





ENERCON SERVICES, INC.

PROJECT REPORT  
REVISION STATUS SHEET

TXUT-001-PR-005

Revision 0

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PROJECT REPORT REVISION STATUS

<u>REVISION</u>	<u>DATE</u>	<u>DESCRIPTION</u>
0	07/17/08	Initial Issue

PAGE REVISION STATUS

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APPENDIX REVISION STATUS

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## 1.0 Introduction and Contents

This report contains the final compilation of field boring logs collected as part of the Comanche Peak Units 1 and 2 geotechnical exploration program. The 1000-Series of geotechnical boring logs pertains to the Unit 4 footprint area. These include the primary borings (numbered as B-1XXX) B-1000 through B-1065, and various associated offset borings (numbered as B-1XXX-OFFSET) utilized for additional soil characterization at select boring locations. The 2000-Series of geotechnical boring logs pertains to the Unit 3 footprint area. These include the primary borings (numbered as B-2XXX) B-2000 through B-2064, and various associated offset borings (numbered as B-2XXX-OFFSET) utilized for additional soil characterization at select boring locations. Boring B-1012 is located between Units 1 and 2 and provides data that applies to both units for characterizing the subsurface conditions. Also included are the MW-Series which are stratigraphic profile borings drilled to support Monitoring Well installation and the BS-Series drilled as cluster borings for the collection of bulk samples to support non-safety related laboratory testing of excavation material applications.

For a given boring location, the soil portion (upper portion of the boring) and the rock portion are provided on separate boring logs due to the log parameters and resulting log format

All field boring logs were recorded by hand under Work Instructions issued for each boring. These field logs were checked upon completion by the field manager. These checked field logs were transcribed into the final logs contained herein and were subjected to several reviews and are considered complete and final, thus no Independent Technical Review is required.

## 2.0 General Logging Guidelines

The following logging guidelines were provided to the field oversight to emphasize consistency.

1. Intervals of consistent lithology (rock or soil) greater than 6 inches are to be described as separate beds/intervals and contacts shown graphically and numerically on the log.
2. Contacts between sample intervals should be estimated based on drilling notes (consult with driller), cuttings, etc. Contacts between sample intervals are always shown as dashed lines.
3. Drilling and general notes are to start at the representative depth on the boring log.

### Rock Quality Designation (RQD)

Calculate by the sum of all pieces greater than 4 inches (including zones that are mechanically). In the case where stick up from a previous run is captured in the subsequent run:

- The recovery of the previous run is to be adjusted to account for the amount of stick up belonging to the previous run.
- If the stick up is greater than 4 inches in length, the RQD of the previous run is to be adjusted.
- If stick up from a previous run results in an adjustment of the recovery, the stick up is to be placed in the box with the previous run to which it belongs.

Note: Stick up amounts should be appropriately recorded on the boring log and a general note added that RQD and/or recovery were adjusted accordingly and a graphical notation made on the log.



**Fracture and Joint Attributes**

Joint/fracture roughness, spacing, and others descriptors DO NOT apply to mechanical breaks. Depths of all natural joints and fractures are to be shown graphically on the boring log along with the depth.

The evaluation of natural discontinuities vs. mechanical breaks should consider the drilling equipment (consult with the driller). Natural discontinuities should show signs of weathering (discoloration, decomposition, secondary mineralization, etc.). Signs of tooling such as core spin or reduction in core diameter indicate mechanical breaks when signs of weathering are absent. Mechanical breaks also typically are perpendicular, or near-perpendicular, to the core, and have a “hackly” surface that may break through crystals with fresh (bright) fractures. Some natural joints (e.g., horizontal bedding joints) may be perpendicular to the core, but fractures that are more than about 15 degrees from perpendicular (dip exceeding about 15 degrees) should be suspect as natural joints. If unsure, note as a natural joint or fracture and describe accordingly. This results in a conservative assessment of RQD.

In addition, the “Rock Characterization Reference Guide” which follows provides information that aids in the interpretation of the boring logs.





# ROCK CHARACTERIZATION REFERENCE GUIDE



## Rock Description Format

ROCK TYPE; subtype; color (Munsell notation); dominant texture; rock strength; weathering; bedding; additional information (sorting; reaction to HCl; relative abundances; minerals; etc.)

## Rock Strength Classification Scale from Brown (1981), Hoek (1996)

Term	Hardness Designator/Grade	Field Identification	Approximate Range of Uniaxial Compressive Strength
Extremely Weak	R0	Can be indented with difficulty by thumbnail. May be friable or moldable with finger pressure.	< 150 psi
Very Weak	R1	Crumbles under firm blows with point of geologic hammer. Can be peeled by a pocket knife.	150-725 psi
Weak	R2	Can be peeled or scraped by a pocket knife with difficulty. Cannot be scratched by fingernail. Shallow indentation made by firm blow of geologic hammer.	725-3,625 psi
Medium Strong	R3	Cannot be scraped or picked with a pocket knife. Specimen can be fractured with a single firm blow of a hammer/geologic pick.	3,625-7,250 psi
Strong	R4	More than one blow of geologic hammer required to fracture specimen.	7,250-14,500 psi
Very Strong	R5	Specimen requires many hard blows of hammer to fracture or chip. Hammer rebounds after impact.	14,500-36,250 psi
Extremely Strong	R6	Specimen can only be chipped by hammer.	>36,250 psi

## Rock Weathering Classification Scale from Brown (1981)

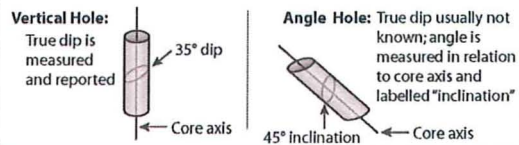
Designation	Symbol	Field Identification	Grade
Fresh	F	No visible sign of rock material weathering; perhaps slight discoloration on major discontinuity surfaces. Rings under hammer impact.	I
Slightly Weathered	SW	Rock mass is generally fresh with slight discoloration in rock fabric. Discontinuities are stained and may contain clay. Decomposition extends up to 1" in rock.	II
Moderately Weathered	MW	Less than 50% of rock is decomposed. Significant portion of rock shows discoloration and weathering effects. Crystals are dull and/or altered. Discontinuities are stained and may contain secondary minerals. Strength is significantly less than fresh rock.	III
Highly Weathered	HW	Rock mass is more than 50% decomposed. Rock can be broken by hand or scraped with knife or pick. All discontinuities exhibit secondary mineralization. Surface of core is friable and/or pitted due to washing out of highly altered minerals by drill water.	IV
Completely Weathered	CW	Rock mass is completely decomposed but rock fabric and structure may still be evident (saprolite). Specimen is easily crumbled or penetrated with pocket knife or geologic pick.	V
Residual Soil	RS	All rock material is decomposed to soil. Rock fabric and structure completely destroyed. There is a large change in volume, but soil has not been significantly transported.	VI

## Joint and Bedding Spacing Terms

Spacing	Joint Spacing Term	Spacing	Bedding/Foliation Spacing Term
<0.1 ft	Very close	<1.5 in	Very thin (laminated)
0.1-0.3 ft	Close	1.5 - 4 in	Thin
0.3-1.0 ft	Moderately close	4 in - 1 ft	Medium
1.0-3.0 ft	Wide	1 ft - 3 ft	Thick
3.0-10.0 ft	Very wide	>3ft	Very thick
>10 ft	Extremely wide		

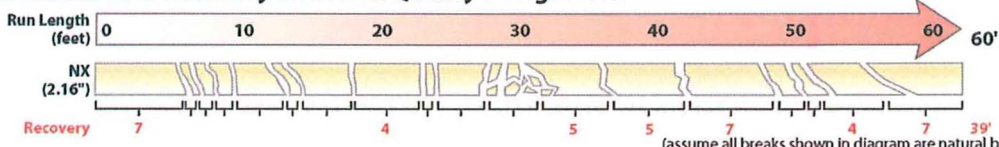
from Brown (1981), Caltrans (1996)

## Method of Measuring Dip of Bedding, Planar Discontinuities, & Foliation in Core



**Rock Quality Designation (RQD) Equation**  $RQD = \frac{\sum \text{solid core pieces } \geq 0.33 \text{ ft (4 in) long}}{\text{Length of run}} \times 100$

## Calculate Core Recovery and Rock Quality Designation



RQD: Sum total of pieces at least 0.33 feet in length / core run (consider mechanically broken core as unbroken) (Example: 39'/60' = 65%; RQD = Fair)  
 RQD Description: 0-25% = Very Poor; 26-50% = Poor; 51-75% = Fair; 76-90% = Good; 91-100% = Excellent

(Continued on reverse)



(Continued from front)

2A

### Discontinuity Terminology

**Discontinuity** – A collective term used for all structural breaks in geologic materials which usually are unhealed and have zero or low tensile strength. Discontinuities also may be healed and exhibit high tensile strength. Discontinuities comprise fractures (including joints), planes of weakness, shears/faults, and shear/fault zones. Contacts between various units also may be considered discontinuities.

**Fracture** – A term used to describe any natural break in geologic material excluding shears and shear zones. Additional fracture terminology is provided below.

**Shear** – A structural break where differential movement has taken place along a surface or zone of failure by shear, characterized by striations, slickensides, gouge, breccia, mylonite, or any combination of these. Often direction, amount of displacement, and continuity may not be known because of limited exposures or observations.

**Fault** – A shear with significant continuity which can be correlated between observations; occurs over a significant portion of a given site, foundation area, or region, or is a segment of a fault or fault zone defined in the literature. The designation of a shear as a fault or fault zone is a site-specific determination.

**Shear/Fault Zone** – A shear that is expressed in relative terms of width. The zone may consist of gouge, breccia, or many related faults or shears together with fractured and crushed rock between the shears or faults, or any combination of these. In the literature, many fault zones are referred to simply as faults.

**Shear/Fault Disturbed Zone** – An associated zone of fractures and/or folds adjacent to shear or shear zone where the country rock has been subjected to only minor cataclastic action and may be mineralized. If adjacent to a fault or fault zone, the term is *fault-disturbed zone*. Occurrence, orientation, and area extent of these phenomena depend upon the depth of burial (pressure and temperature) during shearing, brittleness of materials, and the stress envelope.

### Fracture Terminology Example shown for core, but applicable to any observation.



**Joint (JT)** – A relatively planar fracture along which there has been little or no shearing displacement.



**Foliation Joint (FJ) or Bedding Joint** – A relatively planar fracture which is parallel to foliation or bedding along which there has been little or no shearing displacement.



**Bedding Plane Separation** – A separation along bedding after extraction or exposure due to stress relief or slaking.

**Incipient Joint (IJ) or Incipient Fracture (IF)** – A joint or fracture which does not continue through the specimen or at least not seen with the naked eye. However when the specimen is wetted and then allowed to dry, the joint or fracture trace is evident. When core is broken, it breaks along an existing plane.



**Random Fracture (RF)** – A natural break (fracture) with a generally rough, very irregular, nonplanar surface which does not belong to a joint set.



**Mechanical Break (MB)** – A break due to drilling, blasting, or handling. Mechanical breaks parallel to bedding or foliation are called **Bedding Breaks (BB)** or **Foliation Breaks (FB)**, respectively. Recognizing mechanical breaks may be difficult. The absence of oxidation, staining, or mineral fillings, and often a hackly or irregular surface are clues to recognition.



**Fracture Zone (FZ)** – Numerous, very closely intersecting fractures. Often fragmented core cannot be fitted together.

### Fracture Frequency

The number of natural fractures occurring within a base length or core run. The number of fractures is divided by the length and is reported as fractures per meter or fractures per foot. Expressed as 3/m or 6/ft.

### Fracture Density

Based on the spacing of all natural fractures in an exposure or core recovery lengths in boreholes; excludes mechanical breaks, shears, and shear zones; however, shear-disturbed zones (fractures outside the shear) are included. Descriptors for fracture density apply to all rock exposures such as tunnel walls, dozer trenches, outcrops, or foundation cut slopes and inverts, as well as boreholes. Descriptive criteria presented below are based on borehole cores where lengths are measured along the core axis; for other exposures the criteria is distance measured between fractures (size of blocks).

**Unfractured** – No fractures.

**Very slightly fractured** – Core recovered mostly in lengths greater than 1 m (3 ft.)

**Slightly to very slightly fractured** – \*

**Slightly fractured** – Core recovered mostly in lengths from 300 to 1000mm (1 to 3 ft.) with few scattered lengths less than 300mm (1 ft.) or greater than 1000mm (3 ft.)

**Moderately to slightly fractured** – \*

**Moderately fractured** – Core recovered mostly in 100 to 300mm (0.3 to 1.0 ft.) lengths with most lengths about 200mm (0.6 ft.)

**Intensely to moderately fractured** – \*

**Intensely fractured** – Lengths average from 30 to 100mm (0.1 to 0.3 ft.) with scattered fragmented intervals. Core recovered mostly in lengths less than 100mm (0.3 ft.)

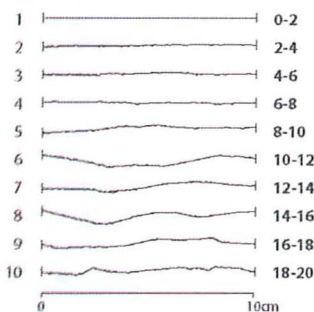
**Very Intensely to Intensely fractured** – \*

**Very Intensely fractured** – Core recovered mostly as chips and fragments with a few scattered short core lengths.

\* Combination of fracture densities (eg. *Very Intensely Fractured* to *Intensely Fractured* or *Moderately to Slightly Fractured*) are used where equal distribution of both fracture density characteristics are present over a significant interval or exposure, or where characteristics are "in between" the descriptor definitions.

### Rock Discontinuity Roughness JRC (Joint Roughness Coefficient)

Typical roughness profiles for JRC range:



### Rock Core Size Chart

#### Wireline Rod and Casing

SIZE	O.D. (in)	I.D. (in)	WEIGHT (lb/10 ft)	THREADS per inch	CONTENT (US gal/100ft)
NQ	2.75	2.375	52	3	23
HMQ	3.5	3.063	77	3	38.4
NW	3.5	3	86	4	36.7
HWT	4.5	4	117	2.5	65.3
AWJ	1.75	1.375	32	5	7.4

#### Wireline Drill Bits

SIZE	CORE DIAMETER (in)	HOLE DIAMETER (in)	HOLE VOLUME (US gal/100ft)
NQ-3	1.775	2.98	36.3
HQ-3	2.406	3.782	58.3

#### Conversions

inch (in) x 25.4 = millimeter (mm)  
foot (ft) x 0.305 = meter (m)





**CORE BOX LABELING**

**Top of Box (Outside Cover) [A]**

**[PROJECT NAME & NUMBER]**  
**[Borehole ID]**  
 Run \_\_\_\_\_ to \_\_\_\_\_  
 Depth \_\_\_\_\_ to \_\_\_\_\_ Date: \_\_\_\_\_  
 Box \_\_\_\_\_ of \_\_\_\_\_ Rig Geologist \_\_\_\_\_

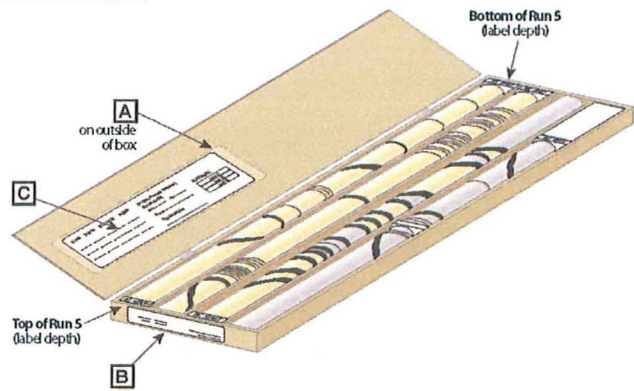
**Left Side of Box [B]**

**[PROJECT NAME & NUMBER]**  
**[Borehole ID]**  
 Run \_\_\_\_\_ to \_\_\_\_\_  
 Depth \_\_\_\_\_ to \_\_\_\_\_ Date: \_\_\_\_\_  
 Box \_\_\_\_\_ of \_\_\_\_\_ Rig Geologist \_\_\_\_\_

**Inside Box Cover [C]**

RUNS	DEPTH	RECOVERY	RQD%	[Project Name & Number]	SCHEMATIC			
_____	_____	_____	_____	[Borehole ID]				
_____	_____	_____	_____	Box _____				
_____	_____	_____	_____	Date: _____				
				Rig Geologist: _____	<table border="1"> <tr><td>[run #]</td></tr> <tr><td>[run #]</td></tr> <tr><td>[run #]</td></tr> </table>	[run #]	[run #]	[run #]
[run #]								
[run #]								
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**Core Box Schematic:**





**ENERCON SERVICES, INC.**

**PROJECT REPORT**

**TXUT-001-PR-005**

**Revision 0**


**BINDER No. 1**

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## **BORING LOG DATA REPORT**

**BINDER No. 1**  
**1000-Series Boring Logs**  
**Number of Logs in Binder: 68 Logs**


Binder 1 of 3 contains the 1000-Series of geotechnical boring logs for the Unit 4 footprint area. These include the primary borings (numbered as B-1XXX) B-1000 through B-1065, and various associated offset borings (numbered as B-1XXX-OFFSET) utilized for additional soil characterization at select boring locations. They have all been entered into the gINT software program and have undergone multiple rounds of edits. There are 68 logs total included within Binder 1 of 3. Binders 2 and 3 will include all geotechnical borings for the 2000-Series, the MW-Series (Monitoring Wells), and the BS-Series (Bulk Sample).

Project Name and Job Number TXU Comanche Peak COL 1908		 WLA William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-1000</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'07.51921"N / 97°47'41.80881"W		Total Depth 400 feet	
Drilling Contractor and Rig Richard Simmons Drilling / BK-81 HD		Elevation and Datum 851.008 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 8 feet	
Sampling Method SPT		Sample Driving Hammer/Drop R&C / 140 lbs / 30 inches	No. of Samples 3	Date Started 11/16/06	
		Borehole Inclination Vertical	Logged by T. Campbell	Date Completed 11/28/06	

Reviewed by / Date J. Wesling 12/6/06

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
0							<b>ARTIFICIAL FILL (Qaf)</b> SANDY SILT very pale brown (10YR 8/2), medium stiff, about 30% subrounded fine to medium sand, trace wood fragments		851
1	ML		B-1000 1	6	16	4.5			850
2				8	18				849
3				8					848
4			B-1000 2	31	11	4.5	<b>RESIDUAL SOIL (RS)</b> GRAVELLY SILTY SAND very pale brown (10YR 8/2), dry, very dense, well graded sand, with angular limestone fragments (~30%)		847
5				50/5"	11				846
6	SM		B-1000 3	13	8	4.5	~20% Limestone Fragments		845
7				50/2"	8				844
8							Top of Bedrock at 8'. Augered to 8.5' to set casing.		843
9									842
10									841
11									840
12									839
13									838
14									837
15									



Project Name and Job Number TXU Comanche Peak Col 1908		 WLA William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. B-1000</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'07.51921"N / 97°47'41.80881"W		Total Depth 400 feet	
Drilling Contractor and Rig Richard Simmons / BK-81 HD		Elevation and Datum 851.008 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 8 feet	
Casing Size and Depth 4" / 8.7 feet		Length of Core Barrel and Bit 7.5 feet	No. of Core Boxes 26	Date Started 11/16/06	
		Borehole Inclination Vertical	Logged by T. Campbell/C. Rittel	Date Completed 11/28/06	

Reviewed by / Date J. Wesling 12/6/06

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
9		1										SHALE: mudstone/calcareous sandstone; very pale orange (10YR 8/2) to light brown (5YR 5/6); grading to light to medium gray (N7 to N4); sand is fine grained; platy/fissile to 10.7 ft, then sandstone absent, becoming massive; slightly weathered (SW); bedding 0.5" to 3.0" thick; rocky disturbed zone 11.9' to 12.5' with sharp contacts; slight to strong reaction to HCl; weak (R2). [Glen Rose Formation]	Glen Rose Formation Coring HQ	842
10		2.8							1000-4					841
11		2.33	4	5.0 5.0	100	SW	R2							840
12		2.55												839
13		2.05												838
14		1.67	5	1.6 1.3	100	SW	R2		1000-5			SHALE: mudstone; medium to dark gray (N5 to N3); mottled; few very fine grains; few weathered or fissile zones; weak (R2); does not react to HCl; slightly weathered (SW). [Glen Rose Formation]		837
15		1.17												836
16		1.35												835
17		1.1	6	5.1 5.0	100	SW	R3		1000-6			SHALE: mudstone; greenish gray (5GY 6/1); fissile to massive; common shell hash and sand grains; trace bioturbation and rip-up clasts; slight reaction to HCl; medium strong (R3); slightly weathered (SW). [Glen Rose Formation]		834
18		1.6												833
19		1.4												832
20		0.83												831
21		0.82												830
22		0.7	7	5.0 5.0	100	SW	R3		1000-7			LIMESTONE: micrite; white (N9); with few vugs; slightly weathered (SW); medium strong (R3); with bioturbation and common calcite grains; trace shell hash; abrupt basal contact; strong HCl reaction. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	829
23		2.7				SW	R3							828

Jo, healed, slightly weathered.

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1000</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
24		2.7	7	5.0 5.0	100	SW	R3					SHALE: mudstone; medium gray (N5); massive texture; slightly weathered (SW); medium strong (R3); few shell fragments; slight reaction to HCl; below 25', no HCl reaction on fresh sample, slight reaction on sample shavings. [Glen Rose Formation]		827
25		2.4												826
26		1.5												825
27		1.05	8	5.1 5.0	100	F	R2					SHALE: mudstone; medium dark gray (N4); fresh (F); weak (R2); massive; friable; nonplastic; with very fine grained sand; moist; sticky; trace shell fragments; sharp basal contact. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	824
28		2.42												823
29		1.78												822
30		2.48	9	5.1 5.0	100	F	R2		1000-8			LIMESTONE: micrite; light gray (N7); fresh (F); weak (R2); common bioturbation; few vuggy zones; strong reaction to HCl; interspersed with mudstone which has a slight HCl reaction; abrupt basal contact. [Glen Rose Formation]		821
31		1.17												820
32		2.25												819
33		1.42	10	5.0 5.0	100	F	R2		1000-9			LIMESTONE/MICRITE: light gray (N7); with calcite grains and shell hash; massive; few mudstone layers show slight reaction to HCl; fresh (F); weak (R2); below 36', few small vugs and very fine mud-filled laminae; increasing shell hash content with depth, with bioturbation and differential loading structures. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	818
34		1.08												817
35		2												816
36		0.92	10	5.0 5.0	100	F	R2		1000-10					815
37		1.02												814
38		0.83												813
		1.02												813

Project Name and Job Number  
TXU Comanche Peak Col  
1908



**ROCK LOG**  
**Boring No. B-1000**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
39		1.02												812
40		1.52	10	5.0	100	F	R2							811
41		2.28				F	R0							810
42		2.85				F	R2						Core sticky, gummy. Torn up during removal from core barrel.	809
43		1.52	11	5.1	100	F	R0		1000-11				Run 11 - inner barrel stuck in outer barrel; hammered out, so RQD measurement not possible	808
44		1.92												807
45		1.23												806
46		3									R=8-10, Be, Sl, Ro, on coal seam		Stop coring 11/16/06, begin 11/17/06.	805
47		4				F-SW	R0-R2							804
48		2	12	5.0	100				1000-12					803
49		1.83												802
50		1.82				F-SW	R0							801
51		1.08				F	R0							800
52		2.68	13	5.0	100									799
53		2.63				F	R0							798
		4							1000-13					

Project Name and Job Number  
TXU Comanche Peak Col  
1908



**ROCK LOG**  
**Boring No. B-1000**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)								
54		4	13	5.0 5.0	100	F	R0					SHALE: mudstone; with few thin limestone interbeds; massive; fresh (F); extremely weak (R0); no to very slight reaction to HCl; fissile. [Glen Rose Formation]		797								
55		3.42																		LIMESTONE: micrite; light gray (N7); fresh (F); weak (R2); few shell fragments; slight bioturbation; massive; sharp basal contact. [Glen Rose Formation]		796
56		2.1	14	5.0 5.0	100	F	R0					SHALE: medium dark gray (N4); fresh (F); extremely weak (R0); with few micrite beds (0.25" to 1.5" thick); quickly desiccates; contacts sharp between beds; limestone shows strong reaction to HCl; shale shows no reaction to HCl; sparse bioturbation. [Glen Rose Formation]		795								
57		3.8																				794
58		3.17																				
59		2.48	15	5.1 5.0	100	F	R0					LIMESTONE: micrite; with abundant very fine shale laminae; fresh (F); extremely weak (R0); few shell fragments; sparse shell hash; gradational basal contact. [Glen Rose Formation]		792								
60		1.97																				791
61		2.1																				790
62		3.25																				789
63		3.67	16	5.2 5.0	100	F	R0					SHALE: medium to very dark gray (N5 to N2); fresh (F); extremely weak (R0); generally massive but with few wispy indistinct micrite laminae; sparse bioturbation; slight reaction to HCl; gradational basal contact. [Glen Rose Formation]		788								
64		2.92																			Length of recovery stretched due to mechanical breaks.	787
65		1.97	16	5.2 5.0	100	F	R2					LIMESTONE: micrite; light gray (N7); fresh (F); weak (R2); with bioturbation and rip-up clasts; strong reaction to HCl. [Glen Rose Formation]		786								
66		2.33																				785
67		4																				784
68		2.2	16	5.2 5.0	100	F	R2					SHALE: very dark gray (N2); fresh (F); extremely weak (R0); massive with sparse shell fragments; fresh; desiccates quickly. [Glen Rose Formation]		783								
		2.37																			Length of recovery stretched due to mechanical	783

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**ROCK LOG**  
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)										
69		2.37	16	5.2 5.0	100	F	R2		1000-16				breaks.	782										
70		2.05																					781	
71		1.73	17	5.0 5.0	100				1000-17				LIMESTONE: micrite; light to medium light gray (N7 to N6); fresh (F); weak (R2); massive; predominately bioturbated; rip-up clasts with loading structures and few mud laminae; mud includes shell fragments, dark angular inclusion (lignite?) at 72.6', none to slight reaction to HCl. [Glen Rose Formation]	780										
72		2.33																					779	
73		1.55																						778
74		1.42																						777
75		1.67	18	5.1 5.0	100	F	R2		1000-18				Decreasing bioturbation, increased mud laminae, more massive texture than above.	776										
76		1.67																					775	
77		0.83																						774
78		2.15												773										
79		1.4	19	5.0 5.0	100				1000-19				Length of recovery stretched due to mechanical breaks.	772										
80		1.33																					771	
81		1.17																						770
82		1.83												769										
83		2.27												768										
		2.58												768										

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**ROCK LOG**  
**Boring No. B-1000**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
84		2.58												767
		2.33	19	5.0	100	F	R2							766
85		1.67												766
		1.4				F	R2							765
86		2	20	5.0	100									764
		2.75				F	R2							763
87		2.67												762
88		2.33												761
		2.3												760
89		1.53	21	5.0	100	F-SW	R2							759
		1.25												758
90		NM												757
		2.02												756
91		3	22	5.0	100	SW	R0-R2							755
		1.25												754
92		2.32												753

SHALE/MUDSTONE: with micrite rip-up clasts; fresh (F); weak (R2); sharp contact at 85.3', below which rip-up clast are absent. [Glen Rose Formation]

LIMESTONE: wackestone/micrite; light gray (N7); fresh to slightly weathered (F to SW); weak (R2); predominately rip-up clasts and abundant very thin clay laminae throughout sample; strong reaction to HCl, trace shells. [Glen Rose Formation]

LIMESTONE: wackestone; medium light gray to light gray (N6 to N7); fresh to slightly weathered (F to SW); weak (R2); common rip-up clasts throughout; common medium subangular grains (calcite?); strong reaction to HCl, thin layers of mudstone surround rip-up clasts; few filled dissolution features. [Glen Rose Formation]

LIMESTONE: wackestone; medium gray to very light gray (N5 to N8); slightly weathered (SW); extremely weak (R0, mud interbeds) to weak (R2, wackestone); fine to medium grained; abundant claystone/mud laminae up to 1.0" thick; mud shows slight reaction to HCl; limestone shows strong reaction to HCl; common calcite grains; sparse rip-up clasts; common loading features below 99.5'. [Glen Rose Formation]

Length of recovery stretched due to mechanical

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)				
99		2.32	22	5.0 5.0	100	SW	R0-R2					LIMESTONE: wackestone; medium gray to very light gray (N5 to N8); slightly weathered (SW); extremely weak (R0, mud interbeds) to weak (R2, wackestone); fine to medium grained; abundant claystone/mud laminae up to 1.0" thick; mud shows slight reaction to HCl; limestone shows strong reaction to HCl; common calcite grains; sparse rip-up clasts; common loading features below 99.5'. [Glen Rose Formation]	breaks.	752				
100		2															751	
101		1.87																750
102		4.15	23	4.8 5.0	96	SW	R1-R2					LIMESTONE: wackestone; light to medium gray (N7 to N5); slightly weathered (SW); weak to very weak (R2 to R1); packstone layer 101.4' to 102.1'; common mudstone veins and few loading structures; sharp contacts with packstone; limestone shows strong reaction to HCl; mudstone shows slight reaction to HCl. [Glen Rose Formation] Limestone/mudstone contacts indistinct.		749				
103		3.67															748	
104		2.47																747
105		1.77	24	4.9 5.0	98	F	R2					LIMESTONE: micrite; light gray (N7); massive; weak (R2); fresh (F); trace shell fragments at base of sample. [Glen Rose Formation]	Pressure gauge not working - unable to record.	746				
106		3.53															745	
107		3.58																744
108		1.58	25	5.0 5.0	100	SW	R2					LIMESTONE: wackestone/packstone; very light to medium gray (N8 to N5); fresh (F); weak (R2); generally massive with few thin clay laminae; horizontal to subhorizontal bedding planes are indistinct; medium grained; subangular to rounded grains in packstone; strong HCl reaction; packstone absent below 110.0'; sharp basal contact. [Glen Rose Formation]		743				
109		1.67															742	
110		1.25																741
111		2.88	25	5.0 5.0	100	F	R2						Stop coring 11/17/06, begin 11/18/06.	740				
112		3																739
113		3.33																738
		3.42										LIMESTONE: wackestone/packstone; light to dark gray (N7 to N3); fresh (F); weak (R2); dominant bioturbation and rip-up clasts; mud laminae abundant; very thin, generally subhorizontal in groups up to 3.0" thick; calcite grains and shells absent; strong reaction to HCl; sharp basal contact. [Glen Rose Formation]		738				



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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
114		3.42	25	5.0 5.0	100	F	R2							737
115		4.32												LIMESTONE: micrite; light to medium light gray (N7 to N6); fresh (F); weak (R2); horizontal bedding is distinct to indistinct; sparse fine grains; strong reaction to HCl; loading structures 116.0' to 116.3', gradational basal contact. [Glen Rose Formation]
116		2.08	26	5.1 5.0	100	F	R2							735
117		2.5												
118		2.27	27	5.1 5.0	100	F	R2							733
119		2.28												LIMESTONE: wackestone/packstone; fresh (F); weak (R2); massive texture; increasing grain density with depth; medium grains; subangular to subrounded; slight to strong reaction to HCl; rip-up clasts 120.0' to 120.7'; sharp basal contact. [Glen Rose Formation]
120		2.5	28	5.0 5.0	100	F	R2		1000-26					731
121		1.83												LIMESTONE: wackestone/micrite; medium light gray to light gray (N6 to N7); fresh (F); weak (R2); massive; bedding layers indistinct; trace loading structures 120.7' to 121.7'; includes sparse bioturbation; fine shell hash; strong reaction to HCl; gradational basal contact. [Glen Rose Formation]
122		2.48	29	5.1 5.0	100	F	R2							729
123		2.67										1000-27		
124		2.83	30	5.0 5.0	100	F	R2							727
125		2												
126		3.02	31	5.0 5.0	100	F	R2							725
127		3.67												
128		2.28	32	5.0 5.0	100	F	R2							723
		1.72												

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
129		1.72	28	5.0 5.0	100	F	R2		1000-28			LIMESTONE: packstone/wackestone; fresh (F); weak (R2); indistinct thin to medium bedding; horizontal to subhorizontal bedding planes; common rip-up clasts; few mudstone laminae; very fine shell hash and calcite grains; strong reaction to HCl; increasing rip-up clasts with depth; gradational basal contact. [Glen Rose Formation]	Pressure gauge not working - unable to record.	722
		1.83												721
130		2.08												720
131		4.22	29	5.1 5.0	100	F	R0		1000-29		SHALE: dark greenish gray (5G 4/1); very fine grained; fresh (F); extremely weak (R0); very thinly bedded; very slight reaction to HCl; common shell fragments throughout with shell hash (coquina) bed at basal contact; basal contact sharp, with load structures. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	719	
132		3.67											718	
133		5.13											717	
134		NM	30	4.9 5.0	98	F	R2		1000-30		LIMESTONE: micrite/wackestone; very light gray (N8); fresh (F); weak (R2); massive; very fine grained; trace mud-filled laminae; strong reaction to HCl; basal contact gradational over 0.2'. [Glen Rose Formation]		716	
135		5.22											715	
136		3.4											714	
137		2.83	31	5.0 5.0	100	F	R0-R2		1000-31		SHALE: dark greenish gray (5G 4/1); very fine grained; extremely weak (R0); fresh (F); very slight reaction to HCl; very thinly bedded at top of sample, grading to medium bedded; gradational basal contact. [Glen Rose Formation]		713	
138		2.5											712	
139		4											711	
140		2.27	31	5.0 5.0	100	F	R0-R2		1000-31		LIMESTONE: wackestone; medium to light gray (N5 to N7); fresh (F); extremely weak (R0) to weak (R2); massive with few packstone beds; includes rip-up clasts and shell fragments; trace mud laminae; strong reaction to HCl; increased shell fragments; trace loading structures. [Glen Rose Formation]	Shale layer 140' to 140.3'.  Pressure gauge not working - unable to record.	710	
141		1.73											709	
142		2.3											708	
143		1.4									Weak mud layer 142.9' to 143.1', rip-up clasts dominate below 143.1'.		708	

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)		
144		1.4	31	5.0 5.0	100	F	R0-R2							707		
145		2.17					F	R2								706
146		3.33					F	R2								705
147		3	32	5.2 5.0	100	F	R2							704		
148		2.08					F	R2								703
149		1.33					F	R2								702
150		1.67	33	4.7 5.0	94	F-SW	R0							701		
151		3.83					F-SW	R0								700
152		2.77					F-SW	R2								699
153		2.73	34	5.0 5.0	100	F	R2							698		
154		2.33					F	R2								697
155		3.17					F	R2								696
156		2.83	34	5.0 5.0	100	F	R2							695		
157		2.43					F	R2								694
158		2.68					F	R2								693
		2.8														

SHALE: medium light gray (N6); very thinly bedded; weak (R2); fresh (F); common rip-up clasts; contact indeterminate due to breakage and jumbling of sample; strong reaction to HCl. [Glen Rose Formation]

LIMESTONE: wackestone; medium light to light gray (N6 to N7); fresh (F); weak (R2); with abundant rip-up clasts near top of sample; decreasing with depth. [Glen Rose Formation]

SHALE: medium light gray (N6); fresh to slightly weathered (F to SW); extremely weak (R0); strong reaction to HCl. [Glen Rose Formation]

LIMESTONE: wackestone; very light to light gray (N8 to N7); fresh to slightly weathered (F to SW); weak (R2); medium to thick bedded; bedding recognized by presence/absence of rip-up clasts, loading structures, and intervals of grains; violent reaction to HCl. [Glen Rose Formation]

SHALE: medium gray (N5); fresh (F); weak (R2); fissile; abundant shell fragments; weak; strong reaction to HCl; gradational (3") basal contact. [Glen Rose Formation]

LIMESTONE: wackestone with some micrite; light gray (N7); fresh (F); weak (R2); with rip-up clasts; lesser amount of bioturbation; mud laminae throughout; laminae indistinct at top of sample, becoming more distinct with depth; common shell fragments; strong to violent reaction to HCl; mud laminae decreases below 160.7', where sample generally becomes more massive. [Glen Rose Formation]

Length of recovery stretched due to mechanical breaks.

Inner barrel stuck in outer barrel. Trip out, manual tag at 150.4' (should be 150.0'). Core broke during removal from core barrel. Appears overpacked, especially at 148.5 ft.

Downhole pressure reads 900 psi, driller unsure if correct.

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
159		2.8	34	5.0	100							LIMESTONE: wackestone with some micrite; light gray (N7); fresh (F); weak (R2); with rip-up clasts; lesser amount of bioturbation; mud laminae throughout; laminae indistinct at top of sample, becoming more distinct with depth; common shell fragments; strong to violent reaction to HCl; mud laminae decreases below 160.7', where sample generally becomes more massive. [Glen Rose Formation]		692
160		0.98												691
161		1.67	35	5.1	100	F	R2						Length of recovery stretched due to mechanical breaks.	690
162		1.75												689
163		1.33												688
164		2.2												687
165		2.42	36	5.0	100							LIMESTONE: wackestone; medium light gray (N6), massive; fresh (F); weak (R2); mudstone laminae common especially 165.0' to 166.0'; below 166.0', laminae appear in wisps, generally in 0.5" to 1.0" groupings with 3.0" to 6.0" spacing; horizontal to subhorizontal; grains and shell fragments very fine to very coarse; strong reaction to HCl. [Glen Rose Formation]	686	
166		1.02											685	
167		0.98											684	
168		1.48											683	
169		1.15	37	5.0	100	F	R2					LIMESTONE: wackestone; medium light gray (N6); massive; fresh (F); weak (R2); mudstone laminae common; grains and shell fragments very fine to very coarse; grading to packstone; trace ooids; few loading structures; strong reaction to HCl; increased rip-up clasts below 174.5'. [Glen Rose Formation]	682	
170		1.5											681	
171		1.47											680	
172		1.48	37	5.0	100	F	R2						679	
173		1.08											678	
		1.13												678

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
174		1.13	37	5.0 5.0	100	F	R2		1000-35					677
		1.5												676
175		1.08	38	5.0 5.0	100	F	R2					LIMESTONE: wackestone with micrite; medium dark gray to light gray (N4 to N7) with abundant rip-up clasts and load structures, especially above 177.5'; mud and shell hash common surrounding rip-up clasts; more massive texture below 177.5'; mud shows slight to strong reaction to HCl; limestone shows strong reaction to HCl, all texture contacts gradational. [Glen Rose Formation]		675
176		3.02												674
177		1.4												673
178		1.07												672
179		1.32	39	5.0 5.0	100	F	R2						Downhole pressure reads 900 psi, driller unsure if correct.	671
180		1.43												670
181		1.75												669
182		2.33												668
183		1.8												667
184		1.83	40	5.0 5.0	100	F	R2		1000-36					666
185		1.08												665
186		3.02												664
187		1.4	40	5.0 5.0	100	F	R2							663
188		1.07												663

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
189		1.07												662
		1.32	40	5.0	100	F	R2							661
190		2.63											Stop coring 11/18/06, begin 11/19/06.	660
191		1.95												660
192		1.77	41	5.0	100	F	R2							659
193		1.33							1000-37					658
194		1.42												657
195		3.5												656
196		4.68				F-SW	R0							655
197		1.8	42	5.0	100	F-SW	R2							654
198		2.33				F-SW	R0							653
199		3.22				F-SW	R0							652
200		2.58				F-SW	R0-R2							651
201		3.63	43	5.0	100	F-SW	R0							650
202		2.33				F-SW	R2							649
203		1.18				F-SW	R0							648

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
204		1.18	43	5.0 5.0	100	F-SW	R0		1000-38			thin bedded; abundant shell fragments; horizontal to subhorizontal bedding; none to slight reaction to HCl. [Glen Rose Formation]		647
205		3.7				F-SW	R0			LIMESTONE: wackestone/packstone; fresh to slightly weathered (F to SW); weak (R2); very thinly laminated; little bioturbation; trace shell fragments; packstone fine to coarse grained; trace medium grained dark inclusions (lignite?); strong reaction to HCl; sharp basal contact. [Glen Rose Formation]		646		
206		4	44	4.9 5.0	98	F-SW	R0					SANDSTONE: dark greenish gray (5G 4/1); fresh to slightly weathered (F to SW); extremely weak (R0); poorly to moderately indurated; poorly graded; medium grained; subangular; no reaction to HCl; gradational basal contact. [Glen Rose Formation]		645
207		2.48				F-SW	R2			SHALE: dark greenish gray (5G 4/1); fresh to slightly weathered (F to SW); extremely weak (R0); laminated to thinly bedded; few fine grains; otherwise clay sized; does not reaction to HCl; gradational (126' to 207.7') basal contact. [Glen Rose Formation]		644		
208		0.9				F-SW	R0			LIMESTONE: wackestone/packstone; fresh to slightly weathered (F to SW); weak (R2); transition between upper shale and limestone; few small rounded (1/4") noncalcareous inclusions; trace pyrite; strong reaction to HCl; sharp basal contact. [Glen Rose Formation]		643		
209		0.92	45	4.9 5.0	98	F-SW	R0		1000-39			SANDSTONE: dark greenish gray (5G 4/1); fresh to slightly weathered (F to SW); extremely weak (R0); poorly to moderately indurated; poorly graded; friable; medium grained; subangular; no reaction to HCl. [Glen Rose Formation]		642
210		2.17				F-SW	R0-R2			SHALE: dark greenish gray (5GY 4/1); fresh to slightly weathered (F to SW); extremely weak (R0); thinly laminated to very thin bedded; numerous mechanical breaks, probably due to drilling pressure/washout; few moderately cemented sandstone beds to 2" thick; slight react to HCl; at 210', grading to thinly bedded shale/wackestone layers. [Glen Rose Formation]		641		
211		3.07	46	5.0 5.0	100	F	R2					LIMESTONE: wackestone; with shale interbeds; fresh to slightly weathered (F to SW); extremely weak (R0) to weak (R2); medium bedded with bioturbation and rip-up clasts; shale has very slight to slight reaction to HCl; limestone shows strong reaction to HCl; individual contacts indistinct to distinct; sample is ~60% limestone, 40% shale. [Glen Rose Formation]		640
212		3.17				F	R2				639			
213		3.27	46	5.0 5.0	100	F	R2							638
214		3.55				F	R2				637			
215		2.83	46	5.0 5.0	100	F	R2							636
216		2.5				F	R2				635			
217		3.67	46	5.0 5.0	100	F	R2							634
218		1.9				F	R2				633			
218		2.83												633



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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)									
219		2.83	46	5.0 5.0	100	F	R2					LIMESTONE: wackestone; light gray (N7); fresh (F); weak (R2); massive with few indistinct thin clay/shale laminae; strong reaction to HCl; gradational upper contact; common rip-up clasts. [Glen Rose Formation]	Downhole pressure reads 900 psi, but may not be correct. No other gauges functioning.	632									
220		2.47																				631	
221		3.43																					630
222		2.67	47	4.9 5.0	98	F	R2		1000-40			Packstone bed 220.8' to 221.0'. LIMESTONE: micrite; fresh (F); weak (R2); sample is predominantly rip-up clasts surrounded by mudstone; sharp basal contact. [Glen Rose Formation]		629									
223		2.42																				628	
224		1.78																					627
225		1.75	48	5.0 5.0	100	F-SW	R0-R2					LIMESTONE: micrite; with partially to moderately indurated sand beds; fresh to slightly weathered (F to SW); extremely weak (R0); gradational contacts; sand is very fine to fine grained; weak; with some silt and clay; common rip-up clasts 227' to 227.6'; sand beds 3" to 5" thick at 225.6' and 226.7'. Sand shows no reaction to HCl; limestone shows strong to violent reaction to HCl. [Glen Rose Formation] Predominantly rip-up clasts surrounded by mudstone.		626									
226		2.02																				625	
227		3.83																					624
228		3.33	49	5.0 5.0	100	F-SW	R0					SANDSTONE: greenish gray (5GY 6/1) to dark greenish gray (5G 4/1); fresh to slightly weathered (F to SW); extremely weak (R0); very weakly cemented; massive; very fine to fine grained; does not react to HCl. [Glen Rose Formation]		623									
229		1.48																					622
230		1.37																					
231		1.87	49	5.0 5.0	100	F-SW	R0							620									
232		1.5																					619
233		1.23																					
		1.37												618									

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-1000**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
234		1.37												617
		1.25	49	5.0 5.0	100									616
235		3.03												615
236		1.07				F-SW	R0							614
237		1.93	50	5.0 5.0	100									613
238		2.82												612
239		2.33												611
240		0.58				F-SW	R0							610
241		5.07							1000-42					609
242		4.7	51	3.7 5.0	74	F-SW	R0						For description, assuming top of sample is 240', although sand may have washed out at any section in run.	608
243		5.08												607
244		4.17				NA	NA				No recovery			606
245		2.37												605
246		1.87	52	4.8 5.0	96	F-SW	R2							604
247		2.08												603
248		2.17					R0							

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1000</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
249	SHALE	2.17	52	4.8 5.0	96	F-SW	R0					SHALE: fresh to slightly weathered (F to SW); extremely weak (R0); laminated to thinly bedded; coarse shell hash; trace fine sand. [Glen Rose Formation]		602
250		2.08												601
251		3.67												600
252	LIMESTONE	4.33	53	5.0 5.0	100	F-SW	R2					LIMESTONE: micrite/wackestone; fresh to slightly weathered (F to SW); weak (R2); rip-up clasts throughout; grains fine to coarse; grading to packstone below 254.0'; strong reaction to HCl; few unconsolidated sand layers in rip-up layers; basal contact at rip-up clast. [Glen Rose Formation]		599
253		3												598
254		1.2												597
255	SHALE	1.5	54	5.0 5.0	100	F-SW	R0					SHALE: friable; noncalcareous; fresh to slightly weathered (F to SW); extremely weak (R0); laminated to thinly bedded; coarse shell hash; trace fine sand; gradational basal contact. [Glen Rose Formation]	Based on drilling conditions, driller reports sand 257.0' to 260.0'.	596
256		2.67												595
257		3.82												594
258	SANDSTONE	1.1	55	3.3 5.0	66	F	R0					SANDSTONE: greenish gray (5GY 6/1) to dark greenish gray (5G 4/1); fresh (F); extremely weak (R0); with cross-beds; very poorly graded; medium grained; rounded; coal seam at 258.2'. [Twin Mountain Formation]		593
259		0.93												592
260		0.67												591
261	SANDSTONE	1.77	55	3.3 5.0	66	F	R0					SANDSTONE: greenish gray (5GY 6/1) to dark greenish gray (5G 4/1); fresh (F); extremely weak (R0); with cross-beds; very poorly graded; medium grained; rounded; not cemented to partially cemented; becoming silty; very fine grained below 259.5'. [Twin Mountain Formation]		590
262		1.68												589
263		1.5												588
		1.42				NA	NA					Weakly cemented; abundant coal shards; sparse pyrite in clasts and in crystal growth surrounding coal fragments.		
												NO RECOVERY		

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**ROCK LOG**  
**Boring No. B-1000**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
264		1.42									No recovery	NO RECOVERY		587
		0.97	55	3.3 5.0	66	NA	NA							586
265		2.13										SANDSTONE: greenish gray (5GY 6/1); fresh (F); extremely weak (R0); very weakly cemented; very thinly laminated to medium bedded to 267.0', then abundant cross-bedding; load structures and flow bands; does not react to HCl. [Twin Mountain Formation]		585
266		0.7												584
267		1.98	56	4.6 5.0	92	F	R0							583
268		3.43												582
269		2.77												581
270		3.33										SANDSTONE: greenish gray (5GY 6/1); fresh (F); extremely weak (R0); very weakly cemented; poorly graded; very fine to fine grained; some silty zones; laminated to thickly bedded; none to very slight reaction to HCl. [Twin Mountain Formation]	Stop coring 11/19/06, start 11/20/06.	580
271		3.8				F	R0							579
272		1.17	57	3.9 5.0	78									578
273		3.57							1000-45					577
274		3.85				NA	NA				No recovery	NO RECOVERY	Downhole pressure reads 900 psi, driller unsure if correct.	576
275		1.72										SANDSTONE: greenish gray (5GY 6/1); massive; fresh (F); extremely weak (R0); very weakly cemented; poorly graded; very fine to fine grained; rounded grains; some silty zones; none to very slight reaction to HCl. [Twin Mountain Formation]		575
276		0.98	58	2.3 5.0	46	F	R0							574
277		0.67										NO RECOVERY		573
278		0.98				NA	NA				No recovery		Return water clear, release ditch becoming filled	573

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 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
279		0.98										NO RECOVERY	with very fine sand.	572
		1.05	58	$\frac{2.3}{5.0}$	46	NA	NA							571
280		0.97										SANDSTONE: greenish gray (5GY 6/1); massive; fresh (F); very weak (R1); very weakly cemented; poorly graded; very fine to fine grained; some silty zones; rounded grains; no reaction to HCl. [Twin Mountain Formation]	Wireline spool fixed, but kelley spool not releasing. Driller has to pull kelley spool manually at top of every 20.0' run.	570
281		0.67				F	R1							569
282		3.02	59	$\frac{2.3}{5.0}$	46				1000-46			NO RECOVERY		568
283		3.1				NA	NA				No recovery			567
284		3.83												566
285		2.82										SANDSTONE: greenish gray (5GY 6/1); fresh; extremely weak (R0); trace pinkish gray (5YR 8/1); increased clay and silt content (up to 30%); does not react to HCl. [Twin Mountain Formation]	At 285.0', manual tag = 285.4'.	565
286		1.8				F	R0							564
287		0.77	60	$\frac{2.2}{5.0}$	44							NO RECOVERY		563
288		0.88				NA	NA				No recovery			562
289		1.02												561
290		0.93										SANDSTONE: greenish gray (5GY 6/1); fresh (F); extremely weak (R0); massive; subrounded to rounded grains; trace subangular medium grained mafics; clay content to 20% below 291.6'. [Twin Mountain Formation]		560
291		0.67	61	$\frac{2.1}{5.0}$	42	F	R0		1000-47					559
292		0.83										NO RECOVERY		558
293		0.98				NA	NA				No recovery			

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**ROCK LOG**  
**Boring No. B-1000**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
294		0.98										NO RECOVERY		557
		1.1	61	$\frac{2.1}{5.0}$	42	NA	NA							556
295		1.02				F	R0					SANDSTONE: greenish gray (5GY 6/1); fresh (F); extremely weak (R0); massive; subrounded to rounded grains; trace subangular medium grained mafics; with abundant coal seams; coal black (N1), in 1/4" to 1/2" seams; but sample completely fractured, disturbed. [Twin Mountain Formation]		555
296		1.33				F-SW	R2-R3							554
297		1.98	62	$\frac{2.5}{5.0}$	50	F-SW	R2-R3					SANDSTONE: very light gray (N6); weak to medium strong (R2 to R3); interbedded with carbonate breccia, white to light gray (N9 to N7); weak (R2); sandstone/breccia layers medium bedded; carbonate clasts subangular to subrounded; up to 3" diameter; strong reaction to HCl in both sandstone and breccia. [Twin Mountain Formation]		553
298		1.03				NA	NA				No recovery			552
299		1.83										NO RECOVERY		551
300		4.92										SILTSTONE: sandy; greenish gray (5G 6/1); fresh to slightly weathered (F to SW); very weak to weak (R1 to R2); massive; no react to HCl; pitting likely due to drilling wash-out; few thin cemented zones; trace pyrite; some clay, grading to mudstone below 302.0', decreasing sand and silt content with depth. [Twin Mountain Formation]	Driller reports downhole pressure reading correctly at 900 psi.	550
301		3.1				F-SW	R2-R1							549
302		5.72	63	$\frac{4.1}{5.0}$	82	F-SW	R2-R1		1000-48					548
303		4.75												547
304		3.33				NA	NA					NO RECOVERY		546
305		3.7										SILTSTONE: sandy; greenish gray (5G 6/1); fresh to slightly weathered (F to SW); very weak to weak (R1 to R2); massive; very fine grained; no react to HCl; few thin cemented zones; trace pyrite; some clay. [Twin Mountain Formation]		545
306		3.47				F-SW	R2-R1							544
307		3.67	64	$\frac{4.2}{5.0}$	82	F-SW	R2-R1							543
308		1.67												543

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-1000**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
309		1.67												542
		1.05	64	4.2 5.0	82	NA	NA				No recovery	NO RECOVERY		541
310		0.6				F	R0					SANDSTONE: light olive gray (5Y 6/1); fresh (F); extremely weak (R0); massive; very fine to fine grained; 10%-15% silt. [Twin Mountain Formation]		540
311		0.83										NO RECOVERY	Sandstone washout (?)	539
312		1.1	65	1.6 5.0	32									538
313		0.87												537
314		1.17												536
315		0.9											Pumping ~33 gpm, 90% return.	535
316		1.23												534
317		1.43	66	0.0 5.0	0	NA	NA				No recovery			533
318		1.8											No recovery. Drilling with weight of rods only (88 lbs/rod = 2800 lbs approx.)	532
319		0.83												531
320		1.1												530
321		0.92												529
322		0.5	67	0.0 5.0	0								Return water changed to light brown at ~320.0', very fast drilling indicates sand.	528
323		0.45												528



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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
324		0.45										NO RECOVERY		527
		0.33	67	5.0 5.0	0	NA	NA							526
325		0.33										SANDSTONE: very pale orange (10YR 8/2) to grayish orange (10YR 7/4); massive; slightly weathered (SW); weak (R2); minor pitting at 326.0'; mostly no react to HCl; some very slight reaction to HCl near base of core; poorly graded to medium grained; subrounded to rounded; trace mafics. [Twin Mountain Formation]	525	
326		0.93				SW	R2			1000-49				524
327		1.78	68	1.3 5.0	26							NO RECOVERY		523
328		1.13				NA	NA				No recovery			522
329		1.25												521
330		4.67										SHALE: mudstone; grayish green (5G 5/2); with 25% sand; massive with few thin laminae; friable; nonplastic; extremely weak (R0); slightly weathered (SW); does not react to HCl; sharp basal contact. [Twin Mountain Formation]	520	
331		3.58				SW	R0							519
332		3.25	69	5.0 5.0	100						Ro, irregular Ro, irregular	LIMESTONE: micrite; white (N9) to pinkish gray (5YR 8/1); very weak (R1); slightly weathered (SW); massive, with few thin clay laminae; friable; nonplastic; does not react to HCl; sharp basal contact. [Twin Mountain Formation]	518	
333		3.28				SW	R1				Ro, irregular		Tagged hole with rod at 315.0' (15.0' of sand in borehole had to be washed out to get to TD of 330.0').	517
334		3.22										SHALE: mudstone; grayish red (10R 4/2); medium bedded; mostly consolidated with few unconsolidated layers; few micrite beds; no to slight reaction to HCl in mudstone; strong reaction to HCl in limestone. [Twin Mountain Formation]	516	
335		5.5											Return water turned red at 334.0'. Pale reddish brown (10R 5/4). Run 69: Inner barrel stuck in outer barrel. Trip out to release.	515
336		5.4				SW	R0-R1							514
337		3.5	70	3.8 4.0	76								Pumping 20 gpm, 100% return.	513
338		4.5												

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
339		4.5	70		76							SHALE: mudstone; grayish red (10R 4/2); medium bedded; mostly consolidated with few unconsolidated layers; few micrite beds; no to slight reaction to HCl in mudstone; strong reaction to HCl in limestone. [Twin Mountain Formation]	Stopped using split-barrel sampler. Began using solid sampler.	512
		3.53												511
340		7.17												510
341		4.72	71	<u>5.0</u> 5.0	100									509
342		3.83												508
343		5.77												507
344		4.72										Unoxidized zones, light olive gray (5Y 6/1).	Stop coring 11/21/06, start 11/27/06, start 11/28/06.	506
345		7.03	72	<u>1.5</u> 2.0	75								3.5' of tailings in bottom of barrel, drilled only 2.0' before barrel full. Sample fragile and broken from removal from barrel. Crew adding Shur-Mud to stabilize hole.	505
346						SW								504
347														503
348		27.3	73	<u>1.9</u> 3.0	63									502
349														501
350		4.95												500
351		9.38												499
352		9.23	74	<u>5.0</u> 5.0	100									498
353		11.75										Unoxidized section; greenish gray (5GY 6/1); laminated 0.5" to 1.0" thick; some red beds also present 1.0" to 3.0" thick.		
		4.95												

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**ROCK LOG**  
**Boring No. B-1000**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
354		4.95	74		100									497
		3.13												496
355		4.45												495
356		2.52	75	<u>4.7</u> 5.0	94									494
357		4.15												493
358		3.3				SW	R1-R2							492
359		2.22												491
360		3.78												490
361		3.32	76	<u>4.2</u> 5.0	82									489
362		3.2												488
363		4.62												487
364		3.7												486
365		7.15												485
366		4.7	77	<u>3.2</u> 5.0	64	SW	R0-R1							484
367		6.33												483
368		4.83												483

SANDSTONE: moderate brown (5Y 3/4 to 5Y 4/4); fine grained; slightly weathered (SW); very weak to weak (R1 to R2); beds 0.1" thick; mottles 1.0" to 2.0" at 355.0' to 356.5'; no HCl reaction. [Twin Mountain Formation]

SHALE: mudstone; moderate brown (5Y 3/4 to 5Y 4/4); extremely weak to weak (R0 to R1); slightly weathered (SW); massive to laminated <0.1' thick. [Twin Mountain Formation]

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**ROCK LOG**  
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
369		4.83	77		64							SHALE: mudstone; moderate brown (5Y 3/4 to 5Y 4/4); extremely weak to weak (R0 to R1); slightly weathered (SW); massive to laminated <0.1' thick. [Twin Mountain Formation]		482
370		2											Crew keeps losing core in bottom of boring. They continue with 3.0' and 4.0' runs.	481
371		3.47				SW	R0-R1					Interbedded with sandstone (fine grained) near bottom of unit.		480
372		3.28	78	<u>4.2</u> 4.0	100									479
373		3.8										SANDSTONE: pale blue (5B 6/2); fine grained; slightly weathered (SW); weak to medium strong (R2 to R3); oxidized zone 376.8' to 377.0'. [Twin Mountain Formation]		478
374		2.47												477
375		1.28												476
376		NM	79	<u>4.2</u> 4.0	100	SW	R2-R3		1000-51					475
377		3.35												474
378		2.07												473
379		6.35	80	<u>1.0</u> 3.0	33	NA	NA				No recovery			472
380		2.3												471
381		NM										SANDSTONE: pale blue (5B 6/2) to greenish gray (5GY 6/1); fine grained; slightly weathered (SW); weak to medium strong (R2 to R3). [Twin Mountain Formation]		470
382		NM	81	<u>2.8</u> 5.0	56	SW	R2-R3							469
383		2.5												468
		2.5				NA	NA					NO RECOVERY		468

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**ROCK LOG**  
**Boring No. B-1000**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
384		2.5									No recovery	NO RECOVERY		467
		1.6	81	<del>2.8</del> 5.0	56	NA	NA							
385													5.0' runs.	466
		1.85												
386														465
		1.92												
387														464
		1.17	82	<del>4.6</del> 5.0	92	SW	R2-R3							
388														463
		0.75												
389														462
		0.42												
390														461
		0.68												
391														460
		1.03												
392														459
		1.22	83	<del>4.8</del> 5.0	96									
393														458
		1.25												
394														457
		1.68												
395						SW	R2-R3							456
		1.6												
396														455
		2.78												
397			84	<del>4.8</del> 5.0	96									454
		1.53												
398														453
		1.22												


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	Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
	399		1.22										SANDSTONE; greenish gray (5GY 6/1); fine grained; slightly weathered (SW); weak to medium strong (R2 to R3). [Twin Mountain Formation]		452
	400		1.7	84	4.8 5.0	96	SW	R2-R3							Bottom of boring 400.0'; 11/28/06.
	401														450
	402														449
	403														448
	404														447
	405														446
	406														445
	407														444
	408														443
	409														442
	410														441
	411														440
	412														439
	413														438

Project Name and Job Number TXU Comanche Peak COI 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-1001</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'09.59563"N / 97°47'42.07001"W		Total Depth 300 feet	
Drilling Contractor and Rig Fugro / CME 45C		Elevation and Datum 842.384 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 11.25 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 5	Date Started 11/1/06	
		Borehole Inclination Vertical	Logged by C. Rittel	Date Completed 11/7/06	

Reviewed by / Date J.Wesling 12/5/06

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
0							<b>ARTIFICIAL FILL (Qaf)</b> CLAYEY SILT with calcareous deposits brownish yellow (10YR6/6), very stiff to hard, slight HCl reaction, trace medium to coarse, angular to subangular sands, mottled		842
1			B-1001 1A	12					841
2				14	$\frac{18}{18}$	4.51			840
3				12					839
4	CL/ML		B-1001 2A	4			grades to lean Clay		838
5				8	$\frac{15}{18}$	4.51			837
6				17					836
7			B-1001 3A	8			violent HCl reaction, increase in calcareous deposits		835
8				9	$\frac{18}{18}$				834
9				10					833
10	CL		B-1001 4A	9	$\frac{14}{18}$	4.51	<b>RESIDUAL SOIL (RS)</b> LEAN CLAY, yellow (10YR7/8), very stiff, damp, slight to strong HCl reaction; trace medium grained, subangular sand (<10%)		832
11			B-1001 5A	50/3"	$\frac{4}{3}$				831
12							Top of Bedrock at 11.25'	Limestone bedrock at 11.25'	830
13									829
14									828
15									827

Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG Boring No. B-1001</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'09.59563"N / 97°47'42.07001"W		Total Depth 300 feet	
Drilling Contractor and Rig FUGRO / CME-45C		Elevation and Datum 842.384 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 11.25 feet	
Casing Size and Depth 4" / 13 feet		Length of Core Barrel and Bit 8.6 feet	No. of Core Boxes 20	Date Started 11/1/06	
		Borehole Inclination Vertical	Logged by C.Rittel	Date Completed 11/7/06	

Reviewed by / Date J.Wesling 12/5/06

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology		Remarks	Elevation (feet)
12												SILT (ML); yellow (10 YR 7/8); very stiff; damp; low toughness; low to medium plasticity; slight to strong reaction to HCl; trace medium grained sand (<10%) subangular grains LIMESTONE: BEDROCK	Limestone fragments placed into B-1005A sample jar. Casing installed at 13.0' PVC casing seated ~2.0' into rock down to 12.0'	831	
13															830
14		4.42	1	1.7 2.0	75	SW	R2				1001-1	LIMESTONE: wackestone; very light gray (N8) to yellowish gray (5Y 7/2); slightly weathered (SW); weak (R2); interbeds of yellowish gray 2.0" to 6.0" thick. [Glen Rose Formation]	Tan wash water returned	829	
15															828
16						SW	R1				1001-2	SHALE: mudstone; medium gray (N5); strong HCl reaction; slightly weathered (SW); very weak (R1). [Glen Rose Formation]	Tan wash water returned	827	
17															826
18		8.32	2	5.0 5.0	100	SW	R1-R2					SHALE: mudstone; medium light gray (N6); very slight HCl reaction; more indurated than bounding units; slightly weathered (SW); weak to very weak (R2 to R1); slight to strong reaction to HCl. [Glen Rose Formation]	Cemented zone, wash is more greenish gray	825	
19															824
20															823
21						SW	R1				1001-3	SHALE: mudstone; medium gray (N5); no HCl reaction; slightly weathered (SW); very weak (R1). [Glen Rose Formation]	Bottom 7.0" of run hanging out of sample barrel	822	
22															821
23		8.1	3	5.0 5.0	100	SW	R1-R2					SHALE: mudstone; medium light gray (N6); very slight reaction to HCl; more indurated than bounding units; slightly weathered (SW); weak to very weak (R2 to R1). [Glen Rose Formation] Wackestone interbed 0.3' thick.	Fine-grained sand in bottom of tub. Reacts to HCL, cemented zone	820	
24															819
25															818
26		5.42	4	5.0 5.0	100	SW	R2					LIMESTONE: very light gray (N8); violent HCl reaction; weak (R2). [Glen Rose Formation]		817	
															816
															815
															814
															813
															812
															811
															810
															809
															808
															807
															806
															805
															804
															803
															802
															801
															800



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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
27												INTERBEDDED LIMESTONE, wackestone to mudstone; very light gray (N8) to medium light gray (N6); extremely weak to weak (R0 to R2); slightly weathered (SW). [Glen Rose Formation]	due to softness of mudstones, core is chips with lengths averaging 0.1' or less, limestone rich beds are more intact	816
28		5.42	4	$\frac{5.0}{5.0}$	100									815
29									1001-4					814
30													Start 11/02/2006	813
31													Tu water color is gray	812
32													Requested driller to slow drill rate during runs to attempt better core recovery - it didn't help	811
33		17.52	5	$\frac{4.9}{5.0}$	98				1001-5					810
34						SW								809
35							R0-R2						Longest core fragment 0.4' of wackestone interbed. Good water return. Drill rate same as runs. Hard to determine natural fractures due to high number of mechanical (bedding) breaks	808
36									1001-6					807
37														806
38		16.7	6	$\frac{4.6}{5.0}$	92									805
39														804
40														803
41		11.67	7	$\frac{5.0}{5.0}$	100								Driller notes that he is still learning this rig and is new	802

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
42												INTERBEDDED LIMESTONE. wackestone to mudstone; very light gray (N8) to medium light gray (N6); extremely weak to weak (R0 to R2); slightly weathered (SW). [Glen Rose Formation]	to HQ coring and will attempt to adjust drilling methods for better core recovery	801
43		11.67	7	5.0 5.0	100	SW	R0-R2						Driller purged all water from hole after run 7.	800
44														799
45									1001-7			SHALE: mudstone; medium light gray (N6) to medium gray (N5); slightly weathered (SW); extremely weak to very weak (R0 to R1); very sticky; clay rich. [Glen Rose Formation]	Core damaged from removal of core barrel due to expansive mudstone sticking to sampler, core also increased in length when placed in box.	798
46						SW	R0-R1							797
47														796
48		18.48	8	5.0 5.0	100	SW	R2					LIMESTONE: wackestone to packstone; very light gray (N8); weak (R2); slightly weathered (SW); zone of calcite crystals 1.5" (one found at 48.1'). [Glen Rose Formation]		795
49														794
50						SW	R0-R2		1001-8			SHALE: mudstone; medium dark gray (N4); with limestone (wackestone/packstone); 1.0" thick interbeds spaced on average 4.0" to 7.0" apart; slightly weathered (SW); extremely weak to weak (R0 to R2); bedding breaks bound limestone beds. [Glen Rose Formation]	Good water return	793
51													Driller using weight to produce constant drill pressure	792
52														791
53		15.93	9	5.0 5.0	100	SW	R2		1001-9			LIMESTONE; wackestone; very light gray (N8); weak (R2); slightly weathered (SW); violent reaction to HCl. [Glen Rose Formation]		790
54														789
55						SW	R1					SHALE: mudstone; medium gray (N5) to medium dark gray (N4); very weak (R1); slightly weathered (SW); very slight to slight reaction to HCl; few limestone interbeds 0.3' to 0.5' thick; slight reaction to HCl. [Glen Rose Formation]		788
56		16.55	10	5.0 5.0	100				1001-10				Core sticking to sample barrel which damaged	787

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
57												SHALE: mudstone; medium gray (N5) to medium dark gray (N4); very weak (R1); slightly weathered (SW); very slight to slight reaction to HCl; few limestone interbeds 0.3' to 0.5' thick; slight reaction to HCl. [Glen Rose Formation]	the core when it was removed, also core now appears longer after disturbance	786
58		16.55	10	<u>5.0</u> 5.0	100	SW	R1							785
59														784
60														783
61												LIMESTONE: micrite; very light gray (N8) to medium light gray (N6); slightly weathered (SW); weak (R2); violent reaction to HCl. [Glen Rose Formation]		782
62						SW	R2							781
63		15.7	11	<u>4.9</u> 5.0	98									780
64						SW	R1			1001-11		SHALE: mudstone; medium gray (N5); slightly weathered (SW); very weak (R1); slight to strong reaction to HCl. [Glen Rose Formation]		779
65												LIMESTONE: micrite; very light gray (N8) to light gray (N7); weak (R2); slightly weathered (SW); violent reaction to HCl; convoluted bedding present. [Glen Rose Formation]		778
66						SW	R2			1001-12				777
67													Core barrel covered in thick drill mud after run 12. Core 5.1' after placed into box due to handling	776
68		11.1	12	<u>5.0</u> 5.0	100									775
69						SW	R1-R2					Softer zone with more fine grained mudstone interbedded; very weak to weak (R1 to R2); slightly darker color.		774
70						SW	R2							773
71		13.07	13	<u>5.0</u> 5.0	100								Most breaks in core from trying to remove high	772

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
72													plasticity zones of the core sticking to the barrel - see photos of core before removal to core box for accurate length	771
73		13.07	13	$\frac{5.0}{5.0}$	100	SW	R2		1001-13					770
74														769
75														768
76												LIMESTONE: wackestone; light gray (N7) to medium light gray (N6); interbedded with mudstones <0.1' thick; extremely weak to weak (R0 to R2); slightly weathered (SW); strong reaction to HCl. [Glen Rose Formation]	Core sticking to barrel, mudstones are chips and fragments	767
77						SW	R0-R2							766
78		8.45	14	$\frac{5.0}{5.0}$	100				1001-14					765
79												LIMESTONE: wackestone to micrite; very light gray (N8); slightly weathered (SW); weak (R2); violent reaction to HCl; interbedded with extremely weak (R0) beds of mudstone. [Glen Rose Formation]	Fractured section composed of mudstones	764
80														763
81		2.25											Core barrel jammed on inside drill rod during removal, it's picking up all 55' of rod. Crew removes all pipe and fixes jam due to tape coming off split tube	762
82		2.75				SW	R0-R2					82.0' to 90.0': very light gray (N8) to medium light gray (N6); violent reaction to HCl.	Core is pulverized and broken from removal to core box	761
83		1.5	15	$\frac{5.0}{5.0}$	100								Core is pulverized and broken from removal to core box	760
84		2.17											Hard to determine BB / MB from natural fractures	759
85		2.57												758
86		2.2	16	$\frac{4.9}{5.0}$	98				1001-15					757

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)						
87		1.42	16	4.9 5.0	98	SW	R0-R2					LIMESTONE: wackestone to micrite; very light gray (N8); slightly weathered (SW); weak (R2); violent reaction to HCl; interbedded with extremely weak (R0) beds of mudstone. [Glen Rose Formation]	Top 3.8' of core in good condition (photos missing RUN #)	756						
88		1.07																	755	
89		1.75													1001-16					754
90		1.15	17	5.0 5.0	100	SW	R2					LIMESTONE: micrite to wackestone; very light gray (N8); slightly weathered (SW); weak (R2); violent reaction to HCl; interbedded with extremely weak (R0) mudstone. [Glen Rose Formation]	Pulverized core	753						
91		2.27													1001-17				752	
92		2.35																Mudstone interbed; enriched mud zone; medium gray (N5) to light gray (N7).		751
93		1.1																Very light gray (N8) to light gray (N7).		750
94		1.33																		749
95		1.27	18	5.0 5.0	100	SW	R0-R1					Enriched mudstone zone; medium light gray (N6); pyrite crystals present.		748						
96		1.67																Weak to very weak (R2 to R1) below 95.4'.		747
97		1.78																		746
98		2.32	18	5.0 5.0	100	SW	R1-R2							745						
99		2.97													1001-18				744	
100		1.63	19	4.7 5.0	94									743						
101		1.12																	Some BB surfaces show more weathering than	742

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
102		1.07											previous BB surfaces	741
103		1.4	19	$\frac{4.7}{5.0}$	94								Run number is wrong on photos of core. Mismarked "18" instead of 19.	740
104		1.07												739
105		1.12							1001-19					738
106		2.15												737
107		2.33				SW	R1-R2						Changed to finer grained matrix	736
108		2.67	20	$\frac{5.0}{5.0}$	100							Stong reaction to HCl.		735
109		1.2												734
110		0.75												733
111		0.95							1001-20				Core is chips, mud, and framents 0.1' to 0.2'	732
112		1.33												731
113		2.67	21	$\frac{5.0}{5.0}$	100									730
114		1.42							1001-21			LIMESTONE: micrite; very light gray (N8) to light gray (N7); slightly weathered (SW); weak (R2); strong reaction to HCl. [Glen Rose Formation]	More intact core	729
115		1.33				SW	R2							728
116		3.72	22	$\frac{4.8}{5.0}$	96									727

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
117		1.92										LIMESTONE: micrite; very light gray (N8) to light gray (N7); slightly weathered (SW); weak (R2); strong reaction to HCl. [Glen Rose Formation]	Zones filled in with darker material (1.0' long)	726
118		2.45	22	$\frac{4.8}{5.0}$	96				1001-22					725
119		1.53				SW	R2							724
120		3.3												723
121		1.58											Only 0.1' section returned, crew checks bottom and core is there. Attempting to see if core will stay in barrel	722
122		2							1001-23		Redrilled section to attempt to recover core.			721
123		2.17	23	$\frac{3.1}{5.0}$	62								Crew fishing out each fragment of core using the core barrel Only recovered 0.1' of total core from Run 23	720
124		1.67				NM	NM				No recovery.			719
125		2.12												718
126		4.12				SW	R2							717
127		5.65				SW	R0-R2					SHALE: mudstone; medium light gray (N6) to medium gray (N5); slightly weathered (SW); extremely weak to weak (R0 to R2); trace fossils; no to strong reaction to HCl. [Glen Rose Formation]	Driller is experimenting with drill rates	716
128		2.53	24	$\frac{5.0}{5.0}$	100							LIMESTONE: very light gray (N8); weak (R2); slightly weathered (SW); strong to violent reaction HCl reaction. [Glen Rose Formation]		715
129		6.35				SW	R0-R2		1001-24			SHALE: mudstone; medium light gray (N6) to medium gray (N5); extremely weak to weak (R0 to R2); slightly weathered (SW). [Glen Rose Formation]		714
130		1.35										LIMESTONE: very light gray (N8) to light gray (N7); weak (R2); slightly weathered (SW); violent reaction to HCl; interbedded with mudstone. [Glen Rose Formation]		713
131		5.03	25	$\frac{5.0}{5.0}$	100	SW	R2							712

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
132		3.28				SW	R2							711
133		3.2	25	$\frac{5.0}{5.0}$	100	SW	R0-R1					SHALE: mudstone; medium gray (N5); extremely weak to very weak (R0 to R1); slightly weathered (SW). [Glen Rose Formation]		710
134		1.52												709
135		1.75				SW	R2		1001-25			LIMESTONE: wackestone; very light gray (N8) to light gray (N7); slightly weathered (SW); weak (R2). [Glen Rose Formation]	Core barrel stuck in HQ rod during removal	708
136		2.87										LIMESTONE: micrite to wackestone; with mudstone interbeds; extremely weak to weak (R0 to R2); slightly weathered (SW); strong to violent reaction to HCl. [Glen Rose Formation]		707
137		1.83										Mudstone interbed.	Core stuck to side walls of barrel, core destroyed upon removal. See photos for before photos	706
138		2.37	26	$\frac{5.0}{5.0}$	100									705
139		2.25												704
140		1.95												703
141		1.33				SW	R0-R2		1001-26					702
142		1.78											Core stuck to sides of barrel, core destroyed when removed from barrel	701
143		2.12	27	$\frac{5.0}{5.0}$	100				1001-27					700
144		2.35												699
145		2.73												698
146		3.17	28	$\frac{4.6}{5.0}$	92								Driller uses more water to core	697



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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
147		2.78				SW	R0-R2							696
148		2.73	28	$\frac{4.6}{5.0}$	92				1001-28			SHALE: mudstone; light gray (N7) to medium dark gray (N4); interbedded with micrite beds 0.2' to 0.4' thick, very light gray (N8) to light gray (N7); slightly weathered (SW); very weak to weak (R1 to R2). [Glen Rose Formation]		695
149		2.17				SW	R1-R2							694
150		2.57												693
151		4.2											Raining: crew having problems with wet tape and core barrel. Start 11/05/2006 at 150.4'	692
152		2.58				SW	R0-R2					SHALE: mudstone; light gray (N7) to medium dark gray (N4); strong reaction to HCl; extremely weak to weak (R0 to R2); slightly weathered (SW). [Glen Rose Formation]	NOTE that the rock samples are not continuous but labeled according to the Run Number after sample 1001-28 ( not logging error)	691
153		2.55	29	$\frac{5.0}{5.0}$	100								Consistent drill rate	690
154		2.52										LIMESTONE: packstone; light gray (N7); slightly weathered (SW); weak (R2); interbeds of mud-enriched zones. [Glen Rose Formation]		689
155		2.48												688
156		2.5							1001-30					687
157		1.95				SW	R2					156.0' to 157.2': enriched in clays; indistinct layers.		686
158		2.3	30	$\frac{5.0}{5.0}$	100									685
159		2.02												684
160		1.82											Weathering present in BJ	683
161		1.67	31	$\frac{5.1}{5.0}$	100	SW	R2-R3						Rock increasing in strength and length of core between MB/BB	682

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
162		1.78										LIMESTONE: packstone; very light gray (N8) to light gray (N7); wavy bedding dipping 0 degrees to 15 degrees; strong to violent reaction to HCl; calcite crystals up to 0.25" compose 5% to 10% of ground mass; slightly weathered (SW); weak to medium strong (R2 to R3). [Glen Rose Formation]		681
163		1.22	31	$\frac{5.1}{5.0}$	100								Length of recovery stretched due to mechanical breaks.	680
164		1.45												679
165		1.52												678
166		2.33												677
167		2.58												676
168		2.58	32	$\frac{5.0}{5.0}$	100							167.0' to 169.6': Enriched zone of clays and mudstones; indistinct from limestone; some beds 0.5" to 1.0" thick in upper part of run.		675
169		2.47				SW	R2-R3							674
170		2.32												673
171		2.55												672
172		2.83												671
173		2	33	$\frac{5.0}{5.0}$	100							Mudstone/clay enriched beds 0.3" thick; spaced 1.0" to 2.0".		670
174		1.97												669
175		2.13												668
176		1.97	34	$\frac{4.9}{5.0}$	98									667

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
177		2.78										LIMESTONE: packstone; very light gray (N8) to light gray (N7); wavy bedding dipping 0 degrees to 15 degrees; strong to violent reaction to HCl; calcite crystals up to 0.25" compose 5% to 10% of ground mass; slightly weathered (SW); weak to medium strong (R2 to R3). [Glen Rose Formation]		666
178		3.12	34	$\frac{4.9}{5.0}$	98									665
179		3.42												664
180		2.02								1001-34			Consistant drill rate	663
181		1.82												662
182		1				SW	R2-R3						Large intact core lengths	661
183		1.33	35	$\frac{5.0}{5.0}$	100							Wavy bedding; 0.25" to 0.5".		660
184		1.33												659
185		1.33												658
186		1.45												657
187		1.6												656
188		2.2	36	$\frac{5.0}{5.0}$	100									655
189	NM					SW	R0-R2					SHALE: mudstone; medium gray (N5); extremely weak to very weak (R0 to R2); slightly weathered (SW). [Glen Rose Formation]		654
190		3.58										LIMESTONE: wackestone; very light gray (N8); weak to medium strong (R2 to R3); strong reaction to HCl; slightly weathered (SW). [Glen Rose Formation]		653
191		2.28	37	$\frac{5.0}{5.0}$	100	SW	R2-R3			1001-36				652

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)				
192		4.02	37	5.0 5.0	100	SW	R1					SHALE: mudstone; medium dark gray (N4); interbedded with wackestone, 0.3' thick; very weak (R1); slightly weathered (SW). [Glen Rose Formation]		651				
193		7.67				SW	R2						LIMESTONE: wackestone; very light gray (N8); weak (R2); slightly weathered (SW); some mudstone beds 1.0" thick spaced 2.0" to 3.0" apart. [Glen Rose Formation]		650			
194	NM					SW	R0-R1							SHALE: mudstone; medium dark gray (N4); extremely weak to very weak (R0 to R1); slightly weathered (SW). [Glen Rose Formation]		649		
195	NM					SW	R2							LIMESTONE: micrite; very light gray (N8); weak (R2); slightly weathered (SW). [Glen Rose Formation]		648		
196		2.5	38	4.3 5.0	86	SW	R1					SHALE: claystone; sandy; light greenish gray (5G 7/1); very weak (R1); slightly weathered (SW); sands are fine grained; subangular quartz; slight to no reaction to HCl. [Glen Rose Formation]		647				
197		2.95				SW	R0						SHALE: mudstone; medium gray (N5) to medium dark gray (N4); extremely weak (R0); slightly weathered (SW); no reaction to HCl. [Glen Rose Formation]		646			
198		7.27				SW	R2							LIMESTONE: wackestone; very light gray (N8); slightly weathered (SW); weak (R2); zones enriched in medium grained sands, dark in color. [Glen Rose Formation]		645		
199		4.17	39	4.7 5.0	94	SW	R0-R2							644				
200		3.8															643	
201	NM															LIMESTONE: wackestone; very light gray (N7) to medium light gray (N6); with sandy mudstone interbeds; medium gray (N5); sands are fine to medium grained; subangular; extremely weak to weak (R0 to R2); slightly weathered (SW); slight to no reaction to HCl in mudstones; strong HCl reaction in limestones. [Glen Rose Formation]	Core is fragmented due to weak sediments	642
202		5.02																641
203		2.32											640					
204		3.67											639					
205		2.62											638					
206		4.17	40	5.0 5.0	100								637					
													636					

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 TXU Comanche Peak Col  
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**ROCK LOG**  
**Boring No. B-1001**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
207		2.95												636
208		3.17	40	<u>5.0</u> 5.0	100									635
209		3.5												634
210		2.58												633
211		2.15												632
212		2.17												631
213		4.12	41	<u>4.9</u> 5.0	98	SW	R0-R2							630
214		2.17												629
215		2.42							1001-41					628
216		2.53											STOP 11/5/2006 215.4'. START 11/06/2006 Core sticking to barrel, damaged when removed. Core is chips, fragments and mud	627
217		1.68												626
218		2.37	42	<u>5.0</u> 5.0	100									625
219		3.23												624
220		2.87												623
221	NM		43	<u>5.0</u> 4.8	100	SW	R3-R4						Twin Mountain Formation? Presence of sands	622

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**ROCK LOG**  
**Boring No. B-1001**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
222						SW	R3-R4					SANDSTONE: medium light gray (N6) to greenish gray (5G 6/1); fine grained; slightly weathered (SW); medium strong to strong (R3 to R4); very slight HCl reaction. [Twin Mountain Formation]	in tub	621
223		NM	43	$\frac{5.0}{4.8}$	100							SHALE: mudstone; medium light gray (N6) to medium gray (N5); very weak (R1); slightly weathered (SW); trace of fine - grained sand throughout interval; no HCl reaction; grades into sandstone below. [Twin Mountain Formation]		619
224						SW	R1							618
225													Increasing sands	617
226		1.1										SANDSTONE: light gray (N7) to medium light gray (N6); very weak (R1); slightly weathered (SW); fine grained; subangular quartz; uniformly graded; silts present; trace <10% dark mafic sand grains; no HCl reaction. [Twin Mountain Formation]	Driller notes water is increasing. Formation taking water. Fines upward with increasing silts and clays. Sand in mud tub, additional recovery of Run 44 found during Run 45. 1.2' + 3.3' = 4.5'. See photo	616
227		0.63												615
228		0.4	44	$\frac{4.5}{5.0}$	90	SW	R1							614
229		0.17								1001-44				613
230		0.2												612
231		0.17										Medium dark gray (N4); no to slight reaction to HCl.	Pulverized core due to loose sands. Poor recovery	611
232		1.45				SW	R0					SHALE: claystone; olive gray (5Y 4/1); extremely weak (R0); slightly weathered (SW). [Twin Mountain Formation]	Unable to determine sandstone / claystone contact due to low core recovery	610
233		1.67	45	$\frac{1.8}{5.0}$	36							No recovery		609
234		4.63				NM	NM							608
235		4.43												607
236		NM	46	$\frac{5.0}{5.0}$	100	SW	R0							607

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Project Name and Job Number  
 TXU Comanche Peak Col  
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**ROCK LOG Boring No. B-1001**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
237						SW	R0							606
238		NM	46	<u>5.0</u> 5.0	100								SANDSTONE: medium light gray (N6); fine grained sand; slight to strong HCl reaction; massive; weak to medium strong (R2 to R3); slightly weathered (SW). [Twin Mountain Formation]	605
239						SW	R2-R3							604
240														603
241		3.07											SHALE: claystone; dark gray (N3); high plasticity; breaks in core every 0.75"; extremely weak to weak (R0 to R2); slightly weathered (SW); slight to no reaction to HCl; abrupt contact with sandstone below. [Twin Mountain Formation]	602
242		6.12				SW	R0-R2							601
243		5.13	47	<u>4.7</u> 5.0	94									600
244		6.5												599
245		3.72				SW	R2-R3						SANDSTONE: medium light gray (N6); slightly weathered (SW); weak to medium strong (R2 to R3); fine grained; slight HCl reaction. [Twin Mountain Formation]	598
246		3.1											SANDSTONE: light bluish gray (5 B 7/1) to medium bluish gray (5B 5/1); fine grained; weak (R2); slightly weathered (SW). [Twin Mountain Formation]	597
247		2.02				SW	R2							596
248		2.78	48	<u>4.1</u> 5.0	82								SHALE: mudstone; medium bluish gray (5 B 5/1); extremely weak (R0); slightly weathered (SW). [Twin Mountain Formation]	595
249		3.17				SW	R0							594
250		2.6				NM	NM						No recovery	593
251		2.4	50	<u>4.4</u> 5.0	88	SW	R0-R1						END 11/6/2006. START 11/6/2006 Core barrel	592

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**ROCK LOG**  
**Boring No. B-1001**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)									
252		3.65	50	4.4 5.0	88	SW	R0-R1					SANDSTONE: medium gray (N5) to medium dark gray (N4); extremely weak to weak (R0 to R2); slightly weathered (SW); fine grained sand; silt and clay present. [Twin Mountain Formation]	jammed during removal  Driller notes loss of water	591									
253		3.57																					590
254		3.57																				No recovery	
255		1.95				NM	NM							588									
256		1.08				SW	R0-R1					Organic-rich zone: woody material; roots.		587									
257		1.17												586									
258		0.33	51	4.3 5.0	86	SW	R2			1001-50		SANDSTONE: medium light gray (N6); fine grained; poorly graded (uniform); subangular to sub- rounded quartz; 10% other lithologies including carbonates; no HCl reaction; weak (R2); slightly weathered (SW); massive. [Twin Mountain Formation]		585									
259		0.53																					
260		0.63				NM	NM					No recovery		583									
261		1.12												582									
262		3.6										261.3' to 262.5": slight color change to medium bluish gray (5B 5/1).		581									
263		2.78	52	4.2 5.0	84	SW	R2							580									
264		2.3																					
265		1.6				NM	NM					No recovery		578									
266		10.72	53	3.4 5.0	68	SW	R2					265.4' to 266.8': slight increase in fines and slight color change; medium light gray (N6) to medium gray (N5).		577									



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**ROCK LOG**  
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
267		2.83												576
268		3.52	53	$\frac{3.4}{5.0}$	68	SW	R2							575
269		5.28				NM	NM						No recovery	574
270		2.42												573
271		3.67												572
272		2.82												571
273		2.1	53	$\frac{5.0}{5.0}$	100									570
274		1.67												569
275		1.2				SW	R2							568
276		1.52												567
277		1.78												566
278		0.75	54	$\frac{4.3}{5.0}$	86									565
279		1.43												564
280		1.12				NM	NM							563
281		2.03	55	$\frac{3.9}{5.0}$	78	SW	R2							562

Well cemented fragment from 272.5' - 272.7' is less greenish gray, very light gray (N8), fines upward

266.8' to 268.6': greenish gray interval (5G 6/1).

278.8' to 279.2': slight reaction to HCl on fresh faces.

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**Boring No. B-1001**


Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
282		1.05				SW	R2							561
283		1.58	55	$\frac{3.9}{5.0}$	78	SW	R1-R2		1001-55			SANDSTONE: greenish gray (5G 6/1); fine grained, with 10% to 15% coarse sand and clasts; subangular; coarse fraction is tan, dark green, and light gray (N6); slightly weathered (SW); very weak to weak (R1 to R2); poorly graded. [Twin Mountain Formation]	Coarse sands appear to be cemented clasts of sandstone	560
284		1.53				SW	R1-R2							559
285		2.52				NM	NM							558
286		3.33												557
287		3.03												556
288		1.72	56	$\frac{4.7}{5.0}$	94	SW	R1-R2							555
289		1.75											Increase in carbon content composed of woody material (~10%), 0.1" - 0.3" in length, woody fragments in mud tub	554
290		1.77				NM	NM							553
291		2.02												552
292		2.57												551
293		3.17	57	$\frac{5.0}{5.0}$	100	SW	R2-R3		1001-57			SANDSTONE: medium light gray (N6) to medium dark gray (N4); slightly weathered (SW); weak to medium strong (R2 to R3); interbeds of organic rich beds, black, 1.0" thick, spaced 0.5' to 2.0' apart; sands are fine grained; subangular to some subrounded grains of quartz; pyrite mineralization coating bedding planes at 293.7'. [Twin Mountain Formation]		550
294		1.2											Change in return mud - dark brown	549
295		1.2												548
296		1.67	58	$\frac{4.7}{5.0}$	94								Oily material on surface of mud tub water	547
												295.8' to 296.1': Medium to fine grained; medium strong to weak (R3 to R2); some		546

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**ROCK LOG**  
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
297		4.52												546
298		1.75	58	4.7 5.0	94	SW	R2					pyrite crystals present. SANDSTONE: medium bluish gray (5B 5/1); fine grained; weak (R2); slightly weathered (SW); no reaction to HCl; thin bed of very light (N8) to light gray (N7), fine grained sandstone; strong reaction to HCl. [Twin Mountain Formation]		545
299		2.33												544
300		1.9							1001-58			299.2' to 299.3': thin bed of fine grained sandstone; very light gray (N8) to light gray (N7); strong reaction to HCl.		543
301														542
302														541
303														540
304														539
305														538
306														537
307														536
308														535
309														534
310														533
311														532

Project Name and Job Number TXU Comanche Peak COL 1908		 <b>SOIL LOG Boring No. B-1002</b>	
Type and Diameter of Boring HSA / 7"	Boring Location 32°18'07.75819"N / 97°47'40.05882"W	Total Depth 300.2 feet	
Drilling Contractor and Rig Palmerton & Parrish / CME 55	Elevation and Datum 844.663 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 10.5 feet
Sampling Method SPT	Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 5	Date Started 11/17/06
Borehole Inclination Vertical		Logged by K. Krug	Date Completed 11/21/06

Reviewed by / Date J. Wesling 11/30/06

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0								<b>ARTIFICIAL FILL (Qaf)</b> LIMESTONE FRAGMENTS with clay white, dry, medium dense, angular limestone fragments, about 20% fines		844
1	GC		B-1002 1	14	8.5					843
2				10	18					842
3				4						841
4			B-1002 2	45	9.5			<b>RESIDUAL SOILS (RS)</b> LIMESTONE FRAGMENTS with clay white, dry, very dense, weathered angular limestone fragments		840
5	GC			50/3.5"	9.5					839
6										838
7			B-1002 3	14	13	1		<b>LEAN CLAY</b> light yellowish brown (2.5YR 6/4), damp, hard, low dry strength, some oxidized zones, ~ 5-10% limestone fragments		837
8				8	17					836
9	CL		B-1002 4	6	12	4.5				835
10				50/6"	12					834
11			B-1002 5	50/1"	1			auger refusal at 10.5' Top of Bedrock at 10.5'		833
12										832
13										831
14										830
15										830

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Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG Boring No. B-1002</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'07.75819"N / 97°47'40.05882"W		Total Depth 300.2 feet	
Drilling Contractor and Rig Palmerton and Parrish / CME 55		Elevation and Datum 844.663 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 10.5 feet	
Casing Size and Depth 4" / 11 feet		Length of Core Barrel and Bit 8.56 feet	No. of Core Boxes 20	Date Started 11/17/06	
		Borehole Inclination Vertical	Logged by K. Krug	Date Completed 11/21/06	

Reviewed by / Date J. Wesling 11/30/06

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
11		9.27	1	<u>4.7</u> 1.7	93	F	R3					SHALE (claystone): dark greenish gray (10 GY 4/1); massive; medium strong; no HCl reaction; fresh.	top of rock	834
12												SHALE: clay rich; weak to slight reaction to HCl; very weak (R1); slightly weathered fossil hash present.		833
13		8.07				SW	R1							832
14		7.2							1002-6					831
15		3.08	2	<u>5.0</u> 5.0	100							LIMESTONE: wackestone/packstone; white (N8); vuggy; reacts strongly to HCl; fresh (F); vuggy zones every 0.6'; bedding (lamellae) visible and planar; very fossil rich.		830
16			3			F-SW	R3				He, SM, clay filled			829
17		1.68												828
18		4.43												827
19		4.52										LIMESTONE: packstone; rip-up clasts surrounded by duller limestone create a semi-planar bedding structure; fossil hash abundant; strong reaction to HCl; fresh (F); weak (R2).	gray water return	826
20		3.9	3	<u>5.0</u> 5.0	100	F	R2		1002-7					825
21		4.2												824
22		5.1										SHALE: (claystone); dark gray (N4); massive with hint of overlying units bedding pattern; very slight reaction to HCl; fresh (F); very weak (R1).		823
23		7.58				F	R1		1002-8					822
24		8.78	4	<u>5.0</u> 5.0	100									821
25		10.25										LIMESTONE: packstone; interbedded with shale; dark gray (N4); massive; slight reaction to HCl; white with no shale from 25.9'-26.4'; return to packstone 26.4'-27.0'.	gray water return	820
		5.87				F	R1							

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 TXU Comanche Peak Col  
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**ROCK LOG**  
**Boring No. B-1002**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)						
26		5.87	4	51.0	100	F	R1							819						
27		7.38																818		
28		6.62	5	51.0	100	F	R2					LIMESTONE: wackestone with interbedded shale; gray (N5); massive to fine bedding; disturbed; big rip-up clasts w/shales surrounding in 0.001' beds (non planar); strong HCl reaction; fresh (F); weak (R2); calcite nodules present.	gray water return	817						
29		2.95																	816	
30		3.58																		815
31		3																		814
32		3.27							1002-9					813						
33		5.15	6	51.0	100	F	R2					SHALE: with interbeds of packstone; dark gray (N4); massive beds of limestone 0.1' thick with calcite grains.	variable:900lbs water pressure	812						
34		3.28																		811
35		3.57																		810
36		5.32														1002-10				809
37		6.65										LIMESTONE: wackestone with interbedded shale; white (N8); disturbed beds of rip-up clasts surrounded by shales 0.05' thick and bands of shale 0.2' thick; limestone shows strong HCl reaction; fresh (F); weak (R2).		808						
38		10.83										SHALE: with interbeds of packstone; dark gray (N4); massive beds of limestone 0.1' thick with calcite grains.		807						
39		6.58	7	51.0	100	F	R2					LIMESTONE: as above.		806						
39		2.88														SHALE: as above.		806		
40		8.28									F-SW	R2					LIMESTONE: shale layers weathered out; coal seam at 40.9'; increased shale density; rip-up clasts toward bottom.		805	



Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1002</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)								
41		8.28	7	5.0 5.0	100	F-SW	R2					LIMESTONE: shale layers weathered out; coal seam at 40.9'; increased shale density; rip-up clasts toward bottom.	0lbs down pressure	804								
42		11.72																				803
43		3.47	8	4.7 5.0	94	F-SW	R2					LIMESTONE: packstone; interbedded shales; white (N8); rip-up clasts comprise dominant texture with shale surrounding clasts.	gradational contact	802								
44		3.37																				801
45		5.58																				800
46		2.77																				799
47		2.17	9	5.0 5.0	100	F	R2					LIMESTONE: micrite/wackestone; with interbeds of shale; white (N8); non planar 0.001' shale layers; calcite rich layers; violent HCl reaction; fresh to slightly weathered; extremely weak.	gray water return	798								
48		15.3																				797
49		7.72																				796
50		5.22												795								
51		4.4	10	5.0 5.0	100	F	R1					LIMESTONE: packstone; white (N8); fossiliferous with rip-up clasts; fresh (F); weak (R2).	hydro 900 psi, down pressure 250 psi	794								
52		4.62																				793
53		4.23																				792
54		3.83																				791
55		3.95												790								
		3.32																				

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-1002</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
56		3.32	10	51.0 5.0	100	F	R2							789
57		3.85												SHALE (mudstone); dark gray (N4); fine lamellae bedding with fossil hash; slight reaction to HCl; fresh (F); very weak (R1).
58		5.07				F	R1							787
59		1.9												786
60		3.18	11	51.0 5.0	100	F	R1					LIMESTONE; packstone; white (N8); rip-up clasts dominate texture.		785
61		3.62							F	R1		1002-15		SHALE: dark gray (N4); massive; slight reaction to HCl; fresh (F); very weak (R1).
62		8.28												783
63		3.08								1002-16		LIMESTONE; packstone; white (N8); light greenish gray 5 G 8/1) from 62.3'-67.2'; large rip-up clasts surrounded by 0.05-0.1' shales; fresh (F); weak (R2); violent to strong reaction to HCl.	900 psi hydro 300 psi down pressure	782
64		3.73												781
65		1.55	12	51.0 5.0	100	F	R2							780
66		2.43												
67		4.17												778
68		4.97										LIMESTONE: wackestone; rip-up clasts ~0.01'-0.1' along long axis; shales reduced to ~0.05'-0.1' thick bands of 0.001' layers around rip-up clasts.		777
69		2.32	13	51.0 5.0	100	F	R2							776
70		1.88												
		1.63												

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**ROCK LOG**  
**Boring No. B-1002**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)	
71		1.63	13	5.0 5.0	100							LIMESTONE: wackestone; rip-up clasts ~0.01'-0.1' along long axis; shales reduced to ~0.05'-0.1' thick bands of 0.001' layers around rip-up clasts.		774	
72		1.68												1002-17	773
73		2.85	14	5.0 5.0	100	F	R2					LIMESTONE: wackestone; with interbedded shales; light greenish gray ( 5 GY 8/1); rip-up clasts control texture; 0.05'-0.1' along long axis; surrounded by 0.001' thick bands of shale; violent reaction to HCl; fresh (F); weak (R2).	gray water return	772	
74		2.65												1002-18	771
75		2.48												770	
76		2.55												769	
77		2.53	15	5.0 5.0	100							LIMESTONE: micrite; white (N8); a bluish tone due to calcite; rip-up clasts present; violent reaction to HCl.	Calcite occurs as "blue dots"	768	
78		2.05												767	
79		1.55												766	
80		2.25	16	5.0 5.0	100	F	R2					LIMESTONE: wackestone; rip-up clasts ~0.01'-0.1' along long axis; shales reduced to 0.05'-0.1' thick bands around rip-up clasts control texture; violent HCl reaction; fresh (F); weak (R2); small blue dots calcite?	Zone of large rip-up clasts	765	
81		1.87												1002-19	764
82		1.75												763	
83		2.87	16	5.0 5.0	100	F	R2					LIMESTONE: wackestone; rip-up clasts ~0.01'-0.1' along long axis; shales reduced to 0.05'-0.1' thick bands around rip-up clasts control texture; violent HCl reaction; fresh (F); weak (R2); small blue dots calcite?	Calcite occurs as "blue dots"	762	
84		2.8												761	
85		2.7												760	
		2.67													

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**ROCK LOG**  
**Boring No. B-1002**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)			
86		2.67	16	5.0 5.0	100	F	R2					LIMESTONE: white (N9); large rip-up clasts 0.1-0.2' surrounded by shale; smaller rip-up clasts.	Calcite occurs as "blue dots"	759			
87		2.15									1002-20					758	
88		2.02	17	5.0 5.0	100	F	R2					LIMESTONE: wackestone; white (N8); with thin 0.001' interbeds of shale; rip-up clasts dominate texture; fresh (F); weak (R2).	gray water return  Blue dots dense and homogeneous	757			
89		1.52														756	
90		1.33															755
91		2.33									1002-21						754
92		2.72	18	5.0 5.0	100	F	R2					LIMESTONE: micrite/wackestone; white (N8); rip-up clast structure; blue dots present but less common; shale introduced between rip-up clasts; blue dots increase; violent reaction to HCl.	900 psi hydro pressure, 300 psi down pressure	753			
93		2.6														752	
94		2.65															751
95		4.9	19	5.0 5.0	100	F	R2					LIMESTONE: packstone; greenish gray (10Y 6/1); disturbed bedding; rip-up clasts and recrystallizing; fresh (F); weak (R2).		750			
96		1.9									1002-22						749
97		2.32	3	5.0 5.0	100	F	R2							748			
98		3															747
99		2.22															746
100		2.02	19	5.0 5.0	100	F	R2					LIMESTONE: packstone; greenish gray (10Y 6/1); disturbed bedding; rip-up clasts and recrystallizing; fresh (F); weak (R2).		745			
		2.52															

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)		
101		2.52	19	5.0 5.0	100	F	R2					LIMESTONE: micrite/wackestone; white (N8); rip-up clast structure; blue dots present but less common; shale introduced between rip-up clasts; violent reaction to HCl.	Calcite occurs as "blue dots"	744		
102		2.55						F	R2		1002-23					743
103		2.22	20	5.0 5.0	100							LIMESTONE: packstone; greenish gray; (10Y 6/1); disturbed beds; rip-up clasts; fossil hash; clay interbeds 0.05' thick; strong reaction to HCl; fresh (F); weak (R2); increase in shale from 107.3'-109.3'.	gray water return	742		
104		2.18														741
105		2.68														740
106		2.67									1002-24					739
107		2.15	3			F	R3						1000 psi hydro, 375 psi down pressure	738		
108		3														737
109		2.22														736
110		2.27	21	5.0 5.0	100							LIMESTONE: micrite/packstone; interbedded with shale; white (N8); fine interbeds of 0.01' shale; rip-up clasts common; calcite crystals increase in size from dots to 0.01'; fresh (F); medium strong.		735		
111		1.65							F	R3						734
112		2.07	22	5.0 5.0	100							LIMESTONE: wackestone; same as above; increase in rip-up clasts.		733		
113		2.42									1002-25					732
114		2.57							F	R3						731
115		1.82											730			
		1.92				F										

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
116		1.92	22	5.0 5.0	100	F	R3					LIMESTONE: packstone; greenish gray; (10Y 6/1); disturbed beds; rip-up clasts; recrystallized.		729
117		1.98										LIMESTONE: wackestone; same as above.	728	
118		3.43											727	
119		1.82	23	5.0 5.0	100									726
120		2.28											725	
121		2.88										LIMESTONE: packstone with shale interbeds; white (N9); rip-up clasts dominate texture; 0.01' shale beds; fresh to medium strong.	gray water return	724
122		4.05	24	5.0 5.0	100	F	R3			1002-26				723
123		3.07											722	
124		2.37										Thicker shale density and rip-up clasts	721	
125		2.83										400 psi down pressure, 100 psi hydro pressure	720	
126		2.87	25	5.0 5.0	100								no "blue dots"	719
127		3.52											718	
128		6.3										SHALE: greenish black (10Y 3/1); massive; fine lamellae bedding; possibly claystone; slight reaction to HCl; very weak (R1); fresh.		717
129		4.43												716
130		3.73				F	R1			1002-29		LIMESTONE: packstone; white (N8); rip-up clasts common; voids filled with clay; slight reaction to HCl; weak (R2).		715
		3.57												

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)		
131		3.57	25	5.0	100	F	R1					SHALE; greenish gray (5G 5/1); massive; oxidation stains; slight reaction to HCl; fresh (F); very weak (R1).		714		
132		2.98												LIMESTONE: packstone/wackestone; white (N8); rip-up clasts and disturbed beds; shell hash; strong reaction to HCl; fresh weak.		713
133		2.57	26	5.0	100	F	R2							712		
134		2.1														711
135		4.1							F	R2		1002-30		LIMESTONE: packstone with interbedded shales; white (N8); rip-up clasts and disturbed beds; shale surrounding rip-up clasts; fresh (F); weak to medium strong; increase in shale density from 139.2'-140.2'. At 133.8, introduction of shales 0.01'-0.05' thick, surrounding rip-up clasts.	gray water return	710
136		3.07							F	R2-R3						709
137		2.78	27	5.0	100									708		
138		3.4														707
139		3.8													900 psi hydro pressure, 350 psi down pressure	706
140		2.4							F	R2						705
141		2.77	28	5.0	100						1002-31			704		
142		2.97														703
143		2												LIMESTONE: wackestone; same as above.		702
144		2				F	R2						701			
145		3.32												700		
		3.82				F	R1-R2									



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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)			
146		3.82	28	51.0 5.0	100	F	R2		1002-32			Shale interbed 145.3'-145.7'; greenish gray (5 GY 4/1).		699			
147		2.97				F	R2									698	
148		4.38	29	51.0 5.0	100	F	R2		1002-33			LIMESTONE: packstone with interbedded shale; gray (N5); rip-up clasts and disturbed beds; fossil hash; calcite crystals in rip-ups; violent HCl reaction; fresh (F); weak to medium strong.		697			
149		3.83				F	R2								Pyrite rich zone at 149'.		696
150		2.97				F	R2								LIMESTONE: packstone; with interbedded shales; medium gray (N5); rip-up clasts and disturbed beds; fossil hash dominates; calcite crystals in rip-up clasts; violent reaction to HCl; fresh (F); weak to medium strong.	gray water return, 1000 psi hydro, 350 psi down	695
151		3	30	51.0 5.0	100									694			
152		3.63				F	R2-R3									693	
153		3.38														692	
154		2.3														691	
155		4.03	31	51.0 5.0	100							LIMESTONE: packstone; as above; decreasing shale density.		690			
156		1.73				F	R2-R3									689	
157		1.65														688	
158		2.85	31	51.0 5.0	100							LIMESTONE: packstone; as above except light gray (N7); very fossil rich; weak (R2).		687			
159		2.18				F	R2									686	
160		1.83														685	
		1.93															

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)									
161		1.93	31	5.0 5.0	100	F	R2		1002-34			LIMESTONE: packstone; as above except light gray (N7); very fossil rich; weak (R2).		684									
162		2.5																				683	
163		2.13	32	5.0 5.0	100	F	R2					Little or no shale below 163'.	gray water return	682									
164		1.43																				681	
165		1.18																					680
166		1.87	33	5.0 5.0	100	F	R2					LIMESTONE; packstone; light gray (N7); rip-up clasts and shell hash dominate texture; highly disturbed to undisturbed bedding; violent reaction to HCl; fresh (F); weak (R2).	950 psi hydro pressure, 450 psi down pressure	679									
167		1.55																					678
168		3.17	34	5.0 5.0	100	F	R2					LIMESTONE: packstone; as above; rinterbedded shales (0.01'-0.05') around rip-up clasts.		677									
169		1.95																					676
170		2.65																					675
171		2.23	34	5.0 5.0	100	F	R2		1002-35					674									
172		2.18																					673
173		3.28	34	5.0 5.0	100	F	R2							672									
174		1.83																					671
175		1.5																					670
		1.97																					

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
176		1.97	34	51.0 51.0	100	F	R2					LIMESTONE: packstone; as above; rinterbedded shales (0.01'-0.05') around rip-up clasts.		669
177		2.37												668
178		3.9												667
179		1.65	35	51.0 51.0	100	F	R2					Calcite crystals very common.	gray water return	666
180		1.57												665
181		1.47												664
182		1.83	36	51.0 51.0	100	F	R2					LIMESTONE: packstone; with interbedded shales; light gray (N7); rip-up clasts and shell hash dominate in non-distence bedding; shales 0.01'-0.05' thick surrounding rip-up clasts; calcite crystals common; violent reaction to HCl; weak (R2).	1000 psi hydro pressure, 400 psi downpressure	663
183		1.97												662
184		2.67												661
185		2.5	37	4.8 5.0	96	F	R2					SHALE: dark gray (N4); disturbed lamellae bedding; shell hash; slight HCl reaction; weak (R2).		660
186		2.75												659
187		2.43												658
188		3.62	37	4.8 5.0	96	F	R2							657
189		3.45												656
190		5.27												655
		6.12												

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
191		6.12	37	4.4 5.0	96	F	R2					LIMESTONE: packstone; with interbedded shales; light gray (N7); rip-up clasts and shell hash dominate in non-distinct bedding; shales 0.01'-0.05' thick surrounding rip-up clasts; calcite crystals common; violent reaction to HCl; weak (R2).		654
192		2.32										653		
193		3.27	38	5.0 5.0	100	F	R2					SHALE: dark gray (N4); lamellae bedding; fossil hash; slight reaction to HCl.	gradual contact	652
194		5.8										651		
195		3.73										650		
196		3.4	39	4.4 5.0	88	F	R0					SHALE: dark gray (N4); lamellae bedding with shell hash disturbed beds; slight HCl reaction.	hydro 750 psi, down pressure 200 psi	649
197		2.8										648		
198		1.88	40	5.0 5.0	94	F	R0					SANDSTONE: dark gray; massive; no reaction to HCl; poorly cemented.	sharp contact	647
199		2.82										646		
200		6.85	40	5.0 5.0	94	F	R2					LIMESTONE: packstone; white (N8); calcite crystals and fossil hash; rip-up clasts; violent HCl reaction; weak (R2).	Calcite occurs as "blue dots"	645
201		2.4										644		
202		0.65	40	5.0 5.0	94	F	R0					SHALE: dark gray (N4); massive; very slight reaction to HCl; very weak (R1); fresh.	non-linear, sharp	643
203		4.97										642		
204		6	40	5.0 5.0	94	F	R0					SHALE: with interbedded sands and limestone; dark gray (N4); fine lamellae bedding 0.01'-0.001' thick limestone bands.		641
205		9.93										640		
205		10.17				F						LIMESTONE: micrite; return to previous; with shell hash.		640

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)								
206		10.17	40	51.0 51.0	94	F	R2-R3					LIMESTONE: packstone with interbedded shales; white (N8); highly disturbed bedding; calcite crystals; violent HCl reaction; fresh (F); weak to medium strong.		639								
207		7.17																				638
208		4.5	41	51.0 51.0	100	F	R2					SHALE: same as above; weak (R2).		637								
209		8.13																				636
210		2.73																				635
211		3.27	42	51.0 51.0	100	F	R2					LIMESTONE: packstone with interbedded shales; light gray (10R 7/1); rip-up clasts dominate texture; shale .2-.01' thick around rip-ups; strong reaction to HCl.	gray/brown water return	634								
212		2.42																				633
213		3.55																				632
214		3.05																			down pressure 400 psi, hydro pressure 1100 psi	631
215		8.97	43	51.0 51.0	100	F	R2					SHALE: dark green; fined lamellae bedding disturbed; slight HCl reaction; weak (R2).	gray water return	630								
216		12.18																				629
217		4.48	43	51.0 51.0	100	F	R2					LIMESTONE: packstone; same as above.		628								
218		4.97																				627
219		3.07																				626
220		2.57	43	51.0 51.0	100	F	R1					SANDSTONE: dark green (N 4/1); massive; slight reaction to HCl; very weak (R1).		625								
		4.72																				

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
221		4.72	43	5.0 5.0	100	F	R1					LIMESTONE: packstone; white (N8); interbedded with shale and sandstone; rip-up clasts; fossil hash; strong reaction to HCl; sandstone interbeds		624
222		7.52												
223		3.03	44	5.0 5.0	100	F	R2					SANDSTONE: greenish gray (5 G 5/1); massive; fine grained; well sorted; well rounded; laminated; very slight reaction to HCl; fresh (F); very weak to weak.	gray water return	622
224		3.58												
225		2.43	44	5.0 5.0	100	F	R1-R2					SANDSTONE: as above except extremely weak; no reaction to HCl; low recovery, depth to basal contact indeterminate.		620
226		1.78												
227		2.12	45	0.7 5.0		F	R0-R1					Weak to very weak.		618
228		2.17												
229		0.83	45	0.7 5.0		F	R0					SANDSTONE: as above except extremely weak; no reaction to HCl; low recovery, depth to basal contact indeterminate.		616
230		0.52												
231		0.62	46	1.6 5.0		F	R0					SANDSTONE: as above except extremely weak; no reaction to HCl; low recovery, depth to basal contact indeterminate.		614
232		0.8												
233		2.5	46	1.6 5.0		F	R0					SANDSTONE: as above except extremely weak; no reaction to HCl; low recovery, depth to basal contact indeterminate.	0 psi down, 750 psi hydro	612
234		1.52												
235		5.7	46	1.6 5.0		F	R0					SANDSTONE: as above except extremely weak; no reaction to HCl; low recovery, depth to basal contact indeterminate.		610
		9.75												

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
236		9.75	46	5.0 5.0		F	R0					SANDSTONE: as above except extremely weak; no reaction to HCl; low recovery, depth to basal contact indeterminate.		609
237		9.8												
238		21.92				F	R0					SHALE: greenish gray (5GY 5/1); fine lamellae bedding; disturbed; slight reaction to HCl; fresh extremely to very weak.		607
239		10.55												
240		0.85	47	5.0 5.0	100	F	R0-R1					LIMESTONE: packstone with interbedded shales; greenish gray (5GY 5/1); rip-up clasts; strong reaction to HCl; fresh (F); weak (R2).	gray water return	605
241		6.23												
242		3.52				F	R0-R1							603
243		3.62												
244		8.25	48	5.0 5.0	100	F	R0					SHALE: greenish gray (5GY 5/1); massive; fresh (F); very weak (R1); slight HCl reaction .		601
245		9.8												
246		4.7				F	R0-R2					LIMESTONE: packstone with interbedded shales; greenish gray (5GY 5/1); rip-up clasts; strong reaction to HCl; fresh (F); weak (R2).	600-900 psi hydro pressure, 350 psi downpressure	599
247		2.63												
248		8.12	49	5.0 5.0	100	F	R0-R1						new bit to cut shales better	597
249		5.1												
250		3				F	R0-R1					SANDSTONE; gray (N6); well sorted; poorly cemented; no reaction to HCl; weak to extremely weak.	gray-brown water return	595
		6.32												



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251		6.32	49	5.0 5.0	100	F	R0-R1					SHALE: greenish gray (5GY 5/1); massive to fine lamellae bedding; disturbed; very weak (R1); fresh (F); slight HCl reaction.	down pressure	594								
252		6.57																		SANDSTONE: gray (N6); massive; poor to moderately cemented; very weak (R1); very slight HCl reaction.		593
253		2.12	50	3.2 5.0	64	F	R0-R1							592								
254		1.23																			591	
255		2.1																			gray water return, down pressure 250 psi	590
256		8.02																				589
257		8.43	51	5.0 5.0	100	F	R1					SHALE: black (N2.5); fine lamellae bedding; disturbed; very weak (R1); slight reaction to HCl.		588								
258		3.2																				587
259		2.03																			SANDSTONE: gray (N6); massive; poor to moderately cemented; very weak (R1); very slight HCl reaction.	
260		0.53												585								
261		0.53	52	4.8 5.0	96	F	R0					SANDSTONE: unconsolidated sand, uncemented; extremely weak.		584								
262		2.87																				583
263		1.05																			SANDSTONE: medium gray (N5); fine to massive bedding; very weak (R1); poorly to moderately cementated; none to slight reaction to HCl.	
264		1.03												581								
265		0.98												580								
		0.7																				

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
266		0.7				F	R1							579
		1.65	52	4.8 5.0	96	F	R0							578
267		3.78											green water return	577
268		5.18				F	R1							576
269		6.3	53	5.0 5.0	100									575
270		3.62											green water return, 0 psi down pressure, 650 hydro pressure	574
271		1.02				F	R0-R1							573
272		0.87							1002-45					572
273		0.35												571
274		0.48	54	4.4 5.0							unconsolidated sandstone			570
275		0.37												569
276		1.42				F F	R0-R3							568
277		1.65											gray water return	567
278		1.98	55	4.0 5.0	80	F	R0							566
279		1.4				F	R1-R3							565
280		1.93				F								

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908




**ROCK LOG**  
**Boring No. B-1002**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
281		1.93	55	4.0 5.0	80	F	R0-R1					LIMESTONE: micrite; white (N8/1); vugs. SANDSTONE: greenish gray (10 GY 5/1); interbedded shales present (<0.05') well rounded; subangular; well sorted; massive bedding; fresh (F); very weak to extremely weak; very slight reaction to HCl.		564
282		4.33												1002-46
283		4.82	56	5.0 5.0	100	F	R0					SANDSTONE: greenish gray (10 GY 5/1); well rounded; subangular; well sorted; fine grained; poorly cemented; no reaction to HCl; fresh (F); very weak (R1).	gray green water return	562
284		1.27												561
285		7.2												560
286		3.75												559
287		3.75	57	5.0 5.0	100	F	R1					SANDSTONE: as above except extremely weak; poorly cemented to noncemented; coal seams present (0.05'-0.005' thick).		558
288		1.78												557
289		0.48												556
290		0.52	58	5.0 5.0	100	F	R1					SHALE: mudstone; pale green (5 G 6/2); massive; no reaction to HCl; fresh (F); weak to medium strong.		555
291		0.7												554
292		1.53	58	5.0 5.0	100	F	R2-R3					SHALE: mudstone; pale green (5 G 6/2); massive; no reaction to HCl; fresh (F); weak to medium strong.	dark brown water return, 0 psi down pressure, 600 psi hydro pressure	553
293		3.17												552
294		9.72												551
295		15.87	58	5.0 5.0	100	F	R2-R3					SHALE: mudstone; pale green (5 G 6/2); massive; no reaction to HCl; fresh (F); weak to medium strong.	gray green water return	550
		10.95												

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-1002</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
296		10.95	58	5.0 5.0	100	F						SHALE: mudstone; pale green (5 G 6/2); massive; no reaction to HCl; fresh (F); weak to medium strong.		549
297		7.13												548
298		6.53					R2-R3		1002-48					547
299		6.1	59	2.4 3.0	48									546
300		3.37												545
301											BOTTOM OF HOLE AT 300.2'			544
302														543
303														542
304														541
305														540
306														539
307														538
308														537
309														536
310														535

Project Name and Job Number TXU Comanche Peak COI 1908				<b>SOIL LOG</b> <b>Boring No. B-1003 offset</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'05.11572"N / 97°47'41.12093"W		Total Depth 400.5 feet	
Drilling Contractor and Rig Palmerton and Parish / CME 55		Elevation and Datum 861.77 feet NAVD88	Ground Water Depth 27.88	Depth to Bedrock 15.1 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 6	Date Started 2/5/07	
		Borehole Inclination Vertical	Logged by Glidden	Date Completed 2/9/07	

Reviewed by / Date R. Ortiz 2/14/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0							ARITIFICAL FILL (Qaf) LEAN CLAY stiff, very dark grayish brown (10YR3/2), damp			861
1	CL			9					pp=1.0	
2	SM	B-1003 offset 1		15	18/18	1	SILTY SAND medium dense, pale yellow (2.5Y8/4), dry, fine to very fine grained sand with limestone fragments		pp <0.5	860
3				5						859
4	CL	B-1003 offset 2		10	18/18	1.5	LEAN CLAY medium stiff, dark greenish gray (10Y4/1), damp, with sand		pp=1.5	858
5				4						857
6	ML			6			SILT brownish yellow (10YR6/8), damp		pp=3.0	857
7										856
8	CL	B-1003 offset 3		11	17/18	3	LEAN CLAY medium stiff, mottled brownish yellow (10YR6/8) and very dark brown (10YR2/7), damp, with limestone fragments		pp=3.0	855
9				6					pp <0.5	855
10	ML	B-1003 offset 4		40	10/10	1	RESIDUAL SOIL (RS) SILT hard, light gray (2.5Y7/2) to brownish yellow (10YR6/6), damp		pp=1.0	853
11				50/5"			LIMESTONE very light gray (N8) to grayish yellow (5Y8/4), very weak to extremely weak, highly weathered, HCl reaction			852
12	ML	B-1003 offset 5		16	9/9	4	SILT with limestone fragments very stiff, pale yellow (2.5Y8/3), dry, angular carbonate clasts ~10%		pp=4.0	851
13				50/3"			LIMESTONE very weak to extremely weak (R1-R0), very light gray (N8), highly weathered, HCl reaction			850
14	CH	B-1003 offset 6		3	17/17	4.51	FAT CLAY hard, olive yellow (2.5Y6/6), dry to damp		pp >4.5	848
15				6						847
				50/5"						847

Project Name and Job Number  
 TXU Comanche Peak COL  
 1908



**SOIL LOG**  
**Boring No. B-1003 offset**

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
15							Top of Bedrock at 15.1'	Bedrock at 15.1'	846
16									845
17									844
18									843
19									842
20									841
21									840
22									839
23									838
24									837
25									836
26									835
27									834
28									833
29									832
30									




Undisturbed sample  
 SH = Shelby; P = Pitcher; O = other



Driven (2.5 to 3.0 inch) with liners  
 MC = Modified California; O = other



Standard Penetration Test (SPT) sampler

Project Name and Job Number TXU Comanche Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-1003</b>	
Type and Diameter of Boring HSA / 7"			Boring Location 32°18'05.11572"N / 97°47'41.12093"W		Total Depth 336.5 feet
Drilling Contractor and Rig Fugro / CME 75			Elevation and Datum 861.688 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 16.5 feet
Sampling Method SPT			Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 4	Date Started 11/20/06
			Borehole Inclination Vertical	Logged by M. Buga	Date Completed 2/12/07

Reviewed by / Date \_\_\_\_\_ R. Ortiz 2/12/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0										
0 - 1	CL		B-1003 1		18/18	3.5		RESIDUAL SOIL (RS) SANDY LEAN CLAY very stiff, very dark grayish brown (10YR3/2), damp to moist, with rootlets	tv=3.5 TSF	861
1 - 2								LIMESTONE with silty sand weathered; boulder/cap rock		860
2 - 3								auger and split spoon refusal at 2.5', solid flight auger down to 8'	Auger and split spoon refusal at 2.5'	859
3 - 4										858
4 - 5										857
5 - 6										856
6 - 7								CLAYEY SAND dark yellow brown (10YR4/6), damp to moist		855
7 - 8										854
8 - 9	SC		B-1003 2	3	18/18					853
9 - 10				25	18/18					852
10 - 11				35						851
10 - 11			B-1003 3	50/6"	6/6			SANDY SILT light yellowish brown (2.5Y6/4), dry; limestone fragments (weathered limestone)	split spoon refusal; auger down through hard material	851
11 - 12	ML							split spoon refusal, augered through hard material		850
12 - 13										849
13 - 14			B-1003 4	16	18/18			LEAN CLAY, very stiff to hard, yellowish brown (10YR5/6) to dark yellowish brown (10YR4/6)		848
14 - 15	CL			18	18/18					847



Project Name and Job Number  
 TXU Comanche Peak COL  
 1908



**SOIL LOG**  
**Boring No. B-1003**

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
15	CL						LEAN CLAY, very stiff to hard, yellowish brown (10YR5/6) to dark yellowish brown (10YR4/6) (Continued from previous page)			846
16										
17							Auger refusal at 16.5'. Top of Bedrock		Bedrock at 16.5'	845
18										844
19										843
20										842
21										841
22										840
23										839
24										838
25										837
26										836
27										835
28										834
29										833
30										832



Undisturbed sample  
 SH = Shelby; P = Pitcher; O = other




Driven (2.5 to 3.0 inch) with liners  
 MC = Modified California; O = other



Standard Penetration Test (SPT) sampler

ROCK LOG TXU\_BORINGS.GPJ WLA9-8-06.GDT 7/15/08

Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. B-1003 offset</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'05.11572"N / 97°47'41.12093"W		Total Depth 400.5 feet	
Drilling Contractor and Rig Palmerton and Parrish / CME 55		Elevation and Datum 861.77 feet NAVD88	Ground Water Depth 27.88	Depth to Bedrock 15.1 feet	
Casing Size and Depth 4" / 15.5 feet		Length of Core Barrel and Bit 8.6 feet	No. of Core Boxes 26	Date Started 2/5/07	
		Borehole Inclination Vertical	Logged by T.Glidden	Date Completed 2/9/07	

Reviewed by / Date R. Ortiz 2/14/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
16		2.3	7	4.5 2.0	90	SW-MW	R2-R1					LIMESTONE, wackestone, very light gray (N7), weak to very weak (R2-R1), slightly to moderately weathered (SW-MW), reacts to HCl, micrite, silty rip up clasts. [Glen Rose Formation]		846
17		2.07										LIMESTONE, micrite, silty, medium light gray (N6), very weak (R1), slightly weathered (SW), thinly bedded, reacts to HCl. [Glen Rose Formation]		845
18		2.67	8	5.0 5.0	100	SW	R1					LIMESTONE, wackestone, white (N9), to medium light gray (N6), weak to very weak (R2-R1), slightly to moderately weathered (SW-MW), reacts to HCl, fossiliferous, silty interbeds up to .2' wide with silty laminations 20.3-21.4. [Glen Rose Formation]		844
19		2.42				SW-MW	R1-R2					843		
20		1.13				SW	R1					842		
21		1.33	9	5.0 5.0	100	SW	R1					LIMESTONE, micrite, silty, medium light gray (N6), very weak (R1), slightly weathered (SW), reacts to HCl, bioturbated 21.3-21.5, laminated, slight to moderate HCl reaction, shale interbeds at 22.8 and 23.3. [Glen Rose Formation]		841
22		2.3										840		
23		3.53	10	5.0 5.0	100	MW	R0						300psi, 900 rpm, good color, water flow	839
24		1.95												838
25		1.55	10	5.0 5.0	100	F-SW	R2					SILTSTONE/SHALE, calcareous, medium gray (N5), to greenish gray (5GY 6/1), extremely weak (R0), moderately weathered (MW), slight to moderate HCl reaction, abundant shell fragments. [Glen Rose Formation]		837
26		2.78										836		
27		4.4	10	5.0 5.0	100							LIMESTONE, wackestone, very light gray (N7), weak to very weak (R2-R1), slightly to moderately weathered (SW-MW), reacts to HCl, silty laminations, fossiliferous. [Glen Rose Formation]		835
28		2.17										834		
29		5.63	10	5.0 5.0	100							SILTSTONE/SHALE, calcareous, dark greenish gray (5G 4/1), extremely weak (R0), moderately weathered (MW), no reaction to HCl. [Glen Rose Formation]		833
30		1.12										832		

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-1003 offset**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
31		1.65	10	51.0 51.0	100	F-SW	R2					LIMESTONE, wackestone, very light gray (R8), weak (R2), fresh to slightly weathered (F-SW), reacts to HCl shale interbed at 30.7, fossiliferous. [Glen Rose Formation]		831
32		1.12										830		
33		1.35										829		
34		2.03	11	51.2 51.0	100	MW	R1-R2			1003- offset- 11		LIMESTONE, wackestone, medium gray (N5), weak to very weak (R2-R1), moderately weathered (MW), reacts to HCl, pervasive silt laminations, fossiliferous. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	828
35		1.28										827		
36		2.05										826		
37		1.33	12	51.0 51.0	100	SW-MW	R2					LIMESTONE, micrite, silty, silt content decreasing with depth, medium gray to very light gray, weak (R2), moderately to slightly weathered, reacts to HCl increasingly with decreased silt content, fossiliferous, bioturbated 35.8-36.3. [Glen Rose Formation]		825
38		4.4										824		
39		3.48										823		
40		4.48	13	51.1 51.0	100	MW	R0			1003- offset- 12		SILTSTONE/SHALE, calcareous, dark greenish gray (5G 4/1), extremely weak (R0), moderately weathered (MW), no reaction to HCl. [Glen Rose Formation]		822
41		3.15										821		
42		2.08										820		
43		0.77	13	51.1 51.0	100	SW-MW	R1-R2					LIMESTONE, wackestone, verylight gray to medium gray (N7-N5), weak to very weak (R2-R1), slightly to moderately weathered (SW-MW), bioturbated with thinly spaced silt filled cracks except for silty massive interval 40.5-41.4, fossiliferous throughout, reacts to HCl. Micrite interbed 44.5-44.7, silty laminations 44-44.5, 44.7-45.8. [Glen Rose Formation]		819
44		1.12										818		
45														817

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1003 offset</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
46		1.07	13	5.1 5.0	100	SW-MW	R1-R2					LIMESTONE, wackestone, verylight gray to medium gray (N7-N5), weak to very weak (R2-R1), slightly to moderately weathered (SW-MW), bioturbated with thinly spaced silt filled cracks except for silty massive interval 40.5-41.4, fossiliferous throughout, reacts to HCl. Micrite interbed 44.5-44.7, silty laminations 44-44.5, 44.7-45.8. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	816
47		1.27						815						
48		1.93						814						
49			14	5.0 5.0	100	MW	R0				SILTSTONE/SHALE, shale, dark gray (N3), extremely weak (R0), moderately weathered (MW), no react to HCl. [Glen Rose Formation]		813	
50		3.27						812						
51		4.9						811						
52		2.17				SW	R1-R2				LIMESTONE, wackestone, very light gray (R8), very weak to weak (R1-R2), slightly weathered (SW), reacts to HCl bioturbated, thinly spaced wavy silt beds, recrystallized shells throughout. [Glen Rose Formation]		810	
53		4.87				MW	R0				SILTSTONE/SHALE, calcareous, medium dark gray (N4) to dark greenish gray (5G 4/1), extremely weak (R0), moderately weathered (MW), no reaction to HCl, wackestone interbeds. [Glen Rose Formation]		809	
54		3.25											808	
55		0	15	4.9 5.0	98							LIMESTONE, wackestone, very light gray (R8), slightly weathered (SW), weak to very weak (R2-R1), react to hCL, biotubrated, thinly spaced wavy silt beds, mud interbed at 56.4, shale interbeds at 59.6 and 59.8. [Glen Rose Formation]		807
56		0												806
57		4.37				SW	R1-R2						805	
58		2.37											804	
59		2.85	16	5.0 5.0	100									803
60		2.92												802

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-1003 offset</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)		
61		1.77	16	5.0 5.0	100	SW	R1-R2						.1 added to run 16 from run 17	801		
62		2.13										1003-offset-16		SILTSTONE/SHALE, calcareous, dark gray to grayish black (N3-N2), very weak to extremely weak (R1-R0), slightly to moderately weathered (SW-MW), very slight react to HCl. [Glen Rose Formation]		800
63		6.5	17	5.0 5.0	100	SW-MW	R1-R0							799		
64		5.43														798
65		3.05														797
66		2.58								SW					LIMESTONE, wackestone, very light gray (R8), weak (R2), slightly weathered (SW), reacts to HCl, abundant recrystallized fossils. [Glen Rose Formation]	
67		4.45	18	5.0 5.0	100		R2						SILTSTONE/SHALE, calcareous, dark gray to grayish black (N3-N2), slightly weathered (SW), very weak to extremely weak (R1-R0), thinly spaced calcareous laminations, very slight react to HCl, wackestone interbeds at 67.5 and 67.7. [Glen Rose Formation]		795	
68		5.87											1003-offset-17			794
69		2.48								SW						
70		2.23	19	5.0 5.0	100		R0						LIMESTONE, wackestone, very light gray (R8), slightly weathered (SW), weak (R2), reacts to HCl bioturbated with thinly spaced silt filled burrows and cracks. [Glen Rose Formation]	.5 not retrieved initially, 1' run follow up to try to retrieve missing core	792	
71		2.22														
72		4	19	5.0 5.0	100		R0						SILTSTONE/SHALE, calcareous, dark gray to greenish black (N3 to 5G 6/1), extremely weak (R0), moderately weathered (MW), no react to HCl. [Glen Rose Formation]	missing core not recovered, presumed to be pulverized, run 19 1' followed by 4' fun	790	
73		3.4								MW						
74		1.97	19	5.0 5.0	100		R2							788		
75		1.83								SW					LIMESTONE, wackestone, very light gray (N8), weak (R2), slightly weathered (SW), reacts to HCl, bioturbations with mud filled	

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-1003 offset**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
76		2.07	19	5.0 5.0	100	MW	R0-R1			1003- offset- 19		burrows. [Glen Rose Formation]		786
77		4.7										SILTSTONE/SHALE, calcareous, dark gray to grayish black (N3-N2), extremely weak to very weak (R0-R1), moderately weathered (MW), very slight to no react to HCl. [Glen Rose Formation]	785	
78		0	20	5.0 5.0	100	SW				1003- offset- 20		LIMESTONE, wackestone, very light gray (R8), weak (R2), slightly weathered (SW), reacts to HCl, thinly spaced bioturbations, silt filled burrows up to .2, shale bed at basal contact with shell fragments. [Glen Rose Formation]		784
79		2.45											783	
80		1.35											F-SW	
81		1.3	21	4.9 5.0	98	SW	R2			1003- offset- 21		LIMESTONE, wackestone, very light gray to light gray, weak (R2), slightly weathered (SW), wavy silt laminations react to HCl, rip up clasts 88-89.5, bioturbated 89.1-89.8, silty laminations 89.2-91.2. [Glen Rose Formation]		781
82		1.73											780	
83		1.37											779	
84		0.88											778	
85		1.07	22	5.0 5.0	100					1003- offset- 22				777
86		1.22											776	
87		1.98												775
88		1.85												774
89		1.3												773
90		2											.1 added to run 22 from run 23	772

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-1003 offset**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
91		0.88	22	5.0 5.0	100									771
92		1.5												770
93		1.82												769
94		1.28	23	5.0 5.0	100								768	
95		2.12											767	
96		1.63											766	
97		1.4	24	5.0 5.0	100	SW	R2						765	
98		0											764	
99		1.88											763	
100		1.67	25	5.1 5.0	100								762	
101		1.4											761	
102		1.87											760	
103		2.07	25	5.1 5.0	100								759	
104		1.32											758	
105		0.55											757	

.1 added to run 24 from run 23



Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1003 offset</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
106		0.82	25	5.1 5.0	100	SW						LIMESTONE, wackestone, oolitic, very light gray to light gray (N7-N8), weak to very weak (R2-R1), slightly to moderately weathered (SW-MW). [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	756
107		1.77												755
108		1.67	26	5.0 5.0	100	SW						LIMESTONE, wackestone, silty, medium light gray (N6), weak to very weak (R2-R1), slightly weathered (SW), silty laminations with rip up clasts, reacts to HCl. [Glen Rose Formation]		754
109		1.32												753
110		1.35												752
111		0.82	27	5.0 5.0	100	SW-MW						LIMESTONE, wackestone, very light gray (R8), weak (R2), slightly weathered (SW), bioturbated, reacts to HCl. [Glen Rose Formation]		751
112		1.43												750
113		2.43	28	5.0 5.0	100	SW	R1-R2					LIMESTONE, wackestone, oolitic, very light gray to medium light gray (N8-N6), slightly to moderately weathered (SW-MW), weak to very weak (R2-R1), bioturbated silty laminations 111.6-111.9, react to HCl. [Glen Rose Formation]		749
114														748
115														747
116		2.33	29	5.0 5.0	100	SW						LIMESTONE, micrite, silty, light gray to medium light gray (N7-N6), slightly weathered (SW), laminated, fossiliferous, rip up clasts, very weak react to HCl. [Glen Rose Formation]		746
117		2.03												745
118		2.3	30	5.0 5.0	100	SW						LIMESTONE, wackestone, oolitic, very light gray (N8), weak (R2), slightly weathered (SW), wavy silt beds laminated to thickly bedded react to HCl. [Glen Rose Formation]		744
119		1.62												743
120		1.17												742

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**ROCK LOG**  
**Boring No. B-1003 offset**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
121		1.75	28	5.0 5.0	100	SW-MW	R2					LIMESTONE, wackestone, very light gray to light gray (N8-N7), weak (R2), slightly to moderately weathered (SW-MW), fossiliferous, silty laminations at basal contact reacts to HCl. [Glen Rose Formation]	silt beds to 5mm at contact	741
122		1.62				SW								
123		5.93				MW	R1-R2					LIMESTONE, wackestone, very light gray (N8), weak (R2), slightly weathered (SW), mildly bioturbated, variably oolitic, thinly bedded silty toward basal contact, reacts to HCl. [Glen Rose Formation]	.1 added to run 29 from run 28	739
124														
125		3.07	29	5.0 5.0	100					1003- offset- 29		LIMESTONE, micrite, silty, light gray to medium light gray (N7-N6), laminated, rip up clasts, slightly weathered (SW), weak (R2), reacts to HCl. [Glen Rose Formation]		737
126		1.08												
127		1.85				SW						LIMESTONE, wackestone, very light gray (N8), slightly weathered (SW), weak (R2), reacts to HCl, mildly bioturbated		735
128		1.97												
129		1.98												733
130		7.35				30	5.0 5.0	100		R2				
131		2.03												1003- offset- 30
132		2.02				SW-MW						LIMESTONE, micrite, silty, light gray to yellowish gray (N7 to 5Y 8/1), slightly to moderately weathered (SW-MW), weak (R2), reacts to HCl, rip up clasts present. [Glen Rose Formation]		730
133		2.02												
134		1.3	31	5.0 5.0	100	F-SW						LIMESTONE, wackestone, micritic, light gray, fresh to slightly weathered (F-SW), reacts to HCl, laminated silts 133.3-133.6, bioturbated 133.6-134.2, rip up clasts at 133.7, increased silt content beginning at 136.2. [Glen Rose Formation]		728
135		1.15												

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-1003 offset</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
136		1.52	31	51.0	100	F-SW	R2			1003-offset-31				726
137		3.03												
138		0												724
139		1.6												723
140		1.42	32	51.0	100	SW-MW	R1-R2			1003-offset-32				722
141		1.48												
142		1.92												720
143		0												719
144		5.25				MW	R0					SILTSTONE/SHALE, shale, dark gray, extremely weak (R0), moderately weathered (MW), no reaction to HCl, shelly debris first .3. [Glen Rose Formation]		718
145		5.12	33	51.0	100	SW	R2							717
146		5.12												
147		2.62					R1			1003-offset-33				715
148		1.43				MW-SW								714
149		2.17	34	51.0	100		R2							713
150		2.67												

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1003 offset</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
151		5.73	34	5.0 5.0	100							LIMESTONE, wackestone, very light gray to light gray (N8-N7), slightly to moderately weathered (SW-MW), reacts to HCl, weak (R2), wavy laminated silts throughout shale interbed 150.3-150.6, 2" burrow at 151. [Glen Rose Formation]		711
152						MW-SW	R2							710
153		1.57												709
154		1.75												708
155		1.35	35	5.0 5.0	100							LIMESTONE, wackestone, silty, light gray to medium gray (N7-N5), moderately weathered (MW), extremely weak (R0), reacts to HCl, laminated silts compose ~40% of unit. [Glen Rose Formation]		707
156		2.37				MW	R0							706
157		2.02										LIMESTONE, wackestone, light gray (N7), slightly weathered (SW), weak to very weak (R2-R1), reacts to HCl, bioturbated, occasional rip up clasts up to 3mm. [Glen Rose Formation]		705
158		1.67											.2 added to run 36 from run 37	704
159		0.93					R1-R2							703
160		1.3	36	5.0 5.0	100									702
161						SW								701
162		4.33												700
163		2.1										LIMESTONE, wackestone, micritic, very light gray (R8), slightly weathered (SW), weak (R2), react to HCl. [Glen Rose Formation]		699
164		0	37	5.0 5.0	100		R2					LIMESTONE, wackestone, very light gray (R8), slightly weathered (SW), weak (R2), react to HCl 3mm pyrite clasts at 163.1, bioturbated with laminated silts 163.1-163.6. [Glen Rose Formation]		698
165		3.45												697

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
166		1.77	37	5.0	100							LIMESTONE, wackestone, light gray, slightly to moderately weathered (SW-MW), weak to very weak (R2-R1), react to HCl, bioturbated, variable silt content occasional rip up clasts, silt 169.2-169.6 with shelly debris at base of silty area, bioturbated 169.7-170.4, abundantly fossiliferous beginning at 170.5. [Glen Rose Formation]		696
167		2.23		5.0										
168		4.67												694
169													drill chatter	693
170		1.1	38	5.0	100									692
171		0.97		5.0										
172		1.25												690
173		2					R1-R2							689
174		1.03										LIMESTONE, packstone, very light gray to light gray, slightly to moderately weathered (SW-MW), very weak (R1), react to HCl, wavy thin bedded to laminated silt throughout. [Glen Rose Formation]		688
175		1.12	39	5.0	100									687
176		1.87		5.0										
177														685
178		1.32												684
179		1.08	40	5.0	100									683
180		0.88		5.0										

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**ROCK LOG**  
**Boring No. B-1003 offset**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)								
181		0.83	40	5.0	100	SW-MW R1-R2						LIMESTONE, packstone, very light gray to light gray, slightly to moderately weathered (SW-MW), very weak (R1), react to HCl, wavy thin bedded to laminated silt throughout. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	681								
182		0		5.0								680										
183		0	41	5.1	100													LIMESTONE, wackestone, very light gray (R8), slightly weathered (SW), weak (R2), reacts to HCl, packstone interbed 183.4-183.7, silt beds are packy, fossiliferous. [Glen Rose Formation]		679		
184		0.85																5.0		678		
185		0.8	42	5.0	100																677	
186		2.62																			5.0	676
187		1.85																			5.0	675
188		1.07	43	5.0	100																674	
189		0.9																			5.0	673
190		2.35	43	5.0	100																672	
191		2.47				5.0	671															
192		1.43	43	5.0	100									670								
193		0.8												5.0	669							
194														668								
195														667								

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**ROCK LOG**  
**Boring No. B-1003 offset**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)								
196		1.2	43	5.0 5.0	100							LIMESTONE, wackestone, very light gray (R8), slightly weathered (SW), weak (R2), react to HCl, medium spaced bioturbations, fossiliferous, silty laminations beginning at 191.9-193.4. [Glen Rose Formation]		666								
197		2.38																		LIMESTONE, wackestone, silty, very light gray to medium light gray (N8-N6), slightly to moderately weathered (SW-MW), weak to very weak (R2-R1), react to HCl, silty regions are wavy up to ~30% of bed, up to 197.5, below 197.5 medium spaced bioturbations with silty packstone to wackestone.. [Glen Rose Formation]		665
198		1.43	44	5.0 5.0	100	SW-MW	R1-R2							664								
199		0.75																			663	
200		1																				662
201		0.93																				661
202		1.27	45	5.1 5.0	100	MW	R0							660								
203		2.42																			659	
204		2.25																			658	
205		3.27	46	5.0 5.0	100	SW	R2					SILTSTONE/SHALE, shale and calcareous mud, dark gray to olive black, moderately weathered (MW), extremely weak (R0), no react to moderate reaction to HCl, shelly debris throughout. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	657								
206		2.33																				656
207		1.62	46	5.0 5.0	100	SW	R2					LIMESTONE, wackestone, very light gray to light gray, slightly weathered (SW), weak (R2), react to HCl, bioturbated with dramatic silt increase 208.6-209.4, large silt and shelly debris filled bioturbations 209.6-210.4, shale and calcareous interbed 209-209.4. [Glen Rose Formation]		655								
208		2.1																			654	
209		1.43																			653	
210													652									

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**ROCK LOG**  
**Boring No. B-1003 offset**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
211		1.62	46	5.0 5.0	100	SW	R2							651
212		2.35				R0								SILTSTONE/SHALE, calcareous mudstone, dark gray moderately weathered, extremely weak (R0), moderate to no HCl reaction. [Glen Rose Formation]
213		0					R1-R2					LIMESTONE, wackestone, very fine grained, very light gray (R8), slightly to moderately weathered (SW-MW), weak to very weak (R2-R1), HCl reaction. [Glen Rose Formation]		649
214		0										SANDSTONE, silty quartzose sandstone, fine grained, greenish gray (5G 6/1), extremely weak (R0), moderately weathered (MW), massively bedded no HCl reaction. [Glen Rose Formation]		648
215		1.83	47	4.2 5.0	84		R0						SILTSTONE/SHALE, and calcareous mudstone, medium dark gray to dark gray, extremely weak (R0), moderately weathered (MW), no reaction to HCl. [Glen Rose Formation]	647
216		2.53												LIMESTONE, wackestone, oolitic, very light gray (R8), weak (R2), slightly weathered (SW), fossiliferous, react to HCl, silt micrite interbed 215.9-216.3. [Glen Rose Formation]
217		1.17					R2						645	
218		1.5				SW-MW					1003-offset-41			644
219		0.82					R0					SANDSTONE, and mudstone, interbeds, sandstone: silty, very fine to fine grained, medium dark gray, extremely weak (R0), moderately weathered (MW), no to slight react to HCl; shale: medium dark gray, extremely weak (R0), moderately weathered (MW), slight HCl reaction. [Glen Rose Formation]	643	
220		1.83	48	4.9 5.0	98									642
221		1.62												LIMESTONE, wackestone, very light gray to medium light gray (N8-N6), slightly to moderately weathered (SW-MW), weak to very weak (R2-R1), react to HCl, massively bioturbated micrite zone 222.3-222.5. [Glen Rose Formation]
222		2.25												640
223		4.15					R1-R2							639
224		2.83	49	5.0 5.0	100									638
225		2.47												LIMESTONE, wackestone, very light gray to light gray, weak to very weak (R2-R1), slightly to moderately weathered (SW-MW), react to HCl, thinly bedded silts and bioturbation 228.7-229.2. [Glen Rose Formation]



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**ROCK LOG**  
**Boring No. B-1003 offset**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
226		4.12	49	5.0 5.0	100									636
227		3.33												635
228		2.22	50	5.0 5.0	100	SW-MW								634
229		1.23												633
230		2.7												632
231		2.9	51	5.0 5.0	100								631	
232		3.17											630	
233		3.92	52	4.6 5.0	92	R1-R2								629
234		0												628
235		2.98												627
236		2.43	51	5.0 5.0	100	MW							626	
237		2.67											625	
238		2.15	52	4.6 5.0	92								624	
239		1.25											623	
240		1.63				R0							622	

LIMESTONE, wackestone, very light gray to light gray, weak to very weak (R2-R1), slightly to moderately weathered (SW-MW), react to HCl, thinly bedded silts and bioturbation 228.7-229.2. [Glen Rose Formation]  
 LIMESTONE, micrite, very light gray to medium light gray weak to very weak, slightly to moderately weathered (SW-MW), react to HCl, interbeds of shale at 222.8, 225.8, slightly vuggy 223.6-224, bioturbated and variably spaced silt laminations. [Glen Rose Formation]

LIMESTONE, wackestone, silty, very light gray to medium light gray (N8-N6), weak to very weak (R2-R1), moderately weathered (MW), reacts to HCl, wavy laminated bioturbated, shale interbed 230.3-230.7, shell hash at basal contact. [Glen Rose Formation]

LIMESTONE, wackestone, very light gray to medium light gray (N8-N6), weak to very weak (R2-R1), slightly to moderately weathered (SW-MW), reacts to HCl, bioturbated throughout with pervasive silt filled burrows. [Glen Rose Formation]

SILTSTONE/SHALE, calcareous, dark greenish gray (5G 4/1), extremely weak, moderately weathered (MW), no react to HCl. [Glen Rose Formation]

LIMESTONE, wackestone, silty, light gray to greenish gray, weak to very weak (R2-R1), moderately weathered (MW), react to HCl, bioturbated with greenish gray clay infill, mudstone interbed 237.5-237.6, silty quartzose sandstone interbed 237.6-238. [Glen Rose Formation]

.2 added to run 50 from 51

1003-  
offset-  
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1003-  
offset-

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**ROCK LOG**  
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
241		0	52	4.6	92							SANDSTONE, silty quartzose sandstone, greenish gray (5G 6/1), extremely weak (R0), moderately weathered (MW), very fine grained, no react to HCl, shale interbed 245.2-245.4. [Glen Rose Formation]		621
242		0		5.0										620
243		2.13												619
244		2.63												618
245		2.07	53	4.6	92							SANDSTONE, silty quartzose sandstone, greenish gray (5G 6/1), extremely weak (R0), moderately weathered (MW), very fine grained, bioturbated, infill exhibits slight reaction to HCl, no reaction otherwise. [Glen Rose Formation]	discontinuity and bedding depths shifted up .3 with return of .3 sick up from run 55	617
246		1.43		5.0										616
247		2.73												615
248		2.02				MW	R0							614
249		1.52								1003-offset-44		SANDSTONE, quartzose sandstone, fine grained, light brownish gray, cross-bedded, moderately weathered (MW), extremely weak (R0), no HCl reaction, shale interbed 249.5-249.6. [Glen Rose Formation]		613
250		6.83	54	4.4	88							SANDSTONE, silty quartzose sandstone, greenish gray (5G 6/1), extremely weak (R0), moderately weathered (MW), very fine grained, bioturbated, infill exhibits slight reaction to HCl, no reaction otherwise. [Glen Rose Formation]		612
251		5.9		5.0								611		
252		8.08										SILTSTONE/SHALE, calcareous with thinly bedded sands, dark greenish gray to greenish black (5G 4/1 to 5G 2/1), extremely weak (R0), moderately weathered (MW), no reaction HCl. [Glen Rose Formation]		610
253		3.83	55	5.0	100									609
254		2.92		5.0								608		
255						R1-R2								607

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
256		2.6	55	5.0 5.0	100		R1-R2					LIMESTONE, wackestone, silty, medium light gray to light olive gray, moderately weathered (MW), weak to very weak (R2-R1), reacts to HCl, laminated silts and rip up clasts throughout, bioturbated. [Glen Rose Formation]	300 psi 1900 rpm switch to solid core, psi to 0 in sands	606
257		2.92										605		
258		4.2										604		
259		4.12	56	4.4 5.0	88	MW						SILTSTONE/SHALE, shale and calcareous mud, dark gray, to greenish black, extremely weak (R0), moderately weathered (MW), no react to HCl. [Glen Rose Formation]	.5 of core missing presumed lost from muds	603
260		3.43										602		
261		4.58										601		
262		5.07	57	4.7 5.0	94		R0					SANDSTONE, silty quartzose sandstone, greenish gray to olive gray, fine grained, slightly weathered (SW), extremely weak (R0), massively bedded, no react to HCl. [Twin Mountain Formation]	drilling stopped temporarily to attempt retrieval of missing run 56 core Glen Rose Formation Twin Mountains Formation	600
263		0										599		
264		1.45										598		
265		1.23	58	5.0 5.0	100							gradational contact	597	
266		0.57											596	
267		1.67											595	
268		5.72	59	5.0 5.0	100	MW							594	
269		3.35											593	
270		2.98											592	

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
271		1	58	5.0 5.0	100							SANDSTONE, quartzose sandstone, light brownish gray to light olive gray, fine grained, slightly weathered (SW), no react to HCl, extremely weak (R0), silty sand interbed 270.8-271. [Twin Mountain Formation]		591
272		1.38				SW	R0			1003- offset- 46		SANDSTONE, silty quartzose sandstone, greenish gray (5G 6/1), very fine grained, slightly weathered (SW), extremely weak (R0), no react to HCl. [Twin Mountain Formation]		590
273		2.27												589
274		0.98												588
275		1.05	59	4.5 5.0	90		R2					LIMESTONE, sand wackestone, medium gray (N5), weak (R2), slightly weathered to fresh, reacts to HCl, rip up clasts. [Twin Mountain Formation]	.5 missing from run presumed washed out	587
276		0.97										SANDSTONE, silty quartzose sandstone, greenish gray (5G 6/1), very fine grained, slightly weathered (SW), no react to HCl, extremely weak. [Twin Mountain Formation]		586
277		1.02												585
278		2.3												584
279		0.97								1003- offset- 47				583
280		1.2	60	4.8 5.0	96	F-SW	R0					SANDSTONE, silty quartzose sandstone, light brownish gray to greenish gray, fine grained extremely weak, slightly weathered (SW), no react to HCl. [Twin Mountain Formation]		582
281		0.95												581
282		1.15												580
283		2.17												579
284		1.78	61	4.5 5.0	90									578
285		1.75												577

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**ROCK LOG**  
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
286		1.58	61	4.5 5.0	90							SILTSTONE, sandy, greenish gray (5G 6/1), slightly weathered (SW), very weak to extremely weak, no react to HCl. [Twin Mountain Formation]		576
287		1.5												575
288		6.18										SANDSTONE, silty quartzose, greenish gray (5G 6/1), slightly weathered (SW), weak to very weak (R2-R1), variably calcareous matrix, little to no HCl reaction depending on silt content. [Twin Mountain Formation]		574
289														573
290		2.67	62	4.9 5.0	98		R1-R0							572
291		3.47												571
292		3.07												570
293		2.27					F-SW							569
294		4.23												568
295		2.42	63	4.9 5.0	98									567
296		1.12												566
297		0.77										SANDSTONE, quartzose, medium light gray to light olive gray, slightly weathered (SW), extremely weak (R0), fine grained, no react to HCl. [Twin Mountain Formation]		565
298		0.87					R0							564
299		1.1	64	4.7 5.0	94									563
300		0.98												562

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**ROCK LOG**  
**Boring No. B-1003 offset**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
301		3.33	64	4.7 5.0	94	F-SW						SILTSTONE, medium dark gray, extremely weak (R0), slightly weathered (SW), no reaction to HCl, carbonized plant fossils throughout. [Twin Mountain Formation]		561
302		1.43												560
303		1.83										SANDSTONE, quartzose, medium gray (N5), moderately weathered (MW), extremely weak (R0), no react to HCl, fine grained, laminated, carbonized plant and woody fossiliferous beds. [Twin Mountain Formation]	559	
304		0.73											558	
305		1.13	65	5.0 5.0	100		R0					SANDSTONE, quartzose sandstone, ~5% lithic fragments including pyrite, extremely weak (R0), medium grained, moderately weathered (MW), no react to HCl. [Twin Mountain Formation]		557
306		2.83												556
307		1.73				MW						SANDSTONE, quartzose, medium gray to greenish gray (N5 to 5G 6/1), moderately weathered (MW), extremely weak (R0), no react to HCl, thinly bedded carbonized plant and woody fossils, .1 pyrite clast at 307.7, .3 wood from 308.1-308.4. [Twin Mountain Formation]	555	
308		2.82										LIMESTONE, sand wackestone, medium gray (N5), weak (R2), moderately weathered (MW), strong reaction to HCl, bioturbated, fossiliferous. [Twin Mountain Formation]	554	
309		0	66	5.0 5.0	100		R2						553	
310		8.33										552		
311		6.83										SILTSTONE, sandy siltstone, greenish gray (5G 6/1), moderately weathered (MW), extremely weak (R0), no to very slight HCl reaction, sand component very fine. [Twin Mountain Formation]	551	
312		5.1											550	
313		2.25	67	5.0 5.0	100		R0						2 added to run 66 from run 67	549
314		1.7										548		
315													547	

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-1003 offset**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
316		1.57	67	5.0 5.0	100								SANDSTONE, silty quartzose, greenish gray (5G 6/1), moderately weathered (MW), extremely weak (R0), no reaction to HCl, very fine grained. [Twin Mountain Formation]	546
317		1.9												545
318		2.87												544
319		0.7											SANDSTONE, quartzose, light brownish gray to greenish gray, moderately weathered (MW), extremely weak (R0), fine grained, no reaction to HCl. [Twin Mountain Formation]	543
320		1.57	68	4.6 5.0	92									542
321		3.15												541
322		2.35												540
323		1.78				MW	R0							539
324		2.48	69	4.6 5.0	92									538
325		1.92												537
326		2.98												536
327		2.18												535
328		0.92	70	4.9 5.0	98									534
329		0.65												533
330														532

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**ROCK LOG**  
**Boring No. B-1003 offset**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
331		1.32	70	4.9 5.0	98	MW	R0					SANDSTONE, quartzose, brownish gray with greenish gray laminated beds of higher silt content, moderately weathered (MW), extremely weak (R0), very fine grained, no HCl reaction. [Twin Mountain Formation]		531
332		1.62												529
333		2.12	528											
334		1.07	527											
335		0.7	71	4.9 5.0	98									526
336		1.6	525											
337		1.07	524											
338		1.68	523											
339		1.63	522											
340		1.05	72	5.0 5.0	100									521
341		1.62	520											
342		2.38	519											
343		1.87	518											
344		4.5	73	4.6 5.0	92	1003- offset- 51	SANDSTONE, quartzose, light brownish gray to greenish gray (5YR 6/1 to 5G 6/1), moderately weathered (MW), extremely weak (R0), very fine grained, no HCl reaction. [Twin Mountain Formation]	517						
345														



Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1003 offset</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)					
346		1.85	73	4.6 5.0	92	MW	R0					SANDSTONE, quartzose, light brownish gray to greenish gray (5YR 6/1 to 5G 6/1), moderately weathered (MW), extremely weak (R0), very fine grained, no HCl reaction. [Twin Mountain Formation]		516					
347		1.23																515	
348		1.5																	514
349		2.07	74	5.0 5.0	100	SW-MW	R0-R1					SILTSTONE, sandy, greenish gray (5G 6/1), moderately to slightly weathered (SW-MW), very to extremely weak (R1-R0), no HCl reaction, sand component very fine.. [Twin Mountain Formation]	.1 added to run 74 from 75	513					
350		2.93																	512
351		2.4																	
352		2.28	75	5.1 5.0	94	SW-MW	R0					LIMESTONE, wackestone, very light gray to pinkish gray (N7 to 5YR 8/1), slightly weathered (SW), weak (R2), HCl reaction. [Twin Mountain Formation]		510					
353		3.88																509	
354		5.98																	508
355		3.13	76	5.1 5.0	80	SW-MW	R1-R2					SANDSTONE, silty quartzose, light greenish gray and light brown to moderate brown (5G 8/1 and 5YR 6/4 to 5 YR 4/4), slightly to moderately weathered (SW-MW), extremely weak (R0), wavy calcareous laminations, reacts to HCl. Very fine grained, limestone rip up at 352. [Twin Mountain Formation]	Length of recovery stretched due to mechanical breaks.	507					
356		2.08																	506
357		2.12																	
358		0	76	5.1 5.0	80	SW-MW	R1-R2					SILTSTONE, light greenish gray and moderate brown (5G 8/1 and 5YR 4/4), slightly to moderately weathered (SW-MW), very weak (R1), no react to HCl, jointed. [Twin Mountain Formation]	drill time missed this run due to visiting engineer who wanted to see rock core, discuss field calls	504					
359		0																	503
360		0																	

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 TXU Comanche Peak Col  
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**ROCK LOG**  
**Boring No. B-1003 offset**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
361		0	76	5.1 5.0	80						JO JRC2, tight JO JRC2, slickenside, tight JO JRC6, slickenside, tight	SILTSTONE, light greenish gray and moderate brown (5G 8/1 and 5YR 4/4), slightly to moderately weathered (SW-MW), very weak (R1), no react to HCl, jointed. [Twin Mountain Formation]	Length of recovery stretched due to mechanical breaks.	501
362		3.72								JO JRC2, slickenside, tight JO JRC2 tight, slickenside				500
363		3.3												499
364		1.93									JO JRC2-6, tight slickenside			498
365		2.33	77	5.0 5.0	16								.2 added to run 77 from 76	497
366		1.22									JO JRC 5, slickenside, tight			496
367		0												495
368		3.97				SW-MW								494
369		3.57				R1-R2					JO JRC4-6, slickenside, tight			493
370		1.65	78	5.2 5.0	60							SILTSTONE, light greenish gray (5G 8/1), slightly weathered (SW), weak (R2), no HCl reaction, moderately weathered interbed 370.3-370.7, moderate brown, extremely weak (R0), no HCl reaction. [Twin Mountain Formation]	Length of recovery stretched due to mechanical breaks.	492
371		2.02												491
372		3.32										SILTSTONE, moderate brown and dark reddish brown (5YR 4/4 and 10R 3/4), slightly to moderately weathered (SW-MW), very weak to extremely weak (R1-R0), no HCl reaction, siltstone interbed at 372.1-372.2, weak (R2), light greenish gray. [Twin Mountain Formation]		490
373		2.55												489
374		1.83	79	5.0 5.0	100									488
375		1.47									JO JRC 5, tight			487

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
376		0										SILTSTONE, moderate brown and dark reddish brown (5YR 4/4 and 10R 3/4), slightly to moderately weathered (SW-MW), very weak to extremely weak (R1-R0), no HCl reaction, siltstone interbed at 372.1-372.2, weak (R2), light greenish gray. [Twin Mountain Formation]		486
377		0	79	5.0 5.0	100									485
378		2.43												484
379		1.42												483
380		2.25	80	5.0 5.0	100							SANDSTONE, light greenish gray and dark reddish brown, highly oxidized, slightly weathered (SW), weak to very weak (R2-R1), no HCl reaction, laminated dewatering structures. [Twin Mountain Formation]	gradational contact	482
381		1.5												481
382		2.72												480
383		4.42				SW-MW	R1-R2							479
384		1.57								1003- offset- 53	JO JRC2, slickenside, tight	SILTSTONE, moderate reddish brown (10R 4/6), slightly weathered (SW), weak to very weak (R2-R1), no HCl reaction. [Twin Mountain Formation]	gradational contact	478
385		1.63	81	5.0 5.0	100									477
386		1.68										SANDSTONE, quartzose, moderate reddish brown (10R 4/6), slightly weathered (SW), very weak (R1), no reaction to HCl. [Twin Mountain Formation]		476
387		1.77												475
388		2.13												474
389		0.83	82	5.0 5.0	100									473
390		1.57												472


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**ROCK LOG**  
**Boring No. B-1003 offset**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
391		1.43	82	5.0 5.0	100							SANDSTONE, quartzose, moderate reddish brown (10R 4/6), slightly weathered (SW), very weak (R1), no reaction to HCl. [Twin Mountain Formation]		471
392		2.45												470
393		1.37	83	5.0 5.0	100	SW-MW	R1-R2							469
394		1.6												468
395		1.1												467
396		1.18												466
397		1.45	84	3.0 3.0	87								465	
398		0.7											464	
399		0											463	
400		1.85											462	
401													bottom of hole	461
402														460
403														459
404														458
405														457

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offset-  
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Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-1003</b>
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'05.11572"N / 97°47'41.12093"W	Total Depth 336.5 feet
Drilling Contractor and Rig Fugro / CME 55		Elevation and Datum 861.688 feet NAVD88	Ground Water Depth DRY Depth to Bedrock 16.5 feet
Casing Size and Depth 4" / 16 feet		Length of Core Barrel and Bit 8.5 feet	No. of Core Boxes 22 Date Started 11/20/06
		Borehole Inclination Vertical	Logged by M. Buga Date Completed 2/12/07

Reviewed by / Date R. Ortiz 2/12/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
17		3											begin rock coring	845
18		4.08												844
19		6.5	1	2.9 4.0	58	F	R0-R3				BJ, Ro, Wa, Op			843
20		4							1003-5					842
21		3.5												841
22		5.87				F	R2		1003-6				600 psi, 90% to 100% water return, water loss	840
23		2.35	2	4.4 5.0	88	F	R1-R2							839
24		4.42				F	R2-R3							838
25		3.88				F	R2-R3							837
26		3.62				F	R2-R3							836
27		4.25				F	R2-R3							835
28		5.25	3	3.6 5.0	72	F	R0							834
29		5.97				F	R0							833
30		5.87				F	R2-R3		1003-7					832
31			4	0.9 1.0	0.85	F	R0-R1						switch to 5 ft inner barrel, making 1 ft run to avoid excessive pipe replacing	831

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1003</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
32		2.37									Wa, BJ, SI to Ro, Op healed fracture	(R0 to R1); slight to strong reaction to HCl; fossiliferous. [Glen Rose Formation]		830
33		1.67				F	R2-R3					LIMESTONE: micrite; light gray (N7); fresh (F); weak to medium strong (R2 to R3); violent reaction to HCl; occasional clay veining; small intraclasts (0.1" thick). [Glen Rose Formation]	Slow drilling (clay?)	829
34		4.05	5	5.0 5.0	100						BJ, Wa, SI, TI			828
35		3.17							1003-8					827
36		1.25										LIMESTONE: wackestone; medium dark gray (N4); fresh (F); weak (R2); strong to violent HCl reaction; clasts become smaller and sparser towards base. [Glen Rose Formation]	500 psi 90-100% water return	826
37		1.17				F	R2							825
38		1.83												824
39		8.83	6	4.8 5.0	96									823
40		6.57				F	R1		1003-9			SHALE: medium bluish gray (5B 5/1); fresh (F); very weak (R1); very slight HCl reaction; rip-up clasts at base. [Glen Rose Formation]	water loss	822
41		5.75				F	R2					LIMESTONE: wackestone; medium dark gray (N4); fresh (F); weak (R2); strong HCl reaction. [Glen Rose Formation]		821
42		2.5				F	R2					LIMESTONE: wackestone; medium dark gray (N4); fresh (F); weak (R2); strong HCl reaction; few clasts. [Glen Rose Formation]		820
43		1.92				F	R2					LIMESTONE: wackestone; light gray to medium light gray (N7 to N6); fresh (F); weak (R2); violent HCl reaction. [Glen Rose Formation]		819
44		1.3	7	5.0 5.0	100							LIMESTONE: micrite; light gray (N7); fresh (F); weak to medium strong (R2 to R3); violent HCl reaction; occasional wackestone interbed. [Glen Rose Formation]		818
45		1.68				F	R2-R3							817
46		2												816

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1003</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
47		1.73										LIMESTONE: wackestone/packstone; medium light gray (N6); fresh (F); weak (R2); violent HCl reaction; large rip-up clasts >1.0"; matrix contains 0.1" intraclasts. [Glen Rose Formation]		815
48		2.3				F	R2							814
49		1.53	8	5.0	100				1003-11			LIMESTONE: packstone; medium light gray (N6); fresh (F); weak (R2); violent HCl reaction. [Glen Rose Formation]		813
50		1.63				F	R2							812
51		1.67				F	R2					LIMESTONE: wackestone; medium light gray (N6); fresh (F); weak (R2); violent HCl reaction; shale at 51.6' to 52.0'. [Glen Rose Formation]		811
52		3.75				F	R2				BJ, Wa, Ro, Op			810
53		3.83				F	R2					LIMESTONE: packstone; light gray (N7); fresh (F); weak (R2); violent HCl reaction; rip-up clasts at base. [Glen Rose Formation]		809
54		4.5	9	5.0	100	F	R1					SHALE: medium bluish gray (5B 5/1); fresh (F); very weak (R1); very slight HCl reaction; interbedded with micrite at 53.35', 53.8' to 53.9', and 54.1' to 54.6'. [Glen Rose Formation]	water loss	808
55		3.33							1003-12					807
56		3.25									Wa, Op, Ro	LIMESTONE: packstone; light gray (N7); fresh (F); weak to medium strong (R2 to R3); violent HCl reaction. [Glen Rose Formation]	500psi	806
57		2.18										Wackestone 57.2' to 57.55'.		805
58		3				F	R2-R3					Wackestone 58.1' to 58.3'.		804
59		2.4	10	5.0	100				1003-13			Wackestone 58.8' to 59.0'.		803
60		2.27										Shale/clay bed 59.5' to 59.8'.		802
61		3												801

Project Name and Job Number  
TXU Comanche Peak Col  
1908



**ROCK LOG**  
**Boring No. B-1003**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
62		1.83				F	R2-R3							800
63		2.5										SHALE: medium bluish gray (5B 5/1); very weak to extremely weak (R1 to R0); fresh (F); none to slight HCl reaction; very thinly bedded. [Glen Rose Formation]		799
64		5.9	11	5.0	100	F	R0-R1							798
65		6							1003-14					797
66		3.83									BJ, PI, SI, TI			796
67		3.77				F	R2-R3					LIMESTONE: micrite; light gray (N7); fresh (F); weak to medium strong (R2 to R3); violent HCl reaction; contains rip-up clasts; fossiliferous. [Glen Rose Formation]		795
68		4.37							1003-15			SHALE: medium bluish gray (5B 5/1); very weak (R1); fresh (F); none to very slight HCl reaction; desiccation cracks; faintly bedded 68.0' to 68.2' with micrite. [Glen Rose Formation]		794
69		4.78	12	5.0	100	F	R1							793
70		4.5												792
71		2.5				F	R2					LIMESTONE: packstone; light gray (N7) to medium light gray (N6); fresh (F); weak (R2); violent HCl reaction; grades to wackestone. [Glen Rose Formation]	slide pin broken down from 3:20-4:12 pm	791
72		2.1				F	R2					LIMESTONE: wackestone; medium light gray (N6); fresh (F); weak (R2); violent HCl reaction bottom 0.3' is micrite. [Glen Rose Formation]		790
73		3.33												789
74		3.85	13	5.0	100	F	R1		1003-16			SHALE: medium bluish gray (5B 5/1); fresh (F); very weak (R1); very slight HCl reaction; occasional micritic rip-up clasts. [Glen Rose Formation]		788
75		3.52												787
76		4.42				F	R2					LIMESTONE: wackestone; medium light gray (N6); fresh (F); weak (R2); violent HCl reaction; abundant clasts. [Glen Rose		786



Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1003</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
77		4.03				F	R0-R1					Formation] SHALE: dark greenish gray (5GY 4/1); fresh (F); very weak to extremely weak (R1 to R0); slight HCl reaction. [Glen Rose Formation]		785
78		4.07				F								784
79		2.75	14	5.0 5.0	100	F	R2-R3		1003-17			LIMESTONE: packstone; medium light gray; fresh (F); weak to medium strong (R2 to R3); violent HCl reaction. [Glen Rose Formation]		783
80		2				F								782
81		2.25				F	R0-R1					SHALE: medium bluish gray (5B 5/1); fresh (F); extremely weak to very weak (R0 to R1); very slight HCl reaction. [Glen Rose Formation]	500 psi 90-100% water return	781
82		2.58				F	R2-R3					LIMESTONE: micritic; light gray (N7); fresh (F); weak to medium strong (R2 to R3); violent HCl reaction. [Glen Rose Formation]		780
83		1.33				F	R2					LIMESTONE: wackestone; light gray (N7); fresh (F); weak (R2); violent HCl reaction. [Glen Rose Formation]		779
84		1.13	15	5.0 5.0	100	F	R2					LIMESTONE: packstone; light gray (N7); fresh (F); weak [Glen Rose Formation](R2); violent HCl reaction.		778
85		1.17				F								777
86		1.15				F			1003-18			LIMESTONE: wackestone; light gray (N7); fresh (F); weak (R2); violent HCl reaction. [Glen Rose Formation]		776
87		1.25				F	R2							775
88		1.2				F								774
89		1.63	16	5.0 5.0	100	F	R2					LIMESTONE: micrite; light gray (N7); fresh (F); weak (R2); violent HCl reaction. [Glen Rose Formation]		773
90		1.58				F			1003-19			LIMESTONE: wackestone; light gray (N7); fresh (F); weak (R2); violent HCl reaction; abundant rip-up clasts. [Glen Rose Formation]		772
91		1.38				F	R2							771

BJ, Wa, Ro, Op

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)		
92		2.5	17	5.0 5.0	100	F	R2						500 psi 90-100% water return	770		
93		2.37				F	R2								LIMESTONE: packstone; light gray (N7); fresh (F); weak (R2); violent HCl reaction; grades towards wackestone. [Glen Rose Formation]	769
94		2.13				F	R2								LIMESTONE: wackestone; medium light gray (N6); fresh (F); weak (R2); violent HCl reaction; clasts range from <0.1" to 2.0". [Glen Rose Formation]	768
95		2.22	18	5.0 5.0	100	F	R2		1003-20					767		
96		2.05				F	R2							LIMESTONE: micrite; light gray (N7); fresh (F); medium strong (R3); violent HCl reaction. [Glen Rose Formation]	766	
97		1.53				F	R3				1003-21			LIMESTONE: packstone; light gray (N7); fresh (F); weak to medium strong (R2 to R3); violent HCl reaction. [Glen Rose Formation]	765	
98		1.6	19	5.0 5.0	100	F	R2-R3							764		
99		1.3				F	R2-R3							LIMESTONE: wackestone; light gray (N7); fresh (F); weak (R2); violent HCl reaction; clasts range from 0.1" to 2.0". [Glen Rose Formation]	763	
100		1.8				F	R2							LIMESTONE: packstone; light gray (N7); fresh (F); medium strong (R3); violent HCl reaction; blue "splotches". [Glen Rose Formation]	762	
101		1.83	19	5.0 5.0	100	F	R2							761		
102		1.45				F	R3							LIMESTONE: wackestone; bluish white (5B 9/1); fresh (F); weak to medium strong (R2 to R3); violent HCl reaction; clasts range from 0.1" to 2.1". [Glen Rose Formation]	760	
103		2.55				F	R3				1003-22			LIMESTONE: micrite; bluish white (5B 9/1); fresh (F); medium strong (R3); violent HCl reaction; occasional clay veining; 105.2' to 105.6' wackestone interbed. [Glen Rose Formation]	759	
104		1.78	19	5.0 5.0	100	F	R2-R3							758		
105		1.6				F	R3							LIMESTONE: micrite; bluish white (5B 9/1); fresh (F); medium strong (R3); violent HCl reaction; occasional clay veining; 105.2' to 105.6' wackestone interbed. [Glen Rose Formation]	757	
106		1.45				F	R3							LIMESTONE: micrite; bluish white (5B 9/1); fresh (F); medium strong (R3); violent HCl reaction; occasional clay veining; 105.2' to 105.6' wackestone interbed. [Glen Rose Formation]	756	

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
107		1.9										LIMESTONE: wackestone; medium light gray (N6); fresh (F); weak (R2); violent HCl reaction; clasts 0.1"; 107.7' is coal seam; intermittent packstone 108.8' to 109.2', packstone; 109.7'. change to medium gray (N5) and fewer clasts. [Glen Rose Formation]	Steady drilling	755
108		2.6							1003-23					754
109		1.77	20	5.0 5.0	100	F	R2							753
110		2.17												752
111		1.57				F	R2-R3					LIMESTONE: packstone; light gray (N6); fresh (F); weak to medium strong (R2 to R3); violent HCl reaction. [Glen Rose Formation]		751
112		2.03				F	R2-R3							750
113		2.17				F	R2					LIMESTONE: wackestone; medium bluish gray (5B 5/1); fresh (F); weak (R2); violent HCl reaction; 113.5' to 113.9' packstone interbed. [Glen Rose Formation]		749
114		2	21	4.8 5.0	96					1003-24				748
115		1.42				F	R2-R3					LIMESTONE: packstone; medium light gray (N6); fresh (F); weak to medium strong (R2 to R3); violent HCl reaction. [Glen Rose Formation]		747
116		2.03												746
117		2.72				F	R2					LIMESTONE: wackestone; medium gray (N5); fresh (F); weak (R2); violent HCl reaction; micrite 117.1' to 117.2'; rip-up clasts 117.5' to 118.0'; planar bedding 117.7' to 118.0'. [Glen Rose Formation]		745
118		1.75												744
119		1.83	22	5.0 5.0	100							LIMESTONE: micrite; bluish white (5B 9/1); fresh (F); weak to medium strong (R2 to R3); violent HCl reaction; oolitic; clay veining; occasional very thin shale beds. [Glen Rose Formation]		743
120		1.42				F	R2-R3							742
121		1.62								1003-25				741

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
122		2.6				F	R2					LIMESTONE: packstone; light gray (N7) to medium bluish gray (5B 5/1); fresh (F); weak (R2); violent HCl reaction; 122.0' to 122.2' wackestone interbed; oolitic; gradational basal contact. [Glen Rose Formation]		740
123		1.42												739
124		1.47	23	5.0 5.0	100	F	R2					LIMESTONE: wackestone; oolitic; light to medium bluish gray (5B 7/1 to 5B 5/1); fresh (F); weak (R2); violent reaction to HCl; packstone interbed 124.5' to 124.7'. [Glen Rose Formation]		738
125		2				F	R2		1003-26					737
126		3.28												736
127		1.97				F	R3					LIMESTONE: micrite; oolitic; very light gray (N8); fresh (F); medium strong (R3); violent HCl reaction; clay veining in top 0.5'. [Glen Rose Formation]		735
128		1.95				F	R2					LIMESTONE: packstone; light gray (N7); fresh (F); weak (R2); violent HCl reaction. [Glen Rose Formation]		734
129		2	24	5.0 5.0	100	F	R2					LIMESTONE: micrite; oolitic; very light gray (N8); fresh (F); weak (R2); violent HCl reaction; gradational basal contact. [Glen Rose Formation]		733
130		2.43				F	R2		1003-27			LIMESTONE; wackestone; light medium gray; fresh (F); weak (R2); violent HCl reaction. [Glen Rose Formation]		732
131		2.67				F	R2					LIMESTONE: packstone; light gray (N6) to medium gray (N5); fresh (F); weak (R2); violent HCl reaction; gradational basal contact. [Glen Rose Formation]		731
132		1.92				F	R2					LIMESTONE: micrite; light medium gray (N6); fresh (F); weak (R2); slight HCl reaction; planar bedding to wavy beds and rip-up clasts at base. [Glen Rose Formation]		730
133		1.67												729
134		8.67	25	5.0 5.0	100	F	R2		1003-28			LIMESTONE: packstone; medium light gray (N6); fresh (F); weak (R2); violent HCl reaction. [Glen Rose Formation]		728
135		2.47				F	R2					LIMESTONE: wackestone; medium light gray (N6); fresh (F); weak (R2); violent HCl reaction; planar (bedded) laminated top 0.3'. [Glen Rose Formation]		727
136		2.42												726

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
137		2.33				F	R2							725
138		1.9				F	R2					LIMESTONE: medium gray (N5); fresh (F); weak (R2); violent HCl reaction: planar bedding with rip-up clasts at contact. [Glen Rose Formation]		724
139		1.13	26	<u>5.0</u> 5.0	100							LIMESTONE: packstone; medium light gray (N6); fresh (F); weak to medium strong (R2 to R3); violent HCl reaction; wackestone interbed 140.3' to 140.5'. [Glen Rose Formation]		723
140		2.57				F	R2-R3							722
141		2.43												721
142		2.42				F	R2		1003-29			LIMESTONE: wackestone; medium light gray (N6); fresh (F); weak (R2); violent HCl reaction; increased clast size and abundance from 141.95' to 142.3'; gradational basal contact. [Glen Rose Formation]		720
143		3							1003-30			LIMESTONE: packstone; medium light gray (N6); fresh (F); weak (R2); violent HCl reaction; intermittent wackestone 143.3' to 143.6'. [Glen Rose Formation]		719
144		6.2	27	<u>4.9</u> 5.0	98	F	R2							718
145		5				F	R1					SHALE: dark greenish gray (5GY 4/1); very weak (R1); fresh (F); very slight HCl reaction; sparse fossils and rip-up clasts. [Glen Rose Formation]	water loss, 0 psi to 300 psi downpressure, drilling slowed	717
146		4.08				F	R2-R3					LIMESTONE: micrite; light gray (N7); fresh (F); weak to medium strong (R2 to R3); violent HCl reaction; occasional clay/shale clasts. [Glen Rose Formation]		716
147		3.73				F	R1-R2		1003-31			SHALE: dark greenish gray (5GY 4/1); fresh (F); very weak to weak (R1 to R0); strong HCl reaction. [Glen Rose Formation]		715
148		2.53										LIMESTONE: packstone; medium light gray (N6); fresh (F); weak to medium strong (R2 to R3); violent HCl reaction. [Glen Rose Formation]		714
149		2.42	28	<u>4.7</u> 5.0	94	F	R2-R3						Grades to wackestone	713
150		2.5												712
151		2.38				F	R1					SHALE: dark greenish gray (5GY 4/1); fresh (F); very weak (R1); slight to strong		711

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
152		2.5										HCl reaction; rip-up clasts in top 0.1'. [Glen Rose Formation]		710
153		1.75				F	R2-R3					LIMESTONE: packstone; light gray (N7); fresh (F); weak to medium strong (R2 to R3); violent HCl reaction; wackestone 152.2' to 152.5'. [Glen Rose Formation]		709
154		2.18	29	5.0 5.0	100							LIMESTONE: wackestone; medium light gray (N6); fresh (F); weak (R2); violent HCl reaction; bioturbated (wormy burrows); interbedded with packstone at 154.4' to 154.7', 154.8' to 155.8', 157.1' to 157.6', and 157.8' to 158.0'. [Glen Rose Formation]		708
155		1.97												707
156		2.33				F	R2							706
157		2.43												705
158		2.33												704
159		2.67	30	5.0 5.0	100							LIMESTONE: packstone; light gray (N7); fresh (F); weak to medium strong (R2 to R3); violent HCl reaction; 0.1' clay filled vein at 160.5' to 160.6'. [Glen Rose Formation]		703
160		3.03				F	R2-R3							702
161		2.98												701
162		3				F	R2					LIMESTONE: wackestone; medium gray (N5); fresh (F); weak (R2); violent HCl reaction; interbedded w/shale at 162.1' to 162.5', interbedded with packstone 162.5' to 162.7' and 162.95' to 163.1'. [Glen Rose Formation]		700
163		2.07												699
164		1.93	31	5.0 5.0	100	F	R2-R3					LIMESTONE: micrite; light gray (N7); fresh (F); weak to medium strong (R2 to R3); violent HCl reaction; grades to wackestone. [Glen Rose Formation]		698
165		2.02				F	R2					LIMESTONE: wackestone; medium gray (N5); fresh (F); weak (R2); violent HCl reaction; sparse grains/clasts towards base. [Glen Rose Formation]		697
166		3				F	R2-R3					LIMESTONE: packstone; light gray (N7); fresh (F); weak to medium strong (R2 to R3); violent HCl reaction. [Glen Rose Formation]	Sample 1003-34 not collected.	696

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
167		2.9										LIMESTONE: silty wackestone; dark greenish gray (5GY 4/1); fresh (F); weak (R2); violent HCl reaction; sparse clasts. [Glen Rose Formation]		695
168		2.8												694
169		3.07	32	5.0 5.0	100	F	R2							693
170		2.55								1003-35				692
171		2.18										LIMESTONE: packstone; light gray (N7); fresh (F); weak to medium strong (R2 to R3); violent HCl reaction. [Glen Rose Formation]		691
172		1.33												690
173		1.4				F	R2-R3							689
174		1.37	33	5.0 5.0	100							LIMESTONE: wackestone; medium light gray (N7); fresh (F); weak (R2); violent HCl reaction; gradational basal contact. [Glen Rose Formation]		688
175		1.85				F	R2							687
176		1.5										LIMESTONE: packstone; medium light gray (N7); fresh (F); weak to medium strong (R2 to R3); violent HCl reaction; fossiliferous. [Glen Rose Formation]		686
177		1.32												685
178		1.12				F	R2-R3							684
179		0.9	34	5.0 5.0	100									683
180		0.98												682
181		1.63				F	R2-R3			1003-36				681

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
182		1.2										LIMESTONE: packstone; medium light gray (N7); fresh (F); weak to medium strong (R2 to R3); violent HCl reaction; fossiliferous. [Glen Rose Formation]		680
183		1.12				F	R2-R3							679
184		1.48	35	5.0	100									678
185		1.07												677
186		1.5				F	R2					LIMESTONE: wackestone; medium gray; fresh (F); weak (R2); violent HCl reaction; clasts 0.1" to >2.0". [Glen Rose Formation]		676
187		1.67												675
188		1.33										LIMESTONE: packstone; medium light gray (N7); fresh (F); weak to medium strong (R2 to R3); violent HCl reaction; fossiliferous matrix; grades to micrite. [Glen Rose Formation]		674
189		1.12	36	5.0	100									673
190		0.9												672
191		1.07				F	R2-R3							671
192		1.25												670
193		2.15												669
194		1.5	37	5.0	100	F	R2-R3			1003-37		LIMESTONE: wackestone; medium light gray (N7); fresh (F); weak to medium strong (R2 to R3); violent HCl reaction. [Glen Rose Formation]		668
195		1.25										LIMESTONE: packstone; medium light gray (N7); fresh (F); weak to medium strong (R2 to R3); violent HCl reaction; grades to micrite. [Glen Rose Formation]	500 psi, 90% to 100% water return	667
196		1.27				F	R2-R3							666



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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
197		1.37				F	R2-R3					LIMESTONE: packstone; medium light gray (N7); fresh (F); weak to medium strong (R2 to R3); violent HCl reaction; grades to micrite. [Glen Rose Formation]		665
198		1.37				F	R2					LIMESTONE: wackestone; medium light gray (N6); fresh (F); weak (R2); violent HCl reaction. [Glen Rose Formation]		664
199		0.9	38	4.6 5.0	97							LIMESTONE: packstone-micrite; medium light gray (N6); fresh (F); weak (R2); violent HCl reaction. [Glen Rose Formation]		663
200		1				F	R2-R3							662
201		1.4												661
202		1.27										LIMESTONE: packstone; light gray (N7); fresh (F); weak to medium strong (R2 to R3); violent HCl reaction; grades to larger clasts; almost no matrix at 204.0', oolitic. [Glen Rose Formation]		660
203		1.22				F	R2-R3							659
204		1.23	39	5.0 5.0	100									658
205		1												657
206		3.07				F	R3					LIMESTONE: oolitic; micritic; light gray (N7); fresh (F); medium strong (R3); violent HCl reaction; fossiliferous. [Glen Rose Formation]	240 psi, softer material	656
207		3.15				F	R1					SHALE: dark greenish gray (5GY 4/1); fresh (F); very weak (R1); slight HCl reaction; occasional rip-up clasts; laminations. [Glen Rose Formation]		655
208		2.15				F	R3					LIMESTONE: micrite; light gray (N7); fresh (F); medium strong (R3); violent HCl reaction. [Glen Rose Formation]		654
209		1.5	40	5.0 5.0	100									653
210		2.45				F	R1					SHALE: dark greenish gray (5GY 4/1); fresh (F); very weak (R1); very slight reaction to HCl. [Glen Rose Formation]	water loss	652
211		2.85				F	R2-R3					LIMESTONE; micrite interbedded with wackestone; medium light gray (N6) to medium gray (N5); fresh (F); weak to medium strong (R2 to R3); violent HCl reaction. [Glen Rose Formation]	water loss	651

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
212		2.25				F								650
213		1.05				F	R0-R1							649
214		1.17	41	4.6 5.0	92	F	R3						500 psi, 90% to 100% water return	648
215		2.17				F	R0-R1		1003-39		Rf, Pl, Ro, Op			647
216		2.22				F								646
217		2.27				F	R1							645
218		1.67				F								644
219		2.22	42	4.5 5.0	90	F								643
220		1.48				F	R2-R3							642
221		3.67				F	R0-R1						200 psi to 300 psi, water loss	641
222		2.82				F								640
223		2.82				F								639
224		2.5	43	5.0 5.0	100	F	R2							638
225		3.53				F							water loss	637
226		3.33				F	R2-R3							636

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
227		3.67										LIMESTONE: wackestone; medium dark gray (N4); fresh (F); weak (R2); violent HCl reaction; micrite interbeds 228.0' to 228.4' and 228.8' to 229.0'. [Glen Rose Formation]		635
228		2.75				F	R2		1003-40					634
229		2.15	44	5.0 5.0	100									633
230		2.22												632
231		2.9				F	R1-R2					SHALE and WACKESTONE: interbedded; shale is dark greenish gray (5GY 4/1), fresh (F), very weak (R1), slight to strong HCl reaction; wackestone is medium light gray (N6), fresh (F), weak (R2), violent HCl reaction. [Glen Rose Formation]		631
232		2.27										LIMESTONE: wackestone-packstone; medium light gray (N6); fresh (F); weak to medium strong (R2 to R3); violent HCl reaction. [Glen Rose Formation]		630
233		2.75							1003-41					629
234		2.18	45	4.9 5.0	96	F	R2-R3							628
235		2.15												627
236		2.9												626
237		2.47				F	R1					SANDSTONE: greenish gray (5GY 6/1); fresh (F); very weak (R1); massive; no HCl reaction. [Glen Rose Formation]		625
238		2.52										LIMESTONE: micrite; light gray (N7); fresh (F); weak to medium strong (R2 to R3); violent HCl reaction; shale interbed 238.5' to 238.9'. [Glen Rose Formation]		624
239		1.97	46	5.0 5.0	100	F	R2-R3							623
240		1.6											water loss	622
241		1.33				F	R1						gradational contact 241.0' to 264.7'	621

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)	
242		1.15										SANDSTONE: dark greenish gray (5GY 4/1); fresh (F); very weak (R1); no to very slight HCl reaction; medium spaced thin beds; fine grained. [Glen Rose Formation]	between Glen Rose Formation and Twin Mountain Formation.	620	
243		0.73													619
244		0.83	47	5.0 5.0	100										618
245		0.83													617
246		0.8				F	R1							240 psi to 400 psi, water loss	616
247		0.53													615
248		0.7							1003-42						614
249		1.27	48	4.9 5.0	98										613
250		3.42													612
251		1.47												200 psi to 400psi, poor water return	611
252		3.67										SANDSTONE: dark greenish gray (5GY 4/1); fresh (F); extremely weak to very weak (R1 to R0); no HCl reaction; planar bedding; occasional convoluted bedding with rip-up clasts; shale interbeds; very thinly bedded. [Glen Rose Formation]	610		
253		6.2				F	R0-R1							609	
254		5.35	49	5.0 5.0	100							LIMESTONE: wackestone; light gray (N7); fresh (F); weak to medium strong (R2 to R3); violent HCl reaction. [Glen Rose Formation]	608		
255		2.75				F	R2-R3		1003-43					607	
256		2.58												606	

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
257		2.8										LIMESTONE: wackestone; light gray (N7); fresh (F); weak to medium strong (R2 to R3); violent HCl reaction. [Glen Rose Formation]		605
258		1.37				F	R2-R3							604
259		1.83	50	5.0 5.0	100									603
260		6.07												602
261		5.5										SHALE: dark greenish gray (5GY 4/1); fresh (F); very weak (R1); no HCl reaction; very thinly bedded; desiccation cracks. [Glen Rose Formation]		601
262		6.73				F	R1							600
263		6.78												599
264		2.33	51	5.0 5.0	100	F	R2					LIMESTONE: wackestone; medium light gray (N6); fresh (F); weak (R2); violent HCl reaction; shale interbed 264.1' to 264.25'; and packstone 264.25' to 264.7'. Lower contact is contact between Glen Rose Formation and Twin Mountain Formation. [Glen Rose Formation]		598
265		2.5												597
266		2.97										SANDSTONE: dark greenish gray (5GY 4/1); fresh (F); very weak (R1); no HCl reaction; massive; rip-up clasts in top 0.4'. [Twin Mountain Formation]		596
267		0.67				F	R1		1003-44		Rf, Pl, Sl, Tl			595
268		0.58												594
269		2.67	52	4.5 5.0	90									593
270		3												592
271		2				F	R1							591

0 psi to 300 psi, water loss, Ronnie

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-1003</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
272		0.45										SANDSTONE: dark greenish gray (5GY 4/1); fresh (F); very weak (R1); no HCl reaction; massive; rip-up clasts in top 0.4'; with interbeds of coal. [Twin Mountain Formation]	is trying to keep down pressure	590
273		0.22												589
274		0.32	53	5.0	100	F	R1		1003-45		Rf, Wa, Sl, Op			588
275		0.3												587
276		0.5												586
277		1										SANDSTONE: medium bluish gray (5B 5/1); fresh (F); very weak (R1); no to slight HCl reaction; massive; fine grained; shale interbed 278.0' to 278.5'. [Twin Mountain Formation]		585
278		2.63												584
279		6.33	54	5.0	100	F	R1						water loss	583
280		0.97												582
281		0.77												581
282		0.95										SANDSTONE: light olive gray (5Y 6/1); fresh (F); very weak (R1); no HCl reaction; massive; fine grained; occasional bluish gray (5B 5/1) interbeds. [Twin Mountain Formation]		580
283		0.63				F	R1		1003-46					579
284		0.87	55	5.0	100							SANDSTONE: medium bluish gray (5B 5/1); fresh (F); weak to very weak (R2 to R1); massive; occasional light olive gray (5Y 4/1) interbeds; bioturbated 286.0' to 286.3'. [Twin Mountain Formation]		578
285		0.93				F	R1-R2							577
286	NM													576

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-1003**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
287		1.52				F	R1-R2							575
288		1.83				F	R3							574
289		1.63	56	$\frac{4.9}{5.0}$	98								0 psi to 250 psi	573
290		2.17												572
291		2.33												571
292		6.1				F	R1						0 psi to 200 psi, poor water return	570
293		5.22												569
294		4.38	57	$\frac{4.2}{5.0}$	84									568
295		11.15												567
296		15												566
297		2.65												565
298		0.75				F	R1			1003-47	Rf, Pl, Sl, Ti		almost no down pressure, water is not returning	564
299		0.82	58	$\frac{4.8}{5.0}$	96									563
300		2.15												562
301		1				F	R1				BJ, Wa, Sm, Op		0 down pressure, poor water return. "Letting her float" says Ronnie the driller.	561

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1003</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
302		0.78				F	R1		1003-48			Convolut ed organic bedding, very thin SANDSTONE: dark greenish gray (5GY 4/1); fresh (F); very weak (R1); no HCl reaction; fine grained; massive. [Twin Mountain Formation]		560
303		0.62				NA	NA				Washout, No Recovery			
304		7	59	<del>4.8</del> 5.0	96	F	R1							558
305		1												557
306		0.97										SANDSTONE: dark gray (N3); fresh (F); very weak (R1); no HCl reaction; convoluted organic bedding; organic beds 308.1' to 308.15' and 308.6' to 309.5'. [Twin Mountain Formation]		556
307		0.62				F	R1						150 down pressure	
308		0.65												554
309		1.73	60	<del>4.7</del> 5.0	94									553
310		4.08				F	R1-R2				Wa, Op, BJ, SI	LIMESTONE: wackestone; medium dark gray (N4); fresh (F); very weak to weak (R1 to R2); violent HCl reaction; sandy matrix. [Twin Mountain Formation]		552
311		10.78										SANDSTONE: greenish gray (5GY 6/1); fresh (F); very weak (R1); no HCl reaction; massive; very fine to fine grained. [Twin Mountain Formation]		551
312		9.72												550
313		9.13												549
314		4.92	61	<del>5.0</del> 5.0	100	F	R1					Limestone clasts		548
315		2.93												547
316		3.28												546




Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1003</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
317		2.12										SANDSTONE: greenish gray (5GY 6/1); fresh (F); very weak (R1); no HCl reaction; massive; very fine to fine grained. [Twin Mountain Formation]		545
318		1.67												544
319		1	62	<u>4.6</u> 5.0	92	F	R1					Heavily bioturbated 318.8' to 319.0', 319.6' to 319.8', and 320.5' to 321.0'.		543
320		0.78												542
321		1.07										SANDSTONE: light gray (N7); fresh (F); extremely weak to very weak (R0 to R1); no HCl reaction; massive; fine grained; sparse bioturbation. [Twin Mountain Formation]		541
322		0.67											0 down pressure poor water return	540
323		0.62												539
324		0.63	63	<u>4.6</u> 5.0	92	F	R1							538
325		0.65												537
326		0.98												536
327		0.73												535
328		0.43				F	R1					SANDSTONE: light gray (N7); fresh (F); extremely weak to very weak (R0 to R1); no HCl reaction; massive; fine grained; sparse bioturbation. [Twin Mountain Formation]		534
329		0.23	64	<u>3.7</u> 5.0	74	NA	NA				Washout, No Recovery			533
330		0.25				F	R1							532
331		0.33				NA	NA				Washout, No Recovery			531

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-1003</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
332		0.28										SANDSTONE: light gray (N7); fresh (F); extremely weak to very weak (R0 to R1); no HCl reaction; massive; fine grained; sparse bioturbation. [Twin Mountain Formation]		530
333		0.23												529
334		0.73	65	5.0		F	R1							528
335		0.17												527
336		0.32											Drill rod stuck in hole at 336.5'; rig down. Boring B-1000-Offset drilled to 400.0'.	526
337												Total depth drilled 336.5'.	525	
338													524	
339													523	
340													522	
341													521	
342													520	
343													519	
344													518	
345													517	
346													516	

Project Name and Job Number TXU Comanche Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-1004</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'07.31768"N / 97°47'43.97424"W		Total Depth 301.5 feet	
Drilling Contractor and Rig Palmerston and Parish / CME 55		Elevation and Datum 859.704 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 16.2 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 7	Date Started 11/27/06	
		Borehole Inclination Vertical	Logged by MSZ	Date Completed 12/2/06	

Reviewed by / Date J. Wesling 12/6/06

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0	CL						RESIDUAL SOIL (RS) LEAN CLAY with silt soft, brown (10YR5/3), moist, <5% medium grain sand			859
1			B-1004 1	8	10/10					858
2				50/4"			LIMESTONE FRAGMENTS with silt and sand and calcareous deposits dense, light gray (10YR7/2), dry, 90% limestone gravel, 10% fine sand and silt			857
3										856
4	GM		B-1004 2	7	14/18					855
5				16						854
6				24						853
7	CL		B-1004 3	6	15/18		LEAN CLAY stiff, yellow (10YR7/6), damp			852
8				11						851
9	SP			13						850
10	CL		B-1004 4	24	15/17.5		SAND with gravel light gray (10YR7/2), dry, (~5%) sand and gravel are angular and reactive to HCl LEAN CLAY hard, mottled gray (10YR6/1) and light yellow brown (10YR6/4) with few calcareous deposits			849
11				18						848
12	ML		B-1004 5	50/4"	4/4		SILT dense, hard, light greenish gray, dry, weathered limestone, violent reaction to HCl			847
13										846
14	CL		B-1004 6	15	18/18		LEAN CLAY very stiff to hard, light olive brown (2.5Y5/4), damp			845
15				45			1" thick lense of angular limestone fragments up to .75" in size			845
				15						845

Project Name and Job Number TXU Comanche Peak COI 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">SOIL LOG</h2> <h2 style="margin: 0;">Boring No. B-1004</h2>
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Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
15	CL						LEAN CLAY very stiff to hard, light olive broan (2.5Y5/4), damp <i>(Continued from previous page)</i> few angular limestone fragments up to .5" in size, violent reaction to HCl			844
16		B-1004.7	50/4"	5/4			Top of Bedrock at 16.2' Augered to 16.5 to set casing.		Sample refusal, augered to 16.5' + HSA refusal. Set casing	843
17										842
18										841
19										840
20										839
21										838
22										837
23										836
24										835
25										834
26										833
27										832
28										831
29										830
30										830




Undisturbed sample  
SH = Shelby; P = Pitcher; O = other



Driven (2.5 to 3.0 inch) with liners  
MC = Modified California; O = other



Standard Penetration Test (SPT) sampler

Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG Boring No. B-1004</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'07.31768"N / 97°47'43.97424"W		Total Depth 301.5 feet	
Drilling Contractor and Rig Palmerston and Parrish / CME 55		Elevation and Datum 859.704 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 16.2 feet	
Casing Size and Depth 4" / 16.5 feet		Length of Core Barrel and Bit 8.6 feet	No. of Core Boxes 20	Date Started 11/27/06	
		Borehole Inclination Vertical	Logged by M. Zellman	Date Completed 12/2/06	

Reviewed by / Date J. Wesling 12/6/06

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
17		NM	1	0.8 1.0	80	SW-MW	R0-R2					LIMESTONE; wackestone; very light gray (N8) to dusty yellow (5Y 6/4); matrix supported; slightly weathered to moderately weathered (SW to MW); extremely weak to weak (R0 to R2); strong HCl reaction. [Glen Rose Formation]		843
18		6.75				MW	R1				Jt, Sm, Pl	LIMESTONE; wackestone; medium light gray (N6); interbeds of moderate yellow (5Y 7/6); moderately weathered (MW); very weak (R1); very few lignite fragments. [Glen Rose Formation]	jointed area is discolored and weathered (0.2') zone, thin serrated black sutures, vugs and black mineralization	842
19		6.08				SW	R1-R2		1004-8			LIMESTONE: wackestone; very light gray (N8) to medium dark gray (N4); slightly weathered (SW); very weak to weak (R1 to R2); this section grades from light to dark back to light. [Glen Rose Formation]		841
20		5.5	2	4.9 5.0	98	SW	R2					LIMESTONE: wackestone; medium light gray (N6); slightly weathered (SW); weak (R2); matrix supported; some interbedded shale; bedding is wavy; violent HCl reaction. [Glen Rose Formation]		840
21		3.88				SW	R2					MUDSTONE: medium bluish gray (5B 5/1); massive; slightly weathered to moderately weathered (SW to MW); very weak to weak (R1 to R2); slight to no HCl reaction; some lignite fragments; some wavy, thinly spaced bedding at 26.5'. [Glen Rose Formation]	11/27 to 11/28	839
22		4.08												838
23		5.47							1004-9					837
24		6.9												836
25		5	3	5.0 5.0	100	SW-MW	R1-R2							835
26		4.17												834
27		5.03												833
28		7.93												832
29		4.5							1004-10					831
30		8.93	4	5.0 5.0	100	SW-HW	R2							830
31		4.18												829

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1004</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
32		4.2	4	5.0 5.0	100							LIMESTONE: wackestone; very light gray (N8); slightly weathered to highly weathered (SW to HW); weak (R2); matrix supported; clasts are subrounded: highly weathered zones have large and small voids; planar bedding, shells present. [Glen Rose Formation]	break along weathered zone of weakness	828
33		3.63												827
34		2.85				SW-HW	R2							826
35		5.5	5	5.1 5.0	100				1004-11					825
36		4.78											Length of recovery stretched due to mechanical breaks.	824
37		4.92										SHALE: mudstone; medium bluish gray (5B 5/1); massive; slightly weathered (SW); weak (R2); upper contact is gradational; highly weathered zones around fractures; no color change; increase HCl reaction with depth; sharp, wavy basal contact. [Glen Rose Formation]		823
38		6.15											dark water return	822
39		5.72				SW	R2							821
40		6.73	6	4.8 5.0	96				1004-12					820
41		6.17												819
42		6.5				SW	R2					LIMESTONE: packstone; medium light gray (N6); slight weathering (SW); weak (R2); clast supported; bedding is wavy with some interbedded shale; rounded to subrounded clasts; some fossils present; wackestone at 42.6'. [Glen Rose Formation]		818
43		3.5										LIMESTONE: wackestone; medium light gray (N6); slightly weathered (SW); weak (R2); some wavy bedding visible. [Glen Rose Formation]	good water return	817
44		2.07												816
45		2.45	7	5.0 5.0	100	SW	R2							815
46		2.03							1004-13					814

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1004</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
47		NM	7	5.0 5.0	100							LIMESTONE: wackestone; medium light gray (N6); slightly weathered (SW); weak (R2); some wavy bedding visible. [Glen Rose Formation]		813
48		3				SW	R2							812
49		1.62												811
50		2	8	5.0 5.0	100									810
51		6.3				HW	R0-R1					SHALE: medium gray (N5); highly weathered (HW); extremely weak to very weak (R0 to R1); many fractures along bedding. [Glen Rose Formation]		809
52		3				SW	R2		1004-14			LIMESTONE: packstone; light gray (N7); slightly weathered (SW); weak (R2); matrix supported; thinly spaced bedding; wavy bedding; fossiliferous; violent HCl reaction. [Glen Rose Formation]		808
53		7.92				HW	R0					SHALE: medium gray (N5) highly weathered (HW); extremely weak (R0); fractured along bedding; interbedded with some thin limestone beds. [Glen Rose Formation]		807
54		8.58												806
55		2.08	9	4.0 5.0	80				1004-15			LIMESTONE: wackestone; very light gray (N8); slightly weathered (SW); weak (R2); matrix supported; many thin wavy bedding exposed; some interbedded shale at weak fracture areas. [Glen Rose Formation]		805
56		3.83												804
57		4.25				SW	R2							803
58		3.67												802
59		9.17	10	4.9 5.0	98									801
60									1004-16			LIMESTONE: packstone; very light gray (N8) to medium dark gray (N4); slightly weathered (SW); weak (R2); many fossils; wavy beds; interbedded with shale. [Glen Rose Formation]		800
61		4.17				SW	R2							799

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1004</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
62		3.62	10	4.9 5.0	98	SW	R2							798
63		8.3				MW-SW	R0-R1					SHALE: medium gray (N5); moderately to slightly weathered (MW to SW); extremely to very weak (R0 to R1); massive; many fractures along bedding; 0.1' to 0.2' spacing; higher weathering in fracture zones. [Glen Rose Formation]		797
64		6.95												796
65		7.22	11	4.9 5.0	94								many rip up clasts	795
66		5.5				SW	R2					LIMESTONE: wackestone; very light gray (N9); slightly weathered (SW); weak (R2); many fossils present; interbed of shale at 66.6'. [Glen Rose Formation]		794
67		3.5												793
68		5				SW	R1				Jo, Pl, Sm, Ti	SHALE: medium gray (N5); slightly weathered (SW); very weak (R1); massive; fractures along bedding; no HCl reaction; lower contact is clear and planar; beds up to 0.15' thick. [Glen Rose Formation]		792
69		4.73												791
70		3.88	12	4.5 5.0	90							LIMESTONE: wackestone; very light gray (N8); slightly weathered (SW); weak (R2); fossils visible; thin to medium bedding is wavy; bioturbation; violent HCl reaction. [Glen Rose Formation]		790
71		1.7				SW	R2				Jo, Pl, He			789
72		5.07												788
73		7.13										SHALE; medium dark gray (N4); slightly weathered (SW); very weak (R1); massive; few thin limestone beds. [Glen Rose Formation]		787
74		5.67				SW	R1							786
75		4.3	13	4.6 5.0	92								good water return	785
76		9.92				SW	R2					LIMESTONE: wackestone; light gray (N7); slightly weathered (SW); weak (R2); wavy beds; many fossils; some shale beds. [Glen Rose Formation]		784
						SW	R1					SHALE: medium dark gray (N4); slightly weathered (SW); weak (R1). [Glen Rose Formation]		



Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1004</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
77		7	13	4.6 5.0	92	SW	R1		1004-19			SHALE: medium dark gray (N4); slightly weathered (SW); weak (R1). [Glen Rose Formation]	Stopped drilling 11/28/06, started 11/29/06.	783
78		12				SW-MW	R1-R2				LIMESTONE: wackestone; light gray (N7); slightly to moderately weathered (SW to MW); very weak to weak (R1 to R2); fine grained; rounded to subrounded; bioturbation; 0.3' shale bed at 79.5'. [Glen Rose Formation]	782		
79		7.18							1004-20					781
80		2.35	14	5.0 5.0	100	SW	R2					LIMESTONE: micrite; very light gray (N8); slightly weathered (SW); weak (R2); very fine grained; bioturbated; some wavy beds; gradational basal contact. [Glen Rose Formation]		780
81		2.73										LIMESTONE; wackestone; medium light gray (N6); slightly weathered (SW); weak (R2); strong to violent reaction to HCl; some wavy bedding; clast size to <1.0 mm; bioturbated zones filled with fine grained material lighter in color. [Glen Rose Formation]		779
82		3.08												778
83		7												777
84		2.37							1004-21					776
85		2.5	15	5.1 5.0	100									775
86		3.18				SW	R2					Rare, thin lignite clasts.	Length of recovery stretched due to mechanical breaks.	774
87		3.03												773
88		3.52												772
89		5.5												771
90		4.62	16	5.0 5.0	100				1004-22					770
91		4.25												769

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1004</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
92		4.18	16	<u>5.0</u> 5.0	100							LIMESTONE; wackestone; medium light gray (N6); slightly weathered (SW); weak (R2); strong to violent reaction to HCl; some wavy bedding; clast size to <1.0 mm; bioturbated zones filled with fine grained material lighter in color. [Glen Rose Formation] Black, subrounded clasts (<1 mm).		768
93		2.67												767
94		3.5												766
95		3.55	17	<u>4.7</u> 5.0	94				1004-23					765
96		3.25											Many wavy beds and bioturbations with interbedded shales up to 0.15' thick. Less bedding and bioturbation below shaley interval.	764
97		2.5												763
98		4.67												762
99		5.25				SW	R2						good water return, dark	761
100		3.03	18	<u>5.0</u> 5.0	100									760
101		1.85							1004-24					759
102		2											Large rip-up clasts and zones filled with secondary mud with fossils; clast content increasing with depth.	758
103		3.5												757
104		2.23							1004-25			Intergrading packstone and wackestone from 103.5' to 106.0'; decreased burrows.	756	
105		2	19	<u>5.0</u> 5.0	100								755	
106		1.85											754	

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
107		1.78	19	5.0	100							LIMESTONE; wackestone; medium light gray (N6); slightly weathered (SW); weak (R2); strong to violent reaction to HCl; some wavy bedding; clast size to <1.0 mm; bioturbated zones filled with fine grained material lighter in color. [Glen Rose Formation]		753
108		1.83				SW	R2							752
109		1.67												751
110		1.5	20	5.0	100					1004-26		LIMESTONE: wackestone; very light gray (N8); slightly weathered (SW); weak (R2); very fine grained; soft sediment deformation and wavy beds; ~15% fine dark clasts. [Glen Rose Formation]		750
111		1.55				SW	R2							749
112		1.62				SW	R2					LIMESTONE: packstone; very light gray (N8) to medium light gray (N6); slightly weathered (SW); weak (R2); upper contact is planar with bedding; large rip-up clasts (0.1'); very fine clasts with fossils. [Glen Rose Formation]		748
113		4.5										LIMESTONE: wackestone; very light gray (N8); slightly weathered (SW); weak (R2); very fine to fine clasts; some sediment deformation and few wavy beds; from 116.5' to 117.0', increasing grain size and silt laminae up to 0.25" thick. [Glen Rose Formation]		747
114		3.08												746
115		4.12	21	5.0	100					1004-27		LIMESTONE: wackestone; very light gray (N8); slightly weathered (SW); weak (R2); very thin laminations of packstone (up to 0.1' thick); mostly planar bedding; shells present. [Glen Rose Formation]		745
116		3.62				SW	R2							744
117		3.73												743
118		4.08												742
119		4.35	22	5.0	100					1004-28		bluish water, good return		741
120		5				SW	R2							740
121		3.55										Darkens to medium dark gray (N4); burrows present.		739

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
122		3.67	22	5.0 5.0	100	SW	R2							738
123		4.17				SW	R2					LIMESTONE: packstone; very light gray (N8) to medium dark gray (N4); slightly weathered (SW); weak (R2); fine to medium grains; many shells and fossils; visible burrows with lighter colored secondary fill. [Glen Rose Formation]		737
124		3.5							1004-29					736
125		3.68	23	5.0 5.0	100							LIMESTONE: wackestone; light gray (N7); slightly weathered (SW); weak (R2); interbedded with thin shale beds (up to 0.15' thick); thin bedding absent below 125.0'; some burrows and rip-up clasts at 126.7'; few fossils. [Glen Rose Formation]		735
126		3.42												734
127		3.55				SW	R2							733
128		4.9												732
129		3.13												731
130		3.42	24	4.8 5.0	96									730
131		4.5							1004-30			LIMESTONE: micrite; very light gray (N8); slightly weathered (SW); weak (R2); very fine grained; dominated by bioturbation and rip-up clasts; burrows increasing with depth. [Glen Rose Formation]	burrows	729
132		4												728
133		2.93				SW	R2							727
134		3												726
135		2.17	25	5.0 5.0	100									725
136		3.68				SW	R2		1004-31					724

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
137		3.22	25	5.0 5.0	100							LIMESTONE: wackestone; medium gray (N5); slightly weathered (SW); weak (R2); very fine to fine grained; interbedded with shale and micrite; many burrows visible with secondary filling of micrite; soft sediment deformation at lower contact. [Glen Rose Formation]		723
138		3.75												722
139		3.18												721
140		3.62	26	5.1 5.0	100	SW	R2							720
141		2.92											Length of recovery stretched due to mechanical breaks.	719
142		3.05												718
143		3.68				SW	R1					SHALE: dark gray (N3); slightly weathered (SW); very weak (R1); massive; many fractures along bedding; many fossils in upper portion; no HCl reaction. [Glen Rose Formation]		717
144		4.17								1004-33				716
145		4.5	27	4.9 5.0	98	SW	R2					LIMESTONE: micrite; very light gray (N8); slightly weathered (SW); weak (R2); upper contact planar, angled 45°; many burrows filled with shale/mud and shells. [Glen Rose Formation]		715
146		6.08				SW	R1			1004-32		SHALE: pale blue (5PB 7/2) slightly weathered (SW); very weak (R1); contains many fine to very fine black clasts; contains burrows; gradational basal contact. [Glen Rose Formation]		714
147		5.67										LIMESTONE: wackestone; light gray (N7) to medium gray (N5); slightly weathered (SW); weak (R2); shale interbed in upper 0.3'; grades to micrite and then to wackestone; very fine to medium grained; fossiliferous; many burrows filled with light gray (N7) micrite. [Glen Rose Formation]		713
148		3.08												712
149		1.68				SW	R2							711
150		3.72	28	5.0 5.0	100					1004-34		Matrix becomes darker and many more burrows are visible. Very weak (R1), highly weathered (HW) shale bed at 150.1'.		710
151		3.83												709

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
152		3.55	28	5.0 5.0	100									708
153		3.83												707
154		3.58				SW	R2							706
155		4.12	29	5.0 5.0	100				1004-35					705
156		3.68											good water return	704
157		4.33										LIMESTONE: wackstone; very light gray (N8); slightly weathered (SW); weak (R2); composed of fine to very fine matrix supported clasts; many rip-up clasts; few burrows; some deformed wavy beds; fill between rip-up clasts is silty with few fine to medium grains. [Glen Rose Formation]	703	
158		4.02												702
159		3.8				SW	R2							701
160		3.62	30	5.0 5.0	100				1004-36					700
161		3.08										Interbedded shale layers (up to 0.2' thick) 160.5' to 161.4'.		699
162		3.17										LIMESTONE; micrite: very light gray (N8); slightly weathered (SW); weak (R2); very fine grained; some burrows. [Glen Rose Formation]	stopped drilling 11/29/06, started 12/1/06	698
163		6.3				SW	R2							697
164		4.92										At 164', darkens to medium gray (N5) due to thin interbedding of shale; zone is 0.8' thick.		696
165		3.52	31	4.9 5.0	98				1004-37					695
166		2.18				SW	R2					LIMESTONE: wackstone; medium light gray (N6); slightly weathered (SW); weak (R2); many fine to medium grains; shells/fossils; burrows; sediment deformation; burrows contain micrite as secondary filling. [Glen Rose Formation]		694

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)	
167		2.4	31	4.9 5.0	98							LIMESTONE: wackestone; medium light gray (N6); slightly weathered (SW); weak (R2); many fine to medium grains; shells/fossils; burrows; sediment deformation; burrows contain micrite as secondary filling. [Glen Rose Formation]		693	
168		5.17				SW	R2								692
169		4.93													691
170		4	32	5.0 5.0	100							LIMESTONE: micrite; very light gray (N9); slightly weathered (SW); weak (R2); wavy bedding; burrows. [Glen Rose Formation]	some pyritic shale, very rare	690	
171		3.5				SW	R2			1004-38					689
172		3.38				SW	R2								688
173		3										LIMESTONE: packstone; medium gray (N5); slightly weathered (SW); weak (R2); many fossils throughout; fine to medium clasts; burrows (few); many wavy and deformed beds; strong reaction to HCl; shale beds (thin) to 174.0'. [Glen Rose Formation]	good water return	687	
174		4.02													686
175		3.08	33	5.0 5.0	100										685
176		2.77										Decreasing sediment deformation with depth; rare sparite.		684	
177		5.17				SW	R2								683
178		2.7													682
179		2.92												681	
180		3.35	34	5.0 5.0	100									680	
181		3.18												679	

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
182		3.25	34	5.0 5.0	100							LIMESTONE: packstone; very light gray (N8); slightly weathered (SW); weak (R2); fine to (few) medium grains and fossils; rare shale; no to very little bioturbation; gradational basal contact. [Glen Rose Formation]		678
183		2.35				SW	R2							677
184		2.67												676
185		2.75	35	5.0 5.0	100	SW	R1					SHALE: medium dark gray (N4); slightly weathered (SW); very weak (R1); calcareous; strong reaction to HCl; contains many burrows filled with limestone (packstone to micrite). [Glen Rose Formation]	dark water	675
186		2.62							1004-41			LIMESTONE; wackestone; very light gray (N8) to light gray (N7); slightly weathered (SW); weak (R2). [Glen Rose Formation]		674
187		2.73												673
188		2.35										Burrows present; increased mud content; wavy bedding.		672
189		2.92							1004-42					671
190		3.67	36	4.9 5.0	98							Decreasing grain size; mud absent; many white (N9) 2.0 mm to 3.0 mm fossils.		670
191		4.35				SW	R2							669
192		4.13												668
193		4.62										192.3' to 193.0': rip-up clasts and burrows; interbedded shales; wavy bedding within wackestone.		667
194		4.17												666
195		4.25	37	5.0 5.0	100									665
196		3.62												664



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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
197		3.08	37	5.0 5.0	100	SW	R2					196.3' to 196.7': rip-up clasts; shale interbeds. LIMESTONE; wackestone; very light gray (N8) to light gray (N7); slightly weathered (SW); weak (R2). [Glen Rose Formation]		663
198		4.02										LIMESTONE: wackestone; very light gray (N8); slightly weathered (SW); weak (R2); very fine to fine grained; few wavy beds visible; few fossils; rare, small burrows present. [Glen Rose Formation]		662
199		3.25										Increase in shale beds (up to 0.5 inch thick) 199.0' to 201.5', moderately close spacing.		661
200		3.38	38	5.0 5.0	100									660
201		3.5				SW	R2							659
202		2.83												658
203		3.17											No sample 1004-44 recorded.	657
204		3.35												656
205		2.92	39	4.8 5.0	96	SW	R1					SHALE: dark gray (N3); slightly weathered (SW); very weak (R1); color ranges from dark gray (N3) to grayish black (N2); no HCl reaction; upper contact is wavy and deformed; bedding is closely spaced and planar. [Glen Rose Formation]		655
206		2.97												654
207		3.13										LIMESTONE: wackestone; very light gray (N8); slightly weathered (SW); weak (R2); very fine to medium grained; upper contact is sharp and planar; violent reaction to HCl. [Glen Rose Formation]		653
208		5.15				SW	R2							652
209		3.5												651
210		2.5	40	4.9 5.0	98									650
211		2.67				SW	R2					LIMESTONE: micrite; light gray (N7); slightly weathered (SW); weak (R2); thin bedded; planar to wavy; weak shale beds visible. [Glen Rose Formation]		649

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
212		3.17	40	4.5 5.0	98	SW	R1					SHALE: medium dark gray (N4); slightly weathered (SW); very weak (R1); interbeds at top 0.3' and bottom 0.2'; very slight HCl reaction. [Glen Rose Formation]	lignite clasts 1.0 cm	648
213		3.35				SW	R0				SANDSTONE: greenish gray (5G 6/1); slightly weathered (SW); extremely weak (R0); fine grained and becoming very fine grained downward; massive; disaggregated. [Glen Rose Formation]	647		
214		6.6				SW	R1					SHALE: medium dark gray (N4); very closely spaced; very thin bedding; many rip up clasts; slightly weathered (SW); very weak (R1). [Glen Rose Formation]		646
215		2.05	41	5.0 5.0	100	SW	R1							645
216		4.57				SW	R0					LIMESTONE: micrite; very light gray (N8); very fine to fine grained; slightly weathered (SW); extremely weak (R0); very thin bedding. [Glen Rose Formation]		644
217		3.88				SW	R2					LIMESTONE: packstone; light gray (N7); slightly weathered (SW); weak (R2); fine dark grains; no shells; lower contact is sharp and sub planar. [Glen Rose Formation]		643
218		3.83				SW	R1					SHALE: medium dark gray (N4); slightly weathered (SW); very weak (R1); very thin; very closely bedded; interbedded with very thin sand; lower contact interbeds with micrite. [Glen Rose Formation]		642
219		2.13								1004-47				641
220		2.33	42	5.0 5.0	100							LIMESTONE: micrite; very light gray (N8); slightly weathered (SW); weak (R2); very fine grains; very thin, very closely laminated beds from 218.0' to 220.0'; burrows filled with mudstone at 220.6'.	apparent turbid depositions or bioturbations	640
221		2.58				SW	R2					Shale bed 221.3' to 221.6'.		639
222		2.55												638
223		3.25				SW	R2					SHALE: medium dark gray (N4); slightly weathered (SW); weak (R2); very closely spaced, very thin beds; interbedded with limestone (packstone) at 223.7' to 224.1'; weak reaction to HCl; sharp planar lower contact. [Glen Rose Formation]		637
224		3.67												636
225		3.13	43	5.0 5.0	100	SW	R2					LIMESTONE: micrite; very light gray (N8); slightly weathered (SW); weak (R2); very closely spaced laminated beds; very fine grained. [Glen Rose Formation]		635
226		3.88				SW	R2					SHALE: calcareous; medium dark gray (N4); slightly weathered (SW); weak (R2); very closely spaced laminated beds; interbeds are micrite; slight HCl reaction.		634

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
227		4.33	43	5.0 5.0	100	SW	R2					[Glen Rose Formation] LIMESTONE: micrite; very light gray (N8); slightly weathered (SW); weak (R2); upper 0.5' contains rip up clasts and burrows.	bed ends	633
228		3.83										[Glen Rose Formation] LIMESTONE: wackestone; medium dark gray (N4) to light gray (N7); slightly weathered (SW); weak (R2); fine grained; very close, very thin bedding. [Glen Rose Formation]		632
229		4.33												631
230		4.5	44	5.0 5.0	100							Shale bed 229.7' to 230.1'.  Grain size increased to fine to medium; small burrows; shell fossils; moderately close, very thin shale interbeds; sharp, planar lower contact.		630
231		4.02				SW	R2							629
232		3.8												628
233		5.2											12/1 to 12/2	627
234		7.83												626
235		7.67	45	5.0 5.0	100							SHALE: grayish blue green (5BG 5/2); slightly weathered (SW); very weak (R1); interbedded with close thin beds of micrite; deformed angular upper contact; slight HCl reaction; gradational lower contact. [Glen Rose Formation]		625
236		7.43				SW	R1							624
237		7.33				SW	R0					SANDSTONE: pale green (10G 5/2); slightly weathered (SW); extremely weak (R0); fine grained; massive. [Glen Rose Formation]		623
238		5.5				SW	R2					SANDSTONE: very light gray (N8); slightly weathered (SW); weak (R2); very fine to fine grained; massive; lower contact gradational. [Twin Mountain Formation]	Contact between Glen Rose Formation and Twin Mountain Formation at 237'. good water return	622
239		4										SANDSTONE: grayish green (5G 5/2); very fine to fine grained; massive; slightly weathered (SW); extremely weak (R0). [Twin Mountain Formation]		621
240		3.67	46	4.9 5.0	98	SW	R0							620
241		3.22												619

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
242		2.38	46	4.5 5.0	98	SW	R0							618
243		2.17				SW	R1					MUDSTONE/SHALE: light olive gray (5GY 6/1); interbedding with sandstone; very thin and very close beds; slightly weathered (SW); very weak (R1). [Twin Mountain Formation]		617
244		2.25										SANDSTONE: light olive gray (5GY 6/1); slightly weathered (SW); extremely weak (R0); very fine to fine grains; bedding closely spaced, thin and wavy; silt increases with depth; lower contact gradational. [Twin Mountain Formation]		616
245		1.92	47	4.8 5.0	96	SW	R0							615
246		2.02												614
247		1.78										SANDSTONE: medium light gray (N6) to medium gray (N5); slightly weathered (SW); extremely weak to weak (R0 to R2); very closely spaced, very thin bedding; interbedded with mudstone beds; sandstone extremely weak; claystone weak. [Twin Mountain Formation]	thin seams of coal	613
248		5.03				SW	R0-R2							612
249		8.53										Coarser sand with shell fragments along lower contact; grayish black (N2) from 248.7' to 249.0'; light gray (N7) 249.8' to 250.1'; lower contact clear and planar.		611
250		7.83	48	5.0 5.0	100									610
251		8.25									1004-50	SHALE: dark gray (N3); slightly weathered (SW); very weak (R1); upper 0.5' contains very thin sand beds; sediment deformation and rip up clasts; no HCl reaction. [Twin Mountain Formation]		609
252		28				SW	R1					Interbedded with very fine sand 251.7' to 252.0'; slight HCl reaction.	shell fragments	608
253		8.47												607
254		7.5				SW	R1					SHALE: calcareous; medium gray (N5); slightly weathered (SW); very weak (R1); interbedded with underlying limestone beds; very thin; slight HCl reaction; gradational lower contact. [Twin Mountain Formation]		606
255		4.97	49	5.0 5.0	100	SW	R2					SANDSTONE: very fine grained; slightly weathered (SW); weak (R2); interbedded with overlying shale from 253.8' to 254.8'; massive below 254.8'; strong HCl reaction; sharp lower contact. [Twin Mountain Formation]		605
256		3.17				SW	R2							604

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
257		4.5	49	5.0 5.0	100	SW	R2					SANDSTONE: light gray (N7); slightly weathered (SW); weak (R2); massive; bioturbation; slight HCl reaction; very fine grained; massive. [Twin Mountain Formation]		603
258		9.77												602
259		2.88										SHALE: medium dark gray (N4); slightly weathered (SW); extremely weak to very weak (R0 to R1); close bedding to moderately close bed spacing along bedding. [Twin Mountain Formation]		601
260		7.67	50	5.0 5.0	100	SW	R0-R1						No sample 1004-51 recorded. Length of recovery stretched due to mechanical breaks.	600
261		18.67												599
262		4.35												598
263		5.52										SANDSTONE: very light gray (N9) to medium gray (N5); slightly weathered (SW); extremely weak to weak (R0 to R2); very fine grains; rare bedding is planar and 20° (cross-beds?); many burrows; 262.5' to 263.3' some beds of loosely cemented fine sands. [Twin Mountain Formation] Shale bed 263.6' to 263.7'.		597
264		3.35				SW	R0-R2							596
265		3.5	51	5.0 5.0	100								dark sand above and below both shale units	595
266		2.18										SANDSTONE: grayish blue green (5RB 5/2); slightly weathered (SW); very fine to fine grained; alternates between extremely weak (R0) (loosely cemented sand) and weak (R2) (very fine sand); weak sections 0.2' to 0.4' long. [Twin Mountain Formation]		594
267		2.38												593
268		3.43				SW	R0-R2							592
269		4.83												591
270		3.33	52	5.0 5.0	100				1004-52			Interbedding with lower unit; 0.25" to 0.5' thick sand beds. Bed of very light gray (N8) sand 269.8' to 270.2'; massive below 270.2'.		590
271		3.13										Very fine silty sand 271.0' to 271.4'; weak; no reaction to HCl.		589

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1004</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
272		3.32	52	5.0 5.0	100							SANDSTONE: medium bluish gray (5B 7/1) to medium light gray (N6); slightly weathered (SW); very weak (R1); very fine to fine grained; massive to bedded; gradational upper contact. At 272.5', coal/lignite clasts (<1.0 cm). [Twin Mountain Formation]	gradational contact	588
273		1.1				SW	R1					Bedding planar, 20° at 272.9'. 273.1' to 274.0': intervals of coal bedding 0.1' to 0.2' apart; planar at 10°; lower contact is clear and planar.		587
274		2.32												586
275		3	53	4.9 5.0	98							SANDSTONE: medium bluish gray (5B 5/1); slightly weathered (SW); very weak (R1); very fine to fine grained; interbedded with fine light gray (N7) sand; wavy and deformed beds. [Twin Mountain Formation]		585
276		3.72				SW	R1							584
277		3										SANDSTONE: medium bluish gray (5B 7/1); slightly weathered (SW); very weak (R1); very fine to fine grained; contains some bedded intervals of silty sands (0.2' to 0.4') and fine grained grayish sand (0.2'); interbedding (~1" apart) of silty sand and grayish sand is common. [Twin Mountain Formation]		583
278		2.85												582
279		4.38											good water return	581
280		11.63	54	5.0 5.0	100					1004-53		More massive below 280.3'; silty, very fine sandstone.		580
281		3.62										Siltstone bed 281.0' to 281.5'.		579
282		4.97				SW	R1					1.0" thick clay rich seam; below 281.5, sandstone is silty, very fine grained.		578
283		2.85										More weathered 283.0' to 284.0'.		577
284		2.92										Burrows visible, sand is very fine grained below 285.5'.		576
285		2.7	55	5.0 5.0	100									575
286		2.33												574

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-1004**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)	
287		2.52	55	<u>5.0</u> 5.0	100							SANDSTONE: pale blue (5B 6/2) to greenish blue green (5BG 5/2); silty to very fine sand; massive; slightly weathered (SW); extremely weak to very weak (R0 to R1); calcareous and light gray (N7) from 286.5'-286.8'; below 286.8', silty sand, massive. [Twin Mountain Formation]		573	
288		6.33												572	
289		3.18												571	
290		4.38	56	<u>4.4</u> 5.0	88				1004-54				0.9' picked up in next run	570	
291		4.02												569	
292		3.83											Red sand bed (0.1' thick) at 292.0'.	568	
293		4.17												567	
294		4.68				SW	R0-R1						Reddish sand 294.0' to 294.2'.	5.3/4.4=0.9' extra from last run	566
295		4.22	57	<u>5.0</u> 4.5	100								295.0' to 295.6': very light gray (N9); top is wavy with burrows.	565	
296		3.62											295.6' to 298.5': very fine sand and silty light gray (N7) sandy clasts.	564	
297	NM												563		
298		2.83											562		
299		2.52							1004-55			298.5' to 301.5': very loose sand; very little cementation.	561		
300		2.92	58	<u>5.0</u> 4.5	100								560		
301	NM	2.75											559		


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**ROCK LOG**  
**Boring No. B-1004**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
302													Total depth drilled 301.5'	558
303														557
304														556
305														555
306														554
307														553
308														552
309														551
310														550
311														549
312														548
313														547
314														546
315														545
316														544



Project Name and Job Number TXU Comanche Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-1005</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'07.55611"N / 97°47'43.58808"W		Total Depth 225 feet	
Drilling Contractor and Rig Geotechnology / CME 55		Elevation and Datum 857.018 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 17 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 7	Date Started 11/29/06	
		Borehole Inclination Vertical	Logged by Streig	Date Completed 12/3/06	

Reviewed by / Date J. Wesling 12/5/06

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
0							<b>ARTIFICIAL FILL (Qaf)</b> LEAN CLAY with sand medium stiff to hard, grayish brown (10YR5/2), dry, 15% very fine sand, <5% small angular pale yellow, silty pebbles or clasts (<0.1' diameter), strong reaction to HCl	Upper 0.1-0.2' disturbed soil with large (1") roots	857
1			B-1005 1	6	8				856
2				50/5"	11				855
3	CL								854
4			B-1005 2	8	18				853
5				17	18				852
6				23					851
7	CL		B-1005 3	9	20		LEAN CLAY very stiff to hard, pale yellow (2.5Y7/4), damp, light greenish gray mottles (GLE1,8/5GY), with limestone fragments		850
8				12	18				849
9			B-1005 4	35	15		SILT with limestone fragments hard, pale yellow (2.5Y7/3) dry, <10% very fine sand; breaks into platy peds., strong reaction with HCl		848
10	ML			50/4"	10				847
11									846
12			B-1005 5	7	23		<b>RESIDUAL SOIL (RS)</b> LEAN CLAY stiff, olive yellow (2.5Y6/6), damp, strong reaction to HCl		845
13	CL			8	18				844
14			B-1005 6	13					843
15	CL			50/5"	5				842

Project Name and Job Number TXU Comanche Peak COL 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">SOIL LOG</h2> <h2 style="margin: 0;">Boring No. B-1005</h2>
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Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
15							LEAN CLAY with limestone fragments hard, light yellowish brown (2.5Y6/4), (~15%) poorly sorted, angular, mostly 0.1" with rare 0.5" clasts, strong reaction to HCl; basal contact with Micrite clasts, very angular 1" clasts (fine gravel) <i>(Continued from previous page)</i>		842
16	CL		B-1005 7	50/4"	4/4				841
17							Top of Berock at 17'	Refusal at 17' (bedrock)	840
18									839
19									838
20									837
21									836
22									835
23									834
24									833
25									832
26									831
27									830
28									829
29									828
30									




Undisturbed sample  
SH = Shelby; P = Pitcher; O = other



Driven (2.5 to 3.0 inch) with liners  
MC = Modified California; O = other



Standard Penetration Test (SPT) sampler

Project Name and Job Number TXU Comanche Peak Col 1908		 WLA William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. B-1005</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'07.55611"N / 97°47'43.58808"W		Total Depth 225 feet	
Drilling Contractor and Rig GeoTechnology / CME 55		Elevation and Datum 857.018 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 17 feet	
Casing Size and Depth 4" / 17 feet		Length of Core Barrel and Bit 8.6 feet	No. of Core Boxes 14	Date Started 11/29/06	
		Borehole Inclination Vertical	Logged by A. Streig	Date Completed 12/3/06	

Reviewed by / Date J. Wesling 12/5/06

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
17		3.52										LIMESTONE: wackestone; medium light gray (N6); fine grained; slightly weathered (SW); weak (R2); fine laminae; mudstone interbeds at 19.0'; interbeds <0.3' thick; strong HCl reaction. [Glen Rose Formation]	Refusal at 17.0' into bedrock (Glen Rose Formation)	840
18		3.43	8	$\frac{2.7}{3.0}$	90	SW	R2						Good water return, light brown	839
19		4.68												838
20		4.55												837
21		5.35				SW	R1		1005-8			SHALE: mudstone; calcareous shale; medium light gray (N6); fine grained; slightly weathered (SW); very weak (R1); fine laminae; rip up clasts and fossils in upper 0.3'; strong HCl reaction. [Glen Rose Formation]	Some slough fell into borehole on upper 0.2' of sample	836
22		4.63	9	$\frac{4.8}{5.0}$	96									835
23		3.38				SW	R1							834
24		3.35				SW	R2					SHALE: mudstone; shale; strong laminae; greenish gray (5G 6/1); fine grained; slightly weathered (SW); very weak (R1); calcareous; strong HCl reaction. [Glen Rose Formation]	Below similar to shale above; stronger laminations and color change; sub-unit description noted at 23.4'	833
25		3.07										LIMESTONE: wackestone; very light gray (N9); fine grained; slightly weathered (SW); weak (R2); massive; strong HCl reaction. [Glen Rose Formation]		832
26		3.03				SW	R1					SHALE: mudstone; calcareous shale; greenish gray (5GY 6/1); fine grained; slightly weathered (SW); very weak (R1); small fossils from 26.2' to 27.0'; strong laminae at base; sharp basal contact. [Glen Rose Formation]	Good water return, no color change	831
27		2.47	10	$\frac{4.9}{5.0}$	98									830
28		1.7				SW	R2					LIMESTONE: micrite; sparitic; very light gray (N9); coarse grained crystalline; massive with irregular dark rough sutures; <5% dark minerals, coal/organics (?), these areas do not react with HCl; shell hash at 28.0'; strong reaction to HCl; vugs. [Glen Rose Formation]		829
29		1.33							1005-9					828
30		4.77				SW	R1							827
31		6.37	11	$\frac{5.0}{5.0}$	100	SW	R1					LIMESTONE: wackestone; very light gray (N8); fine grained; slightly weathered (SW); very weak (R1); fine laminations; organic laminations; <15% dark grains at 30.7'; gradual lower contact over 0.1'. [Glen Rose Formation]	Good water return	826

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1005</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
32		5.47										SHALE: mudstone; medium light gray (N6); fine grained; slightly weathered (SW); very weak (R1); fine laminae in upper 2.0'; massive to weakly laminated; shell fragments from 31.0' to 33.0'; shells react strongly to HCl; base of unit does not react; strong laminae at base of unit and slight reaction to HCl from 36.7' to base; higher clay content 35.0' to 37.0'. [Glen Rose Formation]	Driller reports slow progress, possibly clay	825
33		3.75	11	5.0 5.0	100									824
34		3.52				SW	R1							823
35		10.9								1005-10			822	
36		9.12											821	
37		12.52	12	4.9 5.0	98							SHALE: mudstone; interbedded wackestone; light gray (N7); fine grained; slightly weathered (SW); very weak (R1); fine laminae in upper 0.4'; strong reaction to HCl for wackestone interbeds. [Glen Rose Formation]	820	
38		4.9				SW	R1						819	
39		4.83								1005-11		LIMESTONE: wackestone; light gray (N7) fine grained; slightly weathered (SW); some laminae; bioturbation. [Glen Rose Formation]	818	
40		2.17				SW	R2						817	
41		2.17										LIMESTONE: micrite; very light gray (N8); very fine grained; slightly weathered (SW); weak (R2); some laminae; gradational basal contact (0.1'); strong HCl reaction. [Glen Rose Formation]	816	
42		2	13	5.0 5.0	100								815	
43		2.27										LIMESTONE: wackestone; with micrite interbeds 0.2' thick; light gray (N7); slightly weathered (SW); weak to very weak (R2 to R1); fine laminae near top; massive micrite interbeds; bioturbation; strong HCl reaction. [Glen Rose Formation]	814	
44		2.25				SW	R1-R2						813	
45										1005-12			812	
46		NM	14	5.0 5.0	100							Winch cables twisted	811	
47		2.75											810	

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**ROCK LOG**  
**Boring No. B-1005**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
47		2.75				SW	R1-R2							810
48		4.12	14	5.0 5.0	100	SW	R1					SHALE: mudstone; medium gray (N5); fine grained; slightly weathered (SW); very weak (R1); fine laminae <0.25" thick; wackestone interbed at base of unit; otherwise no HCl reaction. [Glen Rose Formation]		809
49		7.07				SW	R2		1005-13			LIMESTONE; wackestone; light gray (N7); fine grained; some laminae; bioturbation; slightly weathered (SW); weak (R2); strong reaction to HCl [Glen Rose Formation]		808
50		6.6				SW	R0-R1					SHALE: mudstone; medium light gray (N6); fine grained; slightly weathered (SW); very weak to extremely weak (R1-R0); interbeds of wackestone <0.5" thick; limestone reacts strongly to HCl; mudstone shows no reaction. [Glen Rose Formation]		807
51		5.18										LIMESTONE: wackestone; with shale interbeds <0.5" thick; very light gray (N8); wackestone beds <0.5" thick; moderately weathered (MW); very weak to weak (R1 to R0); irregular thin shale interbeds; rough along bedding planes; wackestone shows strong HCl reaction; shale shows weak HCl reaction; shells throughout wackestone. [Glen Rose Formation]	Good water return, light grayish brown color	806
52		3.75	15	5.0 5.0	100									805
53		3.75												804
54		3.1												803
55		4.65				MW	R1-R2		1005-14					802
56		5.5												801
57		5.5	16	5.0 5.0	100									800
58		4.13												799
59		4.17							1005-15			SHALE: mudstone; with weak clay interbeds at 59.4'; medium gray (N5); fine grained; moderately weathered (MW); very weak (R1); fine laminae; slight HCl reaction; wavy upper contact. [Glen Rose Formation]		798
60		8.42				MW	R1						Core stuck in outer barrel, pipe removed	797
61		8.52	17	5.0 5.0	100									796
62									1005-16					

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
62		5.75	17	5.0 5.0	100	MW	R1						Silty clay unit swelled in split barrel, jamming inner barrel into outer	795
63		5.75				SW	R2							
64		5.67				SW	R1						Good water return, grayish color	793
65		11.35												792
66		4.37									JT, diffuse			791
67		2.95	18	4.8 5.0	96	SW	R2							790
68		6.7												
69		8.37							1005-17					788
70		3.85				SW	R1						Good water return light gray color	787
71		5.25												786
72		5.25	19	4.8 5.0	96	SW	R2							785
73		10.02												
74		5.67				SW	R2		1005-18				No sample B-1005-18 recorded on log.	783
75		2.4												782
76		3	20	5.0 5.0	100	SW	R2							781
77														

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
77		3.08										LIMESTONE: wackestone; light gray (N7); slightly weathered (SW); weak (R2); fine grained; massive through upper 1.0'; deformed laminae/bedding; bioturbation; burrows; strong HCl reaction; sharp upper contact with interbedded wackestone and shale; massive with frequent bioturbation below 82.0'; some small organic nodules (lignite ?) <0.10" in length, prismatic to rectangular in shape. [Glen Rose Formation]  Medium grain size; <25% grains, 75% matrix.	Good water return, light gray color	780
78		2.5	20	5.0 5.0	100								Problems with split inner barrel, outer barrel, removed hole to retrieve inner	779
79		NM												778
80		NM							1005-19					777
81		1.35												776
82		2.67	21	5.0 5.0	100									775
83		1.67											Length of recovery stretched due to mechanical breaks.	774
84		2.35				SW	R2			1005-20			Adjusted from 4.9/5 recovery to 5/5 for run 21, when run 22 produced missing piece	773
85		4.08												772
86		3.22												771
87		2.2	22	5.0 5.0	100									770
88		2.45												769
89		10.32												768
90		5.53								1005-21				767
91		5.37	23	5.1 5.0	100									766
92														

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**ROCK LOG**  
**Boring No. B-1005**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
92		2				SW	R2					LIMESTONE: wackestone; light gray (N7); with calcareous shale interbeds; shale interbeds 0.5" to 1" thick; shale medium gray (N5); slightly weathered (SW); weak (R2); strong reaction to HCl. [Glen Rose Formation]		765
93		7.5	23	5.1 5.0	100							LIMESTONE: wackestone; light gray (N7); weak (R2); slightly weathered (SW); fine grained, coarsening downward to medium grained; massive with some deformed bedding 1.0 to 5.0" thick; massive at top of unit; bioturbation; lenses filled with lighter, fine grained, secondary material; strong reaction to HCl; gradational basal contact over 3.0". [Glen Rose Formation]		764
94		3.6												763
95		2.67				SW	R2		1005-22					762
96		6.03												761
97														760
98		4	24	5.0 5.0	100								No sample B-1005-23 recorded on log.	759
99		2.18												758
100		2.17							1005-23					757
101		1.47												756
102		1.47												755
103		2.35	25	5.0 5.0	100	SW	R2						No sample B-1005-24 recorded on log.	754
104		2.37												753
105		NM							1005-24					752
106		1.67												751
107		2.62	26	4.9 5.0	98	SW	R2							



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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
107		1.27				SW	R2					LIMESTONE: wackestone; very light gray (N8); fine grained; slightly weathered (SW); weak (R2); massive from 106.4' to 107.5'; disturbed/deformed laminae below 107.5'; irregular bioturbation; strong HCl reaction. [Glen Rose Formation]		750
108		1.25	26	4.9 5.0	98							LIMESTONE: packstone; light gray (N7); medium grained; slightly weathered (SW); weak (R2); deformed bedding/laminae; wackestone interbeds at 109.3', 1.0" to 2.0" thick; common bioturbation filling with coarser, darker gray material. [Glen Rose Formation]		749
109		1.25							1005-25					748
110		1.47				SW	R2							747
111		1.8												746
112		2.67	27	5.0 5.0	100							SHALE: mudstone; calcareous clay; light gray (N7); very fine grained; slightly weathered (SW); very weak (R1); laminated throughout; 1.0" to .25" thick interbed of fine grained wackestone; strong HCl reaction. [Glen Rose Formation]		745
113		2				SW	R2							744
114		2												743
115		2.45				SW	R2		1005-26			LIMESTONE: packstone; light gray (N7); medium grained; slightly weathered (SW); weak (R2); beds 1.0" to 5.0" thick; packstone beds separated by shale laminae <1.0' thick; bioturbation; strong reaction to HCl. [Glen Rose Formation]		742
116		1.9												741
117		3.22	28	5.0 5.0	100	SW	R2					LIMESTONE: wackestone; very light gray (N8); fine grained; slightly weathered (SW); weak (R2); some shells; strong reaction to HCl; sharp basal contact. [Glen Rose Formation]		740
118		1.5										LIMESTONE: packstone; light gray (N7); medium grained; slightly weathered (SW); weak (R2); massive; deformed laminae from 120.0' to base of unit; bioturbation is filled with coarser material; strong HCl reaction. [Glen Rose Formation]		739
119		1.53				SW	R2		1005-27					738
120		1.2												737
121		2.25	29	5.0 5.0	100									736
122						SW	R2					SHALE: mudstone; calcareous shale; light gray (N7); slightly weathered (SW); weak (R2); very fine grained; laminae; thin		

Project Name and Job Number  
 TXU Comanche Peak Col  
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**ROCK LOG**  
**Boring No. B-1005**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
122		2.25										interbed of wackestone bioturbation; strong HCl reaction [Glen Rose Formation]		735
123		1.27	29	5.0 5.0	100							LIMESTONE: packstone; very light gray (N8); fine grained; slightly weathered (SW); weak (R2); massive; few fine laminae. [Glen Rose Formation]		734
124		1.62				SW	R2							733
125		1.18							1005-28					732
126		1.18											Good water return, light gray color	731
127		1.57	30	5.0 5.0	100							SHALE: mudstone; claystone; light gray (N7); fine grained; slightly weathered (SW); weak (R2); fine laminae; few burrows filled with darker and coarser material; very slight reaction to HCl [Glen Rose Formation]		730
128		1.78				SW	R2							729
129		2.4										LIMESTONE: wackestone; light gray (N7); very fine grained from 130.0' to 135.0'; coarsening downward to medium grained at 136.5'; massive; with 1.0" thick zones with laminae below 132.5'; slightly weathered (SW); weak (R2); bioturbation increasing with depth; strong HCl reaction; gradational lower contact. [Glen Rose Formation]		728
130		2.1							1005-29					727
131		1.57												726
132		1.27	31	5.0 5.0	100									725
133		3.13				SW	R2							724
134		2												723
135		3.23							1005-30					722
136		2.5	32	4.8 5.0	96									721
137														

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1005</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
137		2.75										LIMESTONE: wackestone; light gray (N7); very fine grained from 130.0' to 135.0'; coarsening downward to medium grained at 136.5'; massive; with 1.0" thick zones with laminae below 132.5'; slightly weathered (SW); weak (R2); bioturbation increasing with depth; strong HCl reaction; gradational lower contact. [Glen Rose Formation]		720
138		2.75	32	4.8 5.0	96	SW	R2							719
139		4.12							1005-31					718
140		10										SHALE: mudstone; medium dark gray (N4); very fine grained; moderately weathered (MW); very weak (R1); fine laminae; abundant shells; strong HCl reaction; gradational lower contact. [Glen Rose Formation]	Drying and fracturing along bedding, basal contact dipping at 30°	717
141		5.8				SW	R2							716
142		8.33	33	5.0 5.0	100	SW	R1					LIMESTONE: wackestone; very light gray (N8); fine grained; slightly weathered (SW); weak (R2); massive; fractures and possible bioturbation. [Glen Rose Formation]	Good water return	715
143		2.7				SW	R1					SHALE: mudstone; calcareous shale; light gray (N7); fine grained; slightly weathered to moderately weathered (SW to MW)); very weak (R1); fine laminae; very few shell fragments some bioturbation; strong HCl reaction. [Glen Rose Formation]	Iron oxide stains on core	714
144		2.03										LIMESTONE: wackestone; very light gray (N8); with interbedded shales; shale interbeds have a gradational contact with wackestone; 0.1' laminations within shale; slightly weathered (SW); weak (R2); shale interbeds <4.0" thick; interbeds occur between 150.0' and 153.0'; wackestone is mottled very light gray (N8) and light gray (N7); bioturbation at base of unit; strong reaction to HCl. [Glen Rose Formation]		713
145		4.25							1005-32					712
146		4.52				SW-MW	R2							711
147		4.52	34	4.9 5.0	98									710
148		6.88												709
149		3.2												708
150									1005-33					707
151	NM	4.17	35	5.0 5.0	100	SW	R2					LIMESTONE: wackestone; light gray (N7); medium grained; slightly weathered (SW); weak (R2); deformed bedding; wavy and irregular bedding 1.0" to 2.0" thick; laminae in distinct zones; some shell fragments above 155.0'; strong reaction to HCl; interbeds of fine grained wackestone below 152.7', <0.1' thick. [Glen Rose Formation]	Below 150.0', rock sample interval increases to 10'	706
152														

JT, wavy, and irregular, bedding plane, tight wavy, dip 30°

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
152		2.15										LIMESTONE: wackestone; light gray (N7); medium grained; slightly weathered (SW); weak (R2); deformed bedding; wavy and irregular bedding 1.0" to 2.0" thick; laminae in distinct zones; some shell fragments above 155.0'; strong reaction to HCl; interbeds of fine grained wackestone below 152.7', <0.1' thick. [Glen Rose Formation]		705
153		2.7	35	5.0 5.0	100									704
154		NM												703
155									1005-34					702
156		1.62												701
157		1.67												700
158		5.67	36	5.0 5.0	100							Shale interbed 157.6' to 158.1'; slight reaction to HCl; finely laminated. [Glen Rose Formation]		699
159		5.88				SW	R2							698
160		4.2												697
161		3.15												696
162		4.4										Shale interbed 161.3' to 161.6'; finely laminated; shell fragments common; gradational upper and lower contacts (0.1' contact). [Glen Rose Formation]		695
163		2.37	37	5.0 5.0	100							LIMESTONE: wackestone; light gray (N7); medium grained; slightly weathered (SW); weak (R2); deformed bedding; wavy and irregular bedding 1.0" to 2.0" thick; laminae in distinct zones; rip up clasts throughout; strong reaction to HCl. [Glen Rose Formation]		694
164		2.78												693
165		3.7												692
166		NM	38	4.8 5.0	96	SW	R2							691
167		NM												

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
167		2.5										LIMESTONE: micrite; very light gray (N8); very fine grained; slightly weathered (SW); weak (R2); bedding 0.5" to 2.0" thick; massive below 167.0'; shale interbeds .25" thick; strong HCl reaction. [Glen Rose Formation]		690
168		1.25	38	4.8 5.0	96	SW	R2							689
169		3.17												688
170		2.25								1005-36		LIMESTONE: packstone; mottled medium gray (N5) to light gray (N7); medium grained; slightly weathered (SW); weak (R2); bedding laminae up to 2.0" thick; shell fossils; strong HCl reaction; grades to slightly finer grained clasts with depth. [Glen Rose Formation]	Good water return, gray color	687
171		2.33												686
172		1.43	39	5.0 5.0	100									685
173		1.45												684
174		1.5												683
175		1.5				SW	R2							682
176		1.65												681
177		3	40	5.2 5.0	100									680
178		NM												679
179		2.33									JT, 0°, Pl, Sm, Ti, Bedding		Length of recovery stretched due to mechanical breaks.	678
180		1.92								1005-37		LIMESTONE: wackestone; very light gray (N8) to light gray (N7); weak (R2); slightly weathered to moderately weathered (SW to MW); fine grained; bedding 2.0" thick to laminated, wavy and deformed; stylolites; very tight and wavy from 183.8' to 185.0'; burrows filled with dark coarse material; strong HCl reaction. [Glen Rose Formation]		677
181		2	41	5.0 5.0	100	SW-MW	R2							676
182														

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
182		2.05												675
183		2.08	41	5.0 5.0	100						fracture along suture, JT, 0°, slightly rough Op	LIMESTONE: wackestone; very light gray (N8) to light gray (N7); weak (R2); slightly weathered to moderately weathered (SW to MW); fine grained; bedding 2.0" thick to laminated, wavy and deformed; stylolites; very tight and wavy from 183.8' to 185.0'; burrows filled with dark coarse material; strong HCl reaction. [Glen Rose Formation]		674
184		2.17									JT, 0° fracture along suture, wavy, slightly rough, open			673
185		1.78												672
186		1.38												671
187		2	42	5.1 5.0	100									670
188		1.67											Length of recovery stretched due to mechanical breaks.	669
189		3.28				SW-MW	R2							668
190		1.02												667
191		1.03												666
192		1	43	4.9 5.0	98									665
193		5.83											664	
194		1.45											663	
195		1.58										Some iron oxide stains inner barrel at 195.2'	662	
196		1.58	44	4.8 5.0	96								661	
197														


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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
197		3.55										LIMESTONE: wackestone; very light gray (N8) to light gray (N7); weak (R2); slightly weathered to moderately weathered (SW to MW); fine grained; bedding 2.0" thick to laminated, wavy and deformed; stylolites; very tight and wavy from 183.8' to 185.0'; burrows filled with dark coarse material; strong HCl reaction. [Glen Rose Formation]		660
198		3.13	44	4.8 5.0	96									659
199		1.95				SW-MW	R2			1005-39				658
200		1.75												657
201		7.9												656
202		NM	45	4.9 5.0	98	MW	R2					SHALE: mudstone; calcareous; medium gray (N5); very fine grained; moderately weathered (MW); weak (R2); fine laminae; trace shells throughout (<5%); wavy contacts; slight reaction to HCl. [Glen Rose Formation]		655
203		6.53												654
204		6.8				MW	R2					LIMESTONE: wackestone; very light gray (N8); weak (R2); moderately weathered (MW); fine grained; 7% medium grained; bedding <1.0" thick to laminated; bioturbation filled with slightly darker coarser material. [Glen Rose Formation]		653
205		4.67												652
206		3.2										LIMESTONE: wackestone; very light gray (N8); with calcareous shale interbeds fine grained; moderately weathered (MW); shale beds 3.0" to 5.0" thick; shale is finely laminated; shale is medium light gray (N6); moderately weathered (MW); weak (R2); strong HCl reaction. [Glen Rose Formation]		651
207		6.93	46	5.0 5.0	100	MW	R2							650
208		4.22												649
209		3.25												648
210		3.58				MW	R2			1005-40		SANDSTONE; greenish gray (5GY 6/1); very fine grained; well sorted; subrounded; subdiscoidal; massive; moderately weathered (MW); no HCl reaction; poorly consolidated. [Glen Rose Formation]	Losing water; polymer added to remove inner barrel and keep core intact	647
211		6.73	47	3.5 4.0	87.5	MW	R2				Core lost, washed out			646
212													Core lost from 210.0' to 210.5' within sandstone	

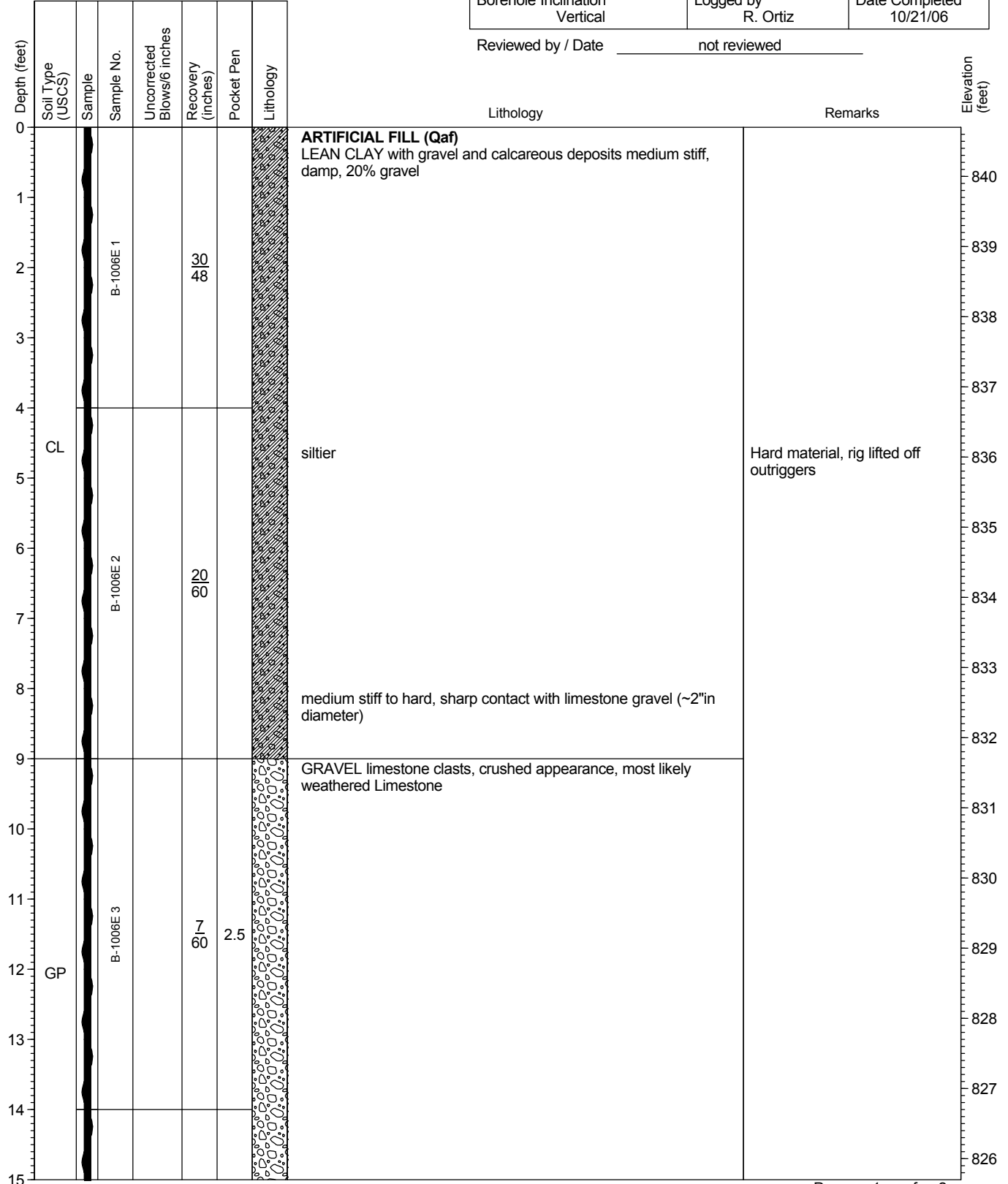
Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1005</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
212		6.22												645
213		47		3.5 4.0	87.5								Inner barrel stuck outer barrel, removed up to 180'	644
214		5.5				MW	R2							643
215		4	48	0.0 1.0	0						Core lost, washed out		Core lost 214.0' to 215.0'; core washed out; poorly consolidated sandstone	642
216		3.22				MW	R1							641
217		4.93												640
218		4.03	49	4.7 5.0	94	SW	R2							639
219		5.5												638
220		2.87												637
221		3.55												636
222		2.4												635
223		3.42	50	5.0 5.0	100									634
224		6												633
225		3.5											Total depth drilled 225'.	632
226														631
227														



Project Name and Job Number TXU Comanche Peak COI 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-1006E</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'08.79831"N / 97°47'43.02538"W		Total Depth 75.4 feet	
Drilling Contractor and Rig TEXPLOR / CME 55		Elevation and Datum 840.7 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 20 feet	
Sampling Method Continuous Core		Sample Driving Hammer/Drop NA / NA	No. of Samples 6	Date Started 10/21/06	
		Borehole Inclination Vertical	Logged by R. Ortiz	Date Completed 10/21/06	

Reviewed by / Date \_\_\_\_\_ not reviewed \_\_\_\_\_



Project Name and Job Number TXU Comanche Peak COI 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">SOIL LOG</h2> <h2 style="margin: 0;">Boring No. B-1006E</h2>
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Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
15							GRAVEL limestone clasts, crushed appearance, most likely weathered Limestone <i>(Continued from previous page)</i>		825
16			B-1006E 4		80				824
17									823
18									822
19	GP						hard, light gray (2.5Y7/1), 100% gravel ~1" in diameter		821
20								Bedrock at 20'	820
21			B-1006E 5		10/54				819
22									818
23									817
24							Drilling continued to 29', no sample collected below 23.5'. Plug installed in auger in an unsuccessful attempt to break through a boulder. Cuttings here consisted of light gray limestone chips.		816
25									815
26									814
27									813
28									812
29									811
30									811




Undisturbed sample  
 SH = Shelby; P = Pitcher; O = other



Driven (2.5 to 3.0 inch) with liners  
 MC = Modified California; O = other




Standard Penetration Test (SPT) sampler

Project Name and Job Number TXU Comanche Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-1006</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'08.79831"N / 97°47'43.02538"W		Total Depth 225 feet	
Drilling Contractor and Rig Palmerston and Parish / CME 55		Elevation and Datum 847.721 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 7.2 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 3	Date Started 12/3/06	
		Borehole Inclination Vertical	Logged by MSZ	Date Completed 12/5/06	

Reviewed by / Date \_\_\_\_\_ J. Wesling 12/6/06

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
0							<b>RESIDUAL SOIL (RS)</b> LEAN CLAY with sand very stiff to hard, light brownish gray (10YR6/2), dry, about 10% fine to coarse limestone fragments		847
1	CL		B-1006 1	6	10				846
2				9	18				845
3				16					845
4			B-1006 2	50/6"	11		LIMESTONE FRAGMENTS with sand very dense, white (8/1 2.5Y), dry, about 20% fine sand		844
5	GM			50/4"	11				843
6									842
7			B-1006 3	24	10		Grades to sand with limestone fragments, (~20%) very dense, pale yellow (8/4 2.5Y), dry,		841
7.25				50/3"			LIMESTONE split spoon refusal at 7.25'	Bedrock at 7.25'	840
8									839
9									838
10									837
11									836
12									835
13									834
14									833
15									833

Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG Boring No. B-1006</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'08.79831"N / 97°47'43.02538"W		Total Depth 225 feet	
Drilling Contractor and Rig Palmerton and Parrish / CME 55		Elevation and Datum 847.721 feet NAVD88	Ground Water Depth 62.1	Depth to Bedrock 7.2 feet	
Casing Size and Depth 4" / 7.4 feet		Length of Core Barrel and Bit 8.6 feet	No. of Core Boxes 15	Date Started 12/3/06	
		Borehole Inclination Vertical	Logged by M. Zellman	Date Completed 12/5/06	

Reviewed by / Date J. Wesling 12/6/06

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
8.00		3.85				SW	R2						Begin HQ wire line	840
8.73		3.73				HW	R1							839
10.75		2.02	1	4.6 5.0	92	MW	R0		1006-4					838
11.00		1.83												837
12.33		2.33				SW	R1							836
12.66						HW	R0							836
13.00		7.55												835
13.62		5.62				SW	R1							834
15.42		2.8	2	4.9 5.0	98				1006-5					833
16.25		2.83				SW	R0							832
17.17		2.62				SW	R2							831
18.00		2.83												830
19.33		3.33									JT; PL; Ro			829
20.00		3.23	3	5.0 5.0	86	SW	R2				JT; PL; Ro			828
21.00		3.33							1006-6					827
22.00		4.17									JT; PL; Si			826

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1006</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
23		4.83				SW	R2					LIMESTONE: wackestone; medium light gray (N6); slightly weathered (SW); weak (R2); visible old bedding; slight "pockety" face. [Glen Rose Formation]		825
24		3.5												824
25		2.38	4	5.0 5.0	100	SW	R2		1006-7			SHALE: medium light gray (N6); slightly weathered (SW); weak (R2); very fine grained; few burrows; planar lower contact. [Glen Rose Formation]		823
26		2.05												822
27		1.5				MW	R0					SHALE: claystone; dark greenish gray (5GY 4/1); moderately weathered (MW); extremely weak (R0); massive; lower contact gradational. [Glen Rose Formation]		821
28		3.52												820
29		3.02				SW	R2		1006-8			SHALE: mudstone, calcareous; medium light gray (N6); slightly weathered (SW); weak (R2); very fine grained; interbedded with lower limestone unit with thin close wavy beds. [Glen Rose Formation]		819
30		4.02	5	5.0 5.0	100	MW	R1					LIMESTONE: wackestone; medium light gray (N6); moderately weathered (MW); very weak (R1); crushed lower contact. [Glen Rose Formation]		818
31		4.25												817
32		3.83										LIMESTONE: micrite; very light gray (N8); slightly weathered (SW); weak (R2); very fine grained; sample has split vertically but shows no signs of weathering along fracture. [Glen Rose Formation]		816
33		3.75				SW	R2							815
34		4.02												814
35		2	6	5.1 5.0	100				1006-9			LIMESTONE: wackestone; very light gray (N8); slightly weathered (SW); weak (R2); fine grained; small fossils; lower contact is abrupt and wavy. [Glen Rose Formation] Burrows and wavy beds from 35.0' to 36.1'.		813
36		2				SW	R2						Length of recovery stretched due to mechanical breaks.	812
37		5												811

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1006</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
38		4.5										LIMESTONE: wackestone; very light gray (N8); slightly weathered (SW); weak (R2); fine grained; small fossils; lower contact is abrupt and wavy. [Glen Rose Formation]		810
39		4.02				SW	R2					Weathered shale bed.		809
40		4.25	7	4.5 5.0	90				1006-10					808
41		3.67				SW	R1					SHALE: medium dark gray (N4); slightly weathered (SW); very weak (R1); lower contact planar; limestone bedding 0.1' to 0.2' thick from 41.2' to 41.6'; wavy and few small lignite. [Glen Rose Formation]		807
42		4												806
43		3.5										LIMESTONE: micrite; very light gray (N8); slightly weathered (SW); very weak (R1); fine grains; deformed wavy beds of very thin shale. [Glen Rose Formation]		805
44		3.75				SW	R1							804
45		4.02	8	4.4 5.0	88				1006-11					803
46		2.15										LIMESTONE: wackestone; very light gray (N8); slightly weathered (SW); weak (R2); very fine grained with small fossils and burrows; interbedded with many very thin, very close shale beds; some contain rip up clasts of micrite; increase in size downward. [Glen Rose Formation]		802
47		1.83				SW	R2							801
48		2.83												800
49		3.38				SW	R1-R2					LIMESTONE: wackestone; light gray to medium gray (N7 to N5); slightly weathered (SW); very weak to weak (R1 to R2); many very close, very thin, very weak (R1), wavy shale beds; shells are common; many burrows and rip ups; abrupt lower contact. [Glen Rose Formation]	Sample stuck in core barrel; rods pulled; AJ rod used to bring sample out of barrel	799
50		4.5	9	4.6 5.0	92									798
51		5.02							1006-12			SHALE: medium dark gray (N4); slightly weathered (SW); very weak (R1); massive abrupt upper contact; no HCl reaction;. [Glen Rose Formation]		797
52		4.5				SW	R1							796

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1006</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
53		9.02				SW	R1					SHALE: medium dark gray (N4); slightly weathered (SW); very weak (R1); massive abrupt upper contact; no HCl reaction;. [Glen Rose Formation]	12/3-12/4	795
54		5.38				SW	R2					LIMESTONE: micrite; very light gray (N8); slightly weathered (SW); weak (R2); fine grained contains few fossils and burrows; planar contact. [Glen Rose Formation]		794
55		10.67	10	4.9 5.0	98							SHALE: medium dark gray (N4); slightly weathered (SW); very weak (R1); many close, very thinly interbedded shale/micrite couples; fossils; interbedded limestone beds are planar; shale not reactive to HCl; planar abrupt lower contact. [Glen Rose Formation]		793
56		7.67							1006-13					792
57		8.32				SW	R1							791
58		6.17												790
59		5.92				SW	R2					LIMESTONE: micrite; slightly weathered (SW); weak (R2); very fine grained with few fossils; small burrows; interbedded with moderately close very thin shale. [Glen Rose Formation]		789
60		6.07	11	4.0 5.0	80							Increase in occurrence of wavy shale interbeds up to 1.0" thick.	No sample 1006-14 recorded.	788
61		4.83										SHALE: dark gray (N3); slightly weathered (SW); very weak (R1); very close, very thin beds; slight HCl reaction; some rare limestone fragments; abrupt lower contact. [Glen Rose Formation]	4.0' run to pick up remainder of last short return	787
62		6.17				SW	R1							786
63		7.33												785
64		5.83	12	5.0 4.0	100	SW	R2					LIMESTONE: wackestone; very light gray (N8); slightly weathered (SW); weak (R2); fine grains and shells; interbedded with wavy, close, very thin beds of shale; small burrows. [Glen Rose Formation]	1.0' run to get back on track	784
65		5.17				SW	R1					SHALE: dark greenish gray (5GY 4/1); many mechanical breaks along bedding; slightly weathered (SW); very weak (R1); abrupt wavy upper contact; lower 0.2' contain few limestone rip up clasts. [Glen Rose Formation]		783
66		2.8							1006-15					782
67		3.5	13	1.1 1.0	100	SW	R2					LIMESTONE: wackestone; very light gray (N8); slightly weathered (SW); weak (R2); fine grains; massive. [Glen Rose Formation]		781

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**ROCK LOG**  
**Boring No. B-1006**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
68		3.67												780
69		3.62												779
70		3.72	14	5.0 5.0	100				1006-16				No sample 1006-16 recorded.	778
71		4.17												777
72		5.02												776
73		3.78												775
74		3.72												774
75		NM	15	5.0 5.0	100	SW	R2							773
76		4.67							1006-17					772
77		5.17												771
78		5.43												770
79		4.5												769
80		4.73	16	4.9 5.0	96				1006-18					768
81		4.97												767
82		5.1												766



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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
83		2.5												765
84		3.02							1006-20			Limestone grains, fossils increase to 1.0 mm; very few to no shale interbeds.	Sample 20 out of sequence	764
85		2.83	17	5.0 5.0	100									763
86		3.02				SW	R2							762
87		2.62							1006-19			Shale interbed with limestone, burrows.		761
88		3.67												760
89		2.33												759
90		2.35	18	5.2 5.0	100									758
91		2.62				SW	R2					LIMESTONE: wackestone; very light gray (N8) to light gray (N7); slightly weathered (SW); weak (R2); very fine to fine grained; some sediment deformation and wavy bedding; moderately close, very thin beds of shale. [Glen Rose Formation]	No sample 1006-20 recorded. Length of recovery stretched due to mechanical breaks.	757
92		2.68												756
93		3.72				SW	R2					LIMESTONE: packstone; light gray (N7); slightly weathered (SW); weak (R2); fine grain; very close; very thin shale bedding. [Glen Rose Formation]		755
94		3.35										LIMESTONE: wackestone; light gray (N7); weak (R2); slightly weathered to moderately weathered (SW to MW). [Glen Rose Formation]		754
95		3.62	19	4.8 5.0	96	SW-MW	R2		1006-21					753
96		3.73										Slightly more weathered zone from 95.6' to 96.8'; slightly darker; vuggy.		752
97		3.85										Darkens to medium gray; slightly more		751

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
98		2.52										weathered and more visible bedding from 96.8' to 98.0'. LIMESTONE: wackestone; light gray (N7); weak (R2); slightly weathered to moderately weathered (SW to MW). [Glen Rose Formation]		750
99		2.5												749
100		1.83	20	5.0 5.0	100	SW-MW	R2		1006-22		Vuggy, moderately weathered zone from 99.6' to 100.0'.		748	
101		1.75									Vuggy, moderately weathered zone from 100.4' to 100.7'.		747	
102		3									Vuggy, moderately weathered zone from 101.3' to 101.4'		746	
103		2.75											745	
104		2.83				SW	R2				LIMESTONE: micrite; very light gray (N8); slightly weathered (SW); weak (R2); very fine grained; massive; violent HCl reaction. [Glen Rose Formation]		744	
105		NM	21	5.0 5.0	100				1006-23		Darkens to light gray (N7); strong reaction to HCl.		743	
106		4.5									Start of very thin, very close shale and limestone laminations.		742	
107		5									LIMESTONE: wackestone; very light gray (N8); slightly weathered (SW); weak (R2); fine grains; mostly massive with occasional shale and limestone laminations; violent HCl reaction; fine grain-sized fossils; few rare burrows. [Glen Rose Formation]		741	
108		4.13							1006-24				740	
109		3.88				SW	R2						739	
110		4.32	22	5.0 5.0	100								738	
111		5.35											737	
112		4.83									111.0' to 111.6': Increased weathering; slightly vuggy; strong HCl reaction.		736	

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
113		3.72				SW	R2					LIMESTONE: micrite; light gray to very light gray (N7 to N8); slightly weathered (SW), weak (R2); many very close, very thin beds with some deformation; burrows throughout; upper contact is totally deformed by overlying material. [Glen Rose Formation]		735
114		3.32				SW	R2					LIMESTONE: wackestone; very light gray (N8); slightly weathered (SW); weak (R2); fine grains; massive, grading to very close, very thin bedding; burrows at 114.0' filled with wackestone; upper contact planar; lower contact gradational. [Glen Rose Formation]		734
115		3.55	23	5.0 5.0	100					1006-25		LIMESTONE: packstone; very light gray (N8); with medium bluish gray fine clasts/fossils; slightly weathered (SW); weak (R2); massive; few burrows filled with micrite; lower contact is clear and deformed, packstone deforms lower micrite. [Glen Rose Formation] Increase in size and occurrence of fossils, burrows, below 117.2'.		733
116		3.8										LIMESTONE: micrite; very light gray (N8); slightly weathered (SW); weak (R2); burrows filled with packstone. [Glen Rose Formation]		732
117		3.58				SW	R2					SHALE: calcareous; light olive gray (5Y 6/1); slightly weathered (SW); weak (R2); massive; appears "blotchy" when darker grayish zones are scratched, revealing olive gray coloring; slight reaction to HCl. [Glen Rose Formation]		731
118		4.5										LIMESTONE: wackestone; light gray (N7); slightly weathered (SW); weak (R2); fine grained; massive; planar/abrupt upper contact. [Glen Rose Formation]		730
119		5.17				SW	R2					LIMESTONE: packstone; medium gray (N5); slightly weathered (SW); weak (R2); white fossils and clasts; massive with burrows. [Glen Rose Formation]		729
120		3.83	24	5.0 5.0	100					1006-26		LIMESTONE: wackestone; light gray (N7); slightly weathered (SW); weak (R2); very fine to fine grains; massive; burrows. [Glen Rose Formation]		728
121		4				SW	R2					LIMESTONE: wackestone; light gray (N7); slightly weathered (SW); weak (R2); very fine to fine grains; massive; burrows. [Glen Rose Formation]		727
122		5.18				SW	R2					LIMESTONE: wackestone; light gray (N7); slightly weathered (SW); weak (R2); very fine to fine grains; massive; burrows. [Glen Rose Formation]		726
123		3.02										LIMESTONE: wackestone; light gray (N7); slightly weathered (SW); weak (R2); very fine to fine grains; massive; burrows. [Glen Rose Formation]		725
124		2.73				SW	R2					LIMESTONE: wackestone; light gray (N7); slightly weathered (SW); weak (R2); very fine to fine grains; massive; burrows. [Glen Rose Formation]		724
125		4.02	25	5.0 5.0	100					1006-27		LIMESTONE: wackestone; light gray (N7); slightly weathered (SW); weak (R2); very fine to fine grains; massive; burrows. [Glen Rose Formation]		723
126		10.12				SW	R2					LIMESTONE: wackestone; light gray (N7); slightly weathered (SW); weak (R2); very fine to fine grains; massive; burrows. [Glen Rose Formation]		722
127		4.97										LIMESTONE: wackestone; light gray (N7); slightly weathered (SW); weak (R2); very fine to fine grains; massive; burrows. [Glen Rose Formation]		721

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
128		3.32				SW	R2					LIMESTONE: micrite; very light gray (N8); slightly weathered (SW); weak (R2); very fine grained; very deformed upper boundary; rip up clasts; burrows filled with upper material; subplanar wavy beds thinly spaced; secondary fill in burrows and between rip ups of wackestone and shale. [Glen Rose Formation]		720
129		3.35												719
130		4.25	26	<u>4.2</u> 5.0	84	SW	R2			1006-28		LIMESTONE: wackestone; very light gray to medium light gray (N8 to N6); slightly weathered (SW); weak (R2); fine grains and many fine white fossils; very many burrows filled with micrite, mostly elliptical (boudinage?); matrix is dark, burrow fill is lighter; violent HCl reaction. [Glen Rose Formation]		718
131		6.83												717
132		14.88				HW	R0					SHALE: grayish blue (5PB 5/2); highly weathered (HW); extremely weak (R0). [Glen Rose Formation]		716
133		5.37	27	<u>1.0</u> 1.0	100	SW	R2					LIMESTONE: wackestone; with interbedded shales; slightly weathered (SW); weak (R2); soft sediment deformation. [Glen Rose Formation]		715
134		3								1006-29				714
135		2.92				SW	R1					SHALE: calcareous; pale blue (5B 6/2); slightly weathered (SW); very weak (R1); massive; slight reaction to HCl. [Glen Rose Formation]		713
136		4.02	28	<u>4.0</u> 4.0	100							LIMESTONE: wackestone; very light gray (N8); slightly weathered (SW); weak (R2); fine grained; many fossils (white, < 3.0 mm); burrows; mostly massive; bedding is very thin and moderately close. [Glen Rose Formation]		712
137		4.35				SW	R2							711
138		7.25	29	<u>0.9</u> 1.0	90					1006-30		Weathered and interbedded with shale from 137.7' to 138.0'. LIMESTONE: packstone; medium light gray (N6); slightly weathered (SW); weak (R2); fine grained; subplanar to wavy, very close, very thin bedding; some shale beds; many burrows and soft sediment deformation; gradational lower contact. [Glen Rose Formation]	12/4-12/5	710
139		12.5												709
140		4.32												708
141		5.2	30	<u>4.0</u> 4.0	100	SW	R2					140.1' to 141.0': Higher shale content; thicker shale beds; more clay rich; large burrows ~1.0" thick.		707
142		4.83												706

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
143		5.02										LIMESTONE: wackestone; light gray to medium light gray (N7 to N6); fine grained; slightly weathered to moderately weathered (SW to MW); weak (R2). [Glen Rose Formation] 142.7' to 144.0': Increased weathering; burrows. 0.1' clay bed. 144.0' to 146.0': Section has 0.5' sections of increased weathering, occurring in sections where shale content is higher; burrows filled with wackestone; slightly weathered (SW) limestone rip ups.		705
144		3.92												704
145		4.17	31	5.0 5.0	100					1006-31				703
146		3.78				SW-MW								702
147		4.67					R2							701
148		4.82												700
149		4.62										148.5' to 149.0': Laminated shale beds; (flattened?) burrows.	699	
150		4.5	32	5.0 5.0	100								698	
151		4.67				SW	R2			1006-32		LIMESTONE: wackestone; medium light gray (N6); slightly weathered (SW); weak (R2); very fine to fine grains; grains/clasts are very dark gray to black (N2 to N1) and very fine to fine; few fossils; rare to no burrows; few lignite stringers. [Glen Rose Formation]	697	
152		2.35											696	
153		4.55				SW	R1					LIMESTONE: wackestone; light gray (N7) to medium dark gray (N4); slightly weathered (SW); very weak (R1); very close thin shale and limestone beds. [Glen Rose Formation]	695	
154		4.02										LIMESTONE: wackestone; light gray (N7); slightly weathered (SW); weak (R2); fine grains; white clasts and fossils; small burrows present; some bedding deformation; gradational lower contact. [Glen Rose Formation]	694	
155		4.83	33	5.0 5.0	100	SW	R2			1006-33			693	
156		5.02										Some bedding deformation.	692	
157		5.05											691	

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
158		4.15										LIMESTONE: wackestone; light gray (N7); slightly weathered (SW); weak (R2); fine grains; white clasts and fossils; small burrows present; some bedding deformation; gradational lower contact. [Glen Rose Formation] 158.0' to 160.6': Rare to no shale.		690
159		4.17												689
160		3.78	34	5.0	100	SW	R2							688
161		3.83											Increase in shale content; color change to medium light gray (N7); bedding deformation in limestone; fossils.	687
162		4.32												686
163		5.17											LIMESTONE: packstone, with interbedded shales; light gray (N7); slightly weathered (SW); weak to extremely weak (R2 to R0); fine to medium grains; bedding is moderately close and very thin; many fossils present; very rare pyrite; many small micrite/wackestone filled burrows; violent HCl reaction. [Glen Rose Formation]	very rare pyrite
164		2.83												684
165		2.57	35	5.0	100									683
166		2.73												682
167		2.85				SW	R2-R0			1006-34				681
168		2.5												680
169		2.4											679	
170		2.68	36	5.0	100							Fine to coarse grains; moderately close shale interbeds, extremely weak to very weak (R0 to R1); increase in fossil occurrence and size; fossils are white.	678	
171		2.63												677
172		2.43				SW	R2							676

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
173		4.17										LIMESTONE: wackestone; very light gray (N8); slightly weathered (SW); weak (R2); fine to medium grains. [Glen Rose Formation] 172.2' to 174.3': Very thin, subplanar to wavy bedding; many burrows.  174.3' to 178.0': Massive.		675
174		3.52												674
175		3	37	5.0 5.0	100									673
176		3.02												672
177	NM													671
178	NM													670
179	NM													669
180	NM		38	5.0 5.0	100	SW	R2			1006-35				668
181		2.18												667
182		2.25												666
183		1.83											665	
184		1.97											664	
185		1.93	39	5.0 5.0	100								663	
186		2.17											662	
187		2.02											661	

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
188		1.8										LIMESTONE: wackestone; very light gray (N8); slightly weathered (SW); weak (R2); fine to medium grains. [Glen Rose Formation]		660
189		1.85												659
190		1.73	40	5.0 5.0	100	SW	R2							658
191		1.83							1006-36					657
192		1.88												656
193		1.72										SHALE: medium dark gray (N4); slightly weathered (SW); very weak (R1); upper 0.2' contain laminated beds; lower contact is clear and wavy; many bedding breaks. [Glen Rose Formation]		655
194		1.87				SW	R1							654
195		2.05	41	4.6 5.0	92							LIMESTONE: wackestone; very light gray (N8); slightly weathered (SW); weak (R2); very fine grained; few shells. [Glen Rose Formation]		653
196		1.68												652
197		1.92				SW	R2							651
198		2.17												650
199		2.83												649
200		3.93	42	4.9 5.0	98	SW	R1					SHALE: calcareous; medium dark gray (N4); slightly weathered (SW); very weak (R1); many breaks along bedding planes. [Glen Rose Formation]		648
201		2.93				SW	R2		1006-37			LIMESTONE: micrite; very light gray (N8); slightly weathered (SW); weak (R2); thin bedding laminations. [Glen Rose Formation]	wackestone at bottom 0.2'	647
202		3				SW	R2							646




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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
203		3.33				SW	R2					SHALE: medium dark gray (N4); slightly weathered (SW); weak (R2); abrupt wavy upper contact; abrupt planar lower contact. [Glen Rose Formation]		645
204		3.55											micrite for 0.2'	644
205		3.85	43	4.3 5.0	86	SW	R2					LIMESTONE: packstone; light gray (N7); slightly weathered (SW); weak (R2); fine to medium grains; mostly massive; rare wavy beds; clear, abrupt upper and lower contacts. [Glen Rose Formation]		643
206		4				SW	R0					SANDSTONE; olive gray (5Y 4/1); slightly weathered (SW); extremely weak (R0); silty and fine grains; massive. [Glen Rose Formation]	clear upper	642
207		3.93				SW	R1					SHALE: medium dark gray (N4); slightly weathered (SW); very weak (R1); abrupt planar upper contact; interbedded shale and micrite at gradational lower contact. [Glen Rose Formation]		641
208		3.17				SW	R1							640
209		3.13				SW	R0-R1					LIMESTONE: micrite; light gray (N7); slightly weathered (SW); extremely weak to very weak (R0 to R1). interbedded with shale; very thin, very close laminations. [Glen Rose Formation]	shale	639
210		3.35	44	5.0 5.0	100					1006-38		LIMESTONE: wackestone; very light gray (N8); slightly weathered (SW); weak to very weak (R2 to R1); fine to medium grains; bed deformation and interbedded shales. [Glen Rose Formation]	shale	638
211		3.73				SW	R2-R1							637
212		3.98				SW	R2					SHALE: siltstone; calcareous; medium light gray (N6); slightly weathered (SW); weak (R2); slight HCl reaction; lower contact deforming lower unit. [Glen Rose Formation]		636
213		3				SW	R2					LIMESTONE: micrite; light gray (N7); slightly weathered (SW); weak (R2); small burrows. [Glen Rose Formation]		635
214		3.02										LIMESTONE: wackestone; slightly weathered (SW); weak (R2); fine to coarse white grains and fossils; micrite interbeds; moderately close, thin to medium beds; major bed deformation at 214.8'. [Glen Rose Formation]	1.0"shale	634
215		3.18	45	5.1 5.0	100								shale	633
216		4.02				SW	R2						Length of recovery stretched due to mechanical breaks.	632
217		3.3												631

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
218		4.03				SW	R2							630
219		3.78				SW	R1					SHALE: medium light gray (N6); slightly weathered (SW); very weak (R1) clear planar upper and lower contacts. [Glen Rose Formation]		629
220		3.5	46	5.0 5.0	100							LIMESTONE: wackestone; very light gray (N8); slightly weathered (SW); weak (R2); fine to coarse grains; many fossils; many wavy thin beds of shale and limestone rip-up clasts; many burrows. [Glen Rose Formation]		628
221		3.23				SW	R2		1006-39					627
222		3.67												626
223		4.32												625
224		4.5	47	2.9 2.8	100	SW	R2					SHALE: medium gray to grayish blue green (N5 to 5BG 5/2); slightly weathered (SW); weak (R2); few limestone rip up clasts; large burrows with sand fill. [Glen Rose Formation]		624
225		4.58				SW	R2					LIMESTONE: micrite; slightly weathered (SW); weak (R2); very fine to fine grained; top is deformed by overlying shale. [Glen Rose Formation]	end of hole	623
												BOTTOM OF HOLE AT 225.0'		622
226														622
227														621
228														620
229														619
230														618
231														617
232														616

Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. B-1006E</b>	
Type and Diameter of Boring NQ / 3"		Boring Location 32°18'08.79831"N / 97°47'43.02538"W		Total Depth 75.4 feet	
Drilling Contractor and Rig TEXPLOR / CME 75		Elevation and Datum 840.7 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 20 feet	
Casing Size and Depth 4" / 29 feet		Length of Core Barrel and Bit 8.6 feet	No. of Core Boxes 3	Date Started 10/21/06	
		Borehole Inclination Vertical	Logged by R. Ortiz	Date Completed 10/21/06	

Reviewed by / Date \_\_\_\_\_ not reviewed \_\_\_\_\_

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)			
29		1.75	1	4.5	89							LIMESTONE, micrite, light grey to greenish grey, fine grained, slightly weathered, weak, strong effervescence, some bioturbation fossiliferous, glen rose fm, 32.4-33.6 mudstone/shale, greenish grey, very fine grained,	end of core drilling, switch to NQ rock core	811			
30		0.75		1.4											810		
31		2.55	2	4.8 5.0	77									809			
32		1.7													slow drilling	808	
33		3.03				3	4.7 5.0	94								2000psi, light grey water return	807
34		3.82															
35		1.8	4	4.4 5.0	88	SW								805			
36		1.07							R2						804		
37		2.05														803	
38		1.33														802	
39		0.9	4	4.4 5.0	88									801			
40		1.5													800		
41		0.87														799	
42		1.87	4	4.4 5.0	88									798			
43		6.17														797	

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-1006E**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
44		6.17	4	4.4 5.0	88		R2							796
45		8.55												795
46		2.13	5	5.0 5.0	100		SW					MUDSTONE/SHALE, greenish grey, very fine grained, slightly weathered, very weak to weak, weak effervescence, interbedded with limestone, micrite, white to light grey, fine grained, SW, weak, strong effervescence, 50.1-52.8 micrite, light grey with thin interbeds of shale, slightly weathered, weak, fossiliferous, strong effervescence, bioturbated, 52.8-55.3 micrite 56.3 shale, 57.4-58.25 mudstone, 58.25-60.1 micrite	794	
47		4.95											793	
48		3.25											792	
49		4.67											791	
50		4.47											790	
51		1.55											789	
52		1.2											788	
53		4.72	6	5.1 5.0	100	R1-R2							787	
54		4.33	7	2.9 2.0	57								run 7 2' due to slow drilling and no progress, bit may be packed off	786
55		5.83												785
56		1.23												784
57		4.5	8	5.4 3.0	100								change bits	783
58		1.63												782
59		1.95												

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-1006E**


Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
59		1.95	8	5.4 3.0	100								new bit may be too aggressive, it has broken up the limestone badly	781
60		2.03												780
61		1.12	9	5.4 5.0	100							LIMESTONE, micrite, white to light grey, slightly weathered, weak, fine grained, fossiliferous, strong effervesence, bioturbated interbedded with very thin to thin very weak mudstone/shale layers, adds to lower rock strength	100% water return	779
62		0.87											778	
63		0.77	10	4.3 5.0	86								100% water return	777
64		0.75												776
65		1.17	11	4.4 5.0	87									775
66		1												774
67		1.15	11	4.4 5.0	87									773
68		1.32												772
69		1.82	11	4.4 5.0	87									771
70		2.55												770
71		1.43	11	4.4 5.0	87								LIMESTONE, micrite, interceded with very thin to thin beds of mudstone, white to light greenish grey, fine to very fine grained, fossiliferous, shell fragments, moderate to strong effervesence, bioturbated.	769
72		1.98												768
73		2.3	11	4.4 5.0	87									767
74		2.07												

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908




**ROCK LOG**  
**Boring No. B-1006E**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
74		2.07	11	4.4 5.0	87	SW	R1-R2					LIMESTONE, micrite, interceded with very thin to thin beds of mudstone, white to light greenish grey, fine to very fine grained, fossiliferous, shell fragments, moderate to strong effervesence, bioturbated.		766
75		2.17												765
76													TD, bottom of hole	765
77														764
78														763
79														762
80														761
81														760
82														759
83														758
84														757
85														756
86														755
87														754
88														753
89														752

Project Name and Job Number TXU Comanche Peak COL 1908		 WLA William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-1007</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'08.94015"N / 97°47'42.02591"W		Total Depth 226.7 feet	
Drilling Contractor and Rig Palmerston and Parish / CME 55		Elevation and Datum 843.623 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 11.5 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 5	Date Started 12/12/06	
		Borehole Inclination Vertical	Logged by S. Dee	Date Completed 12/12/06	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 1/15/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0										843
1			B-1007 1	19				<b>RESIDUAL SOIL (RS)</b> LEAN CLAY with limestone fragments stiff to very stiff, light redish brown (5YR6/4), damp, strong reaction to HCl		842
2				28	10/18					841
3				13				medium stiff to stiff, very pale brown (10YR8/3), damp, <15% gravel		840
4			B-1007 2	7						839
5				8	10/18					838
6	CL			13						837
7			B-1007 3	4				medium stiff, light yellowish brown (10YR6/4), damp, <10% gravel, limestone fragments <0.5" dia.		836
8				4	11/18	4				835
9				4						834
10			B-1007 4	3						833
11				7	18/18	2				832
12			B-1007 5	50/5"	6/5	2.5		Top of Bedrock at 11.5'		831
13										830
14										829
15										828

Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG Boring No. B-1007</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'08.94015"N / 97°47'42.02591"W		Total Depth 226.7 feet	
Drilling Contractor and Rig Palmerston and Parrish / CME 55		Elevation and Datum 843.623 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 11.5 feet	
Casing Size and Depth 4" / 11.5 feet		Length of Core Barrel and Bit 8.6 feet	No. of Core Boxes 15	Date Started 12/12/06	
		Borehole Inclination Vertical	Logged by S. Dee	Date Completed 12/15/06	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 1/15/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
12			1	5.0 0.8	100							LIMESTONE: sparite; very light gray (N8); massive; slightly weathered (SW); strong; strong HCl reaction: thin interbeds of brown claystone. [Glen Rose Formation]	Top of bedrock (Glen Rose Formation) at 11.5'.	832
13		1.75												831
14		0.92												830
15		1	2	5.0 5.0	100		R4		1007-6					829
16		2.67												828
17		1.83										LIMESTONE: packstone; medium gray (N5); slightly weathered (SW); medium strong (R3); interbeds of shale. [Glen Rose Formation]		827
18		1.83												826
19		2.17				SW	R3					LIMESTONE: sparite; medium gray (N5); slightly weathered (SW); weak (R2); abundant (<1cm) interbeds of shale. [Glen Rose Formation]		825
20		2.58	3	4.7 5.0	94				1007-7					824
21		2.08												823
22		3					R0					SHALE: medium dark gray (N4); slightly weathered (SW); extremely weak (R0); thinly bedded (<1 cm). [Glen Rose Formation]		822
23		2.17					R1					LIMESTONE: sparite; medium gray (N5); slightly weathered (SW); very weak (R1); massive. [Glen Rose Formation]		821
24		2.33												820
25		2.17	4	5.0 5.0	100		R2					LIMESTONE: wackestone; light gray (N7); weak (R2); interbeds of shale in isolated bands of 4"-6"; rip-up clasts more abundant; clasts increase in size below 28'.		819
26		2.33							1007-8					818
		2.17												

fracture  
fracture



Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-1007**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
27		2.17	4	5.0 5.0	100							LIMESTONE: wackestone; light gray (N7); weak (R2); interbeds of shale in isolated bands of 4"-6"; rip-up clasts more abundant; clasts increase in size below 28'.		817
28		2.17											Less shale in beds.	816
29		2.67												815
30		2.17	5	5.0 5.0	100		R2							814
31		2.25												813
32		2.58												812
33		5.02										4" shale bed at 32.5'.		811
34		3.83				SW			1007-10					810
35		4.15	6	4.7 5.0	94		R0					SHALE: medium dark gray (N4) to dark gray (N3); very thin beds; extremely weak (R0); interbeds of wackestone; slightly weathered (SW); damp. [Glen Rose Formation]	Run # incorrect on photo (labeled 7)	809
36		4.67												808
37		5.2												807
38		1.5										LIMESTONE: wackestone; very light gray (N8); massive; slightly weathered (SW); weak (R2); isolated interbeds of shale; dry; increase in undulatory shale interbeds (<0.1 cm thick) at 141'; oolites in bottom 0.5'. [Glen Rose Formation]		806
39		4.08												805
40		4.08	7	4.4 5.0	88		R2							804
41		1.5												803
		4.83											Run # incorrect on photo (labeled 8).	

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1007</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
42		4.83	7	4.4 5.0	88	SW			1007-11 1007-11			LIMESTONE: wackestone; very light gray (N8); massive; slightly weathered (SW); weak (R2); isolated interbeds of shale; dry; increase in undulatory shale interbeds (<0.1 cm thick) at 141'; oolites in bottom 0.5'. [Glen Rose Formation]		802
43		3.92					R2							801
44		2.02							1007-12					800
45		4.17	8	4.3 5.0	86							SHALE: dark gray (N3); massive to very thinly bedded; fresh (F); extremely weak (R0); bedding is < 1 cm thick where present; damp. [Glen Rose Formation]	Removed 3' on Run 8, drilled 3' to start run 9, recovered 1' of run 8 material.	799
46		1.33					R0							798
47		5.5												797
48		4.33				F	R2					LIMESTONE: packstone; light gray (N7); massive; fresh (F); weak (R2); dry. [Glen Rose Formation]		796
49		3.53					R0					SHALE: medium gray (N5); thinly bedded; fresh (F); weak (R2); damp. [Glen Rose Formation]		795
50		4.62	9	5.0 5.4	100							Interbed of wackestone at 49'. LIMESTONE: packstone; light gray; massive; fresh (F); weak (R2); dry; thin interbeds of shale. [Glen Rose Formation]		794
51		4.17							1007-13			SHALE: medium dark gray (N4); thinly bedded; fresh (F); weak (R2); damp. [Glen Rose Formation]		793
52		0					R0							792
53		3.67					R2					LIMESTONE: packstone; light gray (N7); interbeds of shale; slightly weathered (SW); weak (R2); dry. [Glen Rose Formation]	Rrun 9 overdrilled 0.4' to 52.7'.	791
54		3.42	10	4.4 4.0	88	SW			1007-14			SHALE, medium dark grey, bedded, fresh (F), extremely weak (R0), damp [Glen Rose Formation]		790
55		4.53					R0							789
56		3.95				F								788

Project Name and Job Number  
 TXU Comanche Peak Col  
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**ROCK LOG**  
**Boring No. B-1007**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
57		3.95				F	R0							787
		3.27				SW	R2					LIMESTONE: wackestone; light gray (N7); interbeds of shale; slightly weathered (SW); weak (R2); dry; oolites. [Glen Rose Formation]		786
58		3.17										SHALE: medium dark gray (N4); bedded; fresh (F); extremely weak (R0); damp. [Glen Rose Formation]		785
59		2.5	11	5.0 5.0	100	F	R0							784
60		1.67								1007-15		LIMESTONE: wackestone; light gray (N7); interbeds of shale (1 cm-6cm); slightly weathered (SW); weak. [Glen Rose Formation]		783
61		1.25				SW								782
62		4.75											End of drilling 12/13/06.	781
63		3.25										Increase in shaly interbeds 63'-64'; abundant rip-up clasts at 64'.	780	
64		2.2	12	5.0 5.0	100	F								779
65		2.1								1007-16				778
66		1.8					R2							777
67		0.75												776
68		1.13										Shaly interbeds frequently 3 cm to 8 cm thick from 68'-70'; increase in weathering to slightly weathered in areas of high shale concentration.	775	
69		1.23	13	5.0 5.0	100	SW								774
70		1.3												773
71		1.38								1007-17		LIMESTONE: wackestone; light gray (N7) to medium light gray (N6); bedded; slightly weathered (SW); weak (R2); dry; reacts strongly to HCl. [Glen Rose Formation]		

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-1007**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
72.0		1.38							1007-17			LIMESTONE: wackestone; light gray (N7) to medium light gray (N6); bedded; slightly weathered (SW); weak (R2); dry; reacts strongly to HCl. [Glen Rose Formation]		772
72.5		1.7												771
73.0		2												770
74.0		1.33	14	5.0 5.0	100	SW								769
75.0		1.5							1007-18					768
76.0		1.7												767
77.0		1.65												766
78.0		1.33												765
79.0		0.9	15	5.0 5.0	100		R2					Increased concentration of shale interbeds 78'-78.5'.		764
80.0		0.97												763
81.0		1.83												762
82.0		1.83				F-SW			1007-19			Increase in rip-up clast concentration, clasts of limestone (0.1'-0.3') bound by limy mud and shale		761
83.0		1.97												760
84.0		1.33	16	5.0 5.0	100									759
85.0		1.5												758
86.0		1.4							1007-20					758

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1007</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
87		1.4												757
88		1.33				F								756
89		1.27				F								755
90		1.5	17	4.6 5.0	92	F-SW				1007-21				754
91		0.97										Higher concentration of shale interbeds at 88.7' and 92'.		753
92		1.83					R2							752
93		1.28												751
94		1.83										LIMESTONE; wackestone; light gray (N7) to medium light gray (N6); bedded; slightly weathered (SW); weak (R2); reacts strongly to HCl; interbeds of shale and limy siltstone (0.02'->0.2'); [Glen Rose Formation]		750
95		1.53	18	5.0 5.0	100	SW						Shale with rip-up clasts of limestone 94.8'-95.2'.		749
96		1.63												748
97		1.03								1007-22		Shale bed at 96'.		747
98		2.27										LIMEY SILTSTONE: medium light gray (N6); bedded; slightly weathered (SW); weak (R2); strong HCl reaction, beds are <.02' thick. [Glen Rose Formation]		746
99		2.73					R1							745
100		2.5	19	5.0 5.0	100					1007-23				744
101		1.27					R2					LIMESTONE: wackestone; light gray (N6) to medium light gray (N7); bedded; slightly weathered (SW); weak (R2); undulatory interbeds of shale; shale interbeds increase at 102.6'; abundant lenticular limestone clasts 0.1-0.3' bound by shale bedding. [Glen Rose Formation]		743
		2.05												

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-1007**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
102.0		2.05												742
102.5		1.97												741
103.0		1.95							1007-24					740
103.5		1.47	20	5.0 5.0	100	SW								739
104.0		1.3												738
104.5		1.92												737
105.0		3.5												736
105.5		1												735
106.0		1.12	21	5.0 5.0	100		R2							734
106.5		1.12							1007-25					733
107.0		1.37												732
107.5		2.17				F								731
108.0		1.67												730
108.5		1.83	22	5.0 5.0	100									729
109.0		1.73							1007-26					728
109.5		2												728

LIMESTONE: wackestone; light gray (N6) to medium light gray (N7); bedded; slightly weathered (SW); weak (R2); undulatory interbeds of shale; shale interbeds increase at 102.6'; abundant lenticular limestone clasts 0.1-0.3' bound by shale bedding. [Glen Rose Formation]

High concentration of silty material interfingering with wackestone 107-107.5'.

High concentration of rip-up clasts 111.5'-112.8'.

LIMESTONE: micrite; light gray (N7); thinly bedded (<0.1'); fresh (F); weak (R2); reacts strongly to HCl. [Glen Rose Formation]

LIMESTONE: wackestone; light gray (N7) to medium light gray (N6); fresh (F); weak (R2); interbeds of micrite limestone; strong HCl reaction. [Glen Rose Formation]

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-1007**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)	
117		2				F						LIMESTONE: wackestone; light gray (N7) to medium light gray (N6); fresh (F); weak (R2); interbeds of micrite limestone; strong HCl reaction. [Glen Rose Formation]		727	
		2.73												726	
118		2.33												725	
119		4.5	23	5.0 5.0	100	SW				1007-27				724	
120		1.65										Increase in shale beds 119.5'-120'.7'.		723	
121		1.72					R2							722	
122		2												721	
123		1.85				F						High concentration of rip up clasts 122.7'-125.4'.		720	
124		2	24	5.0 5.0	100					1007-28				719	
125		2.5												718	
126		5.12				SW	R0					LIMEY SILTSTONE: dark gray (N3); slightly weathered (SW); extremely weak (R0); very thin bedding <1"; damp; moderate HCl reaction. [Glen Rose Formation]		717	
127		1.68												716	
128		5.15					R2					LIMESTONE: wackestone; light gray (N7); fresh (F); weak (R2); reacts strongly to HCl. [Glen Rose Formation]		715	
129		3.12	25	5.0 5.0	100		R0					LIMEY SILTSTONE: dark gray (N3); fresh (F); extremely weak (R0); very thin bedding <1"; reacts strongly to HCl. [Glen Rose Formation]		714	
130		2.22								1007-29				713	
131		2.17					R2						LIMESTONE: wackestone; light gray (N7); fresh (F); weak (R2); reacts strongly to HCl; very high concentration of undulatory interbeds of shale. [Glen Rose Formation]		713

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-1007**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
132		2.17										LIMESTONE: wackestone; light gray (N7); fresh (F); weak (R2); reacts strongly to HCl; very high concentration of undulatory interbeds of shale. [Glen Rose Formation]		712
		4.35							1007-30					711
133		2.4												710
134		1.52	26	5.0 5.0	100							Abundant rip-up clasts between 134.7' and 135.7'.		709
135		1.48												708
136		2.08				F						Abundant rip-up clasts from 137.4'-138.6', decreasing to no rip-up clasts at 140'; interbeds of shale/siltstone through 141'.		707
137		5.88												706
138		2											Inner barrel clogged and blocked water, driller pulled barrel, cleared sample and continued with run.	705
139		1.92	27	5.0 5.0	100		R2							704
140		1.82												703
141		1.28							1007-31			Abundant rip-up clasts from 142.2'-143.7' and 145.2'-145.8'; zones of rip-up clasts contain a higher concentration of shale beds.		702
142		2.17												701
143		3.15												700
144		2.13	28	5.0 5.0	100	SW			1007-32					699
145		1.68												698
146		1.78												698



Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-1007**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
147		1.78												697
147		4.35												696
148		2.67												695
149		2.08	29	5.0 5.0	100									694
150		2.52								1007-33				693
151		2.37												692
152		1.27												691
153		1.17												690
154		1.33	30	5.0 5.0	100	SW	R2							689
155		1.48												688
156		1.48												687
157		1.82												686
158		1.27												685
159		0.97	31	5.0 5.0	100									684
160		0.75								1007-34				683
161		1.03												683

Limestone as above; medium gray (N5) to medium dark gray (N4); zones of rip-up clasts/shale interbeds alternate with zones absent of clasts/shale.

LIMESTONE; wackestone; light gray (N7) to medium light gray (N6); bedded; slightly weathered (SW); weak (R2); strong reaction to HCl; zones of abundant rip-up clasts. [Glen Rose Formation]

Increase in rip-up clasts 155.5'-158.2'.

LIMESTONE: packstone; light gray (N7); bedded; slightly weathered (SW); weak (R2); strong HCl reaction; highly fossiliferous; grain supported; undulating interbeds of shale and siltstone. [Glen Rose Formation]

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-1007**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
162		1.03												682
		1.52												681
163		1.8												680
164		1.13	32	5.0 5.0	100									679
165		0.83												678
166		1.22												677
167		2.72												676
168		2.2							1007-35					675
169		1.37	33	5.0 5.0	100	SW	R2							674
170		0.98												673
171		1.15												672
172		0.95												671
173		0.95												670
174		1.17	34	5.0 5.0	100									669
175		1.1												668
176		1.25												668

Shale interbeds 162.5'-164'.

LIMESTONE: wackestone; light gray to medium light grey (N6-N7), bedded; slightly weathered (SW); weak (R2); reacts strongly to HCl; abundant rip up clasts and shale interbeds to 169'; less abundant shale below 169'; no rip up clasts. [Glen Rose Formation]

Zone of increased rip-up clasts and shale interbeds 175'-176.2'.

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-1007**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
177		1.25												667
178		4.67												666
179		1.47												665
180		1.52	35	5.0 5.0	100									664
181		0.8								1007-36				663
182		1.08					R2							662
183		1.82												661
184		1.2												660
185		0.9	36	5.0 5.0	100	F								659
186		1.15												658
187		1.2												657
188		4.55					R0							656
189		4.02												655
190		2.53	37	5.0 5.0	100					1007-37				654
191		1.62					R2							653
		2.93												

Zone of increased rip-up clasts and shale interbeds 178.2'-180'.

LIMESTONE: packstone; light gray (N7); bedded; fresh (F); weak (R2); strong HCl reaction, clast supported; fossils intermittent; undulating shale beds; fossils decrease below 182.5'. [Glen Rose Formation]

SHALE: dark gray (N4); fresh (F); extremely weak (R0); very thinly bedded; reacts moderately to HCl; fine grains of limestone. [Glen Rose Formation]

LIMESTONE: packstone; light gray (N7); reacts strongly to HCl; clast supported; fossiliferous zones in beds of shale; fresh (F); weak (R2); 0.3' interbeds of shale 191'-191.3' and 191.7'-192'. [Glen Rose Formation]

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1007</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
192		2.93												652
		1.97					R2							651
193		4					R0							650
194		4.27	38	4.2 5.0	84		R2						3.5' of 5' recovered on Run 38, redrilled 3 ft on run 39 and recovered more foot of run 38 total recovery 4.2/5 for run 38	649
195		1.43												648
196		0				F	R0							647
197		3.05												646
198		1.37												645
199		0.97	39	4.5 5.0	90		R2							644
200		2.47							1007-38					643
201		1.75					R0							642
202		0												641
203		2.62												640
204		2.55	40	5.0 5.0	100	SW	R2							639
205		0												638
206		0				F								638

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
207		0				F						LIMESTONE: micrite; light gray (N7); fresh (F); weak (R2); very thin bedding; reacts to HCl very fine grained. [Glen Rose Formation]		637
		3.4							1007-39			LIMESTONE: wackestone; light gray (N7) to medium light gray (N6); slightly weathered (SW); weak (R2); frequent interbeds of shale/siltstone; reacts strongly to HCl; 0.3'-0.4' interbeds of shale at 212' and 212.9'; frequent 0.1' interbeds of shale below 212.9'; rip up clasts and burrows; 0.4' interbed of siltstone 217.2'-217.6'; less abundant interbeds of shale from 217.6'-219.5'; abundant bioturbation. [Glen Rose Formation]		636
208		3.53												635
209		2.05	41	5.0 5.0	100									634
210		1.23												633
211		2.73												632
212		3.77												631
213		3.33				SW								630
214		1.92	42	5.0 5.0	100		R2							629
215		1.33												628
216		2.02												627
217		3.55												626
218		1.85												625
219		1.67	43	4.8 5.0	96				1007-40					624
220		0.73				F						SILTSTONE: dark gray (N3); massive; fresh (F); extremely weak (R0); gradational upper and lower contacts. [Glen Rose Formation]		623
221		2.17										LIMESTONE: packstone; medium light gray (N6); very thinly bedded; fresh (F); weak (R2); abundant fossils and bioturbation. [Glen Rose Formation]		623

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 TXU Comanche Peak Col  
 1908




**ROCK LOG**  
**Boring No. B-1007**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
222		2.17										LIMESTONE: packstone; medium light gray (N6); very thinly bedded; fresh (F); weak (R2); abundant fossils and bioturbation. [Glen Rose Formation]		622
		1.1												621
223		1.08	44	33.3	70	F	R2					SILTSTONE: sandy; dark gray (N3); fresh (F); extremely weak (R0); gradational upper contact with limestone; massive to thinly bedded; reacts moderately to HCl. [Glen Rose Formation]		620
224		0.92												619
225														618
226													Total depth drilled: 225'	617
227														616
228														615
229														614
230														613
231														612
232														611
233														610
234														609
235														608
236														

Project Name and Job Number TXU Comanche Peak COI 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-1008 offset</b>	
Type and Diameter of Boring HSA / 7"			Boring Location 32°18'07.65947"N / 97°47'41.05563"W		Total Depth 8.7 feet
Drilling Contractor and Rig Palmerton and Parish / CME 55			Elevation and Datum 847.54 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 8.7 feet
Sampling Method SPT			Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 4	Date Started 1/30/07
			Borehole Inclination Vertical	Logged by G. VanEtten	Date Completed 1/30/07

Reviewed by / Date \_\_\_\_\_ R. Ortiz 2/6/07


Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
0							<b>RESIDUAL SOIL (RS)</b> SANDY GRAVEL with silt dense, very pale brown (10YR8/2), dry, 50% limestone gravel, 30% sand, 20% silt		847
1	GM		B-1008 offset 1	6					846
2				25	10/18				845
3				18					844
4			B-1008 offset 2	18			SILT with sand hard, pale yellow (2.5Y8/3), dry, coarse grained sand		844
5				28	12/18				843
6	ML		B-1008 offset 3	50/5"	5/5		yellow (2.5Y7/8), with calcareous deposits		841
7									840
8			B-1008 offset 4	50/2"	2/2		light gray (10YR7/1), with limestone fragments		839
9									838
10									837
11									836
12									835
13									834
14									833
15									833

Project Name and Job Number TXU Comanche Peak COI 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-1008</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'07.65947"N / 97°47'41.05563"W		Total Depth 225.2 feet	
Drilling Contractor and Rig Palmerston and Parish / CME 55		Elevation and Datum 847.556 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 9.5 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 4	Date Started 11/28/06	
		Borehole Inclination Vertical	Logged by E. Weldon	Date Completed 11/28/06	

Reviewed by / Date J. Wesling 12/6/06

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0										847
0 - 1	GM							<b>RESIDUAL SOIL (RS)</b> LIMESTONE FRAGMENTS with silt hard, brown (2.5 YR4/3) dry, some clay, angular limestone fragments		847
1 - 2		B-1008 1		13	50/7"			SILT with sand hard, light yellow (2.5YR 6/4), dry to damp, with calcareous deposits		846
2 - 3								auger scraping		845
3 - 4										844
4 - 5		B-1008 2		25	50/5.5"	10/11		strong reaction to HCl, occasional black manganese particles		843
5 - 6	ML									842
6 - 7		B-1008 3		50/5"	5/5"			auger scraping below 6'		841
7 - 8										840
8 - 9		B-1008 4		50/1"	1/1"			weathered limestone, gray (5Y6/1)		839
9 - 10								auger refusal at 9.5'		838
10 - 11										837
11 - 12										836
12 - 13										835
13 - 14										834
14 - 15										833



Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG Boring No. B-1008</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'07.65947"N / 97°47'41.05563"W		Total Depth 225.2 feet	
Drilling Contractor and Rig Palmerton and Parrish / CME 55		Elevation and Datum 847.556 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 9.5 feet	
Casing Size and Depth 4" / 9.5 feet		Length of Core Barrel and Bit 8.6 feet	No. of Core Boxes 15	Date Started 11/28/06	
		Borehole Inclination Vertical	Logged by E Weldon, A. Tillery	Date Completed 12/5/06	

Reviewed by / Date J. Wesling 12/6/06

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
10		2.73							1008-5			LIMESTONE: micrite; medium bluish gray; (5B 5/1); with shale beds; weak (R2); strong HCl reaction; slightly weathered (SW); homogeneous. [Glen Rose Formation]	good water recovery, clean, slightly gray auger screeching, difficult augering, slow	838
11		2.27	1	3.7 3.7	97	SW	R2							837
12		1.87												836
13		1.87				SW	R1					SHALE: greenish gray (5GY 6/1); homogeneous. [Glen Rose Formation]		835
14		4.48										LIMESTONE: micrite; greenish gray (5GY 6/1); homogeneous; shale interbeds. [Glen Rose Formation]	core upside down	834
15		2.93												833
16		2.27	2	5.0 5.0	98	F-SW	R3		1008-6		BJ, Ro, Op BJ, Ro, Op BJ, Ro, Op			832
17		1.5										LIMESTONE: packstone; medium bluish gray (5B 5/1); massive; some stylolites about 0.4' apart; fossiliferous. [Glen Rose Formation]	good water, milky gray	831
18		1.53												830
19		1.4												829
20		1.27											recorded run times too short, misunderstood driller, likely double each time/ft	828
21		1.25	3	5.0 5.0	80	F-SW	R2-R3		1008-7		BJ, Ro, Op	SHALE: with wackestone interbeds; medium bluish gray (5B 5/1); shale beds <0.6'; core breaks and sometimes compresses on shale beds. [Glen Rose Formation]		827
22		1.5												826
23		1.52												825
24		1.75	4	5.0 5.0	100	F	R2				BJ, Ro, Op		stop to fill water truck	824
		2.58											wait for water truck	

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1008</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
25		2.58									BJ, Ro, Op	SHALE: medium bluish gray (5B 5/1); homogeneous to faint horizontal beds; slight HCl reaction. [Glen Rose Formation]		823
26		2.15							1008-8				sample barrel stuck; driller thinks its swollen, pulling rods	822
27		2.27	4	5.0 5.0	100	F	R2				BJ, Op, Ro	LIMESTONE: packstone/wackestone. [Glen Rose Formation]		821
28		3.02									BJ, Sl, Ro, Op	SHALE: medium bluish gray (5B 5/1); massive; faint bedding; no HCl reaction. [Glen Rose Formation]		820
29		1.95												819
30		2.02									BJ, Sl, Ro, Op	LIMESTONE: wackestone; light bluish gray (5B 6/1); massive; small fossils. [Glen Rose Formation]		818
31		2.02	5	5.2 5.0	62	F	R2-R3		1008-9			SHALE: medium bluish gray (5B 5/1); weak (R2); fine horizontal bedding. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	817
32		1.5												816
33		1.52									BJ, Sl, Ro, Op	LIMESTONE: wackestone; light medium bluish gray (5B 5/1); rip-up clasts; wavy thin beds; medium grains. [Glen Rose Formation]		815
34		1.63												814
35		1									1008-10	BJ Pt, Sm, Op	good water return	813
36		0.8	6	4.8 5.0	44	F	R2-R3				BJ, Pt, Sl, Op			812
37		2.25										LIMESTONE: wackestone; interbedded with shale beds 1" to 2" thick; 70% shale, 30% wackestone. [Glen Rose Formation]		811
38		5.73												810
39		2.43	7	4.1 5.0	8	F	R2-R3							809
		3.68							1008-11					

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
40		3.68							1008-11			LIMESTONE: wackestone; interbedded with shale beds 1" to 2" thick; 70% shale, 30% wackestone. [Glen Rose Formation]		808
41		4.27										LIMESTONE: wackestone; with small shale interbeds; wackestone beds 0.5" to 5"; shale beds 1 mm to 5 mm thick; some wavy stylolites; rip-up clasts. [Glen Rose Formation]		807
42		2	7	4.1 5.0	8	F	R2-R3							806
43		NM												805
44		1.73							1008-12					804
45		1.55										LIMESTONE: wackestone/packstone; light bluish gray (5B 7/1); interbedded with shaly beds 0.5" to 2"; packstone beds 1" to 4"; bivalve fossils; wavy beds; increasing wavy beds and rip-up clasts. [Glen Rose Formation]		803
46		1.92	8	4.7 5.0	48	F	R3							802
47		4.7								BJ, Ro, Op				801
48		3.12								BJ, Sm, Ti				800
49		2.33								BJ, Sm, Ti		SHALE: dark bluish gray (5B 5/1); very thin beds; fossiliferous; some color variation; weak (R2). [Glen Rose Formation]		799
50		5.7								BJ, Sm, Ti				798
51		5.77	9	4.9 5.0	42	F	R2					LIMESTONE: packstone; fossiliferous; light bluish gray (5B 7/1); fossils are bivalves, 1 cm to 2 cm; massive; no clear bedding. [Glen Rose Formation]		797
52		2.62										SHALE; with interbedded LIMESTONE; dark bluish gray (5B 5/1); very thin beds; fossiliferous; some color variation; weak (R2); 1 cm to 3 cm beds of wackestone every 3" to 12"; many bedding breaks on shale. [Glen Rose Formation]	good water return	796
53		6.2												795
54		3.75	10	5.0 5.0	32	F	R2-R3							794
		4.28							1008-14					

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)	
55		4.28										LIMESTONE: packstone; fossiliferous; light bluish gray (5B 7/1); fossils are bivalves, 1 cm to 2 cm; massive; no clear bedding. [Glen Rose Formation]		793	
56		3.93												792	
57		2.08	10	5.0	32	F	R2-R3							791	
58		3.43												790	
59		4.42												789	
60		0.72								1008-15				788	
61		2.85	11	3.0 5.0	78	F	R2-R3						Discussed fractures with J. Wesling. Decided most fractures are MBs. Will make corrections from here on. good water return tapped hole and came up with 63.8, difficult to tell if and when tape hit bottom driller notes that core is being washed away	787	
62		4.92													786
63		4.92													785
64		3.42													784
65		5.17												783	
66			12	4.8 5.0	95	F	R2-R3			1008-16				782	
67		1.33												781	
68		2.73												780	
69		1.47	13	5.0 5.0	100	F	R3							779	
		1.45													

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1008</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
70		1.45							1008-17			LIMESTONE: micrite; shale rip-up clasts; light gray (N7); more rip-up clasts at base. [Glen Rose Formation]		778
71		2.43												777
72		NM	13	5.0	100	F	R3							776
73		2.4												775
74		1.87											774	
75		1.8											773	
76		1.5	14	5.2	100	F	R3		1008-18			LIMESTONE: wackestone; medium gray (N5); fairly homogeneous; thin wavy shale beds, usually 2 cm to 5 cm apart; wackestone rip-ups in shale; strong HCl reaction. [Glen Rose Formation]		772
77		1.85											good water return, 400psi Length of recovery stretched due to mechanical breaks.	771
78		2.13												770
79		2.25												769
80		1.8											768	
81		1.83	15	5.0	100	F	R3-R4						767	
82		1.87							1008-19				766	
83		NM									Fracture zone		765	
84		0.73	16	5.0	100	F	R3					Increasing shale below 82.0'; up to 50% shale, 50% wackestone.	764	
		1.12												

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-1008</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
85		1.12									Fracture zone			763
86		3	16	5.0 5.0	100	F	R3		1008-20					762
87														761
88		5.83									Fracture zone			760
89		1.67							1008-21			Below 89.0', shale content decreases to 15% to 20%.	core barrel stuck, drillers pull rod	759
90		1.72									BJ, Si Ro, Op			758
91		1.22	17	5.1 5.0	100	F	R3							757
92	NM										BJ, Si Ro, Ti		Length of recovery stretched due to mechanical breaks.	756
93	NM													755
94		2.73										SHALE: interbedded with wackestone; dark gray (N3); some sandy mottled beds. [Glen Rose Formation]		754
95		1.48										LIMESTONE: wackestone; medium gray (N5); fairly homogeneous; thin wavy shale beds, usually 2 cm to 5 cm apart; strong HCl reaction; increasing shale at bottom. [Glen Rose Formation]		753
96		3.55	18	5.2 5.0	100	F	R3		1008-22			SHALE; with interbedded wackestone; 60% shale, 40% limestone. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	752
97		2										LIMESTONE: wackestone; interbedded with shale; light gray (N7) with mottled wavy shale at upper part of run; shale beds <4 cm; strong HCl reaction. [Glen Rose Formation]		751
98		1.97												750
99		1.55	19	4.8 5.0	96	F	R3							749
		1.83												

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
100		1.83							1008-23			LIMESTONE: wackestone; interbedded with shale; light gray (N7) with mottled wavy shale at upper part of run; shale beds <4 cm; strong HCl reaction. [Glen Rose Formation]		748
101		1.85												747
102		1.85	19	4.8 5.0	96	F	R3							746
103		1.88												745
104		2.75										LIMESTONE: micrite to wackestone; medium gray (N5); mainly micrite. [Glen Rose Formation]		744
105		1										LIMESTONE: wackestone; medium bluish gray (5B 5/1); fairly massive with very thin wavy shale beds; strong HCl reaction. [Glen Rose Formation]		743
106		1.08	20	5.0 5.0	82	F	R3				BJ, Wa, Op, Sl			742
107		1.28							1008-24					741
108		3.65									BJ, Wa, Sl weathered			740
109		1.43										LIMESTONE: packstone; medium gray (N5), dirty looking dark grains near top; horizontal bedding; rip-up clasts; strong HCl reaction. [Glen Rose Formation]		739
110		1.43												738
111		1.58	21	5.0 5.0	100	F	R3		1008-25				sample stuck in hole, driller repeatedly sending down, finally bring up sample; resume drilling	737
112		4.63										LIMESTONE: micrite; medium gray (N5); homogeneous; wackestone rip-up clasts. [Glen Rose Formation]		736
113		1.67										LIMESTONE: packstone; medium gray (N5); horizontal bedding; rip-up clasts; strong HCl reaction. [Glen Rose Formation]		735
114		1.38	22	4.9 5.0	98	F	R3							734
		1.2												

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
115		1.2										LIMESTONE: wackestone; light gray (N7); homogeneous; horizontal bedding; strong HCl reaction; zone of very thin shale layers starting at 116.0'; fractures occur with approximately 1" spacing. [Glen Rose Formation]		733
116		2.63												732
117		2.2	22	4.9 5.0	98	F	R3							731
118		2.18							1008-26		BJ, Wa, Ti			730
119		2										LIMESTONE: micrite; light gray (N7); slight swirly appearance; homogeneous; rip-up clasts. [Glen Rose Formation]		729
120		2										LIMESTONE: wackestone; light gray (N7); homogeneous; small fossils; strong HCl reaction. [Glen Rose Formation]		728
121		1.63	23	5.0 5.0	100	F	R3-R4							727
122		1.67											down pressure 400 psi good water return	726
123		1.83							1008-27					725
124		3.93							1008-28					724
125		2.57												723
126		1.88	24	5.0 5.0	100	F	R4							722
127		2.13												721
128		3.43												720
129		3.13	25	5.0 5.0	92	F	R2-R3		1008-29			Increasing shale content below 128.0'.		719
		3.9												



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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
130		3.9										Increasing shale content below 128.0'.		718
131		4.4										SHALE: dark gray (N3); horizontal beds; fracture patterns; otherwise massive; HCl reaction. [Glen Rose Formation]		717
132		3.63	25	5.0 5.0	92	F	R2-R3					LIMESTONE: wackestone; light gray (N7); homogeneous; small fossils; strong HCl reaction; some shale rip-up clasts and chert nodules [Glen Rose Formation]		716
133		6.5										SHALE: dark gray (N3); fissile; fractured; over 0.5" to 1" horizontal beds; homogeneous; slight HCl reaction. [Glen Rose Formation]		715
134		4.6							1008-30			LIMESTONE: wackestone; light gray (N7); thin planar shale beds. [Glen Rose Formation]		714
135		3.33												713
136		3.45	26	5.0 5.0	100	F	R3						good water return	712
137		5.27										SHALE: dark gray (N3); planar beds; very thin common breaks along beds; slight HCl reaction. [Glen Rose Formation]		711
138		6.62										LIMESTONE: wackestone; medium light gray (N6); increased rip-up clasts; some interbedded shale beds; some bioturbations; pyrite filled vugs. [Glen Rose Formation]		710
139		1.8												709
140		1.95												708
141		1.75	27	5.0 5.0	100	F	R2-R3							707
142		1.77												706
143		3.07									Fracture zone, shale			705
144		2.1	28	5.2 5.0	100	F	R2-R3							704
		1.03							1008-32					

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
145		1.03												703
146		1.7												702
147		2	28	5.2 5.0	100	F	R2-R3						Length of recovery stretched due to mechanical breaks.	701
148		2												700
149		2.15												699
150		1.58												698
151		3.5	29	5.0 5.0	100	F	R2-R3						good water return	697
152		4.57												696
153		2.77										SHALE: dark gray (N3); gradual upper and lower contacts with wackestone; slight HCl reaction; planar beds. [Glen Rose Formation] LIMESTONE: wackestone; light gray (N7); some shell fragments visible in core breaks; small white (1 mm) fossils present. [Glen Rose Formation]	695	
154		2.03												694
155		2.88												693
156		2.7	30	5.0 5.0	100	F	R3			Fracture zone	SHALE: calcareous; crumbly; mottled; wavy horizontal beds; gradational contact with micrite above and below gray; slight HCl reaction. [Glen Rose Formation]	sample barrel stuck in hole, driller retrieve	692	
157		1.63								Fracture zone				691
158		3.05									LIMESTONE: wackestone; very light gray (N8); grainy; almost packstone; beds seem to be 4 cm thick; interbedded with sandy shale beds usually 1 mm to 2 mm thick and wavy; strong HCl reaction. [Glen Rose Formation]		690	
159		1.05	31	5.4 5.0	100	F	R3							689
		0.83												

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)	
160		0.83										LIMESTONE: wackestone; very light gray (N8); grainy; almost packstone; beds seem to be 4 cm thick; interbedded with sandy shale beds usually 1 mm to 2 mm thick and wavy; strong HCl reaction. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	688	
161		1.23													687
162		0.95	31	5.4 5.0	100	F	R3								686
163		1.17													685
164		0.93										LIMESTONE: packstone; light gray (N7); calcite filled fossils <0.5 cm; sparry calcite filled fossils to 15 cm. [Glen Rose Formation]	good water return, driller using minimum down pressure 400psi	684	
165		0.73													683
166		0.73	32	5.1 5.0	100	F	R3							682	
167		0.85												681	
168		0.83												680	
169		1.65										Length of recovery stretched due to mechanical breaks.	679		
170		0.87												678	
171		1.45	33	5.0 5.0	99	F	R3							677	
172		1.25												676	
173		1.32												675	
174		1.37	34	5.0 5.0	100	F	R3							674	
		1.07													

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-1008**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
175		1.07										LIMESTONE: wackestone; light gray (N7); 90% limestone, 10% shale; limestone beds 1 cm to 12 cm; shale beds are 1 mm to 3 mm thick, wavy; small sparry calcite filled vugs; strong HCl reaction; increasing shale content to 15% with depth; slightly sandy in zones; strong HCl reaction. [Glen Rose Formation]		673
		0.58												672
176			34	5.0 5.0	100	F	R3							671
		1.08												670
177		1.17												670
178		1.28												669
179		1.43												668
180									1008-36					667
181		1.1	35	5.1 5.0	100	F	R3							667
		1.13											good water return, down pressure 400psi Length of recovery stretched due to mechanical breaks.	666
182		1.32											665	
183		1.35											664	
184		1											663	
185		1.03	36	5.1 5.0	100	F	R3						662	
186		1.12											661	
187		1.43										Length of recovery stretched due to mechanical breaks.	660	
188		1.15	37	5.0 5.0	100	F	R2-R3						659	
189		1.15												

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
190		1.15										LIMESTONE: wackestone; light gray (N7); 90% limestone, 10% shale; limestone beds 1 cm to 12 cm; shale beds are 1 mm to 3 mm thick, wavy; small sparry calcite filled vugs; strong HCl reaction; increasing shale content to 15% with depth; slightly sandy in zones; strong HCl reaction. [Glen Rose Formation]		658
191		0.92												657
			37	5.0 5.0	100	F	R2-R3					SHALE: very dark gray (N3); slight HCl reaction; fine grained; gradual upper contact; planar beds. [Glen Rose Formation]		656
192		4.32											656	
193		4.25							1008-37				655	
194		1.4										LIMESTONE: wackestone; light gray (N7); few clasts or particles less than 1 mm; few fossils; homogeneous; almost no shale; some small fossils towards bottom. [Glen Rose Formation]		654
195		3.92											653	
196		NM	38	4.7 5.0	94	F	R2-R3						652	
197		2.87											651	
198		2.88											650	
199		2.83										SHALE: very dark gray (N3); few fine grained beds; horizontal beds. [Glen Rose Formation]		649
200		0.77									BJ, Sl Ro, Pl, Op	LIMESTONE: micrite; light gray (N7); horizontal beds 1 cm to 7 cm; grades towards wackestone in bottom 2 cm; strong HCl reaction. [Glen Rose Formation]		648
201		1.67	39	4.5 5.0	80	F	R2-R3					SANDSTONE: dark yellowish gray (5Y 6/2); fine sand; well sorted; noncemented; abrupt contact; slight HCl reaction. [Glen Rose Formation]		647
202		2.57										SHALE: very dark gray (N3); few fine grained beds; horizontal beds. [Glen Rose Formation]		646
203		3.37										LIMESTONE: micrite; light gray (N7); horizontal beds 1 cm to 7 cm; strong HCl reaction; grading towards wackestone over bottom 6 cm. [Glen Rose Formation]		645
204		NM	40	4.5 5.0	90	F	R2-R3						644	
		2.82												

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
205		2.82										SHALE: with sand interbeds. [Glen Rose Formation]		643
206		NM												642
207		3.23	40	4.5 5.0	90	F	R2-R3				BJ, Pl, Sm, Ti	LIMESTONE: micrite; light gray (N7); strong HCl reaction; interbedded with sand and shaley sand; 50% sand, 50% limestone beds 9 cm to 8 cm; sand is dark yellowish gray (5Y 6/2); fine; well sorted; noncemented; with pink fragments. [Glen Rose Formation]		641
208		4.7												640
209		3.67							1008-39			LIMESTONE: micrite/wackestone; interbeds; horizontal; 1 cm to 9 cm; light gray (N7); few fossils; discolorations in upper foot of run; 50% micrite, 50% wackestone; strong HCl reaction [Glen Rose Formation]		639
210		3.38												638
211		3.42	41	4.5 4.5	100	F	R3						good water return	637
212		3.73												636
213		4.5									Fracture zone			635
214		2.93	41a	0.0 0.5	0							LIMESTONE: wackestone; light greenish gray (5GY 8/1); fossiliferous; fossils ~ 1 cm; "dirty" or sandy appearance. [Glen Rose Formation]	driller stopped run early because sampler felt full; ran 6" run, no recovery	634
215		3.05										LIMESTONE: wackestone; light gray (N7); with thin 1 mm wavy shale beds; some fossils; 75% limestone, 25% shale; irregular wavy with bioturbation; strong HCl reaction. [Glen Rose Formation]		633
216		1.9									BJ, Pl, Sm, Op			632
217		2.65	42	4.8 5.0	96	F	R2-R3					LIMESTONE: wackestone; interbedded with shale; contacts gradational; beds 1 cm to 3 cm thick; slight to strong HCl reaction; shale interbeds increase downward to 35%; rip-up clasts increase downward. [Glen Rose Formation]		631
218		5.15												630
219		3.12												629
219		2.35	43	5.0 5.0	100	F	R2		1008-40		Fracture zone			629
219		2.22												

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
220		2.22												628
221		1.65												627
222		1.32	43	5.0	100	F	R2							626
223		2.27										SAND: dark gray (N3); well sorted; homogeneous fine sand; slight HCl reaction; no clear bedding [Glen Rose Formation]		625
224		3.67										LIMESTONE: wackestone; light gray (N7); massive; no clear bedding; fossiliferous; shale grading towards sand at base. [Glen Rose Formation]		624
225		2.98	44	2.2 2.0	100	F	R3							623
226													total depth drilled 225.2'	622
227														621
228														620
229														619
230														618
231														617
232														616
233														615
234														614

Project Name and Job Number TXU Comanche Peak Col 1908		 WLA William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. B-1009-I</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'06.42029"N / 97°47'41.58920"W		Total Length 225.6 feet	
Drilling Contractor and Rig Boart Longyear / 44TMA		Elevation and Datum 857.201 feet NAVD88	Ground Water Depth NA	Length to Bedrock 13.69 feet	
Casing Size and Depth 4" / 17.8 feet		Length of Core Barrel and Bit 8.6 feet	No. of Core Boxes 15	Date Started 12/13/06	
		Borehole Inclination 65 Degrees	Logged by E. Weldon	Date Completed 12/16/06	

Reviewed by / Date R. Ortiz 1/10/07

Length (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Length (feet)
18		3.33										LIMESTONE: packstone; light gray (N7); grading to wackestone; packstone is fine grained, very thinly spaced; silty shell fragments; slightly weathered; weak; strong to violent HCl reaction.	pvc casing set at this depth, begin HQ3 rock coring at 17.8	841
19		2.93	1	5.0 2.8	96									840
20		1.77							1009-I-1				water turns dark gray light gray	839
21		4.38										LIMESTONE: packstone; fining to micrite; massive; wackestone layers absent.		838
22		3.47										SHALE: claystone; calcareous; as above but minor packstone rip up clasts and coarse shell fragments; dark greenish gray (5 GY 4/1); grades into packstone.		837
23		2.4	2	4.8 5.0	96							LIMESTONE: packstone; shells; medium gray (N5); massive; fine grained with some bioturbation; slight to moderately weathered; weak		836
24		1.88									BPS rough			835
25		3.08							1009-I-2			SHALE: claystone to siltstone; same as above without shells; slight HCl reaction; burrows.		834
26		2.78										LIMESTONE: packstone light olive gray (5 Y 6/1); fine grained with coarse shells; massive; slightly weathered; weak.		834
27		4.5										SILTSTONE: calcareous; dark greenish gray (5 GY 4/1); bedded with shell hash; strong HCl reaction; bioturbation absent; slightly weathered; weak.		833
28		2.63	3	5.0 5.0	96							LIMESTONE: packstone; with interbeds of grainstone; thinly bedded; yellowish gray (5 Y 8/1) grainstone; violent HCl reaction; slightly to moderately weathered with vugs; extremely weak to weak.		832
29		2.13											100% water return	831
30		1.67							1009-I-3					830
31		1.83											3:30 overshot stuck in hole, halt drilling at 40.6 to pull out rod	829
32		1.77												828



Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-1009-I</b>
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Length (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Length (feet)
33		1.67	4	5.1 5.0	100		R1-R2					LIMESTONE; wackestone; dark greenish gray (GY 4/1); silt to fine sand and coarse shells; weakly to thinly layered; slightly weathered; weak; violent HCl reaction.	Length of recovery stretched due to mechanical breaks.	827
34		1.5												826
35		1.37							1009-I-4					825
36		2.55											100% water return, coming through casing	824
37		2.23												
38		5.77	5	5.0 5.0	100	SW						SHALE: claystone to siltstone; greenish black (5 GY 2/1); very thin laminated; extremely weak; slightly weathered; rip-up clasts; shells.		823
39		5.12												822
40		2.43							1009-I-5			LIMESTONE: wackestone; dark greenish gray (5 GY 4/1); very weak; slightly weathered; bioturbated; slight to strong HCl reaction.		821
41		1.83					R0-R1							820
42		1.95										LIMESTONE: packstone; with wackestone interlayers; light olive gray (5 Y 6/1); dark and interlayers of wackestone (0.2' thick); greenish gray (5 GY 4/1) very weak; slightly weathered.		819
43		2.82	6	5.1 5.0	100									818
44		1.85											Length of recovery stretched due to mechanical breaks.	817
45		2.25							1009-I-6			LIMESTONE: wackestone; dark greenish gray (5 GY 4/1); silt size to fine sand; extremely weak; slightly weathered; soft sediment deformation.		816
46		2.23												815
47		1.23												814

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1009-I</h2>
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Length (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Length (feet)
48		1.73	7	5.0 5.0	99	F-SW	R1-R2				BPS, Si, smooth, slight staining	LIMESTONE: packstone; light gray (N7) to greenish gray (5 GY 4/1); dark interlayers of wackestone; very fine to medium grained; slightly weathered to fresh; very weak to weak; shell fragments; violent HCl reaction in packstone; very strong in wackestone.	100% water return	813
49		1.27												812
50		1.55							1009-I-7					811
51		3.6										SHALE: claystone; dark greenish gray (5 GY 4/1); massive; burrows of packstone; slightly weathered; extremely weak; slight HCl reaction.		810
52		4.3										LIMESTONE: packstone to micrite; with clayey wackestone interbeds; very thinly spaced; violent HCl reaction; fresh to slightly weathered; extremely weak to very weak		809
53		3.52	8	5.0 5.0	100		R0-R1					SHALE: claystone; as above; coal layers; shells.		808
54		4.6							1009-I-8					807
55		4.82										LIMESTONE: micrite; light olive gray (5 Y 6/1) and light gray (N7); CaCO3 infilling; slightly weathered; weak; soft sediment deformation; thinly to very thick layers of clayey wackestone.		806
56		2.28												805
57		2.12												804
58		4.45	9	5.0 5.0	100	SW						SHALE: claystone to wackestone; interbeds; dark greenish gray (5 GY 4/1); thinly spaced wackestone; extremely weak; slightly weathered; strong HCl reaction.		803
59		3.33										LIMESTONE: micrite; coarsening downward; micrite broken by soft sediment deformation; strong HCl reaction.		802
60		2.35							1009-I-9					801
61		3.33												800
62		2.47										SHALE: claystone; with shell fragments; violent HCl reaction; very thinly laminated LIMESTONE; micrite with soft sediment deformation; very weak to weak; slightly weathered		799

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1009-I</h2>
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Length (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Length (feet)
63		2.68	10	<del>5.1</del> 5.0	100	SW						LIMESTONE; micrite with soft sediment deformation; very weak to weak; slightly weathered		800
64		2.68										SHALE: and clay; calcareous; increasing fissility and less HCl reaction with depth; dark greenish gray (5 GY 4/1); slightly to moderately weathered; extremely weak; fossils.	Length of recovery stretched due to mechanical breaks.	799
65		4.85								009-I-10				798
66		6.63											100% water returns	797
67		NM											photo should read run 11 not run 10	796
68		2.85	11	<del>5.0</del> 5.0	100	SW-MW	R0-R2					LIMESTONE: micrite; with coarse crystalline CaCO3 replaced shells; massive lacks silt interbeds; vugs; slightly weathered; weak to medium strong.		795
69		4.1										SHALE: calcareous; dark greenish gray (5 GY 4/1) to light olive gray (5 Y 6/1); lighter with increased carbonate; weak and fissile; fresh to slightly weathered; extremely weak; minor soft sediment deformation.		794
70		4.52								009-I-11				793
71		3.37											10:35 waiting for water delivery	792
72		2.85												791
73		3.28	12	<del>5.0</del> 5.0	100							LIMESTONE: micrite; same as above with interlaminae of silty greenish gray (5 GY 4/1) shell rich material; soft sediment deformation; slightly weathered; weak.	contact abrupt abundant shell frags within .1' above contact	790
74		3.18												789
75		3.15								009-I-12		SHALE: claystone; calcareous; same as above; fewer shells downward; and lower carbonate content.	contact abrupt wavy	788
76		2.73												787
77		2.25												787

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Length (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Length (feet)
78		3.02	13	4.9 5.0	98		R0-R2					LIMESTONE: packstone; similar to micrite above; but matrix very fine sand size.	gradational contact	786
79		4.67										SHALE: claystone; calcareous; as above; shells scarce; lower contact abrupt and wavy.	abrupt contact	785
80		4.42							009-I-13					784
81		NM										LIMESTONE: micrite packstone; with coarse crystalline CaCO3 in fill in replaced shells; very light gray (N8); massive; weak; slightly weathered; violent HCl reaction; soft sediment deformation.	abrupt contact run 13 broke off 1.1, will only core 3' of 14 to collect stick up	783
82		2.3	14	3.0 3.0	100		R0-R1							782
83		4.3										SHALE: claystone; calcareous; shale; shell rock.	abrupt contact	781
84		1.77					R0					LIMESTONE: micrite; grading coarser down into packstone; massive.		780
85		1.42	15	2.0 2.0	100				009-I-14			PACKSTONE to wackestone: muddy interlayering; slight weathered; weak to very weak; packstone is very fine to medium grained and light olive gray strong HCl reaction; shell fragments; lots of soft sediment deformation	gradational contact	779
86		1.78												778
87		2.03												777
88		1.52	16	5.0 5.0	99		R1-R2						mud content increasing while grain size increases downward	776
89		1.12												775
90		2.72							009-I-15					774
91		2.68												773
92		2.07												772

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Length (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Length (feet)
93		2.77	17	5.0 5.0	100									773
94		2.65										LIMESTONE: packstone to wackestone sequence as above; slightly weathered; very weak.	gradational contact	772
95		3.22					R1		009-I-16					771
96		1.98										LIMESTONE; packstone; grading into wackestone; slightly weathered; very weak	abrupt contact	770
97		2.45												769
98		2.5	18	5.0 5.0	100									768
99		2.4											100% water return	767
100		2.75							009-I-17					766
101		1.87										LIMESTONE; packstone; grading down into wackestone sequence as above; slight vugging; slightly weathered; weak to very weak; light gray (N7); medium to coarse grained; coarsening with depth; weakly bedded; very thin	abrupt contact	765
102		1.53												764
103		1.53	19	5.0 5.0	100	SW	R1-R2							763
104		1.8												762
105		2.82							009-I-18					761
106		3.42												760
107		2.37											mud content in matrix increases, grains larger,	760

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-1009-I</b>
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	Length (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Length (feet)
	108		2.07	20	<del>5.1</del> 5.0	100	SW						LIMESTONE; packstone; grading down into wackestone sequence as above; slight vugging; slightly weathered; weak to very weak; light gray (N7); medium to coarse grained; coarsening with depth; weakly bedded; very thin	contact abrupt but irregular	759
	109		1.95											Length of recovery stretched due to mechanical breaks.	758
	110		1.1											contact abrupt but irregular	757
	111		1.65											gradational contact	756
	112		2.35											gradational contact	755
	113		1.75	21	<del>5.0</del> 5.0	99		R1							
	114		1.45											abrupt contact	754
	115		2.73												753
	116		2.08											abrupt contact gradational contact	752
	117		1.63												751
	118		2.15	22	<del>4.9</del> 5.0	98							LIMESTONE: wackestone with packstone.	abrupt contact	750
	119		1.98										LIMESTONE: packstone as above 115.8'-117.6'; interbeds of silt 0.3' thick;	abrupt contact Abrupt contact	749
	120		1.3												748
	121		2.77											end drilling for day	747
	122		2.1												746

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	Length (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Length (feet)
	123		3.32	23	5.0 5.0	100	SW	R1-R2					LIMESTONE: packstone as above 115.8'-117.6'; interbeds of silt 0.3' thick; LIMESTONE: packstone; light gray (N7); medium to coarse grained; coarsening slightly downward; slightly weathered weak to very weak; well bedded; very shaly; at 123.3'-124'; finer laminae; strong to violent HCl reaction; pyrite; bioturbation and soft sediment deformation generally absent.	100% water return	745
	124		1.23							009-I-22			gradational contact	744	
	125		1.5										LIMESTONE: packstone; between very light gray (N8) and greenish gray (5 GY 6/1); as above except becomes well bedded as above until 227.1'; then grades into coarse packstone then coarse wackestone 128.2'-128.5' above sharp contact.		743
	126		1.65												742
	127		1.83										coarser grains, siltier		741
	128		1.97	24	5.0 5.0	100		R0-R1					LIMESTONE: packstone; sequence as above; light gray (N7); medium to coarse grained; slightly weathered; very weak; weakly bedded; burrows and soft sediment deformation; no pyrite. Grades to wackestone at 129.7'.	abrupt contact	740
	129		1.12												739
	130		2.4							009-I-23					738
	131		2.15												737
	132		3.63										SHALE: claystone; calcareous; light olive gray (5 Y 6/1); very thinly to thinly bedded; slightly weathered; very weak; bioturbation absent; strong HCl reaction; fossils absent.	abrupt contact	736
	133		1.45	25	5.0 5.0	100		R1					LIMESTONE: packstone; grading downward to wackestone; sequence as above; very light gray (N7); soft sediment deformation; medium grained; mottled appearance; very weak to weak; slightly weathered.	abrupt contact	735
	134		2.02												734
	135		1.02							009-I-24				increase in silt/mud and coarsens to wackestone	733
	136		2.4												732
	137		3.23												731

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	Length (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Length (feet)
	138		2.17	26	4.9 5.0	98	F-SW	R1-R3						abrupt contact	732
	139		1.18										LIMESTONE: micrite; light olive gray (5 Y 4/1); massive; fresh; medium strong. SHALE: siltstone to claystone; massive; fresh; medium strong to very weak; no to slight HCl reaction; silty infills.	abrupt contact	731
	140		1.27							009-I-25					730
	141		3.2										LIMESTONE: packstone; grading to wackestone downwards; same sequence as above; greater soft sediment injections of wackestone; weak to very weak.	gradational contact Jordan helping	729
	142		1.67											abrupt contact	728
	143		2.32	27	5.0 5.0	100		R1							727
	144		3.52											100% water return	726
	145		NM							009-I-26					725
	146		2.7				SW							abrupt contact	725
	147		2.98												724
	148		2.92	28	5.2 5.0	100		R1-R2						abrupt contact	723
	149		3.88											Length of recovery stretched due to mechanical breaks.	722
	150		2.7							009-I-27				abrupt contact	721
	151		4.23											abrupt contact	720
	152		3.4											abrupt contact	719



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Length (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Length (feet)
153		7.85	29	5.0 5.0	99							SHALE: to claystone; slightly calcareous; bivalve rich; greenish gray (5 GY 4/1); finely laminated; slightly weathered to fresh; extremely weak; bioturbation; very slight HCl reaction.		718
154		2.2										LIMESTONE: micrite or fine grained packstone; coarsens downward; very light gray (N7); massive; fresh to slightly weathered; medium strong to weak; bioturbated; burrows infilled with wackestone; some soft sediment deformation; HCl violent	abrupt contact	717
155		4.95										SHALE: claystone; calcareous; greenish gray (5 GY 4/1); massive weakly bedded; slightly weathered; extremely weak; some shells;		716
156		4.95										LIMESTONE: wackestone; light olive gray (5 Y 6/1); silty matrix; packstone rip up clasts; slightly weathered to fresh; very thin to thin bedding; shell fragments; violent HCl reaction; high degree of soft sediment deformation.	Run 29 was short because broke off high at bottom, will do short 3' run 30 to correct the .7 stickup	715
157		4.95	30	3.0 3.0	100									714
158		4.48												713
159		6.2	31	1.9 2.0	95							Claystone interbed 159.3'-159.63'.		712
160		2.32												711
161		4.35												710
162		3.25												709
163		3.25	32	5.0 5.0	100									708
164		2.8												707
165		2.98												706
166		3.35												
167		2.8												
167		2.92	33	3.1 3.0	100								Run 32 slightly short, so Cody wants to do short run 33 to pick up stick up,	

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Length (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Length (feet)
168		1.92	33	3.1 3.0	100		R1					LIMESTONE: packstone grading into wackestone; light olive gray (5 Y 6/1); very fine to coarse grained; massive; slightly weathered; weak; strong HCl reaction; shell fragments.	gradational contact	705
169		2.92	34	1.9 2.0	95		R2					LIMESTONE: packstone; grading down to wackestone; sequence with very thin bedded calcareous claystone layers 171'-171.4'; slightly weathered; very weak to weak.	abrupt contact	704
170		2.93							009-I-29					703
171		4.47												702
172		2.5											gradational contact	701
173		3.08	35	5.0 5.0	100		R1-R2							700
174		3.07											abrupt contact	699
175		3.27										SHALE: claystone; calcareous; dark greenish gray (5 GY 4/1); fine sand size; shell fragments; very thinly layered; slightly fissile; slightly weathered; extremely weak; violent HCl reaction.		698
176		4										LIMESTONE: wackestone.	Run 35 broke too high, Cody says split barrel likely to slip sometimes, now we must do short run for 36 to collect stick up	697
177		4.2	36	3.0 3.0	100							LIMESTONE: packstone.	gradational contact	696
178		NM												695
179		3.78	37	2.1 2.0	100									694
180		4.23							009-I-30					693
181		1.67					R1					LIMESTONE: packstone; light olive gray (5 Y 6/1); massive; fine to coarse grained with silty dark greenish gray (5 GY 4/1) interlaminae; very strong HCl reaction; soft sediment deformation.	abrupt contact	692
182		2.08												692

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Length (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Length (feet)
183		1.4	38	4.9 5.0	98		R1							691
184		2										LIMESTONE; wackestone as above 176.8'-180.6'.	gradational contact	690
185		2.17												689
186		0.98										SHALE: claystone; calcareous; dark gray to olive black; clay to silt with minor fine sand; slightly fissile; bedding very thin; soft sediment deformation; shells increasing with depth; slight to slightly strong HCl reaction; slightly weathered to fresh; extremely weak;	gradational contact	688
187		1.48												687
188		0.98	39	5.0 5.0	100		R2-R3							686
189		1.05												685
190		NM							009-I-31					684
191		1.48											mud silt increase	683
192		1.03												682
193		1.38	40	5.0 5.0	100	SW	R2							681
194		1.1												680
195		1.28												679
196		1.6												678
197		8.23												678

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Length (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Length (feet)
198		NM	41	5.0 5.0	100	SW						<p>SHALE: claystone; calcareous; dark gray to olive black; clay to silt with minor fine sand; slightly fissile; bedding very thin; soft sediment deformation; shells increasing with depth; slight to slightly strong HCl reaction; slightly weathered to fresh; extremely weak;</p> <p>LIMESTONE: packstone; as 202', becomes more thinly laminated with silty laminae; almost wackestone; 204'-206' silt rich wackestone layers 2 cm; 209.3'-210.5' more silt rich wackestone layers; 210.6'-211.5' thinly spaced wackestone infilled ; 211.5'-214' finely laminated packstone; irregular silty clayey layers.</p>	gradational contact	677
199		1.55												678
200		1.33							009-I-32					679
201		1.28												680
202		1.65												681
203		1.83	42	5.0 5.0	100									682
204		1.8											100% water return	683
205		2.08												684
206		2.42				R1-R2								685
207		1.32												686
208		NM	43	5.0 5.0	100								687	
209		2.02											688	
210		1.67							009-I-33				689	
211		1.5											690	
212		1.13											691	

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	Length (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Length (feet)
	213		1.82	44	4.9 5.0	97	SW	R1-R2					SHALE: claystone; calcareous; dark gray to olive black; clay to silt with minor fine sand; slightly fissile; bedding very thin; soft sediment deformation; shells increasing with depth; slight to slightly strong HCl reaction; slightly weathered to fresh; extremely weak; LIMESTONE: wackestone; same as above. LIMESTONE: wackestone; same as above.		664
	214		1.42											100% water return	663
	215		1.12												662
	216		1.13												661
	217		1.5												660
	218		2.05	45	5.0 5.0	100		R0-R1						abrupt contact	659
	219		2.95												658
	220		2.15												657
	221		1.87										LIMESTONE: packstone; light olive gray to greenish gray; fine sand massive; slightly coarser downward; soft sediment deformation; slightly weathered; medium strong	abrupt contact 5:00 stop drilling	656
	222		2.12												655
	223		2.77	46	5.2 5.0	100		R0-R3					SHALE: claystone; calcareous; shell fragments; olive gray (5 Y 4/1); rip-up clasts LIMESTONE; packstone as above.	gradational contact Length of recovery stretched due to mechanical breaks.	654
	224		2.78												653
	225		2.95										SHALE: claystone; calcareous; dark gray to olive black; clay to silt with minor fine sand; slightly fissile; bedding very thin; soft sediment deformation; shells increasing with depth; slight to slightly strong HCl reaction; slightly weathered to fresh; extremely weak.	abrupt contact	652
	226													Total depth drilled 225.6'; 65° angle.	651
	227														

Project Name and Job Number TXU Comanche Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-1010</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'06.30251"N / 97°47'42.63420"W		Total Depth 224.8 feet	
Drilling Contractor and Rig Richard Simmons Drilling / BK-81 HD		Elevation and Datum 861.411 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 15 feet	
Sampling Method SPT		Sample Driving Hammer/Drop R&C / 140 lbs / 30 inches	No. of Samples 5	Date Started 12/4/06	
		Borehole Inclination Vertical	Logged by C. Rittel	Date Completed 12/13/06	

Reviewed by / Date Frank Syms 12/14/06

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0										861
1	CL		B-1010 1	3	13/18			ARTIFICIAL FILL (Qaf) LEAN CLAY with limestone fragments stiff, dark reddish gray (5YR4/2), damp, trace fine sand, violent reaction to HCl		860
2				6						859
3				8						858
4			B-1010 2	9	16/15			SILTY SAND with limestone fragments very dense, yellow (10YR7/8), 5-10% fine limestone gravel up to 0.5" dia., subangular, violent reaction to HCl		857
5	SM			6						856
6				50/3"						855
7			B-1010 3	5	5/3					854
8				50/3"						853
9	CL		B-1010 4	8	10/9			RESIDUAL SOIL (RS) LEAN CLAY hard, light yellowish brown (10YR6/4), slightly mottled, damp, violent reaction to HCl, <10% manganese nodules		852
10				50/3"						851
11			B-1010 5	50	11/9			SILT with sand hard, light gray (10YR7/2), with calcareous deposits		850
12				50/3"				Weathered Limestone		849
13	ML									848
14										847
15										846

Project Name and Job Number TXU Comanche Peak COL 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">SOIL LOG</h2> <h2 style="margin: 0;">Boring No. B-1010</h2>
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Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
15								Top of Bedrock at 15'		846
16										845
17										844
18										843
19										842
20										841
21										840
22										839
23										838
24										837
25										836
26										835
27										834
28										833
29										832
30										832




Undisturbed sample  
 SH = Shelby; P = Pitcher; O = other



Driven (2.5 to 3.0 inch) with liners  
 MC = Modified California; O = other



Standard Penetration Test (SPT) sampler

Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG Boring No. B-1010</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'06.30251"N / 97°47'42.63420"W		Total Depth 224.8 feet	
Drilling Contractor and Rig Richard Simmons / BK-81		Elevation and Datum 861.411 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 15 feet	
Casing Size and Depth 4" / 15.1 feet		Length of Core Barrel and Bit 5 feet	No. of Core Boxes 14	Date Started 12/4/06	
		Borehole Inclination Vertical	Logged by C. Rittel	Date Completed 12/13/06	

Reviewed by / Date F. Syms 12/14/06

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
15		2.4										LIMESTONE: micrite; very light gray (N8); highly weathered (HW); extremely weak to weak (R0 to R2); no to violent HCl reaction. [Glen Rose Formation]		846
16		2.02				HW	R0-R2							845
17		1.8	1	4.8 5.0	60								weathered bedrock, color is moderate yellowish brown, clay rich	844
18		1.6									BJ, Si, Op clay fillings			843
19		1.73				SW	R0-R1		1010-6			SHALE: mudstone; medium gray (N5); extremely weak to very weak (R0 to R1); slightly weathered (SW); slight HCl reaction. [Glen Rose Formation]		842
20		2.02										LIMESTONE: packstone; very light gray (N8); slightly weathered (SW); weak to medium strong (R2 to R3); violent to strong HCl reaction. [Glen Rose Formation]	interbeds of limestone/mudstone	841
21		2.87				SW	R1-R3		1010-7					840
22		2.77	2	5.0 5.0	100									839
23		2.77				SW	R1					SHALE: mudstone. [Glen Rose Formation]		838
24		2.65				SW	R2					LIMESTONE. [Glen Rose Formation]		837
25		3.2				SW	R0-R1					SHALE: mudstone; greenish gray (5G 6/1) to dark greenish gray (5G 4/1); extremely weak to very weak (R0 to R1). [Glen Rose Formation]	high mud content...could be a fine grained sandstone	836
26		2.87				SW	R1-R2		1010-8			SHALE: mudstone; silty; greenish gray (5G 4/1); very weak to weak (R1 to R2); slightly weathered (SW); slight HCl reaction. [Glen Rose Formation]		835
27		2.4	3	4.9 5.0	98									834
28		2.27				SW	R0-R1					SHALE: mudstone; greenish gray (5G 6/1) to dark greenish gray (5G 4/1); extremely weak to very weak (R0 to R1). [Glen Rose Formation]		833
29		2.43												832



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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
30		2.37				SW								831
31		1.47				SW	R0-R1						infilled burrow	830
32		1.07	4	4.9 5.0	86						BJ, Ti, Wa BJ, Op, Wa, Sl			829
33		0.9				SW	R2-R3		1010-9		BJ, Wa, Sl Op BJ, Wa, Sl, Op			828
34		4.17									BJ, Wa, Sl Op			827
35		1.67							1010-10					826
36		2.83				SW	R1-R2					LIMESTONE: packstone; extremely violent HCl reaction; slightly weathered (SW); very weak to weak (R1 to R2). [Glen Rose Formation]		825
37		2.05	5	5.0 5.0	100									824
38		1.62				SW	R1-R2					SHALE: mudstone; silty; medium light gray (N6); weak HCl reaction; slightly weathered (SW); very weak to weak (R1 to R2). [Glen Rose Formation]		823
39		2.83										SHALE: mudstone; clay rich; dark greenish gray (5G 4/1); extremely weak to very weak (R0 to R1); slightly weathered (SW). [Glen Rose Formation]	pyrite crystal at 39.1'.	822
40		2.13				SW	R0-R1							821
41		1.9				SW	R1-R2					LIMESTONE: packstone; medium gray (N5); very weak to weak (R1 to R2); slightly weathered (SW). [Glen Rose Formation]		820
42		2.1	6	5.2 5.0	100							LIMESTONE: packstone; very light gray (N8); wavy beds; slightly weathered (SW); weak (R2). [Glen Rose Formation]	color change, wavy beds	819
43		1.45				SW	R2		1010-11				Length of recovery stretched due to mechanical breaks.	818
44														817
45		1.5												

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
45		2.22										LIMESTONE; wackestone; very light gray (N8); wavy beds; slightly weathered (SW); very weak (R1); increase in extremely weak (R0) wavy beds through run. [Glen Rose Formation]		816
46		2.8												815
47		1.48	7	5.2 5.0	100	SW	R2-R0			1010-12				814
48		1.3				SW	R2-R0						Length of recovery stretched due to mechanical breaks.	813
49		1.35												812
50		1.8												811
51		6.22												810
52		4.43	8	5.2 5.0	100	SW	R2-R0			1010-13		SHALE: mudstone; medium gray (N5); slightly weathered (SW); extremely weak to weak (R0 to R2); rare interbeds of limestone <0.1' thick; slight HCl reaction. [Glen Rose Formation]		809
53		4.77				SW	R2-R0						Length of recovery stretched due to mechanical breaks.	808
54		NM												807
55		1.33								1010-14		LIMESTONE: wackestone; light gray (N7); wavy beds 0° to 5° dip; extremely weak to medium strong (R0 to R3); slightly weathered (SW); violent to strong HCl reaction; some sections enriched in muds. [Glen Rose Formation]		806
56		1.83											poor core quality due to sticking in barrel	805
57		3.25	9	5.2 5.0	100	SW	R0-R3							804
58		1.78											Length of recovery stretched due to mechanical breaks.	803
59		1.83												802

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
60		2.4										LIMESTONE: wackestone; light gray (N7); wavy beds 0° to 5° dip; extremely weak to medium strong (R0 to R3); slightly weathered (SW); violent to strong HCl reaction; some sections enriched in muds. [Glen Rose Formation]		801
61		2.1				SW	R0-R3							800
62				4.1 5.0	82				1010-15					
63		2.22	10									SHALE: mudstone; medium dark gray (N4); very weak (R1); slightly weathered (SW); no to slight HCl reaction. [Glen Rose Formation]		799
64		4.67												798
65		4.1				SW	R1							797
66		4.25							1010-16					796
67		2.75												795
68		2.4	11	5.0 5.0	100	SW	R2					LIMESTONE: micrite. [Glen Rose Formation]		794
69		2.52				SW	R1					SHALE: mudstone; medium dark gray (N4); very weak (R1); slightly weathered (SW); no to slight HCl reaction: few limestone interbeds 0.1' thick; 0.3' to 2' apart. [Glen Rose Formation]	sample is desiccating	793
70		3.33												792
71		1.53										LIMESTONE: micrite; very light gray (N8); very weak to weak (R1 to R2); wavy beds dipping 10°. [Glen Rose Formation]	crew attempted to recover lost core	791
72		3.35				SW	R1-R2							790
73		4.02	12	4.9 5.0	98									789
74		4.85				SW	R2		1010-17			SHALE: mudstone; dark gray (N3); fine grained; well cemented; slightly weathered (SW); weak (R2); few thin limestone interbeds. [Glen Rose Formation]		788
75		3.52												787

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
75		1.95				SW	R2							786
76		4.18				SW	R2-R0					LIMESTONE: micrite to wackestone; slightly weathered (SW); weak (R2); wavy beds; extremely weak (R0) dark mud layers 0.25" thick. [Glen Rose Formation]	no sample B-1010-18 recorded on original log	785
77		3.57	13	5.0 5.0	100	SW	R1-R2					SHALE: mudstone; medium dark gray (N4); fine grained; very weak to weak (R1 to R2); slightly weathered (SW). [Glen Rose Formation]		784
78		3.28										LIMESTONE: micrite to wackestone; very light gray (N8); slightly weathered (SW); weak (R2); wavy beds; extremely weak (R0) dark mud layers, 0.25" to 0.5" thick; increasing mud layers with depth. [Glen Rose Formation]		783
79		2												782
80		1.83										Mudstone interbed 80.1' to 80.4'. [Glen Rose Formation]		781
81		1.78												780
82		1.98	14	4.8 5.0	96									779
83		1.28												778
84		1.33				SW	R2-R0							777
85		1.27												776
86		3.12												775
87		2.67	15	5.0 5.0	100									774
88		2.17												773
89		2.83												772
90														

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
90														771
91		NM												770
92		NM												769
93		NM	16	4.9 5.0	98	SW	R2-R0						wavy beds	768
94		NM												767
95		NM							1010-21					766
96		2.82				SW	R2					LIMESTONE: wackestone; very light gray (N8); weak (R2); violent reaction to HCl. [Glen Rose Formation]	end12/5-begin12/12	766
97		1				SW	R1					SHALE: medium dark gray (N4); very weak (R1); violent HCl reaction. [Glen Rose Formation]		765
98		1.33	17	5.0 5.0	100	SW	R2		1010-22			LIMESTONE: wackestone; very light gray (N8); weak (R2); burrows and some rip up clasts. [Glen Rose Formation]		764
99		1.92												763
100		2.72										LIMESTONE: wackestone; medium light gray (N6); very weak (R1); dry to damp; moderately weathered (MW). [Glen Rose Formation]		762
101		2.45				MW	R1							761
102		3.28												760
103		2.03	18	4.9 5.0	98							LIMESTONE: wackestone; medium gray (N5); dry; mud filled vugs up to 1"; mud filled burrows; shaly interbeds. [Glen Rose Formation]		759
104		0.73				SW	R2		1010-23					758
105		1.3												757

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
105		1.25										LIMESTONE: wackestone; medium gray (N5); dry; mud filled vugs up to 1"; mud filled burrows; shaly interbeds. [Glen Rose Formation]	strong HCl	756
106		1.07												755
107		1.78	19	5.0 5.0	100									754
108		1.03							1010-24				increased clast size	753
109		2											increased clast size	752
110		1.73				SW	R2						darker gray	751
111		1.07											strong HCl	750
112		1.17	20	5.0 5.0	100									749
113		1.42							1010-25				increased shale beds from 112.0'-114.0'	748
114		1.25												747
115		1.25												746
116		3.15												745
117		2.93	21	5.0 5.0	100	SW	R1-R2						SHALE: mudstone; interfingers light gray (N7); very weak to weak (R1 to R2); dry; burrows. [Glen Rose Formation]	744
118		0.97				SW	R2		1010-26				LIMESTONE: micrite; very fine grained; weak (R2); slightly weathered (SW). [Glen Rose Formation]	743
119		1.2				SW	R2						LIMESTONE: wackestone; light gray (N7); weak (R2); dry; increased clast size; shaly interbeds; violent HCl reaction. [Glen Rose Formation]	742
120														

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
120		1.25										LIMESTONE: wackestone; light gray (N7); weak (R2); dry; increased clast size; shaly interbeds; violent HCl reaction. [Glen Rose Formation]		741
121		3.15				MW	R2		1010-27					740
122		2.93	22	5.0 5.0	100									739
123		0.97												738
124		1.2				SW	R2							737
125		2.25				SW	R1						distinct bed of larger clasts, strong HCl reaction	736
126		1.8							1010-28			LIMESTONE: wackestone; light gray (N7); weak (R2); slightly weathered to fresh (SW to F); dry; some burrows near top of mudstone bed; laminae near bottom of run. [Glen Rose Formation]		735
127		2.17	23	5.0 5.0	100									734
128		1.82				F-SW	R2							733
129		2.43												732
130		1.7												731
131		1.87				SW	R2							730
132		1.58	24	5.0 5.0	100									729
133		2.03				SW	R2		1010-29					728
134		1.72												727
135														

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
135		1.4				SW	R2					LIMESTONE; SHALE: mudstone; light gray (N7); damp; weak (R2); abundant mud matrix; very fine clasts; slightly weathered (SW). [Glen Rose Formation]		726
136		2.43												725
137		4.05	25	5.0 5.0	100	SW	R2					LIMESTONE: wackestone; medium gray (N5); weak (R2); dry; abundant wavy shale beds. [Glen Rose Formation]		724
138		1.92							1010-30			LIMESTONE: wackestone; medium gray (N5); weak (R2); dry; occasional wavy shaly beds; abundant bioturbations and burrows; extremely weak (R0) in burrows; violent HCl reaction. [Glen Rose Formation]	strong HCl reaction below	723
139		2.3												722
140		1.28												721
141		2.5				SW	R0-R2							720
142		3.08	26	5.0 5.0	100									719
143		2.22												718
144		3.43							1010-31			LIMESTONE: mudstone; dark gray (N4); extremely weak (R0); slightly weathered (SW); damp; thin mud layers (<0.1'). [Glen Rose Formation]	weak HCl reaction	717
145		2.13				SW	R0							716
146		6.03				MW	R2					LIMESTONE: wackestone; medium light gray (N6); slightly weathered (SW); weak (R2); dry. [Glen Rose Formation]	large rip up clasts, mud filled burrows	715
147		3.48	27	5.0 5.0	100									714
148		1.67				MW	R2					SHALE: mudstone; shaly; grayish black (N2) to dark greenish gray (5GY 4/1); damp; weak (R2). [Glen Rose Formation]	wavy thin beds, moderately weathered	713
149		2.95				SW	R2					LIMESTONE: packstone; light gray (N7); weak (R2); dry; slightly weathered (SW); large clasts; numerous fossils. [Glen Rose Formation]	gradational contact	712
150									1010-32					





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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
150		2.17				MW	R0-R1					SHALE: mudstone; dark gray (N3); extremely weak (R0); damp; moderately weathered (MW). [Glen Rose Formation]	sections of interbedded packstone, moderate HCl	711
151		4.33										LIMESTONE: packstone; light gray (N7) to medium gray (N5); weak (R2); dry; slightly weathered (SW); large clasts <1'; top has thin mud layers; slight to strong HCl reaction; more shaly interbeds below 155.0'; decrease in clast size at 162.5'; some mud layers less than 0.2' thick. [Glen Rose Formation]	gradational contact	710
152		1.1	28	5.1 5.0	100								moderate to strong HCl reaction	709
153		2.18											Length of recovery stretched due to mechanical breaks.	708
154		1.97												707
155		2.03												706
156		3.02												705
157		1.83	29	5.1 5.0	100	SW	R2							704
158		1.37											Length of recovery stretched due to mechanical breaks.	703
159		1.5												702
160		1.15											no sample B-1010-34 recorded on original log	701
161		3.47												700
162		1.15	30	5.0 5.0	100									699
163		1.73												698
164		2.08				SW								697

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
165		2.77										SHALE: mudstone; dark gray (N3); moderately weathered (MW); damp; coal bed in top 0.2'; medium grained; extremely weak to weak (R0 to R2); slight to strong HCl reaction; few fossils. [Glen Rose Formation]		696
166		2.83												695
167		2.43	31	5.0	100	SW	R0-R2							694
168		3.23												693
169		2.83												692
170		1.17							1010-35				LIMESTONE; wackestone; light gray (N7) to medium light gray (N6); slightly weathered (SW); weak to medium strong (R2 to R3); dry; some wavy layer clasts up to pebble size; matrix darkens at 174.0' to 175.2'; few fossils in this zone. [Glen Rose Formation]	
171		1.63											690	
172		1.42	32	5.0	100	SW	R2-R3						689	
173		1.67											688	
174		1.85											687	
175		1.77										LIMESTONE: packstone; medium light gray (N6) to medium gray (N5); weak to medium strong (R2 to R3); dry; slight reaction to HCl. [Glen Rose Formation]	grain size pebble to small cobble, slightly weathered (SW), distinct contact	686
176		1.58				SW	R2-R3							685
177		1.33	33	5.0	100							LIMESTONE; packstone; medium light gray (N6) to light gray (N7); medium strong (R3); dry; slight reaction to HCl; abundant fossils; grain size to pebble sized; slightly weathered (SW). [Glen Rose Formation]		684
178		1.17				SW	R3							683
179		1.35												682

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
180		1.2	34	<del>4.8</del> 5.0	96	SW	R3					LIMESTONE; packstone; medium light gray (N6) to light gray (N7); medium strong (R3); dry; slight reaction to HCl; abundant fossils; grain size to pebble sized; slightly weathered (SW). [Glen Rose Formation]		681
181		1.48												680
182		1.05												679
183		1.17												678
184		1.25												677
185		2.6												676
186		3												675
187		2.1												674
188		1.45												673
189		1.6												672
190		1.68	35	<del>5.0</del> 5.0	100	SW	R2-R3				SHALE: medium gray (N5); dry; very weak (R1); slightly to moderately weathered (SW to MW). [Glen Rose Formation]		671	
191		1.98											670	
192		2.5											669	
193		2.55											668	
194		1.77											667	

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
195		1.73										LIMESTONE; packstone; medium gray (N5) to light gray (N7); weak to medium strong (R2 to R3); abundant large fossils; some mud filled burrows and cracks; dry; slightly weathered (SW); some rip up clasts, rip up density increases near bottom; sparse fossils; few wavy shaly beds. [Glen Rose Formation]	strong HCl reaction below	666
196		1.7				SW								665
197		2.5	37	5.0 5.0	100				1010-38					664
198		1.68										Below 197.5', strength increases to medium strong (R3); sparse fossils; few wavy shaly cracks and burrows.		663
199		1.43												662
200		1.68				SW	R2-R3							661
201		1.62												660
202		1.5	38	5.0 5.0	100									659
203		1.15										Below 202.6', same as above but no shaly cracks or cracks.		658
204		1.25				SW								657
205		3.68												656
206		3.02				SW	R0-R1		1010-39			SHALE: mudstone; medium dark gray (N4) to dark gray (N3); extremely weak to very weak (R0 to R1); damp; slightly weathered (SW); 1 mm laminar mud layers. [Glen Rose Formation]		655
207		2.22	39	5.0 5.0	100	SW	R3					LIMESTONE: packstone; medium gray (N5) to light gray (N7); weak to medium strong (R2 to R3); large fossils up to 5 mm; some mud filled burrows; dry; slightly weathered (SW); some rip up clasts, rip up density increases near bottom; sparse fossils; few wavy shaly beds. [Glen Rose Formation]		654
208		2.8												653
209		3.1				SW	R0-R1					SHALE: mudstone; medium dark gray (N4) to dark gray (N3); extremely weak to very weak (R0 to R1); damp; slightly weathered (SW); mud; 1 mm laminar layers; interbedded with packstone in 0.3' beds.	gradational contact	652
210														


Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1010</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
210		3.33				SW	R2					[Glen Rose Formation] LIMESTONE: packstone; light gray (N7) to medium light gray (N6); dry; weak (R2); thin beds of shale (mudstone); slightly weathered (SW). [Glen Rose Formation]		651
211		3.02				MW	R0					SHALE: mudstone; medium dark gray (N4) to medium gray (N5); extremely weak (R0); moderately weathered (MW). [Glen Rose Formation]		650
212		3.15	40	4.9 5.0	98	SW	R2					LIMESTONE: packstone; light gray (N7) to medium light gray (N6); dry; weak (R2); thin beds of shale (mudstone); slightly weathered (SW). [Glen Rose Formation]	first sandstone	649
213		1.93				HW	R0-R1					SANDSTONE: beach sand; olive gray (5Y 4/1); very weak to extremely weak (R1 to R0); moderately to highly weathered (MW to HW); damp; fine grained. [Glen Rose Formation]		648
214		1.13				HW-MW	R1					SHALE: mudstone; calcareous mud with abundant sand; dark gray (N3); very weak (R1); damp; highly weathered to moderately weathered (HW to MW). [Glen Rose Formation]		647
215		3.18				HW-MW	R1					LIMESTONE: wackestone; medium light gray (N6) to light gray (N7); dry; slightly weathered (SW); medium strong (R3); similar to wackestone above. [Glen Rose Formation]	gradational contact	646
216		1.82				SW	R3					SHALE: mudstone; sandy; olive gray (5Y 4/1) to dark gray (N3); extremely weak to very weak (R0 to R1); top 0.2' is beach sand; damp; highly weathered (HW); decreasing sand content, becoming more shaly below 219.0'. [Glen Rose Formation]	weak HCl reaction	645
217		1.8	41	4.8 5.0	96	HW	R0-R1					LIMESTONE: wackestone; interbedded with mudstone and shale; no bed thicker than 0.5'; medium light gray (N6) to medium dark gray (N4); slightly to moderately weathered (SW to MW); dry to damp; extremely weak to weak (R0 to R2); pebble sized to fine grain clasts. [Glen Rose Formation]	strong to moderate HCl reaction	644
218		1.9				HW	R0-R1							643
219		1.1								1010-40				642
220		2.02												641
221		3.68												640
222		4.43	42	4.9 5.0	98	SW-MW	R0-R2							639
223		4.95												638
224		3.85												637
225												BOTTOM OF HOLE AT 224.8'		

Project Name and Job Number TXU Comanche Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-1011-I offset</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'07.38565"N / 97°47'42.79987"W		Total Depth 15 feet	
Drilling Contractor and Rig Richard Simmons Drilling / BK-81 HD		Elevation and Datum 855.31 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 15 feet	
Sampling Method SPT		Sample Driving Hammer/Drop R&C / 140 lbs / 30 inches	No. of Samples 4	Date Started 12/14/06	
		Borehole Inclination Vertical	Logged by Strane	Date Completed 12/14/06	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 1/10/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0								<b>RESIDUAL SOIL (RS)</b> SANDY SILT medium stiff, white to very pale brown (10YR8/1 - 10YR8/3), damp, with calcareous deposits		855
1				6						854
2			B-1011-I offset 1	12	13/18					853
3				14						852
4	ML		B-1011-I offset 2	12	9.5/9			hard, brownish yellow (10YR6/8), damp to dry		851
5				50/3"						850
6			B-1011-I offset 3					yellow (10YR8/6)		849
7				62/6"	8/6					848
8								LEAN CLAY hard, light olive brown (7.5Y5/6), damp to moist		847
9			B-1011-I offset 4	11	16/18					846
10				9						845
11	CL		B-1011-I offset 5					few angular limestone fragments, white to light gray (25YR9/1 - 8/2), dry to damp		844
12				50/0.5"	6/6.5					843
13								Weathered Limestone		842
14										841
15									Bedrock at 15'	840

Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG Boring No. B-1011-I</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'07.38565"N / 97°47'42.79987"W		Total Length 225.8 feet	
Drilling Contractor and Rig Boart Longyear / 44TMA		Elevation and Datum 854.71 feet NAVD88	Ground Water Depth NA	Length to Bedrock 12.42 feet	
Casing Size and Depth 4" / 13.6 feet		Length of Core Barrel and Bit 8.6 feet	No. of Core Boxes 15	Date Started 12/16/06	
		Borehole Inclination 65 Degrees	Logged by E. Weldon	Date Completed 1/9/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 1/10/07

Length (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Length (feet)
14		2.48	1	1.4 2.0	40							LIMESTONE: packstone with claystone interbeds 14.5' to 15.1'; very pale orange (10YR 8/2) to dark yellowish orange (10YR 6/6); fine to medium grained; massive to weakly laminated; extremely weak (R0); moderately weathered (MW); violent HCl reaction; turns light gray (N7) at 17.0'; becomes thinly laminated to 19.7', then massive. [Glen Rose Formation]	casing set at 13.6' angle depth, begin rock coring 9:30am	842
15		2.18									BPS, Si			841
16						MW	R0				BPS, Si, smooth, slight staining Si, rough, MnO and FeO, BPS			840
17		5.67									BPS, Si smooth BPS, rough			839
18		2.47	2	5.0 5.0	72									838
19									1000-I-1		BPS on BB, sly smooth	SHALE: claystone; medium gray (N5); finely laminated; slightly weathered (SW); extremely weak (R0); occasional discontinuous MnO lamellae; strong HCl reaction; shells. [Glen Rose Formation]	abrupt contact	837
20		2.42				SW	R0							837
21		2.97				MW	R0				BPS on BB	LIMESTONE: packstone; medium gray (N5); fine to medium grained; massive to weakly laminated; moderately weathered (MW); extremely weak (R0); violent HCl reaction; 1.0 to 3.0 cm layers of fines. [Glen Rose Formation]	abrupt contact	836
22		3.43				SW	R0							835
23		2.58										SHALE: claystone; medium gray (N5); finely laminated; slightly weathered (SW); extremely weak (R0); occasional discontinuous MnO lamellae; strong HCl reaction; shells. [Glen Rose Formation]		834
24		2.15	3	5.0 5.0	100	MW	R1					SHALE: siltstone; greenish gray (5GY 6/1); massive to finely laminated; vugged; moderately weathered (MW); very weak (R1); heavily bioturbated; slight HCl reaction. [Glen Rose Formation]	abrupt contact	833
25		2.17				SW	R0					SHALE: claystone; calcareous; greenish gray (5GY 6/1); weakly laminated; slightly weathered (SW); extremely weak (R0); shell rich; strong HCl reaction. [Glen Rose Formation]	abrupt contact	832
26		2.98										LIMESTONE: wackestone; greenish gray (5GY 6/1); weakly laminated; shell fragments; moderately weathered (MW); extremely weak to very weak (R0 to R1); HCl reaction is violent. [Glen Rose Formation]	abrupt contact	831
27		2.78				MW	R0-R1							831
28		4.52	4	3.0 3.0	100							SHALE: claystone; calcareous; shell rich layers 0.4 cm thick; moderately weathered (MW); extremely weak (R0). [Glen Rose Formation]	abrupt contact	830
29		2.63												829

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1011-I</h2>
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	Length (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Length (feet)					
	29		2.22	5	2.1 2.0	95	MW	R1					LIMESTONE: packstone; very light gray (N8) to light gray (N7); massive; interbedded with grainstone to 30.0'; moderately weathered (MW); very weak (R1); abundant shells; violent HCl reaction. [Glen Rose Formation]	Cody says it feels like barrel is stuffed so he wants to do a 3.0' run 4 and 2.0' run 5	828					
	30		2.23													1000-I-3				827
	31		2.55	6	4.6 5.0	98	SW	R2					LIMESTONE: wackestone; dark greenish gray (5GY 4/1); silty matrix supporting medium to coarse grained shell fragments; slightly weathered (SW); weak (R2); bioturbated 34.2' to 34.7'; violent HCl reaction. [Glen Rose Formation]	abrupt contact gradational contact	826					
	32		2.15																	825
	33		1.63																	824
	34		1.38																	823
	35		1.72	7	5.0 5.0	100	MW	R1-R2					SHALE: siltstone; greenish gray (5GY 6/1); massive; moderately weathered (MW); very weak to weak (R1 to R2); bioturbated; fossil molds (gastropods) vugged out; no to very slight HCl reaction. [Glen Rose Formation]	abrupt contact	822					
	36		2.47													1000-I-4				821
	37		6.32																	820
	38		4.77	8	5.0 5.0	100	SW	R0					SHALE: dark greenish gray (5GY 4/1); silt to clay size; fissile; slightly weathered (SW); extremely weak (R0); very thinly laminated; coarse grained shells. [Glen Rose Formation]	abrupt contact	819					
	39		2.62																	818
	40		NM	8	5.0 5.0	100	SW	R1					LIMESTONE: wackestone; dark greenish gray (5GY 4/1); clay rich 39.2' to 40.0'; slightly weathered (SW); very weak (R1); violent HCl reaction. [Glen Rose Formation]	gradational contact 100% water return	817					
	41		NM													1000-I-5				816
	42		1.3																	815
	43		12										LIMESTONE: packstone; light olive gray (5Y 6/1) to very light gray (N8); massive;	gradational contact						



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Length (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Length (feet)
44		1.83	8	5.0	100	SW	R1-R2		1000-I-6			medium grained; very weak to weak (R1 to R2); slightly weathered (SW); minor coarse crystalline CaCO3 replacement infilling; violent HCl reaction. [Glen Rose Formation]	gradational contact	815
45		1.38				SW	R1					LIMESTONE: wackestone; dark greenish gray (5GY 4/1); silty matrix supports medium to coarse grains and packstone clasts; slightly weathered (SW); very weak (R1): thinly laminated. [Glen Rose Formation]	gradational contact	814
46		1.83				SW	R1-R2					LIMESTONE: packstone; light olive gray (5Y 6/1) to very light gray (N8); thinly laminated; medium grained; very weak to weak (R1 to R2); slightly weathered (SW); violent HCl reaction. [Glen Rose Formation]	gradational contact	813
47		1.22				SW	R1					LIMESTONE: wackestone; dark greenish gray (5GY 4/1); silty matrix supports medium to coarse grains and packstone clasts; slightly weathered (SW); very weak (R1): thinly laminated. [Glen Rose Formation]	abrupt contact	812
48		2.22	9	5.1	100	SW	R1					LIMESTONE: packstone; light olive gray (5Y 6/1) to very light gray (N8); thinly laminated; medium grained; very weak to weak (R1 to R2); slightly weathered (SW); violent HCl reaction. [Glen Rose Formation]	abrupt contact	811
49		1.52				SW	R1					LIMESTONE: wackestone; dark greenish gray (5GY 4/1); silty matrix supports medium to coarse grains and packstone clasts; slightly weathered (SW); very weak (R1): thinly laminated; highly convoluted sediment deformation; abundant shell fractures; violent HCl reaction. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	810
50		2.9				SW	R0					LIMESTONE: packstone; very light gray (N8); medium grained to coarse; slightly weathered (SW); interlaminae; very weak (R1): convoluted bedding; violent HCl reaction. [Glen Rose Formation]	gradational contact	809
51		4.12				SW	R2-R3					LIMESTONE: wackestone; dark greenish gray (5GY 4/1); silty matrix supports medium to coarse grains and packstone clasts; slightly weathered (SW); very weak (R1): thinly laminated; highly convoluted sediment deformation; abundant shell fractures; violent HCl reaction. [Glen Rose Formation]	gradational contact	808
52		4.27				SW	R0					LIMESTONE: micrite; with clay interbeds; very light gray (N8) to light olive gray (5Y 6/1); damp; massive; slightly weathered (SW); weak to medium strong (R2 to R3); violent HCl reaction; pinch and swell sediment deformation; coarse crystalline CaCO3 replacement of shells; bioturbation. [Glen Rose Formation]	gradational contact	807
53		5.75	10	5.2	100	SW	R0					SHALE: claystone; greenish black (5GY 2/1); one interbed of packstone 50.8' to 50.9'; very thinly laminated; fissile; slightly weathered (SW); extremely weak (R0); slight HCl reaction. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	806
54		4.08				SW	R2-R3					LIMESTONE: micrite; with clay interbeds; very light gray (N8) to light olive gray (5Y 6/1); damp; massive; slightly weathered (SW); weak to medium strong (R2 to R3); violent HCl reaction; pinch and swell sediment deformation; coarse crystalline CaCO3 replacement of shells; bioturbation. [Glen Rose Formation]	abrupt contact	805
55		NM							1000-I-8					
56		1.92												
57		3												
58		2.72	11	4.9	98	SW	R2-R3						100% water return	802

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Length (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Length (feet)
59		2.58	11	4.0 5.0	98	SW	R2-R3					SHALE: claystone; greenish black (5GY 2/1); slightly weathered (SW); extremely weak (R0); interbeds of massive micrite thin spaced and 1.0 to 4.0 cm thick.		801
60		2.62							1000-I-9			LIMESTONE: micrite; with clay interbeds; very light gray (N8) or light olive gray (5Y 6/1); damp; massive; slightly weathered (SW); weak to medium strong (R2 to R3); pinch and swell sediment deformation; coarse crystalline CaCO3 replacement of shells; bioturbation; slight to strong HCl reaction; rip-up clasts of micrite. [Glen Rose Formation]	abrupt contact	799
61		2.95										Coarse crystalline carbonate claystone layer 56.8' to 57.0'.		
62		2.37				F-SW	R2					Coarse crystalline carbonate claystone layer 59.6' to 59.8'.		798
63		2.62	12	5.0 5.0	100							Coarse crystalline carbonate claystone layer 60.5' to 60.8'.	abrupt contact	797
64		6.47										LIMESTONE micrite; with clay interbeds; very light gray (N8) to light olive gray (5Y 6/1); damp; massive; fresh to slightly weathered (F to SW); weak (R2); pinch and swell sediment deformation; coarse crystalline CaCO3 replacement of shells; bioturbation; slight to strong HCl reaction; rip-up clasts of micrite; extremely high content gastropod shells; high silt clay infill. [Glen Rose Formation]		796
65		NM				F-SW	R0		000-I-10			SHALE: claystone; greenish black (5GY 2/1) very thinly laminated; fresh to slightly weathered (F to SW); extremely weak (R0); shell fragments coarse; no to slight HCl reaction; fissile. [Glen Rose Formation]	100% water return	795
66		4.75										LIMESTONE: micrite with abundant replaced gastropod shells; light olive gray (5Y 6/1); fresh (F); medium strong (R3). [Glen Rose Formation]	abrupt contact	794
67		3.27				F	R3					SHALE: dark greenish gray (5GY 4/1); slightly weathered to fresh (F to SW); extremely weak (R0); with thin interbeds (2 mm to 3 cm thick) of very fine calcareous sand and micrite spaced thinly to very thin; no to slight HCl reaction except in sandier micrite layers; fissile; coarse shells. [Glen Rose Formation]		793
68		3.5	13	4.0 5.0	97									792
69		4.2				F-SW	R0							791
70		3.6							000-I-11					790
71		2.68										LIMESTONE: micrite; light olive gray (5Y 6/1) to very light gray (N8); massive; very fine grained; slightly weathered (SW); very weak to weak (R1 to R2); violent HCl reaction. [Glen Rose Formation]	abrupt contact	790
72		2.55												789
73		2.62	14	5.0 5.0	100	SW	R1-R2							

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Length (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Length (feet)
74		3.8	14	5.0 5.0	100	SW							gradational contact	788
75		1.97				SW	R0		000-I-12			SHALE: greenish black (5GY 2/1) to dark greenish gray (5GY 4/1) downward; slightly weathered (SW); extremely weak (R0); coarse shell fragments; fine laminations; slight HCl reaction. [Glen Rose Formation]		787
76		2.12												786
77		2.32				SW	R1-R2					LIMESTONE: micrite; light olive gray (5Y 6/1) to very light gray (N8); massive; very fine grained; slightly weathered (SW); very weak to weak (R1 to R2); violent HCl reaction. [Glen Rose Formation]	abrupt contact	785
78		5.03	15	5.1 5.0	100								abrupt contact	784
79		4.92				SW	R0						Length of recovery stretched due to mechanical breaks.	783
80		2							000-I-13				abrupt contact grains coarsening	782
81		2.4				SW	R1-R2							781
82		2.65										Shale bed 82.1' to 82.4'.		780
83		1.82	16	4.9 5.0	98	SW	R1-R2							779
84		1.82											gradational contact	778
85		1.22												777
86		1.68							000-I-14					776
87		1.28				SW	R2						silty clay matrix increases	775
88		1.88	17	5.0 5.0	99									775

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Length (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Length (feet)
89		2.97	17	5.0	99	SW	R2						gradational contact	774
90		1.73							000-I-15			LIMESTONE: wackestone; greenish gray (5GY 6/1); silty; clayey; fine to coarse grains; very thinly laminated; slightly weathered (SW); very weak (R1): soft sediment deformation; laminae are 1.0 mm thick and discontinuous; strong HCl reaction; shell fragments. [Glen Rose Formation]	silty clay increase	773
91		2.1				SW	R1							772
92		3.28											abrupt contact	771
93		3.2	18	5.0	100	SW	R2					LIMESTONE: packstone; greenish gray (5GY 6/1); fine grained to coarse; massive to very thinly laminated; weak (R2); slightly weathered (SW); siltiness increasing downward; abundant soft sediment deformation; some burrows; violent HCl reaction; shell fragments. [Glen Rose Formation]	gradational contact increasing clay content	770
94		1.75				SW	R1							769
95		1.87							000-I-16			LIMESTONE: wackestone; greenish gray (5GY 6/1); silty; clayey; fine to coarse grains; very thinly laminated; slightly weathered (SW); very weak (R1): soft sediment deformation; laminae are 1.0 mm thick and discontinuous; strong HCl reaction; shell fragments. [Glen Rose Formation]	abrupt contact	768
96		2				SW	R2							767
97		2.58										LIMESTONE: packstone; greenish gray (5GY 6/1); fine grained to coarse; massive to very thinly laminated; weak (R2); slightly weathered (SW); siltiness increasing downward; abundant soft sediment deformation; some burrows; violent HCl reaction; shell fragments. [Glen Rose Formation]	gradational contact	766
98		2.35	19	5.0	100	SW	R1						100% water return	765
99		2.17										LIMESTONE: wackestone; greenish gray (5GY 6/1); silty; clayey; fine to coarse grains; very thinly laminated; slightly weathered (SW); very weak (R1): soft sediment deformation; laminae are 1.0 mm thick and discontinuous; strong HCl reaction; shell fragments. [Glen Rose Formation]		764
100		2.27							000-I-17				abrupt contact	763
101		2.1										LIMESTONE: packstone; greenish gray (5GY 6/1); fine grained to coarse; massive; weak (R2); slightly weathered (SW); siltiness increasing downward; some burrows; violent HCl reaction; shell fragments. [Glen Rose Formation]	drilling stopped	762
102		1.25												761
103		2.33	20	5.1	100	SW	R2							761

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Length (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Length (feet)
104		3.65	20	5.1 5.0	100	SW	R2					LIMESTONE: packstone; greenish gray (5GY 6/1); fine grained to coarse; massive; weak (R2); slightly weathered (SW); siltiness increasing downward; some burrows; violent HCl reaction; shell fragments. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	760
105		2.5							000-I-18				increase silt content	759
106		2.87				SW	R1					LIMESTONE: wackestone; dark greenish gray (5GY 4/1); silty to coarse grained; very weak (R1); slightly weathered (SW); intercemented very thinly; slight to strong HCl reaction. [Glen Rose Formation]	abrupt contact	758
107		1.37				SW	R2					LIMESTONE: packstone to micrite; very fine to coarse; light gray (N7) to medium bluish gray (5 B 5/1); weak (R2); slightly weathered (SW). [Glen Rose Formation]	abrupt contact	757
108		1.9	21	5.0 5.0	100	SW	R1-R2					LIMESTONE: wackestone; slightly weathered (SW); weak to very weak (R2 to R1); with intraclasts of packstone.	gradational contact	756
109		1.42				SW	R1-R2					LIMESTONE: packstone; massive; grading to interlaminated; some coarse crystalline CaCO3; slightly weathered (SW); weak to very weak (R2 to R1); wackestone bed 109.2' to 109.5'. [Glen Rose Formation]	abrupt contact	755
110		1.58				SW	R1-R2		000-I-19			LIMESTONE: packstone; light olive gray (5Y 6/1) to light gray (N7); massive; slightly weathered (SW); weak to very weak (R2 to R1). [Glen Rose Formation]	abrupt contact	754
111		2.43				SW	R1-R2					LIMESTONE: wackestone; slightly weathered (SW); weak to very weak (R2 to R1); with intraclasts of packstone.	gradational contact	753
112		2.92				SW SW SW	R1-R2					LIMESTONE: packstone; massive; grading to interlaminated; some coarse crystalline CaCO3; slightly weathered (SW); weak to very weak (R2 to R1). [Glen Rose Formation]	gradational contact	752
113		2.33	22	4.6 5.0	98	SW SW	R2					SHALE: claystone; calcareous; layers of packstone; very thinly spaced; greenish gray (5GY 6/1) to dark greenish gray (5GY 4/1); slightly weathered (SW); weak to very weak (R2 to R1); slight to strong HCl reaction; rip-up clasts. [Glen Rose Formation]	abrupt contact	751
114		2.88				SW	R1		000-I-20			LIMESTONE: wackestone; dark greenish gray (5GY 4/1); fine to coarse grained; slightly weathered (SW); very weak (R1); massive; strong HCl reaction. [Glen Rose Formation]	gradational contact	750
115		2.25				SW	R2					LIMESTONE: packstone; light gray (N7) to light olive gray (5Y 6/1); slightly weathered (SW); weak (R2); burrows; violent HCl reaction; shell fragments. [Glen Rose Formation]	abrupt contact	749
116		1.58				SW	R1					LIMESTONE: wackestone; dark greenish gray (5GY 4/1); silty to coarse; very thinly laminated; slightly weathered (SW); very weak (R1); strong HCl reaction. [Glen Rose Formation]	gradational contact	748
117		2.27				SW	R1							
118		1.5	23	5.0 5.0	100	SW	R1							

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1011-I</h2>
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Length (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Length (feet)
119			23	5.0	100							Formation]		747
		1.78		5.0								LIMESTONE: packstone; light olive gray (5Y 6/1); massive; very fine to coarse; slightly weathered (SW); weak (R2); interlaminated every 1.0 cm to 2.0 cm with olive gray (5Y 4/1) silty beds; strong HCl reaction. [Glen Rose Formation]		746
120		1.27				SW	R2					LIMESTONE: wackestone; dark greenish gray (5GY 4/1); silty to coarse; very thinly laminated; slightly weathered (SW); very weak (R1); strong HCl reaction. [Glen Rose Formation]		745
121		2.63							000-I-21			LIMESTONE: packstone; light olive gray (5Y 6/1); massive; very fine to coarse; slightly weathered (SW); weak (R2); interlaminated every 1.0 cm to 2.0 cm with olive gray (5Y 4/1) silty beds; wackestone interbeds; strong HCl reaction. [Glen Rose Formation]		744
122		3.03				SW	R1-R2							743
123		1.47	24	5.0	99	SW	R2					SHALE: siltstone; calcareous; light olive gray (5Y 6/1) to greenish gray (5GY 6/1); slightly weathered (SW); weak to very weak (R2 to R1); massive; heavily bioturbated; weak to strong HCl reaction. [Glen Rose Formation]	abrupt contact	742
124		1.47							000-I-22			SHALE: siltstone; calcareous; olive gray (5Y 4/1); very thinly laminated; slight HCl reaction; slightly weathered (SW); weak (R2). [Glen Rose Formation]		741
125		NM				SW	R2					LIMESTONE: packstone; very light gray (N8) to medium gray (N5); slightly weathered (SW); weak (R2); very thinly laminated; strong HCl reaction. [Glen Rose Formation]		740
126		2										LIMESTONE: wackestone with packstone; medium gray (N5); silt to coarse grained; shell fragments; strong HCl reaction; soft sediment deformation; very weak (R1); slightly weathered (SW). [Glen Rose Formation]	gradational contact	739
127		3.87				SW	R1							738
128		2.12	25	5.0	100	SW	R2					LIMESTONE: packstone; very light gray (N8) to medium gray (N5); slightly weathered (SW); weak (R2); lacks regular laminations; strong HCl reaction; much soft sediment deformation. [Glen Rose Formation]	abrupt contact	737
129		1.37										LIMESTONE: wackestone; medium gray (N5); slightly weathered (SW); weak (R2); silty matrix; coarse to medium grains; irregularly laminated; shell fossils; strong HCl reaction. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks. gradational contact	736
130		1.42				SW	R2		000-I-23					735
131		3.33				SW	R1-R2					SHALE: claystone; calcareous; light olive gray (5Y 6/1) to light gray (N7); silt to fine grained; elongate bedding; slightly weathered (SW); weak to very weak (R2 to R1); strong HCl reaction. [Glen Rose Formation]	abrupt contact	734
132		2.33												
133		1.6	26	5.0	100									



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	Length (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Length (feet)
	134		1.33	26	5.0	100	SW	R2					LIMESTONE: packstone; very light gray (N8) to medium gray (N5); slightly weathered (SW); weak (R2); lacks regular laminations; strong HCl reaction; much soft sediment deformation. [Glen Rose Formation]		733
	135		1.63							000-I-24			LIMESTONE: wackestone; medium gray (N5); slightly weathered (SW); weak (R2); silty matrix; coarse to medium grains; irregularly laminated; shell fossils; strong HCl reaction; soft sediment deformation 137.0' to 137.9'. [Glen Rose Formation]	gradational contact	732
	136		3.48				SW	R2							731
	137		2.67												730
	138		1.78	27	5.0	100							LIMESTONE: micrite; very light gray (N8); slightly weathered (SW); weak to very weak (R2 to R1); silt to clay size with irregular wavy very thin laminations spaced very thinly; bioturbated; some soft sediment deformation. [Glen Rose Formation]	abrupt contact	729
	139		1.5				SW	R1-R2		000-I-25					728
	140		1.45										Packstone bed 140.2' to 140.6'.	gradational contact	
	141		2.53				SW	R2					LIMESTONE: packstone; light gray (N7) to light olive gray (5Y 6/1); slightly weathered (SW); weak (R2); burrows; violent HCl reaction; shell fragments. [Glen Rose Formation]	gradational contact	727
	142		1.85										LIMESTONE: packstone; light olive gray (5Y 6/1); medium grained; fining downward; irregularly finely laminated; slightly weathered (SW); weak to very weak (R1 to R2); strong to violent HCl reaction; claystone bed 143.8' to 143.9'. [Glen Rose Formation]	abrupt contact gradational contact	726
	143		1.93	28	5.0	100	SW	R1-R2							725
	144		3.12										LIMESTONE: wackestone; medium gray (N5); slightly weathered (SW); weak (R2); silty matrix; coarse to medium grains; irregularly laminated; shell fossils; strong HCl reaction; some soft sediment deformation; clasts surrounded by silty coarse grained wackestone; silty clay content increases downward. [Glen Rose Formation]		724
	145		3.17							000-I-26					723
	146		2.78												722
	147		3.83				SW	R2							721
	148		2.88	29	5.0	100				000-I-27					

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	Length (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Length (feet)
	149		4.5	29	5.0	100	SW	R2					LIMESTONE: wackestone; medium gray (N5); slightly weathered (SW); weak (R2); silty matrix; coarse to medium grains; irregularly laminated; shell fossils; strong HCl reaction; some soft sediment deformation; clasts surrounded by silty coarse grained wackestone; silty clay content increases downward. [Glen Rose Formation]		720
	150		3.73												719
	151		3.02				SW	R1-R2					LIMESTONE: packstone; slightly weathered (SW); weak to very weak (R2 to R1); with wackestone bed 151.7' to 151.9'. [Glen Rose Formation]	gradational contact	718
	152		4.57				SW	R0					SHALE: claystone; dark gray (N3); very thinly laminated; clay; silt size; slightly weathered (SW); extremely weak (R0); slight to no HCl reaction. [Glen Rose Formation]	gradational contact	717
	153		5.22	30	5.0	100	SW	R3					LIMESTONE: micrite; light olive gray (5Y 6/1); massive with minor clay injections; medium strong (R3); slightly weathered (SW); shells replaced with coarse crystalline CaCO3; violent HCl reaction. [Glen Rose Formation]		716
	154		3.45				SW	R3						gradational contact	715
	155		5.18				SW	R0-R2					SHALE: claystone; calcareous; dark greenish gray (5GY 4/1); weakly laminated; very thin clay to fine sand; slightly weathered (SW); extremely weak to weak (R0 to R2); fines downward; shell fragments; HCl reaction slightly strong. [Glen Rose Formation]	gradational contact	714
	156		4.53				SW	R3						gradational contact	713
	157		4.9										LIMESTONE: micrite; light olive gray (5Y 6/1); massive to weakly laminated strong HCl reaction; slightly weathered (SW); medium strong (R3). [Glen Rose Formation]	abrupt contact	712
	158		4.33	31	5.0	100	SW	R2					LIMESTONE: wackestone; very thinly laminated; clasts of packstone surrounded by dark green gray (5GY 4/1); silty matrix; strong HCl reaction; very weak (R1); slightly weathered (SW); shell fragments. [Glen Rose Formation]		711
	159		4.55												710
	160		4.18											100% water return	709
	161		2.82				SW	R2					LIMESTONE: packstone; light olive gray (5Y 6/1); slightly weathered (SW); very weak to weak (R2); very thinly laminated. [Glen Rose Formation]	gradational contact	708
	162		3.83											gradational contact	707
	163		3.5	32	5.0	100									707



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Length (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Length (feet)
164		3.32	32	5.0 5.0	100							LIMESTONE: wackestone; dark greenish gray (5GY 4/1); slightly weathered (SW); weak to very weak (R2 to R1); packstone clasts; very thinly bedded; silt to coarse soft sediment deformation; some rip-up clasts; strong to violent HCl reaction. [Glen Rose Formation]		706
165		NM				SW	R1-R2							705
166		3.32											gradational contact	704
167		3.6												703
168		2.22	33	5.1 5.0	100							LIMESTONE: packstone/wackestone; grading into siltier wackestone; slightly weathered (SW); weak (R2). [Glen Rose Formation]	abrupt contact	702
169		2.35				SW	R2			000-1-29		LIMESTONE: packstone; light olive gray (5Y 6/1); massive; weak (R2); slightly weathered (SW). [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks. abrupt contact	701
170		2.43				SW	R2						gradational contact	700
171		4.23				SW	R1					LIMESTONE: wackestone; dark greenish gray (5GY 4/1); silt to coarse grain size; slightly weathered (SW); very weak (R1); very thinly laminated; irregular discontinuous laminae; abundant packstone clasts; violent HCl reaction; soft sediment deformation. [Glen Rose Formation]	abrupt contact	699
172		2.83				SW	R1					SHALE: claystone; calcareous; dark greenish gray (5GY 4/1); very thinly laminated; slightly weathered (SW); very weak (R1); interbeds of dark silty clay; strong HCl reaction. [Glen Rose Formation]		698
173		3.33	34	5.0 5.0	99	SW	R1-R2					LIMESTONE: wackestone; dark greenish gray (5GY 4/1); silt to coarse grain size; slightly weathered (SW); very weak (R1); very thinly laminated; irregular discontinuous laminae; abundant packstone clasts; packstone interbeds; violent HCl reaction; soft sediment deformation. [Glen Rose Formation]	gradational contact	697
174		3.12				SW	R1					LIMESTONE: wackestone; dark greenish gray (5GY 4/1); silt to coarse grain size; slightly weathered (SW); very weak (R1); very thinly laminated; irregular discontinuous laminae; abundant packstone clasts; packstone interbeds; violent HCl reaction; soft sediment deformation. [Glen Rose Formation]	abrupt contact gradational contact	696
175		3.3				SW	R1-R2					LIMESTONE: packstone; light olive gray (5Y 6/1); massive to thinly laminated; thin; slightly weathered (SW); weak to very weak (R1 to R2); siltier with depth; shell fragments; violent HCl reaction. [Glen Rose Formation]	gradational contact	695
176		2.67				SW	R1					LIMESTONE: wackestone; dark greenish gray (5GY 4/1); silt to coarse grain size; slightly weathered (SW); very weak (R1); very thinly laminated; irregular discontinuous laminae; abundant packstone clasts; violent HCl reaction; soft sediment deformation. [Glen Rose Formation]	abrupt contact	694
177		3.67										LIMESTONE: wackestone; dark greenish gray (5GY 4/1); silt to coarse grain size; slightly weathered (SW); very weak (R1); very thinly laminated; irregular discontinuous laminae; abundant packstone clasts; violent HCl reaction; soft sediment deformation. [Glen Rose Formation]		693
178		4.32	35	4.9 5.0	98							LIMESTONE: packstone; light olive gray		693

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Length (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Length (feet)
179		4.08	35	4.0 5.0	98	SW	R1-R2					(5Y 6/1); massive to thinly laminated; thinly; slightly weathered (SW); weak to very weak (R1 to R2); siltier with depth; shell fragments; violent HCl reaction. [Glen Rose Formation]		692
180		3.47										SHALE: claystone; calcareous; dark greenish gray (5GY 4/1); clay to coarse; very thinly laminated; very weak (R1); slightly weathered (SW). [Glen Rose Formation]	abrupt contact	691
181		1.83										LIMESTONE: packstone; light olive gray (5Y 6/1); massive to interlaminae of silty layers; medium grained; slightly weathered (SW); weak to very weak (R1 to R2); strong HCl reaction soft sediment deformation; shell fragments. [Glen Rose Formation]	gradational contact	690
182		1.92				SW	R-R2					LIMESTONE: wackestone; light olive to olive gray (5Y 6/1 to 5Y 4/1); slightly weathered (SW); weak to very weak (R2 to R1); silt to coarse sand; irregular wavy <1.0 cm layers; violent HCl reaction. [Glen Rose Formation]		689
183		1.48	36	5.0 5.0	100	SW	R1-R2					LIMESTONE: packstone to wackestone interbeds; wavy and spaced 0.3' to 0.2'; <0.1' thick; slightly weathered (SW); weak to very weak (R2 to R1). [Glen Rose Formation]		688
184		1.62										LIMESTONE: wackestone; light olive to olive gray (5Y 6/1 to 5Y 4/1); clay rich; grading into packstone with shell fragments; slightly weathered (SW); weak (R2); violent HCl reaction. [Glen Rose Formation]	100% water return	687
185		1.73												686
186		1.8												685
187		1.38												684
188		1.22	37	5.2 5.0	100							LIMESTONE: packstone; light olive gray (5Y 6/1); massive, with interlayers of siltier wackestone spaced medium and 1.0 cm thick; coarse crystalline CaCO3 replacement of shells; shell fragments; slightly weathered (SW); weak to medium strong (R1 to R3). [Glen Rose Formation]	gradational contact Length of recovery stretched due to mechanical breaks.	683
189		1.3												682
190		0.97												681
191		1.4												680
192		1.33				SW	R1-R3							
193		1.18	38	5.0 5.0	100									

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	Length (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Length (feet)
	194		1.17	38	5.0	100	SW	R1-R3					LIMESTONE: packstone; light olive gray (5Y 6/1); massive, with interlayers of siltier wackestone spaced medium and 1.0 cm thick; coarse crystalline CaCO3 replacement of shells; shell fragments; slightly weathered (SW); weak to medium strong (R1 to R3). [Glen Rose Formation]		679
	195		1.23											fining downward	678
	196		1.8												677
	197		2.53											gradational contact	676
	198		4.12	39	5.0	99	SW	R1					LIMESTONE: wackestone; dark greenish gray (5GY 4/1); very thinly laminated silty shell rich layers with occasional packstone; silt to coarse sand size; slightly weathered (SW); very weak (R1): violent HCl reaction; shell fragments; abundant soft sediment deformation. [Glen Rose Formation]		675
	199		1.23											gradational contact	674
	200		NM										LIMESTONE: packstone; light olive gray (5Y 6/1); fine grained; massive with silty, shell-rich, wackestone interlaminae 1.0 cm to 2.0 cm thick, spaced 0.3' apart until 202.4; then laminae 1.0 cm thick; weak (R2); slightly weathered (SW). [Glen Rose Formation]		673
	201		NM												672
	202		1.85				SW	R2							671
	203		1.48	40	5.0	100									670
	204		1.57												669
	205		3.67												668
	206		3.52				F	R2-R3					LIMESTONE: wackestone; medium light gray (N7); fresh (F); weak to medium strong (R2 to R3); violent HCl reaction; clasts 0.01" to 2.0". [Glen Rose Formation]	1/8/07, drilled 0.8' to complete 5.0' run 40, 100% recovery and RQD, core contains nothing unusual in terms of possible communication below B-1000, drillers are running water outside barrel to lubricate and accommodate possible water loss through	667
	207		2.17										LIMESTONE: packstone; medium light gray (N6); fresh (F); medium strong (R3); violent HCl reaction. [Glen Rose Formation]		666
	208		1.85	41	5.0	100	F	R3							666

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	Length (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Length (feet)
	209		1.47	41	5.0	100	F	R3					LIMESTONE: wackestone; medium gray (N5); fresh (F); weak to medium strong (R2 to R3); violent HCl reaction. [Glen Rose Formation] Packstone bed 209.7' to 209.9'.	contamination	665
	210		2.02				F	R2-R3					LIMESTONE: packstone; medium light gray; fresh (F); medium strong (R3); violent HCl reaction. [Glen Rose Formation] Micritic with dissolution and pyrite 211.0' to 211.7'.		664
	211		1.85												663
	212		1.33				F	R3						600 psi water is being flushed out of boring B-1000	662
	213		1.73	42	5.0	100									661
	214		2.03							000-I-34			LIMESTONE: wackestone; medium light gray (N6); fresh (F); weak to medium strong (R2 to R3); violent HCl reaction; large intraclasts >1.0". [Glen Rose Formation]		660
	215		1.45				F	R2-R3							659
	216		1.35												658
	217		1.33				F	R3					LIMESTONE: packstone; light gray (N7); fresh (F); medium strong (R3); violent HCl reaction; micritic from 218.3' to 218.6'. [Glen Rose Formation]		657
	218		1.88	43	5.0	100									656
	219		2.88										SHALE: dark greenish gray (5GY 4/1) fresh (F); very weak (R1); very slight to slight HCl reaction; shell fragments; sparse bedding. [Glen Rose Formation]	down pressure drops to 500	655
	220		2.58				F	R1							654
	221		2.27				F	R3					LIMESTONE: micrite; light gray (N7); fresh (F); medium strong (R3); violent HCl reaction; occasional dissolution. [Glen Rose Formation]		653
	222		2.68				F	R3					LIMESTONE: packstone; light gray; fresh (F); medium strong (R3); violent HCl reaction. [Glen Rose Formation]		653
	223		3.12	44	5.2	100				000-I-35			LIMESTONE: wackestone; medium gray (N5); fresh (F); weak to medium strong (R2 to R3); strong to violent HCl reaction. [Glen Rose Formation]		


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	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	
224		3.55	44	51.2	100	F	R2-R3					Interbedded with shale 223.3' to 223.6'. Shale bed 223.6' to 223.9'. Micrite bed 223.9' to 224.3'. Shale bed with shell fragments 224.3' to 224.5'. Micrite bed 224.5' to 224.7'. Wackestone bed 224.7' to 225.1'. Micrite 225.1' to 225.3'. Wackestone 225.3' to 225.5'. Shale with shell fragments and rip-up clasts 225.5' to 225.8'. <b>BOTTOM OF HOLE AT 225.8'</b>	Length of recovery stretched due to mechanical breaks.	652
225														651
226		3.32											total depth drilled 225.8'.	650
227														649
228														648
229														647
230														646
231														645
232														644
233														643
234														642
235														641
236														640
237														640
238														639

Project Name and Job Number TXU Comanche Peak COL 1908		 WLA William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-1012 offset</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'08.28312"N / 97°47'35.91922"W		Total Depth 5.5 feet	
Drilling Contractor and Rig TEXPLOR / CME 75		Elevation and Datum 844.043 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 5.5 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 2	Date Started 2/10/07	
		Borehole Inclination Vertical	Logged by M. Zellman	Date Completed 2/10/07	


Reviewed by / Date \_\_\_\_\_ R. Ortiz 2/11/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0										844
0 - 1	CL		B-1012 offset 1	5	12/18		ARTIFICIAL FILL (Qaf) LEAN CLAY light brownish gray (2.5Y6/2), damp, with organic debris			843
1 - 2				5			limestone fragments at 2'			842
2 - 3				16						841
3 - 4	SC		B-1012 offset 2	8	12/14		RESIDUAL SOIL (RS) CLAYEY SAND with gravel stiff to hard, olive yellow (2.5Y6/6), damp, 20% fines, angular to subangular limestone gravel			840
4 - 5				30						839
5 - 5.5				50/2"						838
6										838
7										837
8										836
9										835
10										834
11										833
12										832
13										831
14										830
15										830

Project Name and Job Number TXU Comanche Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-1012</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'08.28312"N / 97°47'35.91922"W		Total Depth 550 feet	
Drilling Contractor and Rig Fugro / CME 75		Elevation and Datum 844.043 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 4 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 2	Date Started 11/1/06	
		Borehole Inclination Vertical	Logged by R. Ortiz	Date Completed 11/20/06	

Reviewed by / Date John Wesling 12/4/06

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
0							<b>RESIDUAL SOIL (RS)</b> SANDY LEAN CLAY medium stiff, brown (10YR4/3), dry, fine to medium sand, few calcareous deposits		844
1				8					843
2	CL		B-1012 1A	11	8.4 18	1.5			842
3				9					841
4			B-1012 2A	13	8.5 8.5		stiff, color to light yellowish brown (2.5Y6/3), wet, fine to coarse sand		840
				50/2.5"			Top of Bedrock at 4'	Bedrock at 4'	840
5									839
6									838
7									837
8									836
9									835
10									834
11									833
12									832
13									831
14									830
15									830

Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG Boring No. B-1012</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'08.28312"N / 97°47'35.91922"W		Total Depth 550 feet	
Drilling Contractor and Rig Fugro / CME 75		Elevation and Datum 844.043 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 4 feet	
Casing Size and Depth 4" / 4.5 feet		Length of Core Barrel and Bit 12.53 feet	No. of Core Boxes 33	Date Started 11/1/06	
		Borehole Inclination Vertical	Logged by R. Ortiz/R. Givler/M. Buga	Date Completed 11/20/06	

Reviewed by / Date John Wesling 12/4/06

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
4		4.38										LIMESTONE, wackestone, yellow (5Y 7/8) to pale yellow (5Y 8/2), heavily weathered (HW), extremely weak to very weak (R0-R1), fine to coarse grained, close to moderately spaced medium to thick interbeds of moderately weathered limestone, some charcoal, fossiliferous (bivalve fragments), slight to strong effervescence [Glen Rose Formation]	SPT refusal @ 4.2 ft, will attempt to drill 6' before switching to HQ-core for rock 1100 psi downhole pressure	840
5		2.67												839
6		1.75	1	2.6 / 5.0	52	HW								838
7		3.37											light brown, cloudy return water	837
8		3.2											~100% water return (upper 2 ft), losing ~50% water @ 7' & below	836
9		5.77				SW								835
10		1.98				HW								834
11		3.58	2	4.5 / 5.0	90						BJ, 5 degreesrees, Op, Pl, SI, weathered zone		losing ~20% water, cloudy, light brownish gray return water	833
12		2.45				SW								832
13		3.07												831
14		2.98										LIMESTONE, micrite, white (N8), slightly weathered, weak (R2), thick bedded, fine grained, minor/small interbeds (<0.1') interbeds of shale, fossiliferous, strong effervescence. [Glen Rose Formation]		830
15		2.27												829
16		2.28	3	5.0 / 5.0	64	SW					Fracture Zone, Fr 5 degreesrees, pl, si, op secondary minerals, dissolution pits around fractures			828
17		1.18												827
18		1.07										LIMESTONE, wackestone, greenish gray (5G 6/1), slightly weathered (SW), very weak to weak (R1-R2), bioturbated (rip up clasts), fossiliferous, friable, strong reaction effervescence. [Glen Rose Formation]		826



Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1012</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
19		0.88										LIMESTONE, micrite, greenish gray (5G 5/1), slightly weathered (SW), weak (R2), fine grained, bioturbated, massive, fossiliferous (minor frags), bioturbated, strong reaction effervescence. [Glen Rose Formation]	Run 4 slipped out of inner barrel. Will attempt to recover. Mudstone smear on catcher. Will drill remaining 1.5' of run to attempt recovery of core	825
20		1.08											~1800 psi downhole pressure	824
21		1.82	4	<u>4.0</u> 5.0	80	SW								823
22		6.98										MUDSTONE/SHALE, dark greenish gray (5G 4/1), very weak, few to no fossils, very fine grained, none to weak effervescence, fissile. [Glen Rose Formation]		822
23		3.73											cloudy light gray return water	821
24		1.1										LIMESTONE, wackestone to packstone, greenish gray (5G 5/1) to light gray (N7), fine to coarse grained, weak to very weak, strong effervescence, medium bedded, darker green beds more highly bioturbated than lighter beds, rip up clasts, very fossiliferous (bivalves) . [Glen Rose Formation]	~90% water return	820
25		1.25												819
26		1.08	5	<u>5.0</u> 5.0	100	SW								818
27		1.47												817
28		1												816
29		1												815
30		1.08												814
31		1.1	6	<u>5.0</u> 5.0	100	SW								813
32		1.15												812
33		0.92												811
34														

BJ, 5 degreesrees, Pl, Ro, Op, w/dissolution features

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1012</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
34		3.63										MUDSTONE/SHALE, dark greenish gray (5G 4/1), weak (R2), slightly weathered (SW), weak effervescence, fissile, medium bedded, very fine grained, many mechanical spins and breaks, interbedded with thick to medium beds of LIMESTONE, micrite, white to light gray (N8 to N7), bioturbated, fossiliferous, rip up clasts. [Glen Rose Formation]	~1800 psi downhole pressure	810
35		1.48												809
36		3.87	7	$\frac{4.2}{5.0}$	84	SW							cloudy, light gray return water	808
37		3.57											~10% water loss	807
38		2.65												806
39		1.45											13:21 right angle drive seal blown, leaking fluid	805
40		2.8											14:47 Drilling problem fixed	804
41		1.25	8	$\frac{5.0}{5.0}$	100	SW								803
42		1.2												802
43		2.33											changing out H2O in mud tub	801
44		0.92												800
45		2.85											Broke high, only 1.1' recovered, will recover on next run	799
46		4.32	9	$\frac{1.1}{5.0}$	22	SW								798
47		5.62												797
48		6.37											End of day 11/2/06 17:15	796
49														

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
49		5.5										MUDSTONE/SHALE, dark greenish gray (10GY 4/1), very fine to fine grained, fissile, bioturbated, weak (R2), effervescence, medium to thick bedded, interbedded with LIMESTONE, wackestone, light gray (N7), fine to medium grained, weak (R2), medium to thin bedded, strong, effervescence, fossiliferous. [Glen Rose Formation]	Start of day 11/3/06 08:20, no water level measurement taken, drill mud in hole	795
50		4.33												794
51		4.5	10	4.6 5.0	92	SW			1012-10					793
52		4.25												792
53		4.97												791
54		4.02				SW						LIMESTONE, micrite, white to light gray (N8 to N7), fine grained, weak (R2), slightly weathered (SW), thick to massive, fossiliferous, heavily bioturbated, many rip up clasts, with very thin (< 0.1") stringers of mudstone/shale. [Glen Rose Formation]		790
55		5.08												789
56		5.02	11	4.1 5.0	82						BJ, 5 degreesrees, Pl, Si Ro, Op	MUDSTONE/SHALE, dark greenish gray (10GY 4/1), very fine to fine grained, moderately weathered (MW) fissile, bioturbated, weak (R2), effervescence, medium to thick bedded. [Glen Rose Formation]	No recovery 56.6' to 59' believed to be washed out due to soft condition of mudstone	788
57		5.98				MW								787
58		6.9							1012-11					786
59		5.23												785
60		6.27												784
61		3.3	12	5.0 5.0	100	SW			1012-12					783
62		5.7									BJ, 5 degreesrees, Pl, Si Ro, Ti	LIMESTONE, packstone/wackestone, light greenish gray (10Y 8/1), fine to coarse grained, thick bedded, weak (R2), slightly weathered (SW), strong effervescence, bioturbated, many rip-up clasts, interbedded with MUDSTONE/SHALE, dark greenish gray (10GY 4/1), very fine grained, weak to very weak (R2-R1), slightly weathered	~1800 psi downhole pressure	782
63		5.15												781
64														

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1012</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
64		3.1										(SW), weak effervescence, slight bioturbation, thin to thick bedded. [Glen Rose Formation]	losing ~15% H2O to formation	780
65									1012-13			LIMESTONE, wackestone, same as previous. [Glen Rose Formation]		779
66		3.6												778
67		2.97	13	5.0 5.0	100	SW							cloudy light greenish gray return water	777
68		3.2												776
69		3.85												775
70		2.2										LIMESTONE, wackestone, light greenish gray (10Y 8/1), fine to medium grained, weak (R2), slightly weathered (SW), fossiliferous, strong effervescence, bioturbated, rip-up clasts [Glen Rose Formation]. [Glen Rose Formation]		774
71		2.58							1012-14					773
72		2.17	14	4.3 5.0	86	SW								772
73		2.92												771
74		5.53												770
75		2.58							1012-15					769
76		2.17										LIMESTONE, wackestone, light greenish gray (10Y 8/1), fine grained, weak (R2), slightly weathered (SW), strong effervescence, massive, fossiliferous, bioturbated, numerous rip-up clasts, many very thin (< 0.1") stringers of mudstone surround rip-up clasts. [Glen Rose Formation]		768
77		2.75	15	5.0 5.0	99	SW								767
78		4.33												766
79		3.35												

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-1012**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
79		4.02										LIMESTONE, wackestone, same as previous. [Glen Rose Formation]		765
80		3.23												764
81		2.6	16	5.0 5.0	99	SW			1012-16					763
82		9.58												762
83		7.97												761
84		5.15										LIMESTONE, wackestone, same as previous. [Glen Rose Formation]		760
85		1.63							1012-17					759
86		1.78	17	3.0 5.0	60	SW								758
87		4.05												757
88		4.88												756
89		6.63												755
90		3.53												754
91		2.52	18	5.0 5.0	100	SW			1012-18			LIMESTONE, wackestone, light greenish gray (5GY 8/1), fine grained, massive, weak (R2), slightly weathered (SW), strong effervescence, bioturbated, rip up clasts, few, very thin seams of mudstone as matrix material between rip-up clasts. [Glen Rose Formation]	~1800 psi downhole pressure	753
92		3.7												752
93		2.28											~100% water return	751
94														

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
94		2.25										LIMESTONE, wackestone, same as previous. [Glen Rose Formation]	light greenish gray, cloudy return water	750
95		3.22										gradational contact		749
96		1.83	19	<del>4.3</del> 5.0	86	SW				1012-19		LIMESTONE, packstone/wackestone, light greenish gray (10Y 8/1) to light gray (N7), fine to medium grained, massive, weak (R2), slightly weathered (SW), strong to weak effervescence, between 94.7 to 95.8 feet moderate dolomitization of packstone texture, fossiliferous, moderately bioturbated. [Glen Rose Formation]	start of day 11/4/07 08:11 @ 94', no AM water level - drill mud in hole	748
97		1.62												747
98		3												746
99		7.35												745
100		2.58												744
101		1.3	20	<del>4.7</del> 5.0	85	SW					BJ, 5 degreesrees, Pl, Sl Ro,Op, mod. Weathered	LIMESTONE, packstone/wackestone, light greenish gray (10Y 7/1), fine to medium grained, massive to medium bedded, weak to very weak, slightly weathered (SW), @100.7' small zone moderatly weathered, At 101.6' - thin (~0.1'), zone of soft, very weak, calcareous mud, fine to medium grained same clasts as observed in packstone, strong effervescence. [Glen Rose Formation]		743
102		1.55									BJ, 5 degreesrees, Sm-Sl,Op, mod. Weathered			742
103		2.15												741
104		4.4												740
105		1.28												739
106		2.07	21	<del>5.0</del> 5.0	93	SW					BJ, 5 degrees, Pl, Sl-Ro, Ti-Op (6 breaks)	LIMESTONE, wackestone, light greenish gray (10Y 8/1), fine grained, fossiliferous, strong effervescence, slightly bioturbate. [Glen Rose Formation]		738
107		2.85												737
108		2.87												736
109											BJ, 5 degrees, Pl, Sm-Sl, Op	LIMESTONE, micrite, light greenish gray		

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
109		2.47									BJ, 5 degrees, Pl, St-Ro, Op	(10Y 8/1), slightly weathered (SW), weak (R2), fossiliferous. [Glen Rose Formation]	~1800 psi downhole pressure	735
110		2.82							1012-22			LIMESTONE, wackestone/packstone, light greenish gray to greenish gray (10Y 8/1 to 5GY 5/1), fine to medium grained, slightly weathered (SW), weak (R2), massive to thick bedded, fossiliferous, oolitic, strong effervescence, bioturbated @110' to 110.5', rip up clasts. [Glen Rose Formation]	light gray, cloudy return water	734
111		1.5	22	<u>5.0</u> 5.0	100	SW							~80-85% water return	733
112		4.63												732
113		4.03												731
114		4.52												730
115		1.9							1012-23			LIMESTONE, micrite, fine grained, light greenish gray (10Y 7/1), massive, slightly weathered (SW), weak (R2), fossiliferous, bioturbated (worm burrows), dissolution features, strong effervescence. [Glen Rose Formation]	broke high - 3.55' recovered	729
116		4.35	23	<u>4.2</u> 5.0	84	SW							2nd attempt to recover core returned an additional 0.65' of core, heavily damaged. Core barrel became stuck + drillers had to violently moer the drill stem in order to free up inner barrel	728
117		2.35									BJ, 5 degrees, Pl, Ro, Op	LIMESTONE, wackestone, greenish gray (10Y 6/1), fine to medium grained, slightly weathered (SW), weak (R2), strong effervescence. [Glen Rose Formation]		727
118		2.58												726
119		4.25												725
120		5.98										same as previous + heavy bioturbation (worm burrows), fossiliferous, some dissolution features, rip up clasts	hard, chattering drilling	724
121		3.55	24	<u>4.9</u> 5.0	98	SW			1012-24				~1600 psi downhole pressure	723
122		3.22											light grayish green, cloudy return water	722
123		5.58											~85-90% water return	721
124														

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
124		5.67										LIMESTONE, wackestone, greenish gray (10Y 6/1), fine to medium grained, slightly weathered (SW), weak (R2), strong effervescence. [Glen Rose Formation] same as previous + thin (0.25 ft) seam of shale (possibly thicker but washed out in drilling)		720
125		3.6												719
126		6.62	25	<u>3.7</u> 5.0	74	SW			1012-25		BJ, 5 degrees, Pl, Sm-Sl, Op			718
127		12.53										LIMESTONE, micrite, light greenish gray (10Y 8/1), fine grained, slightly weathered (SW), weak (R2), strong effervescence, fossiliferous, bioturbated (worm burrows), rip up clasts, dissolution cavities. [Glen Rose Formation]	slow drilling changed out drill water	717
128		4.13												716
129		6.82										LIMESTONE: dolomite, micrite, dark greenish gray (5G 4/1), fine grained, slightly weathered (SW), weak (R2), strong effervescence, 130.25' to 131.2':		715
130		4.17							1012-26		BJ, 5 degrees, Pl, Sm, Ti	LIMESTONE, micrite, same as previous. [Glen Rose Formation]		714
131		2.33	26	<u>4.0</u> 5.0	77	SW					BJ, 5 degrees, Pl, Sl, Op BJ, 5 degrees, Pl, Sl, Op			713
132		2.67										LIMESTONE, wackestone, dark gray to light greenish gray (N4 to 10Y 8/1), fine to medium grained, massive, slightly weathered (SW), weak (R2), strong effervescence, highly bioturbated (many worm burrows) + numerous rip up clasts. [Glen Rose Formation]		712
133		7.47												711
134		4.48												710
135		3.97							1012-27				~1600 psi downhole pressure	709
136		2.27	27	<u>5.0</u> 5.0	99	SW								708
137		1.78					R2						light greenish gray, cloudy return water	707
138		3.8											~85-90% water return	706
139														



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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
139		3.03									BJ, 5 degrees, Pl, St-Ro, Op	LIMESTONE, wackestone, dark gray to light greenish gray (N4 to 10Y 8/1), fine to medium grained, massive, slightly weathered (SW), weak (R2), strong effervescence, highly bioturbated (many worm burrows) + numerous rip up clasts. [Glen Rose Formation]		705
140		2.9								MB				704
141		2.22	28	5.0 5.0	100	SW				1012-28	BJ, 5 degrees, Pl, Ro, Op	LIMESTONE, wackestone, same as previous. [Glen Rose Formation]		703
142		2.48									BJ, 5 degrees, Pl-St, Ro, Op	LIMESTONE, micrite, light greenish gray (10Y 8/1), fine grained, slightly weathered (SW), weak (R2), thick bedded, strong effervescence, heavily bioturbated (many large worm burrows), rip up clasts. [Glen Rose Formation]		702
143		3.12												701
144		6.38									MB MB MB MB	LIMESTONE, wackestone, same as previous with thin interbeds (~0.1 ft) of shale/mudstone. [Glen Rose Formation]		700
145		2.5								1012-29	BJ, 5 degrees, Pl, Sl, Op BJ, 5 degrees, Pl, Sl, Op BJ, 5 degrees, Pl, Sl, Op	LIMESTONE, micrite, same as previous. [Glen Rose Formation]		699
146		2.62	29	3.9 5.0	70	SW								698
147		2.73									MB	LIMESTONE, wackestone, light greenish gray to greenish gray (10Y 7/1 to 10Y 6/1), fine grained, slightly weathered (SW), weak (R2), strong effervescence, fossiliferous, bioturbated. [Glen Rose Formation]		697
148		9.23												696
149		3.82									Fr, 30 degrees, St-Pl, Sl, Op			695
150		4.42												694
151		3.38	30	4.9 5.0	83	SW					BJ, 5 degrees, Pl, Sm, Op BJ, 5 degrees, Pl, Sm, Op			693
152		3.3									BJ, 5 degrees, Pl, Sm-Sl, Op BJ, 5 degrees, Pl, Sm-Sl, Op BJ, 5 degrees, Pl, Sm-Sl, Op			692
153		4.1								1012-30	BJ, 5 degrees, Pl, Sm-Sl, Op BJ, 5 degrees, Pl, Sm-Sl, Op	LIMESTONE, micrite, same as previous. [Glen Rose Formation]		691
154														

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
154		2										LIMESTONE, wackestone, light greenish gray to greenish gray (10Y 7/1 to 10Y 6/1), fine to medium grained, weak (R2), slightly weathered (SW), strong effervescence, fossiliferous, bioturbated, rip up clasts, oolitic. [Glen Rose Formation]	Start of Day 11/5/06 @ 154'	690
155		2.95											No AM water level, drill mud in hole	689
156		2.9	31	5.0 5.0	100	SW								688
157		4.78												687
158		2.1												686
159		1.22										gradational contact		685
160		1.38									FR, 5 degrees, Pl, Ro, Op	LIMESTONE, wackestone/packstone, light greenish gray (10Y 7/1), fine to very coarse grained, slightly weathered (SW), weak (R2), mild to moderate dolomitization, strong effervescence, fossiliferous, large bivalve fragments, bioturbated, rip up clasts. [Glen Rose Formation]		684
161		1.13	32	5.0 5.0	89	SW					FR, 20 degrees, Pl-St, Ro, Op			683
162		1.18									FR 5 degrees, Pl, Ro, Op			682
163		1.7									FR, 15 degrees, St-Pl, Ro, Op			681
164		1.47								1012-31	FR, 15 degrees, St-Pl, Ro, Op			680
165		1.35									FR, 15 degrees, St-Pl, Ro, Op			679
166		1.6	33	5.0 5.0	100	SW					FR, 15 degrees, St, Ro, Op	LIMESTONE, wackestone/packstone, same as previous, with dissolution features, interbedded with thin (0.1') mudstone layers. [Glen Rose Formation]		678
167		1.75												677
168		5.23												676
169														

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1012</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Lithology	Remarks	Elevation (feet)
169		4.8				MW				BJ, 5 degrees, Pl-St, Ro, Op BJ, 5 degrees, Pl-St, Ro, Op BJ, 5 degrees, Pl-St, Ro, Op BJ, 5 degrees, Pl-St, Ro, Op	LIMESTONE, micrite, interbedded with mudstone (washed out), dark greenish gray (10Y 4/1), moderately weathered (MW), very weak, many rip up clasts, highly fractured, weak to moderate effervescence. [Glen Rose Formation]	bouncing drill rig	675
170		1.58								FR, 15 degrees, St, Ro, Op			674
171		1.65	34	5.0 5.0	90	SW				FR, 10 degrees, St, Ro, Op	LIMESTONE, wackestone, light greenish gray (10Y 7/1), fine grained, slightly weathered (SW), weak (R2), strong effervescence, fossiliferous, slightly bioturbated, rip up clasts. [Glen Rose Formation]	~1700 psi downhole pressure	673
172		1.88										light gray cloudy water return	672
173		2.9							1012-32			~90% water return	671
174		2.07									gradational contact		670
175		2.22									LIMESTONE, wackestone/packstone, light greenish gray to greenish gray (10Y 7/1 to 10Y 5/1), fine to coarse grained, slightly weathered (SW), weak (R2), bioturbated, rip up clasts, fossiliferous, oolitic, strong effervescence. [Glen Rose Formation]		669
176		2.7	35	4.6 5.0	80	SW				BJ, 5 degrees, Pl, Ro, Op			668
177		2.67								FR, 10 degrees, St, Ro, Ti			667
178		2.52								FR, closely, very Ro, Op			666
179		1.75									gradational contact		665
180		2.95									LIMESTONE, wackestone, light greenish gray (10Y 7/1), fine to coarse grained, slightly weathered (SW), weak (R2), fossiliferous, strong effervescence, bioturbated, many rip up clasts, mudstone matrix. [Glen Rose Formation]		664
181		2.03	36	4.7 5.0	94	SW							663
182		1.5								FR, 5 degrees, Pl, Sl, Op			662
183		2.48							1012-33				661
184													

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
184		1.68										LIMESTONE, packstone/wackestone, light grayish green to grayish green (10Y 7/1 to 10Y 5/1), same as previous, oolitic, interbedded with mudstone between ~187.8' to 188.6'. [Glen Rose Formation]		660
185		1.43											~1600 psi downhole pressure	659
186		1.45	37	4.4 5.0	72	SW					BJ, 5 degrees, Pl, Sl, Op		~90% water return	658
187		1.4									FR, 5 degrees, Pl, Ro, Op			657
188		5.45									BJ		Hard Drilling	656
189		6.9										MUDSTONE/SHALE, dark greenish gray (10Y 4/1), fine grained, weak to very weak, medium bedded, weak effervescence. [Glen Rose Formation]		655
190		1.4							1012-34		BJ, 5 degrees, Pl, Sm-Sl, Op			654
191		2	38	5.0 5.0	100	SW						LIMESTONE, wackestone, interbedded with medium bedded mudstone/shale (same as previous). [Glen Rose Formation]	bouncing drill rig	653
192		5.53									BJ, 5 degrees, Pl, Sm, Op			652
193		2.97												651
194		6.75										MUDSTONE/SHALE, same as previous. [Glen Rose Formation]		650
195		4.38												649
196			39	2.2 5.0	44	SW						LIMESTONE, micrite, interbedded with mudstone/shale, light greenish gray to dark greenish gray (10Y 8/1 to 10Y 4/1), very fine to fine grained, slightly weathered (SW), very weak to weak (R1-R2), strong effervescence, fossiliferous, minor bioturbation, some dissolution cavities. [Glen Rose Formation]		648
197		2.08												647
198												MUDSTONE, same as previous. [Glen Rose Formation]		646
199														646

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
199		3.9										MUDSTONE, same as previous. [Glen Rose Formation]	~1500 psi downhole pressure	645
200		1.48							1012-35	FR, 5 degrees, PI, Ro, Op (weathered area ±0.1')		LIMESTONE, micrite/wackestone, light greenish gray (10Y 7/1), interbedded with mudstone/shale, dark greenish gray (10Y 4/1), slightly weathered (SW), very weak to weak (R1-R2), fine to very fine grained, weak to strong effervescence, fossiliferous, oolitic, some dissolution features. [Glen Rose Formation]		644
201		1.38	40	<u>3.7</u> 5.0	74	SW								643
202		4.03								BJ, 5 degrees, PI, Ro, Op		MUDSTONE/SHALE, dark greenish gray (10Y 4/1), fine to very fine grained, weak effervescence, interbedded with LIMESTONE, micrite, fine grained, light greenish gray (10Y 7/1), fossiliferous, strong effervescence, some dissolution cavities. [Glen Rose Formation]		642
203		2.95												641
204		4.65												640
205		7.92												639
206		6.97	41	<u>3.4</u> 5.0	61	SW							Hard Drilling	638
207		8.05								BJ, 5 degrees, PI, Ro, Op			light gray, cloudy return water	637
208		5.52											~85% water return	636
209		3.93												635
210		4.83							1012-36					634
211		4.73	42	<u>5.0</u> 5.0	100	SW				BJ, 5 degrees, Op, PI, Sm, S, Ro		LIMESTONE, wackestone, greenish gray to light greenish gray (10Y 5/1 to 10Y 7/1), fine to medium grained, slightly weathered (SW), weak (R2), strong effervescence, bioturbated, rip up clasts. [Glen Rose Formation]		633
212		3.45												632
213		5.2												631
214														

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
214		7.33									Fr, 5 degrees, Pl, Op, Ro	LIMESTONE, wackestone, (interbedded with shale between 213' to 215.1'), light greenish gray (10Y 7/1), coarse to fine grained, slightly weathered (SW), weak (R2), strong effervescence, massive to thick bedded, fossiliferous, heavily bioturbated, numerous rip up clasts. [Glen Rose Formation]		630
215		6.83								Fr, < 5 degrees, Pl-St, Op, Si, Ro			629	
216		4.75	43	<u>4.6</u> 5.0	79	SW				Fr, 5 degrees, Op, Pl, Si, Ro			628	
217		3.17											627	
218		4.05											End of day 17:10, @ 219'	626
219		5.47											Start of Day 11/6/06	625
220		9.77												624
221		4.05	44	<u>1.1</u> 5.0	22	SW								623
222		3.2									Most of sample probably washed out - mudstone? Sandstone? Not recovered in following run		No AM water level, drill mud in hole	622
223		4.78												621
224		3.47									Fr, 5 degrees, Ro, Op, Pl-St	SANDSTONE, silty, greenish gray to light greenish gray (10GY 6/1 to 10Y 7/1), fine grained, slightly weathered (SW), weak (R2), no to weak effervescence, fossiliferous (some fragments), medium bedded, some minor bioturbation, weak to moderate cementation. [Glen Rose Formation]	Run 44 broke high? Only 1 ft recovered	620
225		1.4											619	
226		2.43	45	<u>4.4</u> 5.0	84	SW							618	
227		0.5											617	
228		0.35							1012-37				616	
229														

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
229		0.3										No Recovery for Run 46		615
230		0.43										SANDSTONE. [Glen Rose Formation]	No sample recovered. Washed out? Some sand in mud tub	614
231		0.67	46	<u>0.0</u> 5.0	0	N/A								613
232		1.25												612
233		1.68												611
234		1.67										SANDSTONE, same as previous. [Glen Rose Formation]		610
235		0.85									Fr, <15 degrees, Op, Ro, Pl-St 0 Fr, <15 degrees, Op, St-Pl, Ro, spin feature from drilling 0		~1000 psi downhole pressure	609
236		7.78	47	<u>5.0</u> 5.0	86	SW					Fr, 5 degrees, Op, Ro, Pl	MUDSTONE/SHALE, greenish gray (10G 5/1), very fine grained, slightly weathered (SW), weak (R2), thin to medium bedded, none to slight effervescence, some small, thin, discontinuous, coal fragments (lignite), some fine sand towards bottom. [Glen Rose Formation]	~90% water return	608
237		6.4											light gray cloudy water return	607
238		7.5												606
239		7.27										SANDSTONE, greenish gray (5GY 5/1), very fine grained to fine grained, slightly weathered (SW), weak (R2), moderately cemented (with CaCO3), strong effervescence, fossiliferous, bioturbated, massive. [Glen Rose Formation]		605
240		9.33												604
241		5.52	48	<u>4.4</u> 5.0	88	SW							Slow Drilling	603
242		4.65												602
243		9.52												601
244														

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
244	[Pattern: Vertical lines]	9.47	49	1.9 5.0	38	MW-SW						MUDSTONE/SHALE, greenish black (10Y 2.5/1), slightly to moderately weathered (SW-MW), very weak to weak (R1-R2), none to weak effervescence, fissile, highly disturbed sample, due to multiple recovery attempts, at bottom of run: LIMESTONE, packstone, highly fossiliferous, slight to strong effervescence, sandy. [Glen Rose Formation]	Run 49: 1st attempt to recover core yielded no recovery. Will attempt again. 2nd attempt recovered core (only 0.2'), will try to recover remainder on next run	600
245		7.18										599		
246		6.45										598		
247		5.47										597		
248	[Pattern: Dotted]	4.42	50	0.4 5.0	0.8	SW						GLEN ROSE FORMATION	Aproximate contact w/ Twin Mountain	596
249		1.42										595		
250		0.5										594		
251		0.75										593		
252	[Pattern: Horizontal lines]	3.2	51	3.2 5.0	64	SW						~1600 psi downhole pressure	light greenish gray return water	592
253		4.63										591		
254		2.63										590		
255		2.82										589		
256	[Pattern: Vertical lines]	1.38	51	3.2 5.0	64	SW						SANDSTONE, silty, greenish gray (5GY 5/1), very fine grained, slightly weathered (SW), weak (R2), moderately cemented, weak effervescence (some CaCO3), majority of sample probably washed out. [Twin Mountain Formation]	~90% water return	588
257		2.12										587		
258		1.42										586		
259												End of Day 11/6/06 @ 259'		



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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
259		0.9										SANDSTONE, greenish gray (5GY 5/1), very fine grained, slightly weathered (SW), weak (R2), moderately cemented (with CaCO3), weak effervescence [TWIN MOUNTAIN FORMATION]. [Twin Mountain Formation]	Start of Day 11/7/06 08:10	585
260		0.23												584
261		0.72	52	<u>3.5</u> 5.0	70	SW				1012-39			No AM water level, drill mud in hole	583
262		0.48											May be on bottom of hole will probably have to clear out hole, but will time the run just in case	582
263		1.17												581
264		1.03										SANDSTONE, silty, same as previous. [Twin Mountain Formation]		580
265		1								1012-40				
266		1.65	53	<u>2.7</u> 5.0	54	SW								578
267		1.03												577
268		0.45										MUDSTONE, sandy, greenish gray (5GY 6/1), very fine grained, slightly weathered (SW), very fine grained, highly broken up by attempt to recover core. [Twin Mountain Formation]		576
269		0.83												
270		5.2											core washed out or slipped out of inner barrel. Will attempt to recover on next run...0' recovered on 1st attempt	574
271		5.62	54	<u>2.0</u> 5.0	40	SW								
272		5.35										SANDSTONE, silty, greenish gray to light greenish gray (10GY 7/1 to 10GY 6/1), massive, slightly weathered (SW), weak (R2), weak to moderate effervescence (some CaCO3), nodules present within sandstone, moderate cementation. [Twin Mountain Formation]		572
273		1.62												
274														

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
274		0.53										SANDSTONE, silty, greenish gray to light greenish gray (10GY 7/1 to 10GY 6/1), massive, slightly weathered (SW), weak (R2), weak to moderate effervescence (some CaCO3), nodules present within sandstone, moderate cementation. [Twin Mountain Formation]		570
275		1												569
276		1.65	55	<u>4.3</u> 5.0	86	SW					Fr, 30 degrees, Op,Pl, Sm-Si, Ro			568
277		3.22											~1600 psi downhole pressure	567
278		4.02											cloudy, light gray return water	566
279		2.52										SANDSTONE, silty, greenish gray (10GY 6/1), interbedded with thin to very thin (< 0.1') layers of mudstone, slightly weathered (SW), weak (R2), medium bedded, weak to no effervescence. [Twin Mountain Formation]	~85-90% water return	565
280		2.73												
281		1.88	56	<u>4.2</u> 5.0	83	SW								563
282		2.08												562
283		0.9									Fr, 5 degrees, Pl-St, Si, Ro			561
284		1.45												560
285		1.92									Fr, 20 degrees, Op, Ro, Ro, Pl-St			559
286		1.05	57	<u>3.8</u> 5.0	76	SW					Fr, 5 degrees, Pl-Si, Ro, Op, "lignite" seam	SANDSTONE, silty, with minor "lignite" seams, greenish gray (5GY 6/1) w/ black (N2.5) coal (lignite) seams, massive to thickly bedded, slightly weathered (SW), weak (R2), between 285.4' + 288' continuous and discontinuous seams of coal/lignite up to 0.5' thick.. [Twin Mountain Formation]		558
287		1.68									Fr, 5 degrees, Wa, Sl Ro to Sl Op "lignite"			
288		3.6									Fr, 5 degrees, Wa, Sl Ro, Op "lignite"			556
289														

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
289		1.57									Fr, 5 degrees, Pl, Sl, Ro, Op, "lignite"	289' to 289.2' - lignite SANDSTONE, silty, greenish gray (10GY 6/1), fine grained, slightly weathered (SW), weak (R2), thinly bedded, minor pyrite, discontinuous and continuous seams of lignite, at 290.5' core appears to be brecciated (bioturbation?). [Twin Mountain Formation]	~1600 psi downhole pressure  cloudy, gray water return with specks of lignite + a thin oil film (not from rig)	555
290		0.48												
291		3.63	58	<del>1.6</del> 5.0	25	SW								553
292		1.53												552
293		3.25												551
294		1.47									Fr, 45 degrees, Ro, Op, St, subhorizontal slickensides	SANDSTONE: with mudstone, conglomerate/breccia, dark greenish gray (10GY 4/1) to greenish gray (10GY 5/1), slightly to moderately weathered (SW-MW), very weak to weak (R1-R2), fine to very coarse grained, highly disturbed sample, 294' - 294.6' ~ 50% lignite, seams up to ~0.1' thick, noneffervescent. [Twin Mountain Formation]	cloudy dark gray return water...large amount of lignite flecks, "large" amount of oil on surface	550
295		2.83												
296		2.93	59	<del>3.9</del> 5.0	78	MW-SW								548
297		4.35												547
298		3.33							1012-42					546
299		2.45									Fr, 45 degrees, Ro, Op, St, subhorizontal slickensides  Bj, 5 degrees, Op, To	299' - 299.65': coal seam, lignite	cloudy, dark brownish gray return water with oil film	545
300		4.42												
301		11.33	60	<del>3.9</del> 5.0	73	SW								543
302		6.07											~1450 psi downhole pressure	542
303		6.57											~90% water return	541
304														

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
304		3.6											14:20 TLC safet drive by	540
305		3.58											14:50 change out drilling water @ 304'	539
306			61	<u>0.0</u> 5.0	0	N/A							Run 61: no initial recovery (wash out?), will drill Run 62 + attempt to recover - "clean bottom" says driller...no core slipping out of barrel	538
307		0.93												537
308		0.28												536
309		0.57											SANDSTONE, silty, same as previous, more massive, very weak to weak. [Twin Mountain Formation]	535
310		0.73												534
311		1.12	62	<u>2.2</u> 5.0	44	SW								533
312		0.35												532
313		0.5												531
314		0.48											No Recovery Sample Wash Out	530
315		0.57											Run 63: no initial recovery, will drill Run 64 and hope to recover some of 63	529
316		0.38	63	<u>0.0</u> 5.0	0	N/A								528
317		1.08												527
318		0.17											FAST drilling	526
319														

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
319		0.52										No Recovery Sample Wash Out		525
320		0.62												524
321		0.62	64	0.0 5.0	0	N/A						No Recovery	Run 64: no initial recovery, most certainly washed out	523
322		0.38												522
323		1.03											End of Day @ 324' 16:45	521
324		0.65											Start of Day @ 324' w/ large volume of sand within hole ~45' @ 08:00	520
325		0.53												519
326		0.47	65	0.0 5.0	0	N/A						No Recovery	09:28 hole cleared...drilling begins. No recovery continues...mixing up a thicker batch of mud (before Run 66)	518
327		0.55												517
328		0.7												516
329		6.67										MUDSTONE/SHALE, interbedded with limestone (micrite), and fine grained sandstone, pale green (5G 6/2) to light greenish gray (10Y 8/1), slightly weathered (SW), very weak, sharp contact. [Twin Mountain Formation]		515
330		7.13								1012-43			oil within return water	514
331		12.23	66	4.0 4.0	100	SW						SANDSTONE, dark reddish brown (2.5YR 3/4), massive, fine grained, slightly weathered (SW), weak (R2), thin interbed of shale @ 331' (~0.1' thick), no effervescence. [Twin Mountain Formation]	~100% water return	513
332		13.2									30 degrees, He, Wa 40 degrees, If, Sm, Pl, Ti		~1800 psi downhole pressure	512
333		5.85	67	6.0 6.0	82	SW						same as previous, minor crossbedding, some white colored sections without iron oxide staining, tight, filled and healed joints in upper 2'		511
334														

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
334		3.68										SANDSTONE, dark reddish brown (2.5YR 3/4), massive, fine grained, slightly weathered (SW), weak (R2), thin interbed of shale @ 331' (~0.1' thick), no effervescence. [Twin Mountain Formation]	11/8/06 Sample barrel stuck. End of day 12:12 Will attempt recovery on Monday	510
335		3.9												509
336		3.48	67	6.0 6.0	82	SW					60 degrees, Jo, Pl-Wa, Sm, T			508
337		3.67											11/14/2006 Chip encountered while trying to clear hole. Depth unknown	507
338		3.28							1012-44				11:34 recovered light green mudstone chips - not intact, probably slough ~5' thick	506
339		6.17									50-70 degrees, Jo, Pl filled	SANDSTONE, red (2.5Yr 4/6), massive, moderately weathered (MW), very weak to weak (R1-R2), no fossils or bioturbation, thin healed sub vertical fractures throughout, small white specs of no iron oxide staining, crystalline coating on fractures. [Twin Mountain Formation]		505
340		4.53									30 degrees, RF, Pl, Sm,			504
341		5.37	68	5.0 5.0	95	SW						SANDSTONE, dark reddish brown (2.5YR 3/4), massive, fine grained, mudstone interbeds (0.1' - 0.2'), slightly weathered (SW), very weak to weak (R1-R2), slightly more coarse sand at 348', small pockets of unstained sandstone, small desiccation cracks due to drying. [Twin Mountain Formation]		503
342		5.57									70 degrees, RF, slightly rough, polished, vertical slickensides, white coating on fractures		recovered depth 340.5' - 350.3' in one 10' core run. We had no recovery in one run and a 10' return in next	502
343		7.48									30 degrees, RF, slight rough to smooth, polished vertical slickensides			501
344		7.67									30 degrees, RF, slight rough to smooth, polished vertical slickensides, concave shape			500
345		7.85									degrees, RF, slight rough to smooth, polished vertical slickensides			499
346		7.22	69	5.0 5.0	88	SW								498
347		6.52									70 degrees, RF, smooth to slightly rough, polished vertical slickensides, tight			497
348		9.12									70 degrees, RF, smooth to slightly rough, polished vertical slickensides, tight 38 degrees, RHRF, rough, widely spaced, open			496
349														

Project Name and Job Number  
 TXU Comanche Peak Col  
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**ROCK LOG**  
**Boring No. B-1012**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
349		8.97											mud loss? adding water	495
350		4.33									70-90 degrees,		unable to retrieve sample; flushing hole w/ tremie pipe at 349' washing up green mudstone chips	494
351		3.37	70	0.0 5.0								No Recovery		493
352		3.77												492
353		7.87												491
354		0										At midday on 11/15/06, we had a full interbarrel were unable to retrieve. Had to trip out pipe from previous day, came in with a full 10' run inner barrel, Ronnie then started back down the hole, but didn't hit bedrock until 359'. We are confident that we are at 359' - we can't figure out where these missing 5' went. No data for 354' to 359'	switching to 8.6' core barrel and bit, boart longyear innerbarrel-outer barrel system	490
355		0												489
356		0		0.0 5.0									3:10 - 11/16/06 - explanation of problems on hole B-1012 explained in Daily Field Report for 11/16	488
357		0												487
358		0												486
359		6.48	71	0.8 1.0	80	SW						SANDSTONE, silty, dark red (2.5YR 3/6), massive, modertately weathered (MW) , very weak, no effervescence, slightly weathered (SW) below 361.6'; very miniscule desication cracks, gradational lower contact. [Twin Mountain Formation]	Ronnie says we are on bedrock at 359'	485
360		6.83											100-200 psi down pressure	484
361		8.67									20 degrees, RF, Sm, Pl, T			483
362		6.8	73	4.9 5.0	98	MW-SW							losing water	482
363		4.12												481
364														

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1012</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
364		5.38	73	4.5 5.0	98	MW-SW								480
365		4.58										MUDSTONE, dark red (2.5YR 3/6), massive, slightly weathered (SW), very weak to weak (R1-R2), no effervescence, sharp lower contact. [Twin Mountain Formation]		479
366		6.87												478
367		6.93	74	5.0 5.0	100	SW								477
368		5.33												476
369		4.4											water loss	475
370		1.87				SW							11/17/06 -	474
371		1.83										SANDSTONE, silty, light bluish gray (5B 7/1), slightly weathered (SW), extremely to very weak, no effervescence, faint bedding in upper portion of run, bioturbation, becomes darker at 373.5'. [Twin Mountain Formation]	~90-100% water return, middle of 3rd ft, rock change? Slower drilling	473
372		6.8	75	3.3 5.0	66	SW								472
373		6.32												471
374		5.62											Top 2' came out as cuttings, hole was not completely cleared	470
375		1.03												469
376		2.5				SW						SANDSTONE, greenish gray (10Y 6/1), slightly weathered (SW), very weak to weak (R1-R2), slight effervescence, thinly bedded, shale interbed from 377.5' to 377.7', cross bedding at 377.7' to 378.2'. [Twin Mountain Formation]		468
377		3.48	76	5.0 5.0	100									467
378		2.83				SW								466
379												378.2' to 379.2' becomes silty, color change to light greenish gray (10Y 7/1), extremely weak to very weak (R0-R1)	90-100% water return	466



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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
379		2	76	5.0 5.0	100							SANDSTONE, greenish gray (10Y 6/1), slightly weathered (SW), very weak to weak (R1-R2), slight effervescence, thinly bedded, shale interbed from 377.5' to 377.7', cross bedding at 377.7' to 378.2'. [Twin Mountain Formation] 380.1' dark red bedding, thinly spaced, weathers easier,  382.8' to 383.0' convoluted bedding  383.45' shale interbed, 0.2' thick	~200 psi down pressure	465
380		0.97												464
381		3.7												463
382		1.57	77	5.0 5.0	100	SW								462
383		2.7												461
384		1.05												460
385		1.58												459
386		2.22												458
387		1.83	78	5.0 5.0	100	SW								457
388		3.18												456
389		1.33											455	
390		1.83											454	
391		1.87											453	
392		0.92	79	5.0 5.0	100	SW							~90-100% water return	452
393		1.02											around 200 psi down pressure	451
394														

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1012</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
394		1.22	79	<u>5.0</u> 5.0	100	SW								450
395		0.85				SW						SANDSTONE, reddish brown (2.5YR 4/4), slightly weathered (SW), weak (R2), no effervescence, previous red bedding has become most of the rock, a few interbeds of greenish gray sandstone. [Twin Mountain Formation]		449
396		1.17				SW								448
397		1.5	80	<u>5.0</u> 5.0	100	SW						SANDSTONE, greenish gray (10Y 5/1), slightly weathered (SW), weak (R2), no effervescence, convoluted bedding. [Twin Mountain Formation]		447
398		2.73				MW-SW						SANDSTONE, clayey, greenish gray (10Y 5/1), slightly to moderately weathered (SW-MW), extremely weak to very weak (R0-R1), slight to strong effervescence, 398.35' to 398.8' is similar to 390' to 395' unit. [Twin Mountain Formation]		446
399		7.5				SW						SANDSTONE, greenish gray (10Y 5/1), slightly to moderately weathered (SW-MW), weak to very weak (R2-R1), slight to strong effervescence, limestone clasts (0.2" to 0.75"). [Twin Mountain Formation]	material begins to drill slower	445
400		7.35				SW						SANDSTONE, dark reddish brown (5YR 3/2), massive, slightly weathered (SW), weak (R2), slight effervescence. [Twin Mountain Formation]		444
401		7.5				SW								443
402		7.52	81	<u>4.5</u> 5.0	89	SW					35 degrees, BJ, PI, Ro, Op	SANDSTONE, silty, very dark grayish green (5G 3/2), massive, slightly weathered (SW), weak (R2), very slight to slight effervescence, occasional spots of dark reddish brown sandstone. [Twin Mountain Formation]		442
403		7.5				SW								441
404		8				SW								440
405		6				SW						~405.5' to 410' rock becomes abundantly dark reddish brown (5YR 3/2), very dark grayish green material becomes interbedded - convoluted bedding	Rig down - 14:00 - spool tangled	439
406		7.83				SW								438
407		11.55	82	<u>4.0</u> 5.0	80	SW								437
408		9.28				SW							water loss in 3rd ft	436
409														

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**ROCK LOG**  
**Boring No. B-1012**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
409		9.45	82	<del>4.0</del> 5.0	80	SW								435
410		5.67										SANDSTONE, greenish gray (10Y 5/1), massive, coarse grained, slightly weathered (SW), very weak to weak (R1-R2), no effervescence. [Twin Mountain Formation]	~200 psi down pressure	434
411		2.67											~100% water return	433
412		1.5	83	<del>4.8</del> 5.0	95	SW								432
413		1												431
414		0.97												430
415		0.68												429
416		10.22										416.1' to 416.4' color change to reddish brown (5YR 4/4), fine grained		428
417		1.83	84	<del>4.6</del> 5.0	92	SW								427
418		0.87											~200 to 300 psi down pressure	426
419		1.42										SANDSTONE, reddish brown (5YR 3/2), slightly weathered (SW), very weak to weak (R1-R2), no effervescence. [Twin Mountain Formation]	gradational contact	425
420		1.13											fast drilling	424
421		1.02				SW								423
422		1.05	85	<del>5.0</del> 5.0	100								2000 psi down pressure	422
423		0.8				SW							water is being diverted - no recycling of water	421
424														421

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 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-1012**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
424		0.7	85	5.0 5.0	100							SANDSTONE, greenish gray (10Y 5/1), massive, coarse grained, slightly weathered (SW), very weak to weak (R1-R2), no effervescence. [Twin Mountain Formation] below 425' planar bedding	Driller estimates 90-100% water return	420
425		1.87												419
426		0.33												418
427		0.37	86	5.0 5.0	100									417
428		1.07												416
429		0.48				SW								415
430		0.37										430' to 431.5' reddish brown bed of sandstone		414
431		1.02												413
432		0.4	87	5.0 5.0	100							431.75' to 431.9' claystone/mudstone bed 431.9' return to convoluted bedding	400 psi down pressure	412
433		0.82												411
434		1.33												410
435		1.5										434.5' to 434.8' change to reddish brown (5YR 4/4) color	400 psi down pressure	409
436		0.83											low water in mud tub, refilled at end of run	408
437		0.48	88	5.0 5.0	100	SW								407
438		0.2										438' becomes coarser grained, planar bedding		406
439														

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 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-1012**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
439		0.22	88	5.0 5.0	100	SW						431.9' return to convoluted bedding 439' reddish brown (5YR 4/4) interbeds		405
440		0.43										SANDSTONE, reddish brown (5YR 4/4), slightly weathered (SW), weak (R2), no effervescence, coarse grained, planar greenish gray bedding. [Twin Mountain Formation]	100 psi down pressure	404
441		0.35												403
442		0.37	89	5.0 5.0	100					1012-47				402
443		0.38				SW								401
444		0.35										443.9' greenish gray bedding becomes very sparse		400
445		0.37												399
446		0.4												398
447		0.33	90	5.0 5.0	100									397
448		0.5								1012-48		CONGLOMERATE, brown (7.5 YR 3/3) matrix, slightly weathered (SW), very weak to weak (R1-R2), no to very slight effervescence, clasts range from <0.1" to 1", clasts composed of lithics and sandstone. [Twin Mountain Formation]		396
449		0.47				SW								395
450		0.52								1012-49				394
451		0.63				SW						SANDSTONE, massive, slightly weathered (SW), weak (R2), no effervescence, coarse grained. [Twin Mountain Formation]	100 to 200 down pressure	393
452		0.48	91	5.0 5.0	100	SW						SANDSTONE, brown (7.5YR 5/3), slightly weathered (SW), very weak, coarse to very coarse grained, 45% lithics, occasional cobble sized clasts. [Twin Mountain Formation]		392
453		1.78				SW						452.8' to 453' transition section, lots of clasts, dark greenish gray to greenish gray matrix	water is being drained, cannot accurately gauge water return - Driller says he is not losing water	391
454														

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**ROCK LOG**  
**Boring No. B-1012**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
454		1.45	91	5.0	100	SW						SANDSTONE, greenish gray (10Y 6/1), massive, slightly weathered (SW), weak (R2), no effervescence, medium grained, large clasts ranging from 0.2" to 2", abundant clasts from 455.3' - 455.4'. [Twin Mountain Formation]		390
455		1.4												389
456		2.57										MUDSTONE, mottled, purple, green, red, slightly weathered (SW), very weak to weak (R1-R2), no effervescence, abundant, calcite veining, highly oxidized, planar bedding slightly visible. [Twin Mountain Formation]	slower drilling	388
457		2.48	92	5.0	100								400 psi down pressure	387
458		2.67											roughly 80% water return	386
459		2.83				SW								385
460		4.17											500 psi down pressure	384
461		4.45							1012-50					383
462		3.5	93	5.0	100							461.3' to 461.65' float structures 461.65' to 462' SANDSTONE interbedding, weak red (10R 4/2) & greenish gray (10Y 6/1)		382
463		2.83												381
464		2.67										SANDSTONE, mottled, weak red (10R 4/2), greenish gray (GLEY1 6/1), slightly weathered (SW), weak (R2), same characteristics as previous bed at 455.7'. [Twin Mountain Formation]	400 psi down pressure	380
465		1.18				SW						SANDSTONE, greenish gray (10Y 6/1), slightly weathered (SW), weak to medium strong (R2-R3), no effervescence, wackestone interbed at 365.7' to 366.25'. [Twin Mountain Formation]		379
466		1.2											400 psi down pressure	378
467		1.77	94	5.0	100							SANDSTONE, greenish gray (10Y 6/1), slightly weathered (SW), weak to medium strong (R2-R3), no effervescence, rip up clasts (weak red (10R 4/2), bottom 0.2' turns to mudstone/shale. [Twin Mountain Formation]	90-100% water return (according to driller, water is being dumped)	377
468		1.72				SW								376
469														

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 TXU Comanche Peak Col  
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**ROCK LOG**  
**Boring No. B-1012**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
469		1.48	94	5.0 5.0	100							SANDSTONE, greenish gray (10Y 6/1), slightly weathered (SW), weak to medium strong (R2-R3), no effervescence, rip up clasts (weak red (10R 4/2), bottom 0.2' turns to mudstone/shale. [Twin Mountain Formation]		375
470		2.22				SW								374
471		2.02												373
472		1.6	95	5.0 5.0	100	SW								372
473		1.77												371
474		1.43				SW						SANDSTONE, silty, slightly weathered (SW), weak to medium strong (R2-R3), no effervescence, convoluted bedding. [Twin Mountain Formation]		370
475		1.8				SW						SANDSTONE, greenish gray (10Y 6/1), massive, slightly weathered (SW), weak to medium strong (R2-R3), no effervescence. [Twin Mountain Formation]		369
476		2.33									10 degrees, resealed	rip up clasts		368
477		3.03	96	5.0 5.0	100	SW								367
478		3.83												366
479		1.87				SW						MUDSTONE/SHALE, weak red (10R 4/2), slightly weathered (SW), weak (R2), no effervescence, planar bedding. [Twin Mountain Formation]		365
480		3							1012-51					364
481		2.5							1012-55					363
482		2.23	97	5.0 5.0	100	SW						SANDSTONE, greenish gray (10Y 6/1), slightly weathered (SW), weak to medium strong (R2-R3), no effervescence, interbedded with weak red (10R 4/2) silty sandstone to 483.9. [Twin Mountain Formation]	90-100% water return (according to driller, water is being dumped)	362
483		1.7												361
484														

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 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-1012**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
484		1.85	97	5.0 5.0	100									360
485		1.13										SANDSTONE, weak red (10R 4/2), massive, slightly weathered (SW), weak to medium strong (R2-R3), no effervescence, below 485.2' convoluted bedding. [Twin Mountain Formation]		359
486		1.22				SW								358
487		1.37	98	5.0 5.0	100									357
488		1.83										bottom 0.5' greenish gray (10Y 6/1) with convoluted weak red bedding		356
489		1.83				SW						MUDSTONE/SHALE, weak red (10R 4/2), slightly weathered (SW), very weak to weak (R1-R2), no effervescence, planar bedding. [Twin Mountain Formation]		355
490		2.22											400 psi down pressure	354
491		1.12									26 degrees, RF, He 25 degrees, BJ, He		steady drilling	353
492		1.5	99	5.0 5.0	98							SANDSTONE, greenish gray (10Y 5/1), massive, medium to coarse grained, fresh to slightly weathered (F-SW), weak (R2), no effervescence, abundant quartz grains in top 0.8', weak red interbeds at 492' to 492.4', 492.6' to 493.6', interbeds are fine to medium grained, contain planar bedding. [Twin Mountain Formation]		352
493		2.1				SW-F								351
494		1.37											400 psi down pressure	350
495		1.8										interbedded with weak red sandstone	90-100% water return	349
496		1.32									50 degrees, RF, Wa, Ro, Op			348
497		1.5	100	5.0 5.0	100	SW-F								347
498		1												346
499														



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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
499		2.08	100	5.0	100							SANDSTONE, greenish gray (10Y 5/1), massive, medium to coarse grained, fresh to slightly weathered (F-SW), weak (R2), no effervescence, abundant quartz grains in top 0.8', weak red interbeds at 492' to 492.4', 492.6' to 493.6', interbeds are fine to medium grained, contain planar bedding. [Twin Mountain Formation]		345
500		1.7												344
501		1.05									Vertical fracture, ~90 degrees, partially healed			343
502		1.25	101	5.0	100	SW-F					10 degrees, B <sub>J</sub> , Wa, Ro, Ti			342
503		1.22												341
504		2.17										504.2' to 505' weak red sandstone interbed, planar bedding		340
505		1.22									< 2 degrees, B <sub>J</sub> , Wa, Sl, Ti, mud cracks preserved	mudcracks preserved in fracture		339
506		1.33				SW-F					5 degrees, B <sub>J</sub> , Wa, Sl, Ti	SANDSTONE, weak red (2.5YR 4/2), fresh to slightly weathered (F-SW), weak to medium strong (R2-R3), no effervescence, faint convoluted bedding. [Twin Mountain Formation]		338
507		1.42	102	5.0	94							SANDSTONE, greenish gray (10Y 5/1), weak red (2.5YR 4/2), brown (7.5YR 5/3), fresh to slightly weathered (F-SW), weak to medium strong (R2-R3), no effervescence, medium to coarse grained, planar bedding. [Twin Mountain Formation]		337
508		1.83												336
509		3.02				SW-F						509.2' to 510' bioturbation		335
510		2.08											silted up slightly	334
511		2.48												333
512		2.18	103	5.0	100	SW-F						MUDSTONE to fine-grained SANDSTONE, dark bluish gray (5B 4/1), fresh to slightly weathered (F-SW), weak (R2), no effervescence, very thinly bedded, occasional medium to coarse grained beds. [Twin Mountain Formation]	400 psi down pressure	332
513		2.08				SW-F					2 degrees, B <sub>J</sub> , Wa, Sl, Ti, mud cracks		90-100% water return	331
514														

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
514		1.23	103	5.0 5.0	100	SW-F						SANDSTONE, greenish gray (10G 6/1), massive w/ occasional thin bedding, fresh to slightly weathered (F-SW), weak to medium strong (R2-R3), no effervescence. [Twin Mountain Formation]		330
515		1.55										below 515.5' massive w/ occasional thin bedding		329
516		1.9												328
517		2.25	104	5.0 5.0	100	SW-F					5 degrees, BJ, Wa, Ro, Op	SANDSTONE, greenish gray (10Y 5/1) to dark bluish gray (10B 4/1), fresh to slightly weathered (F-SW), weak to medium strong (R2-R3), no effervescence, planar bedding, very thinly to thinnly spaced, occasional convoluted bedding w/ rip up clasts. [Twin Mountain Formation]		327
518		2												326
519		2.67												325
520		2.3				SW-F								324
521		2.33												323
522		2.15	105	5.0 5.0	100	SW-F						SANDSTONE, light greenish gray (10G 7/1), fresh to slightly weather, medium strong (R3), no effervescence, wispy convoluted bedding with rip up clasts, top 0.6' contain float structures. [Twin Mountain Formation]		322
523		2.42												321
524		2.3												320
525		1.18				SW-F							400 psi down pressure	319
526		1.12												318
527		1.22	106	4.8 5.0	96	SW-F						SANDSTONE, dark bluish gray (5B 4/1), to light greenish gray (10G 7/1), fresh to slightly weathered (F-SW), medium strong to strong (R3-R4), no effervescence, planar bedding with occasional convoluted bedding, top 1.5' are medium to thinnly spaced, below 527.6' bedding is very thinnly to thinnly spaced, occasional rip up clasts, dark bluish gray beds are finer grained. [Twin Mountain Formation]	smooth drilling	317
528		2.03												316
529														315

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908




**ROCK LOG**  
**Boring No. B-1012**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
529		3.03	106	<del>4.8</del> 5.0	96									315
530		3.15												314
531		2.3									2 degrees, BJ, Sm, Pl, Wa			313
532		2.83	107	<del>4.9</del> 5.0	98									312
533		2.67												311
534		2.6				SW-F								310
535		3.15												309
536		3.13										535.55' calcite healed fractures		308
537		3.25	108	<del>5.0</del> 5.0	100							536' calcite healed fractures		307
538		3.05										536.6' calcite healed fractures		306
539		3.13												305
540		3.07												304
541		3.77										bedding becomes thicker	400 psi down pressure	303
542		3.08	109	<del>5.0</del> 5.0	100	SW-F							drilling slowed, water loss	302
543		3.57												301
544														


Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1012</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
544	Dotted pattern	3.12	109	5.0	100	SW-F					SANDSTONE, dark bluish gray (5B 4/1), to light greenish gray (10G 7/1), fresh to slightly weathered (F-SW), medium strong to strong (R3-R4), no effervescence, planar bedding with occasional convoluted bedding, top 1.5' are medium to thinnly spaced, below 527.6' bedding is very thinnly to thinly spaced, occasional rip up clasts, dark bluish gray beds are finer grained. [Twin Mountain Formation]	400 psi down pressure  ~100% water return	300	
545		3.75								299				
546		3.43								298				
547		3.5	110	5.0	100	SW-F				297				
548		3.55								296				
549		3.48								295				
550											BOTTOM OF HOLE - 550'		294	
551													293	
552													292	
553													291	
554													290	
555													289	
556													288	
557													287	
558													286	
559														

Project Name and Job Number TXU Comanche Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-1013</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'05.63875"N / 97°47'42.83107"W		Total Depth 150 feet	
Drilling Contractor and Rig Fugro / CME 45C		Elevation and Datum 863.531 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 6 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / N/A	No. of Samples 2	Date Started 1/27/07	
		Borehole Inclination Vertical	Logged by S. Dee	Date Completed 1/27/07	

Reviewed by / Date R. Ortiz 2/5/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
0							<b>RESIDUAL SOIL (RS)</b> LEAN CLAY medium stiff, moderate brown to light brown (5YR4/4 - 5YR5/6), damp, 5% angular pebbles, with calcareous deposits, reacts strongly to HCl		863
1	CL		B-1013 1	2					862
2				4	15/18	1.3			861
3				3					860
4	ML		B-1013 2	13			SILT with sand and gravel stiff to hard, grayish orange (10YR7/4), dry, 15% angular pebbles increasing with depth, with calcareous deposits, violent reaction to HCl		859
5				21	18/18	4.51			858
6			B-1013 50/0"	36				Top of Bedrock at 6'	857
7					0			Bedrock at 6'	856
8					0				855
9									854
10									853
11									852
12									851
13									850
14									849
15									

Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG Boring No. B-1013</b>
Type and Diameter of Boring HAS/HQ / 4"	Boring Location 32°18'05.63875"N / 97°47'42.83107"W		Total Depth 150 feet	
Drilling Contractor and Rig Fugro Austin / CME 45	Elevation and Datum 863.531 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 6 feet	
Casing Size and Depth 4" / 6 feet	Length of Core Barrel and Bit 8.6 feet	No. of Core Boxes 11	Date Started 1/27/07	
	Borehole Inclination Vertical	Logged by S. Dee	Date Completed 1/31/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 2/5/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
0		1.98				MW	R2					LIMESTONE: packstone; light gray (N7); moderately weathered (MW); weak (R2); reacts to HCl. [Glen Rose Formation]		857
7		1.75				HW	R1-R2		1013-3			LIMESTONE: packstone; dark yellowish orange (10YR 6/6); bedded with interbeds of claystone; highly weathered (HW); very weak to weak (R1 to R2); strong HCl reaction. [Glen Rose Formation]		856
8		1.22	1	3.6 4.0	90									855
9		0.75										SHALE: claystone; dark yellowish orange (10YR 6/6); massive; highly weathered (HW); extremely weak (R0); angular pebbles; 0.1' interbeds of packstone. [Glen Rose Formation]		854
10		1.52				HW	R0							853
11		1.87												852
12		2.02	2	5.0 5.0	100									851
13		1.8				MW	R2		1013-4			LIMESTONE: packstone; silty; yellowish gray (5Y 8/1); moderately weathered (MW); weak (R2); bedded with <0.1' interbeds of shale; strong HCl reaction. [Glen Rose Formation]		850
14		1.62												849
15		1.62				SW	R2					LIMESTONE: wackestone; very light gray (N8); massive with abundant (<0.1') interbeds of silt/shale; weak (R2); slightly weathered (SW); abundant rip up clasts. [Glen Rose Formation]		848
16		2.77							1013-5					847
17		3.17	3	5.0 5.0	100							SHALE: medium dark gray (N4); very thinly bedded; fresh (F); extremely weak (R0); no HCl reaction. [Glen Rose Formation]		846
18		2.65				F	R0							845
19		3.2				F	R2					LIMESTONE: micrite; white (N9); massive; fresh (F); weak (R2); strong HCl reaction. [Glen Rose Formation]		844
20		2.08	4	5.0 5.0	100	F	R1							843

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1013</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
21		3.53	4	5.0 5.0	100	F	R1					SHALE: siltstone and shale; medium gray (N5), massive to very thinly bedded with <0.1' interbeds of micrite; very weak (R1); fresh (F); slight HCl reaction. [Glen Rose Formation]		842
22		1.55				F	R2			1013-6	LIMESTONE: micrite; white (N9); massive; fresh (F); weak (R2); strong HCl reaction. [Glen Rose Formation]		841	
23		1.28				SW	R2				LIMESTONE: wackestone, medium light gray (N6); slightly weathered (SW); weak (R2); bedded with abundant laminations of shale; strong HCl reaction. [Glen Rose Formation]		840	
24		2.13									SHALE: medium dark gray (N4); very thinly bedded; fresh (F); extremely weak (R0); slight reaction to HCl. [Glen Rose Formation]		839	
25		3.25	5	5.1 5.0	100	F	R0					SHALE: medium dark gray (N4); very thinly bedded; fresh (F); extremely weak (R0); slight reaction to HCl. [Glen Rose Formation]		838
26		1.67				SW	R2			1013-7	LIMESTONE: packstone; light gray (N7); massive to bedded with abundant (<0.1') interbeds of shale/silt; weak (R2); slightly weathered (SW). [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	837	
27		1.33				F	R0				SHALE: siltstone and shale; medium light gray (N6); massive; fresh (F); extremely weak (R0). [Glen Rose Formation]		836	
28		1.6				SW	R2				LIMESTONE: wackestone; very light gray (N8); slightly weathered (SW); weak (R2). [Glen Rose Formation]		835	
29		1.87	F	R0				SHALE: medium gray (N5); very thinly bedded; fresh (F); extremely weak (R0); abundant fossil clasts throughout; slight to strong react to HCl. [Glen Rose Formation]	834					
30		3.17	6	5.0 5.0	100	SW	R2					LIMESTONE: wackestone; white (N9); massive; fresh (F); weak (R2); all clasts are fossil fragments; several <0.1' interbeds of shale. [Glen Rose Formation]		833
31		3.7				F	R0			1013-8	SHALE: medium gray (N5); very thinly bedded; fresh (F); extremely weak (R0); abundant fossil clasts throughout; slight to strong react to HCl. [Glen Rose Formation]	832		
32		1.25									LIMESTONE: wackestone; white (N9); massive; fresh (F); weak (R2); all clasts are fossil fragments; several <0.1' interbeds of shale. [Glen Rose Formation]	831		
33		1.63											830	
34		1.15	7	2.0 2.0	100	F	R2							829
35		1.62												
36														

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-1013**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
36		2.08	7	2.0 2.0	100	F	R2					LIMESTONE: packstone; shaly; medium light gray (N6); bedded; slightly weathered (SW); very weak (R1); beds are <0.01' thick, abundant rip up clasts from 36.3' to 38.2; fossil clasts from 38.2' to 41.1'. [Glen Rose Formation]		827
37		7.98												826
38		7.95				SW	R1							825
39		6.28	8	5.0 5.0	100			Pressuremeter	1013-9				Run 8 drilled NQ for pressure meter test interval.	824
40		5.7						Pressuremeter						823
41		6.07						Pressuremeter				SHALE: medium dark gray (N4); very thinly bedded; fresh (F); extremely weak (R0); slight HCl reaction. [Glen Rose Formation]		822
42		6.5				F	R0							821
43		3.63												820
44		2.03	9	5.0 5.0	100	SW	R2					LIMESTONE: packstone; light gray to very light gray (N7 to N8); massive with intermittent zones of shaly silt interbeds (<.1'); slightly weathered (SW); weak (R2); angular, medium grained clasts. [Glen Rose Formation]		819
45		1.33							1013-10					818
46		0.93												817
47		1.47										LIMESTONE: wackestone; light gray (N7); bedded with abundant (<0.1') interbeds of shale/silt; slightly weathered (SW); weak (R2); reacts violently to HCl; medium and subangular clasts; high concentration of shale interbeds from 47.2' to 47.7', 48.2' to 49.0'; abundant rip up clasts in zones with shale interbeds. [Glen Rose Formation]		816
48		0.83				SW	R2							815
49		0.87	10	5.0 5.0	100									814
50		0.93							1013-11					813
51						SW	R2							



Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1013</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
51		0.85	10	5.0 5.0	100							LIMESTONE: packstone; medium light gray (N6); zones of abundant interbeds of shale; clasts are fine to medium grained, rounded to subrounded, white (N9) or light bluish grey (5B 7/1); some burrows; rip up clasts; slightly weathered (SW); weak (R2). [Glen Rose Formation]		812
52		1.4				SW	R2							811
53		2.48	11	2.0 2.0	100									810
54						F	R0					SHALE: dark gray (N3); very thinly bedded; fresh (F); extremely weak (R0); slight HCl reaction. [Glen Rose Formation]		809
55		10.38				SW	R2					LIMESTONE: wackestone; very light gray (N8), interbedded with shale (<0.1'); slightly weathered (SW); weak (R2); strong HCl reaction. [Glen Rose Formation]		808
56		15.87	12	4.9 5.0	98	F	R0	Pressuremeter				SHALE: dark gray (N3); very thinly bedded; fresh (F); extremely weak (R0); slight HCl reaction. [Glen Rose Formation]	Run 12 drilled NQ for pressure meter test interval.	807
57														
58								Pressuremeter	1013-12			LIMESTONE: wackestone; very light gray (N8); massive with occasional interbeds (<0.1') of shale; fresh (F); weak (R2); some fossils. [Glen Rose Formation]		806
59														
60		3.18												804
61		3.08	13	3.0 3.0	100									803
62		1.95				F	R2							802
63		2.75												801
64		2.93												800
65		2.43	14	5.0 5.0	100								Pulldown pressure 200 psi; system pressure 1600 psi; 100% water return (gray).	799
66		2.27				F	R0					SHALE: medium dark gray (N4); very thinly bedded; fresh (F); extremely weak (R0); slight HCl reaction; some beds have fossil clasts. [Glen Rose Formation]		798

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**ROCK LOG**  
**Boring No. B-1013**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
66		5.58	14	5.0	100							SHALE: medium dark gray (N4); very thinly bedded; fresh (F); extremely weak (R0); slight HCl reaction; some beds have fossil clasts. [Glen Rose Formation]		797
67		8.88				F	R0							796
68		5.32												795
69		4.93	15	5.0	86	F	R0	Pressuremeter				LIMESTONE: packstone; massive; fresh (F); extremely weak (R0); fossils. [Glen Rose Formation]		794
70		6.2										SHALE: medium dark gray (N4); very thinly bedded; fresh (F); extremely weak (R0); slight HCl reaction; some beds have fossil clasts. [Glen Rose Formation]	Run 15 drilled NQ for pressure meter test interval.	793
71		5.93				F	R0	Pressuremeter	1013-15					792
72		3.28												791
73		1.7												790
74		1.2	16	5.0	100	SW	R2					LIMESTONE: wackestone; bedded with abundant interbeds (0.1') of shale throughout; slightly weathered (SW); weak (R2); reacts strongly to HCl; clasts are fine grained and subangular. [Glen Rose Formation]		789
75		3.72												788
76		4.35				F	R0					SHALE; medium dark gray (N4); fresh (F); extremely weak (R0); very thinly bedded; no reaction to HCl. [Glen Rose Formation]	230 psi pulldown pressure; 1450 psi system pressure; 100% water return (gray).	787
77		3.57				SW	R2					LIMESTONE: wackestone; bedded with abundant (<0.1') interbeds of shale/silt, slightly weathered (SW); weak (R2); abundant fossils. [Glen Rose Formation]		786
78		3.15										SHALE: medium dark gray (N4); fresh (F); extremely weak (R0); very thinly bedded; no reaction to HCl. [Glen Rose Formation]		785
79		3.97	17	5.0	100									784
80		3.27				F	R0							783
81													Length of recovery stretched due to mechanical breaks.	

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
81		1.93	17	5.2 5.0	100							LIMESTONE: wackestone; light gray (N7); bedded with abundant shale/siltstone (<0.1') beds; slightly weathered (SW); weak (R2); reacts strongly to HCl, bioturbated throughout. [Glen Rose Formation]		782
82		3.55												781
83		1.87												780
84		1.73	18	4.9 5.0	98							Abundant (<0.1') interbeds of shale/silt, as well as burrows and rip up clasts, 84.2' to 87.0'.		779
85		2.2				SW	R2							778
86		1.82												777
87		2.97												776
88		3.17												775
89		3.67	19	5.0 5.0	100			Pressuremeter				LIMESTONE: packstone; very light gray (N8); bedded with abundant (<0.1') interbeds of shale/siltstone; slightly weathered (SW); weak (R2); reacts strongly to HCl, clasts are either fine to medium grained blue or white limestone clasts, or fine to medium grained brown silt and sand grains. [Glen Rose Formation]	Run 19 drilled NQ for pressure meter test interval.	774
90		4.13						Pressuremeter						773
91		8.27				SW	R2							772
92		2.25												771
93		1.45	20	3.0 3.0	100							LIMESTONE: wackestone; light gray (N7); bedded with abundant interbeds of shale, particularly from 92.9' to 94.5'; slightly weathered (SW); weak (R2); bioturbated and rip up clasts from 92.9' to 94.5'. [Glen Rose Formation]		770
94		2.02				SW	R2							769
95		2.4	21	5.0 5.0	100							Abundant (<0.1') interbeds of shale/silt, rip-up clasts, 95.6' to 98.8'.		768
96														

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
96		2.15										<p>LIMESTONE: wackestone; light gray (N7); bedded with abundant interbeds of shale, particularly from 92.9' to 94.5'; slightly weathered (SW); weak (R2); bioturbated and rip up clasts from 92.9' to 94.5'. [Glen Rose Formation]            Zones of clasts which are dominantly blue; rounded and fine to medium grained.</p> <p>Clasts are dominantly black and brown; fine to medium grained silt and sand; angular to subangular.            Abundant (&lt;0.1') interbeds of shale/silt, rip-up clasts, 101.4' to 104.7'.</p> <p>Interbed of siltstone with angular rip up clasts of wackestone.</p> <p>Clasts become bluish gray (5B 7/1), medium grained, subrounded and sparsely oolitic.</p> <p>High percentage of silt, 110.7' to 111.0'.</p>		767
97		1.9												766
98			21	5.0 5.0	100									765
99		1.75							1013-21					765
100		1.3												764
101		2.47												763
102		1.78												762
103		1.03	22	5.0 5.0	100									761
104		1.93				SW								760
105		2.72					R2							759
106		5.8												758
107		5.97												757
108		6.5	23	5.0 5.0	100			Pressuremeter					Run 23 drilled NQ for pressure meter test interval; test failed; reattempt on Run 24.	756
109		7.25						Pressuremeter						755
110		5.52												754
111		11.5	24	5.0 5.0	100				1013-23					753

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
111		10.68	24	5.0 5.0	100	SW	R2	Pressuremeter	1013-24			High percentage of silt, 111.9' to 112.4'.  High percentage of silt, 112.6' to 112.8'. Abundant bioturbation, 112.8' to 113.5'	Run 24 drilled NQ for pressure meter test interval.	752
112		12.7											751	
113		8.85											750	
114		5.7											749	
115		1.35	25	4.5 5.0	90	SW	R2	Pressuremeter	1013-25		LIMESTONE: packstone; light gray (N7) to light bluish gray (5B 7/1); bedded; weak (R2); slightly weathered (SW); clasts are blue oolites. [Glen Rose Formation]  LIMESTONE: wackestone; light gray (N7); bedded with abundant (<0.1') shale interbeds; weak (R2); slightly weathered (SW); clasts are fine to medium grained; brown sand and silt or bluish oolites and subangular fossils; abundant silt/sand filled burrows. [Glen Rose Formation]	Drilled the last 0.5' of run 24 HQ on 1/31/07 due to inability to finish run with Nqon 1/30/07.	748	
116		1.15										747		
117		1.25										746		
118		2.85										745		
119		5.37	26	5.0 5.0	100	SW	R2	Pressuremeter	1013-26		Siltstone interbeds 118.4' to 118.6'. Siltstone interbeds 118.8' to 119.0'.	Used solid inner barrel for runs 25 and deeper due to icy conditions.	744	
120		3.48										743		
121		1.25										742		
122		1.8										741		
123		1.02	27	5.0 5.0	100	SW	R2	Pressuremeter					740	
124		2.03											739	
125		1.53											738	
126														

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
126	[Lithology Pattern]	1.52	27	5.0 5.0	100	SW	R2					LIMESTONE: packstone; silty; light gray (N7) to light bluish gray (5B 7/1); bedded with abundant (<0.1') interbeds of siltstone; slightly weathered (SW); weak (R2); clasts are medium grained; blue oolitic subangular or fine sand and brown. [Glen Rose Formation]		737
127		2.95				F	R1							
128	[Lithology Pattern]	1.77	28	5.0 5.0	100	SW	R2					LIMESTONE: wackestone; light gray (N7); massive; with occasional interbeds (<0.1') of shale/silt; slightly weathered (SW); weak (R2); strong HCl reaction. [Glen Rose Formation]		735
129		1.43												
130	[Lithology Pattern]	1.68	29	5.0 5.0	100	SW	R2					LIMESTONE: micrite; sparitic; silty; very light gray (N8); massive; fresh (F); weak (R2); mottled appearance with light colored patches; gradational lower contact. [Glen Rose Formation]		733
131		2.92												
132	[Lithology Pattern]	1.8	30	5.0 5.0	100	SW	R2					LIMESTONE: packstone; bedded with abundant (<0.1') interbeds of shale; slightly weathered (SW); weak (R2); clasts are silt/fine sand or bluish oolites. [Glen Rose Formation]		731
133		1.28												
134	[Lithology Pattern]	1.23	30	5.0 5.0	100	F	R2					LIMESTONE: packstone; silty; thinly bedded with abundant (<0.1') interbeds of shale/siltstone; slightly weathered (SW); weak (R2); clasts are brown to black silt and fine sand grains or angular gray limestone clasts; abundant bioturbation throughout Run 30. [Glen Rose Formation]		729
135		2.53												
136	[Lithology Pattern]	4.07	30	5.0 5.0	100	SW	R2					LIMESTONE: packstone; silty; light gray (N7) to light bluish gray (5B 7/1); bedded with abundant (<0.1') interbeds of siltstone; slightly weathered (SW); weak (R2); clasts are medium grained; blue oolitic subangular or fine sand and brown. [Glen Rose Formation]		727
137		2.35												
138	[Lithology Pattern]	3.9	30	5.0 5.0	100	SW	R2					LIMESTONE: packstone; silty; light gray (N7) to light bluish gray (5B 7/1); bedded with abundant (<0.1') interbeds of siltstone; slightly weathered (SW); weak (R2); clasts are medium grained; blue oolitic subangular or fine sand and brown. [Glen Rose Formation]		725
139		3.88												
140	[Lithology Pattern]	3.88	30	5.0 5.0	100	SW	R2					LIMESTONE: packstone; silty; light gray (N7) to light bluish gray (5B 7/1); bedded with abundant (<0.1') interbeds of siltstone; slightly weathered (SW); weak (R2); clasts are medium grained; blue oolitic subangular or fine sand and brown. [Glen Rose Formation]		723
141		3.88												

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1013</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
141		NM										LIMESTONE: packstone; silty; thinly bedded with abundant (<0.1') interbeds of shale/siltstone; slightly weathered (SW); weak (R2); clasts are brown to black silt and fine sand grains or angular gray limestone clasts; abundant bioturbation throughout Run 30. [Glen Rose Formation]		722
142		2.15												721
143			30	5.0 5.0	100									720
144		3.82				SW	R2							719
145		4.2												718
146		3.17											718	
147		5.07				F	R0					SHALE: dark gray (N3), very thinly bedded; fresh (F); extremely weak (R0); slight HCl reaction. [Glen Rose Formation]	717	
148		3.8	31	4.8 5.0	96							LIMESTONE: wackestone; massive with (<0.1') interbeds of shale/silt; slightly weathered (SW); weak (R2); strong HCl reaction. [Glen Rose Formation]	716	
149		3.78				SW	R2						715	
150		5.22				F	R0					SHALE, dark gray (N3), very thinly bedded; fresh (F); extremely weak (R0); slight HCl reaction. [Glen Rose Formation]	714	
151						SW	R2					LIMESTONE: wackestone; massive with (<0.1') interbeds of shale/silt; slightly weathered (SW); weak (R2); strong HCl reaction. [Glen Rose Formation]	713	
152													712	
153													711	
154													710	
155													709	
156													708	

Project Name and Job Number TXU Comanche Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-1014</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'08.08134"N / 97°47'42.94056"W		Total Depth 150 feet	
Drilling Contractor and Rig Geotechnology / CME 55		Elevation and Datum 851.197 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 11.5 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 4	Date Started 1/25/07	
		Borehole Inclination Vertical	Logged by J. Cox	Date Completed 1/28/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 2/11/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0										851
1	CL		B-1014 1	8	14/18	3		RESIDUAL SOIL (RS) SANDY LEAN CLAY very stiff, light yellowish brown (2.5Y6/4), dry		850
2				19						849
3				16						848
4	CL		B-1014 2	9	18/18	3.5		LEAN CLAY very stiff, pale yellow (2.5Y7/4), moist, medium sized limestone gravels, with calcareous deposits, strong reaction to HCl		847
5				9						846
6				11						845
7	CL/ML		B-1014 3	19	10/10	1.5		CLAYEY SILT with limestone fragments stiff to hard, olive yellow (2.5Y6/8), moist, reacts to HCl		844
8				50/4"						843
9	CL		B-1014 4	23	15/15	3		LEAN CLAY very stiff to hard, yellow (2.5Y7/6), damp, some limestone fragments, strong reaction to HCl		842
10				22						841
11				50/3"						840
12			B-1014 5	50/1"	0/1			Limestone, auger refusal at 11.5'		839
13								Top of Bedrock at 11.5'	Bedrock at 11.5'	838
14										837
15										836



Project Name and Job Number TXU Comanche Peak Col 1908		 ROCK LOG Boring No. B-1014	
Type and Diameter of Boring HQ, NQ / 4"		Boring Location 32°18'08.08134"N / 97°47'42.94056"W	
Drilling Contractor and Rig GeoTechnology / CME 55		Elevation and Datum 851.197 feet NAVD88	Ground Water Depth DRY
Casing Size and Depth 4" / 11 feet		Length of Core Barrel and Bit 8.6 feet	No. of Core Boxes 10
		Borehole Inclination Vertical	Logged by J. Cox
		Date Completed 1/28/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 2/11/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology		Elevation (feet)
												Remarks		
12		4.42												839
13		2.75				F-MW	R2							838
14		3.67	1	4.4 / 4.5	97									837
15		4.67				F	R1-R2		1014-5					836
16		2.17												835
17		3												834
18		2.75							1014-6					833
19		2.77	2	4.9 / 5.0	98	F	R2							832
20		4												831
21		4												830
22		1.58				F	R1							829
23		2.25												828
24		1.5	3	5.0 / 5.0	86	M	R2		1014-7					827
25		1.25												826
26		2.75												825
		3.5	4	5.0 / 5.0	100	F	R2							825

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1014</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
27		3.5										LIMESTONE: wackestone; shaly; medium gray (N5); fresh (F); weak (R2); damp; small rip-up clasts throughout; strong HCl reaction; fossils abundant. [Glen Rose Formation]		824
28		2.67											good water return	823
29		4.5	4	5.0 5.0	100	F	R2							822
30		4.08							1014-8					821
31		5.25										SHALE: medium dark gray (N3); thinly bedded; fresh (F); very weak (R1); very slight HCl reaction. [Glen Rose Formation]		820
32		4.58				F	R1							819
33		2.5										LIMESTONE: wackestone; medium gray (N5) to medium light gray (N6); fresh (F); weak (R2); dry to damp; abundant rip-up clasts from 32.2' to 35.2', medium gray (N5); rip-up clasts throughout; strong HCl reaction; fossils; 45.05' to 45.3'; no reaction with HCl in shale beds; limestone with many thin shale beds throughout. [Glen Rose Formation]	pressure meter test 33.0' to 34.5'.	818
34		2	5	5.2 5.0	100			Pressuremeter					picture of run 5 core faced backwards, flipped rock around to correct for log. Length of recovery stretched due to mechanical breaks.	817
35		2.67							1014-9				pressure meter test 34.5' to 36.0'.	816
36		1.5						Pressuremeter				Becomes more of a shaly wackestone at 36.2'.	815	
37		2.5												814
38		2.75											good water return	813
39		1.75	6	4.9 5.0	98									812
40		1.58												811
41		2.08							1014-10					810
41		1.75	7	4.9 5.0	98									810

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1014</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
42		1.75												809
43		1.63										Shale bed 42.7' to 42.95'.		808
44		4.5	7	4.9 5.0	98	F	R2					Shale bed 43.1' to 43.2'. Shale bed 43.4' to 43.5'.		807
45		6.75										Shale bed 44.6' to 44.7'. Shale bed 44.8' to 45.0'. Shale bed 45.05' to 45.3'.		806
46		5.5										LIMESTONE: wackestone; shaly; medium gray (N5); fresh (F); very weak to weak (R1 to R2); some rip-up clasts; abundant fossils; violent HCl reaction; shale component is medium dark gray (N3); thinly bedded; fresh (F); very weak (R1); moderate HCl reaction. [Glen Rose Formation]		805
47		4										Shale bed 45.8' to 46.2'.		804
48		2.5												803
49		5.33	8	4.9 5.0	98							Shale bed 48.4' to 48.7'.		802
50		3.75				F	R1-R2							801
51		2.75												800
52		6												799
53		4.75												798
54		7	9	4.6 5.0	92			Pressuremeter				SHALE: medium dark gray (N3); thinly bedded; fresh (F); very weak (R1); no HCl reaction; very soft and extremely weak (R0) at 55.15'. [Glen Rose Formation]	drilling very slow due to massive amounts of shaking, difference in HQ to NQ causing core barrel to shake	797
55		6.33						Pressuremeter					pressure meter test 53.0' to 54.5'. pressure meter test 54.5' to 56.0'.	796
56		12				F	R1							795
		11	10	4.8 5.0	95									

Project Name and Job Number  
TXU Comanche Peak Col  
1908



**ROCK LOG**  
**Boring No. B-1014**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
57		11				F	R1					SHALE: medium dark gray (N3); thinly bedded; fresh (F); very weak (R1); no HCl reaction; very soft and extremely weak (R0) at 55.15'. [Glen Rose Formation]		794
58		4.4				F	R2					LIMESTONE: wackestone; medium light gray (N6); fresh (F); weak (R2); dry; abundant fossils; fine grained; bioturbated; strong HCl reaction. [Glen Rose Formation]	good water return, gray	793
59		4	10	4.8 5.0	95							SHALE: medium dark gray (N3); very fine grained; fine laminations; fresh (F); very weak (R1); no recovery from 58.3' to 58.65' (washout?); no HCl reaction. [Glen Rose Formation]		792
60		6.25												791
61		9				F	R1						picture states 5.1/5, should be 4.75/5 as written on log	790
62		6.83												790
63		4.25												789
64		4.75	11	4.9 5.0	98	SW	R2					LIMESTONE: wackestone; medium light gray (N6); slightly weathered (SW); weak (R2); massive; fine grained; deformed laminations; very strong HCl reaction; dry. [Glen Rose Formation]	good water return, gray	788
65		8										SHALE: medium dark gray (N3); very fine grained; fine laminations; fresh (F); very weak (R1); no HCl reaction; no limestone interbeds; some fossils. [Glen Rose Formation]		787
66		4.75				F	R1							786
67		7.25												785
68		7.5				SW	R2					LIMESTONE: wackestone; with shale interbeds; 0.1' to 0.5' thick; medium light gray (N6); shale is medium gray (N5); slightly weathered (SW); weak (R2); strong HCl reaction. [Glen Rose Formation]		784
69		10	12	4.9 5.0	98	F	R1					SHALE: medium dark gray (N3); very fine grained; fine laminations; fresh (F); very weak (R1); fossiliferous from 69.2' to 69.4'. [Glen Rose Formation]	good water return, dark	783
70		3.75												782
71		2.08				F-SW	R1-R2					LIMESTONE: wackestone; with shale interbeds; 0.1' to 0.5' thick; light gray (N7) to medium light gray (N6); fresh to slightly weathered (F to SW); weak (R2); shale is medium gray (N5); slightly weathered (SW); weak to very weak (R2 to R1); strong HCl reaction; fossiliferous; strong HCl reaction. [Glen Rose Formation]		781
		5.5	13	4.9 5.0	98									780

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-1014</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
72		5.5										Shale bed from 71.35' to 71.45'. More micritic from 71.5' to 72.5'.		779
73		4.75										Abundant large rip-up clasts, occasional shale interbeds to 0.05'.		778
74		6.5	13	$\frac{4.9}{5.0}$	98			Pressuremeter	1014-17				drilling very slow due to change to NQ barrels, lots of shaking pressure meter test 73.0' to 74.5'.	777
75		7												776
76		5.33						Pressuremeter					good water return, light gray color	775
77		2.57											pressure meter test 74.5' to 76.0'.	774
78		2.5												773
79		2.08	14	$\frac{5.0}{5.0}$	100	F-SW	R1-R2						good water return, gray	772
80		2												771
81		2.25												770
82		4												769
83		4.67												768
84		2.45	15	$\frac{5.1}{5.0}$	100									767
85		2.5											Length of recovery stretched due to mechanical breaks.	766
86		2.5												765
		1.85	16	$\frac{5.0}{5.0}$	100									765

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1014</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
87		1.85										Abundant large rip-up clasts, occasional shale interbeds to 0.05'.  Shale bed 87.35' to 87.55'.		764
88		1.75												763
89		1.5	16	5.0 5.0	100									762
90		1.58												761
91		1.67								1014-20				760
92		9.67				F-SW	R1-R2							759
93		9												758
94		6.83	17	4.9 5.0	98			Pressuremeter		1014-21			drill rate very slow due to switch from HQ to NQ	757
95		5						Pressuremeter					pressure meter test 93.0' to 94.5'.	756
96		6											pressure meter test 94.5' to 96.0'.	755
97		4.67								1014-22		LIMESTONE: packstone; medium light gray (N6); fresh (F); dry; weak (R2); medium grained; deformed laminations; abundant rip-up clasts; strong HCl reaction; lenticular bioturbation; shale bed 99.4' to 99.45'. [Glen Rose Formation]	754	
98		1.75												753
99		3.5	18	5.0 5.0	100	F	R2							752
100		1.58											good water return, light gray color	751
101		2.42												750
		3	19	5.1 5.0	100									

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1014</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)		
102		3	19	5.1 5.0	100	F	R2					Shale bed 101.5' to 101.7'. LIMESTONE: wackestone; medium light gray (N6); fresh (F); dry; weak (R2); fine grained; small deformed laminations; slight to strong HCl reaction; possible ooids. [Glen Rose Formation]		749		
103		2.75				F	R2									748
104		2.5				F	R2								Length of recovery stretched due to mechanical breaks.	747
105		1.5	20	5.0 5.0	100	F	R2							746		
106		1.75				F	R2									745
107		2.5				F	R2									744
108		4.5	21	5.1 5.0	100	F	R2							743		
109		3				F	R2									742
110		4				F	R2									741
111		2	22	5.0 5.0	100	F	R2							740		
112		3.42				F	R2									739
113		3.25				F	R2									738
114		2.5	23	5.1 5.0	100	F	R2							737		
115		2.25				F	R2								Length of recovery stretched due to mechanical breaks.	736
116		1.73				F	R2									735
		4										Darkens to medium gray (N5); much more grain supported; rip-up clasts very abundant.		737		
												Shale bed 115.2' to 115.3'. Shale bed 115.4' to 115.5'.		736		

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-1014**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)		
117		4	22	5.0 5.0	100	F			1014-26			LIMESTONE: wackestone; medium light gray (N6); dry; fine grained; fresh (F); weak (R2); very few rip-up clasts; moderate HCl reaction; abundant fossils. [Glen Rose Formation]		734		
		3.25													Shale bed 116.8' to 116.9'.	733
118		3.08													Shale bed 117.3' to 117.5'.	733
119		3							F	R2						732
120		3														731
121		2												730		
122		2.25												729		
123		2.6	23	5.0 5.0	100				1014-27			LIMESTONE: micrite; light gray (N7); dry; fresh (F); weak (R2); very clean; moderate HCl reaction; very few fossils. [Glen Rose Formation]		728		
124		3.77														727
125		5.58							F	R2					Rip-up clasts from 125.5' to 125.9'.	726
126		3.75												725		
127		2.75												724		
128		2.83	24	5.0 5.0	100				1014-28			LIMESTONE: wackestone; light medium gray (N5); fresh (F); weak (R2); dry; fine to medium grained; rip-up clasts abundant from 129.4' to 135.0'; strong HCl reaction. [Glen Rose Formation]		723		
129		2														722
130		2.25							F	R2						721
131		2.25	25	4.9 5.0	96									720		



Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1014</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
132		2.25	25	4.9 5.0	96	F	R2					LIMESTONE: wackestone; light medium gray (N5); fresh (F); weak (R2); dry; fine to medium grained; rip-up clasts abundant from 129.4' to 135.0'; strong HCl reaction. [Glen Rose Formation]		719
133		2.32										1014-29		718
134		2.07										717		
135		1.92	26	5.0 5.0	100	F	R1					SHALE: medium dark gray (N4); thinly bedded; very fine grained; damp; fresh (F); very weak (R1); some fossils; very slight HCl reaction. [Glen Rose Formation]	good water return light gray color	716
136		5.58										715		
137		7.2										714		
138		5.82	27	5.0 5.0	100	F	R2					LIMESTONE: wackestone; light gray (N7); dry; fresh (F); weak (R2); fine grained; massive; bioturbated; strong HCl reaction. [Glen Rose Formation]		713
139		5.58										1014-30		712
140		3.67										711		
141		2.93	28	4.0 4.0	100	F	R2					SHALE: medium gray (N5); thinly bedded; very fine grained; damp; fresh (F); very weak (R1); strong HCl reaction. [Glen Rose Formation]		710
142		2.17										Shale bed 141.4' to 141.5'.		709
143		3.08										Shale bed 141.9' to 142.2'.		708
144		3	27	5.0 5.0	100	F	R2					LIMESTONE: wackestone; light gray (N7); dry; fresh (F); weak (R2); fine grained; massive; bioturbated; strong HCl reaction. [Glen Rose Formation]		707
145		3										1014-31		706
146		2.42										Shale bed 145.2' to 145.3'.		705

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-1014**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
147		3												704
148		3.5												703
149		2.6	28	4.0 4.0	100	F	R2		1014-32					702
150		2.75												701
151													total depth drilled 150.0'	700
152														699
153														698
154														697
155														696
156														695
157														694
158														693
159														692
160														691
161														690

Project Name and Job Number TXU Comanche Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-1015 offset</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'05.88650"N / 97°47'40.88214"W		Total Depth 15.5 feet	
Drilling Contractor and Rig Geotechnology / CME 55		Elevation and Datum 858.8 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 15.5 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 6	Date Started 1/25/07	
		Borehole Inclination Vertical	Logged by J. Cox	Date Completed 1/25/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 1/31/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
0							<b>RESIDUAL SOIL (RS)</b> SANDY LEAN CLAY with limestone fragments medium stiff, very dark brown (10YR2/2)		858
1			B-1015 offset 1	6	7/18	2.5			857
2				5					856
3	CL			2			with calcareous deposits, very pale brown (10YR8/4)		855
4	CL		B-1015 offset 2	4	12/18	2.5			854
5				2					853
6				5					852
7	ML		B-1015 offset 3	41	13/13	2.5	SILT very stiff to hard, yellow (2.5Y7/6), dry to damp, with calcareous deposits, violent reaction to HCl, some drill chatter		851
8				46					850
9				50/1"					849
10			B-1015 offset 4	19	18/18	4	LEAN CLAY hard, light yellowish brown (2.5Y6/4), damp, with calcareous deposits, violent reaction to HCl		848
11				18					847
12	CL		B-1015 offset 5	18	11/11	2	very stiff to hard, olive yellow (2.5Y6/8), dry to damp, some fossils, some drill chatter		846
13				42					845
14			B-1015 offset 6	50/5"			hard, yellow (2.5Y7/6), gray shale bed at bottom of sample		844
15				43	9/9	4	auger refusal at 15.5'		844
				50/3"					

Project Name and Job Number TXU Comanche Peak COL 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">SOIL LOG</h2> <h2 style="margin: 0;">Boring No. B-1015 offset</h2>
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Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
15	CL									843
16										842
17										841
18										840
19										839
20										838
21										837
22										836
23										835
24										834
25										833
26										832
27										831
28										830
29										829
30										829




Undisturbed sample  
SH = Shelby; P = Pitcher; O = other



Driven (2.5 to 3.0 inch) with liners  
MC = Modified California; O = other



Standard Penetration Test (SPT) sampler

Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG Boring No. B-1015</b>	
Type and Diameter of Boring HQ/NQ / 4"		Boring Location 32°18'05.88650"N / 97°47'40.88214"W		Total Depth 151.4 feet	
Drilling Contractor and Rig Boart Longyear / 44 TMA		Elevation and Datum 858.094 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 16 feet	
Casing Size and Depth 4" / 17.1 feet		Length of Core Barrel and Bit 8.6 feet	No. of Core Boxes 10	Date Started 1/10/07	
		Borehole Inclination Vertical	Logged by M.Buga/G.D.Pascale	Date Completed 1/22/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 1/31/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
18.00		4.18										SHALE: medium dark gray (N4); fresh (F); very weak to weak (R1 to R2); slight to strong HCl reaction; sparse bedding; 17.1' to 17.7' includes rip-up clasts; gradational lower contact. [Glen Rose Formation]	coring begins, drilled to 17.1' for casing installation	840
18.50		2.6											water run into filter pond	
19.00			1	3.9 3.9	100	F	R1-R2				BJ, Pl, Sm, Ti	Micrite bed 18.8' to 19.2'. Shell fragments 19.2' to 20.3'.		839
19.50		4.73							1015-1					838
20.00		2.9												
20.50						F	R2					LIMESTONE: wackestone; fresh (F); medium gray (N5); weak (R2); slight HCl reaction. [Glen Rose Formation].		837
21.00		3.6				F	R2					SHALE: siltstone; greenish gray (5GY 6/1); fresh (F); weak (R2); no HCl reaction.		836
21.50		3.2										SHALE: dark greenish gray (5GY 4/1); fresh (F); very weak (R1); very slight to slight HCl reaction; fossiliferous; burrows; gastropods. [Glen Rose Formation]		835
22.00		4.97	2	5.0 5.0	100	F	R1		1015-2			Wackestone interbed 24.3' to 24.6'		834
22.50		4.37												833
23.00		2.13										LIMESTONE: micrite; medium light gray (N6); fresh (F); medium strong (R3); violent HCl reaction; dissolution zone at top; clay banding at base of unit. [Glen Rose Formation]		832
23.50		3.03										Dissolution zone at 26.0'. Dissolution zone 26.6' to 26.7'. Dissolution zone 27.0' to 27.1'. Dissolution zone 27.2' to 27.7'.		831
24.00		2.83												830
24.50		2.67	3	5.0 5.0	100	F	R3		1015-3			Dissolution zone 28.15' to 28.3'. Dissolution zone at 28.7' to 28.8'.		829
25.00		1.78												828
25.50		2.32										LIMESTONE: wackestone; medium gray (N5); fresh (F); weak (R2); violent HCl reaction; bivalve shell fragments in matrix. [Glen Rose Formation]		827
26.00		2.48	4	5.0 5.0	100	F	R2							826

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1015</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
33		2.03				F	R2							825
		2.03				F	R2					SHALE: siltstone; greenish gray (5GY 6/1); fresh (F); weak (R2); no HCl reaction; convoluted bedding. [Glen Rose Formation]		825
34		2.67	4	5.0 5.0	100	F	R2		1015-4					824
		5.38				F	R2					SHALE: dark greenish gray (5GY 4/1); fresh (F); weak (R2); no HCl reaction; dessication cracks; occasional rip-up clasts; shell fragments at top and at base. [Glen Rose Formation]	100' to 150psi, water pressure dropped off	823
35		3.88				F	R2							822
36		2.85				F	R2					LIMESTONE: wackestone; medium light gray (N6) to medium gray (N5); fresh (F); weak (R2); strong to violent HCl reaction; occasional shell fragments. [Glen Rose Formation]		821
37		2.3				F	R2							820
38		3	5	5.0 5.0	100	F	R2		1015-5			Packstone bed 38.2' to 38.4'.		819
39		1.6				F	R3					LIMESTONE: micrite; medium light gray (N6); fresh (F); medium strong (R3); violent HCl reaction; top 0.4' gradational; then micrite with dissolution features. [Glen Rose Formation]		818
40		1.78				F	R2					LIMESTONE: wackestone; medium light gray (N6); fresh (F); weak (R2); violent HCl reaction. [Glen Rose Formation]		817
41		3.68				F	R2					Packstone 40.9' to 41.2'. Increased clay content 41.2' to 42.3'.		816
42		2.13	6	3.0 3.0	100	F	R2				BJ, Pl, Sm, Hb/Ti, clay filled, naturally healed, broke on drilling	Clasts become large and more dominant 42.3' to 43.5'	pressure meter test, switch to NQ 600psi down pressure	815
43		1.45				F	R2		1015-6			Packstone interbed 43.5' to 43.8'.		814
44		3.95				F	R2		1015-7			Grades toward packstone 44.6' to 45.4'		813
45		4.08	7	4.8 5.0	96	F	R2	Pressuremeter					pressure meter test 44.7' to 46.2' 550 psi, water pressure 0 to 200, 2nd pressure meter 45.2' to 46.7', Cody will drill through NQ portion and down to 51.0' to get back to even	812
46		2				F	R2	Pressuremeter						811
47						F	R2					Shale bed 46.8' to 47.2'.		811

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1015</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)									
48		3.45	7	5.0 4.8	96	F	R2	Pressuremeter	1015-8			Micrite 47.2' to 47.4'. Shale bed 47.4' to 47.55'. Wackestone bed 47.55' to 48.3'.  Packestone 48.3' to 48.5'.	pipe length, expecting 2.0' of recovery; 1.0' down bit gets plugged and we stop for day, recovered the rest of previous NQ run to make 100% pressure meter test 46.2' to 48.7'	810									
49		5.08																					809
50		7.53										8		2.0 2.0	100	F	R1					SHALE: dark greenish gray (5GY 4/1); fresh (F); very weak (R1); no HCl reaction. [Glen Rose Formation] Micrite interbed 49.5' to 49.6'. Micrite interbed at 49.7' to 49.8'. Micrite interbed 50.0' to 50.15'.	
51		6.73																				807	
52		2.73																				806	
53		4.37	9	5.0 5.0	100	F	R2-R3		1015-9			LIMESTONE: packstone; medium light gray (N6); fresh (F); medium strong to weak (R3 to R2); violent HCl reaction. [Glen Rose Formation]  Wackestone bed 52.0' to 52.4'.		805									
54		4.3																				804	
55		3.48																				803	
56		3.83	10	3.0 3.0	100	F	R2		1015-10			Shaly 55.15' to 55.25'. Micrite 55.3' to 55.4'. Packestone interbed 55.6' to 56.0'. Shale with rip-up clasts 56.0' to 56.3'.	begin drilling rest of run 8, rods shaking	802									
57		5.08																				801	
58		2.63																				800	
59		3.57	11	5.0 5.0	100	F	R1		1015-11			Fossiliferous wackestone 56.9' to 58.3'.	3 ft run to get to test interval	799									
60		9.2																				798	
61		8.97																				797	
62		7.13				F	R2-R3	Pressuremeter					pressure meter test 60.8' to 62.3'	796									

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1015</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)			
63		11.07	11	5.0 5.0	100	F						LIMESTONE: packstone; medium light gray (N6); fresh (F); weak to medium strong (R2 to R3); violent HCl reaction; voids filled with crystalline material. [Glen Rose Formation] SHALE: dark greenish gray (5GY 4/1); fresh (F); very weak (R1); occasional very thin bedding; no HCl reaction. [Glen Rose Formation] Wackestone bed 63.15' to 63.5'.	pressure meter test 62.3' to 63.8'	795			
64		6.15				F	R1										794
65		8.13															
66		7.97	12	2.0 2.0	95	F						LIMESTONE: packstone; very light gray (N8); fresh (F); weak (R2); slight reaction to HCl; convoluted wavy beds. [Glen Rose Formation] SHALE: claystone; dark gray (N3); mostly massive; fresh (F); extremely weak to very weak (R0 to R1); very slight HCl reaction. [Glen Rose Formation]		792			
67		7.18															791
68		7.61															790
69		8	13	5.1 5.0	100	F						LIMESTONE: packstone; very light gray (N8); fresh (F); very weak (R1); strong reaction to HCl; large clasts. [Glen Rose Formation] SHALE: claystone; medium gray (N5); fresh (F); extremely weak (R2); slight reaction to HCl; thinly bedded to massive. [Glen Rose Formation]		789			
70		8.1															788
71		7.5															787
72		6.5	14	4.0 5.0	80	F						LIMESTONE: packstone; very light gray (N8); fresh (F); very weak (R1); slight reaction to HCl. [Glen Rose Formation] SHALE: claystone; medium dark gray (N3); fresh (F); extremely weak (R0); very little HCl reaction. [Glen Rose Formation]		786			
73		6.4															785
74		6.4															784
75		6.5	15	5.0 5.0	100	F						LIMESTONE: packstone; very light gray (N8); fresh (F); very weak (R1); slight reaction to HCl. [Glen Rose Formation]		783			
76		7.68															782
77		6.41															781



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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
78		7.07										LIMESTONE: packstone; very light gray (N8); strong HCl reaction; thin claystone interbeds; fresh (F); weak (R1). [Glen Rose Formation] Slight reaction to HCl with depth; large rip-up clasts present; white (N9) to medium light gray (N6).		780
79		9.72	15	5.0 5.0	100	F	R1							779
80		6.51												778
81		5.41												777
82		8.71				F	R1					SHALE: claystone; laminated; medium gray (N5); fresh (F); very weak (R1); slight HCl reaction. [Glen Rose Formation] LIMESTONE: packstone; light gray (N7); fresh (F); very weak (R1); slight HCl reaction. [Glen Rose Formation]	777	
83		7.6	16	4.1 3.1	100	F	R1							776
84		6.22											775	
85		4.3				F	R1					SHALE: claystone; light gray (N7); slight HCl reaction; fresh (F); very weak (R1). [Glen Rose Formation] LIMESTONE: wackestone; very light gray (N8); slight HCl reaction; shaly beds with irregular contacts; fresh (F); weak (R2); beds very thin. [Glen Rose Formation]	774	
86		4				F	R2							773
87		3.43	17	5.0 5.0	100	F	R1	Pressuremeter				LIMESTONE: packstone; light gray (N7) to medium light gray (N6); thin shale beds present; slight to strong HCl reaction; limestone fragments present in some of the more shaly beds; fresh (F); very weak (R1). [Glen Rose Formation]	pressure meter test 86.1' to 87.6'	772
88		2.41						Pressuremeter						pressure meter test 87.6' to 89.1'
89		3.41							1015-16					770
90		2.41	18	1.9 1.9	100	F	R1					LIMESTONE: packstone; with shaly interbeds; medium gray (N5); very slight HCl reaction; fresh (F); very weak (R1); rip-up clasts. [Glen Rose Formation]		769
91		3.07												
92		3.1	19	5.0 5.0	100	F	R0							767
														766

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
93		3.3										SHALE: claystone; medium dark gray (N3); very slight HCl reaction; fresh (F); extremely weak (R0); convoluted beds; rip-up limestone fragments present. [Glen Rose Formation]		765
94		3.3										LIMESTONE: packstone; very light gray (N8); very slight HCl reaction; fresh (F); weak (R2); very thin convoluted shale beds. [Glen Rose Formation]		764
95		3.5	19	5.0 5.0	100	F	R2							763
96		2.5												762
97		3.6										LIMESTONE: packstone; very light gray (N8); with shale beds; medium light gray (N6); fresh (F); weak (R2); rip-up clasts; strong HCl reaction. [Glen Rose Formation]		761
98		4.4												760
99		4.1				F	R2							759
100		2.4	20	5.1 5.1	100							SHALE: claystone; with limestone fragments; medium gray (N5); fresh (F); weak (R2); slight HCl reaction; irregular wavy beds. [Glen Rose Formation]		758
101		2.3												757
102		2.4				F	R2					LIMESTONE: packstone to wackestone; light gray (N7) to medium light gray (N6); fresh (F); weak (R2). [Glen Rose Formation]		756
103		1.5										LIMESTONE: shaly; medium gray (N5) to medium light gray (N6); fresh (F); very weak (R1); irregular bedding. [Glen Rose Formation]		755
104		2.4	21	3.0 3.0	100	F	R1							754
105		2.4										LIMESTONE: wackestone; oolitic; light gray (N7); fresh (F); weak (R2); coarse grained; well sorted. [Glen Rose Formation]		753
106		2.1				F	R2					LIMESTONE: packstone with shaly sections; medium light gray (N6); thin shaly beds; slight HCl reaction; fresh (F); weak (R2). [Glen Rose Formation]		752
107		3.1	22	4.9 4.9	100	F	R2						pressure meter test 105.8' to 107.3'	751
		3.3				F	R2	Pressuremeter				LIMESTONE: packstone; very light gray (N8); fresh (F); weak (R2); very slight HCl reaction. [Glen Rose Formation]		

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
108		2.4	22	4.9 4.9	100	F	R2	Pressuremeter				LIMESTONE: packstone; very light gray (N8); fresh (F); weak (R2); very slight HCl reaction. [Glen Rose Formation]	pressure meter test 107.3' to 108.8', switch to NQ, bottom of instrument failed	750
		2.4				F	R1-R2							
109		3.3				F	R1-R2					LIMESTONE: oolitic; with claystone interbeds; fresh (F); weak to very weak (R1 to R2); soft; failed under pressure test; oolites are well sorted and coarse to medium grained; shale bed at 108.0' to 108.2'. [Glen Rose Formation]		749
110		2.5	23	2.0 2.0	100	F	R1-R2					LIMESTONE: packstone; with claystone beds; very light gray (N8) to medium gray (N5); fresh (F); weak to very weak (R1 to R2); limestone has strong HCl reaction; claystone has slight HCl reaction; fresh (F). [Glen Rose Formation]		748
		1.5				F	R1-R2							
111		2.5				F	R1-R2		1015-20			LIMESTONE: packstone; very light gray (N8) to medium gray (N5); fresh (F); weak to very weak (R1 to R2); very strong HCl reaction; rip-up clasts. [Glen Rose Formation]		747
112		2.2												746
113		1.4	24	4.9 5.0	98	F	R1-R2					LIMESTONE: packstone; medium light gray (N6); fresh (F); weak to very weak (R1 to R2); slight HCl reaction; very thin beds; bioturbated; rip-up clasts. [Glen Rose Formation]		745
		2.4				F	R1-R2							
114		2.4										LIMESTONE: packstone; very light gray (N8) to light gray (N7); fresh (F); weak to very weak (R1 to R2); strong HCl reaction. [Glen Rose Formation]		744
115		1.5												743
116		6.9												742
117		2.9				F	R1-R2							741
118		3	25	5.0 5.0	100									740
		3												
119		2.5										Interbedded shales 117.9' to 121.0'.		739
120		Error 2015												738
121		2.61	26	5.0 5.1	100				1015-21					737
		2.61												

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
123		2.44				F	R1-R2							735
124		2.21	26	5.0 5.1	100							LIMESTONE: packstone; very light gray (N8) to medium light gray (N6); fresh (F); weak to very weak (R1 to R2); massive with very thin shale beds. [Glen Rose Formation]		734
125		1.41												733
126		2.24				F	R1-R2							732
127		2							1015-22					731
128		2.53										LIMESTONE: packstone; abrupt upper contact; very light gray (N8) to medium light gray (N6); fresh (F); weak to very weak (R1 to R2); massive; strong HCl reaction; thin shale beds. [Glen Rose Formation]		730
129		1.83	27	5.1 5.1	100	F	R1-R2							729
130		2.13												728
131		2.13												727
132		2.1				F	R1					LIMESTONE: wackestone; light gray (N7); fine grained; fresh (F); very weak (R1); violent HCl reaction. [Glen Rose Formation]		726
133		2.21												725
134		1.44	28	5.0 5.0	100	F	R1					SHALE: claystone; medium gray (N5); fresh (F); very weak (R1); with limestone beds; clasts present; fossiliferous; slight to strong HCl reaction. [Glen Rose Formation]		724
135		1.56												723
136		4.1				F	R2					LIMESTONE: packstone; very light gray (N8); fresh (F); weak (R2); rip-up clasts; very thin shale beds. [Glen Rose Formation]		722
137		3.11	29	5.1 5.1	100	F	R2							721

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)		
138		3.3	29	5.1 5.1	100	F	R2					LIMESTONE: packstone; very light gray (N8) to medium dark gray (N4); fresh (F); weak (R2); wavy irregular beds; rip-up clasts; with fine grained thin shale interbeds. [Glen Rose Formation]		720		
139		3.4												SHALE: claystone; dark gray (N3) to medium gray (N5); with limestone fossils present; fresh (F); extremely weak (R0); strong HCl reaction; wavy beds; very sharp upper contact. [Glen Rose Formation]		719
140		3.2							F	R0		1015-24				718
141		6.5												717		
142		6.5	30	5.0 5.0	100	F	R2					LIMESTONE: wackestone; very light gray (N8); fresh (F); weak (R2); strong HCl reaction; thin shale beds near base of unit. [Glen Rose Formation]		716		
143		4							F	R1		1015-25		SHALE: claystone; greenish gray (5GY 6/1); thin beds; fresh (F); very weak (R1); strong HCl reaction. [Glen Rose Formation]		715
144		3.4												LIMESTONE: packstone; very light gray (N8); fresh (F); weak (R2); some thin shale beds; some fossils; strong HCl reaction. [Glen Rose Formation]		714
145		4.2				F	R2							713		
146		3.1				F	R1		1015-26			SHALE: claystone with limestone clasts; medium dark gray (N4) to light gray (N7); fresh (F); very weak (R1); fossils. [Glen Rose Formation]		712		
147		6.2	31	5.1 5.1	100	F	R2					LIMESTONE: packstone; very light gray (N8); fresh (F); weak (R2); some thin shale beds; some fossils; strong HCl reaction. [Glen Rose Formation]		711		
148		4.3												LIMESTONE: packstone; with shaly beds; light gray (N7) to medium dark gray (N3); fresh (F); weak (R2); strong HCl reaction; rip-up clasts; irregular beds. [Glen Rose Formation]		710
149		4.5							F	R2						709
150		4												708		
151														707		
152													total depth drilled 151.4'	706		

Project Name and Job Number TXU Comanche Peak COI 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-1016</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'04.81020"N / 97°47'42.69342"W		Total Depth 201.2 feet	
Drilling Contractor and Rig Fugro / CME 75		Elevation and Datum 865.59 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 18.4 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 3	Date Started 1/27/07	
		Borehole Inclination Vertical	Logged by S. Dee	Date Completed 1/27/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 1/30/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
0							<b>RESIDUAL SOIL (RS)</b> LEAN CLAY medium stiff, grayish orange (10YR7/4), dry to damp, <5% pebbles		865
1	CL		B-1016 1	7					864
2				3	14/18	1.5			863
3				7					862
4			B-1016 2	34			LIMESTONE FRAGMENTS and silt very pale orange (10YR8/2), strong reaction to HCl		861
5	GP			46	17/18	1.5	boulder encountered 4-5.5'		860
6				25					859
7	CL		B-1016 3	15			LEAN CLAY with sand and limestone fragments very stiff to hard, very pale orange (10RY8/2), dry, some calcareous deposits, strong reaction to HCl		858
8			B-1016 4	23	18/18	4			857
8.6				35			Limestone, auger refusal at 8.6' due to boulders		856
8.6				50/1"	0.5/1				855
9							No Sample Taken		854
10									853
11									852
12									851
13									850
14			B-1016						849
15					118				848

Project Name and Job Number TXU Comanche Peak COL 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">SOIL LOG</h2> <h2 style="margin: 0;">Boring No. B-1016</h2>
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Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
15								No Sample Taken <i>(Continued from previous page)</i>		850
16							849			
17										848
18										847
19							Top of Bedrock at 18.4'	Bedrock at 18.4'		846
20										845
21										844
22										843
23										842
24										841
25										840
26										839
27										838
28										837
29										836
30										




Undisturbed sample  
 SH = Shelby; P = Pitcher; O = other



Driven (2.5 to 3.0 inch) with liners  
 MC = Modified California; O = other



Standard Penetration Test (SPT) sampler

Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG Boring No. B-1016</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'04.81020"N / 97°47'42.69342"W		Total Depth 201.2 feet	
Drilling Contractor and Rig Fugro Austin (soil), Boart Longyear (rock) / CME 45 (soil) 44TMA (rock)		Elevation and Datum 865.59 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 18.4 feet	
Casing Size and Depth 4" / 18.4 feet		Length of Core Barrel and Bit 8.6 feet	No. of Core Boxes 13	Date Started 1/27/07	
		Borehole Inclination Vertical	Logged by S. Dee, G. D. Pascale	Date Completed 1/30/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 1/30/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
19		7.03	1	2.4 2.4	100	F	R0		1016-4			SHALE: mudstone; dark gray (N3) to medium gray (N5); no reaction to HCl; some small limestone fragments present; fresh (F); extremely weak (R0); shell at base. [Glen Rose Formation]	Top of rock. Coring started at 10:30, 1/28/07, Glen Rose Formation.	847
20		9.55				F	R2		LIMESTONE: wackestone with shale interbeds; very light gray (N8); wackestone reacts to HCl strongly; fresh (F); weak (R2); upper contact very irregular. [Glen Rose Formation]		846			
21		6.38	2	5.1 5.1	100	F	R0 to R1					SHALE: claystone; dark gray (N3) to light gray (N7) with limestone interbeds 0.1' to 0.2' thick; shale shows no HCl reaction; limestone shows strong HCl reaction; extremely weak to very weak (R0 to R1); fresh (F). [Glen Rose Formation]		844
22		6.55				F	R1		LIMESTONE: wackestone; light gray (N7) with shale interbeds; shale content increases with depth; some fossils; fresh (F); very weak (R1); wavy beds. [Glen Rose Formation]		843			
23		5.5				F	R1				842			
24		3.03	3	5.1 5.1	100	F	R1		1016-5				841	
25		3.75				F-SW	R1				840			
26		3.33	4	4.9 4.9	100	F	R1		1016-6			SHALE: calcareous; medium dark gray (N4) to light gray (N7); slight reaction to HCl; horizontal very thin beds (<.001'); some fossils present and bioturbated; very weak (R1); fresh to slightly weathered (F to SW); fine grained. [Glen Rose Formation]		839
27		3.42									838			
28		3.92				Organic inclusions.					837			
29		3.73	4	4.9 4.9	100	F	R1					Good water return.	836	
30		3.68									835			
31		3.55	4	4.9 4.9	100	F	R1		1016-7				834	
32		4.33									833			
33		3.2				F	R1						833	



Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1016</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
34		3.2										LIMESTONE: wackestone; very light gray (N8); fresh (F); very weak (R1); massive; with occasional dewatering beds; strong HCl reaction; medium grained. [Glen Rose Formation]		832
35		2.72	4	4.9 4.9	100									831
36		2.55												830
37		1.85				F	R1							829
38		1.75								1016-8				828
39		3	5	5.1 5.1	100									827
40		3.52										LIMESTONE: packstone; very light gray (N8) to medium gray (N5); ~25% shale; massive; strong reaction to HCl; some thin wackestone beds at top; thick; fresh (F); very weak (R1); some thin shale beds (<0.1') toward bottom. [Glen Rose Formation]		826
41		3.53												825
42		3.55				F	R1							824
43		3.07												823
44		5.13	6	4.8 4.8	100					1016-9		SHALE: claystone; dark gray (N3); very slight HCl reaction; very weak (R1); fossils near base; fresh (F). [Glen Rose Formation]		822
45		3.85				F	R1							821
46		3.73				F	R1					LIMESTONE: packstone; very light gray (N8) to medium light gray (N6); strong HCl reaction; small oval shale inclusions; fresh (F); very weak (R1); bioturbated top. [Glen Rose Formation]	Good water return.	820
47		3				F	R1					SHALE: with limestone clasts; medium gray (N5) to light gray (N7); slight HCl reaction; fresh (F); very weak (R1). [Glen Rose Formation]		819
48		2.73	7	5.2 5.2	100									818
		2.42				F	R1					LIMESTONE: wackestone; very light gray (N8); strong reaction to HCl; massive; very weak (R1); fresh (F). [Glen Rose Formation]		818

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1016</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)										
49		2.42	7	5.2 5.2	100	F	R1							817										
		2.92														816								
50		3.53							F	R2		1016-10				815								
51		2.73	8	4.9 4.9	100	F	R2					LIMESTONE: packstone; very light gray (N8) to medium gray (N5); strong reaction to HCl; bioturbated; thin wavy beds (<0.1'); some very thin shale beds toward base; weak (R2); fresh (F). [Glen Rose Formation]		814										
52		2.83																					813	
53		2.35																						812
54		4.02																		1016-11				811
55		3.05	4			F	R0-R1					SHALE: with limestone interbeds; very light gray (N8) to medium dark gray (N4); shale does not react to HCl; limestone shows strong reaction to HCl; fresh (F); extremely weak to very weak (R0 to R1); with bioturbated limestone beds (<0.1' to 0.3' thick) below 55.8'. [Glen Rose Formation]		810										
56																							809	
57		5.05																						808
58		4.72	9	5.1 5.1	100							LIMESTONE: wackestone; very light gray (N8) to white (N9); strong HCl reaction; rip-up clasts with shale between clasts; fresh (F); very weak (R1); thin shale beds present (<0.1'); wavy beds; shale is extremely weak (R0); shows very slight HCl reaction. [Glen Rose Formation]		807										
59																								806
60		2.02	10	4.9 4.9	100	F	R1							805										
61		4.9																						804
62		5.35																						803
63		3.9																						

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1016</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
64		3.9	10	4.9 4.9	100	F	R1					LIMESTONE: wackestone; very light gray (N8) to white (N9); strong HCl reaction; rip-up clasts with shale between clasts; fresh (F); very weak (R1); thin shale beds present (<0.1'); wavy beds; shale is extremely weak (R0); shows very slight HCl reaction. [Glen Rose Formation]		802
65		3.98												801
66		2.85	11	4.9 4.9	100	F-SW	R0-R1					SHALE: claystone; dark gray (N3) to medium light gray (N6); very soft; fresh to slightly weathered (F to SW); extremely weak to very weak (R0 to R1); very slight HCl reaction; massive to very thin beds; shells; more calcareous from 65.8' to 66.8'. [Glen Rose Formation]		800
67		3.48												799
68		2.67												798
69		3.67												797
70		6.17												796
71		3.68				F-SW	R1					LIMESTONE: wackestone; very light gray (N8); fresh to slightly weathered (F to SW); very weak (R1); strong HCl reaction; bioturbated; some rip-up clasts; thin shale bed at base (<.1'). [Glen Rose Formation]		795
72		5.55	12	5.0 5.0	100	F-SW	R0					SHALE: claystone; medium dark gray (N4); very slight HCl reaction; thin limestone beds (0.1' to 0.2') between 71.6' to 73.0'; fresh to slightly weathered (F to SW); extremely weak (R0); very soft; limestone shows strong HCl reaction. [Glen Rose Formation]		794
73		4.48												793
74		5.52												792
75		3.7										LIMESTONE: wackestone; very light gray (N8); strong HCl reaction; very weak (R1); fresh (F); bioturbated; rip up clasts and thin wavy beds. [Glen Rose Formation]		791
76		3.63				F	R1							790
77		4.55	13	5.0 5.0	100	F	R0-R1					SHALE: mudstone; medium gray (N5); massive; extremely weak to very weak (R0 to R1); fresh (F); very slight HCl reaction; few limestone fragments at base. [Glen Rose Formation]		789
78		4.82												788

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1016</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)		
79		4.08	13	5.0 5.0	100	F	R0-R1							787		
		3.52				F	R1							LIMESTONE: wackestone with shaley layers: medium gray (N5) to very light gray (N8); fresh (F); very weak (R1); strong HCl reaction; rip up clasts; thin wavy shale beds; bioturbated. [Glen Rose Formation]		786
80		3.85				F	R1									785
81		5.92	14	5.0 5.0	100	F	R0			1016-17			SHALE: mudstone; medium dark gray (N4); very slight reaction to HCl; fresh (F); extremely weak (R0). [Glen Rose Formation]	784		
82		4.17				F	R1							LIMESTONE: wackestone; light gray (N7) to medium light gray (N6); fresh (F); very weak (R1); strong HCl reaction; wavy interbeds of shale; rip up clasts; 84.0' to 84.3' is a shale layer. [Glen Rose Formation]	783	
83		4.22				F	R1									782
84		3.9	15	5.0 5.0	100									781		
85		2.02												LIMESTONE: wackestone; very light gray (N8); strong HCl reaction; bioturbated; circular void infilled with packstone; fairly massive to wavy; very weak (R1); some rip up clasts from 90.7' to 95.7'; fresh (F); some (<0.1') packstone layers below 90.7'. [Glen Rose Formation]	780	
86		2.58										1016-18				779
87		2.57	16	5.0 5.0	100									778		
88		2.57				F	R1									777
89		3.05														776
90		2.65	16	5.0 5.0	100									775		
91		4.2													Stopped drilling 1/28/07 at 90.7', start 1/29/07, 0830, good water return.	774
92		2.28														773
93		2.35														

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1016</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
94		2.35	16	5.0 5.0	100	F	R1					LIMESTONE: wackestone; very light gray (N8); strong HCl reaction; bioturbated; circular void infilled with packstone; fairly massive to wavy; very weak (R1); some rip up clasts from 90.7' to 95.7'; fresh (F); some (<0.1') packstone layers below 90.7'. [Glen Rose Formation]		772
		2.38												771
95		3.13												770
96		2.43	17	5.1 5.1	100	F	R1						Good water return.	769
97		2.43												768
98		2.37												767
99		3.28	18	5.0 5.0	100	F	R1							766
100		3.18												765
101		2.77												764
102		3	19	5.0 5.0	100	F	R1							763
103		4.02												762
104		4												761
105		4.17	19	5.0 5.0	100	F	R1							760
106		2.98												759
107		3.02												758
108		1.95												

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1016</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
109		1.95	19	5.0 5.0	100							LIMESTONE: wackestone; oolitic; very light gray (N8) to medium gray (N5); fresh (F); very weak (R1); strong HCl reaction; rip-up clasts; bioturbated; shaly from 105.7' to 106.2'; shale present between rip-up clasts; well sorted. [Glen Rose Formation]		757
		1.62												756
110		2.67												755
111		4.17	20	5.1 5.1	100	F	R1					LIMESTONE: wackestone; very light gray (N8) to medium light gray (N7); strong HCl reaction; rip-up clasts; bioturbated; fresh (F); very weak (R1); no fractures; some thin packstone layers; increasing shale content with depth. [Glen Rose Formation]	Good water return.	754
112		2.55												753
113		2.85												752
114		3.57	21	5.1 5.1	100	F	R1			1016-23		LIMESTONE: oolitic; very light gray (N8) to medium light grey (N7); strong HCl reaction; very weak (R1); fresh (F); thin (.01') beds of shale; shale layer 120.9' to 121.4'; shale is wavy. [Glen Rose Formation]		751
115		3.35												750
116		3.4												749
117		2.35	22	5.0 5.0	100	F	R1							748
118		3.02												747
119		2.5												746
120		3.35	2	5.0 5.0	100	F	R1			1016-24				745
121		3.43												744
122		2												743
123		2.67								1016-25				

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1016</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)				
124		2.67	22	5.0 5.0	100	F	R1					LIMESTONE: oolitic; very light gray (N8) to medium light gray (N7); strong HCl reaction; very weak (R1); fresh (F); thin (.01') beds of shale; shale layer 120.9' to 121.4'; shale is wavy. [Glen Rose Formation]		742				
		2.3																741
125		3.02																740
126		3.07	23	5.1 5.0	100	F	R1					LIMESTONE: packstone; very light gray (N8) to medium gray; strong HCl reaction; bioturbated; very weak (R1); fresh (F). [Glen Rose Formation]		739				
127		4.03															738	
128		3.75																737
129		3.8				F	R1			1016-26		SHALE: calcareous; light olive gray (5Y 6/1); slight HCl reaction; wavy thin (.01') beds; fresh (F); very weak (R1). [Glen Rose Formation]		736				
130		3.68				F	R1					LIMESTONE: packstone; very light gray (N8) to medium gray (N5); fresh (F); very weak (R1); strong HCl reaction; rip up clasts present, with shale between clasts; bioturbated. [Glen Rose Formation]		735				
131		3.08	24	5.0 5.0	100	F	R1					LIMESTONE: oolitic; very light gray (N8) to medium light gray (N7); strong HCl reaction; bioturbated; very thin shale beds; fresh (F); very weak (R1). [Glen Rose Formation]		734				
132		2.72															733	
133		3.57																732
134		3.85											731					
135		3.52	25	5.1 5.1	100	F	R1					LIMESTONE: wackestone; very light gray (N8) to medium light gray (N7); strong HCl reaction; bioturbated with voids filled with shale-rich packstone; very weak (R1); fresh (F); rip-up clasts 138.0' to 138.4' with packstone; few thin shale beds (<0.1') below 140.0'; rip up clasts of packstone predominantly below 141.0'. [Glen Rose Formation]	No fractures in core as recovered. Only fractures were from rock hammer sample.	730				
136		2.68													1016-27			729
137		4.02																728
138		3.37																

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1016</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
139		3.37	25	5.1 5.1	100							LIMESTONE: wackestone; very light gray (N8) to medium light gray (N7); strong HCl reaction; bioturbated with voids filled with shale-rich packstone; very weak (R1); fresh (F); rip-up clasts 138.0' to 138.4' with packstone; few thin shale beds (<0.1') below 140.0'; rip up clasts of packstone predominantly below 141.0'. [Glen Rose Formation]	Good water return.	727
140		2.83												726
141		3.23												725
142		5.03	26	5.0 5.0	100	F	R1					LIMESTONE: wackestone; very light gray (N8) to medium light gray (N7); strong HCl reaction; bioturbated with voids filled with shale-rich packstone; very weak (R1); fresh (F); rip-up clasts 138.0' to 138.4' with packstone; few thin shale beds (<0.1') below 140.0'; rip up clasts of packstone predominantly below 141.0'. [Glen Rose Formation]	No fractures in core as recovered. Only fractures were from rock hammer sample.	724
143		3.25												723
144		4.27												722
145		3.55	27	4.9 4.9	100	SW	R0					SHALE: claystone; medium gray (N5); no HCl reaction; bioturbated; some fossils; slightly weathered (SW); extremely weak (R0). [Glen Rose Formation]	Sample every 10.0' below 150.0'.	721
146		4.05												720
147		5												719
148		4.73	28	5.1 5.1	100	F-SW	R1					LIMESTONE: wackestone; very light gray (N8); shale content increases with depth; bioturbated; rip-up clasts; strong HCl reaction; very weak (R1); fresh to slightly weathered (F to SW). [Glen Rose Formation]		718
149		6.37												717
150		4.02												716
151		5	28	5.1 5.1	100	F	R1					LIMESTONE: packstone; very light gray (N8) to medium light gray (N7); fresh (F); very weak (R1); bioturbated; rip-up clasts; thin shale layer 150.9' to 151.3'. [Glen Rose Formation]		715
152		6.17												714
153		5.42												713
		5.25				F								



Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1016</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
154		5.25	28	5.1 5.1	100	F	R0-R1		1016-31			SHALE: claystone with limestone beds; medium gray (N5); slight HCl reaction; beds of limestone fragments; fresh (F); extremely weak to very weak (R0 to R1); bioturbated; fossiliferous. [Glen Rose Formation]		712
155		4.27												
156		3.33				F	R1					LIMESTONE: packstone; medium gray (N5) to very light gray (N8); fresh (F); very weak (R1); shale matrix for limestone clasts in packstone; strong HCl reaction; bioturbated; rip-up clasts. [Glen Rose Formation]		710
157		3.5										SHALE: calcareous shale/packstone; medium gray (N5) to very light grey (N8); fresh (F); extremely weak to very weak (R0 to R1); interbedded shales and limestone; limestone show strong reaction to HCl; and shales show no to slight HCl reaction; bioturbated; limestone beds 0.05' to 0.2' thick; rip-up clasts. [Glen Rose Formation]		709
158		3.87												708
159		3.67	29	5.0 4.9	100	F	R0-R1							707
160		4.83												
161		4.55												705
162		3.17										LIMESTONE: packstone; very light gray (N8) to medium gray (N5); strong HCl reaction; rip-up clasts; bioturbated; very weak (R1); fresh (F). [Glen Rose Formation]		704
163		2.22												703
164		2.28	30	5.1 5.1	100									702
165		2.25												
166		2.25											Good water return.	700
167		2.9												699
168		3.52	31	5.0 5.0	100									698
		3.7												

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-1016</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
169		3.7	31	5.0 5.0	100	F	R0					SHALE: claystone; medium dark gray (N4); very slight HCl reaction; gradational basal contact; small limestone fragments; parallel horizontal bedding; fresh (F); extremely weak (R0). [Glen Rose Formation]		697
170		4.9				F					696			
171		2.8									695			
172		4	32	5.1 5.1	100	F	R1-R2					LIMESTONE: wackestone; very light gray (N8) to medium light gray (N7); strong HCl reaction; bioturbated; shale beds present (0.05'); fresh (F); very weak to weak (R1 to R2). [Glen Rose Formation]		694
173		4.22											693	
174		4.37											692	
175		2.65											691	
176		2.3											690	
177		2.3	33	5.0 5.0	100	F	R2					LIMESTONE: packstone; very light gray (N8) to medium light gray (N7); strong HCl reaction; bioturbated; rip-up clasts; weak (R2); fresh (F); some thin shale beds (<0.1'); wavy. [Glen Rose Formation]		689
178		2.55											688	
179		3.13											687	
180		2.28	34	5.1 5.1	100	F	R2					Stopped drilling 1/29/07 at 165', started on 1/30/07, good water return.		686
181		3.23											685	
182		2.88											684	
183		1.68											683	
		2.75												

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1016</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
184		2.75										LIMESTONE: packstone; very light gray (N8) to medium light gray (N7); strong HCl reaction; bioturbated; rip-up clasts; weak (R2); fresh (F); some thin shale beds (<0.1'); wavy. [Glen Rose Formation]		682
185		1.8	34	5.1 5.1	100									681
186		2.17												680
187		2.45												679
188		2.13				F	R2							678
189		3.67	35	5.0 5.0	100									677
190		2.78												676
191		3.32											Calcareous shale bed 190.3' to 190.7'; extremely weak (R0).	675
192		3.42											LIMESTONE: wackestone; light gray (N7); bioturbated; rip-up clasts with packstone between clasts; strong HCl reaction; weak (R2); fresh (F); fossiliferous. [Glen Rose Formation]	674
193		2.72												673
194		3.28	36	5.0 5.0	100	F	R2							672
195		2.73												671
196		3.55											670	
197		3.43	37	5.0 5.0	100	F	R2					LIMESTONE: packstone; very light gray (N8); bioturbated; strong HCl reaction; weak (R2); fresh (F); some rip-up clasts and (<0.05') shale beds between 197.0' and 198.0'; wavy thin bedding toward bottom. [Glen Rose Formation]	669	
198		4.53											668	
		3.75												

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-1016</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
199		3.75										LIMESTONE: packstone; very light gray (N8); bioturbated; strong HCl reaction; weak (R2); fresh (F); some rip-up clasts and (<0.05') shale beds between 197.0' and 198.0'; wavy thin bedding toward bottom. [Glen Rose Formation]		667
200		2.2	37	5.0 5.0	100	F	R2		1016-35					666
201		2.35												665
202													Total depth drilled 201.2'	664
203														663
204														662
205														661
206														660
207														659
208														658
209														657
210														656
211														655
212														654
213														653

Project Name and Job Number TXU Comanche Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-1017</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'03.31719"N / 97°47'42.04443"W		Total Depth 150 feet	
Drilling Contractor and Rig Geotechnology / CME 55		Elevation and Datum 866.368 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 17 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 5	Date Started 1/22/07	
		Borehole Inclination Vertical	Logged by J. Cox	Date Completed 1/27/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 1/31/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0								ARTIFICIAL FILL (Qaf) SANDY SILT hard, reddish yellow (7.5YR8/6)		866
1	ML	B-1017 1		7	12/18	1				865
2				8						
3				20						
4		B-1017 2		9	12/12	4		medium stiff to hard, color to yellow (2.5Y7/6)		862
5								WEATHERED LIMESTONE auger refusal at 5', switched to solid flight augers to drill through rock layer		861
6		B-1017		50/0.5"	0/0.5				NO RECOVERY	860
9	CL	B-1017 3		15	18/18	2.5				857
10				15						
11				15						
12		B-1017 4		11	11/11	4		RESIDUAL SOIL (RS) LEAN CLAY very stiff, olive yellow (2.5Y6/8), with few calcareous deposits		856
13								very stiff to hard, color to light yellowish brown (2.5Y6/4)		855
14		B-1017		50/2"	0/2			CLAYEY LIMESTONE (MUDSTONE) hard, weathered, dark gray (2.5Y4/1)	NO RECOVERY	853
15										852

Project Name and Job Number  
 TXU Comanche Peak COL  
 1908



**SOIL LOG**  
**Boring No. B-1017**

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
15								CLAYEY LIMESTONE (MUDSTONE) hard, weathered, dark gray (2.5Y4/1) (Continued from previous page)		851
16			#-1017 5	50/2"	2/2	0.5		limestone fragments		850
17								auger refusal at 17'		
17								Top of Bedrock at 17' Augered to 17.6' to set casing and start rock coring.	Bedrock at 17'	849
18										848
19										847
20										846
21										845
22										844
23										843
24										842
25										841
26										840
27										839
28										838
29										837
30										




Undisturbed sample  
 SH = Shelby; P = Pitcher; O = other



Driven (2.5 to 3.0 inch) with liners  
 MC = Modified California; O = other



Standard Penetration Test (SPT) sampler

Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. B-1017</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'03.31719"N / 97°47'42.04443"W		Total Depth 150 feet	
Drilling Contractor and Rig GeoTechnology (soil), Boart Longyear (rock) / CME 55 (soil), 44 TMA (rock)		Elevation and Datum 866.368 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 17 feet	
Casing Size and Depth 5" / 17.6 feet		Length of Core Barrel and Bit 8.6 feet	No. of Core Boxes 10	Date Started 1/22/07	
		Borehole Inclination Vertical	Logged by J Cox, G. D. Pascale	Date Completed 1/27/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 1/31/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
19		8										SHALE: claystone; light gray to medium gray (N5 to N7); very thin beds with limestone; very strong HCl reaction; fresh (F). [Glen Rose Formation]	Rock logging sheet starts at 17.6'. Drilled hole to 17.6', as the rig cannot do SPT tests. SPT tests completed by Geotechnology in a separate borehole. Start of rock coring, 11:30am, lots of water loss, trouble recirculating. Started logging rock at 18.6' 100% water loss.	847
20		4.4	1	2.6 2.8	100	F	R0 to R1					INTERBEDDED SHALES AND LIMESTONE: in ~2.0" thick beds; medium gray (N5) to white (N9); violent HCl reaction; probable slump deposit 20.0' to 20.5'; limestone is wackestone. [Glen Rose Formation]		846
21		5								1017-6		LIMESTONE: packstone with shale beds; very light grey (N8) to medium grey (N5); strong HCl reaction. [Glen Rose Formation]		845
22		3.3										SHALE: claystone; medium gray (N5); slight HCl reaction; thin wavy beds. [Glen Rose Formation]		844
23		4.58										LIMESTONE: wackestone to packstone; very light gray (N8) to medium gray (N5); shale layers; fossils. [Glen Rose Formation]		843
24		3.3	2	5.0 5.0	99	F	R2					SHALE: claystone; medium gray (N5); slight HCl reaction; weak (R2). [Glen Rose Formation]		842
25		4.1								1017-7		LIMESTONE: wackestone; light gray (N7); strong HCl reaction; fresh (F). [Glen Rose Formation]		841
26		2.2										SHALE: claystone; greenish grey (5G 6/1); strong HCl reaction; fossils present. [Glen Rose Formation]		840
27		2.5										LIMESTONE: wackestone; light gray (N7); strong HCl reaction; fresh (F). [Glen Rose Formation]		839
28		2.4										LIMESTONE: wackestone; light gray (N7); thin pressure beds and some fossils; strong HCl reaction. [Glen Rose Formation]		838
29		3.4	3	4.9 4.9	100	F	R2			1017-8		SHALE: claystone; medium gray (N5); slight HCl reaction; weak (R2). [Glen Rose Formation]		837
30		2.2										LIMESTONE; packstone; very light gray (N8) to greenish gray (5G 6/1); strong HCl reaction; fossils present and abundant. [Glen Rose Formation]	Still losing water, drilling slow.	836
31		2.2										LIMESTONE: wackestone; light gray (N7); strong HCl reaction; fresh (F). [Glen Rose Formation]		835
32		2.2										LIMESTONE: wackestone; light gray (N7); thin pressure beds and some fossils; strong HCl reaction. [Glen Rose Formation]		834
33		2.5	4	5.1 5.1	100	F	R2					LIMESTONE: wackestone; light gray (N7); strong HCl reaction; fresh (F). [Glen Rose Formation]		833
		3.4								1017-9				

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1017</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
34		3.4										LIMESTONE: wackestone; light gray (N7); thin pressure beds and some fossils; strong HCl reaction. [Glen Rose Formation]		832
35		4.4	4	5.1 5.1	100	F	R2		1017-10			SHALE: claystone; medium light gray (N6); slight HCl reaction; abundant limestone fragments; inclusions and wavy bedding; thin shale beds at ~36.0'. [Glen Rose Formation]		831
36		4.5												830
37		2.5												829
38		2.4					R2							828
39		3.4	5	5.0 5.0	100	F								827
40		4.4										SHALE: claystone; medium gray (N5); slight HCl reaction; small voids; thin 0.1" beds of limestone; very homogeneous; extremely weak (R0). [Glen Rose Formation]		826
41		4.3					R0 to R1							825
42		5.2							1017-11					824
43		2												823
44		2.1	6	5.0 5.0	100	F	R0 to R1					SHALE: claystone with limestone inclusions; medium light gray (N6); strong HCl reaction; wavy beds; very weak (R1). [Glen Rose Formation]		822
45		2.1												821
46		4.4					R1					LIMESTONE: packstone; very light gray (N8) to medium light gray (N6); strong HCl reaction; very thin shale beds at top of unit; rip up clasts. [Glen Rose Formation]	Still losing all water down hole.	821
47		2.3										LIMESTONE: wackestone; very light gray (N8); strong HCl reaction. [Glen Rose Formation]		820
48		2.4	7	5.0 5.0	100	F	R2					LIMESTONE: packstone; very light gray (N8) to medium gray (N5); strong HCl reaction; thin shale beds; rip up clasts; ooids; shaly matrix 53.9' to 54.2'; weak (R2). [Glen Rose Formation]		819
		2.2												818



Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-1017**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
49		2.2										LIMESTONE: packstone; very light gray (N8) to medium gray (N5); strong HCl reaction; thin shale beds; rip up clasts; ooids; shaly matrix 53.9' to 54.2'; weak (R2). [Glen Rose Formation]		817
50		3.1	7	5.0 5.0	100	F	R2							816
51		2.4							1017-12					815
52		2.2												814
53		2.4												813
54		3.4	8	4.5 4.5	100	F	R2							812
55		4.1							1017-13			SHALE: claystone; medium gray (N5); limestone clasts present; slight HCl reaction. [Glen Rose Formation]		811
56		3.2										LIMESTONE: packstone; very light gray (N8) to medium gray (N5); thin shale beds; rip up clasts; ooids; weak (R2); strong HCl reaction. [Glen Rose Formation]		810
57		3.5										SHALE: claystone; medium dark grey (N4); with limestone beds 0.1" to 0.2"; extremely weak (R0); slight HCl reaction. [Glen Rose Formation]		809
58		4.1										LIMESTONE: packstone; very light gray (N8) to medium grey (N5); strong HCl reaction; interbeds of shale; wavy beds 61.6' to 63.9'; weak (R2); very fossil rich 63.9' to 65.2'. [Glen Rose Formation]		808
59		3.2	9	4.8 4.8	100	F	R0 to R1							807
60		3.3												806
61		3.3							1017-14					805
62		NM	10	0.9 0.9	100	F	R1						Short run due to "catch up".	804
63		3.2	11	4.5 4.5	100	F	R0 to R1							803
		3.4												

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1017</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)									
64		3.4	11	4.5 4.5	100	F	R0 to R1					LIMESTONE: packstone; very light gray (N8) to medium grey (N5); strong HCl reaction; interbeds of shale; wavy beds 61.6' to 63.9'; weak (R2); very fossil rich 63.9' to 65.2'. [Glen Rose Formation]		802									
65		3.4																				801	
66		4																			SHALE: claystone; medium dark gray (N4); very slight HCl reaction; fairly massive; extremely weak (R0); occasional limestone inclusions; very thin beds. [Glen Rose Formation]		800
67		3.2	12	5.4 5.4	100	F	R0							800									
68		3.4																				799	
69		4																			LIMESTONE: packstone; light olive gray (5Y 6/1) to very light gray (N8); very bioturbated below top section. [Glen Rose Formation]		798
70		6																			SHALE: claystone; medium dark gray (N4); very slight HCl reaction; fairly massive; extremely weak (R0); occasional limestone inclusions; very thin beds. [Glen Rose Formation]		797
71			13	4.8 4.8	100	F	R0							796									
72		4.4																			SHALE: claystone; medium dark gray (N4); very slight HCl reaction; extremely weak (R0); small limestone inclusions. [Glen Rose Formation]		795
73		4																				794	
74		2.3	14	5.1 5.1	100	F	R0							793									
75		3.25																				792	
76		2.3																			LIMESTONE: packstone; very light gray (N8) to medium dark gray (N4); strong HCl reaction; thin shale beds. [Glen Rose Formation]		791
77		2.3											SHALE: claystone; medium dark gray (N4); slight HCl reaction; some thin limestone interbeds; extremely weak (R0). [Glen Rose Formation]	100% water loss.	790								
78		4.8												789									
		6												788									

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1017</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
79	[Lithology Column]	6	14	5.1 5.1	100	F	R0 to R1					LIMESTONE: packstone; light gray (N7); fossils present; thin claystone interbeds; slight HCl reaction. [Glen Rose Formation] SHALE: claystone; medium dark grey (N4); slight HCl reaction; extremely weak (R0); fresh (F); horizontal bedding. [Glen Rose Formation]		787
80		3												786
81	[Lithology Column]	3					R0					LIMESTONE: packstone; light gray (N7); fossils; some rip up clasts; some small voids. [Glen Rose Formation]		785
82		4.5												784
83	[Lithology Column]	2.2	15	5.0 5.0	100	F	R2					SHALE: claystone; medium dark gray (N4); slight HCl reaction; extremely weak (R0); fresh (F); irregular bottom contact. [Glen Rose Formation] LIMESTONE: packstone; yellowish gray (5Y 8/1); strong HCl reaction; weak (R2); fresh (F); some thin shale beds around 86.0'; higher shale content below 86.0'; occasional thin fossil rich layer; almost a claystone with limestone clast support. [Glen Rose Formation]		783
84		1.4												782
85	[Lithology Column]	2.3					R2					LIMESTONE: packstone; light gray (N7); rip up clasts; strong HCl reaction; very weak (R1). [Glen Rose Formation]		781
86		1.5												780
87	[Lithology Column]	3.5	16	5.1 5.1	100	F	R2					LIMESTONE: packstone; light gray (N7); rip up clasts; strong HCl reaction; very weak (R1). [Glen Rose Formation]		779
88		2.3												778
89	[Lithology Column]	4.2	16	5.1 5.1	100	F	R2					LIMESTONE: packstone; light gray (N7); rip up clasts; strong HCl reaction; very weak (R1). [Glen Rose Formation]		777
90		3.1												776
91	[Lithology Column]	3.1	17	5.0 5.0	100	F	R1					LIMESTONE: packstone; light gray (N7); rip up clasts; strong HCl reaction; very weak (R1). [Glen Rose Formation]		775
92		3.1												774
93	[Lithology Column]	2.4										LIMESTONE: packstone; light gray (N7); rip up clasts; strong HCl reaction; very weak (R1). [Glen Rose Formation]		773
														100% water loss.

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1017</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
94		2.5										(N8) to medium light gray (N7); slight to strong HCl reaction; interbedded limestone and shale; very thin wavy beds; fresh (F); extremely weak (R0) (shale) to weak (R1) (limestone); some fossil clasts. [Glen Rose Formation]		772
		2.5					R0 to R2		1017-21					771
95		3.3	17	5.0 5.0	100	F								770
96		2.5										LIMESTONE: packstone; light gray (N7); rip up clasts; strong HCl reaction; very weak (R1); excellent fossil at 99.3'. [Glen Rose Formation]		769
97		4.1												768
98		2.3										LIMESTONE: packstone; very light gray (N8); occasional extremely thin beds of shale and rip-up clasts present; dewatering traces throughout. [Glen Rose Formation]		767
99		4.2	18	5.0 5.0	100	F			1017-22					766
100		2.1					R1							765
101		2										SHALE: claystone; medium light grey (N6); slight HCl reaction; limestone fragments. [Glen Rose Formation]		764
102		4												763
103		2.4										LIMESTONE: oolitic packstone with claystone; light gray (N7) to medium dark gray (N4); strong HCl reaction; claystone present along irregular contacts; oolitic 106.5' to 108.1'. [Glen Rose Formation]		762
104		3.3	19	5.0 5.0	100	F								761
105		2.3											100% water loss.	760
106							R0 to R1		1017-23				759	
107		3	20	5.1 5.1	100	F							758	
108		2					R2							

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-1017**


Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
109		3.1					R2					LIMESTONE: oolitic; medium light grey (N6); strong HCl reaction; fresh (F); weak (R2). [Glen Rose Formation]		757
110		4.1	20	5.1 5.1	100	F	R1 to R2		1017-24			LIMESTONE and CLAYSTONE: interbedded; light gray (N7) to medium dark gray (N4); strong HCl reaction; fossils throughout; all beds thin (<.1"). [Glen Rose Formation]		756
111		3.4												755
112		3					R1					SHALE: claystone; with thin limestone beds; light gray (N7); strong to slight HCl reaction; fresh (F); very weak (R1). [Glen Rose Formation]		754
113		1.3												753
114		2	21	5.0 5.0	100	F						LIMESTONE: packstone; very light gray (N8); weak (R2); thin wavy shale beds present; strong reaction to HCl. [Glen Rose Formation]		752
115		2.1												751
116		2.4					R2		1017-25			LIMESTONE: packstone with shale beds throughout; very light gray (N8) to medium gray (N5); strong reaction to HCl; fossils present throughout. [Glen Rose Formation]		750
117		2.2												749
118		3.2												748
119		3.4	22	4.9 4.9	100	F	R1 to R2					SHALE: claystone; medium light gray (N7); very fossil rich and bioturbated; very thin limestone beds near bottom; strong HCl reaction. [Glen Rose Formation]		747
120		1.2							1017-26					746
121		3.3					R1 to R2					LIMESTONE: oolitic; medium gray (N5) to very light gray (N8); strong HCl reaction; ooids are well sorted; some small shaly beds. [Glen Rose Formation]		745
122		2.2	23	5.1 5.1	100	F								744
123		3.2							1017-27					743

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1017</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
124		3.1										LIMESTONE: packstone; with shaly layers; light gray (N7) to medium dark grey (N4); strong HCl reaction; shaly layers have limestone fragments; extremely fossiliferous from 125.5' to 126.6'; bioturbated throughout. [Glen Rose Formation]		742
		3.1												741
125		2.5	23	5.1 5.1	100	F								740
126		3.1					R1 to R2							739
127		4.2												738
128		1.43								1017-28		SHALE: claystone; light gray (N7); massive; slight HCl reaction. [Glen Rose Formation]		737
129		2	24	5.0 5.0	100	F						LIMESTONE: packstone; very light gray (N9) to medium gray (N5); strong HCl reaction; shale interbeds toward top; lack of structure below 130.0'; at 131.6' to 134.2'; high shale content with abundant fossils and lower HCl reaction. [Glen Rose Formation]		736
130		1.5					R1							735
131		2.35												734
132		4.3												733
133		3.4												732
134		1.4	25	4.9 4.9	100	F	R1					LIMESTONE: shaly; medium gray (N5) to light grey (N7); very slight HCl reaction; wavy bedding; high fossil content and stronger HCl reaction toward bottom. [Glen Rose Formation]		731
135		1.3								1017-29				730
136		2.4												729
137		2.4					R1					SHALE: claystone; light gray (N7); very slight HCl reaction; wavy beds. [Glen Rose Formation]		728
138		3.1	26	5.0 5.0	100	F						LIMESTONE: packstone; very light gray (N8); strong HCl reaction; small fossil clasts present; massive. [Glen Rose		

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
139		3.4										[Formation]		727
140		3.4							1017-30			SHALE: claystone with limestone clasts; medium light gray (N6) to medium gray (N5); very slight HCl reaction; irregular limestone clasts. [Glen Rose Formation]		726
141		3.3	26	5.0 5.0	100	F	R1							725
142		3.4												724
143		4.1												723
144		4.2					R1							722
145		3.5	27	4.9 4.9	100	F								721
146		4.5										SHALE and LIMESTONE: interbedded; medium gray (N5) to light gray (N7); very slight HCl reaction; looks like turbidity flow; fresh (F). [Glen Rose Formation]		720
147		2.2							1017-31			LIMESTONE: packstone; very light gray (N8) to white (N9); strong HCl reaction; thin shale beds; 146.3' to 146.4' is shale/claystone with abundant limestone fossils; slight HCl reaction; fresh (F). [Glen Rose Formation]		719
148		4.4					R0 to R1					SHALE: claystone; medium gray (N5); abundant fossils; slight reaction to HCl; fresh (F). [Glen Rose Formation]		718
149		2.5	28	3.6 3.6	100							LIMESTONE: packstone; very light gray (N8); strong HCl reaction; many fossils present. [Glen Rose Formation]		717
150		3										SHALE: claystone; greenish gray (5G 6/1); slight HCl reaction; reduced weathering; some limestone inclusions. [Glen Rose Formation]		716
151		5.3					R0 to R1		1017-32				Total depth drilled: 150'	715
152														714
153														713

Project Name and Job Number TXU Comanche Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-1018</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'09.21359"N / 97°47'43.53870"W		Total Depth 152.4 feet	
Drilling Contractor and Rig Palmerston and Parish / CME 55		Elevation and Datum 846.363 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 6.4 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 3	Date Started 12/15/06	
		Borehole Inclination Vertical	Logged by Strane	Date Completed 12/17/06	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 1/31/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0										846
1	CL		B-1018 1	9	6 18			RESIDUAL SOIL (RS) LEAN CLAY very stiff, brown, damp to dry, with calcareous particles, few roots and limestone fragments		845
2				16						844
3				38						843
4	CL		B-1018 2	14	0 18			SANDY LEAN CLAY very stiff, yellow (2.5Y7/8), with calcareous deposits, weak to moderate reaction to HC		842
5				13						841
6			B-1018 3	50/5"	5 5			Weathered Limestone, auger refusal at 6.0'		840
7								Top of Bedrock at 6.4'	Bedrock at 6.4'	839
8										838
9										837
10										836
11										835
12										834
13										833
14										832
15										



Project Name and Job Number TXU Comanche Peak Col 1908		 WLA William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. B-1018</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'09.21359"N / 97°47'43.53870"W		Total Depth 152.4 feet	
Drilling Contractor and Rig Palmerton and Parrish / CME 55		Elevation and Datum 846.363 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 6.4 feet	
Casing Size and Depth 4" / 6.4 feet		Length of Core Barrel and Bit 10 feet	No. of Core Boxes 10	Date Started 12/15/06	
		Borehole Inclination Vertical	Logged by M. Strane	Date Completed 12/17/06	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 1/31/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
7		0	1	0.8 1.0	80							LIMESTONE: sandy sparite; dark yellowish orange (10 YR 6/6), medium strong to strong; slightly weathered; very sandy; weak to moderate HCl reaction.	Top of Bedrock 6.4', Glen Rose Formation.	839
8		1.5				SW	R3-R4							838
9		1.75												837
10		1.25	2	4.8 5.0	96				1018-4			LIMESTONE: wackestone; medium gray (N5) to medium light gray (N6); slightly weathered; weak; weak to moderate HCl reaction; some fossils; alternating slightly darker beds (<.1').		836
11		2.03					R2							835
12		2.13				SW								834
13		3.08										SANDSTONE: limey sandstone; medium gray (N5) to dark grey (N3); medium strong; slightly weathered; dry to damp; no HCl reaction; faint laminar beds <1mm thick; fine grained.		833
14		2					R3							832
15		5.42	3	5.0 5.0	100									831
16		3.25							1018-5			LIMESTONE: micrite; very light gray (N8) to white (N9); medium strong to strong; fresh; reacts strongly to HCl; lithics up to 1mm; some joints, fossils, and large lithics towards base.	Some lithic beds <.2' thick.	830
17		0.93												829
18		1.25				F	R3-R4				JRC 3 JRC 3			828
19		0.95									Horz., JRC 3			827
20		1.77	4	5.0 5.0	50		R4				JRC 3 JRC 3			826
21		1.75				SW	R2		1018-6					825

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
22		2	4	5.0 5.0	50							LIMESTONE: wackestone; medium light gray (N6) to light grey (N7); slightly weathered; weak; pebble sized clasts in mud; reacts moderately with HCl; dry.		824
23		1.67				SW	R2							823
24		2.15												822
25		3.33	5	5.0 5.0	100				1018-7			Lower section has fewer clasts and is medium gray (N5).		822
26		2.5				MW						LIMESTONE: shale; sandy; medium dark gray (N4) to medium gray (N5); moderately weathered; extremely weak to very weak; damp; strong HCl reaction; very sandy; grades toward wackestone 27.1'-28.4'.		820
27		3.5												819
28		3.08				SW	R0-R1					LIMESTONE: wackestone; medium gray (N5); medium strong to strong (R3-R4); abundant burrows and fossils.		818
29		2								JRC 3 JRC 3		LIMESTONE: micritic wackestone; very light gray (N8) to light grey (N9); weak to strong; fresh to slightly weathered; dry; with shaly interbeds; gradational basal contact.		817
30		1.5	6	5.0 5.0	100	F-SW	R2-R4		1018-8					816
31		1.57												815
32		1.75												814
33		1.63					R2		1018-9			LIMESTONE: shale/mudstone; light gray (N7) to medium light grey (N6); weak; slightly weathered; dry to damp; reacts strongly to HCl.		814
34		1.12				SW						LIMESTONE: wackestone/packstone; medium light gray (N6) to light gray (N7); weak to medium strong; dry; shaly filled burrows and bioturbation; strong HCl reaction; rip-up clasts; slightly weathered; dry to damp; higher concentration of clasts in bottom 1' may be packstone.		813
35		1	7	4.8 5.0	75		R2-R3							812
36		2												811
														810

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
37		2.12	7	4.6 5.0	75	SW	R2-R3				JRC 11			809
38		6.78				SW-MW					JRC 10	LIMESTONE: micrite with shale interbeds; very weak to strong; slightly to moderately weathered; strong HCl reaction in micrite, weak in shale; dry to damp; shale is medium dark gray (N4); micrite is very light gray (N8).		808
39		4.5					R4-R1		1018-10			LIMESTONE: shale with micrite interbeds; medium dark gray (N4); dry to damp; very weak to strong; weak HCl reaction, moderately weathered to fresh.		807
40		1.47	8	5.0 5.0	100	F-MW								806
41		3.75										LIMESTONE: micrite; very light gray (N8); medium strong to strong; slightly weathered; dry shale filled cracks; strong HCl reaction; grades to wackestone at bottom.		805
42		1.5					R3-R4							804
43		2.62												803
44		3.58										LIMESTONE: micrite with shale interbeds; borderline wackestone; light gray (N7) to very light grey (N8); strong; slightly weathered; dry to damp; strong HCl reaction.		802
45		1.05	9	5.0 5.0	100									801
46		2.47				SW	R4		1018-11					800
47		1.5												799
48		2												798
49		1.63										SHALE: siltstone; medium grey (N5) to medium dark grey (N4); very weak to weak; moderately weathered; damp to moist; top 1' borderline wackestone, no HCl reaction.		797
50		3.85	10	4.4 5.0	88		R1-R2							796
51		6												795

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**ROCK LOG**  
**Boring No. B-1018**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
52		5	10	4.4 5.0	88	SW	R1-R2							794
53		5.22				F	R4			1018-12		LIMESTONE: micrite; very light gray (N9), strong; fresh; dry; strong HCl reaction.		793
54		1.47										SHALE: siltstone; with micrite interbeds, medium dark gray (N4); very weak; moderately weathered; damp; no HCl reaction; micrite interbeds (<0.2'); some laminar bedding.		792
55		4.58	11	5.0 5.0	100	MW	R1							791
56		3.15								1018-13		LIMESTONE: micrite; very light gray (N9), strong; fresh; dry; strong HCl reaction; with fossils.		790
57		3.25				F	R4					LIMESTONE: wackestone; medium light gray (N6) to light gray (N7); slightly weathered; gradational upper contact; strong HCl reaction; weak; gradational basal contact.		789
58		3					R2							788
59		1.95										SHALE; medium dark gray (N4) to medium gray (N5); slightly weathered; weak to very weak; damp to dry; no HCl reaction.		787
60		2.6	12	4.2 5.0	84		R1-R2			1018-14				786
61		2.2												785
62		3.78				SW	R2					LIMESTONE: wackestone; medium light gray (N7) to very light gray (N8); slightly weathered; dry; weak; strong HCl reaction; contains mud-filled cracks and burrows.		784
63		6										SHALE: med dark grey (N4); very weak to weak; slightly weathered; damp, no HCl reaction; laminar bedding.		783
64		3.43					R1-R2			1018-15				782
65		1.9	13	4.1 5.0	82									781
66		2.28					R3					LIMESTONE: wackestone with shale interbeds; very light gray (N8); slightly weathered; dry to damp.		780

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**ROCK LOG**  
**Boring No. B-1018**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
67		3	13	4.1 5.0	82	F	R4					LIMESTONE: micrite; very light gray (N8) to white (N9); fresh; dry; strong; clear; strong HCl reaction.		779
68		1.92										LIMESTONE: wackestone; medium light gray (N7) to very light gray (N8); slightly weathered; dry; weak to medium strong; sparse shaly cracks; reacts strongly to HCl; thin interbeds of packstone.		778
69		2												777
70		1.75	14	5.0 5.0	100									776
71		0.98												775
72		1.18								1018-16				774
73		2.25												773
74		0.83												772
75		2.5	15	5.0 5.0	100	SW	R2-R3							771
76		1.32												770
77		1.97								1018-17				769
78		1.25												768
79		1.27												767
80		1.73	16	5.0 5.0	100									766
81		1.58								1018-18		High percentage of shaly beds from 80.0'-81.2'.		765

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**ROCK LOG**  
**Boring No. B-1018**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
82		2.4	16	5.0 5.0	100								Shale bed at 82.2'.	764
83		2.88												763
84		2.02							1018-19					762
85		1.47	17	5.0 5.0	100									761
86		3.58												760
87		2.47												759
88		1.05												758
89		2.78				SW	R2-R3						Shale bed 89.0'-89.3'.	757
90		0.77	18	5.0 5.0	100									756
91		1.25							1018-20					755
92		1.45											Micrite bed near bottom of Run 18.	754
93		1.98												753
94		1.47												752
95		1.52	19	5.0 5.0	100									751
96		1.7					R1-R2						LIMESTONE: shaly wackestone; medium grey (N5) to medium light grey (N6); very weak to weak; strong HCl reaction; damp; slightly weathered.	750

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
97		1.53	19	5.0	100		R3		1018-21			LIMESTONE: micritic wackestone; very light gray (N8) to light gray (N6); medium strong; dry; slightly weathered; extensive burrows; violent HCl reaction.		749
98		1.78					R2					LIMESTONE: shale; medium dark gray (N4); weak; slightly weathered; some rip-up clasts; moderate HCl reaction.		748
99		1.37										LIMESTONE: wackestone/packstone; medium light gray (N6) to very light grey (N7); med strong; slightly weathered; grades between packstone and wackestone in 0.4' beds; fine grained to small pebble sized.		747
100		1.42	20	5.0	100				1018-22					746
101		0.97												745
102		1.75												744
103		3.2												743
104		1.9				SW	R3					Shale bed at base of packstone/wackstone sequence.		742
105		1.63	21	5.0	100				1018-23		JRC 3	LIMESTONE: packstone/wackestone; with some thin micritic beds; very light gray (N8) to medium light grey (N6), medium strong; slightly weathered; no burrows; shaly cracks; moderate HCl reaction; dry; <0.2' micritic layer.		741
106		1.33									JRC 5		May be too wet.	740
107		1.88												739
108		1.78												738
109		1.08												737
110		1.75	22	5.0	100		R3-R4		1018-24			LIMESTONE, shaley packstone, med grey to dark grey, med strong to strong, slightly weathered, abundant rip up clasts, dry to damp, less shaly beds, large burrows		736
111		2.17												735

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**ROCK LOG**  
**Boring No. B-1018**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
112		1.13	22	5.0 5.0	100							LIMESTONE: wackestone; light gray (N7) weak to medium strong; slightly weathered; thin muddy beds (<.2'); reacts moderately to HCl.		734
113		2.6					R2-R3							733
114		1.53												732
115		2.73	23	5.0 5.0	100	SW						LIMESTONE: wackestone; shaley; medium gray (N5); weak to medium strong; slightly weathered; damp; some shale free intervals; strong HCl reaction; gradational basal contact.		731
116		1.78					R3-R4			1018-25				730
117		21.13										LIMESTONE: packstone; with shaley silt; light gray (N7) to medium dark grey (N4); weak to medium strong; dry to damp; reacts strongly to HCl; gradational basal contact.		729
118		1.75										LIMESTONE: wackestone; micritic; light gray (N7); medium strong; fresh to slightly weathered; dry to damp; some very thin shale lenses (<.1').		728
119		1.5												727
120		2	24	5.0 5.0	100							Shaly interbed at 120'.		726
121		2								1018-26				725
122		0.87				F-SW	R2-R3							724
123		2.97										Shaly interbed at 123'.	300 psi pulldown, 900 psi hydraulic pressure.	723
124		3.05	25	5.0 5.0	100							LIMESTONE: packstone; with shaley silt; light gray (N7) to medium dark grey (N4); weak to medium strong; dry to damp; reacts strongly to HCl; gradational basal contact, some packstone interbeds below 127.5'.		722
125		3.83												721
126		6.5								1018-27				720



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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
127		7.85	25	5.0 5.0	100									719
128		4.67				F-SW	R2-R3							718
129		3.3												717
130		5.57	26	4.8 5.0	96									716
131		4.13				MW	R1					LIMESTONE: shale; medium gray (N5) to medium dark gray (N4); very weak; moderately weathered; damp; well laminated; weak HCl reaction.		715
132		2.13				F-SW	R4			1018-28		LIMESTONE: wackestone; micritic, with silt filled cracks and burrows; strong; very light gray (N8); fresh to slightly weathered; dry; thin silt burrows; reacts strongly to HCl.		714
133		7.85					R2					LIMESTONE: wackestone; shaly; mostly mud; grades to packstone; medium gray (N5) to medium light gray (N6); weak; slightly weathered; dry to damp; fine grained; gradational lower contact.		713
134		1.9												712
135		1.72	27	5.0 5.0	100		R2-R3					LIMESTONE: packstone; shaly interbeds; medium light gray (N6) to light gray (N7); weak to medium strong; dry; many shaly beds.		711
136		2								1018-29				710
137		2.62				SW	R1					LIMESTONE: shale; medium gray (N5) to medium dark gray (N4); very weak; slightly weathered; weak HCl reaction.		709
138		3.37										LIMESTONE: packstone, medium light gray (N6) to light gray (N7); weak to medium strong; many burrows; slightly weathered; many rip-up clasts; thin wavy shale beds ~0.1' thick; less shaly below 140', grades to shale at bottom.		708
139		2.63					R2-R3							707
140		2.1	28	5.0 5.0	100									706
141		2.5								1018-30				705

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908

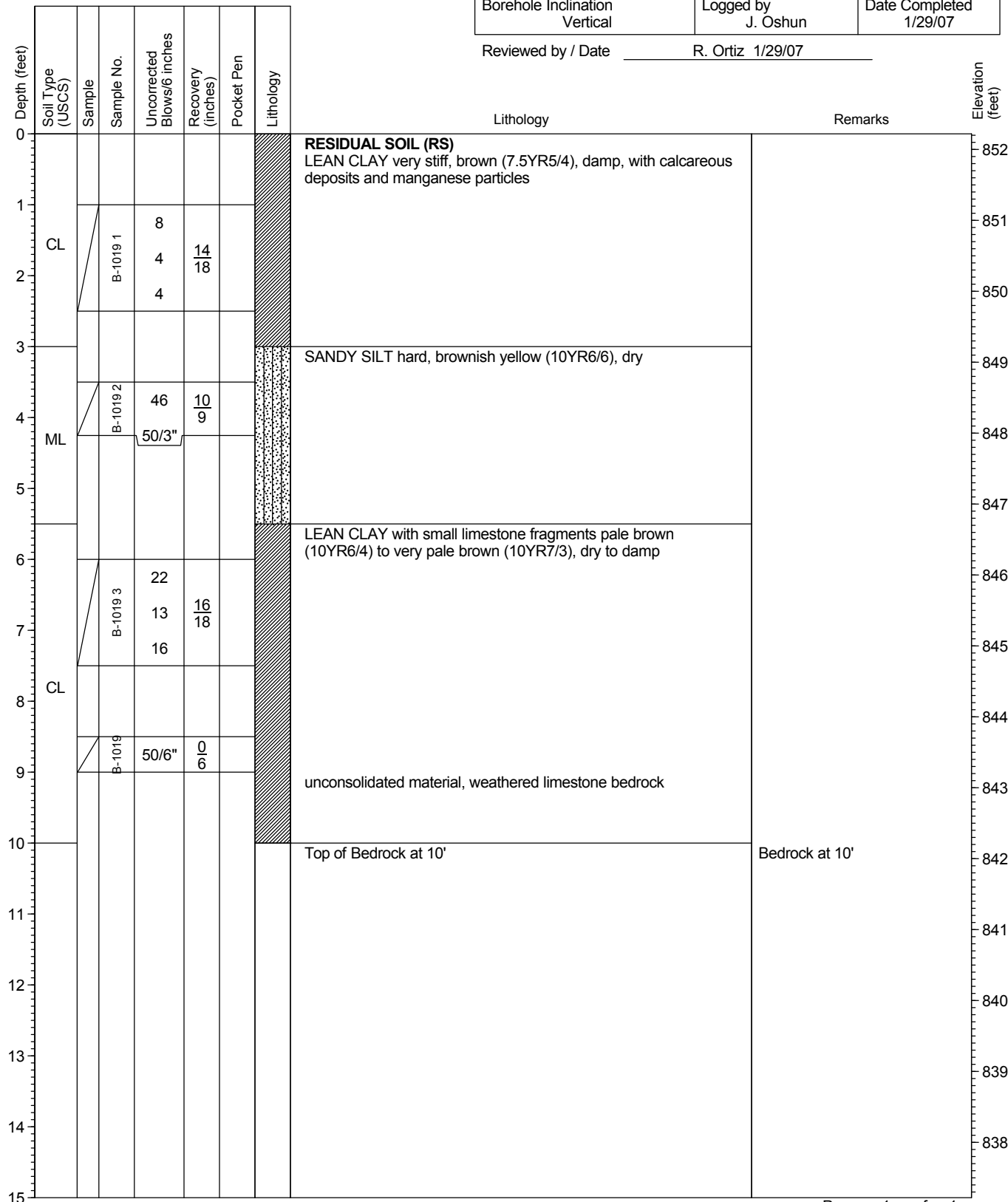



**ROCK LOG**  
**Boring No. B-1018**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
142		3.93	28	5.0	100		R1-R2					LIMESTONE: shale; medium gray (N5); very weak to weak; some packstone; rip-up clasts; damp; slightly weathered.		704
143		2.97										LIMESTONE: wackestone; medium light gray (N6) to light gray (N7); weak to medium strong; slightly weathered; dry to damp; abundant silt filled cracks and burrows; some mud/shale beds ~.1' thick.		703
144		1.57												702
145		1.67	29	5.0	100	SW	R2-R3			1018-31				701
146		1.33												700
147		1.23												699
148		1.8												698
149		1.45				F-SW	R4					LIMESTONE: wackestone; very micritic; light gray (N7) to very light grey (N8); strong; dry; fresh to slightly weathered; grades to shaly packstone; coal seam at 148.1; strong HCl reaction.		697
150		1.95	30	5.0	100					1018-32		LIMESTONE: packstone with shaly interbeds; medium light gray (N6) to very light gray (N9); weak to medium strong; slightly weathered; dry to damp; some rip-up clasts and silt filled cracks outside of shaley bed.		696
151		4.65				SW	R2-R3							695
152		3.35												694
153													Total depth drilled: 152.4'	693
154														692
155														691
156														690

Project Name and Job Number TXU Comanche Peak COL 1908		 <b>SOIL LOG Boring No. B-1019</b>	
Type and Diameter of Boring HSA / 7"	Boring Location 32°18'08.45527"N / 97°47'43.81029"W	Total Depth 200 feet	
Drilling Contractor and Rig Richard Simmons Drilling / BK-81 HD	Elevation and Datum 852.222 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 10 feet
Sampling Method SPT	Sample Driving Hammer/Drop R&C / 140 lbs / 30 inches	No. of Samples 3	Date Started 1/23/07
	Borehole Inclination Vertical	Logged by J. Oshun	Date Completed 1/29/07

Reviewed by / Date                     R. Ortiz 1/29/07                    



Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG Boring No. B-1019</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'08.45527"N / 97°47'43.81029"W		Total Depth 200 feet	
Drilling Contractor and Rig Richard Simmons / BK 81		Elevation and Datum 852.222 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 10 feet	
Casing Size and Depth 4" / 10 feet		Length of Core Barrel and Bit 8.8 feet	No. of Core Boxes 13	Date Started 1/23/07	
		Borehole Inclination Vertical	Logged by J. Oshun	Date Completed 1/26/07	

Reviewed by / Date R. Ortiz 1/29/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
10		2.5										Interbedded SHALE and WACKESTONE, both highly weathered. Shale is light to moderate olive brown, extremely weathered (R0), dissolved by drilling in places. Wackestone is yellowish grey to pinkish gray (5YR 8/1 - 5Y 8/1), medium strong (R3).. [Glen Rose Formation]	Bedrock begun drilling 1/24/07 at 10:15 am	842
11		2.25												841
12		3.02	1	5.0 5.0	74	SW	R0-R3			1019-4				840
13		2.17												839
14		1.85				MW	R3					LIMESTONE: wackestone, medium light gray (N6), MW, medium strong (R3). [Glen Rose Formation]		838
15		3.33				SW	R0-R3			1019-5		SHALE, extremely weathered (HW), brown, extremely weak (R0), gravel clasts, strong HCl reaction. [Glen Rose Formation]		837
16		4.17	2	4.5 2.0	90	MW	R3					LIMESTONE: wackestone, medium grey (N5), medium strong (R2), moderately weathered (MW), fossiliferous, violent reaction to HCl. [Glen Rose Formation]		836
17		2.68								1019-6		LIMESTONE, packstone, medium dark gray (N4), medium strong to weak (R3 - R2), moderately weathered (MW), no HCl reaction, rich fossil shale bed 17.1 to 17.5'. [Glen Rose Formation]		835
18		2.43	3	3.7 3.0	100	MW	R3-R2							834
19		2.6												833
20		1.67				MW	R1					SHALE, dark greenish gray (5 G 4/1), fossiliferous, very weak (R1), moderately weathered. [Glen Rose Formation]		832
21		2.57										LIMESTONE: wackestone, greenish gray (5 G 6/1), medium strong (R3), moderately weathered (MW), shale bed 20.7 to 21' and 22.2 to 22.6', and 22.8 to 22.95', dissolution features at 20.6', 21.2' and 21.3 to 21.4', shale is extremely muddy. [Glen Rose Formation]		831
22		1.85	4	5.1 5.0	100					1019-7				830
23		1.6												829
24		1.35				SW	R4					LIMESTONE, packstone, very light gray (N8), with abundant clasts, strong (R4), slightly weathered (SW), stylonite features at 23.1, 23.4, 23.6, 26.7, 23.9, 24.1, 24.3, 24.7. Stylolites exhibit substantial weathering and have porous dissolution effect, strong HCl reaction. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	828
25														

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1019</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
25		1.17										LIMESTONE, packstone, very light gray (N8), with abundant clasts, strong (R4), slightly weathered (SW), stylonite features at 23.1, 23.4, 23.6, 26.7, 23.9, 24.1, 24.3, 24.7. Styolites exhibit substantial weathering and have porous dissolution effect, strong HCl reaction. [Glen Rose Formation]		827
26		2.32				SW	R4							826
27		2.58	5	5.0 5.0	97									825
28		2.12							1019-8			LIMESTONE, wackestone, silty, weak to medium strong (R2 - R3), medium gray, silt filled matrix, slightly weathered. [Glen Rose Formation]		824
29		2.32				SW	R2-R3							823
30		3.17												822
31		3.68				SW	R0-R3					SHALE: dark gray ( 5GY 4/1), extremely weak (R0), slightly weathered (SW), fossil apparent, weak reaction to HCl. [Glen Rose Formation]		821
32		3.37	6	5.0 5.0	100									820
33		2.25				SW	R2-R3					LIMESTONE: wackestone, medium light (N6), blueish shale interbeds, thinly spaced, many fossils, strong HCl reaction. [Glen Rose Formation]		819
34		2.2							1019-9					818
35		1.77				SW	R1-R3					LIMESTONE: wackestone, medium light (N6), blueish shale interbeds, thinly spaced, many fossils, strong HCl reaction, nearly packstone 35.2 to 36.7', shaly matrix 37.4 to 38.6', abundant bioturbations, shaley areas are weak (R2), remainder of core is medium strong (R3), slightly weathered (SW), moderate reaction to HCl. [Glen Rose Formation]		817
36		1.68												816
37		2.03	7	5.0 5.0	100									815
38		1.43				SW	R2-R3		1019-10			LIMESTONE: wackestone, medium light (N6), blueish shale interbeds, thinly spaced, many fossils, strong HCl reaction, silt filled bioturbations, fossiliferous, strong HCl reaction. [Glen Rose Formation]		814
39		1.48												813
40														

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1019</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
40		1.25										LIMESTONE: wackestone, medium light (N6), blueish shale interbeds, thinly spaced, many fossils, strong HCl reaction, silt filled bioturbations, fossiliferous, strong HCl reaction. [Glen Rose Formation]		812
41		1.05				SW	R2-R3							811
42			8	5.0	100									810
43		1.75												810
44		1.87				SW	R0-R3					SHALE, abundant grain sized fossils, dark greenish gray (5G 4/1), extremely weak (R0), slightly weathered (SW), no HCl reaction, alternating beds of wackestone. [Glen Rose Formation]		809
45		1.77				SW	R3					LIMESTONE: wackestone, light gray (N7), medium strong (R3), abundant thinly spaced shale beds, strong HCl reaction. [Glen Rose Formation]		808
46		3.47				SW	R1					SHALE, medium gark gray (N4), very weak (R1), wackestone beds from 45.6 to 45.8' and 46' and 46.2'. [Glen Rose Formation]		807
47		3.97												806
48		1.97	9	5.0	100							LIMESTONE: wackestone, medium light gray (N5), weak (R2), slightly weathered (SW), abundant mud filled bioturbations, fossiliferous, moderate HCl reaction, , very thin shale beds. [Glen Rose Formation]		805
49		1.95												804
50		3.1								1019-12		Large Shale Bed 48.8' - 49.1'		803
51		1.7				SW	R2-R3					LIMESTONE: wackestone, medium light gray (N5), weak (R2), slightly weathered (SW), abundant mud filled bioturbations, fossiliferous, moderate HCl reaction, , very thin shale beds. [Glen Rose Formation]		802
52		1.93												801
53		2.88	10	4.8	96									800
54		1.82								1019-13		Shale bed		799
55		1.85				SW	R1-R2							798

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1019</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
55		3.17										SHALE, medium dark gray (N4) to dark greenish gray (5 G 4/1), very weak to weak (R1- R2), slightly weathered (SW), no HCl reaction, sand grains from 55 to 55.5'. [Glen Rose Formation]		797
56		4.1				SW	R1-R2							796
57		3.33	11	5.0 5.0	100									795
58		3.35				F	R3					LIMESTONE: wackestone, very light gray (N8), few clasts, medium strong (R3), fresh. [Glen Rose Formation]	Drill speeds up significantly about half way through run	794
59		2.3							1019-14			SHALE, same as previous, beds/crossbeds of wackestone at 59.2' and 59.8' and 60'. [Glen Rose Formation]		793
60		2.58				F	R1							792
61		3.23											791	
62		1.83	12	4.9 5.0	98					1019-15			790	
63		1.33				SW	R2					LIMESTONE: wackestone, light gray (N7), abundant mud filled bioturbations, weak (R2), slightly weathered (SW), shale beds at 62.4', 64.4', and 64.65', strong reaction to HCl. [Glen Rose Formation]	789	
64		2.02											788	
65		3.17										SHALE, medium dark gray (N4), weak to very weak (R1-R2), fresh (F), no HCl reaction. [Glen Rose Formation]	787	
66		2.67				F	R1-R2						786	
67		2.08	13	4.9 5.0	98					1019-16			785	
68		2.47				SW	R2					LIMESTONE: wackestone, light gray (N7), R2, abundant bioturbations, slight weathered (SW), no HCl reaction. [Glen Rose Formation]	784	
69		3.17				SW	R2-R3					SHALE, light gray (N7), weak (R2), abundant bioturbations, slight weathered (SW), no HCl reaction. [Glen Rose Formation]	783	
70														

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1019</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
70		2.18				SW	R2-R3							782
71		2.3							1019-17			LIMESTONE: wackestone with many shale beds thinly spaced, weak to medium strong (R2 to R3), slightly weathered (SW), wackestone is medium light gray (N6), moderate to strong reaction to HCl, massive wackestone after 73.6', moderate to little HCl reaction. [Glen Rose Formation]	Inner barrel stuck end for day 16:30, begin log run 14 at 0811	781
72		2.07	14	5.0 5.0	100	SW	R2							780
73		1.27												779
74		1.35												778
75		2.02										LIMESTONE: wackestone, same as above, medium to light gray (N6), weak (R2), slightly weathered (SW), abundant mud-filled bioturbations, silty matrix. [Glen Rose Formation]		777
76		1.95												776
77		2.17	15	5.0 5.0	100	SW	R2		1019-18					775
78		2.52												774
79		2.17												773
80		1.83										LIMESTONE: wackestone, same as above, mud bioturbations, silty matrix (80.0 to 81.6') with wackestone rip up clasts. [Glen Rose Formation]		772
81		2.25							1019-19					771
82		2.18	16	5.0 5.0	100	SW	R2							770
83		2.25												769
84		2.43												768
85														



Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1019</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
85		1.78										LIMESTONE, wackestone, same as above, abundant shale bioturbations 85' to 88.3', shale bed 88.8', decreases in silt content from 88.8' to 90', stronger HCl reaction in this section. [Glen Rose Formation]		767
86		2.25												766
87			17	5.0	100	SW	R2						765	
88		1.67											764	
89		2.92								1019-20		Drill speed increases at 1.3'	763	
90		1.5												762
91		2.25										LIMESTONE: wackestone, same as above, light to medium light gray (N7-N6), weak (R2), slightly weathered (SW), silty matrix, abundant shale bioturbations thinly spaced throughout. [Glen Rose Formation]	761	
92		2.47											760	
93		2.77	18	5.0	100	SW	R2						759	
94		2.98											758	
95		2.02								1019-21		LIMESTONE: wackestone, same as above, area of packstone 98.6' to 98.85', ( no shale beds in this section), medium shale beds 95' to 97.4'. [Glen Rose Formation]	757	
96		1.35											756	
97		1.52											755	
98		1.25	19	5.0	100	SW	R2			1019-22			754	
99		1.17											753	
100		1.38												

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1019</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
100		1.32										LIMESTONE: wackestone, same as above. [Glen Rose Formation]		752
101		1.98										Packstone/shale bed 100.6' to 100.9' Packstone 100.9' to 101.3'		751
102		3.02	20	5.0 5.0	100	SW	R2			1019-23		Shaley wackestone 101.4' to 102.7'		750
103		2.83										Abundant bioturbations 102.7' to 103.5'		749
104		1.77												748
105		1.17										LIMESTONE: wackestone, same as above, light gray (N7), slightly weathered (SW), weak (R2), abundant fossils, silty matrix, laminated silt beds. [Glen Rose Formation]		747
106		2.32												746
107		2.5	21	4.9 5.0	98	SW	R3			1019-24		No shale beds 107' to 109.6'		745
108		2												744
109		2.67												743
110		1.52										LIMESTONE, packstone, medium light gray (N6) to medium bluish gray (5B 5/1), medium strong (R3), slightly weathered (SW), interbedded with wackestone, mud filled bioturbations, violent reaction to HCl. [Glen Rose Formation]		742
111		2.23				SW	R3							741
112		3.02	22	5.0 5.0	100					1019-25				740
113		3.17										LIMESTONE: wackestone, medium gray (N5), medium strong (R3), fresh, small HCl reaction. [Glen Rose Formation]		739
114		2.25				F	R2							738
115							R2							

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-1019</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
115		2.17										LIMESTONE, packstone, shaley, medium bluish gray (5B 5/1), weak (R2), abundant shale interbeds, weak HCl reaction, slightly weathered. [Glen Rose Formation]		737
116		2.12				SW	R2							736
117		3.35	23	5.0 5.0	100							LIMESTONE: wackestone, medium light gray (N6), weak to medium strong (R2 to R3), slightly weathered (SW), few silt bioturbations, shale bed 118' to 118.2'. [Glen Rose Formation]		735
118		1.83				SW	R3							734
119		1.87							1019-26					733
120		1.5										LIMESTONE: wackestone, same as above, medium gray (N5), weak (R2), slightly weathered (SW), mud filled bioturbations, fine grained clasts. [Glen Rose Formation]		732
121		3.17				F	R3							731
122		2.02	24	5.0 5.0	100									730
123		1.9												729
124		1.78							1019-27			LIMESTONE MICRITE, light gray (N7), fresh, very few bioturbations with higher clast concentraion from 123.2 to 123.9', (R3), medium strong, micrite often has silty matrix, coal (lignite) seams at 127.6'. [Glen Rose Formation]		728
125		2.85												727
126		2.5				F	R2-R3							726
127		2.23	25	5.0 5.0	100									725
128		2.52							1019-28					724
129		2.1				SW	R3							723
130														

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1019</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
130		1.87										LIMESTONE, silty wackestone, medium dark gray (N4), medium strong (R3), fresh, violent reaction to HCl, abundant biotubations, low clast density, fossiliferous. [Glen Rose Formation]		722
131		2.45												721
132		2.15	26	5.0	100	SW	R3							720
133		2.1												719
134		2.18								1019-29				718
135		2.25				SW	R1					LIMESTONE wackestone, silty, same as above, (N6), medium strong (R3), slightly weathered (SW). [Glen Rose Formation]		717
136		2.32				SW	R3			1019-30		SHALE, dark gray (N3), very weak (R1), slightly weathered (SW), fossiliferous, minor HCl reaction. [Glen Rose Formation]		716
137		3.17	27	5.2	100							LIMESTONE: wackestone, very light gray (N7), medium strong (R3), slightly weathered (SW), abundant mud filled fractures. [Glen Rose Formation]		715
138		4.2				F	R1-R2						Length of recovery stretched due to mechanical breaks.	714
139		5.17				SW	R2					SHALE, greenish gray to medium dark gray (N4- 5G 4/1), very weak to weak (R1 to R2), fresh (F), violent HCl reaction. [Glen Rose Formation]		
140		2.85										LIMESTONE, shaley micrite, weak (R2), massive, few clasts, fresh, violent reaction to HCl, sand sized clasts, mud filled bioturbations with slightly larger clasts (rip-ups?). [Glen Rose Formation]		712
141		3.3				SW	R2-R3							711
142		4.32	28	5.0	100									710
143		3.43												709
144		5.17				SW	R2-R3			1019-31				708
145														

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1019</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
145		2.85										LIMESTONE, wackestone, silty, abundant bioturbations, more abundant clasts, medium strong (R3), medium light gray to medium dark gray (N6-N4), abundant shale beds containing clasts of wackestone, bioturbations also are abundant. [Glen Rose Formation]		707
146		2.52												706
147		3.02	29	5.0	100	SW	R2-R3							705
148		4.85							1019-32					704
149		2.93												703
150		1.78										LIMESTONE, wackestone, abundant mud filled bioturbations, medium to medium light gray (N5 - N6), weak to medium strong (R2 - R3), slightly weathered (SW), violent reaction to HCl, matrix is shale limestone combination. [Glen Rose Formation]		702
151		1.62												701
152		1.85	30	5.0	100	SW	R2-R3						700	
153		2.58											699	
154		3.17											698	
155		1.78										LIMESTONE: wackestone, same as above, abundant mud filled bioturbations, shale bed. [Glen Rose Formation]		697
156		3.12				SW	R2							696
157		3.25	31	5.0	100	SW	R2-R3						695	
158		3.68							1019-33			SHALE, calcareous, medium dark gray (R1), slightly weathered (SW), fossiliferous, strong reaction to HCl. [Glen Rose Formation]  LIMESTONE: wackestone, shaley, high clasts content, weak (R2), slightly weathered (SW), bioturbations, violent reaction to HCl. [Glen Rose Formation]		694
159		3.03				SW	R2							693
160														

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1019</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
160		2.83										LIMESTONE wackestone, silty, same as above, coal seams at 160.1' abundant shale beds/ rip up clasts, and bioturbations. [Glen Rose Formation]		692
161		1.97												691
162		2.32	32	5.0	100	SW	R1						690	
163		1.27											689	
164		1.15											688	
165		1.05										LIMESTONE, wackestone, same as above. [Glen Rose Formation]	687	
166		1.95				SW	R2						686	
167		1.77	33	5.0	100							LIMESTONE, silty packstone, medium light gray to medium gray (N6-N5), weak to medium strong (R2 -R3), slightly weathered (SW), abundant shale beds, fossiliferous. [Glen Rose Formation]	685	
168		1.52				SW	R2-R3							684
169		1.05											683	
170		1.85										LIMESTONE: wackestone, medium light gray (N6), weak (R2), slightly weathered (SW), few bioturbations, abundant large fossils 1.5 - 2 cm, moderate to strong reaction to HCl. [Glen Rose Formation]	682	
171		1.4												681
172		1.4	34	5.0	100	SW	R2						680	
173		1.83											679	
174		1.57											678	
175														


Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1019</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
175		1.77										LIMESTONE: wackestone, medium light gray (N6), weak (R2), slightly weathered (SW), few bioturbations, abundant large fossils 1.5 - 2 cm, moderate to strong reaction to HCl. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	677
176		2.22												676
177			35	5.2 5.0	100	SW	R2							675
178														674
179									1019-35					673
180												LIMESTONE: wackestone, same as above, large bioturbations 180' to 181.5', small bioturbations throughout. [Glen Rose Formation]		672
181		1.5												671
182														670
183			36	4.9 5.0	98	SW	R2-R3							669
184														668
185												LIMESTONE: wackestone, same as above, abundant bioturbations, 185' to 186.1', fossiliferous, silty matrix. [Glen Rose Formation]		667
186		2.67												666
187														665
188			37	4.9 5.0	98	SW	R2							664
189									1019-36					664
190														663

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1019</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
190		1.5										LIMESTONE: wackestone, same as above, bioturbations concentrated from 190' to 190.5' and 193.8' to 195'. [Glen Rose Formation]		662
191		1.43												661
192		1.75	38	5.0	100	SW	R2							660
193		1.8												659
194		1.87												658
195		1.33											LIMESTONE: wackestone, same as above, few bioturbations. [Glen Rose Formation]	657
196		1.7				SW	R2						656	
197		2.83	39	5.0	100								655	
198		3.17				SW	R2		1019-37			SHALE, siltstone, sandy, dark gray (N3), very weak (R1), fresh, No HCl reaction, few fossils. [Glen Rose Formation]	654	
199		2.1											653	
200						F	R2					LIMESTONE, wackestone, same as previous. [Glen Rose Formation]	652	
201												Bottom of hole at 200 feet	End of drilling 1/26/07 at 10:00 am	651
202														650
203														649
204														648
205														





Project Name and Job Number TXU Comanche Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-1020</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'06.71293"N / 97°47'44.33772"W		Total Depth 152.4 feet	
Drilling Contractor and Rig Palmerston and Parish / CME 55		Elevation and Datum 861.937 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 18.4 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 6	Date Started 12/17/06	
		Borehole Inclination Vertical	Logged by Strane	Date Completed 1/11/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 1/30/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0							Organic Material (topsoil)			861
1	OL						<b>RESIDUAL SOIL (RS)</b> LEAN CLAY soft to medium stiff, yellowish brown (10Y5/6), damp to moist, with calcareous deposits			860
2		B-1020 1		3	8.5 18					859
3				4						858
4			B-1020 2	23	7 10		CLAYEY SILT very stiff to hard, pale yellow (2.5Y8/2), dry, with calcareous deposits			857
5				50/4"						856
6	CL/ML		B-1020	23	7 10		possible weathered bedrock layer		Refusal, no sample	855
7				50/0"	0 0					854
8							LEAN CLAY stiff to very stiff, olive yellow (2.5Y6/6), damp, strong reaction to HCl			853
9	CL		B-1020 3	6	18 18					852
10				13						851
11	ML			39			SILT hard, yellowish red (5YR4/6), damp to moist, calcareous, moderate reaction to HCl			850
12			B-1020 4	32	12 11		LEAN CLAY hard, brownish yellow (10YR6/6), damp to moist			849
13	CL			50/5"						848
14							SILT with limestone fragments hard, light brownish yellow, dry to damp			847
15	ML		B-1020 5	50/4"	4 4					

Project Name and Job Number TXU Comanche Peak COI 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">SOIL LOG</h2> <h2 style="margin: 0;">Boring No. B-1020</h2>
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Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
15	ML									
16	CL	B-1020 6		10			 LEAN CLAY with sand very stiff, brownish yellow (10YR6/6), moderate reaction to HCl			846
17				12	15/18				845	
18				14						844
18.4							 Weathered Limestone bedrock			844
18.4							Top of Bedrock at 18.4'		Bedrock at 18.4'	843
19										843
20										842
21										841
22										840
23										839
24										838
25										837
26										836
27										835
28										834
29										833
30										832




Undisturbed sample  
SH = Shelby; P = Pitcher; O = other



Driven (2.5 to 3.0 inch) with liners  
MC = Modified California; O = other



Standard Penetration Test (SPT) sampler

Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG Boring No. B-1020</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'06.71293"N / 97°47'44.33772"W		Total Depth 152.4 feet	
Drilling Contractor and Rig Palmerton and Parrish / CME 55		Elevation and Datum 861.937 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 18.4 feet	
Casing Size and Depth 4" / 18.4 feet		Length of Core Barrel and Bit 5 feet	No. of Core Boxes 9	Date Started 12/17/06	
		Borehole Inclination Vertical	Logged by M. Strane	Date Completed 1/11/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 1/30/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology		Remarks	Elevation (feet)
19		4.9	1	3.8 4.0	95	SW-HW						LIMESTONE: wackestone/sparite with weathered interbeds; grayish yellow (5 Y 8/4); very light gray (N8); slightly weathered to highly weathered; strong; strong HCl reaction; dry to damp; some shale interbeds.	Top of bedrock (Glen Rose Formation) at 18.4'. Began HQ coring at 18.4'.	843	
20		2.58				SW	R1-R2					SHALE: medium gray (N5); very weak to weak; damp; slightly weathered.		842	
21		2.83				F-SW	R3-R4				1020-7	LIMESTONE: wackestone/sparite with shaly interbeds; very light gray (N8) to medium light grey (N6); fresh to slightly weathered; medium strong to strong; strong HCl reaction.		841	
22		2.82												840	
23		3.02												839	
24		2.75												838	
25		5.05	2	5.0 5.0	100	SW-MW	R1-R3					LIMESTONE: siltstone, grades to micrite and back to siltstone; light gray (N7) to medium dark grey (N4); very weak to medium strong; slightly weathered to moderately weathered; dry to damp.		837	
26		4.98													
27		4												835	
28		2.12												834	
29		2.88												833	
30		3.18	3	5.0 5.0	100	SW	R1					SHALE: greenish gray (5 GY 6/1); very weak; slightly weathered; damp; no laminations; some very thin sandy laminae.		832	
31		3.35													
32		1.55				MW	R1					SHALE: greenish grey (5 GY 6/1); moderately weathered; very weak; damp.		830	
33		1.2	4	5.0 5.0	100	F	R4					LIMESTONE: sparite; very light gray (N8); fresh; strong; strong HCl reaction; 0.3' thick mud layer from 34.4'-34.7'; abundantly crystalline calcite and lithics.		829	

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1020</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
34												LIMESTONE: sparite; very light gray (N8); fresh; strong; strong HCl reaction; 0.3' thick mud layer from 34.4'-34.7'; abundantly crystalline calcite and lithics.		828
35		5.4	4	5.0 5.0	100	F	R4							827
36												LIMESTONE: shaley wackestone; medium gray (N5) to medium light gray (N6); weak to medium strong; slightly weathered; wavy shaly textures; moderate HCl reaction.		826
37							R2R3							825
38		2.17				SW	R3					LIMESTONE: wackestone; medium light gray (N6); medium strong; slightly weathered; strong HCl reaction; some burrows.		824
39		1.75					R3-R4					LIMESTONE: silty sparite; no visible clasts; medium dark gray (N4); medium strong to strong; dry; laminations; slightly weathered.		823
40		1.62	5	5.0 5.0	100									822
41		3.18										SHALE: medium dark gray (N4); very weak; many laminar beds; moderately weathered; grades to more clastic at bottom; damp; no reaction to HCl.		821
42		2.57				MW	R1							820
43		0.95										LIMESTONE: wackestone; medium light gray (N6); weak; slightly weathered; dry to damp; some rip-up clasts, reacts moderately to HCl.		819
44		1.45				SW	R2				JRC 3			818
45		1.13	6	5.0 5.0	100	F	R4				JRC 4 JRC 2	LIMESTONE: sparite; very light gray (N8); strong; fresh; some silt filled cracks; dry; violent HCl reaction.		817
46		1.25					R2-R2				JRC1 healed fracture	LIMESTONE: wackestone/packstone; with sparite interbeds; slightly weathered; dry to damp.		816
47		2.25				SW	R1-R2					SHALE: medium gray (N5); very weak to weak; slightly weathered; damp; wavy laminae decrease with depth.		815
48		1.62	7	4.6 5.0	92		R2-R3							814

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1020</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
49		1.02										LIMESTONE: wackestone with shaley interbeds sand silt filled vugs, medium light gray (N6) to light gray (N7); weak to medium strong; damp to dry; some fossils; slightly weathered; strong HCl reaction; increasing shale content with depth.		813
50		0.8	7	4.6 5.0	92				1020-13	JRC 2				812
51		0.98				SW	R2-R3							811
52		2.02												810
53		7.03											No recovery with inner rod, drillers pulled to entire rod and retrieved run from bit.	809
54		4.95												808
55		7.67	8	3.2 5.0	64	MW	R1-R2					SHALE: medium dark gray (N4); very weak to weak; moderately weathered; damp; weak HCl reaction.		807
56		12.65				SW	R3		1020-14			LIMESTONE: wackestone with shale interbeds; medium gray (N5) to medium light gray (N6); medium strong; damp to dry; strong HCl reaction; many shale laminae.		806
57		4.17				F	R4					LIMESTONE: sparite; very light gray (N8); strong; fresh; mud filled vug.		805
58		3.05				F-SW	R2-R3					LIMESTONE: wackestone; sparite, with shale/mudstone interbeds; very light gray (N8); moderate HCl reaction; fresh to slightly weathered; weak to medium strong; many shaly cracks.	Depth check, start 1/8/07	804
59		3.15												803
60		2.2	9	4.7 5.0	94	SW	R2		1020-15			LIMESTONE: wackestone; light gray (N7); weak; many shaly cracks; slightly weathered.		802
61		4.03										LIMESTONE: sparite, with shale interbeds; medium strong; fresh to slightly weathered; dry; reacts strongly to HCl.		801
62		4.88				F-SW	R3							800
63		3.55	10	5.0 5.0	100				1020-16					799

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
64		2.32					R3					SHALE: medium gray (N5) to dark gray (N3); extremely weak to weak; moderately weathered; damp to moist; weak HCl reaction; many visible laminae.		798
65		6.92	10	5.0 5.0	100	MW	R0-R2							797
66		7.22												796
67		4.15				F	R4					LIMESTONE: sparite; very light gray (N8); fresh; dry; strong; strong HCl reaction.		795
68		5.32										SHALE: with wackestone interbeds (up to 0.2' thick); medium dark gray (N4) to light gray (N7); very weak to medium strong; slightly weathered; dry to damp; moderate HCl reaction.		794
69		4.9								1020-17				793
70		5.15	11	4.9 5.0	98		R1-R3							792
71		3.48												791
72		3.33										LIMESTONE: wackestone; light gray (N7) to very light gray (N8); medium strong; dry; fresh to slightly weathered; strong HCl reaction; several shale filled burrows; very few visible grains.		790
73		2.35				SW	R3			1020-18				789
74		5.27												788
75		3.33	12	4.6 5.0	92		R1					SHALE: medium dark gray (N4) to dark gray (N3); very weak; slightly weathered; damp; no HCl reaction.		787
76		3.37												786
77		4.77					R2					LIMESTONE: wackestone/packstone; medium dark gray (N4) to light gray (N7); weak; slightly weathered; abundant fossils; violent HCl reaction, very thin shale laminae (<0.1').		785
78		5.12	13	5.0 5.0	100		R1					LIMESTONE: shale; medium dark gray (N4) to dark gray (N3); very weak; slightly weathered; no HCl reaction; damp.		784

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1020</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
79		3.9					R1					LIMESTONE: shale; medium dark gray (N4) to dark gray (N3); very weak; slightly weathered; no HCl reaction; damp.		783
80		2.17	13	5.0 5.0	100	SW	R2		1020-19			LIMESTONE: wackestone/packstone; medium dark gray (N4) to light gray (N7); weak; slightly weathered; abundant fossils; violent HCl reaction, very thin shale laminae (<0.1').		782
81		4.65					R1					LIMESTONE: shale; medium dark gray (N4) to dark gray (N3); very weak; slightly weathered; no HCl reaction; damp.		781
82		1.87										LIMESTONE: wackestone grading to packstone; very light gray (N8) to light gray (N7); dry; fresh; medium strong; violent HCl reaction; large burrow at 83.3'.		780
83		1.4												779
84		1.25				F	R3							778
85		2.22	14	5.0 5.0	100									777
86		2.02												776
87		2.87							1020-20			LIMESTONE, packstone, med grey to light grey, weak, slightly to moderately weathered, damp sand size grains, reacts strongly to hcl		775
88		1.83				SW-MW								774
89		1.37												773
90		1.83	15	5.0 5.0	100		R2							772
91		1.75										LIMESTONE: wackestone with packstone interbeds; medium light gray (N6) to light gray (N7); weak to medium strong; dry to damp; violent HCl reaction.		771
92		1.68				SW								770
93		1.75	16	5.0 5.0	100		R3							769

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1020</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
94		1.65										LIMESTONE: packstone; with silt filled burrows; medium gray (N5) to medium light gray (N6); medium strong; slightly weathered; dry to damp; strong HCl reaction; abundant silt filled vugs and burrows; abundant rip up clasts; large silt filled crack (0.05') thick at 97.5', becoming less silty below 97.5'; some wackestone interbeds (<0.2'); large burrow at 103.2'; angular; fine grains.		768
95		1.73	16	5.0 5.0	100				1020-22					767
96		1.47												766
97		2.7												765
98		1.5												764
99		1.23					R3							763
100		1.58	17	5.0 5.0	100									762
101		2.17				SW			1020-23					761
102		2.8												760
103		2.8												759
104		1.62										Large burrow at 103.2'. LIMESTONE: packstone; same as above with interbedded silt deposits; medium light gray (N6) to light gray (N7); medium strong; strong HCl reaction; rip-up clasts.	758	
105		1.35	18	5.0 5.0	100							Large silt deposit at 105', with angular, fine grains.	757	
106		1.18											756	
107		1.4					R2						755	
108		2.17	19	5.0 5.0	95								754	



Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1020</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
109		1.5							1020-24			LIMESTONE: wackestone; silty; medium gray (N5) to medium light gray (N6); slightly weathered; bioturbation; weak to medium strong; weak HCl reaction.		753
110		2.63					R2					LIMESTONE: wackestone; medium light gray (N6), medium strong; strong HCl reaction; large interbed of silt.		752
111		3.9	19	5.0	95	SW						LIMESTONE: wackestone; medium light gray (N6) to medium gray (N5), weak; weak HCl reaction.		751
112		1.75					R3		1020-25			LIMESTONE: wackestone; medium light gray (N6); abundant silt filled bioturbation; very thin; strong HCl reaction; medium strong.		750
113		2.23										LIMESTONE: packstone with interbedded wackestone layers; medium light gray (N6) to light gray (N7); damp; weak to medium strong; wackestone from 113.1'-113.4'; moderate to very strong HCl reaction; bioturbation 114.5'-114.9', few below 115.4', slightly weathered to fresh.		749
114		1.57												748
115		1.57	20	5.1	100	SW-F	R2-R3		1020-26					747
116		1.55											Length of recovery stretched due to mechanical breaks.	746
117		2.9												745
118		3.17				SW						LIMESTONE: wackestone; with interbedded silt deposits; medium dark gray (N4) to medium light gray (N6); medium strong; thinly bedded silt; strong HCl reaction.		744
119		1.25				F						LIMESTONE: packstone; gradational upper contact; medium light gray (N6); medium strong; bioturbation and veins filled with silt; slightly weathered; strong hcl reaction.		743
120		1.17	21	5.0	100	SW	R3		1020-27					742
121		0.88												741
122		2.73				SW						LIMESTONE: wackestone; medium light gray; medium strong; slightly weathered; bioturbation; rip up clasts; moderate HCl reaction.		740
123		2	22	5.0	100	SW	R2-R3				6 Jt roughness			739

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908




**ROCK LOG**  
**Boring No. B-1020**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)								
124		2.13	22	5.0 5.0	100	SW	R2-R3					LIMESTONE: wackestone with interbedded packstone; medium dark gray (N4) to medium light gray (N6); slightly weathered; rip-up clasts of wackestone in wackestone matrix 123.8'-124.4'; medium strong to weak; moderate HCl reaction.		738								
125		2.25																			737	
126		2.27																	LIMESTONE: micrite grading to wackestone; light gray (N7); medium strong; slightly weathered; very thin bands of wackestone; strong HCl reaction.		736	
127		2.42											SW	R3							735	
128		1.95	23	5.0 5.0	100	SW	R2-R3					LIMESTONE: wackestone grading to packstone; medium light gray (N6) to medium gray (N5); minor HCl reaction; rip-up clasts; weak to medium strong; slightly weathered; packstone filled bioturbation.		734								
129		1.32																				733
130		1.93											SW	R2-R3							732	
131		4.47																clast filled fracture JRC 5			731	
132			24	5.0 5.0	100	SW	R3					LIMESTONE: micrite; very light gray (N8); medium strong, no HCl reaction; fresh; very finely laminated; dark packstone deposits 132.4-133.9; larger thin beds of packstone.		730								
133		1.65																				729
134		2.67											SW								728	
135		1.95												R3					LIMESTONE: packstone with rip-up clasts of micrite; thinly laminated micrite zone; medium light gray (N6); slightly weathered; medium strong; medium to strong HCl reaction.		727	
136		1.63	25	5.0 5.0	100	SW								726								
137		2.22																				725
138		2.93																				724

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1020</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
139		2.42				SW								723
140		2.17	25	5.0 5.0	100	SW	R3					LIMESTONE: wackestone; medium light gray (N6); cracks filled with packstone; beds of packstone; medium strong; very strong HCl reaction; more micritic 138.9'-140.1'; 140.1'-141.4' includes many rip up clasts of micritic material.		722
141		2.28												721
142		2.75							1020-31			LIMESTONE: packstone; medium gray (N5); rip-up clasts of wackestone; weak to medium strong; slightly weathered; strong HCl reaction; abundant bioturbation.		720
143		5.67				SW	R2-R3							719
144		4.33												718
145		6.5	26	4.8 5.0	96	MW	R0-R1		1020-32			SHALE: dark gray (N3) to medium dark gray (N4); thinly laminated; extremely to very weak; moderately weathered.		717
146		3.83									mud filled fracture contact fracture, JRC 7	LIMESTONE: wackestone; light yellowish gray (5 YR 8/1); medium strong; slightly weathered; moderate HCl reaction.		716
147		2.17					R3					LIMESTONE: sandy wackestone; dark greenish gray (5 G 4/1); medium strong; slightly weathered; silt filled bioturbation; weak to moderate HCl reaction.		715
148		6.47							1020-33			LIMESTONE: sandy wackestone, grading to packstone; medium gray (N5) grading to dark greenish gray (5 G 4/1); rip-up clasts toward bottom; HCl reaction decreases with depth; hardness decreases from medium strong to weak; slightly weathered.		714
149						SW	R2-R3							713
150		2.35	27	5.0 5.0	100									712
151		4.58					R1					LIMESTONE: silty wackestone; medium gray (N5); very weak; slightly weathered; weak to moderate HCl reaction; wackestone rip-up clasts.		711
152		3.78					R2-R3					LIMESTONE: wackestone; with trace sand; medium light gray (N6); weak to medium strong; slightly weathered; silt filled bioturbation.		710
153													Total depth drilled: 152.4'	709




Project Name and Job Number TXU Comanche Peak COL 1908		 WLA William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-1021</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'07.84854"N / 97°47'39.21954"W		Total Depth 150 feet	
Drilling Contractor and Rig Palmerston and Parish / CME 55		Elevation and Datum 845.175 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 15.4 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 6	Date Started 1/28/07	
		Borehole Inclination Vertical	Logged by T. Glidden	Date Completed 1/29/07	


Reviewed by / Date R. Ortiz 2/6/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
0							<b>RESIDUAL SOIL</b>		845
0.5	CL		B-1021 1	7	$\frac{7}{18}$	4.5	LEAN CLAY hard, brownish yellow (10YR6/8), damp, few calcareous deposits, reacts to HCl		844
1.5				16					843
2.5				9					842
3.5							LEAN CLAY with sand stiff, brownish yellow (10YR6/6), damp, well graded, calcareous deposits and few limestone fragments, reacts to HCl		841
4.5	CL		B-1021 2	5	$\frac{14}{18}$	2.5			840
5.5				11					839
6.5				12					838
7.5			B-1021 3	40	$\frac{8}{18}$		CALCAREOUS DEPOSITS dense, pale yellow (2.5Y8/2), dry, reacts to HCl auger refusal at 6.0'		837
8.5				15					836
9.5				5					835
10.5	CL		B-1021 4	4	$\frac{14}{18}$	3.5	LEAN CLAY very stiff, white to yellow (2.5Y8/1 - 2.5Y7/6), with calcareous deposits, reacts to HCl		834
11.5				6					833
12.5				6					832
13.5	CL/ML		B-1021 5	7	$\frac{18}{18}$	2.5	CLAYEY SILT medium stiff, brownish yellow (10YR6/8), damp, possible perched groundwater	groundwater possibly perched	831
14.5				4					830
15.5	CL		B-1021 6	4	$\frac{19}{18}$	4.5	LEAN CLAY hard, olive yellow to light gray (2.5Y6/8 - 5Y7/2), damp, occasional carbonate pebbles		829
16.5				8					828
17.5				11					827

Project Name and Job Number TXU Comanche Peak COL 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">SOIL LOG</h2> <h2 style="margin: 0;">Boring No. B-1021</h2>
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Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
15	CL								830
15.4			B-1021	50/1"	Q 1		Top of Bedrock at 15.4'	Bedrock at 15.4'	829.4
16									829
17									828
18									827
19									826
20									825
21									824
22									823
23									822
24									821
25									820
26									819
27									818
28									817
29									816
30									

 Undisturbed sample SH = Shelby; P = Pitcher; O = other	 Driven (2.5 to 3.0 inch) with liners MC = Modified California; O = other	 Standard Penetration Test (SPT) sampler
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Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG Boring No. B-1021</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'07.84854"N / 97°47'39.21954"W		Total Depth 150 feet	
Drilling Contractor and Rig Palmerton & Parrish / CME 55		Elevation and Datum 845.175 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 15.4 feet	
Casing Size and Depth 4" / 15.4 feet		Length of Core Barrel and Bit 8.6 feet	No. of Core Boxes 10	Date Started 1/28/07	
		Borehole Inclination Vertical	Logged by T. Glidden	Date Completed 1/29/07	

Reviewed by / Date R. Ortiz 2/6/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)									
16		2.13	7	1.3 1.6	81							LIMESTONE: very light gray (N8); dry; weak; slightly weathered; common shell fragments up to ~4 mm; reacts to HCl; slightly weathered [Glen Rose Formation].	Auger refusal at 15.4' 250 psi/1850 rpm	829									
17	NM																			Moderately weathered zone 17.2'-17.3'.	Barrel raised and lowered repeatedly, run stopped briefly 300 psi/1900 rpm; run stopped when drain pipe came apart	828	
18		2.88	8	5.0 5.0	98	SW	R2					Thin (1 mm) black organic layer at 18.4'.		827									
19	NM																				0.1' stickup added to run 8	826	
20		2.73																			LIMESTONE: wackestone, silty; medium gray (N5); damp; weak to very weak (R2-R1); moderately weathered (MW); increasingly micritic starting at 21.3'; reaction to HCl. [Glen Rose Formation].		825
21		1.17	9	5.1 5.0	100	MW	R1-R2							824									
22		2																			LIMESTONE: micrite, silty; grades back to wackestone by 22.9'; light gray (N7) to medium gray (N5); weak to very weak (R2-R1); slightly weathered (SW); shell debris at 23.3'; slight reaction to HCl [Glen Rose Formation].	gradational contact	823
23		3.53																					822
24		2.1																			SHALE: interbedded shale and calcareous mud; medium dark gray (N4); extremely weak (R0); damp; moderately weathered (MW); no reaction to HCl. [Glen Rose Formation].		821
25		2.68	10	5.1 5.0	100	MW	R0							820									
26		1.78																			LIMESTONE: wackestone; very light gray to medium gray (N8 to N5); weak to very weak (R2-R1); slightly to moderately weathered (SW-MW); fossiliferous; reaction to HCl [Glen Rose Formation]. Bioturbated 25.7'-26.2'. Becoming silty below 26'. Clean, oolitic zone 27.2'-27.4'. Lower silt zone 27.4'-28.4'. Bioturbated with shell fragments 27.5'-28.3'.	Length of recovery stretched due to mechanical breaks.	819
27		3.2																					818
28		1.92	10	5.1 5.0	100	SW	R1-R2							817									
29		0.78																				816	
30		0.88	10	5.1 5.0	100	SW	R1-R2							815									
		1.37																				Length of recovery	815

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1021</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
31		1.37	10	5.1 5.0	100							LIMESTONE: wackestone; very light gray to medium gray (N8 to N5); weak to very weak (R2-R1); slightly to moderately weathered (SW-MW); fossiliferous; reaction to HCl [Glen Rose Formation]. Heavily bioturbated 30.7'-31.6'.	stretched due to mechanical breaks.	814
		1.27												813
32		1.17	11	5.2 5.0	100	SW	R1-R2					SHALE: calcareous mud, medium dark gray (N4); damp; extremely weak (R0); moderately weathered (MW); no reaction to HCl; wackestone interbed .05' at 40.4' [Glen Rose Formation].	Length of recovery stretched due to mechanical breaks.	812
33		0.92												811
34		1.78												810
35		NM												809
36		1.15	12	5.0 5.0	100	MW	R1-R2					LIMESTONE: wackestone; very light gray (N8); weak (R2); slightly weathered (SW); dry; reaction to HCl. [Glen Rose Formation].	300psi/ 1900 rpm, good H2O flow, clear	808
37		3.63				SW	R0				807			
38		1.78				MW	R2				806			
39		3.98									805			
40		1.08	13	5.0 5.0	100	SW	R1-R2				LIMESTONE: wackestone, micritic; very light gray (N8); dry; weak (R2); slightly weathered (SW); reaction to HCl; bioturbated with increase in silt content from 41.3' to 41.6'; highly weathered 41.8' to 42.0'. [Glen Rose Formation].		804	
41		2.53											803	
42		3.18											802	
43		1.68	13	5.0 5.0	100	SW-MW	R1-R2				LIMESTONE: wackestone; very light gray (N8); dry to damp; weak to very weak (R2-R1); reaction to HCl; silty; abundant shell fragments with bioturbation throughout; shale interbeds at 44.3', 45.2', 45.6'; slightly to moderately weathered; increasing silt content toward gradational lower contact [Glen Rose Formation].		801	
44		1.48											800	
45		2.97												800

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1021</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
46		2.97	13	5.0 5.0	100	SW-MW	R1-R2					Fossiliferous, with abundant bioturbation below 45.7'.		799
47		1.95												
48	NM													
49		7.88								1021-14		SHALE: shale and calcareous shale; medium dark gray to dark gray (N4 to N3); damp; extremely weak (R0); moderately weathered (MW); no reaction to HCl; shelly detrital layer from 50.6' to 50.8' [Glen Rose Formation].		797
50		6.2	14	5.0 5.0	100	MW	R0						drill chatter	796
51		4.93												
52		2.25				SW	R2			1021-15		LIMESTONE: wackestone; very light gray (N8); dry; slightly weathered (SW); weak (R2); strong reaction to HCl; mud interbed 51.6' to 51.8' preceded by 2 cm highly weathered limestone; fossiliferous with some recrystallization [Glen Rose Formation].		794
53		3.08										SHALE: shale and calcareous shale; medium dark gray (N4); damp; extremely weak (R0); moderately weathered (MW); wackestone interbeds up to 0.1'; no reaction to HCl in mudstone [Glen Rose Formation].		793
54	NM					MW	R0						Drill stoppage; water tank empty	792
55		2.7	15	5.0 5.0	100									791
56		1.78												
57		3.22				SW-MW	R1-R2			1021-16		LIMESTONE: wackestone; white (N9) to very light gray (N7); dry; weak to very weak (R2-R1); slightly weathered to moderately weathered (SW-MW); bioturbated throughout, with silt filled burrows thinly spaced; reaction to HCl; extremely wet, calcareous mud; light gray (N7) at 55.2' [Glen Rose Formation].		789
58		3.97												788
59		2.58	16	5.0 5.0	100	SW-MW	R0			1021-17		SHALE: shale and calcareous shale; dark gray (N3); extremely weak (R0); dry to damp; moderately weathered to slightly weathered (MW-SW); wackestone interbed at 58.6'; silty micritic laminations 57.2' to 58.3' [Glen Rose Formation].		787
60	NM													
	NM													785



Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1021</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)	
61	NM		16	5.0 5.0	100	SW	R1-R2					LIMESTONE: wackestone; very light gray to light gray (N8 to N7); weak to very weak (R2-R1); bioturbated with upper contact material infilling burrows; irregularly spaced silty laminations; reaction to HCl; slightly weathered (SW). [Glen Rose Formation].	Stopwatch malfunction	784	
62	NM					MW	R0								SHALE: shale and calcareous mud interbeds; medium dark gray (N4); moderately weathered (MW); extremely weak (R0); no reaction to HCl. [Glen Rose Formation].
63	2.1		17	5.0 5.0	100							LIMESTONE: wackestone; very light gray (N8); dry; weak to very weak (R2-R1); slightly weathered (SW), reaction to HCl; [Glen Rose Formation]. Bioturbated 62.3'-64.7', with silt-filled burrows.		782	
64	1.23					SW	R1-R2								781
65	2.1														Silt absent 65.1'-66.3', with silty laminations below 66.3'.
66	1.23		18	5.0 5.0	100					1021-18				779	
67	0.78													Calcareous mudstone interbed at 66.3'.	778
68	1.3					SW	R1-R2					1021-19		Bioturbation 66.9'-67.1'.	777
69	1.02		19	5.0 5.0	100									776	
70	1.13														775
71	1.5													Slight increase in weathering below 70.9'.	774
72	1.32		20	5.0 5.0	100									773	
73	1.5					SW	R1-R2							Rip-up clasts (up to 1 cm) at 71.5'-72.0'.	772
74	1.72													Rip-up clasts 72.4' to 72.7'. Silty laminations to 72.8'.	771
75	1.02		21	5.0 5.0	100									770	
76	1.12					SW						1021-20		Silty laminations from 73.2' to 74.4'.	770
77														770	

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-1021**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)	
76		1.12	19	5.0 5.0	100							LIMESTONE: wackestone; very light gray (N8); dry; weak to very weak (R2-R1); slightly weathered (SW), reaction to HCl; [Glen Rose Formation]. Bioturbation at 75.6'.		769	
		1.63													
77		NM				SW	R1-R2							768	
78		1.32												767	
79		1.5	20	5.0 5.0	100									766	
		1.65													
80		1.47				SW	R1-R2						Silty burrow infilling with shell fragments at 80.8, silt absent 80.8'-81.8'.;	764	
81		2.22												763	
82		0.57												762	
83		0.58	21	5.0 5.0	98								LIMESTONE: wackestone, silty; medium light gray (N6); dry to damp; very weak (R1); moderately weathered (MW); bioturbated; thinly spaced wavy silt beds up to 1"; slight reaction to HCl [Glen Rose Formation].	0.1' stickup added to run 21	761
		0.9													
84		1.4												759	
85		1.02												758	
86		1.03	22	5.0 5.0	100								Wavy silt filled cracks thinly spaced 86.9' to 88.0'. Bioturbated with large mud filled burrows from 87.1' to 87.7'.		757
		1.02													
87		0.85					R2							755	

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-1021**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
91		0.85	22	5.0 5.0	100								Silt absent 90.2' to 90.7'. Mud filled burrows 90.7' to 91.0'.	754
		1.23												
92		1.4	23	5.0 5.0	98		R2						Silty laminations, moderately weathered 92.6'-93.8'.	753
93		0.92												
94		1.63	24	5.0 5.0	100		SW-MW						0.1' stickup added to run 23 from run 22	752
95		0.73												
96		1.38	25	5.0 5.0	98		R2							751
97		0.58												
98		1.35	25	5.0 5.0	98		R2							750
99		1.18												
100		1.22	25	5.0 5.0	98		R2							749
101		1.18												
102		NM	25	5.0 5.0	98	SW-MW	R2						LIMESTONE: micrite; medium light gray (N6); dry; weak (R2); slightly weathered (SW); fossiliferous; reacts to HCl; gradational upper contact. [Glen Rose Formation].	748
103		1.68												
104		1.33	25	5.0 5.0	98	F-MW	R1-R2						Highly weathered gradational zone; laminated silts, detrital shell fragments; very weak (R1). LIMESTONE: micrite, oolitic; white to light gray (N9 to N7); fresh to moderately weathered (F-MW); dry; weak to very weak (R2-R1); reacts to HCl; bioturbated. [Glen Rose Formation].	747
105		1.92												
		1.83												746
														745
														744
														743
														742
														741
														740

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1021</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)				
106		1.83	25	5.0 5.0	98	SW-MW	R2					LIMESTONE: micrite, silty; very light gray to medium light gray (N8 to N6); slightly to moderately weathered (SW-MW); minor ovoid; reacts to HCl; weathering increases towards lower contact; silty laminations 106.5 to 107'; weak (R2). [Glen Rose Formation].		739				
107		1.78														LIMESTONE: wackestone, oolitic; very light gray to light gray (N8 to N7); dry; moderately to slightly weathered (MW-SW); extensively bioturbated; wavy silt laminations with shell debris up to 1.5 cm thick; weathered wackestone rip-up clasts at 107.6'; reaction to HCl; very weak to weak (R1-R2). [Glen Rose Formation].	0.1' stickup added to run 26 from run 27	738
108		1.67	26	5.0 5.0	100	SW	R1-R2					LIMESTONE: micrite, silty; very light gray to yellowish gray (N8 to 5Y8/1); weak to very weak (R2-R1); slightly weathered (SW); thinly bedded; wackestone; rip-up clasts at upper contact; and at 109.8'; 1.5 cm silty wackestone bed at 109.6'. [Glen Rose Formation].		737				
109		1.17														LIMESTONE: wackestone; very light gray (N8); weak (R2); fresh to slightly weathered (F-SW); dry; reacts to HCl; increasingly oolitic with depth; silty laminations and bioturbated to basal contact. [Glen Rose Formation].		736
110		1.42															Increased silt content below 113.2'.	735
111		1.23																734
112		1.27	27	5.0 5.0	96	F-SW	R2							733				
113		NM																732
114		1.15																731
115		0.97	28	5.0 5.0	98	SW-MW	R2					LIMESTONE: micrite; light gray to yellowish gray (N7 to 5Y 8/1); slightly to moderately weathered (SW-MW); weak (R2); silty laminations; reacts to HCl; oxidation evident starting at 117.1; mud filled burrows at upper contact. [Glen Rose Formation].		730				
116		1.12																729
117		2.15	28	5.0 5.0	98	SW-MW	R2					LIMESTONE: wackestone; very light gray to light gray (N8 to N7); dry; slightly to moderately weathered (SW-MW); weak (R2); silty laminations from 117.7 to 118.6; large lignite clast ~2cm at 118.5'; clay filled burrows at 118.6'. [Glen Rose Formation].		728				
118		1.75																727
119		1.32																726
120		1.48										LIMESTONE: micrite; very light gray (N8); dry; weak (R2); slightly weathered (SW); reacts to HCl; irregularly spaced silt laminations; bioturbation at basal contact with micritic infill. [Glen Rose Formation].	0.2' stickup added to run 28 from run 27	725				
		1.23												725				

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1021</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)			
121		1.23	28	5.0 5.0	98	SW	R2					LIMESTONE: wackestone; light gray to medium light gray (N8 to N7); dry; very weak to weak; slightly to moderately weathered (SW-MW); pervasive to wavy silt laminations; reacts to HCl; bioturbated from 122.5' to 127.3'. [Glen Rose Formation].	radio calls/ visits in prep for hammer tests - missed run times	724			
122	NM																723
123	NM																
124			29	5.0 5.0	100	SW-MW	R1-R2						0.1' stickup added to run 29 from run 30	721			
125	NM																720
126	NM														1021-29		
127		2.02												718			
128		6.43												717			
129		2.55	30	5.0 5.0	100	SW	R2					SHALE: shale and calcareous shale; medium dark gray (N4); extremely weak (R0); moderately weathered; slight reaction to HCl; abundant shell fragments. [Glen Rose Formation].		716			
130		3.32							SW	R2				LIMESTONE: micrite; very light gray (N8); dry; weak (R2); slightly weathered (SW); silty cracks medium spaced; silt filled burrow at basal contact; reacts to HCl. [Glen Rose Formation].		715	
131		2.52				MW-HW	R0					SHALE: shale and calcareous shale; damp; moderately to highly weathered (MW-HW) with secondary chlorite probable based on color; dark greenish gray to greenish gray (5 G 4/1 to 5 G 6/1) micrite interbed at 131.3; extremely weak (R0). [Glen Rose Formation].		714			
132		1.77												713			
133		1.97	31	5.1 5.0	100	SW-MW	R1					LIMESTONE: wackestone; very light gray to light gray (N8 to N7); very weak; slightly to moderately weathered (SW-MW); reaction to HCl; wavy silt laminations; rip-up clasts up to 4 mm throughout; slight reaction to HCl; bioturbation prominent throughout [Glen Rose Formation].		712			
134		1.7														711	
135		2.22										Shale interbed 135.1' to 135.3'.	Length of recovery	710			

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-1021**


Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
136		2.22	31	5.1 5.0	100							Bioturbated below 132.6'.	stretched due to mechanical breaks.	709
		2.42										708		
137		1.63	32	5.1 5.0	100							Oolitic interval 138.0'-139.2.	Length of recovery stretched due to mechanical breaks.	707
138		1.4										706		
139		0.97										705		
140		1.67	33	5.0 5.0	100							Prominent rip-up clasts up to 2" from 145.0' to 145.8'.		704
141		1.67										703		
142		1.68										702		
143		1.35										701		
144		1	34	2.7 3.0	90							Shale interbed 145.8 to 146.1'.		700
145		2.37										699		
146		1.6	34	2.7 3.0	90							Increasing silt content beginning 149'.		698
147		1.45										697		
148		3.93										696		
149		0.85	34	2.7 3.0	90							Grades to shale at 149.6'.		695
150												Total depth drilled		695

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-1021**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
151													150.0'	694
152														693
153														692
154														691
155														690
156														689
157														688
158														687
159														686
160														685
161														684
162														683
163														682
164														681
165														680

Project Name and Job Number TXU Comanche Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-1022</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'06.25714"N / 97°47'43.42690"W		Total Depth 150 feet	
Drilling Contractor and Rig Geotechnology / CME 55		Elevation and Datum 863.48 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 18.5 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 6	Date Started 1/12/07	
		Borehole Inclination Vertical	Logged by J. Cox	Date Completed 1/22/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 1/30/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0										863
1			B-1022 1	11				<b>RESIDUAL SOIL (RS)</b> LEAN CLAY hard, pale yellow (2.5Y7/4), with calcareous deposits, strong reaction to HCl		862
2				13	14/18	4.51				861
3				17						860
4			B-1022 2	5				olive yellow (2.5Y6/8), high reaction to HCl		859
5				7	18/18	4.51				858
6	CL			8						857
7			B-1022	50/3"	0/3			possible weathered Limestone ledge	NO RECOVERY	856
8										855
9			B-1022 3	5				very stiff, slight reaction to HCl		854
10				9	18/18	3				853
11				23						852
12	ML		B-1022 4	27				SILT with limestone fragments hard, pale yellow (2.5Y7/3), few calcareous deposits		851
13				18	18/18	4.51		thin layer of clay with silt, 12.0' - 12.4'		850
14				50						849
15			B-1022 5	50/6"	6/6	1		LIMESTONE FRAGMENTS with silt very dense, (extremely weathered limestone)		849



Project Name and Job Number TXU Comanche Peak COI 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">SOIL LOG</h2> <h2 style="margin: 0;">Boring No. B-1022</h2>
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Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
15							Lithology		Elevation (feet)
15.5							SILT stiff to hard, pale yellow (2.5Y7/3)		848
16									847
16.5									846
17	ML		B-1022 6	8 12 16	18 18	1			845
18									844
18.5							Top of Bedrock at 18.5'	Bedrock at 18.5'	843
19									842
20									841
21									840
22									839
23									838
24									837
25									836
26									835
27									834
28									833
29									832
30									831




Undisturbed sample  
 SH = Shelby; P = Pitcher; O = other



Driven (2.5 to 3.0 inch) with liners  
 MC = Modified California; O = other



Standard Penetration Test (SPT) sampler

Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG Boring No. B-1022</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'06.25714"N / 97°47'43.42690"W		Total Depth 150 feet	
Drilling Contractor and Rig Geotechnology / CME 55		Elevation and Datum 863.48 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 18.5 feet	
Casing Size and Depth 4" / 20 feet		Length of Core Barrel and Bit 8.6 feet	No. of Core Boxes 9	Date Started 1/13/07	
		Borehole Inclination Vertical	Logged by J. Cox	Date Completed 1/22/07	

Reviewed by / Date R. Ortiz 2/9/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
19		7										LIMESTONE: wackestone, shaly; light to medium gray (N7-N4); thin shale layers throughout; fresh (F); weak (R2); some bivalve fossils; reaction to HCL on limestone layers. [Glen Rose Formation]		844
20		7.52	1	2.0 2.0	100	F	R2							843
21		4.5											Everything frozen; started drilling at 12:50pm	842
22		3.17												841
23		2.67	2	5.0 5.0	100	F	R1-R2		7					840
24		4.5												839
25		3										SHALE: medium gray (N4); thinly bedded; fresh (F); very weak (R1); no reaction to HCL. [Glen Rose Formation]		838
26		6.17										LIMESTONE: micrite, shaly; medium gray (N5); wavy shale layers; rip up clasts from 26.3 to 26.6; no reaction to HCL; fresh (F); weak (R2). [Glen Rose Formation]		837
27		3.08												836
28		2.25	3	4.9 5.0	97	F	R2							835
29		2.58												834
30		5							8					833
31		6.5												832
32		6	4	4.9 5.0	98	F-MW	R2-R3		9					831
33		3.17										LIMESTONE: packstone, shaly; medium blueish gray (5B 5/1); abundant fossils; slight reaction to HCL. [Glen Rose Formation]		830

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-1022</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)						
34		3.17	4	4.9 5.0	98	F-MW	R2-R3					LIMESTONE: wackestone; light gray (N7); coal seam at 34.1 to 34.2; fresh to moderately weathered (F-MW); weak (R2); slight reaction to HCL. [Glen Rose Formation]	Extremely cold and wet	829						
35		0.83																	828	
36		1.17																		827
37		4	5	4.9 5.0	98	F	R2					LIMESTONE: wackestone, shaly; medium gray(N4); thin wavy beds; rip up clasts; abundant; slight reaction to HCL; fresh (F); weak (R2). [Glen Rose Formation]		826						
38		4.08																	825	
39		2.33																		824
40		2.5												823						
41		2												822						
42		7.25	6	5.0 5.0	100	F	R1-R2					SHALE: medium dark gray(N4); thinly bedded [Glen Rose Formation]		821						
43		6																		820
44		3.42																		819
45		4.33												818						
46		5.4												817						
47		3.58	7	4.9 5.0	98	F	R2					LIMESTONE: packstone; medium gray(N5); thin shale beds; fresh (F); weak (R2); fossils abundant; rip up clasts abundant throughout. [Glen Rose Formation]		816						
48		2.5																		815
		2.58																		

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-1022</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
49		2.58										LIMESTONE: packstone; medium gray(N5); thin shale beds; fresh (F); weak (R2); fossils abundant; rip up clasts abundant throughout. [Glen Rose Formation]		814
50		2.17	7	4.9 5.0	98	F	R2							813
51		2.23												812
52		2.17												811
53		2.25												810
54		7.17	8	5.6 5.0	72	F	R1-R2					SHALE: medium dark gray(N4); thinly bedded; fresh (F); very weak (R1); no reaction to HCL; damp. [Glen Rose Formation]	missing 1.5' of shale??	809
55		8.33										LIMESTONE: packstone; medium gray(N5); thin shale beds; fresh (F); weak (R2); fossils abundant; rip up clasts abundant throughout. [Glen Rose Formation]		808
56		7											stopped drilling for the day 1_15_07/1_16_07	807
57		7.33										SHALE: medium dark gray(N4); thinly bedded; fresh (F); very weak (R1); no reaction to HCL; damp. [Glen Rose Formation]		806
58		8.08												805
59		3.33	9	5.0 5.0	100	F	R2							804
60		7.42												803
61		10.05										LIMESTONE: wackestone; light gray(N7); fresh (F); weak (R2); shale interbeds throughout; rip up clasts from 59.5 to 59.9; 62.9 to 64.5; some bivalve fossils; slight reaction to HCL. [Glen Rose Formation]		802
62		5.67												801
63		7.33	10	4.9 5.0	98	F	R1-R2							800
		4.5												

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-1022**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
64		4.5							15					799
65		4.25	10	4.9 5.0	98	F	R1-R2					SHALE: medium gray(N5); thinly bedded; fresh (F); very weak (R1); no reaction to HCL. [Glen Rose Formation]		798
66		4.7												797
67		11.75												796
68		11.33							16					795
69		4.15	11	4.9 5.0	98	F	R1-R2					LIMESTONE: wackestone; light gray(N7);fresh (F); weak (R2); rip up clasts throughout; abundant fossils; moderate reaction to HCL. [Glen Rose Formation]		794
70		8.67										SHALE: shale, limey; medium to light gray (N5 to N7); fresh (F); very weak (R1); wackestone beds throughout; limestone beds react with HCL; limestone beds from 69.7' to 71.2'. [Glen Rose Formation]		793
71		8												792
72		6.58												791
73		3.75	12	5.0 5.0	100	F	R1-R2		17			LIMESTONE: wackestone; medium gray (N5); fresh (F); very weak to weak (R1-R2); wavy shale beds from 73.1 to 75.3; rip up clasts from 73.2 to 74.6; slight reaction to HCL; more packstone like from 73.2 to 74.6. [Glen Rose Formation]		790
74		3.75												789
75		9											NOTE: picture states 4.3/5.0 recovery; driller retrieved lost seven inches on run 13	788
76		4.45										SHALE: medium dark gray (N4); thinly bedded; fresh (F); very weak (R1); damp; no reaction to HCL. [Glen Rose Formation]		787
77		4	13	5.0 5.0	100	F	R1-R2		18					786
78		3.33												785

Project Name and Job Number  
 TXU Comanche Peak Col  
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**ROCK LOG**  
**Boring No. B-1022**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)											
79		3.33	13	5.0 5.0	100	F	R1-R2					LIMESTONE: wackestone, shaly; light gray (N7); thin beds of shale; fresh (F); weak (R2); abundant rip up clasts; reacts to HCL. [Glen Rose Formation]		784											
80		4.57																						783	
81		9.17																							782
82		5.08	14	5.0 5.0	100	F	R2					LIMESTONE: wackestone; light gray (N7); thin beds of shale throughout; fresh (F); weak (R2); shale bed from 82.5 to 82.8; rip up clasts from 83.6 to 89.0; moderate reaction to HCL. Abundant fossils. Shale bed from 98.2 to 98.5; rip up clasts change to very large in size at 101.3 and continue till 105.9. [Glen Rose Formation]		781											
83		5																						780	
84		2.83																		19					779
85		2.85	15	5.1 5.0	100	F	R2							778											
86		4.08																						777	
87		1.77																							776
88		1.32	16	5.0 5.0	100	F	R2							775											
89		2.75																		20				774	
90		2.38																							773
91		3.9	16	5.0 5.0	100	F	R2							772											
92		2.25																							771
93		2.75																		21					770

Length of recovery stretched due to mechanical breaks.

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-1022**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
94		2.75	16	5.0 5.0	100	F	R2					LIMESTONE: wackestone; light gray (N7); thin beds of shale throughout; fresh (F); weak (R2); shale bed from 82.5 to 82.8; rip up clasts from 83.6 to 89.0; moderate reaction to HCL. Abundant fossils. Shale bed from 98.2 to 98.5; rip up clasts change to very large in size at 101.3 and continue till 105.9. [Glen Rose Formation]		769
95		1.25												768
96		1.5												767
97		2.08	17	5.0 5.0	100	F	R2							766
98		2.25												765
99		2.5												764
100		2.75	18	5.0 5.0	100	F	R2							763
101		2.28												762
102		3.4												761
103		1.75	19	5.1 5.0	100	F	R2							760
104		2												759
105		2.25												758
106		4	3	5.1 5.0	100	F	R2							757
107		2.83												756
108		3												755
		4.08												

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1022</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)	
109		4.08										LIMESTONE: packstone; medium light gray to medium gray(N6-N5); thin shale beds throughout; fresh (F); weak (R2); abundant rip up clasts; bivalve fossils abundant; strong reaction to HCL. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	754	
110		4.17	19	5.1 5.0	100	F	R2								753
111		3.83							24						752
112		3.75										LIMESTONE: wackestone; light gray(N7); fresh (F); weak (R2); rip up clasts abundant; thin shale interbeds; strong reaction to HCL; some fossils. [Glen Rose Formation]		751	
113		3.17							25						750
114		2.42	20	4.9 5.0	98	F	R1-R2					LIMESTONE: packstone; medium light gray to medium gray(N6-N5); thin shale beds throughout; fresh (F); weak (R2); abundant rip up clasts; bivalve fossils abundant; strong reaction to HCL. [Glen Rose Formation]		749	
115		2													748
116		2.25													747
117		2.65										LIMESTONE: micrite, shaly; medium gray(N5); fresh (F); damp; very weak (R1); slight reaction to HCL. [Glen Rose Formation]		746	
118		1.92													745
119		3.33	21	5.0 5.0	100	F	R2								744
120		2.9										LIMESTONE: packstone; medium light gray to medium gray(N6-N5); thin shale beds throughout; fresh (F); weak (R2); abundant rip up clasts; bivalve fossils abundant; strong reaction to HCL; becomes more of a shaly packstone with large rip up clasts from 125.0 to 127.0. [Glen Rose Formation]		743	
121		1.67													742
122		2.9										LIMESTONE: packstone; medium light gray to medium gray(N6-N5); thin shale beds throughout; fresh (F); weak (R2); abundant rip up clasts; bivalve fossils abundant; strong reaction to HCL; becomes more of a shaly packstone with large rip up clasts from 125.0 to 127.0. [Glen Rose Formation]		741	
123		3.42	22	5.0 5.0	100	F	R2								740
		1.75							27						



Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1022</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
124		1.75	22	5.0 5.0	100	F	R2					LIMESTONE: packstone; medium light gray to medium gray(N6-N5); thin shale beds throughout; fresh (F); weak (R2); abundant rip up clasts; bivalve fossils abundant; strong reaction to HCL; becomes more of a shaly packstone with large rip up clasts from 125.0 to 127.0. [Glen Rose Formation]		739
125		1.5												738
126		1.58												737
127		3.5	23	5.1 5.0	100	F	R2					LIMESTONE: micrite, shaly; medium gray(N5); fresh (F); damp; very weak (R1); slight reaction to HCL. [Glen Rose Formation]  LIMESTONE: wackestone; light medium gray(N6); fresh (F); weak (R2); rip up clasts abundant; fossils occasional; some thin shale beds <.1'; strong reaction to HCL. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	736
128		5												735
129		3.75												734
130		4	24	5.0 5.0	100	F	R2					LIMESTONE: micrite; light gray (N7); fresh (F); weak (R2); very few rip up clasts; moderate reaction to HCL [Glen Rose Formation]		733
131		3.25												732
132		2												731
133		2	25	5.1 5.0	100	F	R2					LIMESTONE: wackestone; light medium gray(N6); fresh (F); weak (R2); rip up clasts abundant; fossils occasional; some thin shale beds <.1'; strong reaction to HCL. [Glen Rose Formation]		730
134		1.55												729
135		1.53												728
136		2.25	25	5.1 5.0	100	F	R2							727
137		3												726
138		4												725
		3.75												

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-1022**


Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
139		3.75	25	5.1 5.0	100	F	R2		30			LIMESTONE: wackestone; light medium gray(N6); fresh (F); weak (R2); rip up clasts abundant; fossils occasional; some thin shale beds <.1'; strong reaction to HCL. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	724
140		3.5												723
141		3												722
142		4.67	26	4.9 5.0	98	F	R2		31			SHALE: medium dark gray (N4); abundant fossils; thinly bedded; fresh (F); very weak (R1); damp; moderate reaction to HCL. [Glen Rose Formation]		721
143		2.75												720
144		3.25												719
145		4.08	27	4.0 4.0	100	F	R1-R2					LIMESTONE: micrite; light gray (N7); fresh (F); weak (R2); some coals seams; violent reaction to HCL. [Glen Rose Formation]		718
146		3.75												717
147		4.5												716
148		3.83	27	4.0 4.0	100	F	R1-R2					LIMESTONE: wackestone; more of a shaly wackestone from 148.3 to 149.2; medium gray(N5); fresh (F); weak (R2); dry. [Glen Rose Formation]		715
149		3												714
150		3.5												713
151														712
152														711
153														710

Project Name and Job Number TXU Comanche Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-1023</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'05.48582"N / 97°47'44.14647"W		Total Depth 150.5 feet	
Drilling Contractor and Rig Richard Simmons Drilling / BK-81 HD		Elevation and Datum 865.678 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 15.5 feet	
Sampling Method SPT		Sample Driving Hammer/Drop R&C / 140 lbs / 30 inches	No. of Samples 6	Date Started 1/15/07	
		Borehole Inclination Vertical	Logged by J. Oshun	Date Completed 1/23/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 1/31/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0										865
1			B-1023 1	11				<b>RESIDUAL SOIL</b> LEAN CLAY very stiff to hard, very pale brown (10YR7/4), damp to dry, with calcareous deposits		864
2				13	16/18					863
3				35						862
4	CL		B-1023 2	17				pale olive (5Y 6/7), moist		861
5				11	12/18					860
6				32						859
7			B-1023 3	31				hard, grayish brown (2.5Y5/2)		858
8				33	14/18					857
9				50/6"						856
10			B-1023	50/2"	1.5/2			possible weathered limestone bedrock shelf or boulder	refusal, no sample taken	855
11										854
12	ML		B-1023 4	13				SANDY SILT hard, light yellowish brown (2.5Y6/4), damp, few calcareous deposits		853
13				50	12/18					852
14				50/1"						851
15	CL		B-1023 5	50/6"	1/6			LEAN CLAY with interbeds of silt		851

Project Name and Job Number TXU Comanche Peak COL 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">SOIL LOG</h2> <h2 style="margin: 0;">Boring No. B-1023</h2>
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Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
15	ML							SANDY SILT light gray (2.5Y7/1), few limestone fragments		850
16								Top of Bedrock at 15.5'	Bedrock at 15.5'	850
17										849
18										848
19										847
20										846
21										845
22										844
23										843
24										842
25										841
26										840
27										839
28										838
29										837
30										836




Undisturbed sample  
SH = Shelby; P = Pitcher; O = other



Driven (2.5 to 3.0 inch) with liners  
MC = Modified California; O = other



Standard Penetration Test (SPT) sampler

Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG Boring No. B-1023</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'05.48582"N / 97°47'44.14647"W		Total Depth 150.5 feet	
Drilling Contractor and Rig Richard Simmons / BK81		Elevation and Datum 865.678 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 15.5 feet	
Casing Size and Depth 4" pvc / 15.5 feet		Length of Core Barrel and Bit 8.8 feet	No. of Core Boxes 9	Date Started 1/15/07	
		Borehole Inclination Vertical	Logged by J. Oshun	Date Completed 1/23/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 1/31/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
16		2.02				HW	R3				JRC3	WEATHERED BEDROCK; light olive brown; medium strong (R3); highly weathered (HW). [Glen Rose Formation]	Bedrock at 16', top of Glen Rose Formation.	850
17		2.28									JRC6	LIMESTONE: wackestone; light gray (N7); weak (R2); moderately weathered (MW); strong HCl reaction; shale interbeds. [Glen Rose Formation]		849
18		2.43	1	5.0 5.0	92	MW	R2							848
19		2.07										SHALE: medium dark gray to dark gray (N3-N4); moderately weathered (MW); extremely weak (R0); weak HCl reaction; rip-up clasts. [Glen Rose Formation]		847
20		2.28				MW	R0			2023-7				846
21		2.6									JRC8 JRC6	LIMESTONE: wackestone; light gray (N7); weak to medium strong (R2-R3); slightly to moderately weathered (SW-MW); overall strong HCl reaction; finely laminated shale interbeds 21.3'-21.6'; large shale interbed 24.3'-24.7'; abundant silt filled bioturbations and abundant rip-up clasts below 25'. [Glen Rose Formation]	Gradational contact.	845
22		2.12												844
23		2.18	2	5.0 5.0	78	SW/MW	R2-R3							843
24		2.08												842
25		1.88								2023-8				841
26		1.85				SW/MW	R2-R3							840
27		1.6										SHALE: mudstone; medium dark gray (N4); very weak (R1); slightly weathered (SW); with hard (R3); wackestone bed 27.4'-27.7'. [Glen Rose Formation]		839
28		3.3	3	5.0 5.0	100	SW	R1			2023-9				838
29		2.03												837
30		1.13				SW	R2-R3					LIMESTONE: wackestone; medium gray (N5); weak to medium hard (R2-R3); slightly weathered (SW); few bioturbations; shale interbeds. [Glen Rose Formation]		836

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-1023**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
31		2.08												835
32		2.05				SW	R3							834
33		1.17	4	5.0 5.0	100									833
34										2023-10		LIMESTONE; packstone; bluish white (5 B 9/1); medium strong (R3); greenish gray interbeds of shale silt filled bioturbations; abundant fossils; violent HCl reaction; shale interbeds; fractures; silt filled. [Glen Rose Formation]		832
35		1.75				SW	R3							831
36											JRC4			830
37		1.77				SW	R3				JRC6 JRC6			829
38		1.27	5	5.0 5.0	98									828
39		1.83								2023-11		LIMESTONE: wackestone; light gray (N7); weak (R2); slightly weathered (SW); silt filled bioturbations; fossiliferous. [Glen Rose Formation]	Gradational contact.	827
40		2.38				SW	R2							826
41		1.93												825
42		1.75				SW	R2							824
43		1.6	6	5.0 5.0	100						JRC6			823
44		1.45				SW	R1							822
45		1.85				SW	R2							821

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1023</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
46		2.32										LIMESTONE: wackestone; medium gray (N5); weak (R2); slightly weathered (SW); strong HCl reaction; with silt filled bioturbations and rip-up clasts below 46'. [Glen Rose Formation]		820
47		2.2												819
48		1.87	7	5.0 5.0	100	SW	R2							818
49														817
50		2.5								2023-13				816
51		1.67										LIMESTONE: wackestone; medium light gray (N6); weak (R2); slightly weathered (SW); strong HCl reaction; shale interbeds; silt filled bioturbations and rip-up clasts. [Glen Rose Formation]		815
52		2.02									JRC6			814
53			8	5.0 5.0	100	SW	R2			2023-14				813
54		2.28												812
55		1.6												811
56						SW	R0				JRC7 JRC4	SHALE: medium dark gray (N4); RO; SW; wackestone interbeds. [Glen Rose Formation]		810
57		4.15										LIMESTONE: wackestone; shale fine interbeds; R2; medium light gray (N6); shale from 57.4'-57.6'; 57.9'-58.1'; and 59.0'-59.3'; abundant rip-up clasts; silt filled bioturbations. [Glen Rose Formation]		809
58		2.5	9	5.0 5.0	100	SW	R2						Abundant fractures (RQD still 100%).	808
59		3.07								2023-15	JRC5			807
60		1.38									JRC4			806

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1023</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
61		1.37										LIMESTONE: wackestone; light gray (N7); irregular medium spaced SHALE; weak (R2); moderate HCL reaction; silt filled bioturbations; shale beds at 61.4'; 63.9'; 64.7'; and 65.4'; coal seam at 64.4'. [Glen Rose Formation]	805	
62		2.7											804	
63		3.13	10	5.0	100	SW	R2						803	
64		2.3								2023-16			802	
65		2.68										LIMESTONE: wackestone; high shale content; many fossils; weak (R2); medium light gray (N6); strong HCl reaction. [Glen Rose Formation]	801	
66		1.62				SW	R2						800	
67		3.75										SHALE: mudstone; medium dark gray (N4); very weak (R1); slightly weathered (SW); wackestone bed at 70.4'-71.0'; light gray (N7). [Glen Rose Formation]	799	
68		3.9	11	5.0	100	SW	R1						798	
69		3.93											797	
70		3.77								2023-17			796	
71		2.05										SHALE: same as above; very weak (R1); dark gray ; slight weathering; no to slight HCl reaction; wackestone interbeds. [Glen Rose Formation]	795	
72		3.6											794	
73		2.92	12	5.0	90	SW	R2				JRC4, JRC6		793	
74		3.17											792	
75		2.25				SW	R2			2023-18		LIMESTONE: wackestone; interbeds of SHALE: light gray (N7); weak (R2); SW; silt bioturbations. [Glen Rose Formation]	791	



Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1023</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
76		2.1				SW	R2					LIMESTONE: wackestone; interbeds of SHALE: light gray (N7); weak (R2); SW; silt bioturbations. [Glen Rose Formation]		790
77		3.18									JRC6	SHALE: mudstone; medium dark gray; very weak (R1); slightly weathered (SW); abundant fossils; few wackestone beds. [Glen Rose Formation]		789
78		3.35	13	5.0	100	SW	R1							788
79		2.93								2023-19				787
80		3.1				SW	R3					LIMESTONE: wackestone; medium gray to medium light gray (N5-N6); SW; abundant medium grained clasts; low HCl reaction; medium strong (R3). [Glen Rose Formation]		786
81		2.65										SHALE: mudstone; medium dark gray; extremely weak; (R0); slightly weathered (SW); no HCl reaction. [Glen Rose Formation]		785
82		3.77				SW	R0							784
83		1.95	14	5.0	96	SW	R2-R3					LIMESTONE: wackestone; light gray (N7); weak to medium strong (R2-R3); slightly weathered (SW); very weak HCl reaction; abundant silt filled bioturbations. [Glen Rose Formation]		783
84		2.9								2023-20				782
85		2.63				SW	R0					SHALE: mudstone; micrite bed from 84.7'-84.85'; shale is medium dark gray (N4); R0; SW; micrite is very light gray (N8); R3-R4; F; medium HCl reaction. [Glen Rose Formation]		781
86		2.17									JRC5, shale bed	LIMESTONE: wackestone; light to very light gray (N7-N8); medium strong (R3); abundant silt filled bioturbations below 86'; below 90'; grading toward micrite; abundant silt filled bioturbations; few coal seams. [Glen Rose Formation]		780
87		2.33												779
88		2.08	15	5.0	100	SW	R0							778
89		1.7												777
90		1.68								2023-21				776

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-1023</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)	
91		2.65										LIMESTONE: wackestone; light to very light gray (N7-N8); medium strong (R3); abundant silt filled bioturbations below 86'; below 90'; grading toward micrite; abundant silt filled bioturbations; few coal seams. [Glen Rose Formation]		775	
92		2.57												774	
93		2.15	16	5.0 5.0	100	SW	R3				JRC6, abundant fossils			773	
94		1.82												772	
95		1.6												771	
96		1.53											LIMESTONE: wackestone; same as above; higher density of clasts; medium light gray (N6); more abundant shale beds; weak (R2); abundant fossils; abundant bioturbations; shale beds. [Glen Rose Formation]	770	
97		1.23													769
98		1.43	17	5.0 5.0	100	SW	R2				JRC6, shale bed				768
99		1.4													767
100		1.58													766
101		1.23												765	
102		1.4												764	
103		2.02	18	5.0 5.0	98	SW	R2-R3							763	
104		2.17												762	
105		1.83												761	

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-1023</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
106		2.68				SW	R2-R3							760
107		1.77										LIMESTONE: packstone; medium light gray (N6) to medium bluish gray (5 B 5/1); rip-up clasts; weak to medium strong (R2-R3); slightly weathered (SW); silt filled bioturbations; fewer bioturbations 109.4'-110.5'. [Glen Rose Formation]	759	
108		2.02	19	5.0	100	SW	R2-R3			2023-25			758	
109		1.72											757	
110		1.83											756	
111		2.02											755	
112		2.83				SW	R2-R3						754	
113		1.87	20	5.0	100	SW	R2-R3			2023-26			753	
114		2.17											752	
115		1.8				SW	R3						Gradational contact.	751
116		1.17					R3							750
117		2.13										LIMESTONE: packstone; medium gray (N5) to medium bluish gray (5 B 5/1); interbeds of wackestone; packstone is shaly; R1-R2; SW; wackestone rip-up clasts. [Glen Rose Formation]	749	
118		2.18	21	5.0	100	SW	R1-R2			2023-27			748	
119		1.5											Mechanical breaks on shale beds.	747
120		1.85											746	

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1023</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
121		2.43				SW	R3					LIMESTONE: wackestone; light bluish gray (5 B 7/1); shaly bioturbations; medium strong (R3); slightly weathered (SW); micrite bed 121.4'-121.45'. [Glen Rose Formation]		745
122		1.82										LIMESTONE; packstone; light gray (N7) to light bluish gray (5 B 8/1); silty bioturbations; medium strong (R3); slightly weathered (SW); medium strong (R3); violent HCl reaction. [Glen Rose Formation]		744
123		1.25	22	5.0 5.0	100	SW	R3		2023-28					743
124		1.35				SW	R3			JRC5				742
125		2.03												741
126		1.77												740
127		1.05												739
128		1.55	23	5.0 5.0	93	F	R2-R3							738
129		1.57												737
130		1.35				SW	R3-R4		2023-29			LIMESTONE: micrite; very light gray (N8) to yellowish gray (5 Y 8/1); medium strong to strong (R3-R4); fresh (F); silty packstone bioturbations; fossils; iron flecks. [Glen Rose Formation]		736
131		1.1										LIMESTONE: packstone; light gray (N7) to light bluish gray (5 B 8/1); silty bioturbations; medium strong (R3); slightly weathered (SW); medium strong (R3); violent HCl reaction. [Glen Rose Formation]	Gradational contact.	735
132		1.87										LIMESTONE: wackestone; light gray to medium light gray (N6 - N7); medium strong (R3); slightly weathered (SW); packstone clasts 130.7'-131.2'; alternating beds of silty packstone 133.5'-134.7'. [Glen Rose Formation]		734
133		1.95	24	5.1 5.0	100	SW	R3							733
134		2.17							2023-30				Length of recovery stretched due to mechanical breaks.	732
135		1.93				F								731

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1023</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
136		1.78				F	R3-R4					LIMESTONE: micrite; light gray (N7); medium strong to strong (R3-R4); fresh (F); few silty bioturbations; silt beds 137.6'-138.0'; large silt bioturbations 135.3'-135.6'.		730
137		1.7							2023-31	JRC5				729
138		2.03	25	4.9 5.0	98							LIMESTONE: wackestone; light gray (N4); low density of clasts; medium strong (R3); fresh (F); bordering on micrite. [Glen Rose Formation]		728
139		2.18				F	R3							727
140		1.98												726
141		2.1										LIMESTONE: wackestone; same as above; abundant shale beds from 140.9'-141.5'; 141.7'-142.2'; 143.8'-144.0'; shale interbeds thinly spaced from 144'-145.5'; medium strong (R3); slightly weathered (SW); abundant bioturbations; silt/shale layers have many fossils; shale beds contain rip-up clasts; silt bioturbations abundant below 145.5'. [Glen Rose Formation]		725
142		2.85												724
143		2.02	26	5.0 5.0	100	SW	R3							723
144		1.65							2023-32 2023-12				Possible turbidite flow.	722
145		1.77												721
146		2.25												720
147		2.67				SW	R3							719
148		2	27	5.0 5.0	100									718
149		2.32				F	R0					SHALE: mudstone; medium dark gray (N4) to dark greenish gray (5 G 4/1); extremely weak (R0); fresh (F); fossiliferous. [Glen Rose Formation]		717
150		2				SW	R3		2023-33	JRC4, shale bed, unseparated fracture.		LIMESTONE: wackestone; as 140.5'-147.9'; absence of silt beds/bioturbations. [Glen Rose Formation]		716


Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-1023**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
151														715
152														714
153														713
154														712
155														711
156														710
157														709
158														708
159														707
160														706
161														705
162														704
163														703
164														702
165														701

BOTTOM OF HOLE AT 150.5'

Project Name and Job Number TXU Comanche Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-1024</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'05.69714"N / 97°47'41.93881"W		Total Depth 110 feet	
Drilling Contractor and Rig Geotechnology / CME 55		Elevation and Datum 861.646 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 17 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 6	Date Started 1/23/07	
		Borehole Inclination Vertical	Logged by J. Cox	Date Completed 1/24/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 1/31/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
0							<b>RESIDUAL SOIL</b> LEAN CLAY medium stiff, dark yellowish brown (10YR4/6), with calcareous deposits darker color, organic content from 0"-4"		861
1			B-1024 1	4					860
2				3	18/18	2.5			859
3				4					858
4			B-1024	50/2"	0/2		large limestone clast, some drill chatter	NO RECOVERY	857
5	CL								856
6			B-1024 2	5			very stiff to hard, olive yellow (2.5Y6/8)		855
7				7	18/18	2			854
8				8					853
9			B-1024 3	8			brownish yellow (10YR6/8)		852
10				12	14/18	3			851
11				38					850
12	GM		B-1024 4	50/5"	5/5	0.5	LIMESTONE FRAGMENTS with silt and some clay hard, yellow (2.5Y7/6), dry		849
13									848
14	ML		B-1024 5	44			SANDY SILT hard, olive yellow (2.5Y6/6), dry, (weathered limestone)		847
15				23	18/18	3.5			847
				21					847

Project Name and Job Number TXU Comanche Peak COL 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">SOIL LOG</h2> <h2 style="margin: 0;">Boring No. B-1024</h2>
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Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
15	ML								846
16	ML		B-1024 6	44	50/3"	3.5	SILT with limestone fragments hard, yellowish brown (10YR5/8), damp to dry		845
17							Top of Bedrock at 17'	Bedrock at 17'	844
18									843
19									842
20									841
21									840
22									839
23									838
24									837
25									836
26									835
27									834
28									833
29									832
30									



Undisturbed sample  
SH = Shelby; P = Pitcher; O = other




Driven (2.5 to 3.0 inch) with liners  
MC = Modified California; O = other



Standard Penetration Test (SPT) sampler



Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. B-1024</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'05.69714"N / 97°47'41.93881"W		Total Depth 110 feet	
Drilling Contractor and Rig Geotechnology / CME 55		Elevation and Datum 861.646 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 17 feet	
Casing Size and Depth 4" / 4 feet		Length of Core Barrel and Bit 8.58 feet	No. of Core Boxes 7	Date Started 1/23/07	
		Borehole Inclination Vertical	Logged by J. Cox	Date Completed 1/24/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 1/31/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology		Remarks	Elevation (feet)
17		5											LIMESTONE: wackestone; light gray(N7); interbedded shale and clay; clay:light yellowish brown(2.5y6/4); fresh; weak;slight reaction to HCL; limestone around clay bed very weathered.	Length of recovery stretched due to mechanical breaks.	844
18		3.35	1	3.2 3.0	100	F - MW	R1-R2						SHALE: Limey shale; medium dark gray (N4); thin beds; moderately weathered; very weak; damp; no reaction to HCL.		843
19		5.25											LIMESTONE: shaly wackestone; medium light gray (N6); Fresh; weak; shale beds at 19.2', 19.4', 19.7' to 19.9; strong reaction to HCL; abundant fossils; one very cool fossil at end of run1. becomes more shaly toward contact; turns medium gray (N5)		842
20			2												841
21		3.17													840
22									7						840
23		3.75	2	4.9 5.0	98	F - SW	R1-R2						SHALE: limey shale; medium dark gray (N4); thin beds; slightly weathered; damp; no reaction to HCL.		839
24		7.25											LIMESTONE: wackestone; medium gray (N4); fresh; weak; abundant fossils; slight reaction to HCL.		838
25		5.42											SHALE: limey shale; medium dark gray(N4); abundant fossils; damp; fresh; weak to very weak; slight reaction to HCL.		838
26		2.5											LIMESTONE: shaly wackestone; medium gray(N5); fresh; weak; strong reaction to HCL; some fossils throughout.		837
27		5.42							8						836
28		7	3	4.9 5.0	98	F - SW	R1-R2						SHALE: limey shale; medium dark gray(N4); abundant fossils; damp; fresh; weak to very weak; slight reaction to HCL.		835
29		2.75											LIMESTONE: packstone; light gray(N7); fresh; weak; fossils very abundant; strong reaction to HCL; massive.		834
30		7.75													833
31		2.5	4	5.0 5.0	100	F - MW	R1-R2						SHALE: dark greenish gray (5G 4/1);moderately weathered; very weak; no reaction to HCL.		832
32		1.75													831
															830

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1024</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
32		1.83										LIMESTONE: wackestone; very light gray(N8) from 30.2 to 30.6; pinkish gray from 30.85 to 33.8; moderately weathered; fossils very abundant; shale beds at 30.6 to 30.8 and 31.0 to 31.25; thin shale beds throughout limestone <.1'; massive; changes to light gray (N7) at 34.0'; more packstone from 34.0 to 34.4; thin shale bed from 34.5' to 34.65'; very strong reaction to HCL		829
33		2.5	4	5.0 5.0	100	F - MW	R1-R2		9					828
34		5.5										LIMESTONE: shaly packstone; medium gray(N5); slightly damp; fresh; weak; fossils throughout; turns more of a shaly wackestone at 36.5'		827
35		4.25												826
36		5.25										LIMESTONE: shaly wackestone; medium gray(N5); slightly damp; fresh; weak; rip up clasts throughout; thin shale beds throughout <.1'; turns more light medium gray (N6) at 42.0'; abundant fossils; moderate reactoin to HCL; more packstone like towards end of run;		825
37		6	5	4.9 5.0	97	F	R1-R2		10					824
38		6.42										SHALE: medium dark gray(N4); very thin beds; damp; fresh; very weak; no reaction to HCL		823
39		7.42												822
40		3.92										LIMESTONE: packstone; light medium gray(N6); dry; fresh; weak; rip up clasts abundant; fossils abundant; strong reaction to HCL; shale beds at 50.6 to 50.7; 51.05' to 51.1'; 51.15' to 51.2'; 52.3' to 52.4'.		821
41		4.5												820
42		3	6	5.0 5.0	100	F	R2						819	
43		1.55											818	
44		1.62										LIMESTONE: packstone; light medium gray(N6); dry; fresh; weak; rip up clasts abundant; fossils abundant; strong reaction to HCL; shale beds at 50.6 to 50.7; 51.05' to 51.1'; 51.15' to 51.2'; 52.3' to 52.4'.		817
45		1.75							11					816
46		1.67	7	5.1 5.0	100	F	R2						815	
47														

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-1024**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
47		1.92												814
48		1.75	7	5.1 5.0	100	F	R2		12				Length of recovery stretched due to mechanical breaks.	813
49		2												812
50		6.75												811
51		9												810
52		2.78	8	5.1 5.0	100	F	R1-R2		13				Length of recovery stretched due to mechanical breaks.	809
53		7.25												808
54		4.75												807
55		6.42												806
56		6.12							14					805
57		3	9	5.0 5.0	100	F	R1-R2							804
58		2.75												803
59		4.25												802
60		5.25												801
61		3.75	10	5.0 5.0	100	F	R1-R2							800
62									15					

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1024</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
62		4.57										SHALE: medium dark gray(N4); fresh; damp; very weak; thinly bedded; no reaction to HCL; coal seam at 62.15'		799
63		10	10	5.0	100	F	R1-R2							798
64		10												797
65		3.75										LIMESTONE: wackestone; light medium gray (N6); Fresh; weak; some rip up clasts; violent reaction to HCL; abundant fossils	Came up .6' short on run 10; stopped run 11 .6' short to make sure barrel didn't overflow. Got the missing .6' back successfully on run 11.	796
66		6										SHALE: medium dark gray(N4); damp; very weak; thinly bedded; some small limestone beds within unit. Limestone; wackestone layer from 66.5 to 66.85'; no reaction to HCL in shale	Finished run 11 with a .6' run, still counted as run 11	795
67		5.33	11	5.0	100	F	R1-R2							794
68		5.25							16					793
69		3.25												792
70		4.57										LIMESTONE: wackestone; medium gray (N5); fresh; slightly damp; weak; rip up clasts abundant; strong reaction to HCL		791
71		5.83												790
72		5.27	12	5.0	100	F	R1-R2		17			SHALE: medium dark gray (N4); damp; very weak; thinly bedded; no reaction to HCL		789
73		4.1												788
74		2.5												787
75		7										LIMESTONE: packstone; medium gray(N5); fresh; weak; dry; abundant fossils; strong reaction to HCL		786
76		9.75	13	5.0	100	F	R1-R2					SHALE: medium dark gray (N4); fresh; very weak; damp; thinly bedded; very slight reaction to HCL.		785
77														

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-1024</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
77		5.67							18			LIMESTONE: packstone; medium gray(N5); fresh; weak; dry; abundant fossils; strong reaction to HCL; large rip up clasts throughout unit		784
78		2.5	13	5.0	100	F	R1-R2							783
79		2.5												782
80		3.75										SHALE: medium dark gray (N4); fresh; very weak; damp; thinly bedded; very slight reaction to HCL. LIMESTONE: wackestone; medium light gray(N7); fresh; dry; weak; some fossils; coal seam at 80.8; moderate reaction to HCL		781
81		3.5							19			LIMESTONE: wackestone to packstone (very close); medium gray (N6); fresh; dry; weak; abundant rip up clasts; some fossils; strong reaction to HCL; coal seam at 81.2'. More wackestone toward end of run 15		780
82		3.88	14	5.0	100	F	R2							779
83		1.75												778
84		1.67												777
85		3												776
86		2.5							20					775
87		1.98	15	5.0	100	F	R2							774
88		2.6											Limestone went back and forth between what looked like wackestone and packstone; very hard to differentiate throughout run	773
89		3												772
90		2.5												771
91		2.58	16	5.0	100	F	R2							770
92														

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-1024</b>
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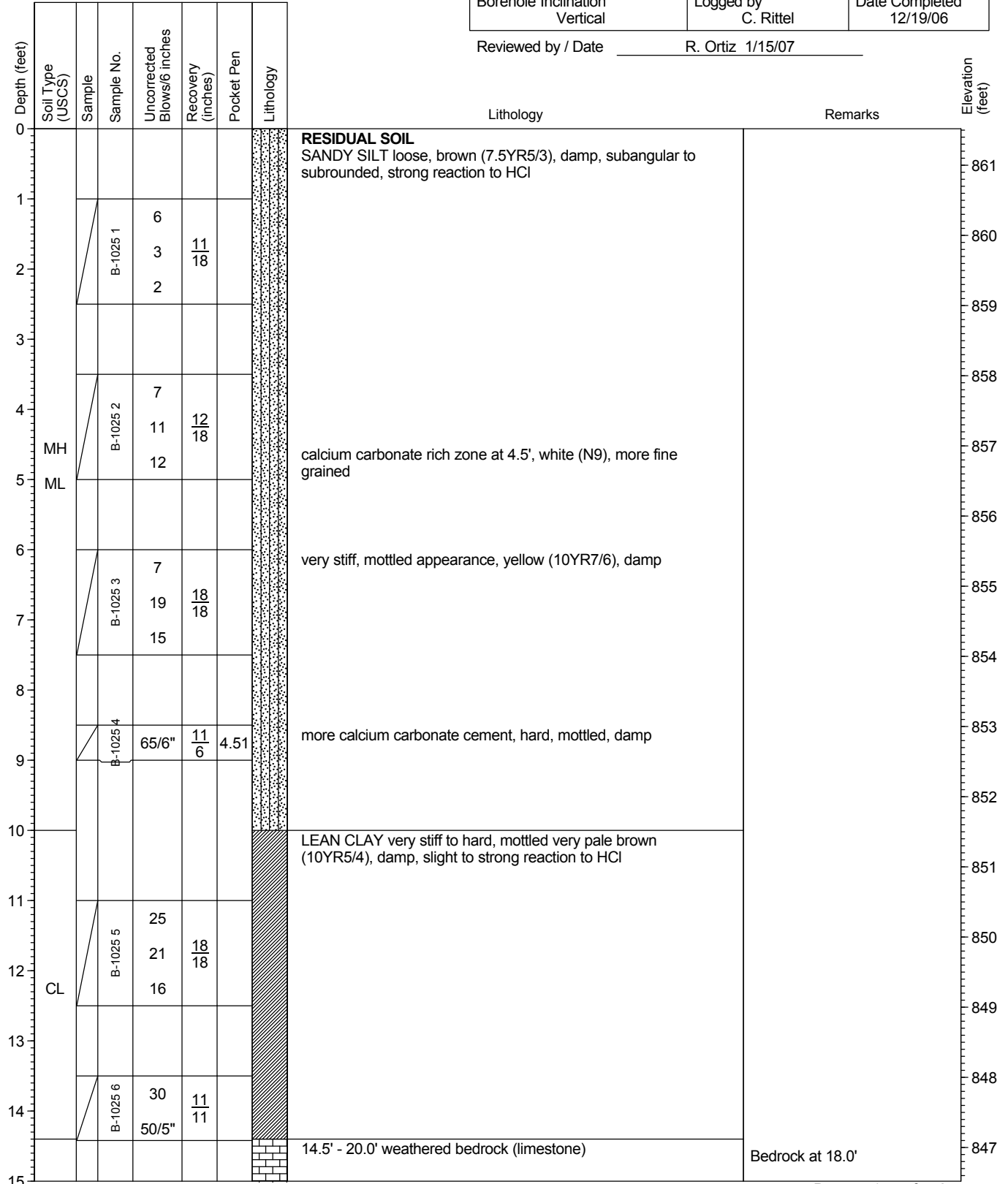
Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
92		2.6										LIMESTONE: packstone; medium gray(N5); dry; fresh; weak; large rip up clasts throughout; some fossils; moderate to strong reaction to HCL; some thin shale beds between 95.2' and 95.7'; all of them <.1'; large rip up clasts from begin at 100' and continue through 110' ; rip up clasts medium blueish gray(5B 5/1); becomes more coarse grained from 105.7 to 109.6.		769
93		2.42	16	5.0	100	F	R2							768
94		2.27												767
95		3.75												766
96		2.82												765
97		1.45	17	5.0	100	F	R2							764
98		2.67												763
99		3							22					762
100		3.25												761
101		2.75												760
102		3	18	5.1	100	F	R2							759
103		2.25							23				Length of recovery stretched due to mechanical breaks.	758
104		2.75												757
105		3.5												756
106		3	19	5.0	100	F	R2							755
107														

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-1024</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
107		2.75										LIMESTONE: packstone; medium gray(N5); dry; fresh; weak; large rip up clasts throughout; some fossils; moderate to strong reaction to HCL; some thin shale beds between 95.2' and 95.7'; all of them <.1'; large rip up clasts from begin at 100' and continue through 110' ; rip up clasts medium blueish gray(5B 5/1); becomes more coarse grained from 105.7 to 109.6.		754
108		2.25	19	57.0	100	F	R2							753
109									24					752
110		2.58												751
111														750
112														749
113														748
114														747
115														746
116														745
117														744
118														743
119														742
120														741
121														740
122														

Project Name and Job Number TXU Comanche Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-1025</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'04.93101"N / 97°47'40.85351"W		Total Depth 151 feet	
Drilling Contractor and Rig Fugro / CME 75		Elevation and Datum 861.518 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 20 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 6	Date Started 12/16/06	
		Borehole Inclination Vertical	Logged by C. Rittel	Date Completed 12/19/06	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 1/15/07





Project Name and Job Number  
TXU Comanche Peak COL  
1908



**SOIL LOG**  
**Boring No. B-1025**

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
15								14.5' - 20.0' weathered bedrock (limestone) (Continued from previous page)		846
16										845
17										844
18										843
19										842
20								Top of Bedrock at 20'		841
21										840
22										839
23										838
24										837
25										836
26										835
27										834
28										833
29										832
30										




Undisturbed sample  
SH = Shelby; P = Pitcher; O = other



Driven (2.5 to 3.0 inch) with liners  
MC = Modified California; O = other



Standard Penetration Test (SPT) sampler

Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG Boring No. B-1025</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'04.93101"N / 97°47'40.85351"W		Total Depth 151 feet	
Drilling Contractor and Rig Fugro Houston / CME 75		Elevation and Datum 861.518 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 20 feet	
Casing Size and Depth 4 / 16.3 feet		Length of Core Barrel and Bit 13 feet	No. of Core Boxes 9	Date Started 12/16/06	
		Borehole Inclination Vertical	Logged by C. Rittel	Date Completed 12/19/06	

Reviewed by / Date R. Ortiz 1/15/06

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
20		2.58	1	$\frac{1.0}{1.0}$	100							LIMESTONE: micrite; very light gray (N8); fine-grained; massive; slightly weathered (SW); weak (R2). [Glen Rose Formation]	Began HQ coring at 20.0'	841
21		3.43												840
22		2.12												839
23		3.4	2	$\frac{4.8}{5.0}$	96								Micrite interbed 22.6-23.0, also sampled as 1025-7	838
24		2.25												837
25		2.65												836
26		2.32												835
27		3.72				SW	R2							834
28		2.82	3	$\frac{5.0}{5.0}$	100									833
29		3.32												832
30		2.17												831
31		2.07											Core box 2 with runs 4-6 was dropped on ground, box reassessed by photos 30' - 45'	830
32		1.78												829
33		2.43	4	$\frac{3.7}{5.0}$	74								Crew lost core at bottom, will re-drill run 4 with run 5	828
34		3.82												827
35													Rig is wobbling due to damage trying to pull rod on previous boring.	827
													NO RECOVERY 34.5'-36.0'. [Glen Rose Formation]	

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1025</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
35		1.63	4	$\frac{3.7}{5.0}$	74							NO RECOVERY 34.5'-36.0'. [Glen Rose Formation]		826
36		1.98					R2					LIMESTONE: wackestone; very light gray (N8); wavy beds spaced 0.5' apart; rare vugs; strong HCl reaction. [Glen Rose Formation]		825
37		1.43												824
38		3.83	5	$\frac{5.0}{5.0}$	100							SHALE: mudstone; medium bluish gray (5B 5/1); fissile; very weak (R1) to weak (R2); slightly weathered (SW). [Glen Rose Formation]		823
39		1.97					R1-R2							822
40		3.75							1025-10				Core becoming smooth	821
41		2.15										LIMESTONE: wackestone; very light gray (N8) to medium light gray (N6); massive to wavy beds; strong to violent reaction to HCl; weak (R2); slightly weathered (SW). [Glen Rose Formation]		820
42		1.62				SW								819
43		2.33	6	$\frac{5.1}{5.0}$	100		R2							818
44		1.57											Length of recovery stretched due to mechanical breaks.	817
45		1.45												816
46		2.58												815
47		1.28												814
48		3.88	7	$\frac{4.7}{5.0}$	92		R1-R2							813
49		2.07												812

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1025</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
50		2.45	7	4.7 5.0	92		R1-R2							811
51		4.5					R2						Interbedded limestones and mudstones 51' - 54.4'	810
52		1.75					R1		1025-13					809
53		2.37	8	5.0 5.0	100		R2							808
54		5.75					R1							807
55		1.95					R1							806
56		1.92											Core breaking along weak mud-rich interbeds	805
57		1.57				SW								804
58		1.52	9	5.0 5.0	100		R1-R2							803
59		1.67												802
60		1.95							1025-14				Mudstone interbed	801
61		1.5												800
62		2.22					R2		1025-15				Interbedded limestones and mudstones 61'-65'	799
63		5.18	10	4.5 5.0	90		R1							798
64		6.45					R1							797
65							R1						Core dropped by	

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1025</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
65		2.93	10	4.5 5.0	90		R1					(SW); very weak (R1) to weak (R2). [Glen Rose Formation]	driller	796
66		2.58										SHALE: mudstone; medium bluish gray (5B 5/1); fissile; very weak (R1) to weak (R2); slightly weathered (SW).		795
67		4.5										LIMESTONE: wackestone; very light gray (N8) to medium gray (N5); fine grained; wavy beds to massive; slightly weathered (SW); very weak (R1) to weak (R2). [Glen Rose Formation]		794
68		2.33	11	4.8 5.0	96		R0-R1		1025-16			SHALE: mudstone; clay; greenish gray (5G 6/1); massive; slightly weathered (SW); extremely weak (R2) to very weak (R1); slight to no HCl reaction.		793
69		1.37												792
70		1.23					R1-R2					LIMESTONE: wackestone; very light gray (N8); wavy beds; slightly weathered (SW); strong to violent reaction to HCl. [Glen Rose Formation]		791
71		3.12												790
72		3.67				SW								789
73		2.17	12	4.8 5.0	96				1025-17			SHALE: mudstone; clay to silt; medium bluish gray (5B5/1); slight reaction to HCl; extremely weak (R2) to very weak (R1); slightly weathered (SW). [Glen Rose Formation]		788
74		2.72												787
75		1.8					R0-R1							786
76		3.55												785
77		4.95											poor core quality	784
78		1.23	13	5.0 5.0	100									783
79		2.33					R2		1025-18			LIMESTONE: wackestone; very light gray (N8); weak (R2); slightly weathered (SW); wavy beds; strong to violent reaction to HCl.		782

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-1025**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
80		1.25	13	5.0 5.0	100							LIMESTONE: wackestone; very light gray (N8); weak (R2); slightly weathered (SW); wavy beds; strong to violent reaction to HCl.		781
81		1.23												780
82		1.15												779
83		0.68	14	5.0 5.0	100									778
84		0.92												777
85		0.87												776
86		1.15							1025-20					775
87		0.88				SW	R2						Rig is drilling faster/ core quality increasing	774
88		1.15	15	5.0 5.0	100									773
89		1.02												772
90		1.13												771
91		1.28												770
92		0.88												769
93		1.12	16	5.0 5.0	100									768
94		1.13												767
95														

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-1025**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
95		1.02	16	5.0 5.0	100							LIMESTONE: wackestone; very light gray (N8); weak (R2); slightly weathered (SW); wavy beds; strong to violent reaction to HCl.		766
96		1.97							1025-21					765
97		1.02												764
98		2.17	17	4.8 5.0	96									763
99		2.03												762
100		1.57												761
101		0.8							1025-22					760
102		1.17				SW								759
103		1.13	18	5.0 5.0	100		R2							758
104		2											slight increase in particle size	757
105		1.87												756
106		1.28							1025-23					755
107		1.38												754
108		2.88	19	5.0 5.0	100									753
109		2.07											Darker zone; medium gray (N5)	752
110														

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-1025**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
110		1.22	19	5.0 5.0	100							LIMESTONE: wackestone; very light gray (N8); weak (R2); slightly weathered (SW); wavy beds; strong to violent reaction to HCl.		751
111		1.22								1025-24			Grading to packstone	750
112		2.3												749
113		1.92	20	5.2 5.0	100									748
114		1.03											Length of recovery stretched due to mechanical breaks.	747
115		1.53								1025-25				746
116		1.78												745
117		1.03				SW	R2					SHALE: mudstone; very fine grained; light gray (N7); weak (R2); slightly weathered (SW); slight HCl reaction. [Glen Rose Formation]		744
118		1.82	21	5.0 5.0	100							LIMESTONE: wackestone to packstone; weak (R2); slightly weathered (SW); strong reaction to HCl. [Glen Rose Formation]		743
119		1.32												742
120		1.78												741
121		1.57								1025-26				740
122		0.72												739
123		1.02	22	5.0 5.0	100								Darker material in matrix	738
124		1.3												737



Project Name and Job Number  
 TXU Comanche Peak Col  
 1908




**ROCK LOG**  
**Boring No. B-1025**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
125		1.35	22	5.0 5.0	100							LIMESTONE: wackestone to packstone; weak (R2); slightly weathered (SW); strong reaction to HCl. [Glen Rose Formation]		736
126		1.13												735
127		1.5												734
128		1.48	23	5.0 5.0	100									733
129		2.52												732
130		3.03												731
131		0.67											End 12/17/06; Start 12/18/06 Start 12/19/06 Switched out to longyear outer barrel	730
132		3.07				SW	R2							729
133		0.92	24	5.0 5.0	100									728
134		0.83											Woody fossil	727
135		1.32												726
136		1.08											Moderate Rain... Core jam in barrel... Core pulverized	725
137		1.2												724
138		0.88	25	4.6 5.0	58									723
139		0.45											Rainy	722


Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1025</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
140		0.8	25	4.6 5.0	58		R2					LIMESTONE: wackestone to packstone; weak (R2); slightly weathered (SW); strong reaction to HCl. [Glen Rose Formation]		721
141		1.27										SHALE: mudstone; medium light gray (N6) to interbedded with wackestone.		720
142		1.02												719
143		3.12	26	4.7 5.0	94		R0-R2		1025-31			SHALE: mudstone; medium gray (N5) to medium bluish gray 5B 5/1; extremely weak (R2) to very weak (R1); no reaction to HCl. [Glen Rose Formation]		718
144		1.63										LIMESTONE: wackestone; very light gray (N8), massive to wavy beds; slightly weathered (SW); weak (R2); violent reaction to HCl. [Glen Rose Formation]		717
145		4.05				SW	R2							716
146		3.13					R0-R1					SHALE: mudstone; clay; medium gray (N5) to medium bluish gray (5B 5/1); extremely weak (R2) to very weak (R1); no reaction to HCl [Glen Rose Formation]		715
147		1.05					R2					LIMESTONE: wackestone to packstone; very light gray (N8) to light gray (N7); weak (R2); strong reaction to HCl. [Glen Rose Formation]		714
148		1.6	27	5.0 5.0	100									713
149		5.28					R1					SHALE: mudstone; medium gray (N5) to medium bluish gray (5B 5/1); extremely weak (R2) to very weak (R1); no reaction to HCl. [Glen Rose Formation]		712
150		4.28												711
151							R2		1025-32			LIMESTONE: wackestone to packstone; very light gray (N8) to light gray (N7); weak (R2); strong reaction to HCl. [Glen Rose Formation]	total depth drilled 151.0'	710
152														709
153														708
154														707
155														707

Project Name and Job Number TXU Comanche Peak COL 1908		 WLA William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-1026</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'04.25347"N / 97°47'41.61808"W		Total Depth 110.8 feet	
Drilling Contractor and Rig Geotechnology / CME 55		Elevation and Datum 865.132 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 5.5 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 2	Date Started 12/19/06	
		Borehole Inclination Vertical	Logged by A. Streig	Date Completed 1/12/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 1/15/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
0							<b>RESIDUAL SOIL (RS)</b> LEAN CLAY very stiff, yellowish brown (10YR5/4), dry, with calcareous deposits		865
1	CL		B-1026 1	10	16/18		color to very dark grayish brown (10YR3/2)		864
2				19					863
3				17					862
4	ML		B-1026 2	8	17/18		SANDY SILT medium dense, yellow (2.5Y7/6), dry, with very fine dark brown circular mottles		861
5				14					860
5.5			B-1026	13					859
6				50/5"	0/0.5		auger and refusal at 5.5' Top of Bedrock	Bedrock at 5.5'	858
7									857
8									856
9									855
10									854
11									853
12									852
13									851
14									850
15									849

Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG Boring No. B-1026</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'04.25347"N / 97°47'41.61808"W		Total Depth 110.8 feet	
Drilling Contractor and Rig GeoTechnology / CME 55		Elevation and Datum 865.132 feet NAVD88	Ground Water Depth DRY		Depth to Bedrock 5.5 feet
Casing Size and Depth 4" / 5.5 feet		Length of Core Barrel and Bit 8.6 feet	No. of Core Boxes 7	Date Started 12/19/06	
		Borehole Inclination Vertical	Logged by A. Streig, R. Turner		Date Completed 1/12/07

Reviewed by / Date \_\_\_\_\_ R. Ortiz 1/15/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
6		1.7	3	4.0 0.5	80	HW	6R2					LIMESTONE, packstone, light brownish grey, fine grain, highly weathered, weak, massive recrystallized calcite, well sorted, grain supported, vugs and voids, .25" diameter filled with yellow silt, strong hcl reaction	Auger hit refusal at 5.5', tried SPT to blow through possible resistant ledge, blow counts at 5.5 are 50/.5", see rock log for remaining core, 5.5-110 Residual bedrock soil	859
7		1.78										SILT, with clay, olive yellow, damp, 60% silt, 40% clay, massive, well sorted, slow to rapid dilatancy, medium plasticity, strong brown silt below 9', slow to strong hcl reaction		858
8		1.8												
9		1.13	4	3.6 5.0	72	CW/RS	R0-R1							857
10		2.75											no sample taken for run 3-5 as this is not bedrock (saprolite)	856
11		4.32										LIMESTONE, wackestone, yellowish grey, fine grain, completely weathered, very weak, beds .25" -1" thick, slight hcl reaction, gradational lower contact over 1-2"		855
12		2.4												854
13		3.33												853
14		2.78	5	4.7 5.0	94	CW								852
15		2.72											depth to weathered bedrock	851
16		2.92					R1							850
17		5.97										MUDSTONE, calcareous shale, medium grey, fine grain, moderately weathered, very weak, laminations core loss 16.9-17.4, interbedded wackestone .4' at 19'	Difficulties pulling up sample, sample washing out along contacts lost core 16.4-17.4	849
18		6.02												848
19		3.27	6	4.0 5.0	80	HW						LIMESTONE, wackestone, light grey, fine grain, moderately to highly weathered, weak to very weak, massive to beds 2" thick, deformed bedding, bioturbated		847
20		4.45												846
20		4.33				SW						MUDSTONE, calcareous shale, medium light grey, fine slightly weathered to moderately weathered, weak, laminations throughout, slight hcl reaction		845

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1026</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
21		4.33	6	4.0 5.0	80									844
22		3.63							3			LIMESTONE, wackestone, very light grey to white, fine, slightly weathered, weak, massive, calcareous shale interbeds 1-3" thick at 21.8-22.1' and 22.5' shale is same as above	Drillers note good water return, unable to directly assess as we are using a tub and filter system to avoid/minimize amount of sediment in run off	843
23		4.43												842
24		3.33	7	5.0 5.0	100		R1							841
25		2.75												840
26		2.08				SW						MUDSTONE, calcareous shale, medium light grey, fine grain, slightly weathered, weak, fine laminations, slightly weathered, weak, fine laminations, some bioturbations, slight hcl reaction, gradational basal contact		839
27		3							4			LIMESTONE, wackestone, light grey, fine, slightly weathered, weak, massive, strong hcl reaction, gradational upper contact		838
28		3										MUDSTONE, calcareous shale, medium grey, fine grain, massive, moderately weathered, weak, slight hcl reaction, gradational lower contact		837
29		2.6	8	5.2 5.0	100							MUDSTONE, claystone, light grey, very fine grain, slightly weathered, weak, massive, some voids .25-.1' diameter, some faint laminations, sharp basal contact, no hcl reaction		836
30		5.22					R2					LIMESTONE, wackestone, very light grey, fine, slightly weathered, weak, massive, common black angular clasts, strong hcl reaction, sharp basal contact	Length of recovery stretched due to mechanical breaks.	835
31		6.27										MUDSTONE, siltstone, greenish grey, fine, slightly weathered, weak, laminated, clay seams <.25" thick at 29.5, shell fragments below 30' depth, slight hcl reaction		834
32		4.78										LIMESTONE, wackestone light grey, thin beds, F, R2, dry, strong hcl reaction	Downhole pressure 400 psi	833
33		10.52										SHALE, medium dark grey, very thinly bedded, F, R1, damp, slight hcl reaction	Run 9 sample badly broken up during removal from split-tube, no sample taken	832
34		12.33	9	4.2 5.0	84	F								831
35		13.38					R1							830
		10.37												

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-1026</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
36		10.37	9	4.2 5.0	84							LIMESTONE, shaley packstone, light to medium grey, thin beds, very thin coal seams < 1" thick, near 36, broken bivalve fossils, F, R1, strong hcl reaction		829
37		5.68												828
38		3.33												827
39		2.95	10	4.4 5.0	87.5		R1					CALCAREOUS SILTSTONE, medium grey, pyrite, thin beds, R1, slightly damp, slight hcl reaction	gradational contact	826
40		1.75							5					825
41		6.95										LIMESTONE, packstone, same as 35-38.6		824
42		8.17										SHALE, medium dark to dark grey, very thin beds, F, R1, damp, no hcl reaction		823
43		7.33										LIMESTONE, shaley packstone, medium dark grey, thin beds, bivalve fossils, F, R1-R2, slightly damp, strong hcl reaction	gradational contact	822
44		4.47	11	5.0 5.0	100	F	R1-R2							821
45		3.88										LIMESTONE, wackestone, very light grey, bivalve fossils, thin beds, F, R2, dry, strong hcl reaction		820
46		4.03					R2							819
47		3.85										LIMESTONE, shaley packstone, very light to medium light grey, thin beds, burrows, bivalve fossil fragments, shaley zones from 47.7-48.5, 49.5-50.4, F, R1-R2, dry strong hcl reaction	gradational contact	818
48		4.88												817
49		2.63	12	5.0 5.0	100		R1-R2						crush zone caused while removing core from sample barrel	816
50		1.88												815
		2.28							7					815

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1026</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
51		2.28	12	5.0 5.0	100							LIMESTONE, shaley packstone, very light to medium light grey, thin beds, burrows, bivalve fossil fragments, shaley zones from 47.7-48.5, 49.5-50.4, F, R1-R2, dry strong hcl reaction		814
52		3.03					R1-R2							813
53		3.08										SHALE, medium dark grey, very thin beds, fossil fragments, F, R1, no hcl reaction		812
54		11.95	13	5.0 5.0	100		R1					LIMESTONE, shaley wackestone, wavy beds, light to medium grey, F, R1-R2, dry strong hcl reaction		811
55		5.28					R1-R2		8			SHALE, same as 52.8-53.8		810
56		5.65					R1					SHALE, very light to medium dark grey, very thin beds, interbeds of wackestone .5-3" thick, F, R1-R2, damp, no hcl reaction		809
57		7.05										LIMESTONE, shaley wackestone, light to medium grey, thin beds, interbeds of shale .2-.5" thick, bivalve fossils, few coal seams, shaley from 58.6-59, 59.5-60.1, F, R1-R2, dry strong hcl reaction		808
58		1.95							9					807
59		4.48	14	4.8 5.0	96	F								806
60		4.13					R1-R2							805
61		2.15												804
62		3.62							10					803
63		7.68												802
64		3.42	15	4.6 5.0	91									801
65		3.05					R1					SHALE, medium dark grey, very thin beds, F, R1, damp no hcl reaction		800
		5.87												800

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**ROCK LOG**  
**Boring No. B-1026**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
66		5.87	15	4.6 5.0	91							SHALE, medium dark grey, very thin beds, F, R1, damp no hcl reaction		799
67		8.33					R1		11					798
68		4.83										LIMESTONE, wackestone, very light grey, abundant fossils, F, R2, dry	gradational contact	797
69		4.03	16	5.0 5.0	100		R2					SHALE, same as 63.8-67.9, one 1.2" limestone bed		796
70		3.55										SHALE, same as 63.8-67.9		795
71		6.48					R1							794
72		6.07											core from run 17 damaged while removing stuck sample barrel from outer tube	793
73		4.67							12			LIMESTONE, wackestone, light to medium light grey, thin wavy beds, burrows, F, R2, dry violent hcl reaction		792
74		2.35	17	5.1 5.0	100		R2							791
75		4.27										SHALE, same as 63.8-67.9	Length of recovery stretched due to mechanical breaks.	790
76		3.8												789
77		6.5												788
78		9.08					R1		13			LIMESTONE, shaley wackestone, light to medium grey, thin beds, burrows, F, R1, slightly damp, strong hcl reaction		787
79		8.6	18	4.8 5.0	96							SHALE, same as 75-76.9		786
80		6.22												785
		5.37					R1-R2					LIMESTONE, shaley limestone, same as 76.9-77.9, with bivalve fossils, 2" shale interbed at 82		785



Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-1026</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
81		5.37	18	4.8 5.0	96		R1-R2					LIMESTONE, shaley limestone, same as 76.9-77.9, with bivalve fossils, 2" shale interbed at 82		784
82		4.88												783
83		5.17												782
84		1.95	19	5.0 5.0	99				14			LIMESTONE, wackestone, very light to medium light grey, thin beds, bivalve and gastropod fossils, burrows from 83.4-84.5, subhorizontal stylolites, F, R2, violent hcl reaction, dry, coal seams .1" thick 85.8 and below, packstone interval 93.8-94.6, shaley from 97.5-98.1, subhorizontal stylolites 98.5-99.3, shaley 101.9 and below		781
85		1.77												780
86		1.62					R2							779
87		3.52							15					778
88		1.4				F								777
89		1.67	20	5.0 5.0	100									776
90		2.48												775
91		2.28												774
92		4.67												773
93		5.4					R1-R2		16					772
94		2.1	21	5.1 5.0	100									771
95		1.65											Length of recovery stretched due to mechanical breaks.	770
		2.65												770

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-1026**


Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
96		2.65	21	5.1 5.0	100							LIMESTONE, wackestone, very light to medium light grey, thin beds, bivalve and gastropod fossils, burrows from 83.4-84.5, subhorizontal stylolites, F, R2, violent hcl reaction, dry, coal seams .1" thick 85.8 and below, packstone interval 93.8-94.6, shaley from 97.5-98.1, subhorizontal stylolites 98.5-99.3, shaley 101.9 and below		769
		5.65												768
97		3.67												767
98		1.95	22	4.5 5.0	90									766
99		1.83							17					765
100		2.05											Run came up .6' short, trying to pick it up on run 23	764
101		3.58												763
102		2.85												762
103		2.17	23	4.7 5.0	94	F	R1-R2							761
104		1.08												760
105		1.8										LIMESTONE, shaley wackestone, light to medium grey, thin convoluted beds, burrows, F, R1-R2, dry strong hcl reaction	759	
106		3											758	
107		3.23							18				757	
108		3.58	24	4.2 5.0	84								756	
109		2.58											755	
110		1.87												

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-1026**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
111		1.87	24	4.2 5.0	84	F							Bottom of hole	754
112														753
113														752
114														751
115														750
116														749
117														748
118														747
119														746
120														745
121														744
122														743
123														742
124														741
125														740

Project Name and Job Number TXU Comanche Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-1027</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'03.43182"N / 97°47'40.55214"W		Total Depth 150 feet	
Drilling Contractor and Rig Geotechnology / CME 55		Elevation and Datum 863.619 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 15 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 6	Date Started 12/16/06	
		Borehole Inclination Vertical	Logged by A. Streig	Date Completed 12/17/06	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 1/10/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0										863
1	CL		B-1027 1	3	14/18			RESIDUAL SOIL (RS) LEAN CLAY medium stiff, brown (10YR4/3), dry to damp, <5% small angular limestone fragments yellow (2.5Y7/6)		862
2				8						861
3				40						860
4			B-1027 2	18	17/18			SILT with limestone fragments very dense, yellow (2.5Y7/6), dry, strong reaction to HCl		859
5				21						858
6	ML		B-1027 3	18						857
7				8	18/18			stiff, yellow (2.5Y8/6), very slight to no reaction to HCl		856
8				20						855
9			B-1027 4	12						854
10	CL			5	14/10			LEAN CLAY hard, light gray (5Y7/1), damp, with calcareous deposits and ~ 15% angular limestone fragments, strong reaction to HCl		853
11				50/5"						852
12	GM		B-1027 5	50/3"	0.5/3			LIMESTONE FRAGMENTS with silt dense, pale yellow (2.5Y7/3), damp, no reaction to HCl, very fine mottles of white and yellow		851
13										850
14	CL		B-1027 6	5	14/13			LEAN CLAY gray (GLE1,5/N), damp very stiff, very slight reaction to HCl		849
15				21						849
				50/1"						

Project Name and Job Number  
TXU Comanche Peak COL  
1908



**SOIL LOG**  
**Boring No. B-1027**

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
15							Top of Bedrock at 15'	Bedrock at 15.0'	848
16									847
17									846
18									845
19									844
20									843
21									842
22									841
23									840
24									839
25									838
26									837
27									836
28									835
29									834
30									




Undisturbed sample  
SH = Shelby; P = Pitcher; O = other



Driven (2.5 to 3.0 inch) with liners  
MC = Modified California; O = other



Standard Penetration Test (SPT) sampler

Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. B-1027</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'03.43182"N / 97°47'40.55214"W		Total Depth 150 feet	
Drilling Contractor and Rig GeoTechnology / CME 55		Elevation and Datum 863.619 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 15 feet	
Casing Size and Depth 4" / 15 feet		Length of Core Barrel and Bit 8.6 feet	No. of Core Boxes 10	Date Started 12/16/06	
		Borehole Inclination Vertical	Logged by A. Streig	Date Completed 12/17/06	

Reviewed by / Date R. Ortiz 1/10/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
15														848
16		NM	7	$\frac{5.0}{1.0}$	100	SW MW	R0						Bedrock at 15 strong HCl reaction below Plugged up removed 10' outer barrel	848
17		4.87					R2						RQD for run 7 corrected after run 8, 8 had .5' stick up	847
18		2.47	8	$\frac{5.0}{2.5}$	100	SW	R1		1027-7					846
19		5.33											unable to comment on water return as we are using a tub and filter system for drill water, drillers comment water return is good no loss	845
20		2.82	9	$\frac{4.4}{2.5}$	88	SW	R2							844
21		6.58											hole plugged up removed 20' of outer barrel	843
22		3.13				SW	R2							842
23		6.25												841
24		4.88	10	$\frac{5.0}{5.0}$	100	SW	R2						minor leak on drill water hose, dripping water	840
25		2.92												839
26		6							1027-8				winch cables twisted around spool, drillers put down mast to untangle wire	838
27		5.13				MW	R1							837
28		3.25	11	$\frac{5.0}{5.0}$	100									836
29		3.23							1027-9					835
30		1.75				MW	R2							834

JT, horizontal, very close.  
Wa, JRC3, R0, MB on healed JT suture

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1027</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
30		1.78	11	5.0 5.0	100						JT, horizontal, JRC3, wavy, rough, close, MB on healed JT suture in sparite	LIMESTONE: wackestone/sparite; depositional texture not recognizable; white (N9) to very light gray (N8); fine to medium grained; massive to 2" thick beds; recrystallized calcite throughout; abundant coal/peat fragments; vugs along seams/suture very wavy; irregular sutures; shell fragments within sutures; healed and tight except where mechanical breaks occurred on sutures; common coal coating; minerals on bedding breaks; strong HCl reaction. [Glen Rose Formation] Very fine pyrite grains 28'-32.4'. Pyrite nodules below 32.4';		833
31		1.17				MW	R2							
32		1.53												831
33		2.82	12	5.0 5.0	100									830
34		3.9										Coal seam at 34', highly bioturbated below 34.1'. Highly bioturbated below coal seam.		829
35		4.5				MW	R2							828
36		3.13								1027-10				827
37		3.47				SW	R2					LIMESTONE: micrite; medium light gray (N7); fine grained; slightly weathered (SW); weak (R2); massive to laminated; a long loose bioturbation within upper 0.7'; bioturbation filled with coarse lighter shell rich matrix from overlying unit; shells along basal contact; strong HCl reaction. [Glen Rose Formation]		826
38		7.37	13	4.8 5.0	96									825
39		8.92				SW	R1					SHALE: mudstone; medium gray (N5); fine grained; slightly weathered (SW); very weak (R1); fine laminations; very slight to no reaction to HCl; planar and smooth bedding breaks; sharp upper contact. [Glen Rose Formation]		824
40		9.73								1027-11				823
41		2.75										LIMESTONE: wackestone; shaly; medium light gray (N7); fine grained; weak (R2); slightly weathered (SW); laminated to 1 1/2" beds; wavy; irregular; some shell fragments; some bioturbation filled with lighter fine grains along basal contact; slight to strong HCl reaction; increased bioturbation, deformed bedding, and percent shell fragments below 46.0'; 10%-25% shell fragments; color change to light gray (N7) below 42.2'. [Glen Rose Formation]	Run 14 assisted by J. Epstein	822
42		2.67										shaly wackestone grades to highly bioturbated wackestone below 42.2 and becomes lighter gray		821
43		2.75	14	5.0 5.0	100	SW	R2							820
44		2.92												819

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1027</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
45		4.13	14	5.0 5.0 5.0	100 60 60					1027-12		LIMESTONE: wackestone; shaly; medium light gray (N7); fine grained; weak (R2); slightly weathered (SW); laminated to 1 1/2" beds; wavy; irregular; some shell fragments; some bioturbation filled with lighter fine grains along basal contact; slight to strong HCl reaction; increased bioturbation, deformed bedding, and percent shell fragments below 46.0'; 10%-25% shell fragments; color change to light gray (N7) below 42.2'. [Glen Rose Formation]	cable on winch is twisted, stopped drilling to repair	818
46		2.47	7	5.0 5.0										817
47		2.67												816
48		1.58	15	5.0 5.0 5.0	100 100 63	SW	R2							815
49		1.33	8 9	2.0 4.0 3.0										814
50		5.4												813
51		7.9								1027-13		SHALE: mudstone; medium gray (N5); fine grained; moderately weathered (MW); very weak (R1); laminated; 1" thick wackestone interbed from 51.2'; no HCl reaction; gradational basal contact. [Glen Rose Formation]		812
52		5.37				MW	R2					LIMESTONE: wackestone; very light gray (N8); fine grained; weak (R2); laminated to 2" thick shale laminations interbedded; wavy deformed bedding; strong HCl reaction; gradual basal contact over .1". [Glen Rose Formation]	Changed/corrected RQD for Run 16 after Run 17, Run 17 had .1' of stick up	811
53		5.38	16	5.0 5.0 4.7 5.0	100 94									810
54		5.37										SHALE: mudstone; shale medium gray (N5), fine grained, moderately weathered (MW), very weak (R1), laminated; wackestone interbeds below 53.5' depth; gradual basal contact from 53.5'; no HCl reaction.		809
55		2.38								1027-14		LIMESTONE: wackestone; very light gray (N8); fine grained; moderately weathered (MW); weak (R2); laminated to 2" thick beds; shale accumulation along laminations; strong HCl reaction. [Glen Rose Formation]		808
56		3.55				MW	R2					Coal seam 0.1'-0.2" at 53.8'. Shale interbed 54.05'-54.4'. Shale interbed at 56.9'-57.0'.		807
57		6.15												806
58		3.9	17	5.0 5.0	100									805
59		4.8												804



Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-1027**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
60		4.95	17	5.0	100	MW	R2					Shale interbed at 60.1'-60.3'		803
61		3.73	11	5.0	56				1027-15					802
62		2.87		5.0								SHALE: mudstone; SHALE: medium gray (N5); fine slightly weathered (SW); weak (R2); laminations to .2'5" thick beds; smooth planar bedding planes; few shell fragments in upper 1'; abundant shell fragments in upper .2' above basal contact; wavy; sharp upper and lower contacts; no HCl reaction; slight HCl reaction where shells present. [Glen Rose Formation]		801
63		10.03	18	5.0	100	SW	R1			1027-16				800
64		5.55	12	5.0	100									799
65		5.87												798
66		4.57				SW	R1					LIMESTONE: wackestone; very light gray (N8); fine grained; slightly weathered (SW); weak (R2); beds 0.5-3" thick; shale interbeds 0.5-3" thick; shale is laminated; same shale as above; no shell fragments within shale; common shells within wackestone. [Glen Rose Formation]	Good water recovery according to drillers	797
67		4.85								1027-17				796
68		52.12	19	5.0	99	SW	R1					SHALE: mudstone; medium gray (N5); fine; slightly weathered (SW); very weak (R1); laminations 0.5" thick; wackestone interbed at 68.7"; wavy sharp upper and lower contact; no HCl reaction. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	795
69		4.05	13	5.0	91									794
70		4.05												793
71		4.33				SW	R1					LIMESTONE: wackestone; very light gray (N8); fine to some medium grained areas; slightly weathered (SW); laminations to 2" thick beds; deformed wavy .25" shale interbeds; bioturbation. [Glen Rose Formation]		792
72		5.13									MB, dipping 30 along healed fracture, bedding fracture filled with silt			791
73		5.22	20	4.9	98	SW	R1					SHALE: mudstone; medium gray (N5); fine grained; slightly weathered (SW); very weak (R1); laminations throughout; higher silt content and lighter color below 74"; very slight to no reaction to HCl; shell fragments in upper 0.2'; gradational wavy upper contact and lower contact over 1". [Glen Rose Formation]		790
74		4.37		5.0										789

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-1027**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
75		7.33	20	4.0	98	SW	R2			1027-18		LIMESTONE: wackestone; very light gray (N8) to light gray (N7); fine; slightly weathered (SW); weak (R2); abundant bioturbation; strong HCl reaction.		788
76		6.35	14	5.0	88	MW	R1					SHALE: mudstone; medium gray (N5); fine; moderately weathered (MW); very weak (R1); fine laminations; no HCl reaction. [Glen Rose Formation]		787
77		4.67												786
78		3.8	21	5.0	100	SW-MW	R2					Shells in wackestone 77.6'-81.5'.		785
79		6.05												784
80		1.95								1027-19		Shale interbed 79.7'-80.1'.		783
81		1.95												782
82		1.95												781
83		1.37	22	5.0	100	SW-MW	R2							780
84		1.72												779
85		1.72												778
86		2.22								1027-20			Good water recovery	777
87		3.28												776
88		1.48	23	5.0	100	SW-MW	R2					Coarsens downward below 88' (grain size coarsens from fine to medium); grain percentage increases to 30%.		775
89												Deformed laminations from 89.0'-89.8'; bioturbation; boudins; less deformed zone/interbed at 89.8'.		774
90	NM													

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-1027**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
90		1.13	23	5.0	100	SW-MW	R2							773
91		3.13								1027-21				772
92		4.02								1027-22			Drillers note good water return, no water loss	771
93		1.72	24	5.0	100	SW-MW	R2							770
94		2.97												769
95		2.62												768
96		1.67											Irregular, wavy, suture-like fractures along bedding planes; tight, closed.	767
97		1.65												766
98		1.3	25	5.0	100	SW-MW	R2			1027-23				765
99		3.5												764
100		3.5											Unit coarsens downward to packstone below 99'.	763
101		3.15				SW-MW	R2							762
102		1.48												761
103		1.4	26	5.0	100	SW	R2							760
104		1.4												759

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1027</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
105		1.8	26	5.0	100	SW	R2					LIMESTONE: packstone; light gray (N7) to medium light gray (N7); fine to medium grained; slightly weathered (SW); weak (R2); massive to 6" thick beds; deformed laminations within 6" beds; common bioturbation; filling with coarser medium gray (N5) material; intense zone of bioturbation and dewatering below 110'; 50%-60% grains; upper contact disturbed by bioturbation; upper contact is wavy and irregular; disturbed over 1"; strong HCl reaction. [Glen Rose Formation]		758
106		2.32							1027-24					757
107		1.25							1027-25					756
108		1.25	27	5.0	100	SW	R2							755
109		2.2												754
110		2.18												753
111	NM													752
112		1.78											11:36, cloudy water running out of catch basin, noted by Danny from Enercon	751
113		1.92	28	4.9	98	SW	R2							750
114		3.02												749
115		3.02							1027-26				748	
116		4.17				SW	R2					Drillers note good water return, average water usage	747	
117		2.13											746	
118		2.45	29	5.0	100	SW	R2						745	
119		1.63							1027-27				744	
120														

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1027</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
120		NM	29	5.0	100	SW	R2					LIMESTONE: packstone; light gray (N7); medium grained; slightly weathered (SW); weak (R2); massive to laminated; sub units; laminated zones 6" thick; deformed wavy laminations; wackestone interbed at 120.3'; grades back to packstone; bioturbation; slight to strong HCl reaction. [Glen Rose Formation]		743
121		2												742
122		2												741
123		1.9	30	5.0	100	SW	R2							740
124		1.88												739
125		2.6				SW	R2			1027-28		SHALE: mudstone; calcareous; light gray (N7); slightly weathered (SW); weak (R2); fine; fine laminations; slight HCl reaction. [Glen Rose Formation]		738
126		2.22										LIMESTONE: packstone; light gray (N7); medium grained; slightly weathered (SW); massive; abundant bioturbation from 126'-126.5'; bioturbation filled with medium light gray (N7) coarse material; overall unit fines downward; slight to strong HCl reaction. [Glen Rose Formation]	Run 31 RQD and recovery corrected after 5.1' recovery on Run 32	737
127		2.02												736
128		2.73	31	5.0	100	SW	R2							735
129		3.25												734
130		2.38												733
131										1027-29				732
132		4.17										LIMESTONE: wackestone; light gray (N7); fine; slightly weathered (SW); weak (R2); massive beds 0.9' thick; interbedded with laminated zones from 0.3"-1" thick; laminations are wavy and deformed; irregular; few micrite interbeds at 35.0'-35.2'; bioturbation at 131.7' filled with darker material including pyrite; small shell fragments from 136.0'-137.8'; slight to strong HCl reaction; sparse angular coal fragments; wavy basal contact, diffuse over 0.5". [Glen Rose Formation]		731
133		1.75	32	5.1	100	SW	R2							730
134		2.23												729
135														

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-1027</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
135		1.97	32	5.1 5.0	100	SW	R2					LIMESTONE: wackestone; light gray (N7); fine; slightly weathered (SW); weak (R2); massive beds 0.9' thick; interbedded with laminated zones from 0.3"-1" thick; laminations are wavy and deformed; irregular; few micrite interbeds at 135.0'-135.2'; bioturbation at 131.7' filled with darker material including pyrite; small shell fragments from 136.0-137.8'; slight to strong HCl reaction; sparse angular coal fragments; wavy basal contact, diffuse over 0.5". [Glen Rose Formation]		728
136		2.62												727
137		2.62												726
138		2.35	33	4.9 5.0	98	SW	R2						Good water return according to drillers. Unable to directly assess due to water filtering system	725
139		2.53												724
140		NM												723
141		2.8												722
142		1.83				SW	R2							721
143		1.83	34	5.0 5.0	100									720
144		3.58				SW	R1					SHALE: mudstone; medium gray (N5) fine grained; slightly weathered (SW); very weak (R1); fine laminations; some shell fragments; very slight HCl reaction; wavy upper and lower contacts. [Glen Rose Formation]		719
145		2.18				SW	R2					LIMESTONE: wackestone; light gray (N7); fine grained; slightly weathered (SW); weak (R2); massive; some bioturbation filled with darker coarser material; strong HCl reaction. [Glen Rose Formation]		718
146		5.85										SHALE: mudstone; calcareous; medium light gray (N7); fine grained; slightly weathered (SW); weak (R2); laminated; slight HCl reaction. [Glen Rose Formation]		717
147		3.93										LIMESTONE: wackestone; light gray (N7); fine grained; slightly weathered (SW); weak (R2); deformed wavy laminations; bioturbation; strong HCl reaction.		716
148		1.58	35	5.0 5.0	100	SW	R2							715
149		4.6												714

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-1027**


Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
150			35	51.0 51.0	100								Total depth drilled 150.0'	713
151														712
152														711
153														710
154														709
155														708
156														707
157														706
158														705
159														704
160														703
161														702
162														701
163														700
164														699
165														

Project Name and Job Number TXU Comanche Peak COL 1908		 WLA William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-1028</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'09.96343"N / 97°47'42.20648"W		Total Depth 75.5 feet	
Drilling Contractor and Rig TEXPLOR / CME 75		Elevation and Datum 842.064 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 12.5 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 5	Date Started 1/22/07	
		Borehole Inclination Vertical	Logged by G. VanEitten	Date Completed 1/23/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 1/30/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0								<b>ARTIFICIAL FILL (Qaf)</b> LEAN CLAY with sand stiff, olive (5Y5/6), damp, some limestone fragments		842
1			B-1028 1	3						841
2				2	18/18	2				840
3				4						839
4			B-1028 2	4				with ~ 10% limestone fragments		838
5				3	19/18	2				837
6	CL			6						836
7			B-1028 3	2				medium stiff, olive yellow (2.5Y6/8)		835
8				2	13/18	1				834
9				8						833
10			B-1028 4	2				soft, olive brown (2.5Y4/4)		832
11				2	8/18	0.5				831
12	GC		B-1028 5	6				GRAVELLY CLAY ~ 40% gravel, some wood and plastic debris		830
13				8	10/18					829
14				11				Top of Bedrock at 12.5'	Bedrock at 12.5'	828



Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG Boring No. B-1028</b>	
Type and Diameter of Boring NQ / 3"		Boring Location 32°18'09.96343"N / 97°47'42.20648"W		Total Depth 75.5 feet	
Drilling Contractor and Rig TEXPLOR / CME 75		Elevation and Datum 842.064 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 12.5 feet	
Casing Size and Depth 4" / 12.5 feet		Length of Core Barrel and Bit 7.95 feet	No. of Core Boxes 4	Date Started 1/22/07	
		Borehole Inclination Vertical	Logged by G. Van Etten	Date Completed 1/23/07	

Reviewed by / Date R. Ortiz 1/30/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology		Remarks	Elevation (feet)
13		1.53							1028-6		JT, Pl, Sl, Op	LIMESTONE: sparite; wackestone; yellowish gray (5Y 8/1); massive; moderately weathered (MW); very weak (R1); fossiliferous; violent HCl reaction; changes to medium gray at 16.2. with shale bioturbation. [Glen Rose Formation]	Bottom of SPT sampling, top of Bedrock at 12.5 Began NQ coring at 12.5', Glen Rose Formation.	829	
14		1.87	1	4.5 3.0	90										828
15		1.8									JT, Pl, Sl, Op		no water return		827
16		0.83				MW	R1								826
17		1.15							1028-7						825
18		0.98	2	4.4 5.0	88										824
19		1.08													823
20		3.22										SHALE: dark gray (N3); massive; fresh (F); extremely weak (R0); some bivalves; limestone interbeds 0.1' thick. [Glen Rose Formation]		822	
21		2.22				F	R0								821
22		1.58													820
23		1.33	3	5.0 5.0	100										819
24		0.83							1028-8			LIMESTONE: wackestone; medium light gray (N6); wavy shale beds 0.05' thick; fresh (F); very weak (R1); some bioturbation. [Glen Rose Formation]		818	
25		0.8				F	R1								817
26		0.97													816
27		0.87	4	4.9 5.0	98	F	R1					LIMESTONE: packstone; medium light gray (N6); very thin wavy shale beds; fresh (F); very weak (R1); rip-up clasts. [Glen Rose Formation]		815	

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-1028</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
28		0.5							1028-9			LIMESTONE: packstone; medium light gray (N6); very thin wavy shale beds; fresh (F); very weak (R1); rip-up clasts. [Glen Rose Formation]		814
29		0.33	4	4.6 5.0	98									813
30		0.6				F	R1						no water return, 1800 psi	812
31		0.33												811
32		1.25												810
33		2.5	5	3.8 5.0	76				1028-10			SHALE: medium dark gray (N4); limestone layers 0.1-0.2' thick; evenly spaced; fresh (F); very weak (R1). [Glen Rose Formation]		809
34	HH	1.8				F	R1					Limestone 33.7'-34.0'.		808
35		4.42												807
36		4.47												806
37		0.8										LIMESTONE: packstone; light gray (N7); wavy interbeds of shale; fresh (F); very weak (R1); bioturbation. [Glen Rose Formation]	contact angled at 45	805
38		0.9	6	3.5 5.0	70				1028-11					804
39		1.17				F	R1							803
40		1.38												802
41		1.1	7	5.0 5.0	60									801
42		2.07												800

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1028</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
43		1.65								1028-12		SHALE: medium dark gray (N4); fresh (F); extremely weak (R0); limestone rip-up clasts; abundant shells. [Glen Rose Formation]		799
44		2.42	7	5.0 5.0	60									798
45		1.82				F	R0						no water return, start drilling 1/23, run 8 came out steaming	797
46		2.3	8	2.0 2.0	100					1028-13				796
47		1.1												795
48		1.75				F	R2			1028-14		LIMESTONE: packstone; very light gray (N8); fresh (F); weak (R2); fossiliferous; bioturbation. [Glen Rose Formation]		794
49		3.83	9	2.4 3.0	63							SHALE: and plastic clay; dark gray (N3); fresh (F); extremely weak (R0). [Glen Rose Formation] 0.1' thick limestone layer at 49.2'. 0.1' thick limestone layer at 49.5'. 0.1' thick limestone layer at 49.8'.		793
50		3.5				F	R0							792
51		2.55											sampler stuck	791
52		3.75												790
53		3	10	4.7 5.0	94							LIMESTONE: packstone; light gray (N7); thin wavy shale layers; fresh (F); very weak (R1); many rip-up clasts. [Glen Rose Formation]		789
54		2.42								1028-15				788
55		3.5				F	R0					SHALE: dark gray (N3); massive; fresh (F); extremely weak (R0); few shell fragments. [Glen Rose Formation]	sampler stuck	787
56		1.92	11	4.2 5.0	56									786
57		1.35				F				1028-16				785

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1028</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
58		2.18										LIMESTONE: packstone; light gray (N7) shale interbeds; 0.05-0.3' thick; fresh (F); very weak (R1); bioturbation and rip-up clasts. [Glen Rose Formation]		784
59		1.83	11	4.2 5.0	56	F	R1						no water return	783
60		2.07												782
61		0.82												781
62		2.13				F	R0					SHALE: dark gray; .005' thick wavy layers of limestone; fresh (F); extremely weak (R0).		780
63		0.9	12	5.0 5.0	100	F	R1					LIMESTONE: wackestone; light gray (N7); massive; fresh (F); very weak (R1). [Glen Rose Formation]		779
64		0.8										LIMESTONE: packstone; medium light gray (N6); wavy thin interbeds of shale fresh (F); very weak (R1); rip-up clasts; some bioturbation. [Glen Rose Formation]		778
65		0.85												777
66		0.72				F	R1							776
67		0.68												775
68		0.7	13	5.1 5.0	91									774
69		0.5										.1' thick layer of coal from 68.3-68.4. LIMESTONE: wackestone; light gray (N7); massive; fresh (F); very weak (R1). [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	773
70		0.7												772
71		0.67				F	R1							771
72		0.68	14	5.0 5.0	88									770


Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-1028</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
73		0.7										LIMESTONE: wackestone; light gray (N7); massive; fresh (F); very weak (R1). [Glen Rose Formation]		769
74		0.5	14	5.0 5.0	88	F	R1		1028-19					768
75		0.7												767
76													Total depth drilled 75.5'.	766
77														765
78														764
79														763
80														762
81														761
82														760
83														759
84														758
85														757
86														756
87														755

Project Name and Job Number TXU Comanche Peak COL 1908				<b>SOIL LOG</b> <b>Boring No. B-1029</b>	
Type and Diameter of Boring HSA / 7"			Boring Location 32°18'08.25662"N / 97°47'41.89926"W		Total Depth 150 feet
Drilling Contractor and Rig Palmerton and Parish / CME 55			Elevation and Datum 846.878 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 6 feet
Sampling Method SPT			Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 2	Date Started 1/25/07
			Borehole Inclination Vertical	Logged by T. Glidden	Date Completed 1/28/07

Reviewed by / Date \_\_\_\_\_ R. Ortiz 2/5/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0							ARTIFICIAL FILL (Qaf) FAT CLAY soft, very dark grayish brown (10YR3/2), moist			846
1	CH		B-1029 1	2	18 18	1				845
2				20			RESIDUAL SOIL (RS) LIMESTONE micrite, moderately weathered, light olive gray (5Y6/1), reacts to HCl			844
3							LEAN CLAY very stiff, light yellowish brown (2.5Y6/4), dry to moist			843
4	CL		B-1029 2	11	15 18	2	stiff, pale yellow (2.5Y8/2), moist, very coarse rounded carbonate clasts below 4'			842
5				4						841
6							Top of Bedrock at 6'		Bedrock at 6.0'	840
7										839
8										838
9										837
10										836
11										835
12										834
13										833
14										832
15										832

Project Name and Job Number TXU Comanche Peak Col 1908		 <b>ROCK LOG Boring No. B-1029</b>	
Type and Diameter of Boring HQ, NQ / 4	Boring Location 32°18'08.25662"N / 97°47'41.89926"W	Total Depth 150 feet	
Drilling Contractor and Rig Palmerston and Parrish / CME 55	Elevation and Datum 846.878 feet NAVD88	Ground Water Depth 37.3	Depth to Bedrock 6 feet
Casing Size and Depth 4" / 6.5 feet	Length of Core Barrel and Bit 8.7 feet	No. of Core Boxes 10	Date Started 1/25/07
Borehole Inclination Vertical		Logged by T.Glidden	Date Completed 1/28/07

Reviewed by / Date R. Ortiz 2/5/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
7		1.75	1	2.5 1.0	50	SW	R2		1029-4			LIMESTONE: wackestone; medium light gray (N6) to dark yellowish orange (10YR 6/6); weak (R2); slightly weathered (SW) to moderately weathered (MW); HCl reaction; wet; marked weathering grading to highly weathered (HW) 7.5'-11.0'; weathering decreases with depth back to moderately weathered (MW). [Glen Rose Formation]	6" of auguring 10' pvc, 3.5' above surface at start of run	840
8		2.25												839
9		1.53				HW	R2							838
10		1.92	2	2.2 5.0	40				1029-5				sample trapped, exact sample location uncertain due to volume of lost material, .2' added to run 2 from run 3	837
11		3.12												836
12		1.82				MW	R2							835
13		1.47												834
14		2.85				MW	R0						gradational contact	833
15		2.43	3	5.0 5.0	100				1029-6			LIMESTONE: light gray (N7) to greenish gray (5GY 6/1); dry; weak (R2); moderately weathered (MW); HCl reaction; dry to damp. [Glen Rose Formation]	gradational contact	832
16												Shale interbed 15.8'-16.1'.	core trapped	831
17		3.27												830
18		0.62				MW	R2							829
19		2.1												828
20		1.75	4	5.0 5.0	96				1029-7				0.2' added to run 4 from run 5	827
21		1.55					R2							826

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1029</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
22		2.03	4	5.0 5.0	96	SW-MW	R2					LIMESTONE: wackestone; light gray (N7) to medium light gray (N6); dry; weak (R2); moderately weathered (MW) to slightly weathered (SW); HCl reaction; marked increase in wavy silt filled beds; very closely spaced; bioturbated. [Glen Rose Formation]		825
23		NM											rig stopped possible electrical short	824
24		2.02				F-SW	R2					LIMESTONE: micrite; medium light gray (N6) to light gray (N7); dry; weak (R2); slightly weathered (SW) to fresh (F); slight HCl reaction. [Glen Rose Formation]		823
25		2.2	5	5.0 5.0	100						1029-8			822
26		2.17				MW	R0					SHALE: dark greenish gray (5GY 6/1); damp; extremely weak (R0); moderately weathered (MW); no HCl reaction		821
27		3.57												820
28		2.3										LIMESTONE: wackestone; medium gray (N5); damp; very weak to weak (R1-R2); slightly to moderately weathered (SW-MW); reacts to HCl; pronounced silt component within wackestone. [Glen Rose Formation]	drilling stopped, NQ gauge prepped for pressuremeter test following day	819
29		1.55				MW	R1-R2							818
30		1.08	6	5.0 5.0	100			Pressuremeter			1029-9			817
31		0.92						Pressuremeter						816
32		1.82										LIMESTONE: wackestone; silty; medium gray (N5); moderately weathered (MW); very weak (R1); reacts to HCl; damp; silt content decreases with depth. [Glen Rose Formation]	NQ interval routed out, switch to HQ, included in run 7, result of differential bit length between HQ and NQ	815
33														814
34		1.3				MW	R1							813
35		1.43	7	4.8 5.5	95									812
35		0.87									1029-10			812
36		0.73												811



Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1029</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)			
37		0.73	7	4.8 5.1	95	MW	R1							810			
38		2.88														809	
39		2.87	8	5.0 5.0	100	SW-MW	R0-R2					LIMESTONE: wackestone; silty; with interbedded shales up to 0.05'; light gray (N7) to dark greenish gray (5GY 6/1); extremely weak (R0) to weak (R2); damp; slightly to moderately weathered (SW-MW); variable HCl reaction. [Glen Rose Formation]		808			
40		2.98														807	
41		4.07							SW-MW	R0-R2				SHALE: with gradationally interbedded wackestone up to 0.1' thick; dark greenish gray (5GY 6/1) to very light gray (N8); slightly to moderately weathered (SW-MW); extremely weak (R0) to weak (R2); contact proceeded by 0.2' of clean wackestone; variable HCl reaction. [Glen Rose Formation]		806	
42		3.85	9	4.8 5.0	96	SW	R2					LIMESTONE: wackestone; very light gray (N8); dry; slightly weathered (SW); weak (R2); reacts to HCl; sporadic and wavy mud filled cracks, closely to moderately spaced		805			
43		1.42														804	
44		3.27	10	5.0 4.8	100							LIMESTONE: wackestone; very light gray (N8) with occasional shale interbeds up to 0.3' thick; slightly to moderately weathered (SW-MW); dry to damp; extremely weak to weak (R0-R2); wavy mud filled cracks; moderately to closely spaced; bioturbated; intact shells at 46.3; variable HCl reaction. [Glen Rose Formation]	drill chatter	803			
45		2.87														802	
46		1.4							SW-MW	R0-R2						801	
47		4.97	10	5.0 4.8	100									800			
48		5.68														799	
49		6.83	10	5.0 4.8	100									798			
50		7.7														switch to NQ for pressuremeter boring, drill rate reduced, constant chatter, rig running 2nd gear	797
51		7.85							MW	R0	Pressuremeter			SHALE: dark greenish gray (5GY 6/1); dry to damp; moderately weathered (MW); extremely weak (R0); no HCl reaction; concentration of subangular subrounded carbonate clasts. [Glen Rose Formation]		796	
		6.03															

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1029</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)								
52		6.03	10	5.0 4.8	100	MW	R0	Pressuremeter				SHALE: dark greenish gray (5GY 6/1); dry to damp; moderately weathered (MW); extremely weak (R0); no HCl reaction; concentration of subangular subrounded carbonate clasts. [Glen Rose Formation]		795								
		7.88																				794
53		4.72	11	5.0 4.8	100	F-SW	R2	Pressuremeter				MICRITE; white (N9) to very light gray (N8); dry to damp; fresh (F) to slightly weathered (SW); weak (R2); violent HCl reaction; recrystallized shell fragments fairly abundant. [Glen Rose Formation]	continual chatter, case movement up to 6" laterally, leaky case joint duct taped, rig running 2nd gear, interval 48'-57.6' reamed to HQ, HQ gauge from 57.6'	793								
54		11.08																				792
55		11.77																				791
56		8.35	12	5.0 5.2	100	MW	R0	Pressuremeter				SHALE: olive gray (5Y 4/1); damp; moderately weathered (MW); extremely weak (R0); no HCl reaction; pyrite rich layer (0.05' thick) at 55.2'. [Glen Rose Formation]		790								
57		5.93																				790
58		1.7																				789
59		4.97	13	5.0 5.0	100	MW	R1-R2					LIMESTONE: wackestone; micritic; white (N9) to very light gray (N8); fresh to slightly weathered (F-SW); weak (R2); violent HCl reaction. [Glen Rose Formation]	5.2' run, .2' of NQ to HQ differential	788								
60		2.68																				787
61		2.3	13	5.0 5.0	100	MW	R0					SHALE: mudstone; med dark gray (N3); wet; moderately weathered (MW); extremely weak (R0); no HCl reaction. [Glen Rose Formation]	split core trapped in barrel, recovered without removing casing	786								
62		7.28																				785
63		6.62	13	5.0 5.0	100	MW	R1					LIMESTONE: micrite; very light gray (N8) to light gray (N7); dry; moderately weathered (MW); very weak to weak (R1-R2); strong reaction to HCl; high silt content above 59.3'. [Glen Rose Formation]		784								
64		5.65																				783
65		3.58	13	5.0 5.0	100	MW	R0					MUDSTONE; shale and interbedded calcareous mud; laminated; medium dark gray (N4); damp; extremely weak (R0); no reaction to HCl; moderately weathered (MW). [Glen Rose Formation]	drill chatter	782								
66		3.08																				781

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-1029**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
67		3.08	13	5.0 5.0	100	SW	R1-R2							780
68		4.1				SW	R2						switch to NQ, 300 psi/1300rpm, pressure meter test	779
69		6.13												778
70		4.22	14	4.6 4.8	98	MW	R1-R2	Pressuremeter						777
71		3.75						Pressuremeter						776
72		4.93												775
73		1.98											switch back to HQ, ream NQ hole, good water flow	774
74		1.28												773
75		1.17	15	5.0 5.4	100	MW	R1-R2							772
76		1.12												771
77		1.28												770
78		1.88												769
79		1.3	16	5.0 5.0	100	MW	R1-R2							768
80		1.4												767
81		1.45											Wavy silt filled laminations from 80.6'-82.0'	766

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1029</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)				
82		1.45	16	5.0 5.0	100	MW	R1-R2					LIMESTONE: wackestone; very light gray (N8) with olive gray (5Y 4/1) silty/wavy intervals; dry; weak to very weak (R2-R1); moderately weathered (MW); prominent burrow ~3" long beginning at erosional contact (78.4'); bioturbation continues to 80.2'; reacts to HCl. [Glen Rose Formation] Additional bioturbation at 82.9'.		765				
83		1.57																764
84	NM											LIMESTONE: micrite; white (N9) to very light gray (N8); dry; fresh (F) to slightly weathered (SW); weak to medium strong (R2-R3); sporadic wavy silt laminations beginning 84.2; silt content increases towards gradational contact; strong (R4) HCl reaction. [Glen Rose Formation]	drill chatter, run interval stops, core barrel pulled and repositioned	763				
85	NM					F-SW	R2-R3		1029-20					762				
86	NM		17	5.0 5.0	100	SW	R2					LIMESTONE: wackestone; very light gray (N8) to light gray (N7); dry; slightly weathered (SW); weak (R2); reacts to HCl; wavy silt laminations throughout. [Glen Rose Formation]		761				
87		1.18														Bioturbation and rip up clasts at 86.5'-87.8';		760
88		1.98														Rip up clasts 88.2'-89.3';		759
89		2.2											758					
90		1.38							1029-21			Heavy bioturbation at 89.3' and bioturbated through 91.1'.	dill chatter	757				
91		2.38	18	5.0 5.0	100	SW	R2					Ooids pervasive beginning at 90';		756				
92		1.13														2" sandy mud zone at 90.7';		755
93		0.43																754
94		1.88											753					
95		1.5	19	5.0 5.0	100	SW	R2							752				
96		0.82											1029-22					751
		1.58																

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-1029**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)										
97		1.58	19	5.0 5.0	100	SW	R2					LIMESTONE: wackestone; very light gray (N8) to light gray (N7); dry; slightly weathered (SW); weak (R2); reacts to HCl; wavy silt laminations throughout. [Glen Rose Formation]		750										
		1.78																						749
98		1.65	20	5.0 5.0	96	MW	R1-R2			1029-23		LIMESTONE: LIMESTONE: wackestone; silty; light olive gray (5 Y 6/1) with very light gray (N8) wackestone rip up clasts; very weak to weak (R1-R2); moderately weathered (MW); extremely abundant gastropod shells up to 1mm; reacts to HCl. [Glen Rose Formation]	.2' added from run 20 to run 21	748										
99		1.47																						747
100		1.17																						746
101		0.73																						745
102		3.17	21	5.0 5.0	100	F-SW	R2					LIMESTONE: oolitic wackestone; very light gray (N8) dry; weak (R2); fresh (F) to slightly weathered (SW); reacts to HCl; minor wavy silt filled cracks at irregular intervals. [Glen Rose Formation]		744										
103		2.27																						743
104		1.75																						742
105		1.87	22	5.0 5.0	100	SW	R1-R2					LIMESTONE: micrite; silty; very light gray (N8) to light gray (N7); dry; very weak to weak (R1-R2); laminated with one silt interbed; reacts to HCl; dramatic increase in silt and muddy interbed at lower contact; slightly weathered (SW). [Glen Rose Formation]		741										
106		1.12																						740
107		0.55	22	5.0 5.0	100	SW	R2					LIMESTONE: wackestone; oolitic; very light gray (N8); dry; weak (R2); slightly weathered (SW); irregularly spaced silt filled cracks; reacts to HCl. [Glen Rose Formation].		739										
108		NM																						738
109		NM																						737
110		1.07	22	5.0 5.0	100	SW	R2					Bioturbated zone 108.2'-109.7'.		736										
111		2.58																						736
												High silt content in wavy laminations from 110.2'-112.2'.												

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
112		2.58	22	5.0 5.0	100	SW	R2		1029-25			LIMESTONE: wackestone; oolitic; very light gray (N8); dry; weak (R2); slightly weathered (SW); irregularly spaced silt filled cracks; reacts to HCl. [Glen Rose Formation]. Micritic zone from 112.2'-112.6' with oolitic wackestone rip up clasts to 1.5". Clay rich area 112.6'-112.7'; Bioturbation at 113.6'.		735
113		NM												734
114		0.87												733
115		0.87	23	5.0 5.0	100	SW	R2							732
116		1.63							1029-26			Thin lignite at 116.2'.		731
117		1.47										Increased silt above erosional feature at 116.8'.		730
118		1.87												729
119		1.2				SW-MW	R1-R2					LIMESTONE: micrite; very light gray (N8) to yellowish gray (5Y 8/1); dry; very weak to weak (R1-R2); slightly to moderately weathered (SW-MW); laminated with siltier intervals; grayish black (N2) organic layer 1cm thick at 120.1'. [Glen Rose Formation]		728
120		1.28	24	5.0 5.0	100	MW	R1-R2		1029-27			LIMESTONE: micrite; yellowish gray (5Y 8/1) to light olive gray (5 Y 6/1); very weak to weak (R1-R2); moderately weathered (MW); silty laminated interbeds; reacts to HCl. [Glen Rose Formation]		727
121		1.68										LIMESTONE: micrite; very light gray (N8); dry; weak (R2); silty; reacts to HCl; slightly weathered (SW). [Glen Rose Formation] Wackestone present from 121.6'-122.0'		726
122		1.43				SW	R2							725
123		NM												724
124		NM	25	5.0 5.0	96	SW	R2					LIMESTONE: wackestone; very light gray (N8) to light olive gray (5 Y 6/1); dry; weak (R2); slightly weathered (SW); reacts to HCl; bioturbation and rip up clasts 123.5'-124.2'; burrows; high silt content 124.2'-125.0'; irregularly spaced silty laminations 126.6'-127.1'; reacts to HCl. [Glen Rose Formation]	incorrectly thought split times were running, no min/ft data for run 25	723
125		NM												722
126		NM											.2' added to run 25 from run 24	721

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
127		NM	25	5.0 5.0	96							LIMESTONE: wackestone; very light gray (N8) to light olive gray (5 Y 6/1); dry; weak (R2); slightly weathered (SW); reacts to HCl; bioturbation and rip up clasts 123.5'-124.2'; burrows; high silt content 124.2'-125.0'; irregularly spaced silty laminations 126.6'-127.1'; reacts to HCl. [Glen Rose Formation]		720
128		NM												719
129		2.12				SW	R2							718
130		2.12												717
131		4.08	26	4.8 5.0	96							SHALE: mudstone; dark gray (N3); damp; extremely weak (R0); moderately weathered (MW); shell fragments from 130.9'-131.2'; grades to calcareous mud at 131.2'.		716
132		7.53												MW
133		2.32				SW	R2					LIMESTONE: micrite; very light gray (N8); dry; weak (R2); slightly weathered (SW); bioturbation at 132.5; reacts to HCl. [Glen Rose Formation]		714
134		6.42				HW-MW	R0-R1					MUDSTONE; mudstone; calcareous; medium dark gray (N3); very weak (R1) to extremely weak (R0); moderately to highly weathered (MW-HW); damp; reacts to HCl; pervasive shell debris with concentrated debris bed 0.05' thick at 134.2'. [Glen Rose Formation]	1900 rpm/350 psi, good water flow, silty	713
135		1.58				SW	R2					LIMESTONE: micrite; white (N9) to very light gray (N8); dry; weak (R2); slightly weathered (SW); reacts to HCl. [Glen Rose Formation]		712
136		1.38	27	5.0 5.0	100							LIMESTONE: wackestone; very light gray (N8) to light gray (N7); dry; weak (R2); moderately weathered (MW); reacts to HCl; irregular spaced silty laminations; mud filled burrows 2-3" long. [Glen Rose Formation] Vuggy starting at 137.3'.		711
137		1.38												MW
138		2.28										Calcareous mudstone 137.8'-138.2'. Moderately weathered (MW); intervals ~50% between 138' and 143'.		709
139		1.8												708
140		1.47	28	5.1 5.0	100							Bioturbated from 139.4'-141.7'.		707
141		1.63												MW
		0.85											Length of recovery stretched due to	


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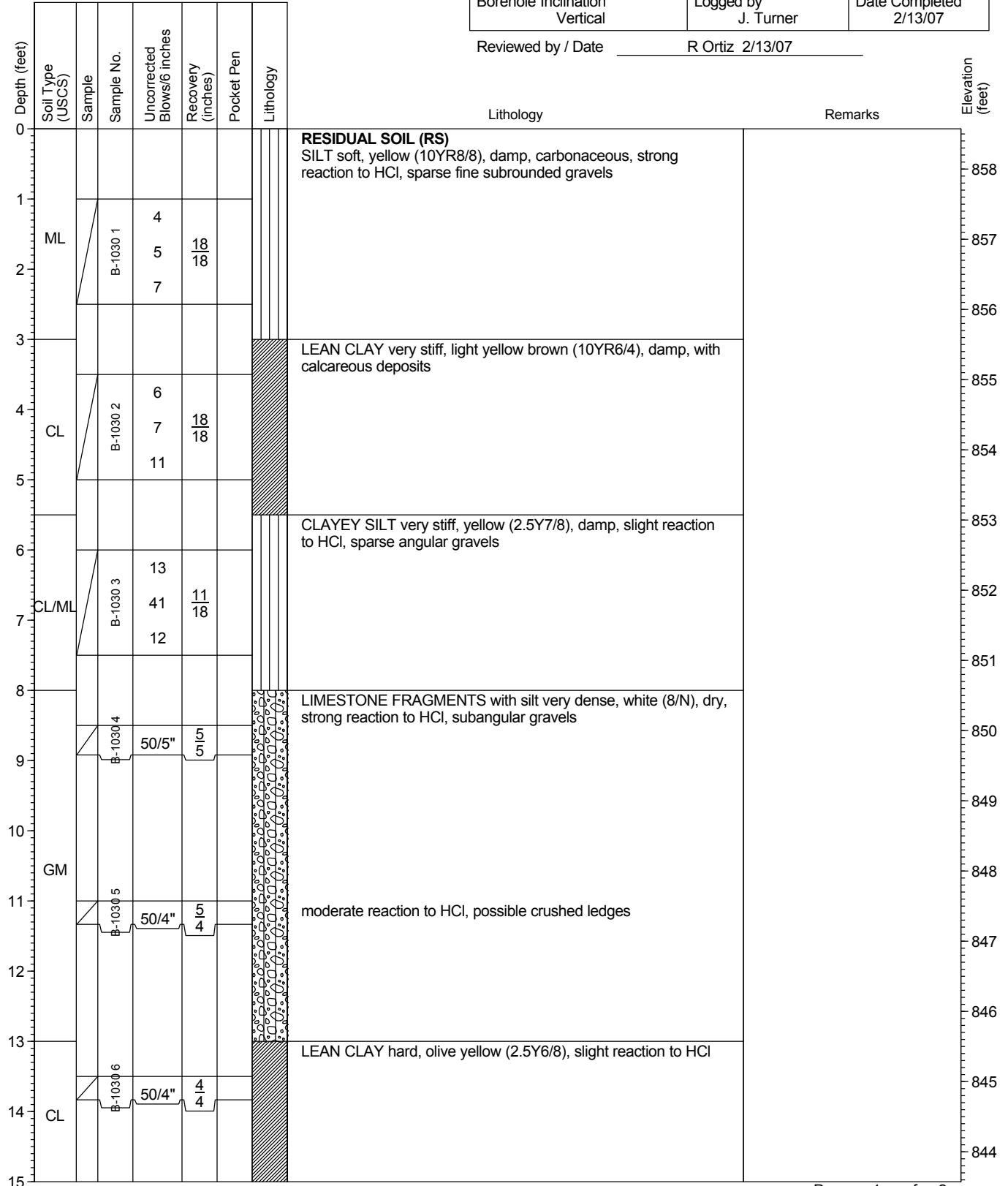
**ROCK LOG**  
**Boring No. B-1029**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
142		0.85	28	5.1 5.0	100	MW	R2					LIMESTONE: wackestone; very light gray (N8) to light gray (N7); dry; weak (R2); moderately weathered (MW); reacts to HCl ; irregular spaced silty laminations; mud filled burrows 2-3" long. [Glen Rose Formation] Silt increase 143.0'-143.5'. Bioturbated 143.5'-147.2'.	mechanical breaks.	705
		1.58												704
143		2.5												703
144		1.33	29	5.0 5.0	100	MW	R2					Vuggy 148.0'-148.3'. Silty and micritic zone 148.8'-149.1'. Bioturbated 149.2'-149.7'.		702
145		0.9												701
146		1.32												700
147		NM	30	4.8 2.0	95	MW	R2							699
148		2.67												698
149		2.08												697
150													total depth drilled 150'.	696
151														695
152														694
153														693
154														692
155														691
156														



Project Name and Job Number TXU Comanche Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-1030</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'07.74588"N / 97°47'44.59729"W		Total Depth 150 feet	
Drilling Contractor and Rig Richard Simmons Drilling / BK-81 HD		Elevation and Datum 858.575 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 17.5 feet	
Sampling Method SPT		Sample Driving Hammer/Drop R&C / 140 lbs / 30 inches	No. of Samples 7	Date Started 2/11/07	
		Borehole Inclination Vertical	Logged by J. Turner	Date Completed 2/13/07	

Reviewed by / Date \_\_\_\_\_ R Ortiz 2/13/07



Project Name and Job Number TXU Comanche Peak COL 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">SOIL LOG</h2> <h2 style="margin: 0;">Boring No. B-1030</h2>
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Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
15	CL						LEAN CLAY hard, olive yellow (2.5Y6/8), slight reaction to HCl <i>(Continued from previous page)</i>		843
16	ML		B-1030 7	24	∞ ∞		SILT with limestone fragments hard, pale yellow (2.5Y7/6), dry, strong reaction to HCl		842
17			50/2"						841
18							auger refusal at 17.5' Top of Bedrock	Bedrock at 17.5'	840
19									839
20									838
21									837
22									836
23									835
24									834
25									833
26									832
27									831
28									830
29									829
30									




Undisturbed sample  
SH = Shelby; P = Pitcher; O = other



Driven (2.5 to 3.0 inch) with liners  
MC = Modified California; O = other



Standard Penetration Test (SPT) sampler

Project Name and Job Number TXU Comanche Peak Col 1908		 <b>ROCK LOG Boring No. B-1030</b>	
Type and Diameter of Boring HQ / 4"	Boring Location 32°18'07.74588"N / 97°47'44.59729"W		Total Depth 150 feet
Drilling Contractor and Rig Richard Simmons / BK HD81	Elevation and Datum 858.575 feet NAVD88	Ground Water Depth 35.6	Depth to Bedrock 17.5 feet
Casing Size and Depth 4 / 17.5 feet	Length of Core Barrel and Bit 10 feet	No. of Core Boxes 10	Date Started 2/11/07
Borehole Inclination Vertical		Logged by J Turner	Date Completed 2/13/07

Reviewed by / Date R Ortiz 2/13/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
18		0.87				SW	R2					LIMESTONE: wackestone; very light gray (N8); medium grained; slightly weathered (SW); weak (R2); finely bedded; packstone interbeds <0.1' thick; slight reaction with HCl. [Glen Rose Formation]	Depth to bedrock (Glen Rose Formation) at 17.5'; began HQ coring at 17.5'.	841
19		1.78												840
20		1.4	8	$\frac{5.0}{5.0}$	100	SW	R0					SHALE: claystone; medium gray (N5); fine grained; slightly weathered (SW); extremely weak (R0); finely laminated; very slight reaction to HCl. [Glen Rose Formation]		839
21		2.03				SW	R2					LIMESTONE: wackestone; light gray (N8); medium grained; slightly weathered (SW); weak (R2); strong reaction to HCl; burrows; bioturbated. [Glen Rose Formation]		838
22		1.77				SW	R0					Interbed of shale 20.7'-20.8'.		837
23		1										SHALE: claystone; medium gray (N5); fine; slightly weathered (SW); extremely weak (R0); finely laminated; does not react with HCl. [Glen Rose Formation]	short run (2.5')	836
24		1	9	$\frac{2.2}{2.5}$	88	F	R2					LIMESTONE: micrite; medium light gray (N6); fine grained; fresh (F); weak (R2); dolomitic; massive; slight reaction with HCl. small vugs; open voids. Some organic material in voids. Lignite coal seam <.1' thick at 22.9'.	coal seam at 22.9'.	835
25		0.4												834
26		2.93										SHALE; silty; glauconitic; greenish gray (5GY 6/1); fine grained; slightly weathered (SW); extremely weak (R0); thinly bedded; fossiliferous; does not react with HCl. [Glen Rose Formation]		833
27		3.5				SW	R0							832
28		2.28	10	$\frac{5.1}{5.0}$	100							Becomes grayish blue green (5BG 5/2) at ; Shell hash (<0.1' thick) at 27.7'.		831
29		1.95										LIMESTONE: wackestone; white (N9); medium to coarse; fresh (F); medium strong (R3); strong reaction to HCl; stylolites/healed sutures. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	830
30		3										29.0-29.2 shale interbed.		829
31		0.97				F	R3						good water return, milky white	828
32		1.62	11	$\frac{4.9}{5.0}$	98									827
		2.02				SW	R2							826

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
33		2.02	11	4.9 5.0	98	SW	R2					LIMESTONE: packstone; silty. Medium gray (N5) medium to coarse; weak (R2); slightly weathered (SW); poorly sorted; slight reaction to HCl; dolomitic; burrows; convoluted bedding; bioturbated [Glen Rose Formation]		826
34		2.05										825		
35		2.17										824		
36		2									Grades into muddy wackestone		823	
37		2.65	12	5.0 5.0	100	SW	R0					SHALE: claystone; dark greenish gray (5GY 4/1); fine; extremely weak (R0); slightly weathered (SW); finely bedded; sparse shell fragments; does not react with HCl; fissile; expanding; soft sediment deformation features [Glen Rose Formation]		822
38		2.48										821		
39		3.75										820		
40		2.65									38.7-38.9 Interbed of wackestone 38.7'-38.9'.		819	
41		2.08	13	5.1 5.0	100	SW	R2					LIMESTONE: packstone; Light gray (N7) to dark greenish gray (5YG 4/1); medium to coarse grained; poorly sorted; weak (R2); slightly weathered (SW); finely laminated; convoluted bedding; bioturbated. [Glen Rose Formation]		818
42		1.5										817		
43		2.4										816		
44		1.12									LIMESTONE: wackestone; light gray (N8); medium strong (R3); medium grained; massive; slight reaction to HCl. [Glen Rose Formation]	fast drilling rate, good water return, milky white. Length of recovery stretched due to mechanical breaks.	815	
45		1.27	814											
46		1.5	813											
47		1.73	14	5.1 5.0	100						LIMESTONE: packstone; very light gray to medium gray (N7 to N5); coarse to medium grained; silty; extremely weak (R0); bioturbated; burrows; slight reaction to HCl. [Glen Rose Formation] Interbeds of wackestone 42.6; to 43.1; (<0.1' thick); slight reaction to HCl.		812	
		2.08												

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)				
48		2.08	14	5.1 5.0	100	SW	R0					SHALE: claystone; medium dark gray (N4); fine; extremely weak (R0); fresh (F); finely laminated; does not react with HCl. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	811				
49		2.25				F	R0								810			
50		2.78				F	R3								809			
51		3	15	4.9 5.0	98	F	R0					LIMESTONE: wackestone; bluish white (5B 9/1); fine grained; medium strong (R3); massive; fresh (F). [Glen Rose Formation]	SHALE; dark greenish gray (5G 4/1); silty; extremely weak (R0); fresh (F); finely laminated; thin (<0.1') interbeds of limestone abundant. [Glen Rose Formation]	Interbed of limestone 51.5'-51.6'	slow drill rate, good water return, bluish white/clear	808		
52		6.03				F	R0										807	
53		3.75				F	R0-R1										806	
54		1.47	16	5.0 5.0	100							LIMESTONE: wackestone; light gray (N7); medium to fine grained; massive; sparse convoluted packstone interbeds (<.1' thick); strong reaction to HCl. [Glen Rose Formation]	Irregular (<0.1) packstone layers abundant 53.8'-54.2'	Shale interbed 54.5'-54.7'	Packstone interbed with wackestone rip-up clasts at 55.4'	805		
55		3.58															804	
56		5.17															803	
57		4.45	17	5.0 5.0	100							SHALE; silty; medium dark gray (N4); fresh (F); moist; extremely weak (R0); fissile; finely bedded; very well sorted; does not react with HCl. [Glen Rose Formation]	Shale interbeds 57.0'-57.1'.	Shale interbeds 57.8'-58.1'.	Shale interbeds 58.4'-58.6'.	Shell fragments 59.0'-59.2'.	802	
58		1.75				F	R0											801
59		1.93																800
60		2.28	17	5.0 5.0	100							SHALE; silty; medium dark gray (N4); fresh (F); moist; extremely weak (R0); fissile; finely bedded; very well sorted; does not react with HCl. [Glen Rose Formation]	Shale interbeds 59.0'-59.2'.	Shale interbeds 57.8'-58.1'.	Shale interbeds 58.4'-58.6'.	Shell fragments 59.0'-59.2'.	799	
61		2.52				F	R0											798
62		4.2																797
		5																

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)				
63		5	17	5.0 5.0	100	F	R0					SHALE; silty; medium dark gray (N4); fresh (F); moist; extremely weak (R0); fissile; finely bedded; very well sorted; does not react with HCl. [Glen Rose Formation]		796				
64		2.68														LIMESTONE: wackestone; white (N9); medium strong (R3); fresh (F); fossiliferous; bioturbated; massive; fine grained; strong reaction to HCl. [Glen Rose Formation] Shale 64.6'-66.7'.		795
65		3.38	18 19	5.0 5.0 4.0 66.0	100 80	F	R3					Thin limestone laminae at 65.6'. Thin limestone laminae at 65.8'.		794				
66		2.97														Thin limestone laminae at 66.7'.		793
67		5.8														Becomes light gray (N7) at 67.9'; weak (R2).		792
68		4.13																791
69		4.22	20	5.0 5.0	100	F	R2							790				
70		4														SHALE: claystone; medium gray (N5); fresh (F); finely bedded; fine grained; does not react with HCl	2/12/07 resume drilling, slow drill rate	789
71		3.02																788
72		3.6	20	5.0 5.0	100	F	R1							787				
73		3.43																786
74		4.63	20	5.0 5.0	100	F	R2					LIMESTONE: wackestone; very light gray (N8) fine grained; finely laminated; weak (R2); dolomitic; muddy; fresh (F); slight reaction with HCl when streaked. [Glen Rose Formation]	recovered 4.0' out of a 5' run (dropped), recovered on run 20 4.0 run recovered the 1.0' from run 19	785				
75		2.2																784
76		2.53																783
77		2.2	20	5.0 5.0	100	F	R2					LIMESTONE: wackestone; very light gray (N8); weak (R2); fresh (F); fine to medium grained; 0.01' packstone interbeds; slight reaction to HCl. [Glen Rose Formation]		782				
		3.17																782

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)										
78.0		3.17	20	5.0 5.0	100	F	R2					Shale interbed 77.6'-78.0'.		781										
78.5		2.5												Packstone interbeds from 0.01' to 0.05' thick, rhythmic interbeds 0.05'-0.2' apart. [Glen Rose Formation]		780								
79.0		2.12	21	5.1 5.0	100	F	R1						Length of recovery stretched due to mechanical breaks.	779										
80.0		3.75																					778	
81.0		1.2																						777
82.0		2.62	22	5.0 5.0	100	F	R1							776										
83.0		3.18																						775
84.0		2.03																						774
85.0		2.25	23	5.1 5.0	100	F	R2							773										
86.0		2.12																						772
87.0		2.17																						771
88.0		2.33	23	5.1 5.0	100	F	R2							770										
89.0		1.3																						769
90.0		1.8																						768
91.0		2.75	23	5.1 5.0	100	F	R2							767										
92.0		NM																						Length of recovery stretched due to

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)	
93		NM	23	5.1	100							LIMESTONE: wackestone; very light gray (N8); weak (R2); fresh (F); fine to medium grained; <0.1' packstone interbeds; slight reaction to HCl; bioturbated; burrows. [Glen Rose Formation]	mechanical breaks.	766	
94		NM		5.0									765		
95		1.82												764	
96		2.88												763	
97		3.3	24	5.0	100	F	R2					Thin shale laminae at 97.6' (<0.1').		762	
98		2.35		5.0									761		
99		5.85												760	
100		2.67												759	
101		1.63	25	5.0	100							LIMESTONE: mottled yellowish gray (5Y 8/1) and light bluish gray (5B 7/1); contains medium grained carbonate grains, medium bluish gray (5B 5/1); slight reaction to HCl. [Glen Rose Formation]	fast drill rate	758	
102		2.12												5.0	757
103		1.55													
104		1.45												755	
105		3.35	26	5.2	100							Packstone interbed 104.8'-105.0'.		754	
106		2.67											5.0	753	
107		2.25													
		1.35				F	R0					Clay interbed 107.1'-107.5'.	Length of recovery stretched due to		



Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-1030**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
108		1.35	26	5.2	100								mechanical breaks.	751
		1.15		5.0									750	
109		1.78	27	4.8 5.0	100									749
110		1.58												748
111		3.02												747
112		1.87	28	5.0	100	F	R1							746
113		2.87												745
114		2.23												744
115		4.25												743
116		1.42	29	5.2 5.0	100								742	
117		1.17											741	
118		1.63											740	
119		1.78	29	5.2 5.0	100								739	
120		1.33											738	
121		1.87	29	5.2 5.0	100	F	R2							737
122		1.8												Length of recovery stretched due to

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908




**ROCK LOG**  
**Boring No. B-1030**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
123		1.8	29	5.2 5.0	100	F	R2					SHALE: claystone; silty; yellowish gray (5Y 8/1); weak (R2); fresh (F); laminated; fine; slight reaction to HCl. [Glen Rose Formation]	mechanical breaks.	736
124		1.03												LIMESTONE: wackestone; light gray (N7); weak (R2); fine grained; massive; muddy; slight reaction to HCl. [Glen Rose Formation]
125		1.4												734
126		2.18				F	R2							733
127		2.85	30	5.1 5.0	100							Thin packstone laminae 126.6'-126.9'.		732
128		2.33												Packstone interbed 127.2'-127.6'.
129		1.75												730
130		1.17				F	R2					LIMESTONE: micrite; yellowish gray (5Y 7/2); weak (R2); fine; fresh (F); massive; strong reaction to HCl.	fast drilling times, good water return; white	729
131		2.67												728
132		1.78	31	5.0 5.0	100	F	R2					LIMESTONE: wackestone. Very light gray (N8); weak (R2); fresh (F); muddy; massive; 130.8-131.1 interbed of packstone. Slight reaction to HCl. [Glen Rose Formation]		727
133		1.33												LIMESTONE: micrite; yellowish gray (5Y 7/2); weak (R2); fine; fresh (F); massive; strong reaction to HCl.
134		1.5				F	R2							725
135		2.17				F	R2					LIMESTONE: packstone; medium gray (N5); fresh (F); weak (R2); laminated; coarse; fissile; weak reaction to HCl. [Glen Rose Formation]		724
136		3.55	32	5.1 5.0	100									723
137		3.83							F	R2				LIMESTONE: wackestone; light gray (N7); weak (R2); fine grained; massive; moderate amount of <0.1' packstone interbeds; bioturbated. [Glen Rose Formation]
		2.3											Length of recovery stretched due to	

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1030</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
138		2.3	32	5.1 5.0	100	F	R2					LIMESTONE: wackestone; light gray (N7); weak (R2); fine grained; massive; moderate amount of <0.1' packstone interbeds; bioturbated. [Glen Rose Formation] Interbed of muddy packstone with burrows infilled with wackestone. 138.0'-138.2'.	mechanical breaks.	721
139		2.08												720
140		3.23				F					Packstone interbed. 139.6'-139.9'.		719	
141		4.57											718	
142		3.42	33	5.0 5.0	100	F	R0					SHALE: medium dark gray (N4); extremely weak (R0); fresh (F); fine grained; finely laminated; sparse shell fragments; fissile; does not react with HCl. [Glen Rose Formation]		717
143		3.43												716
144		3.9	34	5.1 -1.0	100	F	R1					LIMESTONE: wackestone; light gray (N7); fresh (F); fine grained; massive; sparse (<0.1') shale interbeds; strong reaction with HCl. [Glen Rose Formation]		715
145		4.05												714
146		2.87				F	R1				SHALE: greenish gray (5GY 6/1); weak (R2); fresh (F); fine grained; very finely laminated; calcareous; strong reaction to HCl. [Glen Rose Formation]		713	
147		3.48				F	R2				LIMESTONE: packstone. Medium light gray (N6); weak (R2); fresh (F); convoluted; undulatory laminations; bioturbated; slight reaction to HCl. [Glen Rose Formation]		712	
148		4.68									Shale interbed 147.3'-147.5'.	Length of recovery stretched due to mechanical breaks.	711	
149		4.93				F	R0				SHALE: medium dark gray (N4); fresh (F); extremely weak (R0); finely laminated; does not react with HCl. [Glen Rose Formation]	slow drilling rate, bluish light gray water return	710	
150		3.13	35	1.0 1.0	100	F	R2					LIMESTONE: wackestone; medium gray (N5); fresh (F); weak (R2); convoluted; bioturbated; slight reaction with HCl; muddy. [Glen Rose Formation]		709
151														708
152											BOTTOM OF HOLE AT 150'	total depth drilled 150.0'.	707	

Project Name and Job Number TXU Comanche Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-1031</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'06.22031"N / 97°47'44.51535"W		Total Depth 100.6 feet	
Drilling Contractor and Rig Geotechnology / CME 55		Elevation and Datum 864.213 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 18.5 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 6	Date Started 2/7/07	
		Borehole Inclination Vertical	Logged by J. Cox	Date Completed 2/9/07	

Reviewed by / Date R Ortiz 2/11/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0								<b>RESIDUAL SOIL (RS)</b> LEAN CLAY very stiff, light yellowish brown (10YR6/4), damp, with calcareous deposits		864
1			B-1031 1	4						863
2				5	18/18	2.5				862
3				8						861
4			B-1031 2	5				yellow (2.5Y8/6), damp to dry		860
5	CL			5	18/18	3.5				859
6			B-1031 3	12						858
7				50/5"	5/5			hard, dark yellowish brown (10YR4/4)		857
8										856
9			B-1031 4	9						855
10				13	18/18	1.5		stiff, brownish yellow (10YR6/6), damp to dry, several large angular limestone fragments; mostly towards bottom of sample		854
11				25						853
12	ML		B-1031 5	19					SILT with limestone fragments hard, light brownish gray (10YR6/2), dry	852
13				31	16.5/18	4.51				851
14	ML			50/4.5"						850
15			B-1031 6	4	4/4	0.5			SILT with sand hard, pale yellow (2.5Y8/4), dry	

Project Name and Job Number TXU Comanche Peak COI 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">SOIL LOG</h2> <h2 style="margin: 0;">Boring No. B-1031</h2>
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Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
15	ML						SILT with sand hard, pale yellow (2.5Y8/4), dry <i>(Continued from previous page)</i>		849
16	CL	B-1031 6		6			LEAN CLAY hard, brown (10YR5/3), damp to dry		848
17				9	18/18	4.51		847	
18				13					846
19		B-1031		50/1"	Q 1		Top of Bedrock at 18.5'	Bedrock at 18.5'	845
20									844
21									843
22									842
23									841
24									840
25									839
26									838
27									837
28									836
29									835
30									




Undisturbed sample  
 SH = Shelby; P = Pitcher; O = other



Driven (2.5 to 3.0 inch) with liners  
 MC = Modified California; O = other



Standard Penetration Test (SPT) sampler

Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. B-1031</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'06.22031"N / 97°47'44.51535"W		Total Depth 100.6 feet	
Drilling Contractor and Rig Geotechnology / CME 55		Elevation and Datum 864.213 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 18.5 feet	
Casing Size and Depth 4" / 18.5 feet		Length of Core Barrel and Bit 8.6 feet	No. of Core Boxes 7	Date Started 2/7/07	
		Borehole Inclination Vertical	Logged by J Cox	Date Completed 2/9/07	

Reviewed by / Date R Ortiz 2/11/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)				
19		4.08	1	1.9	95	SW-MW	R1-R2					LIMESTONE: wackestone with shale interbeds 18.5-18.6. moderate yellow (5Y 7/6); moderately weathered wackstone; 19.0-19.4 med gray (N5); shale; Limestone elsewhere throughout run - med light gray (N6) weak to very weak; slightly weathered to moderately weathered (SW-MW); Glen Rose Formation	Top of bedrock	845				
20		3.75		2.0												Shale Bed	844	
21		3.92	2	5.0	100	SW	R1-R2		1031-7					843				
22		3.65															Shale Bed	842
23		3.75															Shale Bed	841
24		3.77																840
25		3.83	3	5.0	98	SW-MW	R0-R1					SHALE; medium gray (N5); fresh; weak; very thinly bedded; moderate reaction to HCl. 25.5; SHALE; medium dark gray; thinly bedded; moderately weathered (MW); very weak to weak(R1-R2); No reaction to HCl. 26.7 to 28.8 more of a limey shale; weak; harder than previous shale. 28.8 to 30.4; very weathered shale; dark greenish gray (5G 4/1); abundant fossils; Glen Rose Formation		839				
26		5.75														Coal seam	838	
27		3.75																837
28		3.5	4	5.0	96	SW-MW	R1-R2							836				
29		3.58																835
30		4.33							1031-8					834				
31		3.73							1031-9			LIMESTONE: wackestone; light gray (N7); slightly weathered (SW); weak(R2); massive, abundant fossils; coal seam 33.0 to 33.4; strong reaction to HCl, coal seam at 35.2 and 35.5, shale beds at 34.2 and 34.4 causing bedding breaks. joints at 33.5 - very weathered shale/limestone edges. yellowish in color with abundant fossils.		833				
32		2.33										Shale bed		832				
33		2.25										Coal seam		831				

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-1031**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
34		2.33	4	51.0	96	SW-MW	R1-R2					Shale bed Shale bed		830
35		3.17												829
36		3.58	5	51.0	100	F-SW	R2		1031-10		joint: planar; slightly rough, open	LIMESTONE: packstone, shaley; medium gray (N5); slightly weathered (SW); weak (R2), massive, abundant fossils, fossil supported, very strong reaction to HCl.		828
37		3.5												827
38		3.75												826
39		4.67	6	51.0	100	F-SW	R0-R2		1031-11		joint: stepped; slightly rough, tight	SHALE; medium dark gray (N4); fresh (F); thinly bedded; weak (R2); some bioturbation; no reaction to HCl		825
40		5.25												824
41		5												823
42		5.75												822
43		3.08	7	51.0	100	F-SW	R2		1031-12		joint: stepped, slightly rough, tight	LIMESTONE: wackestone, shaley; medium gray (N5); slightly weathered, interbedded with shale; weak; abundant rip-up clasts, fine grained. Shale beds at 43.4-43.6; 44.2-44.3; 44.7-44.8; 45.1-45.4. Limestone had very strong reaction to HCl; Glen Rose Formation		821
44		2.33												820
45		2.33												819
46		2.2	7	51.1	100	F-SW	R2					LIMESTONE: wackestone; light gray (N7); fresh; massive; dry; weak; abundant rip up clasts; strong reaction to HCl		818
47		3.75												817
48		3.17										Shale bed		816

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1031</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)				
49		2.08	7	5.1 5.0	100	F-SW	R2					Shale bed	Length of recovery stretched due to mechanical breaks.	815				
50		2.03															Shale bed	814
51		1.75	8	4.8 5.0	96	F-SW	R0-R2							813				
52		1.6																812
53		4.58											1031-13					811
54		5.5																810
55		6	9	4.9 5.0	98	F-SW	R1-R2					SHALE: medium dark gray (N4); fresh, damp, very weak, thinly bedded; very weak reaction to HCl; Glen Rose Formation		809				
56		5.75														LIMESTONE: wackestone; light gray (N7); fresh; massive, dry, weak, slightly bioturbated, fine grain, strong reaction to HCl. Shale beds 55.85-56.05, 56.1-56.4, 58.5, 58.7-58.85; 59.45 to 59.55; 59.7 to 59.9. shales same as 54.5 to 55.5. abundant rip-up clasts filled with silty matrix; moderate reaction to HCl; abundant fossils; Glen Rose Formation	808	
57		4.82														Shale bed	807	
58		4.6									Shale bed	806						
59		4.63	10	5.3 5.0	76	F-SW	R1-R2					Shale bed	Inner core barrel stuck inside rod. Catcher could not be retrieved; had to pull all pipe and hand remove it.	805				
60		6.25												1031-14			Shale bed	804
61		5.75															Shale bed	803
62		5.58											802					
63		5.55											801					



Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1031</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
64		4.28	10	5.0	76	F-SW	R1-R2					SHALE: medium gray (N5); fresh to slightly weathered (F-SW), thinly bedded; very weak (R1); weak reaction to HCl; Glen Rose Formation		800
65		8.17												
66		14												798
67		10												797
68		8	11	5.0	96	F-SW	R1-R2					LIMESTONE: wackestone; light gray (N7); fresh (F); massive; weak (R2); abundant fossils; slightly bioturbated; massive reaction to HCl; Glen Rose Formation		796
69		9												
70		11												794
71		5.72												793
72		3.77										LIMESTONE: packstone; medium light gray (N6); fresh (F); weak (R2); massive, very large rip up clasts filled with silty matrix; moderate reaction with HCl; abundant fossils, slightly bioturbated with burrows; Glen Rose Formation		792
73		4.7	12	5.0	96	F-SW	R1-R2							791
74		6.5												
75		6.25										SHALE: same as 68.3 to 71.75. 75, Shale, medium dark gray (N4); fresh (F); very weak (R1); thinly bedded; some fossils throughout; no reaction to HCl; Glen Rose Formation		789
76		5.25												788
77		7.08	13	5.0	92	F-SW	R1-R2							787
78		6.25												

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1031</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)				
79		7.6	13	4.6 5.0	92	F-SW	R1-R2					SHALE: same as 63.5 to 67.6; interbedded with limestone, limestone beds ~.1' each; wackestone beds same as 67.6 to 68.3; Glen Rose Formation		785				
80		4.25														LIMESTONE: packstone; same as 77.2 to 78.1. shale bed at 81.75; 81.9 to 82.15. Both causing bedding breaks; shale same as above. Less rip up clasts from 82.2 to 83.0. 90 medium light gray (N6); fresh; weak; massive; abundant rip up clasts; strong reaction to HCl, medium grain, abundant fossils. 92 same as above, larger rip up clasts from 93.7 to 95.3, very strong reaction to HCl. shale bed at 97.7 to 98.1; Glen Rose Formation Shale Bed Shale Bed		784
81		5	14	5.0 5.0	100	F	R1-R2					smaller but more abundant rip up clasts from 83 to 85.5.		783				
82		5.43															782	
83		2.45																781
84		1.92																780
85		1.4								1031-19			779					
86		1.42	15	5.0 5.0	100	F	R2					more medium grained, strong reaction to HCl.		778				
87		1.67															777	
88		1.6															776	
89		1.7								1031-20			775					
90		1.22											774					
91		4.08	16	5.0 5.0	100	F	R2							773				
92		2.83															772	
93		1.68													1031-21			771

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908




**ROCK LOG**  
**Boring No. B-1031**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
94		1.25	16	51.0 5.0	100	F	R2					LIMESTONE: packstone; medium light gray (N6); fresh; weak; massive; abundant rip up clasts; strong reaction to HCl, medium grain, abundant fossils. 92 same as above, larger rip up clasts from 93.7 to 95.3, very strong reaction to HCl. shale bed at 97.7 to 98.1; Glen Rose Formation		770
95		1.7												769
96		2.32												768
97		1.95	17	51.0 5.1	100	F	R1-R2							767
98		2												766
99		1.75												765
100		2.08												764
101														763
102														762
103														761
104														760
105														759
106														758
107														757
108														756

Project Name and Job Number TXU Comanche Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-1032</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'04.92264"N / 97°47'43.54930"W		Total Depth 100.5 feet	
Drilling Contractor and Rig Geotechnology / CME 55		Elevation and Datum 867.317 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 14.7 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 6	Date Started 2/11/07	
		Borehole Inclination Vertical	Logged by S. Dee	Date Completed 2/14/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 2/19/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
0							<b>RESIDUAL SOIL (RS)</b> LEAN CLAY with sand medium stiff, very pale brown (10YR7/4), dry, calcareous deposits, ~ 20% very fine sand		867
1	CL		B-1032 1	2	16				866
2				6	18				865
3				8					864
4			B-1032 2	11	17		SILT with angular limestone fragments very stiff, white (10YR8/1), dry, ~25% angular limestone gravel (0.4" - 1.0" diameter), strong reaction to HCl		863
5	ML			33	18				862
6				41					861
7			B-1032 3	11	13		~50% shell fragments		860
8	ML			50/5.5"	11.5		SILT with sand hard, yellow (10YR7/6), dry, strong reaction to HCl		859
9									858
10			B-1032 4	26	11.5		SILT hard, yellow (10YR 7/6), damp, strong reaction to HCl	Rock shelf at 9.5', cored through to 11'	857
11	ML			50/5"	11.5		possible rock shelf at 9.5', cored to 11.0'		856
12							sampled through core pipe brownish yellow (10YR 6/6)		855
13			B-1032 5	8	18				854
14	CL			16	18				853
15				28					852
			B-1032 6	27	18		LEAN CLAY very stiff, light gray (10YR7/2), damp, slight reaction to HCl, sample taken through core pipe		851
				32	14				850
				50/2"			Top of Bedrock at 14.7'	Bedrock at 14.7'	849

Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG Boring No. B-1032</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'04.92264"N / 97°47'43.54930"W		Total Depth 100.5 feet	
Drilling Contractor and Rig Geotechnology / CME 55 HTX		Elevation and Datum 867.317 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 14.7 feet	
Casing Size and Depth 4" / 14.7 feet		Length of Core Barrel and Bit 8.6 feet	No. of Core Boxes 6	Date Started 2/11/07	
		Borehole Inclination Vertical	Logged by S Dee	Date Completed 2/14/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 2/19/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
15			7	2.7 1.8	96	R2	MW					LIMESTONE; micrite; weathered; yellowish gray (5Y 7/2) massive; moderately weathered; weak (R2) slight to moderate reaction to HCl. Claystone @ 15.2' to 15.4' and 15.6 to 16	top of rock	852
16						R0	SW					SILTSTONE; medium gray (N5); massive; slightly weathered; extremely weak (R0); slight reaction to HCl		851
17		4.72				R2	SW					LIMESTONE; wackestone; light gray (N7); massive with some <0.1' interbeds of silt; slightly weathered, weak (R2); clasts are rounded and tabular fossils.		850
18		5.47												849
19		4.5	8	5.0 5.0	100							CLAYSTONE; dark gray (N3), massive, slightly weathered, extremely weak (R0), slight reaction to HCl.	pull down pressure ~400 psi. 100% water return, gray	848
20		5.85				R0	SW		7					847
21		2.35												
22		3.2				R2	SW					LIMESTONE; wackestone; very light gray (N8); slightly weathered; weak (R2); massive; moderated reaction to HCl.		846
23		4.22				R1	F					SILTSTONE; medium dark gray (N4), bedded <0.01' to 0.04' beds; fresh; very weak (R1); no reaction to HCl; <0.1' interbeds of limestone.		845
24		2.62	9	5.1 5.0	100							LIMESTONE; wackestone/silty wackestone; massive with <0.1' interbeds of silt and zones of increased silt content; slightly weathered; weak (R2); slight to moderate reaction to HCl; clasts are either bluish gray fossil fragments or gray silt	Length of recovery stretched due to mechanical breaks.	843
25		3.03				R2	SW							842
26		2.72							8					841
27		3.77				R0	F					SHALE/SILTSTONE; medium dark gray (N4); very thinly bedded; fresh; extremely weak (R0), slight reaction to HCl		840
28		4.45	10	4.9 5.0	98							LIMESTONE; sparite; medium gray (N5) massive, fresh, weak (R2); strong reaction to HCl; coarse grained; claystone interbeds from 28 to 28.4 and 28.6 to 29.		839
29		3.75				R2	F							838
		1.67												

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1032</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
30		1.67	10	4.9 5.0	98	R2	F		9			LIMESTONE; sparite; medium gray (N5) massive, fresh, weak (R2); strong reaction to HCl; coarse grained; claystone interbeds from 28 to 28.4 and 28.6 to 29.		837
31		2.75												
32		7.03				R0	F							835
33		6.05										LIMESTONE; wackestone; very light gray (N8); massive with occasional <0.1' interbeds of shale/silt; fresh; weak (R2); strong reaction to HCl, clasts are bluish gray medium to coarse grained rounded and tabular fossil fragments, clasts coarsen downwards. Shale interbeds at 38.8 to 39.0 and 39.4 to 39.6, laminations of black coal at 39.0 to 39.1		834
34		5.65	11	5.0 5.0	100									833
35		1.57									10			
36		1.55				R2	F							831
37		1.4							11					830
38		1.6												829
39		6.1	12	5.0 5.0	100									828
40		1.68												
41		2.07				R2	SW					LIMESTONE; silty packstone; medium light gray (N6); bedded with abundant <0.1' interbeds of silt/shale; slightly weathered, weak (R2); reacts strongly with HCl; clasts are white subangular to sub-rounded fossils and subrounded fine grained sands and silts		826
42		7.78											pull down pressure ~400 psi. 100% water return, gray	825
43		3.07	13	5.0 5.0	100				12					
44		4.42							R0	F				
		4.05												

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)		
45		4.05	13	5.0 5.0	100	R0	F					SHALE; medium dark gray (N4); very thinly bedded; fresh; extremely weak (R0), no reaction to HCl.		822		
46		3.15				R2	SW				LIMESTONE; silty packstone, bedded with abundant shale/silt interbeds (<0.1' beds) slightly weathered; weak (R2), reacts strongly to HCl; top 0.3' is a fossil hash; clasts are medium grained, white, sub-rounded fossils and brown to black rounded silt.		821			
47		3.65				R2	SW				LIMESTONE; packstone; very light gray (N8); massive; slightly weathered, weak (R2); clasts are fine to medium grained, grayish blue		820			
48		4.05	14	4.9 5.0	98	R2	SW					LIMESTONE; silty packstone, same as above (45.6-47.9', with abundant rip-up clasts. At 51 with increase in white subrounded, medium grained fossil clasts and a decrease in shale/silt (<0.1') interbeds. Siltstone interbed from 56.1 to 56.2 and 56.7 to 56.8.		819		
49		2.1				R2	SW								818	
50		2.87										13			817	
51		1.85	15	4.8 5.0	96	R2	SW							816		
52		3.78				R2	SW								815	
53		2.25				R2	SW					14			814	
54		4.03	16	4.8 5.0	96	R2	SW							813		
55		2.37				R2	SW								812	
56		6.52				R2	SW								811	
57		9.28	16	4.8 5.0	96	R2	SW					LIMESTONE; wackestone; light gray (N7); bedded with abundant <0.1' interbeds of silt; slightly weathered; weak (R2)		810		
58		9.42				R0	F							SHALE; medium dark gray (N4); very thinly bedded; fresh; extremely weak (R0), slight reaction to HCl.		809
59		8.07				R2	SW								808	
		2.7														

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
60		2.7	16	4.8 5.0	96	R2	SW					LIMESTONE; wackestone; massive with zones of abundant silty shale interbeds; slightly weathered; weak (R2); strong reaction to HCl; clasts are fine to medium grained bluish gray, tabular or subrounded fossil parts, shale interbed from 58.9 to 59.1; abundant shale <0.1' interbeds from 59.3' to 59.8' and 61.9' to 62.4'. Siltstone interbed from 62.6 to 63		807
61		2.6												806
62		6.67												805
63		6.77	17	4.7 5.0	94	R0	F				SILTSTONE; medium gray (N5); massive; fresh; extremely weak (R0).	this section of siltstone was unrecoverable from inner barrel	804	
64		2.4											803	
65		4.72											802	
66		3.47	18	4.9 5.0	98	R2	F				SHALE; medium dark gray (N4); fresh; extremely weak (R2); very thinly bedded; slight reaction to HCl; damp. Abundant fossil clasts from 70.6 to 70.8.	core barrel stuck, pulled pipe, missed run time due to multiple stops in coring to diagnose rig problems	801	
67													800	
68		4.58											799	
69		8.72	19	4.9 5.0	98	R2	F				LIMESTONE; micrite; very light gray (N8); massive; fresh; weak (R2); abundant bioturbation; strong reaction to HCl. SHALE; medium dark gray (N4); fresh; extremely weak (R2); very thinly bedded; slight reaction to HCl; damp. Wackestone interbeds from 72 to 72.1, 72.6 to 72.8, and 73 to 73.2		798	
70		6.35											797	
71		5.18											796	
72		6.3	19	4.9 5.0	98	R0	F						795	
73		7.8											794	
74		4.77											793	
		3.92												



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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)		
75		3.92	19	4.9 5.0	98	R2	F					LIMESTONE; wackestone; very light gray (N8); fresh; weak (R2); massive with zones of abundant <0.1' interbeds of silt/shale, reacts strongly to HCl, shale interbed from 77.1 to 77.2		792		
76		4.1												18	791	
77		7.75	20	5.0 5.0	100	R0	F					SHALE; medium dark gray (N8), very thinly bedded; fresh; extremely weak (R0); damp, slight reaction to HCl.		790		
78		4.05												19	789	
79		3.92												19	788	
80		3.88	21	5.0 5.0	100	R0	F					LIMESTONE; wackestone; very light gray (N8) massive with zones of abundant shale/silt <.1' interbeds; , slightly weathered; weak (R2), abundant bioturbation. SHALE; medium dark gray (N3), very thinly bedded; fresh; extremely weak (R0), abundant fossils.		787		
81		3.7												R2	SW	786
82		10.52												R0	F	785
83		7.18	22	5.0 5.0	100	R2	SW					LIMESTONE; wackestone; very light gray (N8); bedded with abundant <0.1' interbeds of shale/silt; slightly weathered; weak (R2); abundant bioturbation.		784		
84		3.58												R0	F	783
85		2.73												R0	F	782
86		2.35	21	5.0 5.0	100	R2	SW					LIMESTONE; wackestone; light gray (N7); bedded with abundant <0.1' interbeds of silt/shale; slightly weathered; weak (R2); abundant rip-up clasts and bioturbation		781		
87		3												21	780	
88		2.12	22	5.0 5.0	100	R2	SW							779		
89		3.5												22	778	
		2.47														

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908




**ROCK LOG**  
**Boring No. B-1032**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
90		2.47	22	5.0 5.0	100	R2	SW					LIMESTONE; wackestone; light gray (N7); bedded with abundant <0.1' interbeds of silt/shale; slightly weathered; weak (R2); abundant rip-up clasts and bioturbation		777
91		1.9												776
92		2.5	23	5.0 5.0	100	R0	F					SHALE; medium gray (N4); very thinly bedded; fresh; extremely weak (R0); slight reaction to HCl		775
93		2.08				774								
94		3.07				22	773							
95		3.12	24	4.0 4.0	100	R2	SW					LIMESTONE; packstone; massive with zones of abundant <0.1' shale/silt interbeds; slightly weathered; weak (R2); clasts are rounded gray silt or subrounded bluish gray, fine to medium grained fossil clasts; sometimes oolitic; strong reaction to HCl. Abundant <0.1' shale/silt interbeds and rip up clasts from 96 to 100.5. coal seam (.02') at 97.3. Bottom of hole at 100.5.		772
96		6.03												771
97		3.13												770
98		2.23												23
99		2.32	23											768
100		2.33												767
101													bottom of hole	766
102														765
103														764
104														763

Project Name and Job Number TXU Comanche Peak COL 1908		 WLA William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-1033</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'04.82882"N / 97°47'44.29315"W		Total Depth 76.2 feet	
Drilling Contractor and Rig Geotechnology / CME 55		Elevation and Datum 866.917 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 16.7 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 4	Date Started 2/9/07	
		Borehole Inclination Vertical	Logged by J. Cox	Date Completed 2/10/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 2/13/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0								<b>RESIDUAL SOIL (RS)</b> LEAN CLAY with limestone fragments soft, dark brown (10YR3/3), dry to damp, calcareous deposits		866
1			B-1033 1	3	18	0.25				865
2	CL			9	18			very stiff, color to light yellowish brown (2.5Y6/4), ~15% limestone fragments, some roots below 2'		864
3				18						863
4			B-1033 2	7	11	2		color to yellow (2.5Y7/6)		862
5				50/5"				LIMESTONE FRAGMENTS moderate reaction to HCl		861
6								SANDY SILT with limestone fragments hard, grayish brown (2.5Y5/2), dry, ~10% limestone fragments, calcareous deposits		860
7	ML		B-1033 3	35	18	2				859
8				39	18					858
9	CL			27				LEAN CLAY hard, olive yellow (2.5Y6/8), dry		857
10										856
11	ML		B-1033 4	27	9	4.51		SANDY SILT with limestone fragments hard, yellow (2.5Y7/8), dry to damp, ~10% limestone fragments, angular cobble to pebble size; moderate reaction to HCl		855
12				50/3"						854
13										853
14										852
15									Driller called bedrock at 10', actual bedrock at 16.7'	851

Project Name and Job Number TXU Comanche Peak Col 1908		 WLA William Lettis & Associates, Inc.	<b>ROCK LOG Boring No. B-1033</b>	
Type and Diameter of Boring HQ / 4"			Boring Location 32°18'04.82882"N / 97°47'44.29315"W	Total Depth 76.2 feet
Drilling Contractor and Rig Geotechnology / CME 55 HTX		Elevation and Datum 866.917 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 16.7 feet
Casing Size and Depth 4"		Length of Core Barrel and Bit 8.6 feet	No. of Core Boxes 5	Date Started 2/9/07
		Borehole Inclination Vertical	Logged by J Cox	Date Completed 2/10/07

Reviewed by / Date \_\_\_\_\_ R. Ortiz 2/13/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
10.0	Joint, wavy, slightly rough, tight	1.17	1	1.1 1.4	64	MW	R2					Weathered bedrock; LIMESTONE; wackestone; light olive gray (5Y 5/2); fine grained; moderately weathered; weak; interbedded with claystone; limestone has moderate reaction with HCl, claystone has no reaction with HCl, Secondary mineralization in between bedding break at 10.3. Limestone; moderate yellow (5y 7/6); very weathered; weak; fine grain; slight reaction to HCl.	Began rock coring at 9.8; cored through 2' of limestone then reached more soil	857
11.0		0.6										CLAY; weathered shale; olive yellow (2.5Y 7/8), extremely weak (R0)	Very soft clay - actually part of residual soil. Bedrock not actually hit yet.	856
12.0		2.6												855
13.0		2.75												854
14.0		1.77	2	4.6 5.0	92	HW	R0							853
15.0		1.93												852
16.0		2.45												851
17.0		3.75												850
18.0		2.88										SILTSTONE; medium light gray (N6); interbedded with wackestone; weak to very weak; fine grain; slightly to moderately weathered; fine laminations; wackestone interbed .4' thick from 17.9 to 18.3; limestone beds have moderate reaction to HCl; silty laminations have no reaction; shells in wackestone interbeds.	Bedrock at 16.7	849
19.0		2	3	5.0 5.0	100	MW	R0-R1							848
20.0		2.65												847
21.0		3.02							5			MUDSTONE/SHALE; medium dark gray (N4); moderately weathered; very weak; very thinly bedded; does not react to HCl.		846
22.0		5												845
23.0		6.03	4	4.7 5.0	94	SW	R0-R1					LIMESTONE; wackestone; light gray (N7); dry; weak; slightly weathered; few thin mudstone beds; abundant fossils; moderate reaction to HCl; fine grained.		844
24.0		6.25							6			LIMESTONE; silty micrite; medium dark gray (N4); fine laminations; fine grain; several very thin wackestone layers; very weak; slightly weathered; slight reaction to HCl; shale bed <.1' at 23.3; silty wackestone from 24.3 to 24.7		843
		4.27												

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
25		4.27	4	4.7 5.0	94	SW	R0-R1					LIMESTONE; wackestone; medium light gray to light gray (N6-N7); fine grain; weak; slightly weathered; shale bed at 25.3; abundant fossils; slight reaction to HCl at top of unit; strong reaction at end of unit		842
26		3.25												
27		3.17										SILTSTONE; same as above (16.7 to 19.6); interbedded with <.1' wackestone laminations		840
28		3.17										SILTSTONE; silty micrite; same as 23.1 to 24.8		839
29		1.83	5	5.0 5.0	100	F-SW	R0-R2			7		MUDSTONE; shale; same as 19.6 to 21.7		838
30		4.75												
31		4										SILTSTONE; silty micrite; medium dark gray (N4); very finely laminated; very weak; slightly weathered; very slight reaction to HCl. More of a limestone; wackestone from 21.8 to 32.5, strong reaction to HCl		836
32		3.75								8			835	
33		3.88										SHALE; grayish blue-green (5BG 5/2); finely laminated; slightly weathered; very weak; no reaction to HCl; abundant fossils at contacts at both ends of unit.	Water return going from good to poor back and forth, causing driller to have to raise barrel to induce water return	834
34		4.75	6	5.0 5.0	100	F-SW	R0-R2							833
35		2.28												
36		1.6										LIMESTONE; packstone; medium light gray (N6); medium grain; weak; massive; fresh to slightly weathered; abundant fossils; some bioturbation; moderate reaction to HCl; all joints that are open have secondary mineralization around edges. 38.35 joint was filled with coal but washed out. Joints at 39.8 and 40.0 both filled with coal.	driller complaining about recirculation, threw hardhat helmet; I instructed him to put it back on.	831
37		1.3									Joint, planar; slightly rough; open			830
38		1.3	7	5.0 5.0	51	F-SW	R2				joint; planar; smooth; open joint; planar; smooth; open joint; planar; smooth; healed joint; planar; smooth; healed			829
39		1.75												
		1.32												

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)										
40		1.32	7	5.0	51	F-SW	R2				joint; planar; smooth; filled with coal joint; planar; smooth; filled with coal			827										
41		2.03																						826
42		2.62																						
43		2.77	8	5.1 5.0	100	F-SW	R0-R1			10		SILTSTONE; silty packstone; medium dark gray (N4); weak to very weak; slightly weathered; abundant fossils; fossil supported; less hard from 40.8 to 42.15; more micritic and compacted from 42.15 to 44.9; none to very slight reaction to HCl.	Length of recovery stretched due to mechanical breaks.	824										
44		4.25																						823
45		4																						822
46		4.83	9	5.2 5.0	100	F-SW	R1-R2			11	SHALE; medium dark gray (N4); very weak; slightly weathered; very fine laminations; no reaction to HCl.	Length of recovery stretched due to mechanical breaks.	821											
47		4.25																					820	
48		3.37																					819	
49		1.8	10	5.1 5.0	100	F-SW	R2			12	LIMESTONE; packstone; medium light gray (N6); slightly weathered; weak; medium grained; bioturbation abundant from 48.4-49; rip-up clasts from 48.4-49; <.1' shale layers throughout 48.4 to 49.4; moderate reaction to HCl; abundant fossils throughout.	water recirculation giving driller many problems. Water return keeps stopping on and off.	818											
50		2.08																					817	
51		3.75																					816	
52		3.5	10	5.1 5.0	100	F-SW	R2			12			Length of recovery stretched due to	815										
53		1.5																						814
54		1.25																						813
		1.67												813										


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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
55		1.67	10	5.1 5.0	100	F-SW	R2					LIMESTONE; packstone; medium light gray (N6); slightly weathered; weak; medium grained; bioturbation abundant from 48.4-49; rip-up clasts from 48.4-49; <.1' shale layers throughout 48.4 to 49.4; moderate reaction to HCl; abundant fossils throughout.	mechanical breaks.	812
56		1.12												
57		4.08	11	3.7 5.0	72	F-SW	R0-R2					LIMESTONE; packstone; same as 48.4 to 57.2		810
58		10												
59		2.75	12	5.0 5.0	72	F-SW	R1-R2					LIMESTONE; wackestone; medium light gray (N6); fresh to slightly weathered; weak; fine grained; large rip-up clasts filled with silty matrix; slightly bioturbated; abundant fossils; moderate reaction to HCl; shale beds at 62.2-62.4; 62.9; 63.4; 63.55; 63.7-64; 64.3-64.4; 65.3-65.5; all shale beds mechanically crushed. 66.0' limestone; wackestone more shaley than above; medium gray (N5); slightly weathered; interbedded with <0.1' shale beds (mechanically crushed); weak; slight reaction to HCl		808
60		7.75												
61		17.58	13	4.5 5.0	90	F-SW	R1-R2							806
62		2												
63		4	13	4.5 5.0	90	F-SW	R1-R2		13		joint; wavy; slightly rough; open			804
64		5.5												
65		2.75	13	4.5 5.0	90	F-SW	R1-R2							802
66		3.83												
67		4.83	13	4.5 5.0	90	F-SW	R1-R2							800
68		3												
69		2.25	13	4.5 5.0	90	F-SW	R1-R2							798
		8.08												

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-1033</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)			
70		8.08	13	4.5 5.0	90	F-SW	R1-R2					SHALE; medium dark gray (N4); very weak; very fine laminations; slightly damp; slightly weathered; no reaction to HCl.		797			
71		9.08															
72		6.25										LIMESTONE; wackestone; medium light gray (N6); weak; abundant fossils; very strong reaction to HCl; bioturbated.		795			
73		4.13										SHALE; medium dark gray (N4). same as above. Wackestone interbed from 73.8 to 74.15. very weak; very fine laminations; slightly damp; slightly weathered; no reaction to HCl.		794			
74		4.75	14	5.0 5.0	100	F-SW	R1-R2						Run 14 too broken up to retrieve adequate sample	793			
75		4.22															792
76		4.75															
77												Bottom of hole	790				
78													789				
79													788				
80													787				
81													786				
82													785				
83													784				
84													783				



Project Name and Job Number TXU Comanche Peak COI 1908		 SOIL LOG Boring No. <b>B-1034</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'02.70848"N / 97°47'41.75126"W	
Drilling Contractor and Rig Palmerton and Parish / CME 55		Elevation and Datum 858.463 feet NAVD88	Ground Water Depth DRY
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 2
		Borehole Inclination Vertical	Logged by T. Glidden
		Date Started 2/10/07	
		Date Completed 2/12/07	

Reviewed by / Date                      R. Ortiz 2/14/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
0							<b>RESIDUAL SOIL (RS)</b> SANDY SILT medium dense, brownish yellow (10YR6/8), moist		858
1			B-1034 1	8					857
2				19	10/18	5			856
3	ML			11					855
4			B-1034 2	50/5"	5/5	4.51	hard, color to light yellow brown (2.5Y6/4), dry to damp, calcareous		854
5									853
6								Bedrock at 5.6'	852
7									851
8									850
9									849
10									848
11									847
12									846
13									845
14									844
15									843

Project Name and Job Number TXU Comanche Peak Col 1908		 <b>ROCK LOG Boring No. B-1034</b>	
Type and Diameter of Boring HQ / 4"	Boring Location 32°18'02.70848"N / 97°47'41.75126"W	Total Depth 150 feet	
Drilling Contractor and Rig Palmerton & Parish / CME 55	Elevation and Datum 858.463 feet NAVD88	Ground Water Depth 38.1	Depth to Bedrock 5.6 feet
Casing Size and Depth 4"	Length of Core Barrel and Bit 8.6 feet	No. of Core Boxes 10	Date Started 2/10/07
Borehole Inclination Vertical		Logged by Glidden	Date Completed 2/12/07

Reviewed by / Date R. Ortiz 2/14/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
6		7.58	4	0.6 1.4	60		R2		1034-4			LIMESTONE; wackestone; very light gray (N8) to medium gray (N5); weak (R2); slightly weathered (SW); laminated; shell fragments; strong reaction to HCl. [Glen Rose Formation]	300 PSI, 1900 rpm, recirculating	852
7		4.62										SILTSTONE/SHALE; calcareous SILTSTONE/SHALE and shale; dark greenish gray (5G 4/1); slightly weathered (SW); extremely weak (R0); very slight reaction to HCl. [Glen Rose Formation]		851
8		4					R0		1034-5					850
9		2.63	5	4.6 5.0	98		R2					LIMESTONE; wackestone; very light gray (N8) to light gray (N7); slightly weathered (SW); weak (R2); slight to strong reaction to HCl; calcareous mud interbeds 9.4' to 9.6 and at 9.8. [Glen Rose Formation]	0.2' added to run 5 from run 6	849
10		2.53										SILTSTONE/SHALE; calcareous; medium gray (N5) to dark greenish gray (5GY 4/1); very weak (R1); slightly weathered (SW); slight reaction to HCl; wackestone laminations and wackestone bed 11.3-11.4. [Glen Rose Formation]		848
11		3.82				SW	R1							847
12		5.68					R2					LIMESTONE; wackestone; light gray(N7) to medium light gray (N6); slightly weathered (SW); weak (R2); slight reaction to HCl; mudstone interbed at 12.6. [Glen Rose Formation]		846
13												LIMESTONE; wackestone; very light gray (N8) to medium light gray (N6); very weak to weak (R2-R1); slightly weathered (SW); strong reaction to HCl; bioturbated, silt filled burrows; laminated silts 13.8-14.5. [Glen Rose Formation]		845
14		2.33	6	5.0 5.0	100		R1-R2							844
15									1034-6			LIMESTONE; micrite, silty; greenish gray (5GY 6/1) to medium gray (N5); slightly weathered (SW), weak (R2); strong reaction to HCl; thinly bedded. [Glen Rose Formation]		843
16		2.28					R2							842
17		5				SW-MW	R1					LIMESTONE; wackestone, silty; greenish gray (5GY 6/1); slightly to moderately weathered (SW-MW); very weak (R1); slight reaction to HCl. [Glen Rose Formation]	drilling stopped to replace packer seals	841
18		4.95										LIMESTONE; wackestone, silty; very light gray (N8) to light gray (N7); fresh to slightly weathered (F-SW); weak (R2); strong reaction to HCl; very fine grained. [Glen Rose Formation]		840
19		2.33	7	4.8 5.0	96	F-SW	R2							839
20		2.8										SILTSTONE/SHALE; calcareous; dark greenish gray (5G 4/1); slightly weathered (SW); extremely weak (R0); slight reaction to HCl. [Glen Rose Formation]		838
		2.53				SW	R0		1034-7					

Project Name and Job Number  
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**ROCK LOG**  
**Boring No. B-1034**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)								
21		2.53	7	4.6 5.0	96	SW	R2					LIMESTONE; wackestone; very light gray (N8) to light gray (N7); slightly weathered (SW); weak (R2); strong reaction to HCl; shell hash throughout; increasingly silty with depth.. [Glen Rose Formation]		837								
22		3.83																				836
23		5.3	8	5.0 5.0	100	F-SW	R0-R1					SILTSTONE/SHALE; calcareous; greenish gray (5G 6/1); very weak to extremely weak (R1-R0); slightly weathered to fresh (F-SW); slight reaction to HCl.. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	835								
24		2.8													LIMESTONE; wackestone; white to light gray (N9 to N7); fresh; weak (R2); fossiliferous; slight to strong reaction to HCl; mud interbed at 23.1; with shell hash; shell hash interbed, moderately weathered (MW) at 24.9. [Glen Rose Formation]	834						
25		1.78															833					
26		1.37							F								832					
27		2.32	9	5.2 5.0	100	SW	R2						300 psi, 1950 rpm	831								
28		1.5																				830
29		2.47																				
30		2.82	10	5.0 5.0	100	F-SW	R0					LIMESTONE; micrite, silty; medium light gray (N6); fresh (F); weak (R2) slight to strong reaction to HCl. [Glen Rose Formation]		828								
31		3.57																				827
32		3.33														F						
33		8.88	10	5.0 5.0	100	F-SW	R0					SILTSTONE/SHALE; calcareous; dark greenish gray (5G 4/1) to greenish black (5G 2/1); fresh to slightly weathered (SW); extremely weak (R0); none to slight reaction to HCl. Shell hash 34.5 to 34.8.. [Glen Rose Formation]		825								
34		5.25																				824
35		2.97				R2								823								

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1034</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
36		2.97	10	5.0 5.0	100							LIMESTONE; wackestone, silty; light gray (N7) to medium gray (N5); fresh to slightly weathered (F-SW); weak (R2); slight to strong reaction to HCl; fossiliferous; decreasing silt content with depth; variably bioturbated; occasional laminated silts. bioturbated beginning 45.3; rip up clasts beginning at 45.3; mudstone and shale interbed 45.6-46. [Glen Rose Formation]		822
		2.42												821
37		2.33												821
38														820
39		3.8	11	5.0 5.0	100							SILTSTONE/SHALE; calcareous; dark greenish gray (5G 4/1); fresh to slightly weathered (F-SW); extremely weak (R0); none to slight reaction to HCl; thinly bedded wackestones at 47.2, 47.5, 47.7, 47.9, 48.1, 48.2, 48.5, 48.7. [Glen Rose Formation]	recirc tub flushed & pumped every 2 runs	819
40		1.75												818
41		2.13					R2							817
42		2.1												816
43		3.2					F-SW							815
44		5.2	12	4.9 5.0	100									814
45		6.4												813
46		6.72												812
47		7.42												811
48		5	13	5.0 5.0	100								0.3' added to run 13 from run 14	810
49		2.35												809
50		3.62					R2							808

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
51		3.62	13	5.0 5.0	100							LIMESTONE; wackestone; very light gray (N8) to light gray (N7); fresh to slightly weathered (F-SW); weak (R2) to very weak (R1); strong reaction to HCl; bioturbated, with mud-filled burrows; fossiliferous; calcareous mud interbeds at 53.9, 54.6, 54.9, 55.4, laminated silts 52.8 to 53.4; massively bioturbated 55.5 to 56.8. [Glen Rose Formation]		807
52		5.27												806
53		4.62	14	5.0 5.0	100		R2					SILTSTONE/SHALE; calcareous; dark gray (N3); fresh to slightly weathered (F-SW); extremely weak (R0); none to slight reaction to HCl. [Glen Rose Formation]		805
54		2.67												804
55		3.07	15	4.9 5.0	98		R0					LIMESTONE; wackestone; very light gray (N8); fresh to slightly weathered (F-SW), weak, strong reaction to HCl; fossiliferous (recrystallized) shell hash at upper contact. [Glen Rose Formation]	erosional contact	803
56		4.48												802
57		2.9	16	4.6 4.7	98		R0					SILTSTONE/SHALE; calcareous; dark greenish gray (5G 4/1); fresh to slightly weathered (F-SW); extremely weak (R0); none to slight reaction to HCl; wackestone interbeds at 61.9 to 62.2, 62.5, 62.7, 62.85, 63. [Glen Rose Formation]	0.5' added to run 15 from run 16	802
58		4.3												801
59		2.87	16	4.6 4.7	98		R2							800
60		4.27												799
61		4.13	16	4.6 4.7	98		R0							798
62		4.33												797
63		4.12	16	4.6 4.7	98		R0							796
64		4.67												795
65		3.42	16	4.6 4.7	98		R1-R2							794
65		2.9												793

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)								
66		2.9	16	4.6	98	SW	R1-R2					LIMESTONE; wackestone; very light gray (N8); slightly weathered (SW); weak to very weak (R2-R1); strong reaction to HCl; bioturbated, with mud-filled burrows throughout; fossiliferous; sporadic medium to coarse pyrite grains. [Glen Rose Formation]		792								
67		3.17		4.7		F	R0						SILTSTONE/SHALE; calcareous; medium dark gray (N4) to dark gray (N3); fresh; extremely weak (R0); slight to none reaction to HCl; wackestone interbed at 67.1'; rip up clast at 69.2. [Glen Rose Formation]		791							
68		4.95	17	4.8 5.3	92	F	R0					LIMESTONE; wackestone; very light gray (N7) to very light gray (N8); fresh to slightly weathered (F-SW); strong reaction to HCl; bioturbated, fossiliferous; weak (R2). [Glen Rose Formation]		790								
69		4.48											2.42	5.82	F	R0	1034-17			SHALE; greenish black (5G 2/1); fresh (F); extremely weak (R0); none to slight reaction to HCl. [Glen Rose Formation]		789
70		3.75											3.58	F-SW	R2							0.2' added to run 17 from run 18
71		5.82	18	5.0 5.0	100	F	R0					LIMESTONE; wackestone; very light gray (N8) to light gray (N7); fresh to slightly weathered (F-SW); weak (R2) to very weak (R1); strong reaction to HCl; strongly bioturbated, with mud-filled burrows 72.5-74.9; rip up clasts & minor bioturbations 74.9 to 76.4; increased bioturbation and silty laminations beginning 76.4 and proceeding throughout. 84' darkens to medium light gray (N8). Zone of intense bioturbation 90.4 to 90.9. thin lignite (coal) clast at 93.2'. [Glen Rose Formation]		787								
72		3.58											2.83	1034-18								
73		2.83	19	5.0 5.0	100	F-SW	R1-R2							785								
74		6.2											1.43									
75		1.85	19	5.0 5.0	100	F-SW	R1-R2							783								
76		1.68											1.85									
77		2.15	19	5.0 5.0	100	F-SW	R1-R2							781								
78		1.38											1.68									
79		1.38	19	5.0 5.0	100	F-SW	R1-R2							779								
80		1.38											1.38									

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-1034**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
81		1.38	19	5.0 5.0	100							LIMESTONE; wackestone; very light gray (N8) to light gray (N7); fresh to slightly weathered (F-SW); weak (R2) to very weak (R1); strong reaction to HCl; strongly bioturbated, with mud-filled burrows 72.5-74.9; rip up clasts & minor bioturbations 74.9 to 76.4; increased bioturbation and silty laminations beginning 76.4 and proceeding throughout. 84' darkens to medium light gray (N8). Zone of intense bioturbation 90.4 to 90.9. thin lignite (coal) clast at 93.2'. [Glen Rose Formation]		777
		0.67												776
82		1.73												775
		2.3												774
83			20	5.1 5.0	100	F-SW	R1-R2						Length of recovery stretched due to mechanical breaks.	774
		1.77												773
84		2.72												772
		2.07												771
85			21	5.0 5.0	100								recirc tub pumped	770
		4.85												769
86		1.48												768
		2.33												767
87			22	4.9 5.0	98									766
		1.48												765
88		2.53												764
		1.72												763
89			22	4.9 5.0	98									
		2.08												
90		2.25												

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-1034</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
96		2.25	22	4.6 5.0	98							LIMESTONE; wackestone, oolitic; very light gray (N8) to medium gray (N5) fresh to slightly weathered (F-SW); weak to very weak (R2-R1); strong reaction to HCl; bioturbated with mud-filled burrows throughout; silt laminations 99.7 to 98; 101 to basal contact at 105.1. increasingly silty towards basal contact from 104 to 105.1. [Glen Rose Formation]	drill chatter	762
		2.18												761
97		2.05												760
98		1.88												759
99		1.57	23	5.0 5.0	100		R1-R2							758
100		1.65												757
101		1.7												756
102		2.57	24	5.0 5.0	100							gradational contact	755	
103		1.6											754	
104		2.05											753	
105		1.43											752	
106		1.65	25	5.1 5.0	100								751	
107		2.17											750	
108		1.62											749	
109		1.68											748	
110		2.18											Length of recovery stretched due to	



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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)										
111		2.18	25	5.1 5.0	100	F						LIMESTONE; micrite, silty; medium light gray (N6); fresh (F); weak (R2) strong reaction to HCl; fossiliferous; thinly bedded to laminated; occasional rip up clasts.. [Glen Rose Formation]	mechanical breaks. gradational contact	747										
		3.02																						
112		2.07	26	5.0 5.0	100	F-SW	R2					LIMESTONE; wackestone, oolitic; very light gray(N8) to medium light gray (N6); fresh to slightly weathered (F-SW); slight to strong reaction to HCl; weak (R2); mildly bioturbated throughout; variably occurring laminated silts; shell fragments. Dramatic increase in bioturbation and silt content 117.4-119.5. [Glen Rose Formation]		746										
113		1.67																						745
114		1.9																						744
115		2.15																						743
116		2.27	27	5.0 5.0	100	F	R1-R2					LIMESTONE; micrite, silty; greenish gray (5GY 6/1) to medium gray (N5); fresh (F); weak (R2); strong reaction to HCl; rip up clasts. [Glen Rose Formation]	0.1' added to run 27 from run 26	742										
117		2.12																						741
118		2.27																						740
119		2.7	28	5.0 5.0	100	F-SW	R1-R2					LIMESTONE; wackestone; very light gray (N8); to light gray (N7); fresh to slightly weathered (F-SW); weak to very weak (R2-R1); strong reaction to HCl; mildly bioturbated; occasional laminated silts; prominent burrow at basal contact.. [Glen Rose Formation]		739										
120		1.38																						738
121		2.18	28	5.0 5.0	100	F-SW	R1-R2							737										
122		3.15																						736
123		2.2																						735
124		2.28	28	5.0 5.0	100	F-SW	R1-R2							734										
125		5.85																						733

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
126		5.85	28	5.0 5.0	100	F						LIMESTONE; micrite, silty; medium light gray (N6); to light olive gray (5Y 6/1) fresh (F); weak (R2); strong reaction to HCl; laminated; rip-up clasts. [Glen Rose Formation]		732
127		2.05										LIMESTONE; wackestone, micritic; light gray (n7) to medium gray (N5); fresh to slightly weathered (F-SW); weak (R2); strong reaction to HCl; laminated; bioturbated 128.7. [Glen Rose Formation]	gradational contact	731
128		2.12					R2		1034-29					730
129		1.6	29	5.0 5.0	100									729
130		1.38												728
131		1.95										LIMESTONE; wackestone, silty; medium gray (N5); slightly weathered (SW) to fresh (F); weak to very weak (R2-R1); strong reaction to HCl; bioturbated; silty laminations variably spaced.. [Glen Rose Formation]	gradational contact	727
132		1.92												726
133		1.6							1034-30					725
134		1.4	30	5.0 5.0	100	F-SW								724
135														723
136		4.1					R1-R2							722
137		3.15												721
138		7.68							1034-31			SHALE; calcareous; medium dark gray (N4) and dark greenish gray (5GY 4/1); fresh to slightly weathered (F-SW); extremely weak (R0); none to slight reaction to HCl; fossiliferous 138.1 to 138.3. [Glen Rose Formation]		720
139		3.57	31	5.0 5.0	100							LIMESTONE; wackestone; very light gray (N8) to light gray (N7); fresh to slightly weathered (F-SW); weak (R2); strong reaction to HCl; bioturbated; fossiliferous.		719
140		2.82												718


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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
141		2.82	31	5.0 5.0	100							[Glen Rose Formation] LIMESTONE; micrite, silty; dark greenish gray (5GY 4/1); to medium gray (N5); fresh to slightly weathered (F-SW); weak (R1); slight reaction to HCl; bioturbated down to 141.1. [Glen Rose Formation]		717
142		3.27												
143		2.17	32	5.0 5.0	100	F-SW	R1-R2					LIMESTONE; wackestone; very light gray (N8) to medium gray (N5); fresh to slightly weathered (F-SW); weak (R2) to very weak (R1); strong reaction to HCl; fossiliferous; laminated silts throughout; intensely bioturbated with increased silt content, 144.1' to 145.6'; bioturbation continues below this depth; silt content decreases; shale interbed 145.1 to 145.2; oolitic 148.5 to 149.5.. [Glen Rose Formation]		716
144		1.42												
145		2.45												
146		2.8												
147		2.02	33	3.0 3.0	100								0.1' added to rune 32 from run 33	711
148		1.93												
149		1.88												
150		1.68												709
151												Bottom of Hole at 150'		708
152														707
153														706
154														705
155														704
														703

Project Name and Job Number TXU Comanche Peak COI 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-1035</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'02.78195"N / 97°47'39.80404"W		Total Depth 100 feet	
Drilling Contractor and Rig Palmerton and Parish / CME 55		Elevation and Datum 856.106 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 4 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 2	Date Started 2/12/07	
		Borehole Inclination Vertical	Logged by T. Glidden	Date Completed 2/13/07	

Reviewed by / Date                      R. Ortiz 2/14/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)	
0										856	
1	CL		B-1035 1	4	18 18	4.51			RESIDUAL SOIL (RS) LEAN CLAY very stiff to hard, mottled light gray (10YR7/1) to brownish yellow (10YR6/8), damp		855
2				5							30
3										853	
4	ML		B-1035 2	50/6"	0 6	4.51			SILT with calcareous deposits hard, light gray (10YR7/2) to very pale brown (10YR8/3), violent reaction to HCl (completely weathered limestone)		852
5									Bedrock at 4'		851
6											850
7											849
8											848
9											847
10											846
11											845
12											844
13											843
14											842
15											

Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG Boring No. B-1035</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'02.78195"N / 97°47'39.80404"W		Total Depth 100 feet	
Drilling Contractor and Rig Palmerton & Parish / CME 55		Elevation and Datum 856.106 feet NAVD88	Ground Water Depth 24.92	Depth to Bedrock 4 feet	
Casing Size and Depth 4" / 3.8 feet		Length of Core Barrel and Bit 8.6 feet	No. of Core Boxes 7	Date Started 2/12/07	
		Borehole Inclination Vertical	Logged by Glidden	Date Completed 2/13/07	

Reviewed by / Date R. Ortiz 2/14/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology		Remarks	Elevation (feet)
4		5.35											LIMESTONE: wackestone; grayish yellow (5Y 8/4) to very light gray (N8); weak to very weak (R2-R1); highly weathered to moderately weathered (HW-MW); strong reaction to HCl; fossiliferous. [Glen Rose Formation]	300 psi, 1900 rpm, good water flow, silty to clear; sample depth uncertain due to extent of last material	852
5		6.43	3	3.0 3.2 3.9	28	HW-MW	R1-R2								851
6		7.35													850
7		2.72				SW	R0						SHALE: mudstone; calcareous; medium dark gray (N4); extremely weak (R0); slightly weathered (SW); none to slight react to HCl. [Glen Rose Formation]		849
8		2.07				F	R2						LIMESTONE: wackestone; light gray (N7) to medium light gray (N6); fresh (F); strong reaction to HCl; fossiliferous; bioturbated 8.9 to 9.2; mud interbed at 8.7; weak (R2). [Glen Rose Formation]		848
9		2.28	4	5.0 5.0	100	SW	R1-R2						SHALE: mudstone; calcareous; medium light gray (N6) to medium gray (N5); slightly weathered (SW); very weak (R1); slight reaction to HCl; laminated to thinly bedded; shell hash 9.2 to 9.4. [Glen Rose Formation]		847
10		1.45									4				846
11		2.65											LIMESTONE: wackestone; very light gray (N8) to light gray (N7); slightly weathered (SW); weak to very weak (R2-R1); strong reaction to HCl; bioturbated; laminated silts throughout; fossiliferous. [Glen Rose Formation]		845
12		2.67				SW	R1-R2							0.1 added to run 4 from run 5	844
13		1.52													843
14		1.68	5	5.0 5.0	100	F	R1						SHALE: mudstone; calcareous; medium dark gray (N4); fresh (F); very weak (R1); slight reaction to HCl; laminated to thinly bedded. [Glen Rose Formation]		842
15		2.08				SW	R1-R2						LIMESTONE: micrite; light gray (N7) to light olive gray (5Y 6/1); slightly weathered (SW); weak to very weak (R2-R1); strong react to HCl; wackestone interbed at 14.8. [Glen Rose Formation]		841
16		2.58				SW	R0-R1				5		SHALE: mudstone; calcareous; medium dark gray (N4); slightly weathered (SW); very weak to extremely weak (R1-R0); none to slight reaction to HCl; rip-up clasts 15.3 to 15.5. [Glen Rose Formation]		840
17		1.63				F-SW	R2								839
18		2.57	6	5.0 5.0	100	F	R2						LIMESTONE: wackestone; medium light gray (N6); fresh to slightly weathered (F-SW); weak (R2); strong react to HCl; fossiliferous; bioturbated at upper contact. basal contact gradational. [Glen Rose Formation]		838
19						SW	R0						LIMESTONE; micrite; light gray (N7); weak		

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1035</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
19						SW	R0		6			(R2); fresh (F); strong reaction to HCl; bioturbated with micrite infill. [Glen Rose Formation]		837
20		5.43	6	5.0	100	SW-MW	R1-R2					SHALE: mudstone; calcareous; dark greenish gray (5G 4/1); slightly weathered (SW); extremely weak (R0); fossiliferous. [Glen Rose Formation]		836
21						SW-MW	R1-R2					LIMESTONE: wackestone; greenish gray (5G 6/1); to very light gray (N8); slightly to moderately weathered (SW-MW); weak to very weak (R2-R1); strong to slight reaction to HCl; shell hash 19.8-20.1; mud interbeds 20.1-20.3 and 21.6-22; muds and moderately weathered sections are greenish gray (5G 6/1); fossiliferous. [Glen Rose Formation]		835
22		2.38												834
23		1.87												834
24		0.97									vuggy	LIMESTONE: wackestone; very light gray (N6) to light gray (N7); weak (R2); fresh (F); strong reaction to HCl; vuggy at locations indicated in discontinuity descriptions; fossiliferous; 0.5" silt bed at 26.3. [Glen Rose Formation]		833
25		1.08	7	5.0	100	F	R2		7		vuggy			832
26		1.42												831
27		1.8												830
28		2.18				F-SW	R2					LIMESTONE: wackestone; medium light gray (N6) to medium gray (N5); fresh to slightly weathered (F-SW); very weak (R2); strong reaction to HCl; bioturbated; pervasive silt laminations; fossiliferous. [Glen Rose Formation]	0.1 added to run 8 from run 7	829
29		1.15												828
30		2.2	8	5.0	100							LIMESTONE; silty wackestone; medium light gray (N6) to medium gray (N5); fresh (F); weak (R2); slight reaction to HCl; very fine grained; bioturbated; fossiliferous. [Glen Rose Formation]		827
31		1.55				F	R2							826
32		4.13										SHALE: mudstone; calcareous; dark greenish gray (5G 4/1); fresh to slightly weathered (F-SW); extremely weak (R0); none to slight reaction to HCl. [Glen Rose Formation]		825
33		6.78				F-SW	R0		8					824
34		2.62	9	5.1	100		R2							823

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1035</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
34		2.05				F-SW	R2					LIMESTONE: wackestone; silty; medium gray (N5) to medium dark gray (N4); fresh to slightly weathered (F-SW); weak (R2); slight reaction to HCl; fossiliferous with intact shells 33.3 to 33.5 and fragments throughout; bioturbated; rip-up clasts; wavy silt laminations and thin beds. [Glen Rose Formation]		822
35		1.58	9	4.1 5.0	100				9			LIMESTONE: wackestone; very light gray (N8) to medium light gray (N6); fresh (F); weak (R2); strong reaction to HCl; heavily bioturbated 35.1 to 36.1; moderately bioturbated throughout; fossiliferous; variably silty. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	821
36		1.87												820
37		2.42												819
38														818
39		2.93												817
40		1.5	10	5.0 5.0	100	F	R2							816
41		1.43							10					815
42		1.88											0.1 added to run 11 from run 10	814
43		3.7												813
44		2.85	11	4.9 5.0	98	F-SW	R0					SHALE: mudstone; calcareous mud; dark greenish gray (5G 4/1); fresh (F); extremely weak (R0); slight to no reaction to HCl. [Glen Rose Formation]		812
45		3.48					R1-R2					LIMESTONE: wackestone; very light gray (N8) to light gray (N7); fresh to slightly weathered (F-SW); weak to very weak (R2-R1); strong reaction to HCl; bioturbated; laminated silts. [Glen Rose Formation]		811
46		5.12					R0					SHALE: mudstone; calcareous; dark greenish gray (5G 4/1); fresh (F); extremely weak (R0); slight to no reaction to HCl; calcareous laminations. [Glen Rose Formation]		810
47		3.9				F-SW	R2		11			LIMESTONE: wackestone; light gray (N7) to medium dark gray (N4); fresh to slightly weathered (F-SW); weak (R2); strong reaction to HCl; shale interbeds; bioturbated; thin layers in shale; rip up clasts; occasional laminated silts. [Glen		809
48		1.37	12	4.9 5.0	98									808
49														

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1035</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
49		3.13										Rose Formation] Shale Shale		807
50		2.52	12	4.9 5.0	98		R2						good water flow, silty	806
51		3.08												805
52		3.75												804
53		1.37				F-SW	R1-R2					LIMESTONE: wackestone; light gray (N7); fresh to slightly weathered (F-SW); weak to very weak (R2-R1); slight to strong reaction to HCl; intensely bioturbated with abundant silt-filled burrows; fossiliferous; mud interbeds near upper contact. [Glen Rose Formation]		803
54		2.05	13	4.9 5.0	98									802
55		4.77												801
56		4.07					R0-R1			13		MUDSTONE; shale and calcareous mudstone; fresh to slightly weathered (F-SW); extremely weak to very weak (R0-R1); non to slight reaction to HCl; laminated to thinly bedded; rip up clasts near upper contact; zone of shell debris 58.2 to basal contact. [Glen Rose Formation]		800
57		12.05											0.3 added to run 13 from run 14	799
58		2.57												798
59		4.6	14	5.0 5.0	100	F	R2			14		LIMESTONE: wackestone; light gray (N7); fresh (F); weak (R2); strong reaction to HCl; fossiliferous with recrystallized bivalve shells. [Glen Rose Formation]		797
60		4.43				F-SW	R0					SHALE: mudstone; calcareous; dark greenish gray (5G 4/1); fresh to slightly weathered (F-SW); extremely weak (R0); none to slight reaction to HCl; wackestone fossiliferous interbeds; laminated silts. [Glen Rose Formation]		796
61		5.43												795
62		3.93								16				794
63		2.22	15	5.0 5.0	100	F	R0					LIMESTONE: wackestone; very light gray (N8) to light gray (N7); fresh (F); weak (R2); strong reaction to HCl; bioturbated; fossiliferous with recrystallized bivalve shells. [Glen Rose Formation]		793
64														



Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-1035</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)		
64		2.45	15	5.0 5.0	100	F	R0							792		
65		3.8														791
66		2.27				F-SW	R0		15				0.1 added to run 15 from run 16	790		
67		5.03												789		
68		2.55				F	R2							788		
69		2.97	16	5.1 5.0	100		R0							787		
70		2.28														786
71		3											Length of recovery stretched due to mechanical breaks.	785		
72		5.68												784		
73		2.53												783		
74		1.77	17	5.0 5.0	100	F-SW			17					782		
75		1.48														781
76		1.98														780
77		2.72											0.1 added to run 18 from run 17	779		
78		1.45	18	5.0 5.0	100		R1-R2							778		
79																778

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-1035**


Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
79		1.95												777
80			18	5.0	100				18					776
81		1.8												775
82		2.18												774
83		2.33												773
84		2.02				F-SW	R1-R2							772
85		0	19	5.0	100				19					771
86		4.1												770
87		2.97												769
88		2.23							20					768
89		2.03	20	5.0	100							LIMESTONE: wackestone; very light gray (n8) to light gray (N7); fresh (F); weak (R2); strong reaction to HCl; moderately bioturbated; thinly bedded silts to laminated silts. [Glen Rose Formation]	767	
90		1.35				F	R2							766
91		2.28												765
92		2.97												764
93		2.9	21	5.0	100	F-SW	R1-R2					LIMESTONE: wackestone; light gray (N7) to medium light gray (N6); fresh to slightly weathered (F-SW); weak to very weak (R2-R1); slight to strong reaction to HCl; moderately to intensely bioturbated; fossiliferous; laminated to thinly bedded silts. [Glen Rose Formation]	763	
94														762

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908

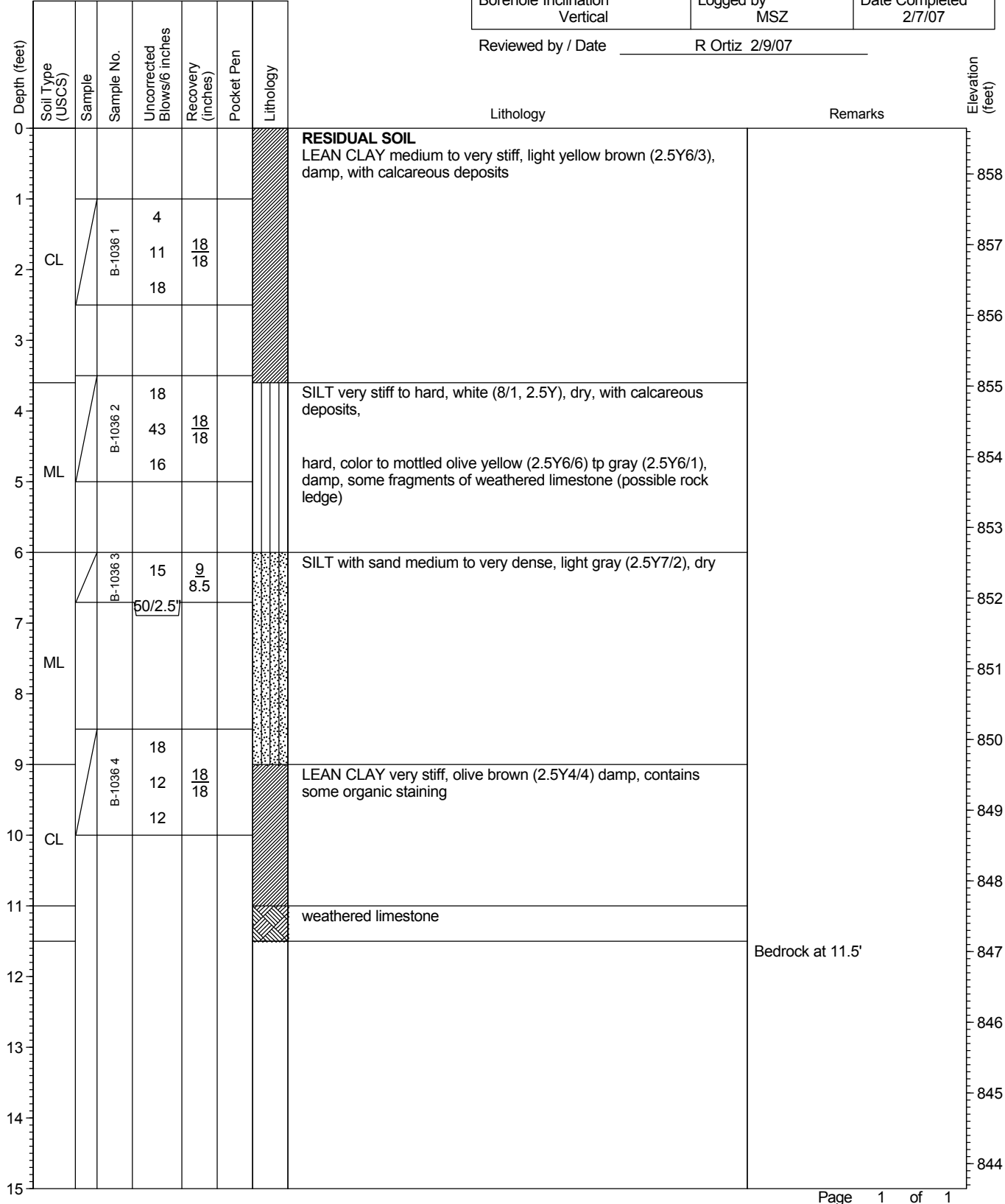



**ROCK LOG**  
**Boring No. B-1035**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
94		1.97	21	5.0 5.0	100	F-SW	R1-R2		21			LIMESTONE: wackestone; light gray (N7) to medium light gray (N6); fresh to slightly weathered (F-SW); weak to very weak (R2-R1); slight to strong reaction to HCl; moderately to intensely bioturbated; fossiliferous; laminated to thinly bedded silts. [Glen Rose Formation]	0.2 added to run 21 from run 22	762
95		1.62												761
96		2.28												760
97		2.27	22	3.0 3.0	100				22			total depth; bottom of hole	759	
98		0.9											758	
99		2.15											757	
100													756	
101														755
102														754
103														753
104														752
105														751
106														750
107														749
108														748
109														

Project Name and Job Number TXU Comanche Peak COL 1908		 <b>WLA</b> William Lettis & Associates, Inc.	<b>SOIL LOG Boring No. B-1036</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'04.75500"N / 97°47'40.08035"W		Total Depth 75 feet
Drilling Contractor and Rig TEXPLOR / CME 75		Elevation and Datum 858.647 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 11.5 feet
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 4	Date Started 2/7/07
		Borehole Inclination Vertical	Logged by MSZ	Date Completed 2/7/07

Reviewed by / Date R Ortiz 2/9/07



Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG Boring No. B-1036</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'04.75500"N / 97°47'40.08035"W		Total Depth 75 feet	
Drilling Contractor and Rig Texplor / CME 75		Elevation and Datum 858.647 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 11.5 feet	
Casing Size and Depth 4"		Length of Core Barrel and Bit 8 feet	No. of Core Boxes 4	Date Started 2/7/07	
		Borehole Inclination Vertical	Logged by MSZ	Date Completed 2/7/07	

Reviewed by / Date R Ortiz 2/9/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology		Remarks	Elevation (feet)
12		1.22				CW-MW	R0-R2					LIMESTONE: wackestone; white (N9), CW-MW, R0-R2, has heavily weathered zones 2/ orange staining. [Glen Rose Formation]		847	
13		1.48	1	3.2 3.5	91		R1					SHALE: claystone; medium gray (N5); slightly weathered (SW); R1, some orange staining (.1) at 12.9' [Glen Rose Formation]	weathered/orange	846	
14		1.85							5			LIMESTONE: wackestone; medium light gray (N6); slightly weathered (SW); R2. 14.5' color change to white (N9). 14.8 color change to medium gray (N5), with closely spaced thin shale beds. 15 color is very light gray (N8), 15.3-16.5 interbedded with wavy (1/4") shale beds [Glen Rose Formation]		845	
15		1.5							6					844	
16		1.13												843	
17		1.17	2	5.0 5.0	100		R2					LIMESTONE: micrite; light gray (N7); slightly weathered (SW); weak (R2); slight reaction to HCl. [Glen Rose Formation]		842	
18		1.22										LIMESTONE: wackestone; very light gray (N8); slightly weathered (SW); weak (R2); fine grained massive. [Glen Rose Formation]		841	
19		1.35				SW						LIMESTONE: wackestone; medium gray (N5), strong reaction to HCl, burrows and fossils present, burrows appear slightly flattened (elliptical). [Glen Rose Formation]		840	
20		1.32										LIMESTONE: micrite; medium light gray (N6); slightly weathered (SW); weak (R2); fine grained massive, slight reaction to HCl. [Glen Rose Formation]		839	
21		1.07												838	
22		0.85	3	5.0 5.0	100		R1		7			Packstone from 21.5' - 21.6' SHALE: siltstone; grayish blue green (5BG 5/2); slightly weathred (SW); very weak (R1); many shell fragments, gradational lower contact, massive. [Glen Rose Formation]		837	
23		1.02					R1-R2					LIMESTONE: wackestone; greenish gray (5G 6/1); slightly weathered (SW); weak (R2); 23.5 large burrows filled with micrite, 24.2-24.4 very light gray (N8) [Glen Rose Formation]		836	
24		1.17												835	
25		1.33	4	5.0 5.0	100		R1					SHALE: claystone; grayish blue green (5BG 5/2); slightly weathered (SW); very weak (R1); many shell fragments [Glen Rose Formation]		834	
26		1.25												833	

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-1036**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
27		1.25	4	5.0 5.0	100		R1					LIMESTONE: wackestone; white (N9) to very light gray (N8); slightly weathered to moderately weathered (SW-MW); very weak to weak (R1-R2); appears crystalline, massive. Several mechanical weathering (MW) zones at each break between 25-29.9, area around each zone is slightly vuggy and stained, some contain separated suture zones stained black. shells and fossils common. [Glen Rose Formation]		832
28		1.52												831
29		1.5												830
30		0.87	5	4.4 5.0	88		R2					LIMESTONE: packstone; medium light gray (N6), slightly weathered (SW); weak (R2); fine grained, massive, shells and small burrows. [Glen Rose Formation]		829
31		1.27												828
32		1.72												827
33		1.87	6	5.0 5.0	100	SW	R1					LIMESTONE: wackestone; light gray (N7); slightly weathered (SW); weak (R2); very few fossils, fine grained, massive [Glen Rose Formation]		826
34		1.2												825
35		2.67												824
36		2.67	7	5.3 5.0	100		R2					SHALE: siltstone; medium bluish gray (5B 5/1); slightly weathered (SW); very weak (R1). [Glen Rose Formation]		823
37		2.73												822
38		2.42												821
39		2.5	7	5.3 5.0	100		R2					LIMESTONE: wackestone, light gray (N7); slightly weathered (SW); weak (R2); fine grained. [Glen Rose Formation]		820
40		2												819
41		0.6												818
		2.68										Large burrows and fossils, irregular bedding.		
												Fine grains, massive, few small fossils		
												Bedding becomes visible, planar, and wavy		

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-1036**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
42		2.68										LIMESTONE: wackestone, light gray (N7); slightly weathered (SW); weak (R2); fine grained. [Glen Rose Formation]		817
43		2.05												816
44		1.85	7	5.3 5.0	100		R2						Length of recovery stretched due to mechanical breaks.	815
45		1.52							11					814
46		0.95												813
47		1.37										Shale		812
48		2.03	8	5.0 5.0	100				12			Laminated bed of shale and limestone		811
49		2.22				SW						Shale		810
50		2.13										Shale		809
51		1.83					R1-R2					Shale		808
52		2.67												807
53		2.08	9	5.2 5.0	100				13			Shale	Length of recovery stretched due to mechanical breaks.	806
54		1.47												805
55		1.45												804
56		1.5	10	4.1 5.0	100							Increased shell/fossil content. Many burrows and wavy/defmored bed, contains	given %100 RQD because remaining .9' was picked up on the next run	803
		1.55												

Project Name and Job Number  
TXU Comanche Peak Col  
1908



**ROCK LOG**  
**Boring No. B-1036**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
57		1.55					R1-R2					zones of packstone within interbedded shales 55.9' -58.2' [Glen Rose Formation]		802
58		2.25												801
59		2.35	10	4.1 5.0	100				14			SHALE; medium bluish gray (5B 5/1); slightly weathered (SW); very weak (R1); calcareous to 59', at 59' darkens to medium dark gray (N4). Lower .2' is zone of shell fragments. Planar 20° contact. [Glen Rose Formation]		800
60		2.3					R1							799
61		4												798
62		3.73					R2					LIMESTONE: wackestone; very light gray (N8); slightly weathered (SW); weak (R2). [Glen Rose Formation]		797
63		3.68	11	5.0 4.0	100							SHALE: siltstone; medium dark gray (N4); slightly weathered (SW); very weak (R1); interbedded with .025 to .1 beds of limestone (planar). Wackestone 63-63.1, 63.7-63.9. 0° planar lower contact, few (rare) shells/rip ups [Glen Rose Formation]		796
64		1.5				SW	R1-R2							795
65		2.5	12	1.3 1.0	100				15					794
66		2.73										LIMESTONE: wackestone; light gray (N7); slightly weathered (SW); weak (R2); , fine grained, deformed shale bedding is common (.025), small burrows common, .1' micrite 67.55-67.65 [Glen Rose Formation]		793
67		2.85					R2							792
68		2.83	13	4.7 5.0	94							SHALE: siltstone; medium dark gray (N4); slightly weathered (SW); very weak (R1); very wavy/deformed upper contact, deformed by upper micrite, no reaction to HCl, dessicates to .0125 to .025 beds [Glen Rose Formation]		791
69		3.02							16					790
70		3.5					R1							789
71		5.18	14	5.0 5.0	100								sampler stuck, cut cable to remove drill stem and sampler	788
		3.42					R1							




Project Name and Job Number  
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 1908

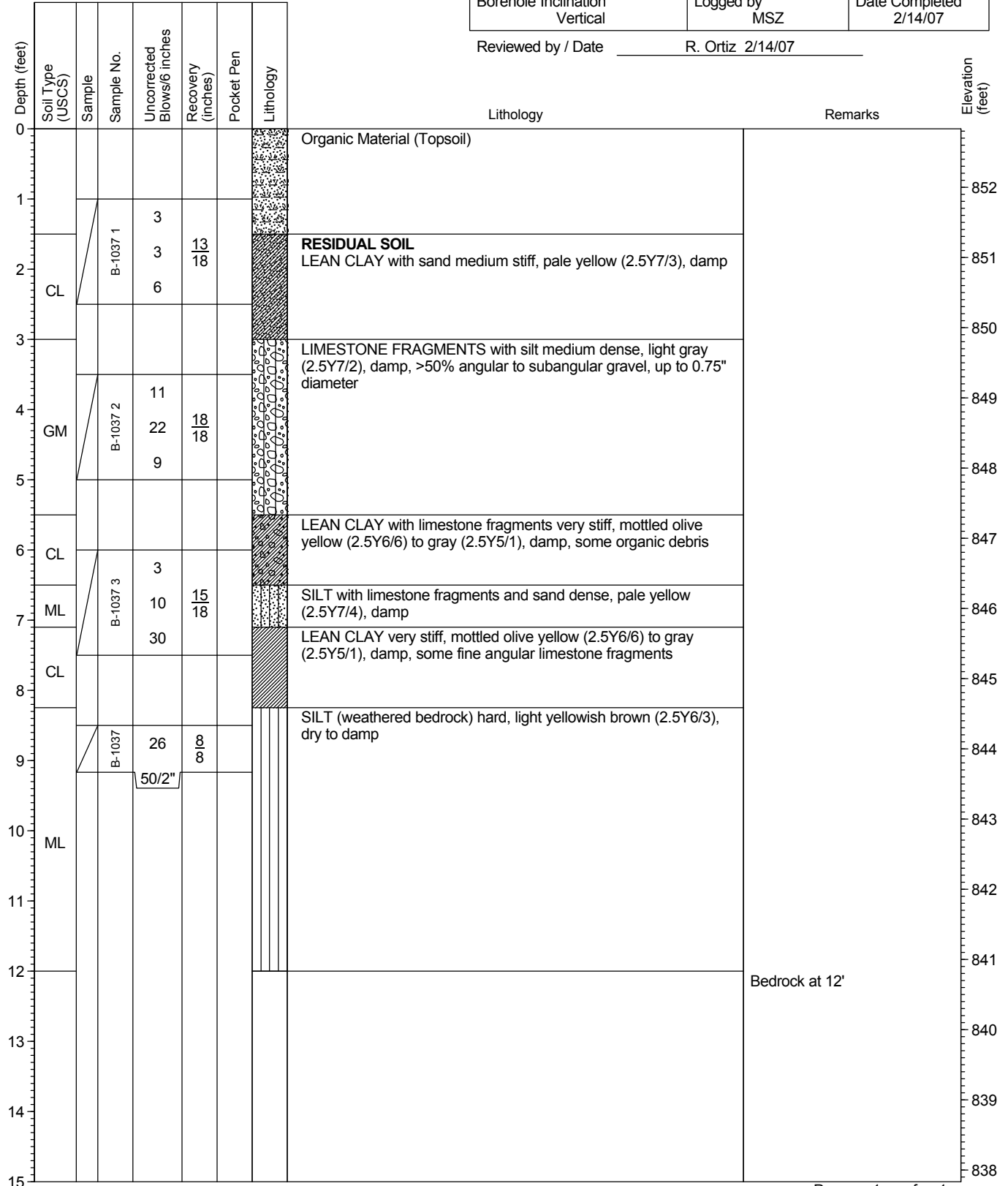



**ROCK LOG**  
**Boring No. B-1036**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
72.0		3.42	14	5.0 5.0	100	MW	R1					LIMESTONE: wackestone; light gray (N7); slightly weathered (SW); very weak to weak (R1-R2), fine-medium grained, deformed [Glen Rose Formation] SHALE: siltstone; medium gray (N5), moderately weathered (MW); very weak (R1); abrupt (planar to sub-planar) contacts (upper and lower) [Glen Rose Formation] LIMESTONE: wackestone; slightly weathered (SW); weak (R2); wavy irregular bedding; fine grained, fossils shells are common, 73.5 and 74 (.2) zones of interbedded shale. [Glen Rose Formation]		787
72.5		3.73					R1						786	
73.0		4.25											785	
74.0		1.5				SW	R2				784			
75.0													bottom of hole	783
76.0														782
77.0														781
78.0														780
79.0														779
80.0														778
81.0														777
82.0														776
83.0														775
84.0														774
85.0														773
86.0														

Project Name and Job Number TXU Comanche Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-1037</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'06.16864"N / 97°47'40.27994"W		Total Depth 151.3 feet	
Drilling Contractor and Rig TEXPLOR / CME 75		Elevation and Datum 852.836 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 12 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 4	Date Started 2/10/07	
		Borehole Inclination Vertical	Logged by MSZ	Date Completed 2/14/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 2/14/07



Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG Boring No. B-1037</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'06.16864"N / 97°47'40.27994"W		Total Depth 151.3 feet	
Drilling Contractor and Rig Boart Longyear / 44 TMA		Elevation and Datum 852.836 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 12 feet	
Casing Size and Depth 4.5 / 14.4 feet		Length of Core Barrel and Bit 8.6 feet	No. of Core Boxes 10	Date Started 2/10/07	
		Borehole Inclination Vertical	Logged by G. Van Etten	Date Completed 2/14/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 2/14/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)	
15.00		9.25	1	4.8 1.9	95	F	R1					LIMESTONE: wackestone; light gray (N7); fresh (F); very weak (R1); pyrite; strong HCl reaction	Began HQ coring at 14.4'. good water return light grey	838	
15.50		5.13				F	R1-R2			1037-1	SHALE: medium dark gray (N4); fresh (F); very weak to extremely weak (R1-R2); many shells at sharp lower contact; moderate HCl reaction				837
16.50		3.15	2	4.7 5.0	94	F	R1					LIMESTONE: wackestone; dark greenish gray (5GY 4/1); fresh (F); sparse bioturbation; violent HCl reaction	gradational contact	836	
17.50		2.82				F	R1								835
18.50		6.15				F	R1							SHALE: dark greenish gray 5GY 4/1; fresh (F); very weak (R1); bioturbation and shell hash at upper contact; abrupt lower contact	834
19.50		4.75												LIMESTONE: wackestone; light gray (N7) with dark greenish gray (5GY 4/1) shale interbeds; fresh (F); very weak (R1); moderate to violent HCl reaction;	833
20.50		3.02	3	5.0 5.0	100	F	R1							832	
21.50		3.83								1037-2		Jt, Pl, Si, Fi			831
22.50		3											Numerous shell fragments at 22.2'.		830
23.50		2.43	4	5.0 5.0	100	F	R1							829	
24.50		2.25												Stylolites at 24.1'.	828
25.50		2.8												Several very thin shale beds at 24.8'-25.3'.	827
26.50		3.72												Color change to dark greenish gray (5GY 6/1) at 25.6'.	826
27.50		2.63	4	5.0 5.0	100	F	R0-R1							825	
28.50		3.83												SHALE: medium dark gray (N4) to dark greenish gray; fresh (F); very weak to extremely weak (R0-R1); common bioturbation; few fossils; mild HCl reaction	824

Project Name and Job Number  
 TXU Comanche Peak Col  
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**ROCK LOG**  
**Boring No. B-1037**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
30.00		6.48	4	5.0 5.0	100	F	R0-R1					Limestone interbed 29.3'-29.7'.	good water return, very light grey, 600 psi down pressure	823
30.68		6.48												
31.00		4.08												822
32.00		3.5										LIMESTONE: wackestone; medium light gray (N6); fresh (F); very weak (R1); few rip-up clasts and sparse bioturbation; shell fossils		821
33.00		1.92				F	R1							820
34.00		3.22	5	5.0 5.0	100	F	R1					LIMESTONE: packstone; medium light gray (N6); fresh (F); very weak (R1); many rip-up clasts; swirled shale interbeds and fossils; moderate HCl reaction		819
35.00		1.62												
36.00		1.85				F	R1							817
37.00		3.1										LIMESTONE: packstone; medium gray (N5); fresh (F); very weak (R1); many rip-up clasts; sparse bioturbation; violent HCl reaction; multiple shell fragments	fast drilling times, good water return, white	816
38.00		1.97												
39.00		2.17	6	4.9 5.0	98									814
40.00		1.52												
41.00		1.17				F	R1					Fewer shale beds at 40.5'		812
42.00		3.43											end of drilling 2/12/07	811
43.00		5.37	7	5.0 5.0	100							Shale interbed with limestone rip-up clasts at 42.6'-43.0'.		
44.00		4.25												

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1037</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)					
45		3.9	7	5.0 5.0	100	F	R0-R1					SHALE: dark greenish gray(5GY 4/1); fresh (F); extremely weak to very weak (R0-R1); limestone interbeds 0.1-0.3'; spaced 0.1-0.3' apart; sharp contacts; few fossils	good water return light grey,	808					
46		5.03																	807
47		2.85	8	5.1 5.0	100	F	R1					LIMESTONE: packstone; medium light gray (N6); fresh (F); very weak (R1); many rip-up clasts; and shale interbeds; swirled and up to 0.1' thick; few organic and pyrite clasts intermixed; moderate HCl reaction; many shell fossils almost hash at base	extremely windy and cold, using truck as blocker Length of recovery stretched due to mechanical breaks.	806					
48		3.88																805	
49		3.53																	804
50		2.58																	803
51		5.12											802						
52		5.65	9	4.9 5.0	98	F	R1					Shale interbed 51.4'-51.6'.		801					
53		2.5															800		
54		3.15														SHALE: medium dark gray (N4); massive; fresh (F); extremely weak (R0); few fossils; very mild HCl reaction		799	
55		6.45											798						
56		5.42											797						
57		5.7	10	5.0 5.0	100	F	R1					LIMESTONE: wackestone; light gray (N7); fresh (F); very weak (R1); many shell fossils; moderate HCl reaction	600psi down pressure	796					
58		2.8																795	
59		6.72															SHALE: medium dark gray (N4); 0.1-0.2' thick layers of wackestone spaced > .1'; fresh (F); extremely weak to very weak (R0-R1); mild HCl reaction; sparse bioturbation; sharp contacts with limestone interbeds		794

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**ROCK LOG**  
**Boring No. B-1037**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
60		6.58	10	5.0 5.0	100	F	R0-R1					SHALE: medium dark gray (N4); 0.1-0.2' thick layers of wackestone spaced > .1'; fresh (F); extremely weak to very weak (R0-R1); mild HCl reaction; sparse bioturbation; sharp contacts with limestone interbeds	good water return	793
61		4.25												792
62		3.4				F	R1					LIMESTONE: packstone; medium light gray (N6); fresh (F); extremely weak (R1); thin wavy shale beds; many rip-up clasts; few shell fragments; strong HCl reaction		791
63		2.78												790
64		5.33	11	5.0 5.0	100	F	R2					SHALE: medium dark gray (N4); fresh (F); extremely weak (R0); massive; few fossils and limestone interbeds	fossils at contact wavy	789
65		3.87												788
66		2.7				F	R1					LIMESTONE: packstone; medium light gray (N6); fresh (F); very weak (R1); many fossils and swirled shale interbeds; moderate to strong HCl reaction	gradational contact	787
67		4.27												786
68		4.75	12	5.0 5.0	100	F	R0					SHALE: medium dark gray (N4) massive; fresh (F); extremely weak (R0); no HCl reaction		785
69		5.67												784
70		2.68				F	R1					LIMESTONE: packstone; medium light gray (N6); fresh (F); very weak (R1); moderate HCl reaction; rip-up clasts spaced closely		783
71		2.8												782
72		4.47	13	5.0 5.0	100	F	R1					Fossiliferous shale layer 71.2'-71.5'.		781
73		2.33												780
74		2.63										Common bioturbation at 73.0'		779

Jt, Pl, Ro, Op

Project Name and Job Number  
 TXU Comanche Peak Col  
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**ROCK LOG**  
**Boring No. B-1037**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
75		2.25	13	5.0 5.0	100	F	R1						good light grey water return	778
		2.25												777
76		1.58												776
77		3.43												776
78		3.05											run 14 is the same rock throughout	775
79		3.95	14	5.0 5.0	100	F	R1							774
80		3												773
81		2.78										Oolites at 80.5;		772
82		3.78												771
83		3.25												770
84		2.5	15	5.0 5.0	100	F	R1					Grainy texture at 84.0', becoming shaly with rip-up clasts 84.0'-87.3'.		769
85		2.58												768
86		2.45												767
87		4.3											water refill	766
88		1.87	16	5.0 5.0	100	F	R1					Few shale interbeds from 87.3'-88.3'		765
89		2												764

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**ROCK LOG**  
**Boring No. B-1037**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
90		3.53	16	5.0 5.0	100	F	R1						Large evaporite brown clast with tip-up clasts; oxidized organic (?) at 89.5'.  good water return	763
91		2.5												762
92		1.95	17	5.0 5.0	100	F	R1						At 93', larger rip-up clasts with wider shale interbeds.  Shell fragments common; violent reaction to HCl; grainy texture in places.  Brown elongate clast at 96.2', possible bone fossil (?). LIMESTONE: wackestone; very light gray (N8); fresh (F); very weak (R1); grainy; few stylolites; violent HCl reaction LIMESTONE: packstone; medium light gray (N6); fresh (F); very weak (R1); many rip-up clasts; sparse bioturbation; very wavy and thin shale layers; strong HCl reaction;	761
93		4.73												760
94		3.58												759
95		1.95												758
96		1.22	18	5.0 5.0	100	F	R1						Very wavy, thin shale layers.  Grainy texture.	757
97		4.2												756
98		3.83												755
99		3.13	19	5.0 5.0	100	F	R1						Shell fossil casts.	754
100		2.4												753
101		2.77	20	5.0 5.0	100	F	R1							752
102		2.83												751
103		2.68	21	5.0 5.0	100	F	R1							750
104		2.27												749



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**ROCK LOG**  
**Boring No. B-1037**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)										
105		2.25	19	5.0 5.0	100	F	R1					LIMESTONE: wackestone; medium light gray (N6); fresh (F); very weak (R1); few very thin planar shale interbeds; occasional pyrite clasts.	good water return light grey, milky	748										
		2.25																						
106		2.02																						
107		2.6	20	5.0 5.0	100	F	R1					Massive bioturbation.		746										
108		2.88																						745
109		2.62																					Very thin distinct shale layers 108.3'-108.6'.	
110		1.37	21	5.0 5.0	100	F	R1					LIMESTONE: packstone; medium gray (N5); fresh (F); very weak (R1); many rip-up clasts; grainy texture; strong HCl reaction; bioturbation and fossils.	run 21 came out as one solid rock, no breaks	743										
111		1.2																						742
112		3.08																						
113		2.47	22	4.9 5.0	98	F	R1					LIMESTONE: wackestone; light gray (N7); fresh (F); very weak (R1); common bioturbation; few fossils; violent HCl reaction;		740										
114		2.85																						739
115		3.72																						
116		2.77	22	4.9 5.0	98	F	R1					116.0'-116.3' thin layers of light gray (N7) shale		737										
117		3.32																						736
118		2.12																						
119		2.57										at 119', trace pyrite clasts, somewhat		734										

Project Name and Job Number  
 TXU Comanche Peak Col  
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**ROCK LOG**  
**Boring No. B-1037**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)	
120		3.1	22	4.9 5.0	98	F	R1		1037-22			granular. LIMESTONE: wackestone; light gray (N7); fresh (F); very weak (R1); common bioturbation; few fossils; violent HCl reaction;	good water return	733	
121		2.77										LIMESTONE: wackestone; light gray (N7) with tint of brown; fresh (F); very weak (R1); common bioturbation; moderate to strong HCl reaction; more bioturbation and rip-up clasts to bottom		732	
122		3.55	23	4.9 5.0	98	F	R1		1037-23				600 psi	731	
123		3.23												730	
124		1.88												729	
125		2.1												728	
126		2.08	24	5.0 5.0	100	F	R1		1037-24				run 24 came out without any breaks	727	
127		3.18												Several small oolites at 126.5'.	726
128		2.63												725	
129		3.02												724	
130		2.63	25	5.1 5.0	100	F	R1						gradational contact	723	
131		2.73												722	
132		2.67												LIMESTONE: packstone; medium light gray (N6); fresh (F); very weak (R1); many rip-up clasts; moderate HCl reaction	721
133		3.9	25	5.1 5.0	100	F	R1							720	
134		3.52												719	

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**ROCK LOG**  
**Boring No. B-1037**


Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)		
135		5.45	25	5.1 5.0	100	F	R1					SHALE: medium light gray (N6); fresh (F); extremely weak (R0); fossils; bioturbation	Length of recovery stretched due to mechanical breaks. shell fossils at contact good water return	718		
136		5.62				F	R0			1037-25				LIMESTONE: wackestone; very light gray (N8) fresh (F); very weak (R1); common bioturbation	large organic clasts at contact, coal?	717
137		4.35				F	R1								SHALE: dark greenish gray (5GY 4/1); fresh (F); extremely weak (R0); limestone rip-up clasts	
138		6.32	26	4.9 5.0	98	F	R0					LIMESTONE: packstone; medium gray (N5); fresh (F); very weak (R1); many rip-up clasts; several oolites; sparse bioturbation and organic clasts; strong HCl reaction; bioturbation; fossils and oolites;	"smeared" contact	715		
139		3.75				F	R1			1037-26				Shale with shells at 141.3'-141.5'. Large rounded rip-up clasts; bioturbation, fossils and oolites at 144'.		714
140		2.92				F	R1									713
141		2.67				F	R1									712
142		6.55				F	R1									711
143		3.58	27	4.9 5.0	98									710		
144		4.5				F	R2			1037-27				changes from very weak (R1) to weak (R2) at 146.2'.		709
145		3.45				F	R2									708
146		3.27	28	4.9 5.0	98									707		
147		6.97				F	R2									706
148		5.2				F	R2			1037-28						705
149		3.73												704		

Project Name and Job Number  
 TXU Comanche Peak Col  
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**ROCK LOG**  
**Boring No. B-1037**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
150		2.9												703
		2.9										changes from very weak (R1) to weak (R2) at 146.2'.		
151		2.2	28	4.9 5.0	98	F	R2							702
152													Total depth drilled 151.3'.	701
153														700
154														699
155														698
156														697
157														696
158														695
159														694
160														693
161														692
162														691
163														690
164														689

Project Name and Job Number TXU Comanche Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-1038</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'09.15105"N / 97°47'40.86652"W		Total Depth 150 feet	
Drilling Contractor and Rig Richard Simmons Drilling / BK-81 HD		Elevation and Datum 843.525 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 13.8 feet	
Sampling Method SPT		Sample Driving Hammer/Drop R&C / 140 lbs / 30 inches	No. of Samples 6	Date Started 2/8/07	
		Borehole Inclination Vertical	Logged by J. Turner	Date Completed 2/10/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 2/13/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0										843
1	CL		B-1038 1	8	18/18			ARTIFICIAL FILL (Qaf) LEAN CLAY very stiff, brownish yellow (10YR6/8), small angular gravels, reacts moderately with HCl, fill likely associated with parking lot		842
2				13						841
3				17						840
4	CL		B-1038 2	12	12.5/18			SANDY LEAN CLAY stiff, gray to brownish yellow (N6 to 10YR6/8), slight reaction to HCl, few limestone fragments		839
5				40						838
6				11				RESIDUAL SOIL LEAN CLAY medium stiff, dark yellowish brown (10YR3/6), dry, moderate reaction to HCl		837
7			B-1038 3	2	16/18					836
8				5						835
9	CL		B-1038 4	5	18/18			yellowish white (2.5Y7/8 to 8/1), moist, some calcareous deposits, strong reaction to HCl		834
10				4						833
11				6						832
12			B-1038 5	5	18/18			very stiff, color to olive (5Y5/4), damp, some roots		831
13				8						830
14	CL			10				LEAN CLAY with sand and small gravel light olive brown (2.5Y5/4), damp, no reaction to HCl	Bedrock at 13.8'	829
15										

Project Name and Job Number TXU Comanche Peak Col 1908		 WLA William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. B-1038</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'09.15105"N / 97°47'40.86652"W		Total Depth 150 feet	
Drilling Contractor and Rig Richard Simmons / BK HD81		Elevation and Datum 843.525 feet NAVD88	Ground Water Depth 29	Depth to Bedrock 13.8 feet	
Casing Size and Depth 4 / 13.5 feet		Length of Core Barrel and Bit 10.5 feet	No. of Core Boxes 10	Date Started 2/8/07	
		Borehole Inclination Vertical	Logged by J. Turner	Date Completed 2/10/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 2/13/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology		Elevation (feet)
													Remarks	
14		1.17	7	3.7 1.5	73				1038-7			CLAY with SILT; roots; olive; slow dilatancy; damp; stiff; low plasticity; reacts to HCl.	depth to bedrock 17.5	830
15		1.35					R1					LIMESTONE: wackestone; white (N9) to light grey (N7); slightly weathered (SW); weak (R2); medium- coarse grained fossiliferous; reacts moderately to HCl. [Glen Rose Formation]	mudstone interbed	829
16		1.63							1038-8					828
17		1.43	8	4.8 5.0	96							SHALE: mudstone; calcareous; shell hash; greenish gray (5GY 6/1); fine grain; matrix with shell frags coarse; extremely weak (R0); fine laminations; weak HCl reaction; mottled. [Glen Rose Formation]		827
18		1.35												826
19		1.52					R0							825
20		1.18							1038-9					824
21		1.68										SHALE: mudstone; dark greenish gray (5GY 4/1); fine to very fine; extremely weak (R0); fissile; no HCl reaction. [Glen Rose Formation]		823
22		2.35	9	4.9 5.0	98									822
23		2.6										LIMESTONE: packstone; silty; grey; medium grained; fine muddy matrix; weak (R2); fine wavy laminations; mod HCl reaction. [Glen Rose Formation]		821
24		2.73												820
25		2.17										LIMESTONE: wackestone; medium light gray (N6); weak (R2); medium gray (N5); massive; HCl reaction. [Glen Rose Formation]		819
26		1.58					R1							818
27		2.35	10	5.0 5.0	100									817
28		1.93							1038-10			LIMESTONE: packstone; greenish gray (5GY 6/1) to light grey; wavy laminated; interbeds of mudstone 27.1-27.5; 28.1-28.4; HCl reaction; shale 33.4-33.6; 33.7-33.8; 33.9-34. [Glen Rose Formation]		816

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1038</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
29		1.93	10	5.0	100									815
		1.68		5.0										814
30		1.83	11	5.2	100		R1							813
		1.18												5.0
31		1.9	11	5.2	100		R1							811
		2.8												5.0
32		2.5	12	5.1	100	SW	R0					SHALE: mudstone; greenish gray (5GY 6/1); extremely weak (R0); fine moist; fissile; no HCl reaction; limestone 36.2-36.3; 36.4-36.5. [Glen Rose Formation]		809
		2.83												5.0
33		3.32	12	5.1	100		R0							807
		1.58												5.0
34		1.73	13	5.1	100		R1					LIMESTONE: micrite; white (N9); weak (R2); dry; massive; fine; interbed of shale 37.7-37.9; 38.5-39.8 fine mud layers. [Glen Rose Formation]		805
		3.28												5.0
35		2.6	13	5.1	100		R0					LIMESTONE: wackestone; with shale interbeds; white (N9); weak (R2); fine-medium grained; sub .1' shale interbeds; bioturbated; fossils. [Glen Rose Formation]		803
		2.93												5.0
36		3.22	13	5.1	100		R0							801
		2.18												5.0

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1038</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)								
44		2.18	13	5.1	100	SW			1038-13				mechanical breaks.	800								
		3.35		5.0														799				
45		2.32	14	4.7 5.0	94		R0		1038-14			SHALE: claystone; very dark grey; very weak (R1); fissile; damp; finely laminated; fossiliferous; no HCl reaction; fresh (F); shell hash at base. [Glen Rose Formation]		798								
46		2.1																797				
47		3.17																	796			
48		1.87	15	5.0 5.0	100							LIMESTONE: wackestone; fresh (F); white (N9); medium strong (R3); fine to medium; massive; bioturbated; burrows; fossils; strong HCl reaction. [Glen Rose Formation]		795								
49		3.02																		SHALE: same as above		794
50		2.83																				793
51		3.03	16	5.0 5.0	100		F		1038-15			LIMESTONE: wackestone; very light gray (N8); fresh (F); weak (R2); R1; fine to medium grained; sub .1' shaley interbeds 53.6-54.8; sub .1' coal seam 54.7. [Glen Rose Formation]		792								
52		2.68																	791			
53		2.43																	790			
54		2.35	16	5.0 5.0	100		R1							789								
55		2.67																		SHALE: mudstone; dark greenish gray (5GY 4/1); fresh (F); extremely weak (R0); fine; dry; no HCl reaction; 56.4 limestone rip up clasts; 58.1-58.3; 58.5-58.7; 58.8-59.1 limestone beds. [Glen Rose Formation]		788
56		3.33																				787
57		3.17	16	5.0 5.0	100									786								
58		4.15																				786



Project Name and Job Number  
TXU Comanche Peak Col  
1908



**ROCK LOG**  
**Boring No. B-1038**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)										
59		4.15	16	5.0 5.0	100		R1					SHALE: mudstone; dark greenish gray (5GY 4/1); fresh (F); extremely weak (R0); fine; dry; no HCl reaction; 56.4 limestone rip up clasts; 58.1-58.3; 58.5-58.7; 58.8-59.1 limestone beds. [Glen Rose Formation]		785										
60		3.67																					784	
61		3.67	17	5.2 5.0	100		R1					LIMESTONE: wackestone; white (N9) to light grey (N7); weak (R2); fresh (F); fine grained; massive; HCl reaction; shale 61.4-61.6; 62.7; 62.3; calcite crystal infilling vug 63.3-63.7; medium strong (R3) after 65; 68 sub .1' silt beds to 68.8; becomes grey; 71.2-71.6 packstone; becomes weak; 72.2-75 sub .1 interbeds of silt; wavy undulatory; fine bedding; 75-78.9 abundant silt beds; at <.1' and .5"-.1' apart; fossiliferous weak; finely laminated 78.9 wackestone is pure white and massive; 80.7-82 rip up clasts; 82.6-82.9 limestone rip up clasts surrounded by .1' silt beds; 86-86.3 mudstone with rip up clasts 87.9 sub .1 shale layer; 88.6-90; abundant very fine sub .1 shale beds interbeds; finely bedded; light grey; 90.5-90.8 packstone. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	783										
62		3.93																					782	
63		2.82																						781
64		3.68																						780
65		3.1	18	5.0 5.0	100		R2							779										
66		2.43																						778
67		2.02	19	5.1 5.0	100		R1							777										
68		2.2																						776
69		3.68																						775
70		4.17																						774
71		2.1	19	5.1 5.0	100		R1							773										
72		2.57																						772
73		2.43																						771
		2.68												Length of recovery stretched due to										

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-1038**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)	
74		2.68	19	5.1	100								mechanical breaks.	770	
		2.52		5.0										769	
75		2.35	20	5.1	100		R1						Length of recovery stretched due to mechanical breaks.	768	
76		2.18												5.0	767
77		2.15												5.1	766
78		2.68	21	5.0	100									765	
79		1.12												5.0	764
80		2.1	22	5.1	100	F								763	
81		2.17												5.0	762
82		2.77												5.0	761
83		3.1	22	5.1	100									760	
84		3.03												5.0	759
85		2.05	22	5.1	100		R2							758	
86		2.17												5.0	757
87		2.1												5.1	756
88		2.33													

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h3 style="margin: 0;">Boring No. B-1038</h3>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)	
89		2.33	22	5.1 5.0	100		R2							755	
		3.35												754	
90		2.15	23	5.0 5.0	100		R1							753	
91		2.78												752	
92		3.27												LIMESTONE: packstone; medium gray (N5); weak (R2); coarse grained; fresh (F); finely bedded very fine clay interbed <.05' at 92.5 slight HCl reaction. [Glen Rose Formation]	751
93		3.8												LIMESTONE: wackestone; light gray (N7); fine grained; convoluted bedding 92.8-93.7; finely bedded below 93.3; interbeds of packstone; mudstone; 98.5-98.8. [Glen Rose Formation]	750
94		2.77						1038-23					749		
95		3.1	24	5.0 5.0	100		R0							748	
96		2.82												747	
97		3.55												746	
98		5.38											745		
99		3.68	25	5.1 5.0	100		R1							744	
100		3.15												743	
101		3.25												LIMESTONE: packstone; light grey to medium gray (N5); coarse grained; thinly bedded; weak - moderate HCl reaction. [Glen Rose Formation]	742
102		2.83											741		
103		3.67											741		
													slower drilling probably due to recirculation Length of recovery		

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1038</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
104		3.67	25	5.1 5.0	100		R2					LIMESTONE: wackestone; white to very light grey; coarse grained; medium strong (R3); very thin shale interbeds; ranging from .5' to .025' apart; strong HCl reaction; 104.1-104.5 packstone. [Glen Rose Formation]	stretched due to mechanical breaks.	740
		3.18										739		
105		2.77										LIMESTONE: packstone; medium dark gray (N4); coarse grained; bedded; weak (R2); fresh (F); abundant rip up clasts of wackestone up to .1' subrounded slight HCl reaction. [Glen Rose Formation]		738
106		2.78												737
107		3.52	26	5.1 5.0	100							SHALE/CLAYSTONE; light olive gray (5Y 6/1); very fine grained; weak (R2); fresh (F) finely bedded; rip up clasts; calcareous; strong HCl reaction. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	736
108		2.68										LIMESTONE: wackestone; white (N9) to light grey (N7); medium grained; weak (R2); fresh (F); massive; strong rxn to HCl; 108.8-108.9 convoluted bedding with sub .1' packstone. [Glen Rose Formation]		735
109		1.97								1038-26				734
110		2.43												733
111		2.75				F								732
112		3.17	27	5.0 5.0	100		R1					LIMESTONE: packstone; medium light gray (N6); coarse weak; fresh (F); thinly bedded; rip up clasts of wackestone; 111.8-111.9 wackestone. [Glen Rose Formation]		731
113		2.57										LIMESTONE: micrite; yellowish gray (5y 8/1); fine; weak (R2); fresh (F); massive; color grades into light olive gray (5Y 6/1) at 114; strong HCl reaction. [Glen Rose Formation]	730	
114		3.27												729
115		2.35								1038-28				728
116		4.33	28	4.9 5.0	98							LIMESTONE: wackestone; very light gray (N8); medium grained; weak (R2); fresh (F); massive to thinly laminated sub .1' interbeds of packstone 115.6-115.9; 118.5 sub .1' interbeds of packstone abundant to 119.8; 119.9 lignite seams at <.1' smells of petroleum; undulatory bedding; bioturbated; sub .1' packstone beds 121.6-122.1; 123.8-124.1 packstone; alternating sub .1' packstone interbedded with wackestone to 124.7. [Glen Rose Formation]		727
117		2.57											726	
118		3.02												

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1038</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
119		3.02	28	4.9 5.0	98							LIMESTONE: wackestone; very light gray (N8); medium grained; weak (R2); fresh (F); massive to thinly laminated sub .1' interbeds of packstone 115.6-115.9; 118.5 sub .1' interbeds of packstone abundant to 119.8; 119.9 lignite seams at <.1' smells of petroleum; undulatory bedding; bioturbated; sub .1' packstone beds 121.6-122.1; 123.8-124.1 packstone; alternating sub .1' packstone interbedded with wackestone to 124.7. [Glen Rose Formation]	coal seam	725
		3.77												724
120		2.43												723
121		2.82	29	5.0 5.0	100		R1							722
122		3.17												721
123		3.43												720
124		3.82	30	5.0 5.0	100									719
125		3.43												718
126		4.83												717
127		2.32	31	5.0 5.0	100		R0							716
128		5.17												715
129		2.9												714
130		2.25	31	5.0 5.0	100		R0							713
131		1.95												712
132		4.12												711
133		3.75												

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1038</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)							
134		3.75	31	5.0	100	F	R1					LIMESTONE: packstone; medium to light gray (N6-N7); fresh (F); weak (R2); undulatory bedding; bioturbated; rip up clasts of wackestone; 132.6-132.9 SHALE: abundant shale beds in thoroughly bioturbated zone 133.5-134.1; 136.6-136.7 wackestone; 138.6-138.8 wackestone; fossils. [Glen Rose Formation]	faster drilling rate, good water return med light grey	710							
		3.33		5.0										709							
135		2.1			708																
136		2.07			707																
137		2.77	32	5.0	100																706
		3.17		5.0										705							
139		2.68			704																
140		1.97			703																
141		2.17			702																
142		2.97	33	5.1	100																701
		3.7		5.0		700															
144		2.52			699																
145		2.03			698																
146		3.78	34	4.9	98								697								
		3.68		5.0		696															
148		3.77												696							

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-1038**


Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
149		3.77	34	4.9 5.0	98	F	R1					LIMESTONE: wackestone; medium light gray (N6); weak (R2); fine fresh (F); laminated; strong HCl reaction. [Glen Rose Formation]		695
150		4.35												694
150												BOTTOM OF HOLE AT 150'	Bottom of hole	693
151														692
152														691
153														690
154														689
155														688
156														687
157														686
158														685
159														684
160														683
161														682
162														681
163														681

Project Name and Job Number TXU Comanche Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-1039</b>	
Type and Diameter of Boring HSA / 7"			Boring Location 32°18'06.47144"N / 97°47'39.33504"W		Total Depth 75 feet
Drilling Contractor and Rig TEXPLOR / CME 75			Elevation and Datum 847.096 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 10 feet
Sampling Method SPT			Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 4	Date Started 2/8/07
			Borehole Inclination Vertical	Logged by M. Zellman	Date Completed 2/8/07

Reviewed by / Date \_\_\_\_\_ R. Ortiz 2/10/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0								ARTIFICIAL FILL (Qaf)		847
0.5								SILT loose, dark grayish brown, damp		
1	ML		B-1039 1	4	18			medium dense, color to light yellowish brown (2.5Y6/3)		846
2				6	18					845
2.5				34						845
3	GP							GRAVEL (crushed rock), very dense, light gray gray (7/1)		844
4	CL		B-1039 2	45	18			RESIDUAL SOIL (RS)		843
4.5				50	18			LEAN CLAY hard, light gray (2.5Y7/2), dry to damp		843
5	ML			25				SILT very stiff, light yellowish brown (2.5Y6/4), damp		842
6			B-1039 3	50/3"	3/3			LEAN CLAY, hard, pale yellow (2.5Y7/3), dry		841
7										840
8	CL							light bluish gray, (Gley 2 8/1), dry, calcareous, slight reaction to HCl (weathered rock)		839
9			B-1039 4	26	8/8					838
9.5				50/2"						838
10									Bedrock at 10'	837
11										836
12										835
13										834
14										833
15										833



Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG Boring No. B-1039</b>	
Type and Diameter of Boring NQ / 3"		Boring Location 32°18'06.47144"N / 97°47'39.33504"W		Total Depth 75 feet	
Drilling Contractor and Rig TEXPLOR / CME 75		Elevation and Datum 847.096 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 10 feet	
Casing Size and Depth 4" / 10 feet		Length of Core Barrel and Bit 8 feet	No. of Core Boxes 4	Date Started 2/8/07	
		Borehole Inclination Vertical	Logged by M. Zellman	Date Completed 2/8/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 2/10/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
10		1.25	1	5.0 1.0	100		R2					SHALE, fine grained, very thinly bedded, very slight to no hcl reaction, dark greenish grey, appearance of fossils, bioturbation, R2		837
11		1.03												836
12		1.13												835
13						SW								834
14		1.08	2	5.0 5.0	100		R1		1039-5		JT, He	SILTSTONE, dark greenish grey, fine grained, slightly weathered, R1		833
15		1.15												832
16		1.1												831
17		1.13										LIMESTONE, wackestone, with crystalline coarse grained, black mineral, slightly to moderately weathered, R2, some bioturbations, strong to violent hcl reaction 19.6 shale interbed, 20.6 shale interbed		830
18		1.05												829
19		0	3	5.0 5.0	100	SW-MW	R2							828
20		1.45							1039-6		every 6" presence of healed fracture			827
21		1.52												826
22		1.08												825
23		1.13	4	4.5 5.0	90	SW	R0-R2		1039-7					824
24		0												823
25		1.55												822

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1039</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
25		1.53	4	4.5 5.0	90		R0-R2					SILTSTONE, greenish grey, fine grained, slightly weathered, R0-R1, no hcl reaction		822
26		1.15												821
27		3.5												820
28		0	5	5.0 5.0	100							LIMESTONE, wackestone, light grey, fine grained, slightly weathered, R2, very thin bedded, significant bioturbation, violent hcl reaction, 29.2-29.7 very thin alternating beds of limestone, 29.8 color change to very light grey, 31.7 color change to medium grey, 33 color change to light grey		819
29		1.58												818
30		0							1039-8					817
31		1.25					R2							816
32		1.52				SW								815
33		1.45	6	5.0 5.0	100									814
34		1.55												813
35		1.58												812
36		2.5							1039-9					811
37		2.17												810
38		2	7	5.0 5.0	100		R1R2					SHALE, dark greenish grey, fine grained, slightly weathered, R1R1, very thinly bedded, piece of organic material at 37.8, weak to strong hcl reaction		809
39		1.15										LIMESTONE, wackestone, very light grey, fine to med grained, slightly weathered, R2, thinly bedded to very thin bedded, interbedded with very thin shale organic material present	wavy contact	808
40									1039-10					

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-1039**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
40		2.63	7	5.0	100		R1R2		1039-10			SHALE, as above, interbedded with wackestone, weak to no hcl reaction		807
41		2.62												806
42		1.85										LIMESTONE, wackestone, very light grey, slightly weathered, R2, moderately close to very close bedding, interbeds of shale, 4mm thick, bioturbation at shale interbeds	wavy contact	805
43		1.25	8	5.1	100		R2							804
44		1.33							1039-11			SHALE, same as above		803
45		1.67												802
46		1.47												801
47		1.07				SW						LIMESTONE, wackestone, as above, shale bed 44.6-44.9, 46.8-47		800
48		1.17	9	5.0	100		R1							799
49		2.35												798
50		5.38										SHALE, dark greenish grey, fine grained, slightly weathered, very weak, very thinly bedded, weak to strong reaction to hcl 50 color change to darker greenish grey, has higher clay content	wavy contact	797
51		1.98							1039-12					796
52		1.17												795
53		4.03	10	4.8	96		R1-R2					LIMESTONE, wackestone, very light grey, fine grained, slightly weathered, weak, strong hcl reaction	wavy contact	794
54		1.38										SHALE, as above, interbedded with wackestone .1-.3' thick,	wavy contact	793
55														

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-1039</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
55		2.8	10	<del>4.6</del> 5.0	96		R1-R2		1039-13			SHALE, as above, interbedded with wackestone .1-.3' thick,		792
56		2.48												791
57		2.05												790
58		3.02	11	<del>4.1</del> 5.0	82		R2					LIMESTONE, wackestone, very light grey to white, fine grained, slightly weathered, weak interbedded with shale 1-2 cm thick, closely spaced, significant bioturbation	planar contact	789
59		3.75												788
60		1.85							1039-14			SHALE, dark greenish grey, slightly weathered, weak, thinly bedded with rare wackestone laminations, large burrows filled with shale, strong hcl reaction	gradational contact	787
61		1.17												786
62		2.23				SW						LIMESTONE, wackestone, very light grey fine grained, slightly weathered, weak violent hcl reaction, close to very close spacing of shale laminations	wavy contact	785
63		5.8	12	<del>4.9</del> 4.0	98		R1-R2		1039-15			SHALE, very dark greenish grey, fine grained, slightly weathered, weak, extremely thin bedding, calcareous laminations at 63.6-63.7, weak hcl reaction	wavy contact	784
64		1.83										LIMESTONE, wackestone, as above	planar contact	783
65		2.2										SHALE, as above	wavy contact	782
66		1.73										LIMESTONE, as above, shale beds 1-5 cm thick, close to moderate closely spaced, wavy, shale laminations begin at 67.8, very close to extremely closely spaced, significant burrowing, color change to very light grey	planar contact	781
67		1.85	13	<del>5.0</del> 5.0	100		R2							780
68		1.8												779
69		2.02							1039-16					778

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908




**ROCK LOG**  
**Boring No. B-1039**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
70		1												777
71		1.1												776
72		1.17	14	5.0	100	SW	R2							775
73		1.13												774
74		1.02							1039-17					773
75														772
76														771
77														770
78														769
79														768
80														767
81														766
82														765
83														764
84														763
85														

Project Name and Job Number TXU Comanche Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-1040</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'06.86973"N / 97°47'39.74260"W		Total Depth 100.5 feet	
Drilling Contractor and Rig TEXPLOR / CME 75		Elevation and Datum 847.042 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 9 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 3	Date Started 2/12/07	
		Borehole Inclination Vertical	Logged by M. Zellman	Date Completed 2/12/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 2/14/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
0							<b>RESIDUAL SOIL (RS)</b> LEAN CLAY medium stiff, light yellowish brown, (2.5Y6/4), damp, with calcareous deposits, 15% fine angular to subangular gravel		847
1			B-1040 1	4					846
2				5	18/18				845
3	CL			31					844
4			B-1040 2	11	18/18		color to mottled yellow (2.5Y7/6) to lt. gray (2.5Y7/2), some organic debris		843
5				8	18/18				842
6			B-1040 3	50/3"	3/3		LIMESTONE FRAGMENTS with silt very dense, white (2.5Y8/1), dry, 70% limestone fragments <0.5"-1", angular to subrounded, (possible limestone ledge)		841
7	GM								840
8							LIMESTONE highly weathered, medium bluish gray (5B5/1), dry		839
9			B-1040	27	0/7			Bedrock at 9'	838
10				50/1"					837
11									836
12									835
13									834
14									833

Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. B-1040</b>	
Type and Diameter of Boring NQ / 3"		Boring Location 32°18'06.86973"N / 97°47'39.74260"W		Total Depth 100.5 feet	
Drilling Contractor and Rig TEXPLOR / CME-75		Elevation and Datum 847.042 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 9 feet	
Casing Size and Depth 4"		Length of Core Barrel and Bit 8 feet	No. of Core Boxes 5	Date Started 2/12/07	
		Borehole Inclination Vertical	Logged by M. Zellman/J.Cox	Date Completed 2/12/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 2/14/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology		Elevation (feet)
												Remarks		
9		2.02	1	5.0 1.5	100		R2							838
10												SHALE: SILTSTONE; medium bluish gray (5B 5/1); slightly weathered (SW); very weak (R1); clear abrupt upper contact; upper most .3 of run is wackestone; oxidation staining along contact of limetstone; top .3' of siltstone is calcareous; slight HCl reaction; color change to greenish blue gray at 12.9; weathered shale.[Glen Rose Formation]	Bedrock at 9'	837
11		2.52												836
12		2.45				SW	R1		1040-5					835
13		2.32	2	5.0 5.0	100									834
14		2												833
15		3.3												832
16		0.9												831
17		1.05				SW-MW	R1-R0		1040-6		JO, PI, SI, TI-Op	LIMESTONE: wackestone; very light gray (N8); slightly weathered to moderatley weathered (SW-MW); extremely weak to very weak (R0-R1); fine-med grained; massive; jointed at .3-1.2' intervals; some jointing healed; appears crystalline; thin black serrated staining stylonites?; strong reaction to HCl 18.4' very vuggy; 18.5' very dark gray-black shale (N3 -N1). [Glen Rose Formation]		830
18		0.98	3	5.0 5.0	100									829
19		0.97												828
20		1.05					R2					LIMESTONE: wackestone; med light gray (N8) ; slightly weathered (SW); weak (R2); fine grains; very close thin bedding; sub-planar; wavy. [Glen Rose Formation]		827
21		1.25												826
22		1.17	4	4.5 5.0	90	SW	R1					SHALE:siltstone; medium bluish gray (5B 5/1) ; slightly weathered (SW); very weak (R1); fine grains; gradational upper and lower contacts; slightly calcareous in upper .4'; some pits/vugs at 23.5		825
23		1.13							1040-7					824
24		1.17												

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1040</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
24		1.17	4	4.5 5.0	90	SW-MW	R0-R1					SHALE; medium bluish gray (5B 5/1); slightly weathered to moderately weathered (SW-MW); extremely weak to very weak (R0-R1); highly weathered at upper and lower contacts. [Glen Rose Formation]	No recovery 24.7' - 25.5'	823
25		5.5												
26		0										LIMESTONE: wackestone; medium gray (N5); slightly weathered (SW); weak (R2); many burrows and very close thin wavy beds; fine grained; color change to very light gray (N8); less/no burrows; planar-subplanar bedding some very close very thin interbeds of shale.[Glen Rose Formation]		821
27		0												820
28		0	5	5.0 5.0	100				1040-8					819
29		0												
30		0										LIMESTONE: wackestone; light gray (N7); slightly weathered (SW); weak (R2); fine grains; small burrows and rip-up clasts; some shell fragments; zones of very close/very thin sub-planar shale; below 35.5 many rip up clasts and burrows; medium grained. [Glen Rose Formation]		817
31		0					R2							816
32		0												815
33		0	6	5.0 5.0	100	SW								814
34		0												
35		0							1040-9					812
36		2.1												811
37		2.12	7	4.9 5.0	98		R1					SHALE; medium light gray (N6); slightly weathered (SW); very weak (R1); burrows interbedded with laminated very thin subplanar limestone 37-37.6'. [Glen Rose Formation]		810
38		2.17									R2			
39		1.5					R1							



Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1040</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
39		1.5										SHALE; medium dark gray (N4); slightly weathered (SW); very weak (R1); burrows present 39.5' - 40' interbedded with limestone; laminated .1' thick. [Glen Rose Formation]		808
40		1.02	7	4.9 5.0	98		R1					LIMESTONE: wackestone; very light gray (N8) to almost white (N9); slightly weathered (SW); weak (R2); fine grain; many very thin/wavy shale beds; small 1 cm burrows; rip up clasts; bedding is very close; very thin. [Glen Rose Formation]		807
41		0												806
42		0.98												805
43		2.48	8	5.0 5.0	100		R2		1040-11					804
44		2.17												803
45		1.83												802
46		2.27				SW						SHALE; medium dark gray (N4); slightly weathered (SW); very weak (R1); thinly bedded; moderate reaction to HCl	J.Cox begins logging at 45.5'	801
47		0.97										LIMESTONE: packstone; medium light gray (N6); slightly weathered (SW); weak (R2); many burrows; abundant fossils; burrows filled with silty matrix; very strong HCl reaction.[Glen Rose Formation]		800
48		0.95	9	4.6 5.0	92				1040-12					799
49		1.3												798
50		1.25					R1-R2					SHALE; same as above; except no HCl reaction; wackestone from 51.4-51.9; 53-53.25; 53.7-53.9; light gray (N7); weak (R2);slightly weathered (SW). [Glen Rose Formation]		797
51		2.25											good water return	796
52		2.9	10	5.0 5.0	100									795
53		2.25							1040-13					794
54		2.25												

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1040</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)						
54		2.25	10	5.0	100	SW	R1-R2				Jt, Wa, Sl, Op	SHALE; same as above; except no HCl reaction; wackestone from 51.4-51.9; 53-53.25; 53.7-53.9; light gray (N7); weak (R2); slightly weathered (SW). [Glen Rose Formation]		793						
55		2.43		5.0								792								
56		1.25			791															
57		1.82			790															
58		1.98	11	4.6 5.0	92													Shale; same as above; except slight HCl reaction. [Glen Rose Formation]		789
59		5.53																		788
60		3.5																		787
61		2																		786
62		1.22																LIMESTONE: wackestone; light gray (N7); slightly weathered (SW); weak (R2); abundant large rip up clasts filled with silty matrix; strong HCl reaction. [Glen Rose Formation]		785
63		2.75	12	5.0 5.0	100													SHALE; same as 60-61.3. [Glen Rose Formation]		784
64		1.5																LIMESTONE: wackestone; same as 62.2-63.6; one very large burrow filled with some type of crystalline structure; large rip up clasts filled with silty matrix from 81.3-81.9. [Glen Rose Formation]		783
65		1.08																		782
66		2.67																		781
67		1.8	13	5.1 5.0	100								sample taken with burrow	780						
68		1.88													779					
69		2.08												Length of recovery stretched due to						

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 TXU Comanche Peak Col  
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**ROCK LOG**  
**Boring No. B-1040**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
69		2.08	13	5.1 5.0	100	SW	R1-R2						mechanical breaks.	778
70		2.2											777	
71		1.25											776	
72		1.12	14	5.1 5.0	100	SW							Length of recovery stretched due to mechanical breaks.	775
73		1.08												774
74		1.17												1040-17
75		1.08	15	5.1 5.0	100	F	R2						Length of recovery stretched due to mechanical breaks. good water return, light grey color	772
76		0.98												771
77		0.95												770
78		1.1	16	5.1 5.0	100	F-SW							Length of recovery stretched due to mechanical breaks.	769
79		0.9												768
80		1.18												767
81		1.08	16	5.1 5.0	100	F-SW							Length of recovery stretched due to mechanical breaks.	766
82		0.88												765
83		0.9												764
84		1.18												1040-19

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-1040</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
84		1.18	16	5.1 5.0	100									763
85		1.03												762
86		1.27												761
87		1.1	17	5.1 5.0	100	F-SW	R2						Length of recovery stretched due to mechanical breaks.	760
88		1.12												759
89		1.15												758
90		1.18												757
91		1.42	18	5.1 5.0	100								Length of recovery stretched due to mechanical breaks.	756
92		1.32												755
93		1.27												754
94		1.43	19	4.9 5.0	98									753
95		1.15												752
96		0.95	19	4.9 5.0	98									751
97		1.12												750
98		1.13												749
99		1.27												749

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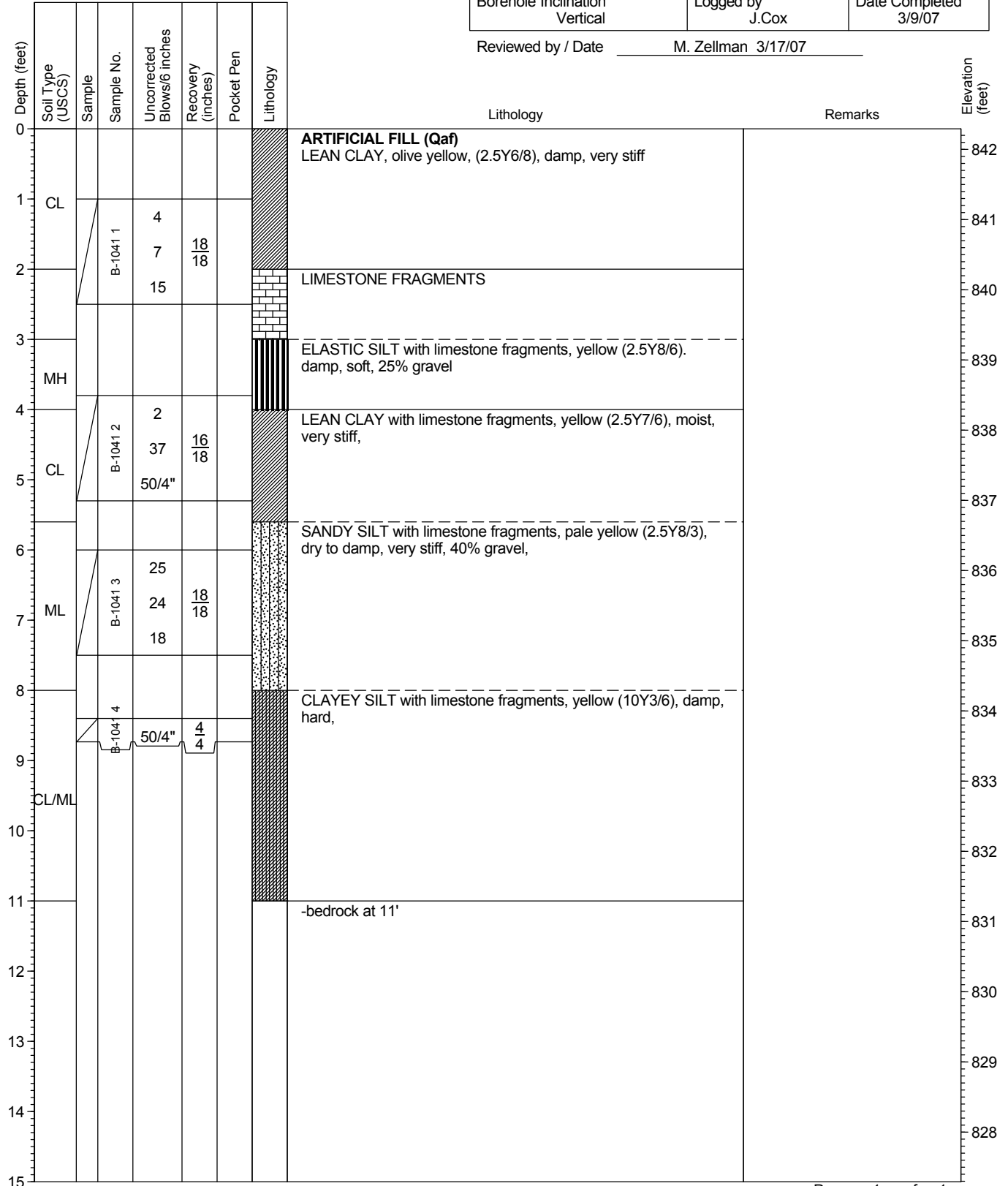



**ROCK LOG**  
**Boring No. B-1040**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
99		1.27												748
100		1.33	19	4.9 5.0	98	F-SW	R2		1040-22			LIMESTONE: packstone; medium light gray (N6); fresh to slightly weathered (F-SW); medium grain; several large areas of silty matrix filled rip up clasts; violent HCl reaction. [Glen Rose Formation]		747
101												Bottom of hole at 100.5'	bottom of hole	746
102														745
103														744
104														743
105														742
106														741
107														740
108														739
109														738
110														737
111														736
112														735
113														734
114														

Project Name and Job Number TXU Comanche Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-1041</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'07.28642"N / 97°47'39.13745"W		Total Depth 149.8 feet	
Drilling Contractor and Rig Fugro / CME 45		Elevation and Datum 842.295 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 11 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 4	Date Started 3/8/07	
		Borehole Inclination Vertical	Logged by J.Cox	Date Completed 3/9/07	

Reviewed by / Date \_\_\_\_\_ M. Zellman 3/17/07



Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG Boring No. B-1041</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'07.28642"N / 97°47'39.13745"W		Total Depth 149.8 feet	
Drilling Contractor and Rig Fugro Austin / CME 45		Elevation and Datum 845.295 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 11 feet	
Casing Size and Depth 4" / 11 feet		Length of Core Barrel and Bit 8.6 feet	No. of Core Boxes 10	Date Started 3/8/07	
		Borehole Inclination Vertical	Logged by J. Cox	Date Completed 3/9/07	

Reviewed by / Date M. Zellman 3/13/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
11		0.83										LIMESTONE:shaly micrite; medium gray(N5); moderately weathered (MW); weak (R2); massive; vuggy; very few fossils; none to slight reaction to HCl. Joint at 12.05 has secondary mineralization around edges. [Glen Rose Formation]	BEDROCK at 11.0'	834
12		1.6									Jt, Wa, Sl, Op		NO SAMPLE TAKEN	833
13		1.92	1	3.8	86	SW	R0-R2				BB			832
14		3.12												831
15		3.42									MB	LIMESTONE:shaly wackestone; greenish gray (5G 6/1); weak (R2); moderately weathered(MW); abundant fossils; strong reaction to HCl. [Glen Rose Formation]		830
16		2.33									BB	SHALE; medium dark gray (N4); very weak (R1), moderately weathered (MW); thinly bedded; No reaction to HCl. [Glen Rose Formation]		829
17		1.93	2	5.2	94	MW	R0-R2				Jt, Pl, Sm, Op	LIMESTONE:wackestone; very light gray (N8); weak (R2);massive; moderately weathered (MW); abundant fossils; strong reaction to HCl; Secondary mineralization in cracks of all joints. Joint at 19.25' filled with coal. [Glen Rose Formation]		828
18		1.82									BB			827
19		2.05									Jt, Pl, Sm, Op Jt, Wa, Sl, Op Jt, Pl, Sl, He Jt, Pl, Sl, He Jt, Pl, Sl, Op			826
20		1.07									MB	LIMESTONE:wackestone; medium light gray(N6); weak (R2);slightly weathered (SW); abundant fossils; strong reaction to HCl; massive; dry; fine to medium grain. [Glen Rose Formation]		825
21		1.1									MB			824
22		1.05	3	5.0	100	SW	R0-R2				MB	SHALE: siltstone; medium light gray; weak (R2);slightly weathered (SW); massive; fine grain; no reaction to HCl. [Glen Rose Formation]		823
23		2.18									MB			822
24		2.42									BB	SHALE; medium gray (N5); very weak (R2);slightly weathered (SW); thinly bedded; no reaction to HCl. [Glen Rose Formation]		821
25		1.7	4	5.2	100		R0-R2				MB			820
26		0.9									MB Crushed			

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1041</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
26		0.9										LIMESTONE:wackestone; light gray (N7); weak (R2);massive; bioturbated; some rip up clasts; strong reaction to HCl. Fine to medium size grains. [Glen Rose Formation]		819
27		0.72												818
28		0.77	4	5.2 5.0	100	SW	R0-R2		1041-7	MB MB MB				817
29		0.62												816
30		0.8										LIMESTONE:wackestone; medium light gray(N6); weak (R2);slightly weathered (SW); strong reaction to HCl; massive; dry; fine to medium grain;abundant rip up clasts; Limestone becomes much more shaley from 36.0 to 38.3. [Glen Rose Formation]		815
31		1.78												814
32		0.55	5	5.0 5.0	100		R0-R2		1041-8	MB MB				813
33		0.67												812
34		0.78												811
35		0.9				F-SW								810
36		2.6										Shale Shale Shale		809
37		2.03	6	5.1 5.0	100		R0-R2							808
38		2.05							1041-9	MB MB BB				807
39		2.98										SHALE; medium gray (N5); very weak (R2);fresh (F); thinly bedded; no reaction to HCl. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	806
40		1.25	7	4.9 5.0	98		R2					LIMESTONE:wackestone; medium light gray(N6); weak (R2);slightly weathered (SW); strong reaction to HCl; massive; dry; fine to medium grain;abundant rip up clasts. [Glen Rose Formation]		805
41		0.93										SHALE; medium gray (N5); very weak (R2);fresh (F); thinly bedded; no reaction to		



Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1041</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
41		0.93										HCl. [Glen Rose Formation]		804
42		3.25								BB	LIMESTONE:wackestone; medium light gray (N6); slightly weathered (SW); weak (R2);massive; abundant rip up clasts filled with silty mud matrix; strong reaction to HCl. [Glen Rose Formation]			803
43		4.17	7	4.9 5.0	98		R2		1041-10	MB	Shale bed causing bedding break			802
44		3.02								MB				801
45		2.02								MB		Shale		800
46		2.05												799
47		1.97	8	5.1 5.0	100		R0-R2			MB				798
48		2.18							1041-11	MB	SHALE; medium dark gray (N4); very weak (R2);slightly weathered (SW); thinly bedded; no reaction to HCl. [Glen Rose Formation]			797
49		3.93				F-SW				MB			Length of recovery stretched due to mechanical breaks.	796
50		3.85							1041-12	MB		INCREASE IN SHALE SAMPLES FOR FUGRO TRIAXLE TESTING		795
51		2.7								MB				794
52		3.5	9	5.0 5.0	100		R0-R2			MB	LIMESTONE:wackestone; light gray (N7); weak (R2);slightly weathered (SW); massive; abundant fossils; strong reaction to HCl. [Glen Rose Formation]			793
53		3.58								MB	SHALE; medium dark gray (N4); very weak (R2);slightly weathered (SW); thinly bedded; no reaction to HCl. Limestone interbeds at 52.5 to 52.7, 52.75 to 52.9, 53.0 to 53.1. [Glen Rose Formation]			792
54		3.8								MB				791
55		2.02	10	5.0 5.0	100		R0-R2							790
56		1.97												

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1041</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
56		1.97										LIMESTONE:wackestone; light gray (N7); slightly weathered (SW); weak (R2);massive; abundant rip up clasts filled with silty mud matrix; strong reaction to HCl. [Glen Rose Formation]		789
57		1.62								BB		SHALE; medium dark gray (N4); very weak (R2);slightly weathered (SW); thinly bedded; no reaction to HCl. [Glen Rose Formation]		788
58		3.75	10	$\frac{5.0}{5.0}$	100		R0-R2		1041-13	MB				787
59		3.6								MB				786
60		3.25								MB		LIMESTONE:wackestone; medium light gray (N6); weak (R2);slightly weathered (SW); abundant rip up clasts; strong reaction to HCl. [Glen Rose Formation]		785
61		3.6								MB		SHALE; medium dark gray (N4); very weak (R2);slightly weathered (SW); very thinly bedded; no reaction to HCl. [Glen Rose Formation]		784
62		3.75	11	$\frac{5.1}{5.0}$	100		R0-R2		1041-14	MB				783
63		3.42								MB		LIMESTONE:wackestone; medium light gray (N6); weak (R2);slightly weathered (SW); abundant rip up clasts; strong reaction to HCl. Shale bed at 64.8 to 65.0; no rip up clasts present from 65.0 to 66.1; much smaller rip up clasts from 95.0 to 99.8. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	782
64		3.32				F-SW				MB				781
65		2.6								BB		Shale		780
66		2.22								Jt, Wa, Sl, Op				779
67		2.33	12	$\frac{5.0}{5.0}$	100		R0-R2			MB				778
68		1.8								MB				777
69		2.1												776
70		1.5	13	$\frac{5.0}{5.0}$	100		R0-R2							775
71		1.8								MB				

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 TXU Comanche Peak Col  
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**ROCK LOG**  
**Boring No. B-1041**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
71		1.8												774
72		2.53												773
73		13	5.0	5.0	100		R0-R2		1041-16	MB			772	
74		2.78											771	
75		2.75											770	
76		3.43											769	
77		5											768	
78		14	5.0	5.0	100		R0-R2		1041-17	MB			767	
79		1.65				F-SW							766	
80		1.5											765	
81		2.4											764	
82		2.72							1041-18	MB		GOOD H2O RETURN	763	
83		1.87											762	
84		1.1	5.0	5.0	100		R2						761	
85		1.72											760	
86		1.97											end 3/8/07, start 3/9/07	760
		1.27	16	5.1	5.0	100	R2							
		3.63												

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 1908



**ROCK LOG**  
**Boring No. B-1041**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
86		3.63												759
87		1.33												758
88		1.37	16	5.1 5.0	100		R2		1041-19	MB			Length of recovery stretched due to mechanical breaks.	757
89		1.18								MB				756
90		1.35												755
91		1.32												754
92		1.33	17	4.9 5.0	98		R2						GOOD H2O RETURN	753
93		1.4				F-SW				MB				752
94		1.15								MB				751
95		1.35							1041-20	MB				750
96		1.28								MB				749
97		1.33	18	4.9 5.0	98		R2			MB				748
98		1.35							1041-21	MB				747
99		1.27								MB				746
100		1.75	19	5.0 5.0	100		R2			MB				745
101		5												

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
101		5									MB	LIMESTONE:micrite; medium light gray (N6); weak (R2);fresh to slightly weathered (SW); massive; very fine grain; very few fossils; moderate reaction to HCl. Striped look from 102.0 to 102.3 due to the silty layers. [Glen Rose Formation]		744
102		2.27							1041-22	MB				743
103		1.8	19	5.0 5.0	100		R2					LIMESTONE:wackestone; medium light gray (N6); weak (R2);slightly weathered to fresh (SW-F); massive; no rip up clasts; slightly bioturbated; abundant fossils; strong reaction to HCl. [Glen Rose Formation]		742
104		1.77									Jt, Pl, Sl, Ti			741
105		1.67										LIMESTONE:wackestone; medium light gray (N6); weak (R2);fresh to slightly weathered (F-SW); massive; occasional rip up clast; some fossils; moderate reaction to HCl; fine to medium grain size. [Glen Rose Formation]		740
106		1.83									MB			739
107		1.77	20	5.0 5.0	100		R2					LIMESTONE:packstone; medium gray (N5); weak (R2);slightly weathered (SW); massive; abundant rip up clasts; medium to coarse grain; abundant fossils; strong reaction to HCl. [Glen Rose Formation]		738
108		2.02							1041-23	MB				737
109		2.2				F-SW				MB				736
110		1.17										LIMESTONE:wackestone; light gray (N7); weak (R2); slightly weathered (SW); massive; fine to medium size grains; very fine grain siltstone from 109.8 to 110.3; rip up clasts throughout run. [Glen Rose Formation]		735
111		1.42												734
112		1.27	21	5.1 5.0	100		R2							733
113		1.35							1041-24	MB			Length of recovery stretched due to mechanical breaks.	732
114		2.02								MB				731
115		2.6	22	5.0 5.0	100		R2							730
116		2.75												

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
116		2.75										LIMESTONE:micrite; light gray (N7); weak (R2);slightly weathered (SW); massive; very fine grain; no rip up clasts; some bioturbation; moderate reaction to HCl. [Glen Rose Formation]		729
117		3.48							1041-25	MB				728
118			22	5.0 5.0	100		R2					LIMESTONE:wackestone; light gray (N7); weak (R2);fresh to slightly weathered (SW); massive; fine to medium grain size; no rip up clasts from 117.8 to 122.8; very few fossils; moderate to strong reaction to HCl. Rip up clasts begin at 122.8 and continue till 128.2. [Glen Rose Formation]		727
119		3.58												726
120		2.62												725
121		2.8												724
122		3.08	23	5.1 5.0	100		R2		1041-26	MB				723
123		3.8				F-SW				MB		Length of recovery stretched due to mechanical breaks.	722	
124		4.32								MB			721	
125		3.2								MB			720	
126		5.55												719
127		5.27	24	5.0 5.0	100		R2							718
128		3.73												717
129		5.77							1041-27	MB		SHALE; medium dark gray (N4); very weak (R2);slightly weathered (SW); very thinly bedded; abundant fossils near contacts with limestone; no reaction to HCl. [Glen Rose Formation]		716
130		2.5	25	5.0 5.0	100		R0-R2			MB		LIMESTONE:wackestone; light gray (N7); weak (R2); slightly weathered (SW); massive; fine to medium size grains; very large rip up clasts. [Glen Rose Formation]		715
131		4.5								MB				


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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
131		4.5							1041-28	MB		SHALE; medium gray (N5); very weak (R2); slightly weathered (SW); thinly bedded; some bioturbation present; slight reaction to HCl. [Glen Rose Formation]		714
132		2.23								MB				713
133			25	5.0 5.0	100		R0-R2					LIMESTONE: wackestone; medium light gray (N6); weak (R2); slightly weathered (SW); abundant rip up clasts; abundant fossils; fine to medium size grains; slightly bioturbated. [Glen Rose Formation]		712
134		2.42												711
135		3												710
136		2.7								MB		Shale		709
137		2.57												708
138		2.48	26	5.0 5.0	99		R0-R2			MB				707
139		2.53							1041-29	MB				706
140		2.63								MB				705
141		2												704
142		2.05								MB				703
143		1.97	27	5.0 5.0	100		R2		1041-30	MB				702
144		2.02								MB				701
145		2.1								MB				700
146		2.43	28	5.0 5.0	100		R0-R2			MB				
		2.38												

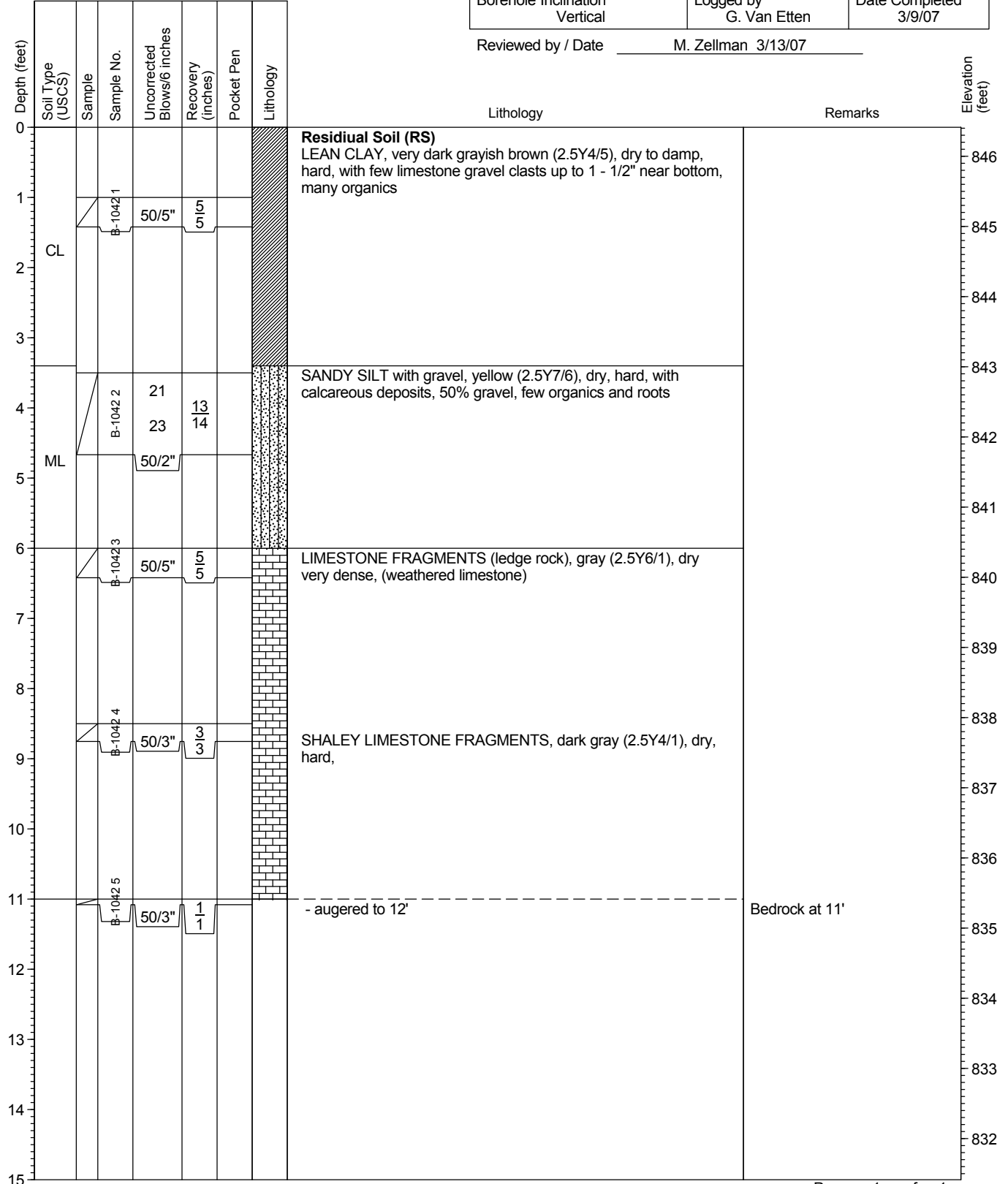
Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-1041</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
146		2.38									MB			699
147		1.27							1041-31		MB			698
148			28	5.0 5.0	100	F-SW	R0-R2				MB			697
149		2.75									MB			696
150		2.62										Shale		695
151												BOTTOM OF HOLE AT 149.8'	BOTTOM of HOLE 149.8'	694
152														693
153														692
154														691
155														690
156														689
157														688
158														687
159														686
160														685
161														



Project Name and Job Number TXU Comanche Peak COI 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-1042</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'06.28423"N / 97°47'38.94404"W		Total Depth 151 feet	
Drilling Contractor and Rig Geotechnology / CME 55		Elevation and Datum 846.411 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 11 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 5	Date Started 3/6/07	
		Borehole Inclination Vertical	Logged by G. Van Etten	Date Completed 3/9/07	

Reviewed by / Date \_\_\_\_\_ M. Zellman 3/13/07



Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG Boring No. B-1042</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'06.28423"N / 97°47'38.94404"W		Total Depth 151 feet	
Drilling Contractor and Rig Geotechnology / CME 55		Elevation and Datum 846.411 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 11 feet	
Casing Size and Depth 4" / 12 feet		Length of Core Barrel and Bit 8.55 feet	No. of Core Boxes 10	Date Started 3/6/07	
		Borehole Inclination Vertical	Logged by G. Van Etten	Date Completed 3/9/07	

Reviewed by / Date M. Zellman 3/13/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
12		1.73										SHALE; dark greenish gray (5G 4/1); fresh (F); extremely weak (R0); massive; very muddy.[Glen Rose Formation]		834
13		2.6				F	R1-R2					LIMESTONE and shell hash; greenish gray (5G 6/1); fresh (F); very weak (R1); silty and fossiliferous; violent reaction to HCl. [Glen Rose Formation]		833
14		2.6	1	4.0 4.0	100									832
15		3.22				F			1042-6				Good water return, light gray.	831
16		1.85										LIMESTONE: wackestone; very light gray (N8); fresh (F); very weak (R1); many stylolites; several saprolite lenses 0.02'-0.1' thick at 18.25' and 19.3'; many shell fragments; strong reaction to HCl. [Glen Rose Formation]		830
17		1.65									Jt, Pl, Sl, Op			829
18		1.83	2	5.2 5.0	88	F			1042-7		Jt, Pl, Sl, Op Jt, Pl, Sl, F Wa, Sl, He, flaky saprolite bed			828
19		3.13											Length of recovery stretched due to mechanical breaks.	827
20		4.1										LIMESTONE: packstone; medium gray (N5); fresh (F); very weak (R1); many very thin shale swirls and rip-up clasts; strong reaction to HCl. [Glen Rose Formation]	Rig shut down due to touch kill switches. Problem quickly resolved.	826
21		2.67					R0-R2							825
22		2.85				F								824
23		2.5	3	5.0 5.0	100									823
24		3.75										SHALE; medium dark gray (N4); fresh (F); extremely weak (R0); very thin shale laminae; massive; no reaction to HCl. [Glen Rose Formation]	Water return is light brown.	822
25		6.02				F			1042-8					821
26		5.8	4	5.0 5.0	100							LIMESTONE; shaly shell hash; medium dark gray (N4); fresh (F); very weak (R1); several rip-up clasts and bioturbations; many fossils; mild reaction to HCl. [Glen Rose Formation]	Stop coring 3/6/07, began 3/7/07.	820

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-1042**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
27		3.42												819
28		7.38				F	R0-R2		1042-9			LIMESTONE: wackestone; light gray (N7) to medium gray (N5); fresh (F); very weak (R1); many bioturbations; some fossils; mild reaction to HCl. [Glen Rose Formation]	Rig shut down due to faulty kill switches. Shut down 4 hours. Gradational contact.	818
29		1.5	4	5.0	100							LIMESTONE: wackestone; very light gray (N8); fresh (F); weak (R2); several stylolites; violent reaction to HCl. [Glen Rose Formation]		817
30		3.07				F						LIMESTONE: packstone; medium light gray (N6); fresh (F); very weak (R1); many rip-up clasts and very thin shale layers intermixed; few pyrite clasts; strong reaction to HCl; several stylolitic clasts and oolites below 33.5'. [Glen Rose Formation]	Good water return, gray.	816
31		3.17												815
32		2.08					R2						400 psi downpressure.	814
33		2.67	5	5.1	100	F			1042-10					813
34		1.7											Length of recovery stretched due to mechanical breaks.	812
35		2.48												811
36		3.75				F								810
37		4.1				F						SHALE; medium dark gray (N4); fresh (F); extremely weak (R0); several limestone rip-up clasts; few fossils. [Glen Rose Formation]		809
38		4.42	6	5.1	100	F	R0-R2					LIMESTONE: packstone; medium light gray (N6); fresh (F); very weak (R1); many rip-up clasts and very thin shale layers intermixed; few pyrite clasts; strong reaction to HCl; several stylolitic clasts and oolites below 33.5'. [Glen Rose Formation]		808
39		6.75				F						SHALE; medium dark gray (N4); limestone interbeds 0.02'-.03' thick; fresh (F); extremely weak to very weak (R0-R1); several small saprolite clasts; strong reaction to HCl. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	807
40		5.67							1042-11					806
41		1.85	7	5.0	100	F						LIMESTONE: packstone; medium light gray (N6); 0.1' between thin shale interbeds; fresh (F); very weak (R1); strong reaction to HCl. [Glen Rose Formation]		805
42														

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1042</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
42		6.17										Shale		804
43		10							1042-12			Shale		803
44			7	5.0 5.0	100	F								802
45		7.42												802
46		7.63										LIMESTONE; light gray (N7) to medium light gray (N6); many shale interbeds; fresh (F); very weak (R1); violent reaction to HCl; abundant shell fossils below 46.5'. [Glen Rose Formation]	Good water return, dark gray.	801
47		4.3				F								800
48		5.5												799
49		3.35	8	5.0 5.0	100							SHALE; medium dark gray (N4); massive; fresh (F); extremely weak (R0); very mild reaction to HCl. [Glen Rose Formation]		798
50		6.67				F	R0-R2		1042-13				400 psi downpressure.	797
51		7.75												796
52		2.78				F						LIMESTONE: wackestone; very light gray (N8); fresh (F); weak (R2); many large shell fossils; violent reaction to HCl. [Glen Rose Formation]		795
53		5.12										SHALE; medium dark gray (N4); limestone interbeds 0.1' thick spaced 0.3' apart from 53.0'-54.5'; fresh (F); extremely weak (R0); some fossils and bioturbation. [Glen Rose Formation]	Water return is dark gray.	794
54		5.2	9	4.8 5.0	98	F			1042-14					793
55		6.3												792
56		6.05												791
57		3.63	10	5.0 5.0	100	F						LIMESTONE: packstone; medium light gray (N6); swirled thin shale interbeds throughout; fresh (F); very weak (R1); bioturbations common; violent reaction to HCl. [Glen Rose Formation]	Recirculating tub starting to fill with sediment.	790

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1042</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)	
57	[Lithology Column]	3.68	10	5.0 5.0	100	F	R0-R2		1042-15			Shale SHALE; medium dark gray (N4); fresh (F); extremely weak (R0); massive with few limestone rip-up clasts; mild reaction to HCl. [Glen Rose Formation]	Good water return, medium gray.	789	
58		4.42				788									
59		4.17				1042-15a			787						
60		7.32				1042-15b			786						
61		6.25				1042-15c			785						
62		6.47	1042-15d	784											
63		4.85	11	4.9 5.0	98	F			1042-16					LIMESTONE: packstone; medium light gray (N6); very thin wavy shale layers; fresh (F); very weak (R1); many rip-up clasts; few fossils; strong reaction to HCl. [Glen Rose Formation]	783
64		7.65				F			782						
65		4.55				F			781						
66		2.05	12	5.0 5.0	100	F			LIMESTONE: wackestone; very light gray (N6); fresh (F); weak (R2); many stylolites; several bioturbations; strong reaction to HCl. [Glen Rose Formation]					780	
67	1.65	F				779									
68	1.9	F				778									
69	1.88	13	5.0 5.0	100	F	LIMESTONE: packstone; medium light gray (N6); fresh (F); very weak (R1); many rip-up clasts thin wavy shale interbeds; several pyrite and saprolite clasts; violent reaction to HCl; large elongated saprolite clast at 73.7. [Glen Rose Formation]	Sunny weather, little wind.	777							
70	2.25				776										
71	2.08				775										
72															

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-1042</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
72	Limestone	4.08	13	5.0 5.0	100	F						LIMESTONE: packstone; medium light gray (N6); fresh (F); very weak (R1); many rip-up clasts thin wavy shale interbeds; several pyrite and saprolite clasts; violent reaction to HCl; large elongated saprolite clast at 73.7. [Glen Rose Formation]		774
73		2.9										773		
74	Shale	5.07	14	5.1 5.0	100	F	R2					Shale	Good water return, light gray.	772
75		5.52										771		
76	Limestone	3.72	14	5.1 5.0	100	F						LIMESTONE: packstone; medium light gray (N6); fresh (F); very weak (R1); many thin shale interbeds an drip-up clasts; few bioturbations and fossils; several saprolite clasts; strong reaction to HCl. [Glen Rose Formation]	400 psi downpressure.	770
77		2.72										769		
78	Limestone	3.8	15	5.0 5.0	100	F						LIMESTONE: wackestone; light gray (N7); fresh (F); very weak (R1); several shaly bioturbations; violent reaction to HCl. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	768
79		4.55										767		
80	Limestone	4.65	15	5.0 5.0	100	F						LIMESTONE: packstone; medium light gray (N6); fresh (F); very weak (R1); many rip-up clasts and thin shaly swirls; few bioturbations and fossils; violent reaction to HCl; several thicker shale interbeds and thick bioturbated zones below 85'; grading to granular packstone.[Glen Rose Formation]	Gradational contact.	766
81		2.5										765		
82	Limestone	2.25	16	5.0 5.0	100	F						LIMESTONE: packstone; medium light gray (N6); fresh (F); very weak (R1); many rip-up clasts and thin shaly swirls; few bioturbations and fossils; violent reaction to HCl; several thicker shale interbeds and thick bioturbated zones below 85'; grading to granular packstone.[Glen Rose Formation]		764
83		1.78										763		
84	Limestone	3	16	5.0 5.0	100	F						LIMESTONE: packstone; medium light gray (N6); fresh (F); very weak (R1); many rip-up clasts and thin shaly swirls; few bioturbations and fossils; violent reaction to HCl; several thicker shale interbeds and thick bioturbated zones below 85'; grading to granular packstone.[Glen Rose Formation]		762
85		5.2										761		
86	Limestone	3.92	16	5.0 5.0	100	F						LIMESTONE: packstone; medium light gray (N6); fresh (F); very weak (R1); many rip-up clasts and thin shaly swirls; few bioturbations and fossils; violent reaction to HCl; several thicker shale interbeds and thick bioturbated zones below 85'; grading to granular packstone.[Glen Rose Formation]		760
87														

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1042</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)							
87	[Lithology Column]	3.2	16	5.0 5.0	100	F	R2					LIMESTONE: packstone; medium light gray (N6); fresh (F); very weak (R1); many rip-up clasts and thin shaly swirls; few bioturbations and fossils; violent reaction to HCl; several thicker shale interbeds and thick bioturbated zones below 85'; grading to granular packstone. [Glen Rose Formation]	Good water return, gray. Gradational contact.	759							
88		2.12												758							
89		1.85												757							
90		2.53												756							
91		2.37												755							
92		3.28	17	5.1 5.0	100	F													LIMESTONE: wackestone; light gray (N6); fresh (F); weak (R2); very thin shale interbeds in places; violent reaction to HCl. [Glen Rose Formation]  LIMESTONE: packstone; medium light gray (N7); fresh (F); very weak (R1); few bioturbations; violent reaction to HCl. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	754
93		2.53																			753
94		3.57																			752
95		3.47																			751
96		1.83																			750
97	2.37	18	5.0 5.0	100	F						Shale		749								
98	2.38												748								
99	2.18												747								
100	3.42												746								
101	3.25	19	5.1 5.0	100	F								745								
102																					

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1042</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
102		4.62										LIMESTONE: wackestone; medium light gray (N6); fresh (F); very weak (R1); silty matrix 101.0'-103.0'; sandy (granular) matrix below; very thin shale layers throughout; several bioturbations; violent reaction to HCl. [Glen Rose Formation]		744
103		2.4												743
104			19	5.1 5.0	100	F							Length of recovery stretched due to mechanical breaks.	742
105		2.58								1042-24		LIMESTONE: wackestone; light gray (N7); fresh (F); very weak (R1); granular texture; violent reaction to HCl; few thin shale interbeds.[Glen Rose Formation]	Good water return, gray.	741
106		5.42												740
107		3.58												739
108		2.92												738
109		2.42	20	5.0 5.0	100	F						LIMESTONE: packstone; medium gray (N5); fresh (F); very weak (R1); granular matrix with many rip-up clasts; wavy shale interbeds intermixed; moderate reaction to HCl. [Glen Rose Formation]	Very gradual gradational contact.	738
110		3.55					R2			1042-25				737
111		5.93										LIMESTONE: wackestone; light gray (N7); fresh (F); very weak (R1); several granular rip-up clasts; very silty; moderate reaction to HCl. [Glen Rose Formation]	Sharp contact.	736
112		2.08												735
113		3.1												734
114		3.5	21	5.0 5.0	100	F						LIMESTONE: packstone; medium light gray (N6); fresh (F); weak (R2); granular; many rip-up clasts; very thin shale swirls; violent reaction to HCl. [Glen Rose Formation]		733
115		3.9											Run 21 - no breaks - solid sample.	732
116		4.73								1042-26				731
117		3.22	22	5.0 5.0	100	F								730



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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
117		3.25										LIMESTONE: wackestone; light gray (N7) with hint of brown; fresh (F); weak (R2); several well defined bioturbations; silty from 116.4'-118.3'; moderate to strong reaction to HCl. [Glen Rose Formation]		729
118		3.6												728
119			22	5.0 5.0	100	F								727
120		3.78												726
121		3.87					R2					LIMESTONE: wackestone; light gray (N7); fresh (F); weak (R2); few bioturbations; strong reaction to HCl; grading to medium gray (N5) below 122.5. [Glen Rose Formation]	Good water return, gray.	726
122		3.45											400 psi downpressure.	725
123		5.18												724
124		3.47	23	5.0 5.0	100	F								723
125		4.17												722
126		5.28												721
127		3.75					R0-R2							720
128		5.52				F								719
129		4.83	24	4.9 5.0	98									718
130		5.63				F								717
131		8.82				F	R1-R2							716
132		8.17	25	5.0 5.0	100	F								715

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1042</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
132		4.57							1042-30 1042-30			SHALE; dark greenish gray (5 G 4/1); fresh (F); weak (R2); several rip-up clasts and bioturbations; mild reaction to HCl. [Glen Rose Formation]	Gradual contact.	714
133		3.95					R1-R2					LIMESTONE: wackestone; very light gray (N8); fresh (F); weak (R2); few bioturbations; strong reaction to HCl. [Glen Rose Formation]		713
134		4.47	25	5.0 5.0	100	F						LIMESTONE: packstone; medium gray (N5); fresh (F); weak (R2); many thin swirled shale layers around rip-up clasts; few saprolite clasts; strong reaction to HCl; grades to predominantly shale from 135.6'-136.0'.	Good water return.	712
135		6.73										Shale		711
136		7.37										LIMESTONE: packstone; medium gray (N5); fresh (F); very weak (R1); many rip-up clasts; thin shale swirls and bioturbations; slightly grainy texture; strong reaction to HCl; shale layer 141.0'-141.2'; several small saprolite clasts below 142"; shale layer; dark greenish gray 146.3'-146.65'.	Stop coring 3/8/07, began 3/9/07.	710
137		4.6					R0-R2							709
138		6.2	26	5.0 5.0	100	F							Run 26 - no breaks - solid sample.	708
139		3.92							1042-31					707
140		7.85												706
141		5.05										Shale		705
142		4.55					R2		1042-32					704
143		5.25	27	5.1 5.0	100	F								703
144		3.22											Length of recovery stretched due to mechanical breaks.	702
145		7.2												701
146		6.5	28	4.9 5.0	98	F	R0-R2					Shale		700
147									1042-33					


Project Name and Job Number TXU Comanche Peak Col 1908	 <small>William Lettis &amp; Associates, Inc.</small>	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1042</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
147		2.33												699
148		4.27					R0-R2					LIMESTONE: wackestone; light gray (N7); fresh (F); very weak (R1); several medium sized bioturbations; few rip-up clasts; violent reaction to HCl. [Glen Rose Formation]		698
149			28	4.9 5.0	98	F								697
150		4.63												696
151		10										LIMESTONE: wackestone; medium light gray (N6); fresh (F); very weak (R1); several bioturbations; violent reaction to HCl. [Glen Rose Formation]		695
152														694
153														693
154														692
155														691
156														690
157														689
158														688
159														687
160														686
161														685
162														685

Project Name and Job Number TXU Comanche Peak COI 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG Boring No. B-1043</b>	
Type and Diameter of Boring HSA / 7"			Boring Location 32°18'10.97505"N / 97°47'46.05367"W		Total Depth 76.8 feet
Drilling Contractor and Rig Palmerton & Parrish / CME 55			Elevation and Datum 824.514 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 5.2 feet
Sampling Method SPT			Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 2	Date Started 4/2/07
			Borehole Inclination Vertical	Logged by J.Cox	Date Completed 4/3/07

Reviewed by / Date R. Ortiz 4/8/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
0							<b>RESIDUAL SOIL (RS)</b> LEAN CLAY, yellowish brown (10YR5/6), damp, medium stiff, with few calcareous particles, organics at surface		824
1	CL		B-1043 1	2	6/18				823
2				2					822
3				6					821
4	CL		B-1043 2	17	16/18		light olive brown (2.5Y5/6), damp, medium stiff to very stiff		820
5	ML			14			SILT with limestone fragments, olive yellow (2.5Y6/6), damp, very stiff - contact at 4' with carbonate clasts separating units		819
5.2				50/4"			- bedrock at 5.2'		818
6									817
7									816
8									815
9									814
10									813
11									812
12									811
13									810
14									810
15									810

Project Name and Job Number TXU Comanche Peak Col 1908		 WLA William Lettis & Associates, Inc.	<b>ROCK LOG</b>		<b>B-1043</b>
Type and Diameter of Boring HQ / 4"			Boring Location 32°18'10.97505"N / 97°47'46.05367"W		
Drilling Contractor and Rig Palmerton & Parrish / CME 55		Elevation and Datum 824.514 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 5.2 feet	
Casing Size and Depth 4" / 5 feet		Length of Core Barrel and Bit 8.7 feet	No. of Core Boxes 5	Date Started 4/2/07	
		Borehole Inclination Vertical	Logged by J. Cox	Date Completed 4/3/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 4/3/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
6		2.62	1	1.6 1.6	100	MW	R2					LIMESTONE: wackestone; very pale orange (10 YR 8/2); weak (R2); moderately weathered (MW); massive; slightly damp; abundant fossils; moderate reaction to HCl; interbedded with highly weathered mudstone 6.8'-8.8'. [Glen Rose Formation]		819
7		2.03												818
8		1.58												817
9		1.47	2	4.2 5.0	84	MW-HW	R1-R2		1043-3				100% loss of circulation.	816
10		0.82												815
11		0.93												814
12		0.87				MW	R2							813
13		4.65				SW	R2		1043-4			LIMESTONE: wackestone; medium gray (N5); weak (R2); slightly weathered (SW); slightly damp; moderate reaction to HCl; abundant fossils.[Glen Rose Formation]		812
14		2	3	3.5 5.0	70							SHALE; medium dark gray (N5); weak (R2); slightly weathered (SW); several interbeds of limestone <0.1' thick. [Glen Rose Formation]		811
15		2.17				SW	R0-R1							810
16		2.63												809
17		2.1												808
18		7.1	4	4.9 5.0	98	SW-MW	R0-R2					LIMESTONE: wackestone; medium light gray (N6); weak (R2); interbedded with occasional shale layers <0.2' thick from 17.7'-19.5'; limestone is very pale orange (10 YR 8/2); slightly weathered to moderately weathered (SW-MW); strong reaction to HCl; shale interbeds have no reaction to HCL. [Glen Rose Formation]		807
19		3.05											Still no circulation. Drilling blind.	806
20		2.88												805

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1043</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)		
21		2.88	4	4.9 5.0	98	SW-MW	R0-R2		1043-5					804		
22		2.88				SW	R2									803
23		1.25	5	4.8 5.0	96	SW	R2		1043-6			Shale	LIMESTONE: packstone; medium gray (N5); weak (R2); slightly weathered (SW); some burrows filled with silty matrix; abundant fossils; violent reaction to HCl.[Glen Rose Formation]	802		
24		1.57				SW	R2									801
25		1.75				SW	R0									800
26		2.43				SW	R0									799
27		2.72	6	5.0 5.0	100	SW	R0		1043-7				SHALE; medium dark gray (N5); very weak (R2); slightly weathered (SW); thinly bedded; no reaction to HCl. [Glen Rose Formation]	798		
28		3.03				SW	R0									797
29		1.62				SW	R2									796
30		3.12	7	5.1 5.0	100	SW	R0-R2					LIMESTONE: wackestone; medium light gray (N6); weak (R2); slightly weathered (SW); abundant fossils; strong reaction to HCl; 0.2' thick shale interbeds throughout.[Glen Rose Formation]	795			
31		4.37				SW	R0									794
32		4.67	7	5.1 5.0	100	SW	R0					SHALE; medium dark gray (N4); very weak (R2); slightly weathered (SW); thinly bedded; no reaction to HCl.[Glen Rose Formation]	793			
33		1.5				SW	R0									792
34		2.2				SW	R1-R2									LIMESTONE: wackestone; medium gray (N5); weak (R2); slightly weathered (SW); slightly bioturbated; strong reaction to HCl; few fossils.
35		2											790			
		2.97											Length of recovery			

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)				
36		2.97	7	5.1 5.0	100	SW	R0					SHALE; medium dark gray (N4); very weak (R2); slightly weathered (SW); thinly bedded; no reaction to HCl.[Glen Rose Formation]	stretched due to mechanical breaks.	789				
		3.02																
37		2.37	8	5.1 5.0	100	SW	R0					LIMESTONE: packstone; medium gray (N5); weak (R2); very slightly weathered (SW); abundant fossils; moderate reaction to HCl.[Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	787				
38		2.13				SW	R2									786		
39		1.8				SW	R0									785		
40		1.87	9	5.2 5.0	100	SW	R2					SHALE; medium dark gray (N4); very weak (R2); slightly weathered (SW); thinly bedded; no reaction to HCl.[Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	784				
41		1.9																783
42		2.25																782
43		1.02	10	5.2 5.0	100	SW	R2					Shale		781				
44		1.4																780
45		1.25	10	5.2 5.0	100	SW	R2					Shale	Length of recovery stretched due to mechanical breaks.	779				
46		2																778
47		0.72																777
48		1.05	10	5.2 5.0	100	SW	R2							776				
49		1.85																775
50		1.12												Length of recovery	775			


Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-1043</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)				
51		1.12	10	5.2 5.0	100	SW	R2						stretched due to mechanical breaks.	774				
		1.97											1043-11					773
52		1.33	11	5.0 5.0	100	SW	R2											
53		1.42																772
54		1.6																771
55		1.52												1043-12				770
56		1.48	12	5.1 5.0	100	SW	R2											
57	NM																	769
58	NM																	768
59	NM													767				
60	NM												Length of recovery stretched due to mechanical breaks.	766				
61	NM											LIMESTONE: wackestone; light gray (N7); weak (R2); slightly weathered (SW); rip-up clasts 62.0'-65.2' and 72.0'-73.2'. [Glen Rose Formation]	765					
62		2.38	13	5.1 5.0	100	SW	R2											
63		1.57																764
64		1.67																763
65		1.57											Length of recovery	762				



Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-1043</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
66		1.57	13	5.1 5.0	100	SW	R2					LIMESTONE: wackestone; light gray (N7); weak (R2); slightly weathered (SW); rip-up clasts 62.0'-65.2' and 72.0'-73.2'. [Glen Rose Formation]	stretched due to mechanical breaks.	759
		1.77						758						
67		1.5	14	5.0 5.0	100	SW	R2							757
68		1.25						756						
69		1.33						1043-15	755					
70		1.5						754						
71		1.52	15	5.0 5.0	100	SW	R2							753
72		2.08						1043-16	752					
73		2						751						
74		2.1	15	5.0 5.0	100	SW	R2							750
75		2.07						749						
76		2.17						748						
77											BOTTOM OF HOLE AT 76.8'		747	
78														746
79														745
80														

Project Name and Job Number TXU Comanche Peak COL 1908		 SOIL LOG Boring No. <b>B-1044</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'11.26805"N / 97°47'43.12536"W	
Drilling Contractor and Rig Geotechnology / CME 55		Elevation and Datum 838.206 feet NAVD88	Ground Water Depth DRY
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 8
		Borehole Inclination Vertical	Logged by G. Van Etten
			Date Started 4/2/07
			Date Completed 4/2/07

Reviewed by / Date                      R. Ortiz 4/8/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0										838
1	CL		B-1044 1	1	11/18			ARTIFICIAL FILL (Qaf) LEAN CLAY, brown, (7.5YR4/2), damp, soft to medium stiff, with organics and roots		837
2				2						836
3				4						835
4			B-1044 2	1	6/18			LEAN CLAY with sand, organics, and calcareous particles yellowish brown, (10YR5/9), damp, medium stiff, 10% organics		834
5				4						833
6	CL		B-1044 3	2	0/18					832
7				1						831
8				5						830
9			B-1044 4	7				LIMESTONE FRAGMENTS, white, (10YR8/7) with very dark grayish brown (10YR3/2) lean clay, dry, medium dense, limestone "pokerchips" with organics - rock slab ledge at 8.5'		829
10				12	6/18					828
11	GC		B-1044 5	4						827
12				20	3/18					826
13				17						825
14	CL		B-1044 6	6	14/18			LEAN CLAY with few limestone fragments, brownish yellow (10YR 6/8), damp, very stiff		824
15				4						823
				5						822
				12						821

Project Name and Job Number TXU Comanche Peak COI 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">SOIL LOG</h2> <h2 style="margin: 0;">Boring No. B-1044</h2>
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Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
15	CL						LEAN CLAY with few limestone fragments, brownish yellow (10YR 6/8), damp, very stiff <i>(Continued from previous page)</i>		823
16	CL		B-1044 7	5	6 17		GRAVELLY LEAN CLAY, brownish yellow (10YR6/6) to light gray (10YR7/1), dry, very stiff, 50% limestone gravel, mottled		822
17				11					50/5"
18	GM		B-1044 8	50/5"	5 5		Limestone fragments, gray (5Y6/3), dry, very dense, mix of limestone and shale breaks in thin layers (completely weathered limestone)		820
19									819
20									818
21							Augered to 20.5' - top of bedrock at 20.5'		817
22									816
23									815
24									814
25									813
26									812
27									811
28									810
29									809
30									




Undisturbed sample  
 SH = Shelby; P = Pitcher; O = other



Driven (2.5 to 3.0 inch) with liners  
 MC = Modified California; O = other



Standard Penetration Test (SPT) sampler

Project Name and Job Number TXU Comanche Peak Col 1908		 <b>ROCK LOG Boring No. B-1044</b>	
Type and Diameter of Boring HQ / 4"	Boring Location 32°18'11.26805"N / 97°47'43.12536"W	Total Depth 75.7 feet	
Drilling Contractor and Rig Geotechnology / CME 75	Elevation and Datum 838.206 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 20.5 feet
Casing Size and Depth 4" / 20.5 feet	Length of Core Barrel and Bit 8.55 feet	No. of Core Boxes 4	Date Started 4/2/07
	Borehole Inclination Vertical	Logged by G. Van Etten	Date Completed 4/3/07

Reviewed by / Date R. Ortiz 4/8/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
21		1.62											Glen Rose Foramtion.	817
22		1.82									Jt, horizontal	LIMESTONE: wackestone; yellowish gray (5 Y 8/1); slightly weathered (SW); very weak (R1); several oxidized zones and shell hash zones; brown sandy interbeds intermixed; several bioturbations an drip-up clasts; mild to moderate reaction to HCL. [Glen Rose Formation]	816	
23		2.87	1	4.9 5.0	98	SW	R1		1044-9					815
24		1.57												814
25		2												813
26		1.58												812
27		2.25				F	R1							811
28		4.42	2	5.0 5.0	90				1044-10			SHALE: medium dark gray (N4); fresh (F); extremely weak (R0); thin limestone interbed. [Glen Rose Formation]	810	
29		5.03				F	R1				Jt, Wa, Ro, Hc	LIMESTONE: packstone; medium gray (N5) to light gray (N7); fresh (F); very weak (R1); many rip-up clasts; shale swirls; saprolite at 29.7'. [Glen Rose Formation]	809	
30		6.1				F	R0					SHALE: medium dark gray (N4); fresh (F); extremely weak (R0); massive. [Glen Rose Formation]	808	
31		4.4				F	R1					LIMESTONE: wackestone; very light gray (N8) to yellowish gray (5Y 8/1); fresh to slightly weathered (F-SW); very weak (R1); many fractures; stylolites; and weathering features; many shell fragments; strong reaction to HCl. [Glen Rose Formation]	807	
32		4.73							1044-11		Jt, Wa, Sl, Op Jt, Wa, Sl, Op	Shale Shale	806	
33		2.2	3	5.0 5.0	96	SW	R1						Good, light brown water return.	805
34		4.6										SHALE: medium gray (N5); fresh (F); extremely weak (R0); limestone rip-up clasts; mottled. [Glen Rose Formation]	804	
35		4.88				F	R1					LIMESTONE: wackestone; light gray (N7); fresh (F); very weak (R1); many shell fragments. [Glen Rose Formation]	803	

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1044</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
36		3.03							1044-12			LIMESTONE: packstone; medium light gray (N6); fresh (F); very weak (R1); many rip-up clasts and shale swirls; strong reaction to HCl; increase in shell fragments below 38'. [Glen Rose Formation]		802
37		4.68				F	R1							801
38		5.47	4	4.8 5.0	96									800
39		5.25												799
40		2.4										SHALE: medium dark gray (N4); massive; fresh (F); extremely weak (R0); mild reaction to HCl. [Glen Rose Formation]		798
41		2.83				F	R0							797
42		3.42												796
43		2.78	5	5.0 5.0	100				1044-13					795
44		4.47				SW	R1					LIMESTONE: wackestone; very light gray (N8) with brown; slightly weathered (SW); very weak (R1); vertical oxidized fracture. [Glen Rose Formation]		794
45		5				F	R0					SHALE: medium dark gray (N4); fresh (F); extremely weak (R0); limestone interbed 0. [Glen Rose Formation] 2' thick. [Glen Rose Formation]	Good, dark gray water return.	793
46		4.23				F	R0							792
47		4.75							1044-14					791
48		5.68	6	5.0 5.0	100							LIMESTONE: wackestone; light gray (N7); fresh (F); very weak (R1); very thin shale swirls; several large bioturbations; fossil fragments and casts of upper contact; violent reaction to HCl. [Glen Rose Formation]	Sharp, wavy contact.	790
49		6.58				F	R1							789
50		5.43				F	R0							788

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1044</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
51		2.57										SHALE: medium dark gray (N4); fresh (F); extremely weak (R0); massive; mild reaction to HCl. [Glen Rose Formation]		787
52		3.77				F	R0							786
53		6.7	7	5.1 5.0	100	F	R1					LIMESTONE: packstone; medium light gray (N6); fresh (F); very weak (R1); few fossils and shale swirls. [Glen Rose Formation]	350 psi downpressure.	785
54		3.78				F	R0					SHALE: medium dark gray (N4); fresh (F); extremely weak (R0); massive; sticky when wet; mild reaction to HCl. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	784
55		5.13								1044-15				783
56		4.05				F	R2					LIMESTONE: wackestone; light gray (N7); fresh (F); weak (R2); few fossil casts violene reaction to HCl. [Glen Rose Formation]		782
57		6.7				F	R1							781
58		2.55	8	5.6 5.0	100	F	R2			1044-16		Shale interbed from 57.4' - 57.7'. LIMESTONE: wackestone; very light gray (N8); fresh (F); weak (R2); several small casts; violent reaction to HCl. [Glen Rose Formation]		780
59		3.02				F	R1-R2					LIMESTONE: packstone; light gray (N7); fresh (F); very weak (R1); many rip-up casts and shale swirls; violent reaction to HCl. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	779
60		3.08										LIMESTONE: packstone; medium light gray (N6); fresh (F); weak to very weak (R2-R1); many thin wavy shale interbeds and rip-up clasts; few bioturbations; violent reaction to HCl; less shaly; more grainy texture and large boiturbations with depth. [Glen Rose Formation]	Good, gray water return.	778
61		3.88												777
62		2.57												776
63		2.47	9	5.1 5.0	100	F	R1-R2						Only one break in Run #9.	775
64		2.33								1044-17			Length of recovery stretched due to mechanical breaks.	774
65		3.12												773

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-1044**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
66		4.12										LIMESTONE: packstone; medium light gray (N6); fresh (F); weak to very weak (R2-R1); many thin wavy shale interbeds and rip-up clasts; few bioturbations; violent reaction to HCl; less shaly; more grainy texture and large bioturbations with depth. [Glen Rose Formation]		772
67		4.8							1044-18					771
68		4.47	10	4.9 5.0	100	F	R1-R2					Shale		770
69		4.5												769
70		4.17												768
71		3.97												767
72		4.33												766
73		3.6	11	4.9 5.0	100	F	R1-R2							765
74		3.5							1044-19			Shale with well rounded limestone rip-up clasts.		764
75		3.1										LIMESTONE: packstone; medium light gray (N6); fresh (F); weak to very weak (R1); violent reaction to HCl. [Glen Rose Formation]	Good, dark gray water return.	763
76												BOTTOM OF HOLE AT 75.7'.	Total depth 75.7 ft.	762
77														761
78														760
79														759
80														758

Project Name and Job Number TXU Comanche Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-1045</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'11.45493"N / 97°47'42.45811"W		Total Depth 75.8 feet	
Drilling Contractor and Rig Geotechnology / CME 55		Elevation and Datum 838.165 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 19.5 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 8	Date Started 4/3/07	
		Borehole Inclination Vertical	Logged by G. Van Etten	Date Completed 4/4/07	

Reviewed by / Date R. Ortiz 4/8/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0										838
1	CL		B-1045 1	2	11/18			ARTIFICIAL FILL (Qaf) LEAN CLAY with limestone gravel and few organics, yellowish brown (10YR5/4), damp, very stiff		837
2				3						836
3				24						835
4			B-1045 2	3	6/18					834
5	GP-GM			9				GRAVEL with silt, light yellowish brown (10YR6/4), dry, dense, 50% angular gravel, mottled silt		833
6				25						832
7	GP-GM		B-1045 3	18	15/18			GRAVEL with sand and some lean clay, very pale brown (10YR 7/3), dry, dense, 85% limestone gravel,		831
8				10						830
9	CL		B-1045 4	4	9/18			SANDY LEAN CLAY, some angular limestone gravel, and organics, yellow (10YR7/6), dry, hard		829
10				11						828
11				9						827
12	GP-GC		B-1045 5	14	13/18			LIMESTONE GRAVEL with sandy lean clay and few organics, yellowish brown (10YR 5/4), dry, mottled silt and sand, many rootlets		826
13				8						825
14				2						824
15	CL		B-1045 6	5	16/18			LEAN CLAY with small limestone gravel, brownish yellow (10YR6/8) to olive (5Y5/3), dry, stiff, 5% gravel		824
				4						



Project Name and Job Number TXU Comanche Peak COI 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">SOIL LOG</h2> <h2 style="margin: 0;">Boring No. B-1045</h2>
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Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
15	CL							LEAN CLAY with small limestone gravel, brownish yellow (10YR6/8) to olive (5Y5/3), dry, stiff, 5% gravel (Continued from previous page)		823
16				8				SANDY SILT, olive yellow (2.5Y6/6), dry, very stiff		822
17	ML		B-1045 7	11	18/18					821
18				13						820
19		O	B-1045 8	50/4"	Q/4			<b>RESIDUAL SOIL (RS)</b> LIMESTONE		819
20								- top of bedrock at 19.5'		818
21										817
22										816
23										815
24										814
25										813
26										812
27										811
28										810
29										809
30										




Undisturbed sample  
 SH = Shelby; P = Pitcher; O = other



Driven (2.5 to 3.0 inch) with liners  
 MC = Modified California; O = other



Standard Penetration Test (SPT) sampler

Project Name and Job Number TXU Comanche Peak Col 1908		 WLA William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. B-1045</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'11.45493"N / 97°47'42.45811"W		Total Depth 75.8 feet	
Drilling Contractor and Rig Geotechnology / CME 55		Elevation and Datum 838.165 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 19.5 feet	
Casing Size and Depth 4" / 19.5 feet		Length of Core Barrel and Bit 8.5 feet	No. of Core Boxes 4	Date Started 4/3/07	
		Borehole Inclination Vertical	Logged by G. Van Etten	Date Completed 4/4/07	

Reviewed by / Date R. Ortiz 4/8/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
20		2.83	1	1.3 1.3	100	SW	R1		1045-9			LIMESTONE; WACKESTONE, pale orange (10 YR 8/2), slightly weathered, very weak, several fossil casts, strong reaction to HCl, many very thin brownish yellow silty interbeds, several rip-up clasts and bioturbations.	Top of bedrock 19.5 ft.	818
21		2.25											Began HQ coring 4/4/07, Glen Rose Formation. Light brown water return.	817
22		2.33												816
23		1.37	2	5.1 5.0	100	MW	R1							815
24		2.05											Length of recovery stretched due to mechanical breaks.	814
25		1.58							1045-10					813
26		1.5									Jt, Wa, Si, Op			812
27		3.85				SW	R0				Jt, Wa, Si, Op			811
28		3	3	5.2 5.0	84	MW	R1		1045-11		Jt, Wa, Si, Fi	SHALE, medium dark gray (N4) to light gray (N7), slightly weathered, extremely weak, thick limestone interbeds evenly spaced every 0.1'.	Light gray water return.	810
29		5.47				F	R0				Jt, Wo, R0, Fi	LIMESTONE; WACKESTONE, yellowish gray (5 Y 8/1), moderately weathered, very weak, stylolites and fossil casts.	Length of recovery stretched due to mechanical breaks.	809
30		6.3										SHALE, medium dark gray (N4) to light gray (N7), slightly weathered, extremely weak, thick limestone interbeds evenly spaced every 0.1'.		808
31		2.5				MW	R1					LIMESTONE; WACKESTONE, yellowish gray (5 Y 8/1), moderately weathered, very weak, man fractured in all directions, shell fragments in limestone with very thin muddy layers between cracks.		807
32		2.73	4	4.8 5.0	68						Jt, Wa, Si, Op			806
33		2.32				SW	R0		1045-12		Jt, Wa, Si, Fi	SHALE, yellowish gray (5 Y 8/1) to medium gray (N5), slightly weathered, extremely weak, many fractures in all directions, limestone interbeds 0.1'-0.2' thick between, few bioturbations and organics.		805
34		10.75												804

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-1045**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
35		10.75	4	51.8 5.0	68	SW	R0				Jt, Wa, Ro, Fi			803
36		6.45												LIMESTONE; PACKESTONE, medium light gray (N6), fresh, very weak, many thin interbedded shale swirls, strong reaction to HCl, 0.2' thick interbed from 36.8'-37.0', below 37.3, packestone grades toward shell hash.
37		3.22									Jt, Wa, Sl, Fi			801
38		4.38				F	R1							800
39		5.03	5	5.0 5.0	92					1045-13				800
40		3.17												SHALE, medium dark gray (N4), massive, fresh, extremely weak, mild reaction to HCl.
41		5.12												798
42		4.73				F	R0							797
43		4.5								1045-14				796
44		2.92	6	5.0 5.0	100	F	R2					LIMESTONE; WACKESTONE, very light gray (N8), fresh, weak, many shell fossils, violent reaction to HCl.		795
45		3.92												SHALE, medium dark gray (N4), fresh, very to extremely weak, massive with 0.1' to 0.3' thick limestone interbeds spaced 0.1'-0.6' apart.
46		5.92											Good, light gray water return.	793
47		3.9				F	R0			1045-15		SHALE, medium dark gray (N4), massive, fresh, extremely weak, several very thin limestone lenses.		792
48		3.42	7	5.1 5.0	100							LIMESTONE; PACKESTONE, medium light gray (N6), fresh, very weak, many shale layers up to 0.1' thick intermixed, zones of many shell casts and fragments, strong reaction to HCl.		791
49		4.2							F	R1				
		4.92				F							Length of recovery stretched due to mechanical	789

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1045</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)				
50		4.92	7	5.1 5.0	100	F	R0		1045-16			SHALE, medium dark gray (N4), massive, fresh, extremely weak, several very thin limestone lenses.	breaks.	788				
51		4.25																787
52		2.95	8	5.0 5.0	100	F F	R0-RR1					LIMESTONE; PACKESTONE, medium light gray (N8), very fresh, very weak, many very thin shale interbeds, few fossils.		786				
53		3.73														SHALE, medium dark gray (N4), massive, fresh, extremely weak, extremely thin shale laminations, muddy surface.		785
54		3.48												1045-17			350 psi downpressure.	784
55		3.17	9	4.9 5.0	98	F	R0					LIMESTONE; WACKESTONE, light gray (N7), fresh, very weak, many thin shale layers up to 0.1' thick but not dominant, few fossils, shale layer 56.8'-57.2', several large bioturbations and vugs.		783				
56		5.62																782
57		3.9																781
58		3.5																780
59		1.98	10	5.0 5.0	100	F	R1		1045-18			LIMESTONE; PACKESTONE, medium light gray (N6), fresh, very weak, many rip-up clasts, several large bioturbations, many very thin shale interbeds, swirled around clasts, violent reaction to HCl.		779				
60		2.67																778
61		3.18															Good, light gray water return.	777
62		2	10	5.0 5.0	100	F	R1					LIMESTONE; PACKESTONE, light gray (N7), fresh, very weak, many very thin wavy shale interbeds around rip-up clasts, few bioturbations and fossil shell fragments, violent reaction to HCl, becoming slightly grainy below 64' with several small organic clasts, 0.2' long bioturbation at 69.2', thicker shale interbeds 72.7'-73.5'.		776				
63		1.97																775
64		3.63												1045-19				774
		3.75																

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-1045**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
65		3.75	10	5.0 5.0	100	F	R1					LIMESTONE; PACKSTONE, light gray (N7), fresh, very weak, many very thin wavy shale interbeds around rip-up clasts, few bioturbations and fossil shell fragments, violent reaction to HCl, becoming slightly grainy below 64' with several small organic clasts, 0.2' long bioturbation at 69.2', thicker shale interbeds 72.7'-73.5'.	Refilled recirculating tub due to slight water loss during drilling.	773
66		7.5												772
67		5.7												771
68		3.88	11	5.2 5.0	100	F	R1						Length of recovery stretched due to mechanical breaks.	770
69		5.67												769
70		4.03												768
71		9.25												767
72		5.75	12	5.0 5.0	100	F	R1						Very little water return.	766
73		3.17												765
74		5.4												764
75		2.3	12	5.0 5.0	100	F	R1						Total depth 75.8'.	763
76		3.27												762
77														761
78														760
79														759

Project Name and Job Number TXU Comanche Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-1046</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'11.75242"N / 97°47'39.61640"W		Total Depth 75 feet	
Drilling Contractor and Rig Richard Simmons Drilling / BK-81 HD		Elevation and Datum 837.252 feet NAVD88	Ground Water Depth 44	Depth to Bedrock 49.5 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 20	Date Started 4/4/07	
		Borehole Inclination Vertical	Logged by S.Deer	Date Completed 4/5/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 4/10/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0										837
1	ML		B-1046 1	13				ARTIFICIAL FILL (Qaf)		836
2				22	18/18	3.25		SILT with gravel, yellow (10YR7/8), dry, stiff to very stiff, 15% angular limestone gravel, reacts strongly to HCL		835
3				34						834
4	CL		B-1046 2	9				LEAN CLAY with sand and gravel, dark yellowish brown (10YR3/4) mottled with yellow (10YR6/8), damp, stiff, 10% gravel (angular limestone up to 1"), reacts strongly to HCL, likely fill		833
5				12	11/18	4.25				832
6				13						831
7			B-1046 3	7				LEAN CLAY with sand and calcareous deposits, very pale brown (10YR 8/2) mottled with yellow (10YR7/6), damp, medium stiff, 10% gravel (sub-angular limestone up to 0.25"), reacts strongly with HCL		830
8				4	17/18	3.25				829
9				8						828
10	CL		B-1046 4	9				olive yellow (2.5Y6/6) mottled with light yellowish brown (10YR6/4), rock (limestone) at base of split spoon		827
11				12	12/18	1.75				826
12				12						825
13			B-1046 5	9				with gravel, reddish brown (5YR4/4), dry, stiff, limestone gravel (sub-rounded limestone <0.25"), slow dilatancy, medium plasticity		824
14				9	6.5/18					823
15	CL		B-1046 6	15				LEAN CLAY with gravel, yellowish brown (10YR5/8), mottled with dark yellowish brown (10YR4/4), damp, stiff, 15% gravel (sub-angular limestone <0.4" with some <1" pieces)		823
				12						
				12	7/18					
				12						

Project Name and Job Number  
TXU Comanche Peak COL  
1908



**SOIL LOG**  
**Boring No. B-1046**

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
15	CL	-	B-1046 7	4	13/18	4	LEAN CLAY with sand, light olive brown (2.5Y5/4), dry, medium stiff, 5% gravel (angular limestone), reacts strongly to HCL		822
16				5					821
17				9					820
18	CL	-	B-1046 8	9	15/18	3.75	LEAN CLAY with sand and gravel, brownish yellow (10YR6/8), damp, stiff to very stiff, 10% gravel, reacts strongly to HCL		820
19				10					819
20				25					818
21				refusal due to rock					817
22	CL	-	B-1046 9	21	7/18	3.5	slightly higher silt content		816
23				50/1"					815
24				7					814
25	CL	-	B-1046 10	9	7/18		LEAN CLAY with gravel, black (5Y2.5/2), damp, stiff to very stiff, 25% gravel (angular limestone <0.5"), reacts strongly to HCL, rock in bottom of scupler		813
26				11					812
27				7					811
28	CL	-	B-1046 11	10	15/18	4	LEAN CLAY with gravel, dry, very stiff, 20% gravel (angular limestone <1"), 5% sand, strong reaction to HCL		812
29				30					811
30				23					810
31	CL	-	B-1046 12	36	16/18		- rock (boulder or ledge) from 28.5' to 28.8'		809
32				29					808
33				15					807



Undisturbed sample  
SH = Shelby; P = Pitcher; O = other



Driven (2.5 to 3.0 inch) with liners  
MC = Modified California; O = other



Standard Penetration Test (SPT) sampler

Project Name and Job Number  
TXU Comanche Peak COL  
1908



**SOIL LOG**  
**Boring No. B-1046**

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
30	CL			8					807
31		B-1046 13		5	16/18	3.25		LEAN CLAY with gravel, light bluish gray (GLE Y27/1), damp, stiff to very stiff, 20% gravel (sub-angular limestone <0.25"), some organic black material (<5%), reacts strongly to HCL	806
32				24					805
33		B-1046 14		9	15/18			brownish yellow (10YR6/8)	804
34				11					803
35	CL			25				very dark grayish brown (10YR3/2) and light brownish gray (2.5Y6/2), no organics	802
36		B-1046 15		13	14/18	4			801
37				13					800
38		B-1046 16		8	12/18	3.5			799
39				7					798
40				9					797
41	CL	B-1046 17		3	12/18	0.5		LEAN CLAY with gravel, dark grayish brown (10YR4/2), wet, soft to very stiff, 20% gravel (angular limestone <0.5"), strong reaction to HCL	796
42				3					795
43		B-1046 18		20					794
44	CL			25	16/18			LEAN CLAY with gravel, very dark gray (10YR3/1), damp, very stiff, gravel (angular limestone <0.5"), strong reaction to HCL, some organics	793
45				27				- groundwater perched at about 44' to 45'	
				32					



Undisturbed sample  
SH = Shelby; P = Pitcher; O = other



Driven (2.5 to 3.0 inch) with liners  
MC = Modified California; O = other



Standard Penetration Test (SPT) sampler



Project Name and Job Number  
 TXU Comanche Peak COI  
 1908



**SOIL LOG**  
**Boring No. B-1046**

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
45	CL			7					792
46		B-1046 19		11	18/18	2.5		completely liquefied <b>RESIDUAL SOIL (RS)</b> LEAN CLAY, greenish gray (GLEY15/1), very stiff, to hard, damp, 10% gravel (angular limestone <0.25"), reacts strongly to HCL - ran out of auger at 46.5', switched over to rock coring equipment, performed SPT sampling through outer barrel, water added to drilling	791
47				43					790
48	CL			7				pea gravel from parking lot at surface mixed in with sample, upper 1' with low blowcounts was likely liquefied and washed away resulting in poor recovery	789
49		B-1046 20		7	5/18	2.25			788
50				30				- driller reports harder drilling at 49.5' likely top of rock Top of Bedrock at 49.5'	787
51									786
52									785
53									784
54									783
55									782
56									781
57									780
58									779
59									778
60									777




Undisturbed sample  
 SH = Shelby; P = Pitcher; O = other



Driven (2.5 to 3.0 inch) with liners  
 MC = Modified California; O = other



Standard Penetration Test (SPT) sampler

Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. B-1046</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'11.75242"N / 97°47'39.61640"W		Total Depth 75 feet	
Drilling Contractor and Rig Richard Simmons / BK-81		Elevation and Datum 837.252 feet NAVD88	Ground Water Depth 44.45	Depth to Bedrock 49.5 feet	
Casing Size and Depth 4" / 46.5 feet		Length of Core Barrel and Bit 8.8 feet	No. of Core Boxes 2	Date Started 4/4/07	
		Borehole Inclination Vertical	Logged by S. Dee	Date Completed 4/5/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 4/10/07


Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
50														787
51	NM											LIMESTONE; WACKESTONE, very light gray (N8), massive with few (<0.1') interbeds of shale/silt, moderately weathered, weak (R2), reacts strongly to HCl, clasts are dominantly medium to coarse grained, bluish gray, tabular and ??? fossils, claystone interbed 3' to 3.4', slightly weathered below 55.2', shale interbed 55.8'-56.1', below 56.1 wackestone is imbedded with abundant (<0.1') shale/silt interbeds and contains abundant rip-up clasts.	Driller added EZ mud polymer to prevent sloughing in borehole walls below casing. Low recovery Run 21 likely due to washing away of interbedded weathered limestone and soil.	786
52	NM													785
53		2.1	1	<u>2.2</u> 5.0	44	MW	R2							784
54		2.67												783
55		3.25							1046-22					782
56		2.5												781
57		2.82												780
58		2.65	2	<u>5.0</u> 5.0	100	SW	R2		1046-23				Core is caked with polymer and very difficult to identify.	779
59		1.85												778
60		1.42											50% water return, gray.	777
61		3.43										LIMESTONE; WACKESTONE, same as above, clasts of gray silt and bluish gray, fine to medium grained subrounded (oolitic?) fossils, zone of very high silt content 64.9'-63.7', abundant bioturbation 60'-70', some high to very high silt content form 65'-66.2', high concentration of shale/silt (<0.1') interbeds from 67.8'-68.2' abd 70' to 71.1'.		776
62		3.67												775
63		3.12	3	<u>4.8</u> 5.0	96	SW	R2		1046-23A					774
64		2.75												773
65		3.12												772

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908




**ROCK LOG**  
**Boring No. B-1046**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)	
65		2.33	4	51.0 5.0	100	SW	R2					LIMESTONE; WACKESTONE, same as above, clasts of gray silt and bluish gray, fine to medium grained subrounded (oolitic?) fossils, zone of very high silt content 64.9'-63.7', abundant bioturbation 60'-70'; some high to very high silt content form 65'-66.2', high concentration of shale/silt (<0.1') interbeds from 67.8'-68.2' abd 70' to 71.1'.		772	
66		1.83												771	
67		2.3												1046-24	770
68		2.12												769	
69		2.17												768	
70		1.77												767	
71		1.85	5	51.2 5.0	100	SW	R2					LIMESTONE; PACKESTONE, light gray (N7), massive with zones of abundant shale/silt interbeds (<0.1'), slightly weathered, weak (R2), clasts of fine to medium grained bluish gray fossils.	Length of recovery stretched due to mechanical breaks.	766	
72		2.43												1046-25	765
73		1.8												764	
74		1.6												763	
75													Bottom of borehole 75.0'.	762	
76														761	
77														760	
78														759	
79														758	
80															

Project Name and Job Number TXU Comanche Peak COL 1908		 WLA William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-1047</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'10.45134"N / 97°47'45.24071"W		Total Depth 150 feet	
Drilling Contractor and Rig Palmerton and Parrish / CME 55		Elevation and Datum 831.11 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 7.7 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 4	Date Started 4/3/07	
		Borehole Inclination Vertical	Logged by J.Cox	Date Completed 4/4/07	

Reviewed by / Date R. Ortiz 4/8/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0										831
0 - 1	OH							RESIDUAL SOIL (RS) SILT with organics, dark olive brown, damp, very soft, abundant roots		831
1 - 2		B-1047 1		2	11/18			LEAN CLAY with gravel and calcareous particles, light yellowish brown (2.5Y6/4), damp, very soft, 10% gravel, rounded to sub-rounded gravel		830
2 - 3	CL			1						829
3 - 4				2						828
4 - 5	CL		B-1047 2	4	18/18			light olive brown (2.5Y5/4), damp, medium stiff to very stiff, no gravel		827
5 - 6				18				SILT with sand and few calcareous deposits, olive yellow (2.5Y6/8), dry to damp, very stiff		826
6 - 7	ML		B-1047 3	8	11/11			light yellowish brown (2.5Y6/4), dry, hard		825
7 - 8				50/5"						824
8 - 9			B-1047 4	45/6"	6/7					823
9 - 10				50/1"						822
10 - 11										821
11 - 12										820
12 - 13										819
13 - 14										818
14 - 15									- auger refusal at 7.5' Top of Rock 7.7'	817

Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG Boring No. B-1047</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'10.45134"N / 97°47'45.24071"W		Total Depth 150 feet	
Drilling Contractor and Rig Palmerson & Parrish / CME 55		Elevation and Datum 831.11 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 7.7 feet	
Casing Size and Depth 4" / 7.7 feet		Length of Core Barrel and Bit 8.8 feet	No. of Core Boxes 10	Date Started 4/3/07	
		Borehole Inclination Vertical	Logged by J. Cox	Date Completed 4/4/07	

Reviewed by / Date R. Ortiz 4/8/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
8		3.08										MUDSTONE, highly weathered bedrock, dark yellowish orange (10 YR 6/6), very weak, highly weathered from 7.8'-8.3', mudstone is hard rock, no reaction to HCl, 9.5'-10.0' not recovered.	Began HQ coring 7.7 ft, 4/4/07, 7.7 Weathered bedrock	823
9		1.58				HW	R0							822
10		1.67	1	4.6 5.0	92									821
11		1.57				HW	R0					SHALE, medium dark gray (N4), very weak, highly weathered, thinly bedded, no reaction to HCl.	Glen Rose Formation	820
12		2.43				MW	R1		1047-5			SILTSTONE, medium gray (N5), moderately weathered, weak, few rip-up clasts and occasional fossils.		819
13		1.37												818
14		1.5				HW	R1-R2						Vertical joint 13.6'-15.3'	817
15		1.5	2	5.0 5.0	100				1047-6		Jt, Wo, Sl, Op			816
16		1.57				HW	R1					SILTSTONE, medium light gray (N6) to grayish orange (10 YR 7/4), color change splits core vertically, weak to very weak, highly weathered, strong reaction to HCl.		815
17		1.72												814
18		1.75												813
19		1.43							1047-7					812
20		2.6	3	5.0 5.0	98	MW	R1-R2					LIMESTONE; WACKESTONE, medium light gray (N6), weak, moderately weathered, occasional rip-up clasts, some fossils, slightly bioturbated, shale bed 21.4'-21.9'.		811
21		4.67												810
22		4.48												809

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1047</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
23		2.2												808
24		3.13				SW	R0					SHALE, medium gray (N5), very weak, slightly weathered, interbedded with ~0.1'-0.2' thick limestone beds, shale is thinly bedded with no reaction to HCl.		807
25		3.03	4	4.9 5.0	98						Jt, Wo, Sl, Op			806
26		2.62				SW	R2		1047-8			LIMESTONE; WACKESTONE, light gray (N7), weak, slightly weathered, slightly bioturbated, very few rip-up clasts, occasional fossils, strong reaction to HCl.		805
27		3.78									Jt, Wo, Sl, Op			804
28		2.72												803
29		1.95							1047-9			LIMESTONE; WACKESTONE, same as above, shale beds at 28.4' to 28.5', 29.8'-29.9', 30.7'-30.8', 31.1'-32.2', rip-up clasts more abundant.		802
30		3.08	5	5.0 5.0	100	SW	R2						Good water return	801
31		3.07												800
32		3.03												799
33		3.08										SHALE, medium dark gray (N4), very weak, slightly weathered, very thinly bedded, no reaction to HCl.		798
34		3.27							1047-10					797
35		3.75	6	4.8 5.0	94	SW	R0							796
36		4.98												795
37		5.18				SW	R2					LIMESTONE; WACKESTONE, light gray (N7), weak, slightly weathered, abundant rip-up clasts.		794
						SW	R0					SHALE, same as 32.9'-36.5', limestone		

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1047</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
38		4.82										interbeds 38.5'-38.6'. SHALE, same as 32.9'-36.5', limestone interbeds 38.5'-38.6'.		793
39		2.83				SW	R0							792
40		3.53	7	5.0 5.0	100				1047-11					791
41		1.6										LIMESTONE; SHALY WACKESTONE, light gray (N7), very weak, weathered, abundant rip-up clasts, abundant fossils, very soft, almost slate-like, can be gouged with knife.		790
42		1.9				SW	R1							789
43		2.18										SHALE, medium dark gray (N4), very weak, slightly weathered, very thinly bedded, no reaction to HCl.		788
44		2.15				SW	R0		1047-12 1047-13					787
45		2.22	8	5.0 5.0	100									786
46		2.08				SW	R2					LIMESTONE; WACKESTONE, light gray (N7), weak, slightly weathered, abundant rip-up clasts, abundant fossils, strong reaction to HCl.		785
47		2.58				SW	R0					SHALE, medium dark gray (N4), very weak, slightly weathered, very thinly bedded, no reaction to HCl.		784
48		2.27												783
49		2.03							1047-14			LIMESTONE; WACKESTONE, light gray (N7), weak, slightly weathered, abundant rip-up clasts from 48.7'-50.4' and 51.9'-52.7', shale bed at 50.6' to 50.9', limestone has strong reaction to HCl.		782
50		2.05	9	5.0 5.0	100	SW	R1-R2							781
51		2.25												780
52		2.22												779

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-1047</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
53		1.45										LIMESTONE; WACKESTONE, light gray (N7), weak, slightly weathered, abundant rip-up clasts from 48.7'-50.4' and 51.9'-52.7', shale bed at 50.6' to 50.9', limestone has strong reaction to HCl.		778
54		1.23												777
55		1.42	10	5.1 5.0	100	SW	R2						Good water return, gray	776
56		1.38								1047-15			Length of recovery stretched due to mechanical breaks.	775
57		1.57												774
58		1.03												773
59		1.17												772
60		1.12	11	5.0 5.0	100	SW	R2						LIMESTONE; WACKESTONE, same as above, shale bed at 60.1' causing bedding break, shale bed 67.0'-67.3'	771
61		1.18								1047-16				770
62		1.1												769
63		1.17											768	
64		1.25											767	
65		1.22	12	5.2 5.0	100	SW	R2			1047-17			766	
66		1.38											765	
67		1.42										Pin broke in water swivel, rig down for one hour, then	764	



Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-1047</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
68		1.12							1047-18			LIMESTONE; WACKESTONE, same as above, shale bed at 60.1' causing bedding break, shale bed 67.0'-67.3'	began coring with borrowed swivel.	763
69		7.33												762
70		2.08	13	5.2 5.0	100	SW	R2							761
71		1.83											Length of recovery stretched due to mechanical breaks.	760
72		1.8												759
73		1.42	14	1.5 1.5	100									758
74		0.48												757
75		1.42											Bottom of boring 75 ft.	756
76		???				SW	R2		1047-19				Length of recovery stretched due to mechanical breaks.	755
77		1.52	15	5.1 5.0	100									754
78		1.52												753
79		1.42												752
80		1.82												751
81		1.9	16	5.0 5.0	100	SW	R2							750
82		1.98							1047-20					749
		1.8												

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1047</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)				
83		1.8	16	5.0 5.0	100	SW	R2					LIMESTONE; WACKESTONE, light gray (N7), weak, slightly weathered, massive, dry, slightly bioturbated, rip-up clasts 81.9'-82.2', fine to medium size grains, 82.2'-82.9' has more coarse grained wackestone.		748				
84		1.87																747
85		1.9	17	5.0 5.0	100	SW	R2					LIMESTONE; PACKESTONE, medium light gray (N6), weak, slightly weathered, massive, abundant fossils, strong reaction to HCl, bioturbated.		746				
86		1.82															745	
87		2.17									F	R2						744
88		1.4																743
89		1.43	18	5.0 5.0	98	SW	R2					LIMESTONE; MICRITE, medium light gray (N6), weak, fresh, massive, very fine grained, no fossils, strong reaction to HCl.		742				
90		1.33															741	
91		1.35																740
92		1.43																739
93		1.32																738
94		1.45	19	5.0 5.0	100	SW	R2					LIMESTONE; PACKESTONE, light gray (N7) to medium light gray (N5), weak, slightly weathered, massive, dry, shale bed 90.1'-92.0', much coarser grain from 92.5'-94.2', abundant fossils, strong reaction to HCl.		737				
95		1.6															736	
96		2.48																735
97		2.35	19	5.0 5.0	100	SW	R2					LIMESTONE; WACKESTONE, light gray (N7), weak, slightly weathered, massive, dry, rip-up clasts form 96.5'-96.8', abundant fossils, violent reaction to HCl.		734				
		2.32															Good water return.	734

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 1908



**ROCK LOG**  
**Boring No. B-1047**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
98		2.32	19	5.0 5.0	100	SW	R2					LIMESTONE; WACKESTONE, light gray (N7), weak, slightly weathered, massive, dry, rip-up clasts form 96.5'-96.8', abundant fossils, violent reaction to HCl.		733
99		2.43												732
100		1.9	20	5.0 5.0	100	SW	R2					LIMESTONE; MICRITE, light gray (N7), weak, slightly weathered, massive, very fine rained, dry, occasional fossils, no rip-up clasts, moderate reaction to HCl.		731
101		1.82												730
102		1.78												729
103		1.83												728
104		1.82	21	5.0 5.0	100	SW	R2					LIMESTONE; WACKESTONE, light gray (N7), weak, slightly weathered, massive, dry, fine to medium grains, abundant rip-up clasts, abundant fossils, strong reaction to HCl.		727
105		1.83												726
106		1.68												725
107		1.7	22	4.8 5.0	95	SW	R2							724
108		1.78												723
109		1.67												722
110		1.83	22	4.8 5.0	95	SW	R2							721
111		2.75												720
112		3.03												719
		3.12												

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1047</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
113		3.12	22	4.8 5.0	95	SW	R2					LIMESTONE; WACKESTONE, light gray (N7), weak, slightly weathered, massive, dry, fine to medium grains, abundant rip-up clasts, abundant fossils, strong reaction to HCl.		718
114		2.97										SHALE, medium dark gray (N4), very weak, slightly weathered, thinly bedded, no reaction to HCl.	717	
115		2.98	23	5.0 5.0	100	SW	R0					LIMESTONE; WACKESTONE, light gray (N7), weak, slightly weathered, massive, dry, fine to medium grains, abundant rip-up clasts, abundant fossils, strong reaction to HCl.		716
116		2.33				SW	R2					715		
117		2.15				SW	R1					714		
118		2.42	24	5.1 5.0	100	SW	R1-R2					LIMESTONE; WACKESTONE, medium light gray (N6), weak, moderately weathered, very silty wackestone, strong reaction to HCl, slightly bioturbated.		713
119		2.32										LIMESTONE; WACKESTONE, medium light gray (N6), weak, slightly weathered, massive, abundant rip-up clasts, abundant fossils, strong reaction to HCl, becomes shaly 134.8'-135.3', fewer rip-up clasts below 144'.	712	
120		2.17	25	5.2 5.0	100	SW	R2							711
121		2.2												710
122		2.12												709
123		2.23	25	5.2 5.0	100	SW	R2						Length of recovery stretched due to mechanical breaks.	708
124		2.1												707
125		1.82												706
126		1.6	25	5.2 5.0	100	SW	R2							705
127		1.65												704
		1.63											Length of recovery stretched due to	

Jt, Wa, Sl, Ti

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
128		1.63	25	5.2 5.0	100	SW	R2					LIMESTONE; WACKESTONE, medium light gray (N6), weak, slightly weathered, massive, abundant rip-up clasts, abundant fossils, strong reaction to HCl, becomes shaly 134.8'-135.3', fewer rip-up clasts below 144'.	mechanical breaks.	703
129		1.68												702
130		2.33												701
131		2.32	26	5.1 5.0	100	SW	R2						Length of recovery stretched due to mechanical breaks.	700
132		2.1												699
133		2.18												698
134		2.15	27	5.1 5.0	100	SW	R2						Length of recovery stretched due to mechanical breaks.	697
135		2.43												696
136		2.33												695
137		2.4	28	5.1 5.0	100	SW	R2						Length of recovery stretched due to	694
138		2.52												693
139		2.6												692
140		2.08	28	5.1 5.0	100	SW	R2						Length of recovery stretched due to	691
141		1.8												690
142		1.93												689
		1.88												

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**ROCK LOG**  
**Boring No. B-1047**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
143		1.88	28	5.1 5.0	100	SW	R2					LIMESTONE; WACKESTONE, medium light gray (N6), weak, slightly weathered, massive, abundant rip-up clasts, abundant fossils, strong reaction to HCl, becomes shaly 134.8'-135.3', fewer rip-up clasts below 144'.	mechanical breaks.	688
144		2												687
145		1.6												686
146		1.62							1047-33					685
147		1.67	29	5.0 5.0	100	SW	R2							684
148		1.5												683
149		1.48												682
150		1.02	30	5.0 0.8	100	SW	R2							681
151														680
152														679
153														678
154														677
155														676
156														675
157														674

Project Name and Job Number TXU Comanche Peak COI 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-1048</b>	
Type and Diameter of Boring HSA / 7"			Boring Location 32°18'10.67112"N / 97°47'43.85016"W		Total Depth 101.5 feet
Drilling Contractor and Rig Geotechnology / CME 55			Elevation and Datum 835.782 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 5 feet
Sampling Method SPT			Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 2	Date Started 4/5/07
			Borehole Inclination Vertical	Logged by G. Van Etten	Date Completed 4/6/07

Reviewed by / Date \_\_\_\_\_ R. Ortiz 4/8/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0										835
1	CL		B-1048 1	2	4 18			RESIDUAL SOIL (RS) LEAN CLAY with organics and roots, very dark grayish brown (2.5Y3/2), damp, medium stiff		834
2				4						833
3				3						833
4	CL		B-1048 2	2	8 18			LEAN CLAY with few organics and calcareous deposits, olive yellow (2.5Y6/6) to olive (5Y5/3), damp, hard		832
5				50/1"				Completely weathered Limestone		831
6										830
7										829
8										828
9										827
10										826
11										825
12										824
13										823
14										822
15										821

Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG Boring No. B-1048</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'10.67112"N / 97°47'43.85016"W		Total Depth 101.5 feet	
Drilling Contractor and Rig Geotechnology / CME 55		Elevation and Datum 835.782 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 5 feet	
Casing Size and Depth 4" / 5 feet		Length of Core Barrel and Bit 8.55 feet	No. of Core Boxes 7	Date Started 4/5/07	
		Borehole Inclination Vertical	Logged by G. Van Etten	Date Completed 4/6/07	

Reviewed by / Date R. Ortiz 4/8/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
5		4.5	1	1.5 1.5	100	SW	R1				Jt, Pl, Sm, Op	LIMESTONE; WACKESTONE, yellowish gray (5 Y 8/1), slightly weathered, very weak, numerous very small shell fragments, few stylolites.	Top of bedrock 5.0'. Began HQ coring 4/4/07, Glen Rose Formation	830
6														829
7		1.47												828
8		1.2				SW	R1		1048-3		Jt, Wa, Ro, Op			827
9		1.72	2	5.0 5.0	100									826
10		3.78										LIMESTONE; WACKESTONE, medium gray (N5), fresh, very weak, very shaly matrix, several rip-up clasts, moderate reaction to HCl.	Sharp weathered contact at 45° angle.	825
11		4.2												824
12		4.28				F	R0							823
13		5.83												822
14		2.45	3	5.2 5.0	100							SHALE, medium gray (N5), fresh, extremely weak, muddy surface, very mild reaction to HCl.	Length of recovery stretched due to mechanical breaks.	821
15		3.03				F	R1		1048-4					820
16		7.85												819
17		2.98				F	R1					LIMESTONE; PACKESTONE, medium light gray (N6), fresh, very weak, many rip-up clasts and very thin shale interbeds swirled around few shell fossils, strong reaction to HCl.		818
18		6.5	4	4.9 5.0	100									817
19		1.43				SW	R1				Jt, Pl, Sl, Op	LIMESTONE; WACKESTONE, yellowish gray (5 Y 8/1), slightly weathered, very weak, several vugs and bioturbations, very oxidized, strong reaction to HCl.		816
20		2.32							1048-5					



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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)								
20		2.32	4	4.9 5.0	100							LIMESTONE; WACKESTONE, yellowish gray (5 Y 8/1), slightly weathered, very weak, several vugs and bioturbations, very oxidized, strong reaction to HCl.	Color change contact at ~45°	815								
21		3.97																				814
22		1.82	5	5.0 5.0	100	F	R1					LIMESTONE; PACKESTONE, light gray (N7), fresh, very weak, many rip-up clasts, shale swirls and few bioturbations, violent reaction to HCl.		813								
23		1.75																				812
24		1.9																				811
25		1.4	6	5.2 5.0	100	F	R0					SHALE, medium gray (N5), fresh, extremely weak, thin limestone lenses intermixed, muddy surface.		810								
26		4.58																				809
27		6																				808
28		1.85																				807
29		6.3	6	5.2 5.0	100	F	R0					SHALE, medium gray (N5), fresh, extremely weak, limestone 0.02'-.01' thick, mild reaction to HCl.		806								
30		6.47																			Length of recovery stretched due to mechanical breaks. Good water return, light gray.	805
31		2.72	7	5.0 5.0	100	F	R1					LIMESTONE; PACKESTONE, medium light gray (N6), fresh, very weak, very thin swirled shale interbeds, several shell fossils and oolites.		804								
32		2.13																				803
33		4.35																				802
34		5	7	5.0 5.0	100	F	R1							801								
35		6.02																				

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)				
35		6.02	7	5.0	100	F	R1					LIMESTONE; PACKSTONE, medium light gray (N6), fresh, very weak, very thin swirled shale interbeds, several shell fossils and oolites.	350 psi downpressure.	800				
36		9.72		5.0													799	
37		4.33	8	5.0	100	F	R0							798				
38		2.47														SHALE, medium dark gray (N4), fresh, extremely weak, massive and fissile, no reaction to HCl.	Sharp wavy contact.	797
39		3.9												1048-9				796
40		6.4																795
41		5.2	9	5.0	98	F	R1							794				
42		3.55														LIMESTONE; WACKSTONE, light gray (N7), fresh, very weak, stylolites.		793
43		5.25														SHALE, medium gray (N5), fresh, extremely weak, several 0.1' thick limestone interbeds, linear deposition, mild reaction to HCl.		792
44		4.23											791					
45		5.87	10	5.0	100	F	R0							790				
46		7.32														LIMESTONE; WACKSTONE, light gray (N7), fresh, very weak, several distinct very thin shale swirls, crushed, strong reaction to HCl.	Good water return, dark gray.	789
47		4.47																788
48		5.42											787					
49		3.83											786					
50		5.33																

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**ROCK LOG**  
**Boring No. B-1048**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)	
50		5.33	10	5.0 5.0	100	F	R0-R1							785	
51		5.53				F	R1						LIMESTONE; PACKESTONE, medium light gray (N6), fresh, very weak, many rip-up clasts and very thin wavy shale swirls.		784
52		5.53				F	R0				1048-14		SHALE, medium dark gray (N4), fresh, extremely weak, massive, very mild reaction to HCl.		783
53		3.78	11	5.0 5.0	100									782	
54		5.2				F	R1						LIMESTONE; PACKESTONE, light gray (N7), fresh, very weak, many swirled shale interbeds, fossilized shells and shell casts, several bioturbations and organic concretions, violent reaction to HCl, shale interbed 55.7'-56.1'.	Length of recovery stretched due to mechanical breaks.	781
55		9.03													780
56		4.9	12	5.0 5.0	100									779	
57		5.75												Stopped drilling 4/4/07, began 4/5/07.	778
58		2.08													777
59		2.15	13	5.0 5.0	100	F	R1							776	
60		2.23													775
61		5.1									1048-15			LIMESTONE; PACKESTONE, light gray (N7), fresh, very weak, many rip-up clasts and very thin shale swirls, strong reaction to HCl. Below 63', fewer rip-up clasts, smaller, more bioturbation, grading toward wackestone, increased rip-up clasts and very thin wavy shale swirls below 68.5', 0.1' thick shale layers 71.7' and 71.9'.	Good water return, light gray.
62		3.78	13	5.0 5.0	100									773	
63		2.8				F	R1								772
64		4.83													771
65		3.97							1048-16						

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)						
65		3.97	13	5.0 5.0	100	F	R1					LIMESTONE; PACKESTONE, light gray (N7), fresh, very weak, many rip-up clasts and very thin shale swirls, strong reaction to HCl. Below 63', fewer rip-up clasts, smaller, more bioturbation, grading toward wackestone, increased rip-up clasts and very thin wavy shale swirls below 68.5', 0.1' thick shale layers 71.7' and 71.9'.		770						
66		5.78																769		
67		3.68	14	5.0 5.0	100	F	R1					LIMESTONE; WACKESTONE, very light gray (N8), fresh, weak, few fossils and bioturbations. LIMESTONE; PACKESTONE, medium light gray (N6), fresh, very weak, many rip-up clasts, very thin shale swirls and few small organic clasts, strong reaction to HCl.	Gradational contact.	768						
68		7.92																	767	
69		4.78																		766
70		7.78	15	5.0 5.0	100	F	R1					LIMESTONE; PACKESTONE, medium light gray (N6), fresh, very weak, many rip-up clasts and very thin shale swirls intermixed, strong reaction to HCl.	Good water return, light gray.	765						
71		7.08																	764	
72		3.27																		763
73		2.5																		762
74		1.83	16	5.1 5.0	100	F	R1					LIMESTONE; PACKESTONE, as above except light gray (N7), includes several large bioturbations near change, more grainy texture and matrix. 83.7'-84.3' is very light gray (N8), 84.3'-85.7' medium light gray (N6), speckled appearance below 85.7' due to shale swirls and bioturbations, shale and sand abundant in matrix below 87', 0.3' wide pyrite clast at 89.1'.	Length of recovery stretched due to	761						
75		5.63																		760
76		10.87												759						
77		6.22	16	5.1 5.0	100	F	R1					LIMESTONE; PACKESTONE, as above except light gray (N7), includes several large bioturbations near change, more grainy texture and matrix. 83.7'-84.3' is very light gray (N8), 84.3'-85.7' medium light gray (N6), speckled appearance below 85.7' due to shale swirls and bioturbations, shale and sand abundant in matrix below 87', 0.3' wide pyrite clast at 89.1'.	Length of recovery stretched due to	758						
78		2.5																		757
79		3.05																		756
80		2.3																		

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)						
80		2.3	16	5.1 5.0	100	F	R1					LIMESTONE; PACKESTONE, as above except light gray (N7), includes several large bioturbations near change, more grainy texture and matrix. 83.7'-84.3' is very light gray (N8), 84.3'-85.7' medium light gray (N6), speckled appearance below 85.7' due to shale swirls and bioturbations, shale and sand abundant in matrix below 87', 0.3' wide pyrite clast at 89.1'.	mechanical breaks.	755						
81		3.33																	754	
82		3.57																		753
83		4.75														1048-20			350 psi downpressure.	752
84		1.75	17	5.0 5.0	100	F	R1					LIMESTONE; PACKESTONE, medium light gray (N6), fresh, very weak, many very thin swirled shale interbeds, small rip-up clasts, several bioturbations and fossil casts, violent reaction to HCl, silty from 91.0' to 92.5'.	Good water return, light gray.	751						
85		6.07																	750	
86		3.42												749						
87		2.53	18	5.0 5.0	100	F	R1					LIMESTONE; WACKESTONE, light gray (N7), fresh, very weak, sandy matrix, granular, shale interbeds <0.01' thick, common bioturbation and organic lens at 94.8', moderate reaction to HCl.		748						
88		3.42														1048-21				747
89		2.12																		746
90		2.25												745						
91		4.37	19	5.0 5.0	100	F	R2							744						
92		4.75																743		
93		2.37																742		
94		2.12												741						
95		2.6							1048-22											

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
95		2.6	19	5.0 5.0	100	F	R2					LIMESTONE; WACKESTONE, light gray (N7), fresh, very weak, sandy matrix, granular, shale interbeds <0.01' thick, common bioturbation and organic lens at 94.8', moderate reaction to HCl.		740
96		2.4												739
97		3.38	20	5.1 5.0	100	F	R1					LIMESTONE; PACKESTONE, medium gray (N5) to light gray (N7), fresh, very weak, granular matrix to 100.2', many rip-up clasts, thin shale interbeds and several bioturbations, silty matrix 100.2'-100.9'.	Length of recovery stretched due to mechanical breaks.	738
98		3.03												737
99		4.5												736
100		6.03												735
101		5.08												734
102													101.5 Total depth drilled.	733
103														732
104														731
105														730
106														729
107														728
108														727
109														726
110														

Project Name and Job Number TXU Comanche Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-1049</b>	
Type and Diameter of Boring HSA / 7"			Boring Location 32°18'10.88198"N / 97°47'41.69399"W		Total Depth 100 feet
Drilling Contractor and Rig Richard Simmons Drilling / BK-81 HD			Elevation and Datum 840.414 feet NAVD88	Ground Water Depth 18.5	Depth to Bedrock 22 feet
Sampling Method SPT			Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 9	Date Started 4/6/07
			Borehole Inclination Vertical	Logged by S.Deer	Date Completed 4/8/07

Reviewed by / Date \_\_\_\_\_ R. Ortiz 4/9/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0										840
1	CL		B-1049 1	5				ARTIFICIAL FILL (Qaf) LEAN CLAY with sand, yellowish brown (10YR5/4) mottled with dark yellowish brown (10YR3/4), damp, very stiff, with calcareous deposits, 10% gravel (angular limestone <0.2"),		839
2				7	14/18	4.5				838
3				15						837
4	CL		B-1049 2	15				SANDY LEAN CLAY, yellow (2.5Y7/6), dry, stiff, 15% gravel (angular limestone <0.5"),		836
5				8	18/18					835
6	CL		B-1049 3	11				LEAN CLAY with sand, yellowish brown (10YR5/6), damp, stiff, 10% gravel (angular limestone <0.25"), reacts strongly to HCL		834
7				6						833
8				8	8/18	4.5				832
9	CL		B-1049 4	10						831
10				3	17/18	2.5				830
11				4						829
12				5						828
13				3						827
14	CL		B-1049 5	3	13/18	3		- few angular limestone fragments		826
15				3						825
16				3						824
17				6	10/10			LEAN CLAY, black (2.5Y2.5/1), damp, medium stiff, 5% gravel, abundant organics		823
18				50/4"				rock, limestone ledge		822

Project Name and Job Number TXU Comanche Peak COI 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">SOIL LOG</h2> <h2 style="margin: 0;">Boring No. B-1049</h2>
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Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
15							rock, limestone ledge (Continued from previous page)		825
16							LEAN CLAY with gravel, light olive yellow (2.5Y5/4), damp, soft, 15% gravel (angular limestone <0.25"), reacts strongly to HCL		824
17	CL	B-1049 7	1 2 3	6 18	3.5				823
18									822
19	CL	B-1049 8	8 12 7	16 18			LEAN CLAY, greenish gray (GLEY26/1), damp, very stiff, slight reaction to HCL - sample 8 came out very wet, perched groundwater starting at about 18.5'		821
20	CL						LEAN CLAY with gravel, light bluish gray (GLEY28/1), wet, medium stiff, 45% clay, 30% silt, 15% gravel (angular to sub-rounded limestone <0.25"), reacts strongly to HCL		820
21	CL	B-1049 9	2	9 18	2.5		LEAN CLAY with gravel, yellowish brown (10YR5/4), wet, soft, 40% clay, 30% silt, 20% gravel (sub-angular limestone to 0.75"), 10% sand		819
22				50/2"					818
23									817
24									816
25									815
26									814
27									813
28									812
29									811
30									



Undisturbed sample  
SH = Shelby; P = Pitcher; O = other




Driven (2.5 to 3.0 inch) with liners  
MC = Modified California; O = other



Standard Penetration Test (SPT) sampler



ROCK LOG TXU\_BORINGS.GPJ WLA9-8-06.GDT 7/11/08

Project Name and Job Number TXU Comanche Peak Col 1908				<b>ROCK LOG</b> <b>Boring No. B-1049</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'10.88198"N / 97°47'41.69399"W		Total Depth 100 feet	
Drilling Contractor and Rig Richard Simmons / BK 81		Elevation and Datum 840.414 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 22 feet	
Casing Size and Depth 4" / 22 feet		Length of Core Barrel and Bit 8 feet	No. of Core Boxes 8	Date Started 4/6/07	
		Borehole Inclination Vertical	Logged by S. Dee	Date Completed 4/8/07	

Reviewed by / Date R. Ortiz 4/9/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
22		1.17										LIMESTONE: wackestone; very light gray (N8); massive with interbeds (<0.1') of shale/silt; moderately weathered; weak (R2); reacts strongly to HCl; clasts of fine to medium grained bluish gray subangular fossils; silty from 23.8'-24.6'. [Glen Rose Formation]	Auger refusal at 22'.	818
23		1.47	10	3.2 3.0	100	MW	R2		1049-10				Began coring HQ, 4/6/07, Glen Rose Formation.	817
24		1.6												816
25		1.35										SILTSTONE; medium light gray (N6); massive; moderately weathered; very weak (R1). [Glen Rose Formation]		815
26		1.38				MW	R2		1049-11			LIMESTONE: packstone; yellowish gray (5 Y 7/2) to 27'; medium light gray (N6) below 27'; moderately weathered above 27'; slightly weathered below 27'; weak (R2); reacts strongly to HCl; clasts of gray silt and fine to coarse grained white and bluish gray fossils; very thinly bedded with abundant (<0.1') shale/silt interbeds; shale interbed 29.8'-30.2'. [Glen Rose Formation]		814
27		1.02	11	5.0 5.0	100									813
28		2.73				SW	R2							812
29		0.8										[Glen Rose Formation]		811
30		1.83										LIMESTONE: wackestone; light gray (N7); very thinly bedded with abundant (<0.1") slate/silt interbed; slightly weathered (SW); weak (R2); clasts of bluish gray subrounded fossils; bioturbated. [Glen Rose Formation]		810
31		2.93				SW	R2							809
32		2.42	12	5.0 5.0	100	SW	R0		1049-12			SHALE: medium dark gray (N4); slightly weathered (SW); extremely weak (R0); very thinly bedded; limestone interbed from 31.9' to 32.0' and 32.7' to 32.9'. [Glen Rose Formation]		808
33		3.02												807
34		2.85				SW	R2					LIMESTONE: wackestone; very light gray (N8); massive with rare (0.1") interbeds of shale/silt; slightly weathered (SW); weak (R2); Clasts are fine to medium grained subrounded bluish gray and white fossils; bioturbation throughout; concentration of abundant (<0.1") shale/silt interbeds [Glen Rose Formation]		806
35		2.25												805
36		1.83	13	5.0 5.0	100	SW	R2							804
37														

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-1049</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
37		1.18												803
38		1.42	13	5.0 5.0	100	SW	R2		1049-13					802
39		1.55												801
40		1.53				SW	R2							800
41		1.83												799
42		1.93	14	4.6 5.0	92	F	R0		1049-14			SHALE: dark gray (N3); very thinly bedded; fresh (F); extremely weak (R0); no reaction to HCl. [Glen Rose Formation]	798	
43		2.08							1049-15					797
44		4.08							1049-16					796
45		3.35										LIMESTONE: wackestone; very light gray (N8); massive; fresh (F); bioturbated. [Glen Rose Formation]	795	
46		3.85										SHALE: medium dark gray (N4); very thinly bedded; fresh (F); extremely weak (R0); slightly reacts to HCl [Glen Rose Formation]	794	
47		2.5	15	5.0 5.0	100	F	R0							793
48		2.63												792
49		3.08							1049-17					791
50		2.43				SW	R2					LIMESTONE: wackestone; very light gray (N8); massive; fresh (F); very weak (R1); with bioturbation; shale interbed 51.2'-51.3'. [Glen Rose Formation]	790	
51		1.9	16	5.1 5.0	100	F	R0							789
52														

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-1049**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)					
52		2.43	16	57.1 5.0	100	F	R0					SHALE: dark gray (N3); very thinly bedded; fresh (F); extremely weak (R0); slight reaction to HCl. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	788					
53		2.38										2.8		SW	R2	1049-18	LIMESTONE: wackestone; light gray (N7); massive; with weathered (0.1') interbeds of shale/silt; Slightly weathered; weak (R2). [Glen Rose Formation]	786	
54		2.37															SHALE: dark gray (N3); very thinly bedded; fresh (F); extremely weak (R0); slight reaction to HCl. [Glen Rose Formation]	785	
55		2.08	17	57.0 5.0	100	F	R0					LIMESTONE: wackestone; light gray (N7); massive; with occasional (0.1') interbeds of shale/silt; slightly weathered (SW); weak (R2); bioturbated; clasts; with light bluish gray fine to medium grained fossils; ??? [Glen Rose Formation]		784					
56		2.75										3.78		SW	R2	1049-19	SHALE: dark gray (N3); very thinly bedded; fresh (F); extremely weak (R0). [Glen Rose Formation]	783	
57		1.55															LIMESTONE: wackestone; light gray (N7); bedded with abundant beds of shale/silt; slightly weathered (SW); weak (R2); clasts with fine to medium grained light bluish gray and white subrounded fossils; reacts strongly to HCl; highly bioturbated; with abundant rip-up clasts; high concentration of shale/silt interbeds from 71.8'-74.0'. [Glen Rose Formation]	782	
58		1.05	18	57.0 5.0	100	SW	R2							781					
59		1.55																	780
60		1.33																	779
61		1.72	19	57.0 5.0	100	SW	R2							778					
62		1.75																	777
63		2.37																	776
64		1.58												775					
65														774					
66																			
67																			

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1049</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
67		2.03										LIMESTONE: wackestone; light gray (N7); bedded with abundant beds of shale/silt; slightly weathered (SW); weak (R2); clasts with fine to medium grained light bluish gray and white subrounded fossils; reacts strongly to HCl; highly bioturbated; with abundant rip-up clasts; high concentration of shale/silt interbeds from 71.8'-74.0'. [Glen Rose Formation]		773
68		2.83	19	5.0	100	SW	R2		1049-20					772
69		3.17												771
70		1.72											Stopped for day, 4/6/07 due to weather, resumed 4/7/07.	770
71		2.05												769
72		2.23	20	5.0	100	SW	R2		1049-22			LIMESTONE: packstone; light gray (N7); bedded with abundant (<0.1') interbeds of shale/silt; slightly weathered (SW); weak (R2); reacts strongly to HCl; clasts are fine to medium grained; light bluish gray and white subrounded to subangular fossils. [Glen Rose Formation]	768	
73		2.17												767
74		2.18												766
75		1.5												765
76		1.55												764
77		1.77	21	5.0	100	SW	R2		1049-23			LIMESTONE: wackestone; all characteristics the same as above but matrix is grain supported; bioturbated; below 81.2'; clasts are medium to coarse grained; primarily bluish gray; subrounded to rounded (oolitic?); high silt Content form 85.5'-86.2' and 88.0'-89.3'; below 89.3'; very heavily bioturbated and clast sized decrease of fine to medium grained [Glen Rose Formation]	763	
78		2.45												762
79		2.52											Gradational contact.	761
80		1.68												760
81		1.65	22	5.0	100	SW	R2		1049-24					759
82														

Project Name and Job Number  
TXU Comanche Peak Col  
1908




**ROCK LOG**  
**Boring No. B-1049**

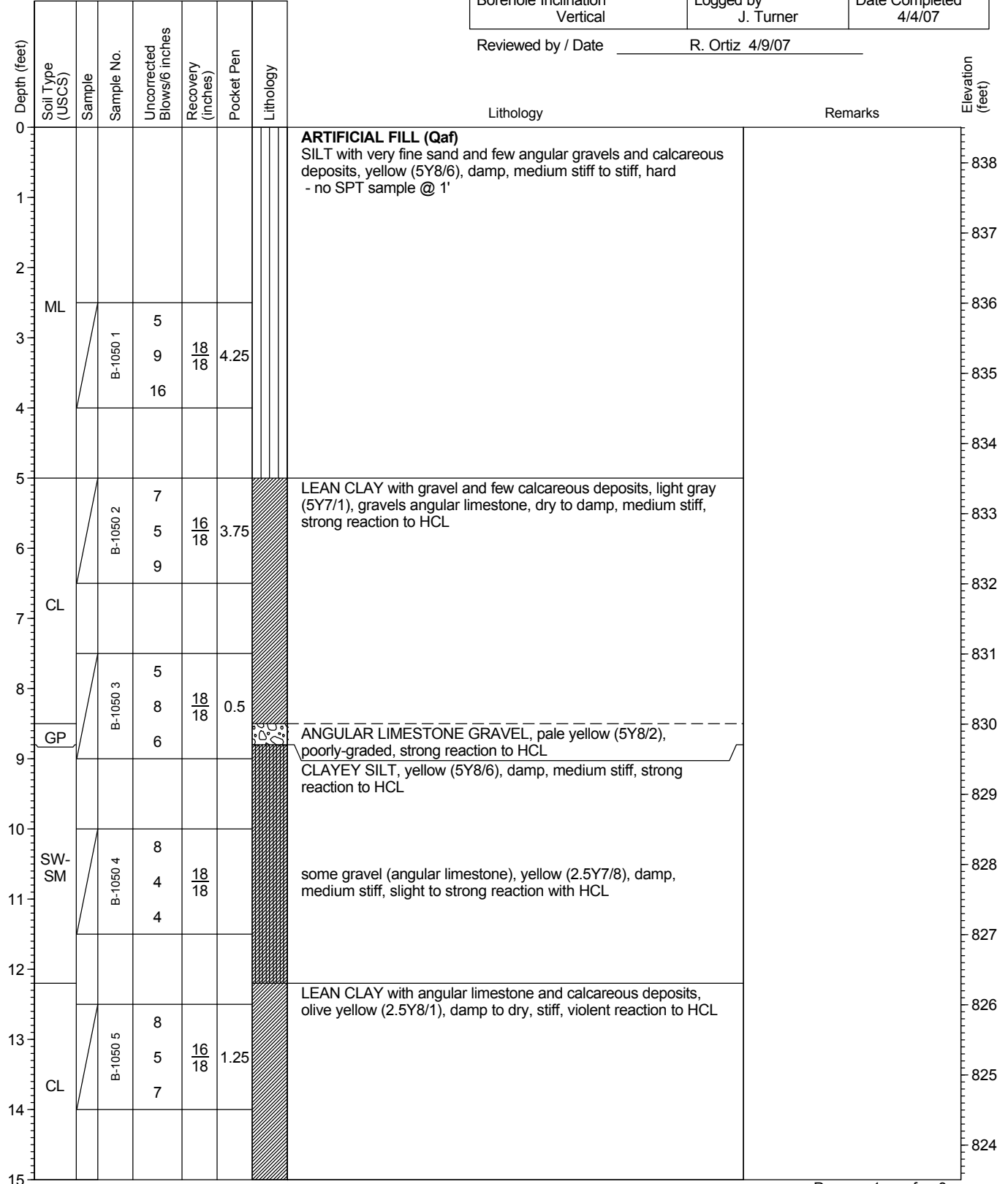
Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
82		1.63												758
83		1.43	22	5.0	100	SW	R2							757
84		1.33												756
85		1.6												755
86		1.7												754
87		1.93	23	5.1	100	SW	R2							753
88		1.98											Length of recovery stretched due to mechanical breaks.	752
89		1.97								1049-25				751
90		1.83												750
91		2.17												749
92			24	5.0	100	SW	R2			1049-26				748
93		1.82												747
94		1.83												746
95		1.82												745
96		1.88	25	5.1	100	SW	R2							744
97														

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-1049</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
97		1.77												743
98			25	5.1 5.0	100	SW	R2		1049-27				Length of recovery stretched due to mechanical breaks.	742
99														741
100												BOTTOM OF HOLE AT 100'	Total depth drilled: 100 ft	740
101														739
102														738
103														737
104														736
105														735
106														734
107														733
108														732
109														731
110														730
111														729
112														

Project Name and Job Number TXU Comanche Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG Boring No. B-1050</b>	
Type and Diameter of Boring HSA / 7"			Boring Location 32°18'11.06395"N / 97°47'40.26851"W		Total Depth 150 feet
Drilling Contractor and Rig Fugro / CME 45			Elevation and Datum 838.504 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 37.5 feet
Sampling Method SPT			Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 14	Date Started 4/2/07
			Borehole Inclination Vertical	Logged by J. Turner	Date Completed 4/4/07

Reviewed by / Date R. Ortiz 4/9/07



Project Name and Job Number TXU Comanche Peak COL 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">SOIL LOG</h2> <h2 style="margin: 0;">Boring No. B-1050</h2>
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Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
15	CL-ML	/	B-1050 6	3	18/18	0.75	CLAYEY SILT with gravel, mottled yellow (10YR7/8) to pale yellow (5Y8/3) and dark gray (5Y4/1), rounded to angular granules to pebbles, damp, strong reaction to HCL (FILL)		823
16				9					822
17				10					821
18	CL/ML	/	B-1050 7	3	12/18	2	LEAN CLAY with some limestone gravel, olive yellow (2.5Y6/6), gravel is white (2.5Y8/1), angular to sub-angular gravel, damp to dry, stiff, very slight reaction to HCL		820
19				3					819
20				4					818
21	CL/ML	/	B-1050 8	2	14/18	4			817
22				3					816
23				6					815
24	CL/ML	/	B-1050 9	4	16/18	4.5			814
25				3					813
26				4					812
27	CL/ML	/	B-1050 10	4	9/10	7/3"	- looks like residium, but more fill material is below this clay		811
28				4					810
29				7/3"					809
30	CL/ML	/	B-1050 11	9	18/18	2	CLAYEY SILT with some gravel, olive yellow (2.5Y6/6), poorly sorted gravel rounded to angular, damp, stiff to very stiff, slight to strong reaction to HCL		809
29				23					808
28	CL/ML	/	B-1050 11	14	18/18		weathered limestone ledge, silt, white (2.5Y8/1)		807
29				14					806

Undisturbed sample SH = Shelby; P = Pitcher; O = other	Driven (2.5 to 3.0 inch) with liners MC = Modified California; O = other	Standard Penetration Test (SPT) sampler
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Project Name and Job Number TXU Comanche Peak COL 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">SOIL LOG</h2> <h2 style="margin: 0;">Boring No. B-1050</h2>
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Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
30	CL	B-1050 12	8	7/6"	12/12	1.5		LEAN CLAY with some angular limestone fragments, olive yellow (5Y6/6), gravel light gray (5Y7/1), gravel 0.2" to 0.1", damp, medium stiff, slight reaction to HCL (FILL) - only 12" of SPT sampled and hammer bottomed out due to lack of short rods		808
31			7							807
32			11							806
33	CL	B-1050 13	7	18/18	1.5		Less gravel, gray (2.5Y6/1), very stiff, damp, mottled with white and light gray (2.5Y8/1) and (2.5Y7/1) very dark grayish brown (2.5Y3/2), damp, high organic content, moderate reaction to HCL		805	
34			10						804	
35			ML							
36	CL	B-1050 14	5	12/12	3.25		<b>RESIDUAL SOIL (RS)</b> LEAN CLAY, black (5Y2.5/1), organic rich, roots, damp, medium stiff, slight to moderate reaction to HCL, weathered limestone gravel at bottom, few roots		802	
37			5						801	
38										- auger returning moist to wet black organic rich clay, caked on auger
39										799
40										798
41										797
42										796
43										795
44										794
45										794




Undisturbed sample  
SH = Shelby; P = Pitcher; O = other



Driven (2.5 to 3.0 inch) with liners  
MC = Modified California; O = other



Standard Penetration Test (SPT) sampler

Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG Boring No. B-1050</b>	
Type and Diameter of Boring HQ / 4"	Boring Location 32°18'11.06395"N / 97°47'40.26851"W	Total Depth 150 feet			
Drilling Contractor and Rig Fugro Austin / CME 45	Elevation and Datum 838.504 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 37.5 feet		
Casing Size and Depth 4" / 37.5 feet	Length of Core Barrel and Bit 8.6 feet	No. of Core Boxes 8	Date Started 4/2/07		
		Borehole Inclination Vertical	Logged by J. Turner	Date Completed 4/4/07	

Reviewed by / Date R. Ortiz 4/9/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)	
38		1.07	15	1.1 2.5	44	HW-CW	R2		1050-15			LIMESTONE: wackestone; very light gray (N8); weak (R2); highly weathered to completely weathered (HW to CW); fossiliferous; calcite cement; strong reaction to HCl. [Glen Rose Formation]	Auger returning moist to wet, black clay/mud caked on solid flight auger. Recirculating good water return, yellowish gray.  300 psi downpressure, 1500 rpm.	801	
39		1.85												SHALE: mudstone; yellowish gray (5Y 8/1); extremely weak (R0); highly weathered (HW); mechanically broken; most of sample (likely mudstone) probably washed away during drilling; some greenish gray clay/mudstone (5G 6/1) at base of sample; slight reaction to HCl. [Glen Rose Formation]	800
40		1.23													
41		1.78	16	1.5 5.0	30	HW	R0							798	
42		2.02													797
43		4.67													796
44		3.23													795
45		3.18	17	4.8 5.0	96	HW	R1		1050-16		Jt, Wa, Sl, He, healed joint filled with calcite.	LIMESTONE: packstone; fossiliferous; white (N9); very weak (R1); vuggy. [Glen Rose Formation]		794	
46		1.88												SHALE: claystone; yellow (2.5Y 7/8); completely weathered (CW); extremely weak (R0); limestone 45.3' to 45.5'. [Glen Rose Formation]	793
47		3.82							SW	R0				SHALE: dark greenish gray (5G 4/1); extremely weak (R0); slightly weathered (SW); fissile; silty; no reaction to HCl. [Glen Rose Formation]	792
48		2.7	18	4.9 5.0	98				1050-17			LIMESTONE: wackestone; white (N9) to very light gray (N8); weak (R2); slightly weathered (SW); massive with 0.05' packstone interbeds at 48.1', 48.4', 48.8', and 50.0'; 0.05' packstone beds to 50.0'; slight reaction to HCl. [Glen Rose Formation]		791	
49		2.42							SW	R2					790
50		2.22													789
51		3.17	18	4.9 5.0	98							SHALE: silty; dark greenish gray (5G 4/1); extremely weak (R0); slightly weathered (SW); laminated; does not react to HCl; shell fragments at 50.6' and 50.9'; burrows filled with micrite 53.3' to 53.5' and 53.6' to 53.9'; limestone interbed at 55.5' to 55.6'. [Glen Rose Formation]		788	
52		2.82							SW	R0					787
		3.5													

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1050</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)				
53		3.5	18	4.9 5.0	98	SW	R0		1050-18			SHALE: silty; dark greenish gray (5G 4/1); extremely weak (R0); slightly weathered (SW); laminated; does not react to HCl; shell fragments at 50.6' and 50.9'; burrows filled with micrite 53.3' to 53.5' and 53.6' to 53.9'; limestone interbed at 55.5' to 55.6'. [Glen Rose Formation]		786				
54		4														Shale becomes more fissile; increased silt content.	785	
55		3.4																784
56		2.6	19	5.0 5.0	100	SW	R2					LIMESTONE: wackestone; very light gray (N8); fossiliferous; burrows abundant; weak (R2); sub 0.1' silty packstone interbeds 56.2', 56.8', 57.0', and 57.2'; strong reaction to HCl; slightly weathered (SW). [Glen Rose Formation]		783				
57		4.15											1050-19					782
58		1.25															SHALE: silty; dark greenish gray (5G 4/1); wavy laminations; extremely weak (R0); slightly weathered (SW). [Glen Rose Formation]	781
59		4	20	5.0 5.0	100	SW	R2					LIMESTONE: micrite; white (N9); weak (R2); slightly weathered (SW); massive; slight to strong reaction to HCl. [Glen Rose Formation]		780				
60		2.37														LIMESTONE: packstone; medium light gray (N6); burrows infilled with overlying micrite; white (N9); very weak (R1); slightly weathered (SW); laminated. [Glen Rose Formation]	779	
61		1.5														LIMESTONE: packstone; very light gray to medium light gray (N8 to N6); weak (R2); slightly weathered to fresh (SW to F); thoroughly bioturbated; burrows infilled with micrite; abundant small shell fragments; fine to very fine grained. [Glen Rose Formation]	778	
62		1.53	21	5.1 5.0	100	F-SW	R2		1050-20					777				
63		1.42														Fast drilling rates.	776	
64		1.25															775	
65		2.4	21	5.1 5.0	100	F-SW	R2							774				
66		2.62														65.2' to 66.1': Massive packstone, light gray (N7)	773	
67		3.77												1050-21		66.3' to 66.9': Silt content increase; small burrows infilled with white micrite; packstone, medium gray (N5)	772	
		2.05										Stop drilling to refill water tank.						

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)						
68		2.05	21	5.1 5.0	100	F-SW	R2					LIMESTONE: packstone; very light gray to medium light gray (N8 to N6); weak (R2); slightly weathered to fresh (SW to F); thoroughly bioturbated; burrows infilled with micrite; abundant small shell fragments; fine to very fine grained. [Glen Rose Formation] 68.0' to 69.4': Interbeds of wackestone 0.2' to 0.05'; strong reaction to HCl; 68.3': 0.1' burrow 69.4' to 69.7': High silt content LIMESTONE: wackestone; with abundant packstone interbeds; very light gray (N9) to medium dark gray (N4); very weak (R1); fresh to slightly weathered (F to SW); medium to coarse; bluish gray (5B 7/1) carbonate grains in white very fine grain matrix; burrows; wavy silty packstone interbeds <0.05'; 73.8' to 74.1': silty packstone interbeds with shell fragments; wackestone, fine grained. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.  Stopped coring 4/3/07, start 4/4/07	771						
69		1.62																	770	
70		1.87																		769
71		3.88	22	4.8 5.0	96	F-SW	R1					LIMESTONE: wackestone; very light gray (N8) with packstone interbeds (silty with shell fragments); medium gray (N5); very weak (R1); fresh to slightly weathered (F to SW); slight reaction to HCl; large burrows infilled with fine grained wackestone. [Glen Rose Formation]	No circulation.	768						
72		1.57																	767	
73		0.75																		766
74		2.57	23	5.0 5.0	100	F-SW	R1					LIMESTONE: packstone; medium gray (N5) with burrows infilled with wackestone, very light gray (N8): packstone very weak (R1); fresh to slightly weathered (F to SW); slight reaction to HCl. [Glen Rose Formation]	450 psi, 1500 rpm.	765						
75		1.42																		764
76		2.87																		763
77		3.62	24	5.1 5.0	100	F-SW	R2					LIMESTONE: wackestone; matrix very light gray (N8); medium to coarse carbonate grains light bluish gray (5B 7/1); weak (R2); fresh (F) to slightly weathered (SW); slight reaction to HCl; lignite seam 82.6' (0.1'); sparse <0.1' silty packstone interbeds; 84.8' to 85.1', packstone interbed; 85.9' to 86.2', packstone interbeds, coarse grained. [Glen Rose Formation]		762						
78		3.58																		761
79		3.07																		760
80		4.12	24	5.1 5.0	100	F-SW	R2							759						
81		2.85																		758
82		1.97																		757
		1.78																		

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)					
83		1.78	24	5.1 5.0	100	F-SW	R2		1050-24			LIMESTONE: wackestone; matrix very light gray (N8); medium to coarse carbonate grains light bluish gray (5B 7/1); weak (R2); fresh (F) to slightly weathered (SW); slight reaction to HCl; lignite seam 82.6' (0.1'); sparse <0.1' silty packstone interbeds; 84.8' to 85.1', packstone interbed; 85.9' to 86.2', packstone interbeds, coarse grained. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks. Stop drilling to refill water tank.	756					
84		1.38																	755
85		3.12																	
86		3.5	25	5.0 5.0	100	SW	R1		1050-25			LIMESTONE: packstone; medium gray (N5); very weak (R1); slightly weathered (SW); abundant shell fragments. [Glen Rose Formation]	Good water return.	753					
87		3.15																	752
88		1.48																	
89		3.35	26	4.9 5.0	98	F-SW	R1-R2					LIMESTONE: wackestone; very light gray (N8); very weak (R1); medium grained; massive; strong reaction to HCl; packstone 89.8' to 90.0'. [Glen Rose Formation]		750					
90		2.65																	749
91		2.05																	
92		2.78	27	5.0 5.0	100	F	R2		1050-26			LIMESTONE: packstone; medium light gray (N6); very weak (R1); fresh to slightly weathered (F to SW); shell fragments; slight reaction to HCl; 95.0' to 95.3', siltstone interbed; laminated. [Glen Rose Formation]		747					
93		2.63																	746
94		3.17																	
95		4.42	28	5.0 5.0	100	F	R2					LIMESTONE: wackestone; white (N9) to very light gray (N8); weak (R2); fresh (F); very coarse grain carbonate grains; massive; slight reaction to HCl. [Glen Rose Formation]		744					
96		3.28																	743
97		2.5																	
		4.3							1050-27										

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)						
98		4.3	27	5.0 5.0	100	SW	R1					LIMESTONE: wackestone; yellowish gray (5Y 7/2); laminated; wavy; bioturbated; and contains clay and silt; very weak (R1); contains sparse shell fragments; very slight reaction to HCl; slightly weathered (SW); packstone interbeds increase to a gradational contact. [Glen Rose Formation]	Refill water tank.	741						
99		5.97																	740	
100		5.5																		739
101		4.22	28	5.0 5.0	100	SW-F	R1					LIMESTONE: packstone; dark gray (N3); with burrows filled with wackestone, very light gray (N8); silty; very weak (R1); slightly weathered to fresh (SW to F); slight reaction to HCl. [Glen Rose Formation]	300 psi, 1200 rpm.	738						
102		4.82																	737	
103		5.22													1050-28					736
104		5.47	29	5.0 5.0	100	F	R1					SHALE; siltstone; calcareous; yellowish gray (5Y 8/1); very weak (R1); fresh (F); laminated; moderate reaction to HCl; burrows filled with overlying packstone. [Glen Rose Formation]	Good water return.	735						
105		4.05																		734
106		3																		733
107		3.53	30	5.0 5.0	100	F-SW	R1-R2					LIMESTONE: wackestone; very light gray (N8) to medium light gray (N6); very weak to weak (R1 to R2); fresh to slightly weathered (F to SW); massive to faintly laminated; no silt content 105.0' to 106.0'; silt increases, becomes almost grain supported, from 106.0' to 107.4'; pure wackestone at 107.4'; begins to grade into silt to shell laminated clasts to 108.3'. [Glen Rose Formation]		732						
108		4.43																		731
109		4.3																		730
110		3.97	2	5.0 5.0	100	F-SW	R2					LIMESTONE: micrite; yellowish gray (5Y 8/1); weak (R2); fresh to slightly weathered (F to SW); strong reaction to HCl; mottled; massive; sparse burrows filled with overlying silty wackestone; bioturbated; soft; sediment deformation fracture. [Glen Rose Formation]		729						
111		5.4																		728
112		5.43													1050-30					727

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
113		2										LIMESTONE: wackestone; muddy; yellowish gray (5Y 8/1) to 111.2'; medium gray (N5) to 112'; light gray (N7) to 114.5'; very weak (R1); fresh to slightly weathered (F to SW); massive; fine to medium grain; 111.2' to 112.0' includes abundant shell fragments; 112.0' to 114.4' is massive, fine grained, fossiliferous; mud and silt content increases with shell fragments below 114.4'; burrows filled with white (N9) wackestone, fine grain, very light gray (N8), massive, weak to very weak (R2 to R1); 118.2' to 120.0', silt, mud content increases; large burrows filled with very light gray wackestone (overlying); strong reaction to HCl. [Glen Rose Formation]	Fast drilling rates, white to light grayish blue water return.	726
114		1.97	30	5.0 5.0	100									725
115		2.22												724
116		3.55												723
117		2.12				F-SW	R1-R2							722
118		2.02	31	4.9 5.0	98									721
119		2.25												720
120		3.27								1050-31				719
121		2.78				F-SW	R1					LIMESTONE: wackestone; medium gray (N5); very weak (R1); slightly weathered to fresh (SW to F); packstone with shell hash interbeds 121.1' to 121.4'. [Glen Rose Formation]		718
122		2.43				SW	R0			1050-32		SHALE; dark gray (N3); extremely weak (R0); slightly weathered (SW); very slight reaction to HCl; fissile; laminated. [Glen Rose Formation]		717
123		2.68	32	5.0 5.0	100									716
124		2.15				F	R1					LIMESTONE: micrite; very light gray (N8); slightly weathered (SW); very slight reaction to HCl; fissile; laminated. [Glen Rose Formation]		715
125		4.2				SW	R0					SHALE; silty; glauconitic; greenish gray (5G 6/1); extremely weak (R0); slightly weathered (SW); fissile. [Glen Rose Formation]	Refill water tank.	714
126		2.13												713
127		3.02	33	5.0 5.0	100	F	R1					LIMESTONE: wackestone; very light gray (N8); very weak (R1); fresh (F); strong reaction to HCl; wavy silty packstone laminations 126.0' to 126.8' with burrows infilled with light gray (N7) wackestone. [Glen Rose Formation]		712
		1.68												




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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)		
128		1.68	33	5.0 5.0	100	F-SW	R0					LIMESTONE: packstone; dark gray (N3); extremely weak (R0); slightly weathered (SW); burrows abundant; filled with overlying wackestone; silty. [Glen Rose Formation]		711		
129		3.67												LIMESTONE: wackestone; light gray (N7); very weak (R1); fresh to slightly weathered (F to SW); bioturbated; sparse silty packstone interbeds <0.05'; fine grain; 131.0' to 131.4' includes packstone interbed with wackestone to filled burrows; wackestone is medium grain. [Glen Rose Formation]		710
130		2.02														709
131		2.12	34	5.1 5.0	100	F-SW	R1							708		
132		1.88														707
133		1.63													Fast drilling rates.	706
134		2.52	35	5.0 5.0	100	SW	R0					LIMESTONE: packstone; silty; medium gray (N5) to medium dark gray (N4); extremely weak (R0); slightly weathered (SW); burrows. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	705		
135		1.93												LIMESTONE: wackestone; very light gray (N8); very weak (R1); fresh to slightly weathered (F to SW); slight reaction to HCl; packstone interbeds 135.6', 136.0' to 136.2', and 137.4'. [Glen Rose Formation]		704
136		2.13														703
137		1.75	36	5.0 5.0	100	F-SW	R1							702		
138		1.97														701
139		2.2														700
140		4.57	36	5.0 5.0	100	F-SW	R1					LIMESTONE: packstone; silty; medium light gray (N6); very weak (R1); fresh to slightly weathered (F to SW); bioturbated; greenish gray (5GY 6/1) shale interbed 139.1' to 139.4'. [Glen Rose Formation]		699		
141		2.23												LIMESTONE: wackestone; very light gray (N8); very weak (R1); fresh to slightly weathered (F to SW). [Glen Rose Formation]	Core coated with mud.	698
142		2.62														697
		3.65														




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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)		
143		3.65	36	5.0 5.0	100	F-SW	R1					LIMESTONE: packstone; silty; medium light gray (N6) to medium gray (N5); very weak (R1); fresh to slightly weathered (F to SW); laminated; fossiliferous; abundant shell fragments; slight reaction to HCl; bioturbated from 143.0' to 144.4'. [Glen Rose Formation]		696		
144		3.2				F	R1							LIMESTONE: wackestone; very light gray (N8); very weak (R1); fresh (F). [Glen Rose Formation]		695
145		4.02									1050-36					
146		2.25	37	4.9 5.0	98	F-SW	R1					LIMESTONE: packstone; silty; medium gray (N5) to light gray (N7); very weak (R1); fresh to slightly weathered (F to SW); fossiliferous; abundant shell fragments; 146.9' to 147.3', siltstone/shale interbed; laminated; calcareous. [Glen Rose Formation]		693		
147		2.77									1050-37					692
148		3.2				F	R2							LIMESTONE: wackestone; very light gray (N8); weak (R2); fine grain; massive; abundant shell fragments 149.0' to 149.5'; fresh (F); strong reaction to HCl. [Glen Rose Formation]	Driller cleaned out hole with water for P-S logging.	691
149		2.97											690			
150		3.35											689			
151													688			
152													687			
153													686			
154													685			
155													684			
156													683			
157													682			

Project Name and Job Number TXU Comanche Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-1051</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'09.66696"N / 97°47'45.88176"W		Total Depth 75 feet	
Drilling Contractor and Rig Texplore / CME 75		Elevation and Datum 842.69 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 13 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 6	Date Started 4/3/07	
		Borehole Inclination Vertical	Logged by S. Dee/M. Buga	Date Completed 4/4/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 4/9/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0										842
1	CL		B-1051 1	4	6 12	1.75		RESIDUAL SOIL (Qaf) LEAN CLAY with calcareous particles, pale brown (10YR6/3), damp, medium stiff, 10% gravel (angular limestone), strong reaction to HCL, few organics at top of sample		841
2				50/5.5"						840
3										839
4	ML		B-1051 2	13	16 18	3.75		SANDY SILT with gravel and calcareous deposits, light gray (10YR7/1), dry, very stiff, 20% gravel (angular limestone)		838
5				9				LEAN CLAY with sand, brownish yellow (10YR6/6), dry stiff to very stoff, 5% gravel (angular limestone), strong reaction to HCL		837
6	CL									836
7			B-1051 3	7	16 18	4.5		LEAN CLAY, yellowish brown (10YR5/6) mottled with gray (10YR5/1), damp, stiff, with few calcareous deposits strong reaction to HCL		835
8				9						834
9	CL		B-1051 4	41	18 18	2		- with dolomitic limestone fragments and silt		833
10				27						832
11								LEAN CLAY, gray (10YR6/1), dry, hard, slight reaction to HCL		831
12	CL		B-1051 5	10	18 18	4.5				830
13				27						829
14			B-1051 6	9	16 18	4.5		WEATHERED SHALEY, CLAYEY LIMESTONE, very dark gray (10YR5/1), dry, slight reaction to HCL		828
15				50/4"						828

Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG Boring No. B-1051</b>	
Type and Diameter of Boring NQ / 3"		Boring Location 32°18'09.66696"N / 97°47'45.88176"W		Total Depth 75 feet	
Drilling Contractor and Rig Texplor / CME 75		Elevation and Datum 842.69 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 13 feet	
Casing Size and Depth 4" / 15 feet		Length of Core Barrel and Bit 11.75 feet	No. of Core Boxes 3	Date Started 4/3/07	
		Borehole Inclination Vertical	Logged by S. Dee/M. Buga	Date Completed 4/4/07	

Reviewed by / Date R. Ortiz 4/9/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
15												LIMESTONE; wackestone; medium gray (N5); massive with rare (>0.1') intervals of shale/silt; slightly weathered; weak (R2).[Glen Rose Formation]		827
16		1.43				SW	R2					LIMESTONE; packestone; silty; medium gray (N5); very thinly bedded with abundant (<0.1') ??? beds of shale/silt; slightly weathered; weak (R2); clasts are abundant black/gray silt and white subangular fossils.		826
17		1.52	7	5.0 5.0	100	SW	R2					LIMESTONE; wackestone; very light gray (N8); massive with occasional (<0.1') interbeds of shale/silt; slightly weathered; weak (R2).		825
18		1.27												824
19		1.75				SW	R2		1051-7					823
20		5.5										LIMESTONE; packestone; medium light gray (N6); bedded with abundant (<0.1') interbeds of shale/silt; slightly weathered; weak (R2); abundant bioturbation; clasts are fine grained; bluish gray and white; tabular and subrounded fossils.		822
21		5.25				SW	R2							821
22		1.17	8	4.6 5.0	92							SHALE; medium dark gray (N4); fresh; extremely weak (R0); very thinly bedded.		820
23		1.13							1051-8					819
24		0.88				F	R0							818
25		1.75										LIMESTONE; wackestone; light gray (N7); massive with occasional interbeds (<0.1') of shale/silt; slightly weathered; weak (R2); strong reaction to HCl.		817
26		1.53				SW	R2							816
27		1.3	9	4.9 5.0	98							LIMESTONE; packestone; silty; medium gray (N5); slightly weathered; weak (R2); very thinly bedded; clasts are black/gray silt and white or bluish gray subrounded fossils.		815
28		1.17				SW	R2		1051-9					814
29		1.22				SW	R2							813

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
30		1										LIMESTONE; wackestone; light gray (N7); massive with occasional interbeds (<0.1') of shale/silt; slightly weathered; weak (R2); strong reaction to HCl; abundant bioturbation throughout. Below; 31.5'; zones of increased clast content come and go; clasts are black/gray silt and fine to medium grained bluish gray; subrounded and tabular fossils.		812
31		1.25												811
32		0.97	10	<del>4.3</del> 5.0	80	SW	R2							810
33														809
34						F	R0					SHALE; dark gray (N3); very thinly bedded; fresh; extremely weak (R0); strong reaction to HCl.		808
35												LIMESTONE; wackestone; light gray (N7); massive with rare (<0.1') interbeds of shale; slightly weathered; weak (R2); clasts are fine to medium grained bluish gray; rounded to tabular fossils.		807
36		2.75				SW	R2							806
37		1.67	11	<del>4.1</del> 5.0	82									805
38		1.08										SHALE; medium dark gray (N4); very thinly bedded; fresh; extremely weak (R0); slight reaction to HCl; rare (<0.1') interbeds of limestone.		804
39		4.33				F	R0							803
40		1.82										LIMESTONE; wackestone; light gray (N7); massive with occasional interbeds (<0.1') of shale; slightly weathered; weak (R2); clasts are fine grained; bluish gray fossils (~0.02') ; heavily bioturbated; reacts strongly to HCl; high concentration of bivalve fossils from 42.6'-43.0'.		802
41		1.15				SW	R2							801
42		2.02	12	<del>4.6</del> 5.0	92									800
43		2.05												799
44		3.12				F	R0					SHALE; medium dark gray (N4); fresh; extremely weak (R0); very thinly bedded.		798
45														

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1051</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
45		4.9				SW	R1					SHALE; dark greenish gray (10Y 4/1); massive; slightly weathered; very weak; slight HCL reaction; sparse micrite lenses; sharp basal contact.	Light gray water retrun, slow drilling.	797
46		6.78				SW	R2		1051-13			MICRITE; gray (N6); slightly weathered; weak; strong HCl reaction; bioturbation.		796
47		3.8	13	4.5 5.0	86							SHALE; dark greenish gray (10Y 4/1); fresh to slightly weathered; weak to medium strong; strong to violent HCl reaction; sparse thin beds; desiccation cracks; weak.		795
48		4.95				F-SW	R1							794
49		4.83												793
50		7.45				SW	R2-R3					LIMESTONE; packestone; gray (N6); massive with dissolution features; slightly weathered; weak to medium strong; strong to violent HCl reaction; sharp contact.		792
51		1.9							1051-14					791
52		2.83	14	3.0 5.0	60							SHALE; dark greenish gray (10Y 4/1); massive with sparse very thin bedding; slightly weathered; very weak; slight to strong HCl reaction; fossiliferous above 55.3; wackestone bed 55.1'-55.3'; sharp basal contact.	100% water return, light gray, cloudy.	790
53		2.5												789
54		6.77				SW	R1							788
55		4.17												787
56		4.37							1051-15					786
57		3.95	15	4.5 5.0	90	SW	R2-R3				BJ, Wa, Sl, Ro, Op	LIMESTONE; wackestone; gray (N6); massive; large clasts; slightly weathered; weak to medium strong; violent HCl reaction.		785
58		4.28				SW	R1					SHALE; dark greenish gray (10Y 4/1); massive with sparse very thin bedding; slightly weathered; very weak; slight to strong HCl reaction; fossiliferous.		784
59		4.67												783

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1051</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
60		2.27										LIMESTONE; wackestone; gray (N5-N6); slightly weathered; weak to medium strong; violent HCl reaction; bioturbation; smaller; more tightly spaced clasts 60'-61'; gradational basal contact.	300 psi downpressure	782
61		8.27				SW	R2-R3							781
62														
63		2.75	16	4.9 5.0	98	SW	R3		1051-16			LIMESTONE; micrite; gray (N6); massive; medium strong; violent HCl reaction; slightly weathered; shale interbed 63.1'-63.5'; with fossil fragments.	100% water return, light gray to drk gray.	780
64		2.35										LIMESTONE; packestone; gray (N6); slightly weathered; weak to medium strong; violent HCl reaction; shaly veining 63.7'-63.95'.		779
65		2				SW	R2-R3							778
66		1.62				SW	R2-R3					LIMESTONE; packestone; gray (N5); slightly weathered; weak to medium strong; violent HCl reaction.		777
67		1.52				SW	R2-R3		1051-17			LIMESTONE; packestone; gray (N5-N6); slightly weathered; weak to medium strong; violent reaction to HCl.		776
68			17	5.0 5.0	100									775
69		2.35										LIMESTONE; wackestone; gray (N5); slightly weathered; weak; violent HCl reaction; bioturbation. 65'-69.4'; fewer/sparse large clasts; 69.4'-70'; abundant; tightly spaced clasts; 70.9'-71.2'; micrite interbed; 71.2'-71.6'; packestone interbed.		774
70		1.35												773
71		1.45				SW	R2							772
72		1.55												771
73		1.33	18	5.0 5.0	100									770
74		1.47							1051-18					769
75		1.67				SW	R2-R3					LIMESTONE; packestone; gray (N5); grades to packestone 74'-75'; slightly weathered; weak to medium strong; violent reaction to HCl.		768

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-1051**


Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
75												Bottom of hole at 75'	75': Total depth drilled.	767
76														766
77														765
78														764
79														763
80														762
81														761
82														760
83														759
84														758
85														757
86														756
87														755
88														754
89														753
90														

Project Name and Job Number TXU Comanche Peak COL 1908		 <b>SOIL LOG Boring No. B-1052</b>	
Type and Diameter of Boring HSA / 7"	Boring Location 32°18'10.11028"N / 97°47'42.99168"W	Total Depth 75 feet	
Drilling Contractor and Rig Texplore / CME 75	Elevation and Datum 842.512 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 13 feet
Sampling Method SPT	Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 5	Date Started 4/5/07
	Borehole Inclination Vertical	Logged by M. Buga	Date Completed 4/5/07

Reviewed by / Date \_\_\_\_\_ R. Ortiz 4/9/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0										842
1	GP		B-1052 1	25	11/18			ARTIFICIAL FILL (Qaf) LIMESTONE FRAGMENTS, light gray, (10YR7/1), dry, dense - rig bouncing, very gravelly		841
2				27						840
3				11						839
4	CL		B-1052 2	7	8/18			LEAN CLAY, yellow (10YR7/6), damp-moist, stiff, with calcareous deposits and few limestone clasts approximately 10%,  caliche weathered limestone at base		838
5				6						837
6	ML		B-1052 3	3	10/18			SILT, yellow (10YR8/8-7/8), wet, soft. <5% caliche gravels (<0.25"), (dolomitic limestone)		836
7				1						835
8				3						834
9	CL		B-1052 4	8	14/18			LEAN CLAY, yellowish brown (10YR5/8), dry, very stiff, with few calcareous deposits,		833
10				13						832
11				10						831
12	CL		B-1052 5	7	16/18			SANDY LEAN CLAY, with scattered calcareous particles, mottled, very pale brown (10YR6/8), very stiff		830
13				13						829
14				50/3"				- SPT refusal at 12.5'		828
15										



Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG Boring No. B-1052</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'10.11028"N / 97°47'42.99168"W		Total Depth 75 feet	
Drilling Contractor and Rig Texplor / CME 75		Elevation and Datum 842.512 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 13 feet	
Casing Size and Depth 4" / 14 feet		Length of Core Barrel and Bit 11.9 feet	No. of Core Boxes 3	Date Started 4/5/07	
		Borehole Inclination Vertical	Logged by M. Buga	Date Completed 4/5/07	

Reviewed by / Date R. Ortiz 4/9/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
14			1	0.8 1.0	80						Rf, Pl, Vr, Op, weathered.	LIMESTONE; micrite, sparitic; gray (N6); moderately weathered (MW); medium strong (R3); large weathered fractures; very slight HCl reaction; clayey interbed 0.8'-0.9'. [Glen Rose Formation]	Began NQ coring 4/5/07 at 15', Glen Rose Formation.	828
15		1.28				MW	R3				Pl, Op, Rf, weathered.			827
16									1052-6		Wa, Vr, Op, weathered. Rf, Pl, Vr, Op			827
17		1.22									BJ, Pl, Ro, Op	SHALE: Siltstone; greenish gray (5G 5/1); slightly weathered (SW); weak (R2); no to slight HCL reaction; shell fragments abundant below 18.6'; no shell fragments or bioturbation; sharp basal contact.[Glen Rose Formation]	100% water return, gray, cloudy.	826
18			2	5.0 5.0	96									825
19		1.17				SW	R2							824
20		1.43												823
21												SHALE: dark greenish gray (5G 4/1); slightly weathered (SW); very weak (R1); no HCl reaction; interbedded with siltstone; massive; convoluted bedding 22.0'-22.2'. [Glen Rose Formation]		822
22		4.25				SW	R1				1052-8			821
23			3	4.5 5.0	88									820
24		3												819
25		1.8				SW	R2					LIMESTONE: wackestone; gray (N5); slightly weathered (SW); weak (R2); strong HCl reaction; grades to oolitic packstone 23.6'-23.9'. [Glen Rose Formation]		818
26		0.98												817
27		1.02		5.0 5.0	100						Pl, Vr, Op	LIMESTONE: micrite; gray (N6); slightly weathered (SW); weak to medium strong (R2-R3); violent HCl reaction; occasional clay veining.[Glen Rose Formation]		816
28		0.92	4			SW	R2-R3					LIMESTONE: wackestone; gray (N5); slightly weathered (SW); weak (R2); strong HCl reaction; micrite from 27.0'-27.2' and 24.0'-29.2'; sparse clasts (<1") 27.2'-28.1'; below 28.1'; larger more abundant clasts.		815
29		0.9												814

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-1052</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
29		1.15	4	<del>5.0</del> 5.0	100	SW	R2-R3		1052-9					813
30		1										LIMESTONE: wackestone; gray (N5-N8); slightly weathered (SW); weak (R2); strong to violent reaction to HCl; abundant clasts 30.4'-32.6' with maximum size of ~2"; shale 32.8'-32.9'; 33.0'-33.4'; and 34.1'. [Glen Rose Formation]	100% water return, gray, cloudy.	812
31		0.93							1052-10					811
32		1.6	5	<del>4.8</del> 5.0	100	SW	R2							810
33		3.47												809
34		1.43									BJ, Pl, Sm, Ti, clay seam			808
35		3.25				SW	R1					SHALE interbedded with micrite; dark greenish gray (5G 4/1); micrite gray (N6-N7); slightly weathered (SW); shale is very weak (R1); micrite is medium strong (R3); shale has no HCl reaction; micrite has violent HCl reaction;		807
36		2.92										micrite bed micrite bed micrite bed		806
37		2.27	6	<del>4.2</del> 5.0	100							LIMESTONE: micrite; gray(N6); slightly weathered (SW); weak to medium strong; violent HCl reaction; large clasts 37.1'-37.9' (>2"); coal seams 41.7'-41.8'; shell fragments and bivalves 43.0'-44.2'.		805
38		1.72				SW	R2-R3		1052-11					804
39		3.62												803
40		3.15												802
41		1.6							1052-12				Fast drilling.	801
42		0.98	7	<del>4.5</del> 5.0	100	SW	R2-R3							800
43		0.8												799

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1052</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
44		0.87	7	4.5 5.0	100	SW	R2-R3							798
45									1052-13			SHALE: dark greenish gray (5G 4/1); slightly weathered (SW); very weak; no HCl reaction; desiccation cracks. [Glen Rose Formation]	Core "pokerchipped," adjacent borings have same habit, possible new bit needed.	797
46														796
47			8	5.0 5.0	100	SW	R1							795
48														794
49						SW	R3					LIMESTONE: micrite; gray (N6); slightly weathered (SW); medium strong (R3); violent reaction to HCl; shell fragments.[Glen Rose Formation]	Vac truck cleans out mud tub.	793
50												SHALE: dark greenish gray (5G 4/1); slightly weathered (SW); very weak (R1); no to slight reaction to HCl; micrite bed		792
51		4.12				SW	R1		1052-14			micrite bed		791
52		6												790
53		1.75	9	3.4 5.0	68						Rf, Wa, Ro, Op	LIMESTONE: micrite; gray (N6); slightly weathered (SW); weak to medium strong (R3); strong to violent HCl reaction; grades to packestone/wackestone at 53'; sample has abundant fractures.[Glen Rose Formation]		789
54		2.57				SW	R2-R3							788
55		5.62												787
56		4.55							1052-15			SHALE: dark greenish gray (5G 4/1); slightly weathered (SW); very weak (R1); no to slight HCl reaction; occasional convoluted bedding <1" thick.[Glen Rose Formation]		786
57		3.67							1052-16					785
58		3.53	10	3.8 5.0	76	SW	R2					LIMESTONE: wackestone; gray (N5); slightly weathered (SW); weak (R2); strong HCl reaction; clasts average 1"; violent HCl reaction.[Glen Rose Formation]		784
59		4.23				SW	R1							784

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1052</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
59		6.5	10	4.3 5.0	76	SW	R1					SHALE: dark greenish gray (5G 4/1); slightly weathered (SW); very weak (R1); none to slight HCl reaction; occasional convoluted bedding <1" thick.[Glen Rose Formation]		783
60		1.93				SW	R2					LIMESTONE: wackestone; gray (N6); slightly weathered (SW); weak (R2); violent reaction to HCl; clasts >1".[Glen Rose Formation]		782
61		1.5				SW	R3					LIMESTONE: micrite; gray (N6); slightly weathered (SW); medium strong (R3); violent reaction to HCl; recrystallized shell fragments.[Glen Rose Formation]		781
62		4.55	11	4.3 5.0	86	SW	R2					LIMESTONE: wackestone; gray (N5-N6); slightly weathered (SW); medium strong (R3); violent reaction to HCl; abundant clasts; average 1"; grading toward packstone below 73.8'. [Glen Rose Formation]		780
63		1.47				SW	R2							779
64		1.02								1052-17				778
65		1.53												777
66		2.02												776
67		2.92	12	4.9 5.0	97	SW	R2						Rods vibrating significantly, difficult to continue coring.	775
68		3.02												774
69		2.5												773
70		2.27											Sampler is stuck, driller eventually frees, first return on Run 13 yields no recovery. Trip back in to recover core.	772
71		1.45												771
72		1.58	13	5.0 5.0	100	SW	R2							770
73		2.23								1052-19				769
74														769

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908




**ROCK LOG**  
**Boring No. B-1052**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
74		2.78	13	51.0	100	SW	R2							768
75												BOTTOM OF HOLE AT 75'	Total depth drilled: 75.0'	767
76														766
77														765
78														764
79														763
80														762
81														761
82														760
83														759
84														758
85														757
86														756
87														755
88														754
89														

Project Name and Job Number TXU Comanche Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-1053</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'10.17969"N / 97°47'42.28628"W		Total Depth 75.8 feet	
Drilling Contractor and Rig Texplore / CME 75		Elevation and Datum 841.354 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 12 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 5	Date Started 4/6/07	
		Borehole Inclination Vertical	Logged by M. Buga	Date Completed 4/6/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 4/12/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0										841
1			B-1053 1	4	7/18					840
2				2						839
3				3						838
4			B-1053 2	5	1/18					837
5				3						836
6	CL			2						835
7			B-1053 3	3	11/18			- occasional coarse gravel		834
8				4						833
9				2						832
10			B-1053 4	1	6/18					831
11				1						830
12			B-1053 5	50/4"	6/18			- occasional coarse gravel, sample is wet at base		829
13								- brown (10YR5/3), hard, moist to wet, ~ 5% fine gravel, occasional coarse gravel, limestone chunks at bottom of 3" recovery		828
14										827
15										826

Project Name and Job Number TXU Comanche Peak Col 1908		 WLA William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. B-1053</b>	
Type and Diameter of Boring HQ / 4"			Boring Location 32°18'10.17969"N / 97°47'42.28628"W		Total Depth 75.8 feet
Drilling Contractor and Rig Texplore / CME 75			Elevation and Datum 841.354 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 12 feet
Casing Size and Depth 4" / 13 feet			Length of Core Barrel and Bit 11.9 feet	No. of Core Boxes 3	Date Started 4/6/07
			Borehole Inclination Vertical	Logged by M. Buga	Date Completed 4/6/07

Reviewed by / Date \_\_\_\_\_ R. Ortiz 4/12/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
13		1.8	1	$\frac{0.9}{1.5}$	60	SW	R2-R3					LIMESTONE: micrite, sparitic; gray (N6); slightly weathered; weak to medium strong; strong HCl reaction. 14.5'-15' is washed out saprolite.[Glen Rose Formation].	Begin NQ coring at 13', Glen Rose Formation.	828
14													Inner barrel stuck.	827
15		1.17				SW	R2					LIMESTONE: wackestone; greenish gray (Gley 5/1); slightly weathered(SW); weak(R2); strong reaction to HCL; small clasts <1"; shell fragments	Pin in catcher mechanism missing, inner barrel stuck in outer barrel, freed.	826
16		1.25												825
17		1.17	2	$\frac{3.7}{5.0}$	73							SHALE: siltstone/claystone; greenish gray (5G 5/1); slightly weathered(SW); weak(R2); no HCl reaction; thin organic lens (0.5"); massive; [Glen Rose Formation].		824
18		1.03												823
19		1.75				SW	R2							822
20		1.17	3	$\frac{0.0}{2.0}$	0									821
21		1.2												820
22		2.5										LIMESTONE: wackestone; gray (N5); slightly weathered(SW); weak(R2); strong HCl reaction; 24.2'-25.3' moderately weathered(MW).[Glen Rose Formation].		819
23		2.32				SW	R2							818
24		2	4	$\frac{3.9}{5.0}$	78									817
25		1.88										LIMESTONE: micrite; gray (N6); medium strong(R3); violent HCl reaction; massive; moderately weathered(MW).[Glen Rose Formation].	10% water return.	816
26		2.33				MW	R3							815
27		2.83	5	$\frac{4.3}{5.0}$	86	SW	R2					LIMESTONE: wackestone; gray (N5-N6); slightly weathered (SW); weak(R2); violent HCl reaction; ~1" clasts become larger from 28.9'-30.8'. [Glen Rose Formation].		814
28		2.58												

Rf, Wa, Ro, Op

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1053</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
28		2.58	5	4.3 5.0	86	SW	R2					LIMESTONE: wackestone; gray (N5-N6); slightly weathered (SW); weak(R2); violent HCl reaction; ~1" clasts become larger from 28.9'-30.8'. [Glen Rose Formation].		813
29		2.68												
30		2.5												811
31		2				SW	R2					LIMESTONE: wackestone; gray (N6); weak to medium strong (R2-R3); violent HCl reaction; abundant clasts; almost a packstone; bioturbation; clasts average 1"; at 33.7'; clast size increases; shale interbeds 35.1'-35.4' and 35.6'-35.8'; micrite 45.4'-35.6'.		810
32		1.5												809
33		1.9												808
34		3.15	6	4.3 5.0	86	SW	R2-R3						Almost 100% water return.	807
35		1.42								1053-9		Micrite bed		806
36		1.67												805
37		2										LIMESTONE: packstone; light gray (N7); slightly weathered (SW); medium strong(R3); violent HCl reaction; wackestone 38.2'-38.6'. [Glen Rose Formation].		804
38		1				SW	R3							803
39		2.83	7	4.4 5.0	88									802
40		1.97				SW	R2					LIMESTONE: wackestone; gray (N6); slightly weathered(SW); weak(R2); violent HCl reaction; large clasts >1". [Glen Rose Formation].		801
41		1.57												800
42		1.17	8	4.0 5.0	80	SW	R1					SHALE: dark greenish gray (Gley 1 4/1); slightly weathered; very weak; no HCl reaction; massive thin occasional rip-up clasts; wackestone 42.6'-43'.		799
43		2												



Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1053</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)	
43		2	8	4.0 5.0	80	SW	R3					LIMESTONE: micrite; gray (N6); slightly weathered (SW); medium strong(R3); violent HCl reaction; clay filled voids.[Glen Rose Formation].		798	
44		1.78				SW	R2			1053-11		LIMESTONE: wackestone; gray (N6); slightly weathered; violent HCl reaction; abundant shell fragments; bivalves.[Glen Rose Formation].		797	
45		1.1													796
46		5.25							F-SW	R1				SHALE: dark greenish gray (Gley 1 4/1); fresh to slightly weathered(F-SW); very weak(R1); massive; fossil fragments at upper contact; desiccation cracks.[Glen Rose Formation].	
47		5.48						1053-12					794		
48		4.48	9	5.0 5.0	100	SW	R3					LIMESTONE: packstone; gray (N6); slightly weathered(SW); medium strong(R3); violent reaction to HCl.[Glen Rose Formation].		793	
49		1.5				SW	R3				LIMESTONE: micrite; light gray (N6); slightly weathered(SW); medium strong(R3); violent reaction to HCl; recrystallized shell fragments in section.[Glen Rose Formation].				792
50		2.58							SW	R1	1053-13		SHALE: dark greenish gray (Gley 1 4/1); slightly weathered(SW); very weak(R1); no to slight HCl reaction; occasional very thin bedding; desiccation cracks 50.3'-50.4'; 50.7'-50.8'; 51.0'-51.1'; micrite interbeds.[Glen Rose Formation].	Drill stopped cutting 0.5' short of 5' run, Run 9.	791
51		2.43											790		
52		3.78											789		
53		3.17	10	4.9 5.0	98	SW	R2					LIMESTONE: packstone; gray (N6); slightly weathered(SW); weak(R2); violent HCL reaction; large clasts >1"; top 3" micrite.[Glen Rose Formation].		788	
54		3.3								1053-14					787
55		2.72											786		
56		3.13				SW	R1					SHALE: same as previous; absence of massive bedding; 55.0'-55.2' has discontinuous bedding and rip-up clasts.[Glen Rose Formation].	Rods shake violently.	785	
57		1.95	11	5.0 5.0	100									784	
58		2.28				SW	R2			1053-15					

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1053</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
58		2.28				SW	R2					LIMESTONE: packstone; gray (N6); slightly weathered(SW); weak(R2); violent HCl reaction.[Glen Rose Formation].		783
59		3.5										SHALE: dark greenish gray (Gley 1 4/1); slightly weathered(SW); very weak(R1); no HCl reaction; massive; packstone interbed from 60.9'-61.3'. [Glen Rose Formation].	Rods shake violently, 57.5'-60.0'.	782
60		0	11	5.0 5.0	100	SW	R1							781
61		2.12											Inner barrel stuck in outer barrel.	780
62		1.22				SW	R2					LIMESTONE: wackestone; gray (N6); slightly weathered(SW); weak(R2); violent HCl reaction; clasts are average of 2" diameter; shale interbed 62.3'-62.7'.		779
63		1.5				SW	R3					LIMESTONE: micrite; light gray (N7); light gray (N7); slightly weathered; weak; violent reaction to HCl.[Glen Rose Formation].		778
64		1.17	12	4.9 5.0	98							LIMESTONE: wackestone; light gray (N7); slightly weathered(SW); weak(R2); violent reaction to HCl; closely packed clasts average 1" in size; bioturbated.		777
65		1.13				SW	R2			1053-16				776
66		1.27												775
67		1.03								1053-17			Rods shake violently, drill chatter.	774
68		1.32												773
69		1.33	13	4.6 5.0	92	SW	R2					LIMESTONE: wackestone; as above. 68.3'-68.9'; clasts less abundant; 68.9'-69.1'; micritic; 69.1'-70.3'; sparse clasts; 70.3'-70.8'; almost micritic; 72.7'-73'; micritic interbed; abundant clasts below 73'; grades toward packstone 75.1'-75.7'.		772
70		1.42												771
71		1.33												770
72		1.3	14	4.3 4.3	100	SW	R2			1053-18			2,500 gallons used during drilling.	769
73		1.33												

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-1053**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
73		1.33	14	4.3 4.3	100	SW	R2					LIMESTONE: wackestone; as above. 68.3'-68.9'; clasts less abundant; 68.9'-69.1'; micritic; 69.1'-70.3'; sparse clasts; 70.3'-70.8'; almost micritic; 72.7'-73'; micritic interbed; abundant clasts below 73'; grades toward packstone 75.1'-75.7'.		768
74		1.02												767
75		0.98												766
76											BOTTOM OF HOLE AT 75.8'	75.8': Total depth drilled.	765	
77														764
78														763
79														762
80														761
81														760
82														759
83														758
84														757
85														756
86														755
87														754
88														

Project Name and Job Number TXU Comanche Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG Boring No. B-1054</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'10.53981"N / 97°47'39.42754"W		Total Depth 75.5 feet	
Drilling Contractor and Rig Geotechnology / CME 55		Elevation and Datum 839.663 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 33.7 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 12	Date Started 3/27/07	
		Borehole Inclination Vertical	Logged by M. McMackan	Date Completed 4/2/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 4/9/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0										839
0 - 1	GM							ARTIFICIAL FILL (Qaf) SILTY GRAVEL, rounded chert gravel (not from this site), slightly damp, loose, dark brown (7.5Y3/2), 60% gravel		839
1 - 2			B-1054 1	4	8/18	3.25			SANDY LEAN CLAY, pale yellow (5Y7/4) to light gray (5Y7/1), damp, stiff, w/ calcareous deposits and limestone fragments	838
2 - 3	CL			3						837
3 - 4										836
4 - 5			B-1054	5	1/18			GRAVEL with silt 10 pieces to 1" with tar coating, dry, medium dense - may be slough		835
5 - 6	GW-GM			11						834
6 - 7				10						833
7 - 8			B-1054 2	5	6/18			CLAYEY GRAVEL, angular gravel in matrix, pale yellow (5Y7/4) to light gray (5Y7/1), damp, medium dense, 50% gravel, weathered bedrock, broken limestone, fresh fractures from SPT and clay coated fractures from original emplacement as fill, clasts also include fragments of yellow clay, clay commonly has medium to high plasticity		832
8 - 9				10						831
9 - 10	GC			3	0/18					830
10 - 11				4						829
11 - 12			B-1054 3	4	16/18			GRAVEL (ANGULAR LIMESTONE FRAGMENTS) and clay, gravel component varies up to >50%		828
12 - 13	GP-GC			4						827
13 - 14				6						826
14 - 15	CL		B-1054 4	4	12/18			LEAN CLAY, brown with scattered calcareous deposits and few limestone gravels, stiff		825
				3						825
				8						825

Project Name and Job Number TXU Comanche Peak COL 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">SOIL LOG</h2> <h2 style="margin: 0;">Boring No. B-1054</h2>
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Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
15	CL						LEAN CLAY, brown with scattered calcareous deposits and few limestone gravels, stiff <i>(Continued from previous page)</i>			824
16				15			CLAYEY SILT, with limestone fragments, dry, very stiff			823
17	CL/ML		B-1054 5	30	12/18	1				822
18				17						
19				4			SANDY LEAN CLAY, yellow gray, damp, stiff, with few limestone fragments and calcareous deposits			821
20			B-1054 6	3	12/18	1				820
21				9						819
22	CL			5			- damp			818
23			B-1054 7	2	11/18	3.5				817
24				3						816
25				2			LEAN CLAY, yellowish gray, damp, medium stiff, few calcareous deposits			815
26			B-1054 8	1	12/18	1				814
27	CL			2						813
28				3			LEAN CLAY, yellowish gray, damp, medium stiff, few calcareous deposits			812
29	CL		B-1054 9	1	12/18	0.75				811
30	GC			2						810
				3			<b>RESIDUAL SOIL (RS)</b> Lean Clay with sand (~15%) black (5Y2/1), ~4" thick, organics (Topsoil)			
	CL		B-1054 10	6	14/18	0.75				
				10						



Undisturbed sample  
SH = Shelby; P = Pitcher; O = other



Driven (2.5 to 3.0 inch) with liners  
MC = Modified California; O = other



Standard Penetration Test (SPT) sampler

Project Name and Job Number TXU Comanche Peak COI 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">SOIL LOG</h2> <h2 style="margin: 0;">Boring No. B-1054</h2>
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Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
30	GC						SILTY CLAYEY GRAVEL, pale yellow to light gray (5Y7/4 to 5Y7/1), wet, very small sample, clay coatings on gravel <i>(Continued from previous page)</i>		809
31				7			CLAYEY SILT with limestone gravel, pale yellow (5Y7/4) to light gray (5Y7/1), moist		808
32	CL-ML		B-1054 11	5	$\frac{2}{18}$	0.75			807
33				5					807
34	CL						GRAVELLY LEAN CLAY, hard, brown, with calcareous particles		806
35									805
36									804
37									803
38									802
39									801
40									800
41									799
42									798
43									797
44									796
45									795




Undisturbed sample  
 SH = Shelby; P = Pitcher; O = other



Driven (2.5 to 3.0 inch) with liners  
 MC = Modified California; O = other



Standard Penetration Test (SPT) sampler

Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<h1 style="margin: 0;">ROCK LOG</h1> <h2 style="margin: 0;">Boring No. B-1054</h2>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'10.53981"N / 97°47'39.42754"W		Total Depth 75.5 feet	
Drilling Contractor and Rig Geotechnology / CME 55		Elevation and Datum 839.663 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 33.7 feet	
Casing Size and Depth 4" / 33.7 feet		Length of Core Barrel and Bit 8.5 feet	No. of Core Boxes 4	Date Started 3/27/07	
		Borehole Inclination Vertical	Logged by M. McMacklin/G Van Etten	Date Completed 4/2/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 4/9/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)	
34		2.23	15	1.6	100	MW	R2					LIMESTONE: wackestone; light gray (N7); massive with short intervals; moderately weathered (MW); strong (R4); fossiliferous.[Glen Rose Formation]	Used HSA as temporary surface casing.	805	
35		3.13		1.8											SHALE: claystone with interbedded wackestone; same as above; light gray (2.5 Y 7/1) to light yellowish brown (2.5 Y 6/8); bedded; weak to extremely weak (R2-R1).
36		3.67				HW						LIMESTONE: wackestone with silty interbeds; light gray (N7) with bluish gray (5 B 7/1) burrows and yellow stain from weathered clay; Moderately Weathered (MW); strong (R4).[Glen Rose Formation]		803	
37		2.25												802	
38		3.42	16	5.2	100	HW	RR2-RR4					SHALE: medium gray (N5).[Glen Rose Formation]		801	
39		3.57		5.0											LIMESTONE: wackestone; as above.[Glen Rose Formation] SHALE: medium gray (N5).[Glen Rose Formation]
40		3.38				SW	R2					LIMESTONE: wackestone with shale interbeds with FeO staining; light gray (N7) and medium gray (shale); Slightly Weathered(SW); strong(R4).[Glen Rose Formation]	Lower limit of weathered rocks. 39.8' and 40.5'; gradational contacts.	799	
41		3.13										LIMESTONE: packstone; light gray (N7); Slightly Weathered(SW); strong(R4); fossiliferous.[Glen Rose Formation]		798	
42		4.83					R2					SHALE with wackestone interbedded; medium gray (N5); Slightly Weathered(SW); weak(R2).[Glen Rose Formation]		797	
43		4.43	17	5.0	100							SHALE: medium gray (N4); ??? laminated; Slightly Weathered(SW); weak(R2).[Glen Rose Formation]		796	
44		2.48		5.0											795
45		3.35							R2R2					LIMESTONE: wackestone; medium gray (N7); as above.[Glen Rose Formation] SHALE: medium gray (N5) with interbedded wackestone; light gray; laminated.[Glen Rose Formation]	
46		3.27				SW	R0							793	
47		6.4	18	5.0	100									792	
48		6.75		5.0										SHALE: medium dark gray (N4); Slightly Weathered(SW); weak(R2).[Glen Rose Formation]	
		7.38													


Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1054</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)						
49		7.38	18	5.0 5.0	100	SW	R4					LIMESTONE: wackestone; light gray; irregular beds with shale partings; Slightly Weathered(SW); strong(R4); silty matrix.[Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	790						
50		5.78																	789	
51		3.18	19	5.0 5.0	100	SW	R2					SHALE: medium dark gray (N4); massive/laminated; Slightly Weathered(SW); weak(R2).[Glen Rose Formation]		788						
52		3.47																	787	
53		4.37																		786
54		6.32																		785
55		4.22	20	5.1 5.0	100	SW	R2			1054-19		LIMESTONE: wackestone; light gray (N7); mottled with silty matrix; medium gray (N6); Slightly Weathered(SW); strong(R4).[Glen Rose Formation]	No water return.	784						
56		5.2				F	R0								SHALE: medium dark gray (N4); Slightly Weathered (SW); weak(R2).[Glen Rose Formation]	783				
57		3.7				F	R1								LIMESTONE: packstone; light gray (N7); fresh(F); very weak(R1); fossiliferous; wavy shale swirls; many fossils; several oolites; violent reaction to HCl.[Glen Rose Formation]	782				
58		5.9	21	4.9 5.0	100	F	R0			1054-20		SHALE: medium dark gray (N4); massive; fresh(F); extremely weak(R0).[Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	781						
59		3.58				F	R2								LIMESTONE: wackestone; very light gray (N7); fresh(F); weak(R2); few fossils; vugs; violent reaction to HCl.[Glen Rose Formation]	780				
60		4.12				F	R1								LIMESTONE: packstone; medium light gray (N6); fresh; very weak; many shale swirls; rip-up clasts; fossil casts; violent reaction to HCl; grades to fewer rip-up clasts; verging on wackestone.[Glen Rose Formation]	779				
61		1.9	21	4.9 5.0	100	F	R1							778						
62		2														777				
63		1.33								1054-21				776						
		1.67																		




Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1054</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
64		1.67	21	4.9 5.0	100	F	R1					LIMESTONE: packstone; medium light gray (N6); fresh; very weak; many shale swirls; rip-up clasts; fossil casts; violent reaction to HCl; grades to fewer rip-up clasts; verging on wackestone.[Glen Rose Formation]		775
65		4.33												
66		5.08										LIMESTONE: wackestone; very light gray (N8) to medium light gray (N6); fresh; very weak to weak; grainy texture; several thin shale interbeds and bioturbation; few fossil fragments; violent reaction to HCl.		773
67		2.42												772
68		3.83	22	4.8 5.0	100	F	R1-R2		1054-22					771
69		3.93												
70		4.4											769	
71		1.87										LIMESTONE: packstone; medium light gray (N6); fresh(F); very weak(R1); grainy texture near top of run; many rip-up clasts; thin wavy shale interbeds; several large bioturbations; violent reaction to HCl.[Glen Rose Formation]	Water refill due to lost circulation.	768
72		2.22												767
73		3.38	23	5.0 5.0	100	F	R1		1054-23					766
74		2.18												
75		3.83												764
76												SHALE: medium gray (N5); fresh(F); extremely weak(R0); limestone rip-up clasts.[Glen Rose Formation] BOTTOM OF HOLE AT 75.5'	Bottom of boring at 75.5'.	763
77														762
78														761

Project Name and Job Number TXU Comanche Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-1055</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'08.18710"N / 97°47'45.48654"W		Total Depth 50 feet	
Drilling Contractor and Rig Texplore / CME 75		Elevation and Datum 854.8 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 14 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 5	Date Started 4/4/07	
		Borehole Inclination Vertical	Logged by M. Buga	Date Completed 4/4/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 4/9/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0										854
1	ML			5				RESIDUAL SOIL (RS)		
			B-1055 1	4	17/18			SILT, dark brown (10yr 3/3), moist, stiff, caliche, rootlets		
2	CL			4				LEAN CLAY, mottled, light gray (10YR7/1), yellowish brown (10YR5/6), moist, stiff, caliche and calcareous deposits, organics 5-10%		853
3										852
4	CL		B-1055 2	14	10.5/10.5			Weathered Limestone fragments with some clay, light yellowish brown (10YR6/4), brownish yellow (10YR6/8), dry-damp, hard, few organics, (weathered limestone)		851
5				50/4.5"						850
6	CL		B-1055 3	28	10/10			SILT and weathered limestone fragments, light gray (2.5Y7/2), dry, hard		849
7				50/4"						848
8								- Rig / Auger shook and vibrated ~ 8'		847
9			B-1055 4	9	15/15			LEAN CLAY, mottled, olive yellow (2.5+6/8), light olive brown (2.5Y5/4), damp-moist, very siff, trace organic debris, sparse caliche		846
10				50/2.75"						845
11	CL		B-1055 5		3/5			- with limestone clasts at sample bottom		844
12				50/5"						843
13										842
14										841
15										840

Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-1055</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'08.18710"N / 97°47'45.48654"W		Total Depth 50 feet
Drilling Contractor and Rig Texplor / CME-75		Elevation and Datum 854.8 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 14 feet
Casing Size and Depth 4" / 14 feet		Length of Core Barrel and Bit 11.9 feet	No. of Core Boxes 3	Date Started 4/4/07
		Borehole Inclination Vertical	Logged by M. Buga	Date Completed 4/4/07

Reviewed by / Date                      R. Ortiz 4/9/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
14		2.02							1055-6			LIMESTONE: wackestone; gray (N5); slightly weathered (SW); weak (R2); strong HCl reaction; top 0.2' is micrite. [Glen Rose Formation]	Top of rock 14'. Began NQ coring, Glen Rose Formation.	840
15		1.75	1	1.7 2.0	85	SW	R2							839
16		1.75												838
17		1.83				SW	R1-R2					SHALE: claystone; greenish gray (Gley 1 5/1); generally massive with occasional very thin; very thinly spaced bedding; very weak to weak (R2); slightly weathered (SW); very slight HCl reaction. [Glen Rose Formation]	100% water return.	838
18		1.42	2	5.0 5.0	100	SW	R2		1055-7			LIMESTONE: wackestone; gray (N5); slightly weathered (SW); weak (R2); strong HCl reaction; bioturbated. [Glen Rose Formation]		837
19		1.43										Shale	300 psi downpressure.	836
20		1.48				SW	R2-R3					LIMESTONE: micrite; dark gray (N4); massive with occasional clay filled voids and unfilled voids; slightly weathered (SW); weak to medium strong (R2-R3); slight to strong HCl reaction. [Glen Rose Formation]		835
21		4.3				SW	R2-R3			Rf, Wa, Ro, Ti		SHALE; dark greenish gray (Gley 1 4/1); slightly weathered (SW); very weak (R1); no HCl reaction; desiccation cracks. [Glen Rose Reaction]		834
22		3.67				SW	R1-R2					LIMESTONE: micrite; dark gray (N4); slightly weathered (SW); weak (R2); bioturbated; slight HCl reaction. [Glen Rose Formation]		833
23		4.83	3	4.7 5.0	96	SW	R2		1055-8			SHALE; DARK GREENISH GRAY (Gley 1 4/1); massive; slightly weathered (SW); very weak (R1); shell fragments; wackestone interbed 22.8'-23.0'. [Glen Rose Formation]		832
24		2.83										LIMESTONE; MICRITE/SPARITE; gray (N6); massive; oolitic; slightly weathered (SW); weak to medium strong (R2-R3); no HCl reaction; dissolution fractures. [Glen Rose Formation]		831
25		1.67				SW	R1							830
26		1.33												829
27		1.58	4	5.0 5.0	100				1055-9					828
28		1.2				SW	R2					LIMESTONE: wackestone; dark greenish gray (Gley 1 4/1); slightly weathered (SW); weak (R2); slight HCl reaction; fossiliferous; sparse clasts; more micritic below 31'; with voids. [Glen Rose Formation]		827
29														826

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1055</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)				
29		1.17	4	5.0 5.0	100	SW	R2					LIMESTONE: wackestone; dark greenish gray (Gley 1 4/1); slightly weathered (SW); weak (R2); slight HCl reaction; fossiliferous; sparse clasts; more micritic below 31'; with voids.[Glen Rose Formation]		825				
30		1.33																824
31		3.5	5	4.2 5.0	84	SW	R1					SHALE; dark greenish gray (Gley 1 4/1); massive; slightly weathered (SW); very weak (R1); no HCl reaction; desiccation cracks.[Glen Rose Formation]		823				
32		7															822	
33		6.52																821
34		1.85	6	4.5 5.0	90	SW	R2					LIMESTONE: wackestone; gray (N5-N6); slightly weathered (SW); weak to strong (R2-R4);violent reaction to HCl.[Glen Rose Formation]	Rig vibrating.	820				
35		1.72																819
36		2.13	7	4.4 5.0	88	SW	R2-R3					LIMESTONE: packstone/micrite; gray (N6); slightly weathered (SW); weak to medium strong (R2-R3); strong to violent HCl reaction; micritic below 37'.[Glen Rose Formation]		818				
37		1.85																817
38		2.83																816
39		2.35	7	4.4 5.0	88	SW	R2					LIMESTONE: wackestone; gray (N5) to dark gray (N4); slightly weathered (SW); weak (R2); strong to violent HCl reaction; micrite interbed 38.2'-38.5'; grades toward packstone 42.5'-44.2'.[Glen Rose Formation]		815				
40		1.98																814
41		0.78	7	4.4 5.0	88	SW	R2					LIMESTONE: wackestone; gray (N5) to dark gray (N4); slightly weathered (SW); weak (R2); strong to violent HCl reaction; micrite interbed 38.2'-38.5'; grades toward packstone 42.5'-44.2'.[Glen Rose Formation]		813				
42		1.08																812
43		0.92											811					
44																		


BJ, Wa, Ro, Op

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908




**ROCK LOG**  
**Boring No. B-1055**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
44		4.5	7	4.4	88	SW	R2				BJ, Wa, Ro, Op	SHALE; dark greenish gray (Gley 1 4/1); slightly weathered (SW); very weak (R1); no HCl reaction; desiccation cracks; micrite 45.1'-45.4'; micrite clasts 46.6'-46.7'; micrite interbed 46.9'-47.1'. [Glen Rose Formation]	Rods vibrating.	810
45		5.17		5.0									809	
46		4.25	8	3.2	80	SW	R2-R3					LIMESTONE: micrite; gray (N5); slightly weathered (SW); weak to medium strong (R2-R3); violent HCl reaction; occasional clay veining; wackestone 48.5'-48.8'. [Glen Rose Formation]	Water circulation issues, rods vibrate occasionally.	808
47		3											4.0	807
48		3												806
49		2.67												805
50												BOTTOM OF HOLE AT 50.0'.	Total depth drilled 50.0'.	804
51														803
52														802
53														801
54														800
55														799
56														798
57														797
58														796
59														

Project Name and Job Number TXU Comanche Peak COL 1908				<h2>SOIL LOG Boring No. B-1056</h2>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'08.94327"N / 97°47'39.29146"W		Total Depth 51 feet	
Drilling Contractor and Rig Geotechnology / CME 55		Elevation and Datum 843.027 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 12.5 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 4	Date Started 3/26/07	
		Borehole Inclination Vertical	Logged by M. McMackan	Date Completed 3/27/07	

Reviewed by / Date M. Zellman 3/28/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0							ARTIFICIAL FILL (Qaf) Asphalt			843
1	GW			8			GRAVEL with sand, (oil aggregate fill, brown), (7.5YR4/2), rounded to subangular gravel, loose, damp, low to none dry strength			842
2	GW		B-1056 1	5	12/18		GRAVEL, very pale brown (10YR7/3), fine grained wackestone chips (freshly shattered by SPT)			841
3			B-1056 2	50/5"			LEAN CLAY, slight yellow brown to pale yellow, (2.5Y7/4) to light yellowish brown, damp, with calcareous deposits and (weathered shale with angular to subrounded clasts of wackestone & saprolite			840
4			B-1056 3	13	12/18	1.5				839
5	CL		B-1056 4	7						838
6			B-1056 5	8	12/18	1.5				837
7				6						836
8				7	7/18	1				835
9				3						834
10				2	3/18					833
11				1						832
12				2						831
13				5						830
14				2						829
15	ML			50/3"			SILT, light yellow brown (2.5Y7/3), hard, (completely weathered limestone)			828

Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG Boring No. B-1056</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'08.94327"N / 97°47'39.29146"W		Total Depth 51 feet	
Drilling Contractor and Rig Geotechnology / CME 55		Elevation and Datum 843.027 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 12.5 feet	
Casing Size and Depth 4" / 12.5 feet		Length of Core Barrel and Bit 8.5 feet	No. of Core Boxes 3	Date Started 3/26/07	
		Borehole Inclination Vertical	Logged by M. McMackin	Date Completed 3/27/07	

Reviewed by / Date M. Zellman 3/28/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
13		2.27				SW	R4					LIMESTONE: wackestone; light gray (N7) with light yellow stain on bedding; massive; moderately weathered (MW); strong (R4); fossil fragments; strong reaction to HCl. [Glen Rose Formation]	Rig Pressure 350 psi	830
14		3.38	6	2.9 3.5	83	SW	R4				JT, JRC, fracture stain	LIMESTONE: packstone; yellowish gray (5Y6/1); massive; moderately weathered (MW); strong (R4); with visible shell frags and vugs; strong reaction to HCl. [Glen Rose Formation]		829
15		4.12							1056-5		JT, JRC		Pale yellow water return	828
16		2.15										LIMESTONE; silty wackestone; light gray (N7) to yellow (10YR 7/6); highly weathered to moderately weathered (HW-MW); medium strong (R4); coarse shell fragments in silty matrix; medium to strong reaction to HCl; lower limit of moderate weathering marked by yellow at 16.4; color change to medium gray (N5); speckled with white (N9); to darker gray (N3); shell fragments; slightly weathered (SW); medium strong (R4); gradational to clean siltstone sharp contact. [Glen Rose Formation]		827
17		6.05				SW	R3							826
18		5.05	7	5.0 5.0	100									825
19		3.88				SW	R3					SHALE: siltstone; medium gray (N5) to greenish gray (5G 6/1); slightly weathered (SW); medium strong (R4); moderate reaction to HCl; vugs at 20'. [Glen Rose Formation]		824
20		2.43							1056-6			SHALE; medium dark gray(N4); massive; laminated; slightly weathered (SW); weak (R2). [Glen Rose Formation]		823
21		3.55				SW	R2							822
22		6.82				SW	R4							821
23		6.23	8	5.0 5.0	100	SW	R3		1056-7			LIMESTONE: wackestone; light gray (N7) to medium gray (N5); shale interbeds throughout; slightly weathered (SW); medium strong (R4). [Glen Rose Formation]	Thin irregular interbeds, shell fossils	820
24		6.52				SW	R3					SHALE: siltstone; medium gray (N5); massive; grades to wackestone with interbedded shale; siltstone; slightly weathered (SW); medium strong (R3). [Glen Rose Formation]	Light gray water return	819
25		2.05										LIMESTONE: wackestone; with interbedded shale; siltstone; light gray (N7) to greenish gray (5G 6/1); medium thick irregular beds; slightly weathered (SW); strong (R4); fossiliferous lignite. [Glen Rose Formation]		818
26		2.3	9	4.9 5.0	98	SW	R4							817
27		4.9												816


Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1056</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
28		4.9							1056-8 1056-8			LIMESTONE: wackestone; with interbedded shale; siltstone; light gray (N7) to greenish gray (5G 6/1); medium thick irregular beds; slightly weathered (SW); strong (R4); fossiliferous lignite. [Glen Rose Formation]		815
29		3.15												814
			9	4.9 5.0	98									
		2.47												
30						SW	R4							813
		2.93												
31														812
		1.2												
32														811
		2.7												
33														810
		5.18	10	4.9 5.0	98	SW	R2					SHALE; shale with wackestone interbeds; medium dark gray (N4) to light gray (N7); slightly weathered (SW); weak (R2); thin beds of wackestone. [Glen Rose Formation]		
34									1056-9					809
		7.93				SW	R4					LIMESTONE: wackestone; with interbedded shale; light gray (N7); slightly weathered (SW); strong (R4). [Glen Rose Formation]		
35														808
		2.72										SHALE; shale with wackestone interbeds; medium gray (N5) and light gray (N7); slightly weathered (SW); weak (R2). [Glen Rose Formation]		
36						SW	R2							807
		3.32												
37														806
		3.47										LIMESTONE: wackestone; very light gray (N8); massive with thin shale partings; slightly weathered (SW); strong (R4);		
38						SW	R4							805
		4.87	11	5.0 5.0	100									
39														804
		4.32				SW	R2					SHALE; medium dark gray (N5); slightly weathered (SW); weak (R2). [Glen Rose Formation]		
40									1056-10					803
		5.18										LIMESTONE: wackestone; light gray (N7); slightly weathered (SW); strong with thin irregular shale beds. [Glen Rose Formation]		
41						SW	R4							802
		3.58												
42			12	4.5 5.0	90									801
		7.03										Shale		




Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1056</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)		
43		7.03	12	4.5 5.0	90	SW	R4					Shale LIMESTONE: packstone, shaly; light gray (N7); massive; slightly weathered (SW); strong (R4). [Glen Rose Formation]		800		
44		7.38				SW	R4									799
45		3.35									1056-11				SHALE; medium gray (N5); slightly weathered (SW); weak (R2). [Glen Rose Formation]	
46		4.38						1056-12						797		
47		4.42	13	5.0 5.0	100	SW	R2					LIMESTONE: wackestone; light gray(N7); massive; slightly weathered (SW); strong (R4). [Glen Rose Formation] SHALE: shale with wackestone interbeds; medium dark gray(N4); massive; laminated with thin beds of wackestone; slightly weathered (SW); weak (R2). [Glen Rose Formation]		796		
48		3.87														795
49		5.47				SW	R4									794
50		3.47				SW	R2							793		
51		2.95							1056-13					792		
52														791		
53														790		
54														789		
55														788		
56														787		
57														786		

Project Name and Job Number TXU Comanche Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG Boring No. B-1057</b>	
Type and Diameter of Boring HSA / 7"			Boring Location 32°18'06.72009"N / 97°47'45.31534"W		Total Depth 50 feet
Drilling Contractor and Rig Richard Simmons Drilling / BK-81 HD			Elevation and Datum 861.14 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 14.9 feet
Sampling Method SPT			Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 6	Date Started 3/26/07
			Borehole Inclination Vertical	Logged by S.Deer	Date Completed 3/27/07

Reviewed by / Date \_\_\_\_\_ R. Ortiz 3/28/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
0							<b>RESIDUAL SOIL (RS)</b> SANDY SILT, yellowish brown (10YR5/6) dry, medium stiff to stiff (high blow counts from 2'-2.5' due to boulder in spoon), 10% (angular limestone gravel), reacts strongly to HCL		861
1	ML		B-1057 1	3					860
2				11	18/18	1.75			859
3				35					858
4			B-1057 2	50/0"	0/0		- rock, boulder, or ledge?		857
5									856
6							<b>LEAN CLAY</b> , strong brown (7.5YR5/8), damp, stiff, 5% angular limestone gravel, reacts strongly to HCL		855
7	CL		B-1057 3	2	14/18	1.75			854
8				4					853
9				9					852
10	ML		B-1057 4	14	0/0	4	<b>SILT</b> , light gray (2.5Y7/2), dry, very stiff (refusal due to rock) 5% angular limestone gravel, strong reaction to HCL, minor organics		851
11				50/3"					850
12	ML		B-1057 5	37	0/0	3.5	<b>SILT</b> , pale yellow (2.5Y7/3), dry, hard, 10% angular limestone gravel, 10% fine sand, reacts strongly to HCL		849
13				50/3"					848
14	CL		B-1057 6	3	17/17	3	<b>LEAN CLAY</b> , olive yellow (0.5Y6/8), dry, very stiff,		847
15				7					846
				50/5"					845

Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. B-1057</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'06.72009"N / 97°47'45.31534"W		Total Depth 50 feet	
Drilling Contractor and Rig R. Simmons Drilling / BK-81		Elevation and Datum 861.14 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 14.9 feet	
Casing Size and Depth 4" / 15.5 feet		Length of Core Barrel and Bit 8.7 feet	No. of Core Boxes 3	Date Started 3/26/07	
		Borehole Inclination Vertical	Logged by S. Dee	Date Completed 3/27/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 3/28/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
15												CLAY (CL); olive yellow (2.5 Y 6/8); damp; medium stiff to very stiff; 50 % clay; 70 % silt; 5 % fine sand; 5 % anhular gravel (limestone); medium dry strength; slow dilatency; medium plasticity. [Glen Rose Formation]		846
16		2.33				MW	R2					LIMESTONE: wackestone; very light gray (N8); massive with interbeds of silt (<0.1'); moderately weathered (MW); weak (R2). [Glen Rose Formation]	Rain delay 3/26/07 until 3/27/07	845
17		2.67	7	4.5 4.5	100	MW	R0					SHALE: medium gray (N5); very thinly bedded; slightly weathered to highly weathered (SW-HW); extremely weak (R0); slight reaction to HCL. [Glen Rose Formation]		844
18		1.33										LIMESTONE: wackestone; massive with (<0.1') interbeds of shale and silt; slightly weathered (SW); weak (R2); clasts are bluish gray (5B 5/1); medium grained oolites with slightly rounded fossils; shale interbed from 20.9' to 21.1' and 22.1' to 22.3'; abundant bivalve fossils from 22.3' to 22.5'. [Glen Rose Formation]		843
19		1.52				SW	R2			1057-7		Shale		842
20		2.17										Shale		841
21		2.68				SW	R2			1057-8		Shale		840
22		2.72	8	5.0 5.0	100	F	R0					Abundant bivalves from 22.3' to 22.5'. SHALE: calcareous; medium dark gray (N4); very thinly bedded; fresh (F); extremely weak (R0); moderate reaction to HCL. [Glen Rose Formation]		839
23		2.67										LIMESTONE: wackestone; silty; medium gray (N5); massive; fresh; weak (R2); matrix is both silty grained and calcite/ dolomite with gravel crystals; with clasts of gray and bluish gray; fossils; moderate reaction to HCL; shale interbed from 25.5' to 26'; below 26' rock becomes greenish gray (5G 6/1); silt stone interbed from 27.8' to 28'. [Glen Rose Formation]		838
24		1.98				F	R0					Shale		837
25		3.67										Shale		836
26		4.43				F	R2					Silt stone interbed from 27.8' to 28'. LIMESTONE: wackestone; fossiliferous; very light gray (N8); massive with rare interbeds of shale/silt; fresh (F); weak (R2); clasts are fine to coarse grained; white to bluish gray fossils of various shapes. [Glen Rose Formation]		835
27		3.65	9	5.0 5.0	100									834
28		4.02								1057-9				833
29		3.03				F	R2							832

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1057</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
30		2										LIMESTONE; wackestone; fossiliferous; same as above; occasional oolites from 20.9' to 31.7'; rare lignite (<0.1') interbeds; strong reaction to HCL. [Glen Rose Formation]		831
31		1.67				F	R2		1057-10					830
32		2.03	10	5.0 5.0	100									829
33		4.02				SW	R0					LIMESTONE; silty packstone; medium gray (N5); very thinly bedded; slightly weathered (SW); weak (R2); clasts are gray silt and fine to medium grained; white and bluish gray fossils; strong reaction to HCL; abundant rip up clasts; become more massive below 35'; silt clasts supported; abundant coarse fossils from 36.8' to 37'. [Glen Rose Formation]	100 percent water return (gray)	828
34		2.57												827
35		1.97				SW	R2							826
36		2.67												825
37		2.72	11	5.0 5.0	100	F	R2					SHALE: medium dark gray (N4); fresh (F); extremely weak (R0); very thinly bedded. [Glen Rose Formation]		824
38		2.63							1057-11					823
39		2.05				SW	R0					LIMESTONE: packstone; same as above; abundant fossils from 39.3' to 39.5'; abundant bioturbation throughout; some oolitic fossils. [Glen Rose Formation]		822
40		2.72												821
41		2.17				SW	R2							820
42		1.55	12	5.0 5.0	100							LIMESTONE: wackestone; light gray (N7); massive with zones of abundant shale/silt (<0.1') interbeds; slightly weathered; weak (R2); clasts are bluish gray and white; fine to medium grained; oolite to subrounded fossils. [Glen Rose Formation]		819
43		2.47				SW	R2		1057-12			Shale		818
44		2.65										Shale		817

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908




**ROCK LOG**  
**Boring No. B-1057**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
45		1.82				SW	R2					LIMESTONE: wackestone; same as above. [Glen Rose Formation]		816
46		1.88										LIMESTONE; packstone; very thinly bedded with abundant (<0.1') interbeds of shale/silt; slightly weathered (SW); weak (R2); reacts strongly to HCL; clasts are fine to coarse grained; white and gray subangular fossils; bioturbation; rip up clasts. [Glen Rose Formation]		815
47		1.62	13	5.0 5.0	100									814
48		1.97				SW	R2		1057-13					813
49		3.45												812
50												SHALE: dark gray (N4); fresh (F); extremely weak (R0). [Glen Rose Formation] BOTTOM OF HOLE AT 50.0'		811
51														810
52														809
53														808
54														807
55														806
56														805
57														804
58														803
59														802

Project Name and Job Number TXU Comanche Peak COI 1908				<b>SOIL LOG Boring No. B-1058</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'07.47110"N / 97°47'39.04390"W		Total Depth 51 feet	
Drilling Contractor and Rig Geotechnology / CME 55		Elevation and Datum 845.221 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 1.2 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 2	Date Started 3/25/07	
		Borehole Inclination Vertical	Logged by M. McMackan	Date Completed 3/25/07	

Reviewed by / Date M. Zellman 3/28/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0							ASPHALT SURFACE			845
1	GP		B-1058 1	8			GRAVEL w/ SAND; brown (5YR3/3), dry, shattered wackestone CLAYEY SILT, (10YR7/8) yellow, damp, stiff, w/ calcareous deposits and few angular limestone fragments, (top of weathered bedrock)		Top of weathered bedrock	844
2	ML			9	17/18	4		843		
3				10			LIMESTONE FRAGMENTS (shattered weathered Limestone) with some clay, yellowish gray (5Y8/1), dry, dense			842
4	GP		B-1058 2	16				841		
5					27	11/18		Started HQ rock core at 4.7'	840	
6				50/5"					839	
7									838	
8									837	
9									836	
10									835	
11									834	
12									833	
13									832	
14									831	
15										

Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG Boring No. B-1058</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'07.47110"N / 97°47'39.04390"W		Total Depth 51 feet	
Drilling Contractor and Rig Geotechnology / CME 55		Elevation and Datum 845.221 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 1.2 feet	
Casing Size and Depth 4" / 6.2 feet		Length of Core Barrel and Bit 8.5 feet	No. of Core Boxes 3	Date Started 3/25/07	
		Borehole Inclination Vertical	Logged by M. McMackin	Date Completed 3/25/07	

Reviewed by / Date M. Zellman 3/28/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
5		4.53	3	1.0 1.3	69	MW-HW	R4-R2					LIMESTONE: wackestone; with interbedded saprolite; very light gray and yellow to light gray (2.5YR 7/2 to 2.5Y 7/6); moderately to highly weathered (MW-HW); strong (R4) (wackestone) to weak (R2) (saprolite). [Glen Rose Formation]	Hollow stem auger used as temporary casing. Began HQ coring at 4.7'. Highly Weathered Glen Rose Formation.	840
6		2.77									JRC7, ??? angle 0°, MnO staining on fracture surface			839
7		1.23				MW-HW	R4-R2		1058-3				350 psi downpressure.	838
8		1.23	4	2.5 5.0	50								Yellowish gray return water.	837
9		0.17										LIMESTONE: saprolite; no core recovered. [Glen Rose Formation]	Half of core lost due to washout of saprolite, positions of breaks and contacts uncertain.	836
10		0.17				CW-MW	R1							835
11		2.5											Balls of saprolite in drilling mud.	834
12		1.68												833
13		1.8	5	3.0 5.0	60							LIMESTONE: saprolite; yellow to light gray (2.5Y 7/2 to 2.5& 7/6). [Glen Rose Formation]		832
14		2.05				HW	R1		1058-4				Distinct weathering front.	831
15		1.5				HW MW	R2					SHALE; silty; greenish gray (5G 6/1). [Glen Rose Formation]		830
16		0.87				HW MW	R2					SHALE: siltstone; greenish gray (5G 6/1); moderately weathered (MW); medium strong (R3; matrix supported clasts; sand size shell fragments. [Glen Rose Formation]		829
17		1.82										LIMESTONE; limestone; brown (10YR 5/3); grades to packstone; with clay matrix; 0.2' at base; highly weathered (HW); weak (R2). [Glen Rose Formation]		828
18		1.13	6	5.0 5.0	100	SW	R4		1058-5			LIMESTONE: wackestone; white (N9) to light gray (N7); medium thick beds; slightly weathered (SW); strong (R4) with shell fragments; lignite and stylolites; strong reaction to HCl. [Glen Rose Fragments]	350 psi downpressure.	827
19		4.6										Shale		826

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-1058**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
20		4.6	6	5.0 5.0	100	SW	R4					Shale	Light gray return water.	825
21		11.5												
22		4.55												823
23		6.45				SW	R4			1058-6				822
24		6.38	7	4.9 5.0	98									821
25		5.7												SHALE; dark gray (N3); laminated; slightly weathered (SW); weak (R2). [Glen Rose Formation]
26		4.38				SW	R2							819
27		3.23												818
28		4.6								1058-7				817
29		2.03	8	5.0 5.0	100	SW	R4							816
30		3.8												
31		2.68												814
32		5.17												813
33		3.48	9	4.9 5.0	98	SW	R4						Light gray return water.	812
34		4.27												
		3.2												




Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-1058</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)				
35		3.2	9	4.9 5.0	98	SW	R4		1058-8					810				
36		3.55																809
37		2.9	10	4.8 5.0	96	SW	R2		1058-9			SHALE; with interbedded wackestone; medium gray (N5) and light gray (N7); thin to medium bedded; slightly weathered (SW); weak (R2). [Glen Rose Formation]		808				
38		3.27															807	
39		6.23																806
40		9.72	11	4.6 5.0	92	SW	R2-R4		1058-10			LIMESTONE; WACKESTONE with interbedded shale; light gray (N7) and medium gray (N5); SW; strong; fossils and lignite; shale beds are generally less than 0.1"; shale bed 44.2'-42.3'; 45.1'-45.3'; and 45.6'-45.8'.		805				
41		7.27															804	
42		3.27																803
43		2.87																802
44		7.38										Shale		801				
45		7.05	12	4.7 5.0	94	SW	R2		1058-11			Shale		800				
46		9.1														Shale		799
47		5.48														LIMESTONE: packstone; fossiliferous; medium to light gray (N5 to N7); medium thick bed; slightly weathered (SW); strong (R4); large bivalve shells filled with mud; clast supported. [Glen Rose Formation]		798
48		5.22							1058-12			SHALE; medium gray (N5); medium laminated bed; slightly weathered (SW); strong (R4). [Glen Rose Formation]		797				
49														796				


Project Name and Job Number TXU Comanche Peak Col 1908	 <small>William Lettis &amp; Associates, Inc.</small>	<h2 style="margin: 0;">ROCK LOG</h2> <h3 style="margin: 0;">Boring No. B-1058</h3>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
50			12	4.7 5.0	94	SW	R2					SHALE; medium gray (N5); medium laminated bed; slightly weathered (SW); strong (R4). [Glen Rose Formation]		795
51												BOTTOM OF HOLE AT 51.0'	Total depth drilled: 51.0'.	794
52														793
53														792
54														791
55														790
56														789
57														788
58														787
59														786
60														785
61														784
62														783
63														782
64														781

Project Name and Job Number TXU Comanche Peak COL 1908		 WLA William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-1059</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'04.98000"N / 97°47'44.55224"W		Total Depth 50 feet	
Drilling Contractor and Rig Richard Simmons Drilling / BK-81		Elevation and Datum 866.149 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 14.5 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 6	Date Started 3/24/07	
		Borehole Inclination Vertical	Logged by S.Deer	Date Completed 3/25/07	

Reviewed by / Date M. Zellman 3/26/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0									<b>ARTIFICIAL FILL (Qaf)</b> SILT, (10YR7/6) yellow, dry, medium stiff, with calcareous deposits, strong reaction to HCL	866
1	ML	B-1059 1		3	17/18	1				865
2			4	6						864
3										
4	ML	B-1059 2		10	13/18	2.5			ANGULAR LIMESTONE FRAGMENTS and SILT, pale yellow (2.5Y8/4), dry, stiff to hard, reacts strongly to HCL (completely weathered limestone)	862
5			36	37						861
6										
7	ML	B-1059 3		10	17/18	4			<b>RESIDUAL SOIL (RS)</b> SILT, Brownish yellow (10YR6/6), dry, stiff to hard, 10% gravel, reacts strongly to HCL, with calcareous deposits	859
8			25	35						858
9										
10	ML	B-1059 4		12	12/18	1			- less gravel and fewer calcareous deposits	856
11			9	11						855
12										
13	ML	B-1059 5		11	17/18	2			SANDY SILT, brownish yellow (10YR6/8), dry, stiff to very stiff, 10% (angular limestone gravel), reacts strongly to HCL	853
14			20	15						852
15										
14		B-1059 6		50/3"	3/3	3.5			ROCK LEDGE with small soil section below it followed by likely weathered bedrock, augered through weathered bedrock to 17'	852

Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG Boring No. B-1059</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'04.98000"N / 97°47'44.55224"W		Total Depth 50 feet	
Drilling Contractor and Rig Richard Simmons / BK 81		Elevation and Datum 866.149 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 14.5 feet	
Casing Size and Depth 4" / 17 feet		Length of Core Barrel and Bit 8.8 feet	No. of Core Boxes 3	Date Started 3/24/07	
		Borehole Inclination Vertical	Logged by S. Dee	Date Completed 3/25/07	

Reviewed by / Date M. Zellman 3/26/07


Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
17		1.43										SHALE; dark gray (N3); very thinly bedded; slightly weathered (SW); extremely weak (R0); no reaction to HCl. [Glen Rose Formation]	Began HQ core 17.0', Glen Rose Formation.	849
18		1.68	7	3.2 3.0	100	SW	R0		1059-7					848
19		2.1				SW	R2					LIMESTONE: wackestone; massive but with (0.1') interbeds of shale/silt; highly weathered (HW); weak (R2); strong reaction to HCl. [Glen Rose Formation]		847
20		2.85				F	R1					SHALE: siltstone; medium gray (N5); very thinly bedded; fresh (F); very weak (R1). [Glen Rose Formation]		846
21		2.05												845
22		1.58	8	5.0 5.0	100	SW	R2					LIMESTONE: wackestone; massive with intermittent (<0.1') interbeds of shale/silt; slightly weathered (SW) weak (R2); clasts are fine to coarse grained bluish gray (5B 7/1); rounded to subrounded fossils; influx of silt clasts from 24.1'-24.5'. [Glen Rose Formation]		844
23		1.33							1059-8				100% water return (gray).	843
24		1.87												842
25		1.93				F	R0					SHALE: siltstone; medium gray (N5); massive; fresh (F); extremely weak (R0); slight reaction to HCl. [Glen Rose Formation]		841
26		2.43				F	R2					LIMESTONE: wackestone; massive; fresh (F); weak (R2); siltstone interbed from 6.7'-27.3'. [Glen Rose Formation]		840
27		2.85	9	5.0 5.0	100	SW	R2		1059-9			LIMESTONE: packstone; silty; massive to very thinly bedded; slightly weathered (SW); weak to very weak (R2-R1); clasts are gray silt; fine to coarse white and bluish gray fossils (N9-5B 7/1); strong reaction to HCl. [Glen Rose Formation]		839
28		2.1												838
29		0												837
30		2.75				F	R0					SHALE: siltstone; medium gray (N5); massive to very thinly bedded; fresh (F); weak (R2). [Glen Rose Formation]		836
31		2.93	10	4.9 5.0	98	SW	R2						Gradational contact.	835
32														

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1059</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
32		2.02										LIMESTONE: wackestone; fossiliferous; very light gray (N8); massive with rare interbeds (<0.1') of shale/silt; slightly weathered (SW); clasts are fine to coarse grained; white and bluish gray fossils of various sizes (N9 - 5B 7/1); strong reaction to HCl; siltstone interbed 34.7'-34.8'. [Glen Rose Formation]		834
33		1.58	10	4.9 5.0	98				1059-10					833
34		1.43				SW	R2							832
35		2.17												831
36		1.97												830
37		2.02	11	5.0 5.0	100								LIMESTONE: packstone; silty; slightly weathered (SW); weak (R2); very thinly bedded; reacts strongly to HCl; clasts are gray silt and fine to medium grained white and bluish gray (N9 - 5B 7/1) fossils; abundant (<0.1') shale interbeds and rip-up clasts throughout. [Glen Rose Formation]	829
38		2.12							1059-11					828
39		1.63				SW	R2							827
40		1.47												826
41		2.67											SHALE; medium dark gray (N4); fresh (F); highly weathered (HW); very thinly bedded; slight reaction to HCl. [Glen Rose Formation]	825
42		2.77	12	5.0 5.0	100	F	R0		1059-12			824		
43		2.47										LIMESTONE: packstone; silty; slightly weathered (SW); weak(R2); very thinly bedded; reacts strongly to HCl; clasts are gray silt and fine to medium grained white and bluish gray fossils; abundant (<0.1') shale interbeds; bioturbation; and rip-up clasts throughout. [Glen Rose Formation]	823	
44		2				SW	R0						822	
45		1.35											821	
46		1.1	13	5.0 5.0	100	SW	R2					Shale	820	
47														

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1059</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
47		1										LIMESTONE: wackestone; light gray (N7); massive with zones of abundant (<0.1') shale/silt interbeds; slightly weathered (SW); weak (R2); clasts are fine to medium grained; light bluish gray and white oolites and subrounded fossils; strong reaction to HCl; abundant bioturbation.[Glen Rose Formation]		819
48		1.43	13	5.0	100	SW	R2		1059-13				818	
49		1.83											817	
50											BOTTOM OF HOLE AT 50.0'.	Total depth drilled: 50.0'.	816	
51													815	
52													814	
53													813	
54													812	
55													811	
56													810	
57													809	
58													808	
59													807	
60													806	
61													805	
62													805	

Project Name and Job Number TXU Comanche Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-1060</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'05.06516"N / 97°47'43.76893"W		Total Depth 50 feet	
Drilling Contractor and Rig Richard Simmons Drilling / BK-81 HD		Elevation and Datum 866.959 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 14.5 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 6	Date Started 3/25/07	
		Borehole Inclination Vertical	Logged by S.Deer	Date Completed 3/25/07	

Reviewed by / Date M. Zellmen 3/26/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0										866
1	ML		B-1060 1	11	15/18	3.5		ARTIFICIAL FILL (Qaf) CLAYEY SILT with some SAND and GRAVEL and calcareous deposits, light yellow brown (7.5YR6/3), dry, very stiff, 15% subangular limestone gravel, reacts strongly to HCL, abundant soft caliche nodules		865
2				17						
3				22						864
4	ML		B-1060 2	5	10/17	4.5		SILT with SAND, yellow (10YR7/6), dry, hard, 10% angular limestone gravel, strong reaction to HCL, minor organics		863
5				32						862
6				50/5"						
7	CL		B-1060 3	17	15/17	2		LEAN CLAY, very pale brown (10YR8/4), dry, hard, 5% angular limestone gravel, strong reaction to HCL		861
8				18						860
9				31						859
10			B-1060 4	50/0"	0/0			ROCK - shelf, boulder?		858
11										857
12	ML		B-1060 5	6	9/17	0.25		SANDY SILT with limestone fragments, brownish yellow (10YR6/6), dry, medium stiff (refusal due to boulder), 10% angular limestone gravel, reacts strongly to HCL, some caliche		856
13				2						855
14				50/5"						854
15	CL		B-1060 6	8	11/11	2.5		LEAN CLAY with weathered Limestone fragments, olive yellow (5.5Y6/6), dry, stiff, reacts strongly to HCL		853
										852
								weathered bedrock		

Project Name and Job Number TXU Comanche Peak COL 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">SOIL LOG</h2> <h2 style="margin: 0;">Boring No. B-1060</h2>
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Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
15								weathered bedrock <i>(Continued from previous page)</i>		851
16										850
17										849
18										848
19										847
20										846
21										845
22										844
23										843
24										842
25										841
26										840
27										839
28										838
29										837
30										837



Undisturbed sample  
 SH = Shelby; P = Pitcher; O = other




Driven (2.5 to 3.0 inch) with liners  
 MC = Modified California; O = other



Standard Penetration Test (SPT) sampler



Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG Boring No. B-1060</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'05.06516"N / 97°47'43.76893"W		Total Depth 50 feet	
Drilling Contractor and Rig Richard Simmons / BK 81		Elevation and Datum 866.959 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 14.5 feet	
Casing Size and Depth 4" / 16 feet		Length of Core Barrel and Bit 8.7 feet	No. of Core Boxes 3	Date Started 3/25/07	
		Borehole Inclination Vertical	Logged by S. Dee	Date Completed 3/25/07	


Reviewed by / Date M. Zellmen 3/26/07


Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
16		1.82										LIMESTONE: wackestone; light gray (N7); bedded to very thinly bedded with abundant (<0.1') interbeds of shale/silt; slightly weathered (SW); weak (R2); clasts are fine grained; tabular to subangular bluish gray fossils; abundant rip-up clasts and bioturbation; strong reaction to HCl. [Glen Rose Formation]	Began HQ coring at 16.0', Glen Rose Formation.	850
17		1.9				SW	R2							849
18			7	4.0 4.0	100									848
19		1.67												847
20		1.52				F	R0						100% water return, light gray.	846
21		1.17												845
22		1.93				SW	R2							844
23		2.13	8	5.0 5.0	100									843
24		1.98				F	R0							842
25		1.48				SW	R2							841
26		1.75				SW	R2							840
27		2.43												839
28		2.68	9	5.1 5.0	100	F	R0							838
29		2.1				SW	R2							837
30		2.27				F	R0							836
31		1.8	10	5.0 5.0	100	F	R2							836

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-1060</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
31		2.25				F	R2							
32						F	R0		1060-10			SHALE; medium dark gray (N4); very thinly bedded; slightly weathered (SW); fresh (F). [Glen Rose Formation]		835
33		1.7	10	5.0	100							LIMESTONE: wackestone; greenish gray (5 G 6/1) to very light gray (N8); slightly weathered (SW); weak (R2); massive with intermittent (<0.1') interbeds of shale/silt; clasts are fine to medium grained; bluish gray and white (5B 7/1 - N9); tabular to subrounded fossils; becomes entirely very light gray (N8) below 33.5'; fossil content increases downward and changes from fine to coarse grained fossils; intermittent zones with voids (<0.1) and stylolites; lignite form 39.1' to 39.2'. [Glen Rose Formation]		834
34		1.63				SW	R2							833
35		1.85												832
36		1.17												831
37		1.18							1060-11				100% water return, light gray.	830
38		1.43	11	5.0	100	SW	R2							829
39		1.72												828
40		2.03												827
41		1.48												826
42		1.88				SW	R2							825
43		2.02	12	5.0	100									824
44		1.27							1060-12					823
45		1.17				SW	R0							822
46		2.02	13	5.0	100	SW	R2							821


Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1060</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
46		1.82	13	51.0 5.0	100	SW	R2					LIMESTONE: packstone; medium dark gray (N4) to light gray (N7); massive with zones of abundant shale/silt (<0.1') interbeds; slightly weathered (SW); weak (R2); bioturbated; clasts are medium grained; bluish gray oolites and tabular fossils. Clast percentage varies but predominantly dispersed. [Glen Rose Formation]		820
47		2.1												819
48		1.82												818
49		1.43												817
50														
51													815	
52													814	
53													813	
54													812	
55													811	
56													810	
57													809	
58													808	
59													807	
60													806	
61													806	

Project Name and Job Number TXU Comanche Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-1061</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'05.59134"N / 97°47'39.50493"W		Total Depth 51 feet	
Drilling Contractor and Rig Geotechnology / CME 55		Elevation and Datum 852.77 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 6.5 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 2	Date Started 3/24/07	
		Borehole Inclination Vertical	Logged by M. McMackan	Date Completed 3/24/07	

Reviewed by / Date M. Zellman 3/26/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0										852
1	SM			8				RESIDUAL SOIL (RS) SAND, brown (10YR4/3)		852
2			B-1061 1	4	12/18	2		LEAN SANDY CLAY, brown (10YR5/3), with calcareous deposits		851
3	CL			4				- weatherd bedrock at 3'		850
4										849
4	GP			8				GRAVEL with SAND, light gray, dry, shattered rock and dust		849
5			B-1061 2	4	11/18	4.5		CLAY, brown yellow (10YR6/6), slightly damp, stiff, w/ calcarious deposits		848
5	CL			4						848
6										847
6	GP-GM		B-1061 3	50/3"	7/9			GRAVEL with SAND and SILT, light gray (N7), dry, very dense, shattered limestone fragments, Augered down to 7.5'		846
7										846
8										845
9										844
10										843
11										842
12										841
13										840
14										839
15										838

Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG Boring No. B-1061</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'05.59134"N / 97°47'39.50493"W		Total Depth 51 feet	
Drilling Contractor and Rig Geotechnology / CME 55		Elevation and Datum 852.77 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 6.5 feet	
Casing Size and Depth 4" / 9 feet		Length of Core Barrel and Bit 8 feet	No. of Core Boxes 3	Date Started 3/24/07	
		Borehole Inclination Vertical	Logged by M. McMackin	Date Completed 3/24/07	

Reviewed by / Date M. Zellman 3/26/07


Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology		Elevation (feet)
													Remarks	
8		1.6												845
		2.48												844
9			4	3.5 3.5	100	MW	R4							843
		2.35												842
10											JT, JRL 10, FeO stains			842
		1.38												841
11														841
		2.28									JT, JRL 7			841
12						SW	R4							840
		5.62												840
13			5	5.0 5.0	86	SW	R2		1061-3					839
		5.03												839
14						SW	R4							838
		3.85												838
15						SW	R2							837
		4.22												837
16														836
		3.35												836
17														835
		2.68												835
18			6	5.0 5.0	100	SW	R4							834
		5.85												834
19														833
		6.52												833
20														832
		3.4							1061-4					832
21														831
		2.38	7	5.0 5.0	100				1061-5					831
22						SW	R4							831
		3.63												831

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1061</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
23		3.63	7	5.0 5.0	100	SW	R4					LIMESTONE: wackestone; white (N9); slightly weathered (SW); strong (R4); fossils; stylolites and lignite; sharp basal contact. [Glen Rose Formation]		830
24		3.27												829
25		2.8												828
26		2.42	8	4.9 5.0	98	SW	R4					LIMESTONE: wackestone; with silty matrix; greenish gray (5G 6/1); slightly weathered (SW); strong (R4); darker silt beds form pronounced partings. [Glen Rose Formation]		827
27		6.43												826
28		3.3												825
29		2.9	8	4.9 5.0	98	SW	R4					SHALE; medium gray (N5); massive; laminated; slightly weathered (SW); weak (R2); sharp basal contact. [Glen Rose Formation]		824
30		3.35												823
31		3.9												822
32		1.43	9	5.0 5.0	100	SW	R4					LIMESTONE; WACKESTONE with silty matrix; greenish gray (5G 6/1); slightly weathered (SW); strong (R4); with fossils; lignite; sharp basal contact. [Glen Rose Formation]		821
33		4.17												820
34		3.2												819
35		2.65	10	5.0 5.0	100	SW	R4					LIMESTONE: wackestone; white (N9) to very light gray (N8); slightly weathered (SW); strong (R2); silty bed 33.9'-34.1'. [Glen Rose Formation]		818
36		2.87												817
37		1.78												816
		2.9												

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1061</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
38		2.9							1061-8			LIMESTONE: wackestone; white (N9) to very light gray (N8); slightly weathered (SW); strong (R2); silty bed 33.9'-34.1'. [Glen Rose Formation]		815
39		2.23												814
40		1.88	10	5.0 5.0	100	SW	R4							813
41		2.25												812
42		2.1				SW	R4							811
43		6.88				SW	R2					SHALE; medium gray (N5); massive laminated; slightly weathered (SW); weak (R2) with wackestone interbeds; medium to thin. [Glen Rose Formation]		810
44		8.2	11	4.7 5.0	94	SW	R4					LIMESTONE: wackestone; white (N9) to very light gray (N8); medium to thin bedded; slightly weathered (SW); strong (R4). [Glen Rose Formation]		809
45		6.88				SW	R4		1061-9			SHALE; same as previous. [Glen Rose Formation]		808
46		7.68				SW	R2					LIMESTONE: wackestone; same as previous. [Glen Rose Formation] SHALE; same as previous. [Glen Rose Formation]		807
47		3.25										LIMESTONE: wackestone; with shale partings to 0.1'; very light gray (N8) and medium gray (N5); strong. [Glen Rose Formation]		806
48		2.88							1061-10					805
49		9.2	12	4.8 5.0	96	SW	R4							804
50		4.8												803
51		4.63												802
52												BOTTOM OF HOLE AT 51.1'.	Total depth drilled; 51.0'.	801

Project Name and Job Number TXU Comanche Peak COL 1908		 WLA William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-1062</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'05.67223"N / 97°47'38.75965"W		Total Depth 50.8 feet	
Drilling Contractor and Rig Geotechnology / CME 55		Elevation and Datum 848.375 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 6 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 2	Date Started 3/23/07	
		Borehole Inclination Vertical	Logged by M. McMackan	Date Completed 3/24/07	

Reviewed by / Date M. Zellman 3/28/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0							RESIDUAL SOIL (RS) Silt (topsoil) dark reddish brown (5YR3/3), non-plastic			848
1				4						847
2	CL		B-1062 1	10	18/18	1	LEAN CLAY, brown (7.5Y4/4), very stiff, plastic, damp			846
3	CL			14			LEAN CLAY, pale yellow, (2.5Y8/3), moist, stiff, non-plastic, shale (completely weathered limestone), has relict bedding			845
4							- limestone fragments			844
5	GP		B-1062 2	17	12/18	4.5	GRAVEL with SAND, light gray (2.5Y7/2), dry, > 50% angular gravel w/ sand			843
6				24						842
7			B-1062 3	50/4"	1/7		GRAVEL with SAND, angular gravel w/ sand, same as above, shattered wackestone			841
8	GP									840
9										839
10										838
11										837
12										836
13										835
14										834
15									Augered down to 9.5'	



Project Name and Job Number TXU Comanche Peak Col 1908		 WLA William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. B-1062</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'05.67223"N / 97°47'38.75965"W		Total Depth 50.8 feet	
Drilling Contractor and Rig Geotechnology / CME 55		Elevation and Datum 848.375 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 6 feet	
Casing Size and Depth 4" / 9.5 feet		Length of Core Barrel and Bit 8.5 feet	No. of Core Boxes 3	Date Started 3/23/07	
		Borehole Inclination Vertical	Logged by M. McMackin	Date Completed 3/24/07	

Reviewed by / Date M. Zellman 3/28/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
10		1.47	5	1.4 1.1	75	SW	R4		1062-3			SHALE, greenish gray (5 G 6/1) with dark mottling, moderately weathered, weak.	Began HQ coring at 9.5', Glen Rose Formation.	838
		1.22				SWMW	R2							SILTSTONE, medium gray (N5), massive, slightly weathered, medium strong.
11		4.53				SW	R2					SHALE, greenish gray (5 G 6/1), massive, laminated, slightly weathered, weak.		837
12		4.52										LIMESTONE; WACKESTONE, with silty matrix, greenish gray (5 G 6/1), massive, slightly weathered, strong, weak HCl reaction on washed surface, strong on powdered.		836
13		3.97	6	5.0 5.0	100	SW	R4							835
14		2.87												
15		8.52				SW	R2-R4		1062-4			SILTSTONE, medium gray (N5), massive, slightly weathered, medium strong.	Pale yellow water return.	833
16		2.02				SW	R2-R4					LIMESTONE; WACKESTONE with shale, very light gray (N8) to medium gray (N5), medium beds, slightly weathered, strong, sharp basal contact.		832
17		3.7										LIMESTONE, WACKESTONE, white (N9), some packstone, with shell fragments, slightly weathered, strong, stylolites and lignite.		831
18		1.22	7	5.0 5.0	100				1062-5					830
19		1.32				SW	R4							
20		1.22												828
21		1.23												827
22		1.7	8	5.0 5.0	100									826
23		3.35				SW	R4				1062-6			
24		4.27										LIMESTONE with silt matrix, ??? white (N9), ??? dark greenish gray (5 G 4/1) matrix, massive, slightly weathered, strong ???, below 24', greater siltstone in very irregular medium thick beds, vugs below 25.4'.		824

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908




**ROCK LOG**  
**Boring No. B-1062**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
25		4.52	8	5.0 5.0	100	SW	R4							823
26		3.3				SW	R2					SHALE, medium dark gray (N4), massive, laminated, slightly weathered, weak.		822
27		3.43												821
28		4.53	9	5.0 5.0	100	SW	R3					SILTSTONE, medium gray (N5), with interbedded shell fragments, wackestone, massive, slightly weathered, medium strong, sharp basal contact.		820
29		3.83											Light gray water return.	819
30		3.15				SW	R4			1062-7		LIMESTONE; WACKESTONE, very light gray (N8), massive with few shaly partings, slightly weathered, strong.		818
31		2.25				SW	R4						Light gray water return.	817
32		3.7												816
33		4.42	10	5.0 5.0	100							LIMESTONE; WACKESTONE, with silty matrix, medium light gray (N6) to very light gray (N8), massive with intervals with shale/siltstone partings, slightly weathered, strong fossil fragments and burrows, trace lignite.		815
34		2.18												814
35		3.53				SW	R4							813
36		2.95								1062-8				812
37		5.12												811
38		4.35	11	4.7 5.0	94									810
39		5.38				SW	R4						SHALE, medium gray (N5), massive laminated ?? slightly weathered, weak	809

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1062</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
40		6.8	11	4.7 5.0	94	SW	R4		1062-9 1062-9			LIMESTONE; WACKESTONE, with shale, light gray (N7) to medium gray (N5), thin to very thin interbeds, fossils in wackestone and traces of lignite and plant fossils, sharp basal contact.		808
41		5.03				SW	R2					SHALE, medium dark gray (N5), thin bedded, slightly weathered, R2, sharp basal contact.		807
42		5.3										LIMESTONE; WACKESTONE with shale interbeds, light gray (N8), massive in medium to thick beds, slightly weathered, strong, shale and above, shale bed 47.3'-47.6'.		806
43		5.18	12	5.0 5.0	100		R4							805
44		6.52				SW								804
45		8.2							1062-10				Light gray water return.	803
46		5.35												802
47		3.35							1062-11					801
48		2.7	13	4.4 5.2	88	SW	R4					LIMESTONE; PACKSTONE, fossil packstone with wackestone as above, irregular beds, medium thick, sharp basal contact.		800
49		3.58										SHALE		799
50		4.42					R2					LIMESTONE; WACKESTONE, as above. SHALE, medium dark gray (N4), massive laminated ??, slightly weathered, weak.		798
51													Total depth drilled: 50.8' bls.	797
52														796
53														795
54														794

Project Name and Job Number TXU Comanche Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-1063</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'12.57354"N / 97°47'36.94881"W		Total Depth 100 feet	
Drilling Contractor and Rig Richard Simmons Drilling / BK-81 HD		Elevation and Datum 837.155 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 30 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 12	Date Started 4/3/07	
		Borehole Inclination Vertical	Logged by J. Turner	Date Completed 4/4/07	

Reviewed by / Date R. Ortiz 4/5/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0								LEAN CLAY w/ SAND and calcareous deposits, yellow (2.5Y7/8), dry to damp, stiff, strong reaction to HCL, Fill		837
1	CL		B-1063 1	10	16/18					836
2				10						
3	CL			12				LEAN CLAY w/ GRAVEL, dark yellowish brown (10YR4/4), dry, stiff, medium dense, low dry strength, gravel angular limestone, poorly sorted fill		835
4	CL		B-1063 2	3	15/18			LEAN CLAY w/ calcareous deposits, olive yellow (2.5Y6/6), damp, stiff, violent reaction to HCL		833
5	CL			9				LIMESTONE / weathered bedrock ledge / angular gravel		
6	CL			4				LEAN CLAY w/ calcareous deposits, light yellowish brown (2.5Y6/4), damp, stiff, slight reaction to HCL		832
7	CL		B-1063 3	5	7/18			LEAN CLAY and LIMESTONE fragments, light olive brown (2.5Y5/3), dry, soft to medium stiff		831
8	CL			4						830
9	CL		B-1063 4	7	12/18			LEAN CLAY w/ few limestone fragments, olive yellow (2.5Y6/6), wet to moist, stiff, and pebbles to granules, very slight reaction to HCL		829
10	CH			9				LEAN CLAY, pale olive (5Y6/3), with angular gravel, damp, slight reaction to HCL		828
11	CL		B-1063 5	9	0/18			FAT CLAY, black (5Y2.5/2) organics, roots, damp, fill, possibly old topsoil		827
12	CL			5				LEAN CLAY, light olive, brown (2.5Y5/3), damp, stiff, w/ small gravel		826
13	CL			4				LEAN CLAY, w/ gravel, light yellowish brown (2.5Y6/4), dry to damp, poorly sorted, strong reaction to HCL, fill		825
14	CL		B-1063 6	4	16/18			LEAN CLAY, w/ calcareous deposits, pale olive and olive yellow (5Y6/4 and 2.5Y6/8) mottled, damp, laminated and lenticular, stiff, moderate reaction to HCL		824
15	CL			25				WEATHERED LIMESTONE LEDGE, white, strong reaction to HCL, some silt and clay		823

Project Name and Job Number TXU Comanche Peak COL 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">SOIL LOG</h2> <h2 style="margin: 0;">Boring No. B-1063</h2>
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Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
15							LEAN CLAY, light yellowish brown (2.5Y6/4), wet, hard, dense, very slight reaction to HCL (Continued from previous page)			822
16		B-1063 7		35	8					821
17	CL			50/2"						820
18										819
19		B-1063 8	7	50/4"	10/10					818
20							WEATHERED LIMESTONE BEDROCK, bedding still evident, extremely weathered, moderate reaction to HCL, silt and clay present and weathering products, mottled pale yellow (2.5Y8/2)			817
21	ML	B-1063 9		50/3"	3/3			CLAYEY SILT w/ calcareous deposits, pale olive (5Y6/3), wet, hard, slight reaction to HCL		816
22	ML							CLAYEY SILT, pale yellow (5Y8/2), wet, hard, slight reaction to HCL		815
23										814
24		B-1063 10	10		15/15			CLAYEY SILT, mottled light yellowish brown (2.5Y6/4) and olive (5Y5/3), wet, almost liquified/ unconsolidated, slight reaction to HCL		813
25				50/3"						812
26	ML							- Auger returning liquified mud pale yellow		811
27								- auger chattering, no sample taken from 26-27.5' because driller refused to take one due to liquified mud + auger chattering		810
28										809
29	ML	B-1063 12		50/5"	3/5			CLAYEY SILT w/ gravel (angular limestone fragments), light yellowish brown (2.5Y 6/4), wet, gravel subrounded weathered limestone, slight reaction to HCL, AUGER REFUSAL AT 30.0'		808
30										




Undisturbed sample  
SH = Shelby; P = Pitcher; O = other



Driven (2.5 to 3.0 inch) with liners  
MC = Modified California; O = other



Standard Penetration Test (SPT) sampler

Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.	<b>ROCK LOG</b>	<b>B-1063</b>
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'12.57354"N / 97°47'36.94881"W		Total Depth 100 feet
Drilling Contractor and Rig Richard Simmons / BK 81		Elevation and Datum 837.155 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 30 feet
Casing Size and Depth 4" / 30 feet		Length of Core Barrel and Bit 8.8 feet	No. of Core Boxes 5	Date Started 4/3/07
		Borehole Inclination Vertical	Logged by J. Turner/S. Dee	Date Completed 4/4/07

Reviewed by / Date                                  R. Ortiz 4/5/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
30		1.95										LIMESTONE: wackestone; very light gray (N8); massive with common (<0.1') interbeds of shale/silt; moderately weathered to slightly weathered (MW - SW); reacts strongly to HCl; moderately weathered zone extends from 30.0'-30.8'. [Glen Rose Formation]	Top of rock: 30.0'	807
31		2.52										Shale		806
32		1.77	13	5.0 5.0	100	SW	R2		1063-13			Shale	Begin HQ coring at 30.0', Glen Rose Formation.	805
33		1.83												804
34		1.93										Shale		803
35		1.57				SW	R2					Shale		802
36		2.33												801
37		2.02	14	5.2 5.0	100				1063-14			SHALE; dark gray (N3); fresh (F); extremely weak (R0); very thinly bedded; reacts slightly to HCl. [Glen Rose Formation]		800
38		1.63				F	R0						Length of recovery stretched due to mechanical breaks.	799
39		1.48												798
40		1.12				MW	R2					LIMESTONE: wackestone; very light gray (N8); moderately weathered (MW). [Glen Rose Formation]		797
41		2.43										SHALE; dark gray (N3); fresh (F); extremely weak (R0); very thinly bedded; reacts slightly to HCl. [Glen Rose Formation]		796
42		1.7	15	5.0 5.0	100	F	R0					Interbed of wackestone from 41.4' to 41.7'. Interbed of wackestone from 41.8' to 41.9'.		795
43		1.97							1063-15					794
44		1.75				SW	R2					LIMESTONE: wackestone; very light gray (N8); massive; slightly weathered (SW); weak (R2); bioturbated. [Glen Rose Formation]		793

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-1063**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
45		1.77				SW	R2					LIMESTONE: wackestone; very light gray (N8); massive; slightly weathered (SW); weak (R2); bioturbated. [Glen Rose Formation]		792
46		1.87												791
47		1.82	16	5.1 5.0	100				1063-16			SHALE; dark gray (N3); very thinly bedded; fresh (F); extremely weak (R0); slight reaction to HCl; rare (<0.1') limestone interbeds.[Glen Rose Formation]		790
48		1.67				SW	R0						Length of recovery stretched due to mechanical breaks.	789
49		2.1												788
50		2.63										LIMESTONE: wackestone; medium light gray (N7); bedded with abundant (<0.1') interbeds of shale; slightly weathered (SW); weak (R2). [Glen Rose Formation]		787
51		3.02				F	RO					SHALE; dark gray (N3); very thinly bedded; fresh (F); extremely weak (R0); slight reaction to HCl; rare (<0.1') limestone interbeds. [Glen Rose Formation]		786
52		2.97	17	5.0 5.0	100				1063-17					785
53		2.75				SW	R2					LIMESTONE: wackestone; very light gray (N8); massive with common (0.1') interbeds of shale/silt; slightly weathered (SW); weak (R2); clasts are fine to medium grained; bluish gray; tabular to subrounded fossils; fossil clasts below 55.5' are fine grained; white; and bluish gray and less abundant; 0.1' shale/silt interbeds are abundant form 55.5' to 58.6'; rip-up clasts are also abundant in this zone; bioturbation is common throughout. [Glen Rose Formation]		784
54		2.17												783
55		1.27												782
56		1.2										Shale		781
57		1.6	18	5.0 5.0	100	SW	R2		1063-18					780
58		1.82												779
59		1.85												778
60														

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-1063</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
60		1.85											60% water return, gray.	777
61		1.83							1063-19			LIMESTONE: packstone; silty; medium gray (N5); slightly weathered (SW); weak (R2); clasts are black and gray silt and medium to coarse grained bluish gray and white wackestone; rounded; reacts strongly to HCl; burrows filled with wackestone. [Glen Rose Formation]		776
62		1.77	19	5.0 5.0	100	SW	R2							775
63		2.17												774
64		2.25										LIMESTONE: wackestone; very light gray (N8); massive with zones of abundant (<0.1') shale/silt interbeds; slightly weathered (SW); weak (R2); strong reaction to HCl; clasts are fine to coarse grained bluish gray subangular to subrounded fossils; abundant rip-up clasts in this zone as well; bioturbation common throughout. [Glen Rose Formation]		773
65		1.47												772
66		1.43							1063-20					771
67		1.35	20	4.9 5.0	98	SW	R2					Shale		770
68		2.1												769
69		1.62												768
70		2.2												767
71		2.02												766
72		1.53	21	5.0 5.0	100	SW	R2					Shale		765
73		2.02												764
74		2							1063-21					763
75														



Project Name and Job Number  
 TXU Comanche Peak Col  
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**ROCK LOG**  
**Boring No. B-1063**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)	
75		2												762	
76		1.7												761	
77		1.83	22	5.0 5.0	100	SW	R2		1063-22			LIMESTONE: wackestone; same as above; below 76.2; clasts become medium to coarse grained; bluish gray; subrounded to rounded; very high silt content 80.7'-81.6'. [Glen Rose Formation]		760	
78		1.8												759	
79		1.67												758	
80		1.47												757	
81		1.5												756	
82		1.33	23	5.1 5.0	100	SW	R2							755	
83		1.97							1063-23				LIMESTONE: packstone; silty; medium dark gray (N4); very thinly bedded; slightly weathered (SW); clasts are gray silt and white subrounded fossils. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	754
84		1.35												753	
85		1.83												752	
86		1.93												751	
87		1.68	24	4.9 5.0	98	SW	R2		1063-24				LIMESTONE: wackestone; very light gray (N8); massive with rare (<0.1') interbeds of silt/shale; slightly weathered (SW); weak (R2); heavily bioturbated from 89.1'-85.4'; high silt content from 85.9'-86.1'; below 86.7'; common (<0.1') interbeds of shale/silt and rip-up clasts; (<0.05') zones of clast supported packstone throughout run 24; siltstone interbed from 84.8'-90.2'. [Glen Rose Formation]		750
88		2.25												749	
89		1.7												748	
90															


Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1063</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
90		2.33										LIMESTONE: wackestone; same as above; below 91.2'; clasts are medium to coarse grained; bluish gray subrounded to rounded fossils. [Glen Rose Formation] Shale	60% water return, gray.	747
91		2.43				SW	R2		1063-25					746
92		2.15	25	5.0 5.0	100									745
93														744
94		1.77				F	R1					LIMESTONE: wackestone; silty; medium light gray (N6); massive; fresh (F); very weak (R2); clasts are bluish gray silt and bluish gray subangular and tabular fossils; reacts strongly to HCl. [Glen Rose Formation]		743
95		1.83												742
96		1.85											96.2' - gradational contact.	741
97		2.03	26	4.8 5.0	96	SW	R2					LIMESTONE: packstone; medium bluish gray (5B 5/1); bedded with abundant (<0.1') interbeds of shale/silt; slightly weathered (SW); weak (R2); clasts are coarse to medium grained; bluish gray fossils; reacts strongly to HCl. [Glen Rose Formation]		740
98		2.2							1063-26					739
99		2.17				F	R0					SHALE: siltstone; yellowish gray (5Y 8/1); fresh (F); extremely weak(R0); very thinly bedded; reacts strongly to HCl. [Glen Rose Formation]		738
100						SW	R2					LIMESTONE: wackestone; light gray (N7); slightly weathered (SW); weak (R2). [Glen Rose Formation] BOTTOM OF HOLE AT 100'.	Total depth drilled: 100.0'	737
101														736
102														735
103														734
104														733
105														

Project Name and Job Number TXU Comanche Peak COL 1908				<b>SOIL LOG Boring No. B-1064</b>	
Type and Diameter of Boring HSA / 7"			Boring Location 32°18'11.43676"N / 97°47'36.77404"W		Total Depth 100.5 feet
Drilling Contractor and Rig Richard Simmons Drilling / BK-81 HD			Elevation and Datum 839.046 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 9 feet
Sampling Method SPT			Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 4	Date Started 3/27/07
			Borehole Inclination Vertical	Logged by S.Deer	Date Completed 4/2/07

Reviewed by / Date \_\_\_\_\_ R. Ortiz 4/9/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)	
0									839	
1	ML		B-1064 1	10	$\frac{16}{18}$	1		GRAVELLY SILT and calcareous deposits, brownish yellow (10YR6/8), damp, stiff, 20% angular gravel (limestone), reacts strongly to HCL	838	
2				10						5
3									837	
4	CL		B-1064 2	3	$\frac{15}{18}$	1.75		LEAN CLAY with calcareous deposits, brownish yellow (10YR6/8), stiff	835	
5				4						8
6				8						
7	CL		B-1064 3	4	$\frac{11}{18}$	1.25		GRAVELLY LEAN CLAY, reddish brown (5YR4/4), damp, stiff, reacts strongly to HCL	833	
8				4						9
9				9						
10									831	
11									830	
12									829	
13									828	
14									827	
15									826	
				50/5"	$\frac{5}{5}$	2			825	

Project Name and Job Number TXU Comanche Peak Col 1908				<h1>ROCK LOG Boring No. B-1064</h1>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'11.43676"N / 97°47'36.77404"W		Total Depth 100.5 feet	
Drilling Contractor and Rig Richard Simmons / BK 81		Elevation and Datum 839.046 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 9 feet	
Casing Size and Depth 4" / 9 feet		Length of Core Barrel and Bit 7 feet	No. of Core Boxes 7	Date Started 3/27/07	
		Borehole Inclination Vertical	Logged by S. Dee	Date Completed 4/2/07	

Reviewed by / Date R. Ortiz 4/9/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology		Elevation (feet)
													Remarks	
9.0		1.77	5	$\frac{1.0}{1.0}$	100	SW	R2					LIMESTONE: wackestone; fossiliferous; massive with rare (<0.1') interbeds of shale/silt; slightly weathered (SW); weak (R2); abundant fine to coarse grained fossil clasts; various sizes; generally bluish gray matrix; reacts strongly to HCl. [Glen Rose Formation]	Top of rock 9.0', began HQ coring at 9.0', Glen Rose Formation. Driller switched outer barrel and bit, changed 5' run sequence.	830
10.0		9.08	6	$\frac{1.0}{1.0}$	100	SW	R2		1064-5					829
11.0		1.67				SW	R2							828
12.0		0.93										SHALE: claystone; dark yellowish orange (10YR 6/6); highly weathered (HW); extremely weak (R0); massive; strong reaction to HCl; likely weathered limestone; below 17.8'; rock becomes very thinly bedded and resembles silty packstone. [Glen Rose Formation]	Low recovery. Driller states that the claystone washed away.	827
13.0		0.85	7	$\frac{2.9}{4.5}$	64				1064-6					826
14.0		0.88												825
15.0		0.5				HW	R0							824
16.0		0.68												823
17.0		1.25	8	$\frac{4.0}{5.0}$	80				1064-7					822
18.0		1.58												821
19.0		2.53				SW	R2					LIMESTONE: wackestone; light gray (N7); massive with zones of abundant (<0.1') interbeds of shale/silt; slightly weathered (SW); weak (R2); strong reaction to HCl; clasts are fine to medium grained; rounded to tabular; bluish gray and white fossils and gray silt. {Glen Rose Formation}	Low recovery on Run #8. Driller states sample washed out, missing interval is at the top of the run.	820
20.0		2.25												819
21.0		2.75	9	$\frac{5.0}{5.0}$	96	SW	R2							818
22.0		2.53							1064-8			Shale	100% water return, gray.	817
23.0		1.5												816
24.0													Gradational contact at 23.1' with packstone.	

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-1064</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)				
24		1.5	9	5.0 5.0	96	SW	R2					Shale		815				
25		1.53														LIMESTONE: packstone; bedded with abundant (<0.1') interbedded shale/silt throughout; slightly weathered (SW); weak (R2); strong reaction to HCl; clasts are fine grained rounded bluish gray fossils; white medium grained subrounded fossils and gray silt. [Glen Rose Formation]		814
26		1.63														Shale		813
27		1.72	10	5.1 5.0	100	SW	R2					Shale		812				
28		1.93												1064-9			811	
29		1.52														LIMESTONE: wackestone; very light gray (N8); massive; with zones of abundant (<0.1') shale/silt interbeds; slightly weathered (SW); weak (R2). [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	810
30		1.63									SW		809					
31		2.83	11	5.0 5.0	100	F	R0					SHALE; dark gray (N3); very thinly bedded; fresh (F); extremely weak (R0). [Glen Rose Formation]		808				
32		4.18															60% water return, gray.	807
33		2.85														LIMESTONE: wackestone; very light gray (N8); massive with occasional interbeds (<0.1' beds) of shale/silt; slightly weathered (SW); weak (R2); clasts of limestone are fine to medium grained bluish gray subrounded fossils. [Glen Rose Formation]		806
34		1.73								1064-10			805					
35		2.82										Shale		804				
36		2.68	12	5.1 5.0	100	F	R2							803				
37		2.83														Shale		802
38		3.17														Shale		801
39		3.02								1064-11		Shale	Length of recovery stretched due to					

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**ROCK LOG**  
**Boring No. B-1064**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)	
39		3.02	12	5.1 5.0	100	F	R2					Shale	mechanical breaks.	800	
40		2.77												SHALE; dark gray (N3); very thinly bedded; fresh (F); extremely weak (R0); slight reaction to HCl. [Glen Rose Formation]	799
41		3.27													
42		3.6				F	R0							797	
43		4.63	13	5.0 5.0	100									796	
44		1.93							SW	R2				LIMESTONE: wackestone; very light gray (N8); massive; fresh (F); weak (R2); strong reaction to HCl. [Glen Rose Formation]	795
45		8.17										SHALE; dark gray (N3); very thinly bedded; fresh (F); extremely weak (R0); interbeds of limestone from 45.5'-45.8'; 46.0'-46.2'. [Glen Rose Formation] Interbed of limestone from 45.5' to 45.8'. Interbed of limestone from 46' to 46.2'.	794		
46		3.02				F	R0							793	
47		3.1												792	
48		2.02	14	4.9 5.0	98									791	
49		3.17							SW	R2				LIMESTONE: wackestone; light gray (N7); slightly weathered (SW); weak (R2); massive with zones of abundant shale/silt interbeds; occasional bioturbation. [Glen Rose Formation] Shale	790
50		3.02												789	
51		2.3										SHALE; medium dark gray (N4); very thinly bedded; fresh (F); extremely weak (R0); slight to no reaction to HCl. [Glen Rose Formation]	788		
52		3.43	15	4.9 5.0	98	F	R0							787	
53		3													
54		1.72				SW	R2								

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)								
54		1.72	15	4.9 5.0	98	F	R0					LIMESTONE: wackestone; medium light gray (N7); slightly weathered (SW); weak (R2); massive with occasional (<0.1') interbeds of shale/silt. [Glen Rose Formation]		785								
55		2.58																		SHALE; medium dark gray (N4); very thinly bedded; fresh (F); extremely weak (R0); no reaction to HCl. [Glen Rose Formation]		784
56		2.17	16	4.8 5.0	96	SW	R2					LIMESTONE: wackestone; very light gray (N7); thinly bedded with (<0.1') interbeds of shale/silt; slightly weathered (SW); weak(R2); clasts of bluish gray and white fine to medium grained fossils. [Glen Rose Formation]		783								
57		2.25																				782
58		2.43																			SHALE; medium dark gray (N4); very thinly bedded; fresh (F); extremely weak (R0). [Glen Rose Formation]	
59		1.77	17	4.7 5.0	94	SW	R2					LIMESTONE: micrite; very light gray (N8); massive with rare (<0.1') interbeds of shale/silt; fresh (F); weak (R2). [Glen Rose Formation]		780								
60		2.02																				779
61		2.02																			LIMESTONE: wackestone; very light gray (N8); slightly weathered (SW); weak (R2);massive with common (<0.1') interbeds of shale/silt; clasts are fine grained bluish gray and white; subangular to subrounded fossil pieces; reacts strongly to HCL; common bioturbation. [Glen Rose Formation]	
62		1.98	18	5.0 5.0	100	SW	R2							777								
63		1.68																				776
64		1.78																				775
65		2.63	18	5.0 5.0	100	SW	R2							774								
66		1.97																			60% water return, light gray.	773
67		1.98																				772
68		1.33	18	5.0 5.0	100	SW	R2							771								
69		1.8																			Shale	

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)				
69		1.8	18	5.0 5.0	100	SW	R2					Shale		770				
70		1.53														Shale		769
71		1.83														Shale		768
72		1.87										Shale		767				
73		1.77	19	5.1 5.0	100	SW	R2					Shale	Length of recovery stretched due to mechanical breaks.	766				
74		1.68												1064-18			Shale	765
75		1.63										Shale		764				
76		1.83										LIMESTONE: packstone; silty; medium dark gray (N4) to light gray (N7); very thinly bedded; slightly weathered (SW); weak (R2); rock is primarily a silty packstone with abundant rip-up clasts and burrows of wackestone. [Glen Rose Formation]	763					
77		1.97										LIMESTONE: wackestone; light gray (N7); slightly weathered (SW); weak (R2); massive with zones of abundant (<0.1') shale/silt interbeds; strong reaction to HCl; clasts are primarily bluish gray; medium to coarse grained subrounded to rounded; fossiliferous. [Glen Rose Formation]	762					
78		1.7	20	5.1 5.0	100	SW	R2					Shale	Length of recovery stretched due to mechanical breaks.	761				
79		2.5												1064-19			Shale	760
80		2.25										Shale	759					
81		1.9										Shale	758					
82		1.6	21	5.0 5.0	100	SW	R2					Shale		757				
83		2.37											1064-20			Shale	756	
84		1.85																



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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
84		1.85	21	5.0	100	SW	R2					Shale		755
85		1.77		5.0										
86		1.93							1064-21			Shale		753
87		1.98										Shale		752
88		1.8	22	5.1	100	SW	R2					Shale		751
89		2.18		5.0										
90		2.53											60%-70% water return, gray.	749
91		1.32												748
92		2.47								1064-22		LIMESTONE: packstone; light gray (N7); very thin bedded with interbeds (<0.1') of shale/silt; slightly weathered (SW); weak (R2). [Glen Rose Formation]		747
93		2.33	23	5.0	100	SW	R2					LIMESTONE: wackestone; light gray (N7); bedded with abundant (<0.1') interbeds of shale/silt; slightly weathered (SW); weak (R2); reacts strongly to HCl; clasts are gray/black silt or white/bluish gray; fine to coarse rounded to subrounded fossils; decrease clast abundance fro 97.4'-99.5'; abundant bioturbation from 97.4'-100.5'. [Glen Rose Formation]		746
94		2.02		5.0										
95		2.75												744
96		1.83												743
97		2.53	24	5.0	100	SW	R2							742
98		2.1		5.0										
99		1.85												

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**Boring No. B-1064**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
99		1.85												740
100		1.1	24	5.0 5.0	100	SW	R2		1064-23					739
101														738
102														737
103														736
104														735
105														734
106														733
107														732
108														731
109														730
110														729
111														728
112														727
113														726
114														
													BOTTOM OF HOLE AT 100.5'. Total depth drilled: 100.5'.	

Project Name and Job Number TXU Comanche Peak Col 1908		 WLA William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. B-1065</b>	
Type and Diameter of Boring NQ / 3"		Boring Location E: 2186082.18/ N: 6793654.75		Total Depth 145.8 feet	
Drilling Contractor and Rig Texplore / CME-75		Elevation and Datum NAVD88	Ground Water Depth DRY		Depth to Bedrock 9.5 feet
Casing Size and Depth 8" / 9.5 feet		Length of Core Barrel and Bit 8.6 feet	No. of Core Boxes 7		Date Started 8/27/07
		Borehole Inclination Vertical	Logged by T. Glidden		Date Completed 8/28/07

Reviewed by / Date \_\_\_\_\_ R. Ortiz 8/29/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
10		3.38	1	0.5 1.0	0							LIMESTONE: wackestone; micrite; very light gray (N8) to dusty yellow (5Y 6/4) to light olive gray (5Y 5/2); weak (R2); slightly weathered (SW) to moderately weathered (MW); violent reaction to HCl; interbeds of mudstone: siltstone and claystone up to .3' thick. [Glen Rose Formation]	no sample-washed out	
11														
12		6.05												
13			2	1.7 5.0	34	SW-MW	R2						receive water quickly, muddy, grayish yellow color; 3.5 feet washed out	
14		1.35												
15		0.48												
16		2.35												
17		2.93	3	5.0 5.2	100	F	R1					MUDSTONE: siltstone; calcareous; wavy laminations; light olive gray (5Y 6/1); fresh (F); very weak (R1); slight reaction to HCl; increased shell debris at 16.6' grading into wackestone and shale interbeds at 16.8' to 17.5'. [Glen Rose Formation]	0 to 1200 psi depending on material; no rpm gauge	
18		2.78												
19						F	R2					LIMESTONE: wackestone; silty; medium light gray (N6); fresh (F); weak (R2); slight reaction to HCl; massive. [Glen Rose Formation]		

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1065</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
19														
20		1.2	3	5.0 5.2	100	F	R2					LIMESTONE: wackestone; silty; medium light gray (N6); fresh (F); weak (R2); slight reaction to HCl; massive. [Glen Rose Formation]		
21		2.53				F	R0					MUDSTONE: shale; dark greenish gray (5G 6/1); fresh (F); extremely weak (R0); slight to no reaction to HCl; massive. [Glen Rose Formation]		
22		2.33				F	R2					LIMESTONE: wackestone; light gray (N7); fresh (F); weak (R2); fossiliferous; slight to strong reaction to HCl; thinly bedded gradational silts. [Glen Rose Formation]		
23		3.05	4	5.0 5.0	100	F-SW	R0			B1065-2		MUDSTONE: shale; greensish gray (5G 6/1) to dark greenish gray (5G 4/1); fresh (F) to slightly weathered (SW); extremely weak (R0); slight reaction to HCl; shell debris; massive. [Glen Rose Formation]		
24		3.87										LIMESTONE: wackestone; very light gray (N8); fresh (F); vuggy zones at erosional contacts; weak (R2); abundant fossils; strong reaction to HCl; massive. [Glen Rose Formation]		
25		3.12				F	R2							
26		4.18												
27			5	5.0 5.0	100					B1065-3				
28		2.98				F	R1-R2					LIMESTONE: packstone; medium light gray (N6); fresh (F); weak (R2) to very weak (R1); massive to laminated; strong reaction to HCl. [Glen Rose Formation]		

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-1065</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)			
29		2.98	5	5.0 5.0	100	F	R1-R2					LIMESTONE: packstone; medium light gray (N6); fresh (F); weak (R2) to very weak (R1); massive to laminated; strong reaction to HCl. [Glen Rose Formation]					
30		3.08														MUDSTONE: siltstone; calcareous; medium dark gray (N4); fresh (F); weak (R2); slight reaction to HCl; fine fossiliferous debris. [Glen Rose Formation]	
31											F	R2					
32			6	5.1 5.1	100	F	R0			B1065-4		MUDSTONE: shale; dark gray (N3); fresh (F); extremely weak (R0); slight to no reaction to HCl [Glen Rose Formation]					
33														B1065-5			
34																	
35		3.42 4.17 4 4.25 3.48										LIMESTONE: wackestone; medium light gray (N5) to very light gray (N8); fresh (F); very weak (R1); strong reaction to HCl; fossiliferous; wavy laminated muds and bioturbation throughout; matrix increasingly silty with depth; lamination interbeds at sub-millimeter scale. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.				
36		1.77															
37		3.18	7	5.0 5.0	100	F	R1										
38																	

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-1065**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
38														
39			7	5.0 5.0	100							LIMESTONE: wackestone; medium light gray (N5) to very light gray (N8); fresh (F); very weak (R1); strong reaction to HCl; fossiliferous; wavy laminated muds and bioturbation throughout; matrix increasingly silty with depth; lamination interbeds at sub-millimeter scale. [Glen Rose Formation]		
40		3.42 2.33 2.33 0.9 1.73												
41						F	R1							
42														
43		4.62	8	5.1 5.1	100								intermittent drill chatter	
44		1.13											Length of recovery stretched due to mechanical breaks.	
45		3.7										MUDSTONE: shale; medium gray (N5); fresh (F); extremely weak (R0); slight reaction to HCl; wackestone rip up clasts and .1' interbeds wackestone from 45.4 to 46. [Glen Rose Formation]		
46						F	R0							
47		3.28	9	4.7 4.9	100									

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-1065**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
48		3.28				F	R0							
49		6.4	9	4.7 4.9	100							LIMESTONE: wackestone; light gray (N7); fresh (F); weak (R2); strong reaction to HCl; .5' shale interbeds closely spaced; increased bioturbation and wavy mud beds . [Glen Rose Formation]	no sample run 9	
50														
51														
52		2.07				F	R2							
53														
54		2.2	10	5.0 5.0	100									
55		2.1												
56		2.13												
56		5.65	11	5.0 5.0	100	F	R0			B1065-8		MUDSTONE: shale; medium gray (N5); fresh (F); extremely weak (R0); slight reaction to HCl; shell hash at basal contact. [Glen Rose Formation]		
57		7.5								B1065-9				

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1065</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
57		7.5										MUDSTONE: shale; medium gray (N5); fresh (F); extremely weak (R0); slight reaction to HCl; shell hash at basal contact. [Glen Rose Formation]	.2' added to run 11 from run 10	
58		6				F	R0							
59		4.2	11	5.0 5.0	100	F	R2					LIMESTONE: wackestone; white (N9) to very light gray (N8); fresh (F); weak (R2); strong reaction to HCl recrystallized fossils. [Glen Rose Formation]		
60		4.1										MUDSTONE: shale; dark greenish gray (5G 6/1); fresh (F); extremely weak (R0); slight reaction to HCl; laminated. [Glen Rose Formation]		
61		6.57				F	R0							
62		5.07							B1065-10					
63			12	4.7 5.0	94							LIMESTONE: wackestone; very light gray (N8); fresh (F); weak (R2) to very weak (R1); thinly bedded muds throughout; slight reaction to HCl. [Glen Rose Formation]		
64		9.5				F	R1-R2							
65		5.08												
66		6.22	13	4.4 5.0	88	F	R0					MUDSTONE: shale; medium dark gray (N4); fresh (F); extremely weak (R0); slight reaction to HCl; laminated; soft sediment deformation. [Glen Rose Formation]	0 to 1200 psi depending on material; no rpm	
									B1065-11					



Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-1065</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)						
67		6.22	13	4.4 5.0	88	F	R0		B1065-12			MUDSTONE: shale; medium dark gray (N4); fresh (F); extremely weak (R0); slight reaction to HCl; laminated; soft sediment deformation. [Glen Rose Formation]	gauge							
68		6.42												B1065-13						
69		4.5																		
70		5.32	14	4.9 5.0	98	F	R0-R1					MUDSTONE: shale; medium dark gray (N4); fresh (F); extremely weak (R0); slight reaction to HCl; laminated. [Glen Rose Formation]								
71		8.73																		
72																				
73			14	4.9 5.0	98	F	R1-R2					LIMESTONE: wackestone; very light gray (N8); fresh (F); weak (R2) to very weak (R1); thinly spaced wavy muds and bioturbation; strong reaction to HCl. [Glen Rose Formation]								
74		8.3																		
75																				
76			15		100	F	R2					LIMESTONE: wackestone; light gray (N7) to medium light gray (N6); fresh (F); weak (R2); violent reaction to HCl; wavy silt laminations; boudinage; bioturbation throughout. [Glen Rose Formation]								

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-1065**


Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
76														
77														
78														
79			15	5.0 5.0	100									
80									B1065-15					
81						F	R2							
82		2.8												
83		4.12	16	5.0 5.1	100									
84		2.3							B1065-16					
85		2.52												

LIMESTONE: wackestone; light gray (N7) to medium light gray (N6); fresh (F); weak (R2); violent reaction to HCl; wavy silt laminations; boudinage; bioturbation throughout. [Glen Rose Formation]

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-1065</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
86		2.52	16	5.0 5.1	100							LIMESTONE: wackestone; light gray (N7) to medium light gray (N6); fresh (F); weak (R2); violent reaction to HCl; wavy silt laminations; boudinage; bioturbation throughout. [Glen Rose Formation]		
		3.53												
87		4.12												
88		3.43	17	5.1 4.9	100	F	R2							
89		1.25											Length of recovery stretched due to mechanical breaks.	
90		1.35								B1065-17		LIMESTONE: wackestone; very light gray (N8); fresh (F); weak (R2) to medium strong (R3); violent reaction to HCl; thinly spaced stylolites. [Glen Rose Formation]		
91						F	R2-R3							
92														
93		2.68	18	4.9 5.0	100	F	R1			B1065-18		LIMESTONE: packstone; medium gray (N5); fresh (F); very weak (R1) to very weak (R1); bioturbated; laminated; boudinage; soft sediment deformation; gastropod fossil up to 1" length; violent reaction to HCl. [Glen Rose Formation]	drill chatter	
94		2.42												
95		3.3												

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1065</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
95		3.3	18	4.9 5.0	100							LIMESTONE: packstone; medium gray (N5); fresh (F); very weak (R1) to very weak (R1); bioturbated; laminated; boudinage; soft sediment deformation; gastropod fossil up to 1" length; violent reaction to HCl. [Glen Rose Formation]		
96		2.18												
97		2.53							B1065-19					
98		2.33	19	5.0 5.0	100									
99		2.32					F	R1						
100		1.92												
101		1.83												
102		1.22												
103		3.28	20	5.1 5.0	100					B1065-20				
104		1.5					F	R2					LIMESTONE: wackestone; very light gray (N8); fresh (F); weak (R2); strong reaction to HCl; massive; pervasive burrows. [Glen Rose Formation]	

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1065</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
105		1.5	20	5.1 5.0	100	F	R2					LIMESTONE: wackestone; very light gray (N8); fresh (F); weak (R2); strong reaction to HCl; massive; pervasive burrows. [Glen Rose Formation]		
106		2.13												
107		3.47	21	4.8 5.0	97	F	R1-R2						first barrel retrieval shorty by 2.5 feet	
108		1.97												
109		4.35	21	4.8 5.0	97	F	R2			B1065-21		LIMESTONE: micrite; silty; medium light gray (N5); fresh (F); weak (R2); violent reaction to HCl; silt laminations; packstone ripup at 110'. [Glen Rose Formation]		
110		5.15												
111			22	5.0 5.0	100	F	R2					LIMESTONE: wackestone; very light gray (N8); fresh (F); weak (R2); fossiliferous; packstone laminations at 110.8 to 111.4; wavy silt laminations and stylolites 112.1 to 112.5'. [Glen Rose Formation]		
112		4.47												
113			22	5.0 5.0	100	F	R2							
114														

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-1065</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
114	[Lithology Column]	4.47	22	5.0 5.0	100	F	R2					LIMESTONE: packstone; medium light gray (N6); fresh (F); weak (R2); soft sediment deformation; boudinage; bioturbated; variable silt content; strong reaction to HCl. [Glen Rose Formation]		
115														
116	[Lithology Column]	0.83												
117														
118	[Lithology Column]	1.12				F	R2							
119														
120	[Lithology Column]	0.77	23	5.0 5.0	100									
121														
122	[Lithology Column]	0.83										LIMESTONE: wackestone; very light gray (N8); fresh (F); weak (R2); fossiliferous; strong reaction to HCl. [Glen Rose Formation]		
123														
124	[Lithology Column]	1.02	24	5.2 5.2	100	F	R2					LIMESTONE: packstone; medium light gray (N6) to light gray (N7); fresh (F); weak (R2); increasing silt content and bioturbation with depth; strong reaction to HCl. [Glen Rose Formation]		
125														

.1' added to 23 from 22

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-1065</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
124			24	5.2 5.2	100	F	R2		B1065-24				Length of recovery stretched due to mechanical breaks.	
125												LIMESTONE: wackestone; light gray (N7); fresh (F); weak (R2); burrows at upper contact; subtle bioturbation throughout; darkening to medium light gray by 126; ripups and burrows below 127.5'; with color change back to light gray (N7); violent reaction to HCl. [Glen Rose Formation]		
126		3.2												
127									B1065-25					
128			25	5.0 5.0	100	F	R2							
129														
130														
131														
132			26	4.8 4.8	100									
133		5.02							B1065-26					

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-1065</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
133		1.9										LIMESTONE: wackestone; light gray (N7); fresh (F); weak (R2); burrows at upper contact; subtle bioturbation throughout; darkening to medium light gray by 126; ripups and burrows below 127.5'; with color change back to light gray (N7); violent reaction to HCl. [Glen Rose Formation]		133
134			26	4.8 4.8	100									
135		3.12				F	R2							
136		5.62											rock stuck sideways in catcher, preventing progress a bit	136
137			27	2.0 2.0	100									
138		7.6				F	R0				MUDSTONE: shale; dark gray (N3); fresh (F); extremely weak (R0); massive; gastropod fossils up to 1.5" ; strong reaction to HCl. [Glen Rose Formation]			
139		4.98	28	3.0 3.0	100	F	R2				LIMESTONE: wackestone; light gray (N7); weak (R2); fresh (F); violent reaction to HCl. [Glen Rose Formation]			
140						F	R0				MUDSTONE: shale; medium dark gray (N4); fresh (F); extremely weak (R0); laminated; slight reaction to HCl. [Glen Rose Formation]			
141		1.68				F	R1-R2				LIMESTONE: wackestone; light gray (N7); weak (R2) to very weak (R1); fresh (F); fossiliferous; wavy laminations; violent reaction to HCl. [Glen Rose Formation]			
142		7.78	29	2.9 2.9	100									



Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-1065</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
143		7.78	29	2.9 2.9	100	F	R0					<p>MUDSTONE: shale; medium dark gray (N4); fresh (F); extremely weak (R0); laminated; fossiliferous; calcareous; wavy laminations; wackestone interval 143.3 to 143.6; strong reaction to HCl. [Glen Rose Formation]</p>	<p>drill stoppage, bit not advancing; core fragments sideways in sampler</p>	
144						F	R2		B1065-29			<p>LIMESTONE: wackestone; light gray (N7) to medium gray (N5); fresh (F); weak (R2); fossiliferous; extensive bioturbation; soft sediment deformation; violent reaction to HCl. [Glen Rose Formation]</p>		
145			30	2.1 2.1	100	F	R2							
146											<p>Bottom of hole at 145.8'</p>		<p>Total depth drilled; 145.8'</p>	
147														
148														
149														
150														
151														
152														



ENERCON SERVICES, INC.

PROJECT REPORT

TXUT-001-PR-005


Revision 0

BINDER No. 2  
Page 1 of 723

## BORING LOG DATA REPORT

**BINDER No. 2**  
**2000-Series Boring Logs**  
**Number of Logs in Binder: 71 Logs**

Binder 2 of 3 contains the 2000-Series of geotechnical boring logs for the Unit 3 footprint area. These include the primary borings (numbered as B-2XXX) B-2000 through B-2064, and various associated offset borings (numbered as B-2XXX-OFFSET) utilized for additional soil characterization at select boring locations. They have all been entered into the gINT software program and have undergone multiple rounds of edits. There are 71 logs total included within Binder 2 of 3. Binder 3 will include all geotechnical borings for the MW-Series (Monitoring Wells) and the BS-Series (Bulk Sample).

Project Name and Job Number TXU Comache Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-2000</b>	
Type and Diameter of Boring HSA / 7"			Boring Location 32°18'08.98718"N / 97°47'30.07842"W		Total Depth 401.1 feet
Drilling Contractor and Rig Palmerston and Parish / CME 55			Elevation and Datum 844.027 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 17.1 feet
Sampling Method SPT			Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 8	Date Started 11/1/06
			Borehole Inclination Vertical	Logged by K. Krug	Date Completed 11/7/06

Reviewed by / Date J. Wesling 11/30/06

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0	CL							loose soil and loam with organics		844
1			B-2000 1	16	10/16			LEAN CLAY with sand and limestone fragments dark reddish brown (5YR 3/2), some organics at top of sample		843
2				23						842
2.3				53/4"				limestone ledge and rock at 2.3'		841
3										840
3.5								plastic debris at 3.5'		840
4			B-2000 2	6	14/18	1.5		<b>RESIDUAL SOIL (RS)</b> LEAN CLAY with sand and limestone fragments very stiff, yellow (2.5RY 7/6), dry		839
4.5			B-2000 3	8						838
5				20						837
5.1				50/1"	1/1			LIMESTONE FRAGMENTS and silt		836
6										835
7										834
8										833
8.5			B-2000 4	6	10/10	4.51		LEAN CLAY with sand and limestone fragments hard, yellow (2.5YR 7/6) few manganese oxide nodules		832
9				50/4"						831
10								LIMESTONE GRAVELS		830
11										829
11.5			B-2000 5	5	8/8	4.5		LEAN CLAY light yellowish brown (2.5YR 6/4), dry to damp, some sand		828
12				50/2"						827
12.5			B-2000 6	40	6/9			SHALY LIMESTONE greenish gray (5/GLEY1), massive with possible layering in "chip" form		826
13				50/3						825
14										824
15										823

Project Name and Job Number  
 TXU Comache Peak COL  
 1908



**SOIL LOG**  
**Boring No. B-2000**

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
15									829
16	CL		B-2000 7	50/3"	3/3	4.51	LEAN CLAY with sand hard, pale yellow (2.5Y8/3), dry to damp, some calcareous deposits		828
17			B-2000 8	50/1"	1/1		Limestone	Bedrock at 17.1'	827
18							Augered from 17.1' to 18.7' to set the casing.		826
19									825
20									824
21									823
22									822
23									821
24									820
25									819
26									818
27									817
28									816
29									815
30									




Undisturbed sample  
 SH = Shelby; P = Pitcher; O = other



Driven (2.5 to 3.0 inch) with liners  
 MC = Modified California; O = other



Standard Penetration Test (SPT) sampler

Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG Boring No. B-2000</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'08.98718"N / 97°47'30.07842"W		Total Depth 401.1 feet	
Drilling Contractor and Rig Palmerton and Parrish / CME 55		Elevation and Datum 844.027 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 17.1 feet	
Casing Size and Depth 6 / 18.25 feet		Length of Core Barrel and Bit 8.6 feet	No. of Core Boxes 26	Date Started 11/1/06	
		Borehole Inclination Vertical	Logged by K. Krug	Date Completed 11/7/06	

Reviewed by / Date J. Wesling 11/30/06

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
19		1.97							2000-1			LIMESTONE: packstone/wackestone; light reddish gray (2.5YR 7/1); vuggy; fossiliferous with carbonate matrix; bedding planes visible; vugs .01' to .001' diameter. [Glen Rose Formation]	No H2O Recovery	825
20		4.35	1	3.9 3.9	100	F	R2				Pyrite nodule		Good H2O recovery milky-clear	824
21		10.92										LIMESTONE: micrite with shale interbeds; greenish gray (5G 6/1); bioturbated; rip up clasts; shale .001' to .002' thick with similar spacing; no vugs. [Glen Rose Formation]		823
22		5.08											grey H2O return	822
23		5.58				F-SW	R2							821
24		5.55										Massive; rip up clasts		820
25		6.57	2	4.9 5.0	98							SHALE: dark greenish gray (5GY 4/1) fine lamellae bands; wet. [Glen Rose Formation]		819
26		7.52				F-SW	R0							818
27		5.67							2000-2			LIMESTONE: micrite/wackestone; greenish gray (5G 6/1); beds disturbed by large rip up clasts; strong reaction to HCl. [Glen Rose Formation]		817
28		5.67				F	R2							816
29		3.77										Intense bioturbation; distinct interbeds of shale .001' to .02' thick, ~.001' apart.		815
30			3	5.0 5.0	100	F	R2					LIMESTONE: packstone. [Glen Rose Formation]		814
31		3.5							2000-3			LIMESTONE: micrite with beds of shale; white (2.5YR 8/1); shale beds ~.0001' thick; rip ups common; strong reaction to HCl; very weak to weak (R1 to R2); fresh to slightly weathered (F to SW). [Glen Rose Formation]		813
32		2				F-SW	R1-R2							812
33		4.87	4	4.9 5.0	98									811

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
34		5										LIMESTONE: micrite with beds of shale; white (2.5YR 8/1); shale beds ~.0001' thick; rip ups common; strong reaction to HCl; very weak to weak (R1 to R2); fresh to slightly weathered (F to SW). [Glen Rose Formation]		810
35		3.8										Shale bed groups occur more commonly, ~.2' to .02' apart.		809
36		4		4.9 5.0	98				2000-4			Gradual loss of beds; heavily disturbed.		808
37		3.43												807
38		2.5				F-SW	R1-R2				Fractured zone			806
39		4.55												805
40		10.33												804
41		10.42	5	5.0 5.0	100							Distinct shale interbeds return, .1' thick, spaced .1' to .2' apart.		803
42		16.07				SW	R0		2000-5			SHALE: extremely weak (R0); slightly weathered (SW). [Glen Rose Formation]		802
43		9.73										LIMESTONE: micrite with beds of shale; white (2.5YR 8/1); shale beds ~.0001' thick; rip ups common; strong reaction to HCl; very weak to weak (R1 to R2); fresh to slightly weathered (F to SW); shale interbed at 47.5'. [Glen Rose Formation]		801
44		2.37							2000-6					800
45		2.15												799
46		6.43	6	5.0 5.0	100	F-SW	R1-R2					Massive.		798
47		4.75												797
48		4.5												796
		5.25	7	4.9 5.0	98									

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
49		3.4				F-SW							milky white H2O return	795
		3.4							2000-7			SHALE: dark greenish gray (5GY 4/1) fine lamellae bands; wet; very weak (R1); slightly weathered (SW). [Glen Rose Formation]		794
50		3.97												794
51		15.5	7	4.9 5.0	98	SW	R1							793
52		21.58												792
53		12.37				SW	R1					LIMESTONE: wackestone; white (2.5YR 8/1); no distinct layers; strong HCl reaction; minor shale layers less than 1 ft thick. [Glen Rose Formation]	water return is grey	791
54		4.53							2000-8					790
55		5.82	8	5.0 5.0	100	SW	R1					SHALE: dark greenish gray (5GY 4/1); fine laminae. [Glen Rose Formation]		789
56		6.9				SW	R1							788
57		5.22										LIMESTONE: packstone with interbedded shales; white (2.5YR 8/1); no distinct layers; rip up clasts present; coal seam at 58.2'. [Glen Rose Formation]		787
58		4				SW	R2							786
59		5												785
60		6.67	9	5.0 5.0	100	F	R1-R2		2000-9			SHALE: greenish gray (5GY 4/1); massive; interbedded with .001' thick limestone spaced ~.6' apart. [Glen Rose Formation]		784
61		5.78												783
62		4.53				SW	R1-R2					LIMESTONE: micrite with interbedded shales; white (N8) to greenish gray (5GY 6/1); thin non-distinct shale layers .0001' thick. [Glen Rose Formation]		782
63		4.22	10	5.0 5.0	100	SW	R1					SHALE: greenish gray (5GY 4/1); massive. [Glen Rose Formation]		781

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
64		6.05				SW	R1					SHALE: greenish gray (5GY 4/1); massive. [Glen Rose Formation]		780
65		4.9	10	5.0 5.0	100							LIMESTONE: micrite with interbedded shales; white (N8) to greenish gray (5GY 6/1;) thin non-distinct shale layers .0001' thick; rip ups common. [Glen Rose Formation]		779
66		3.5												778
67		3.7				F-SW	R2		2000-10					777
68		3.42												776
69		3.5												775
70		2.48	11	5.0 5.0	100							LIMESTONE: micrite/wackestone; interbedded with shale; white (2.5 YR 8/1); shale in non-layered, .001' thick beds enclosing rip up clasts. [Glen Rose Formation]		774
71		2.17												773
72		2.32							2000-11					772
73		2.78										Coal seam.		771
74		8.07				F	R2							770
75		2.5	12	5.0 5.0	100				2000-12			Slight increase in shale content.		769
76		2.07												768
77		3.37											milky white H2O return	767
78		3.83	13	5.0 5.0	100									766



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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
79		3.08										Low shale density. Large rip up clasts to 80.0'.		765
		3.08												
80		2.87							2000-13					764
			13	5.0 5.0	100									
81		3.5												763
						F	R2							
82		3.62										Thickness of shale beds between rip up clasts up to .002' thick.		762
83		3.65												761
84		2.87												760
85		1.98	14	5.0 5.0	100							LIMESTONE: micrite; white (2.5 YR 8/1); interbedded with shale; no defined bedding; shale encloses rip up clasts .0001' thick; clasts range in size .001' to .1' diameter; strong reaction to HCl. [Glen Rose Formation]	grey to milky white H2O return	759
86		2.85												758
									2000-14					
87		3.45												757
						F	R2							
88		3.33												756
89		4.52										LIMESTONE: packstone with interbedded shales; .001' to .1' thick surrounding rip up clasts; dispersed through color changes; bluish grey (GLE2 5/10B); shale differentially weathered; inset from the rest; fresh (F); weak (R2). [Glen Rose Formation]	gradual contact	755
90		2.18	15	5.0 5.0	100									754
									2000-15					
91		2.12												753
						F	R2							
92		2.52												752
93		2.4	16	5.0 5.0	100									751

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
94		4.18										LIMESTONE: packstone with interbedded shales; .001' to .1' thick surrounding rip up clasts; dispersed through color changes; bluish grey (GLE Y2 5/10B); shale differentially weathered; inset from the rest; fresh (F); weak (R2). [Glen Rose Formation]		750
		4.18												
95		2.23												749
			16	5.0 5.0	100									
96		2.33												748
97		2.6												747
98		1.97												746
99		2.58												745
100		1.72	17	5.0 5.0	100								grey H2O return	744
101		1.82				F	R2							743
102		2.32												742
103		2.08												741
104		2.08												740
105		1.32	18	5.0 5.0	100									739
106		3.47												738
107		1.82												737
108		2.92	19	5.0 5.0	100									736

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
109		2.87										LIMESTONE: packstone with interbedded shales; .001' to .1' thick surrounding rip up clasts; dispersed through color changes; bluish grey (GLE Y2 5/10B); shale differentially weathered; inset from the rest; fresh (F); weak (R2). [Glen Rose Formation]		735
		2.87				F	R2							734
110		3.57										SHALE: reddish gray (2.5YR 6/1); limestone rip ups present; fresh (F); weak (R2). [Glen Rose Formation]		734
			19	5.0 5.0	100	F	R2			2000-19				733
111		2.98										LIMESTONE: packstone/micrite with interbedded shales; white (2.5YR 8/1); interbedded shales .001' to .01' thick surrounding rip up clasts; fresh (F); weak (R2). [Glen Rose Formation]		733
														732
112		2										Color change to reddish gray (2.5YR 8/1); massive; dissolution features.		732
														731
113		2.82										LIMESTONE: micrite; reddish gray (2.5YR 8/1); massive; shale occurs interbedded with rip up clasts .0001' thick grouped every .6'; fresh (F); weak (R2). [Glen Rose Formation]		731
														730
114		2.62										Higher shale density 122.6' to 123.4'.  Rip ups more common.		730
														729
115		3.03	20	5.0 5.0	100	F	R2							729
116		3.3												728
117		2.42												727
										2000-20				727
118		1.52												726
119		1.65												725
120		1.95	21	5.0 5.0	100									724
121		1.38				F	R2							723
122		2												722
										2000-21				722
123		3.38	22	5.0 5.0	100									721

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)											
124		2.85	22	5.0 5.0	100	F	R2					LIMESTONE: micrite; reddish gray (2.5YR 8/1); massive; shale occurs interbedded with rip up clasts .0001' thick grouped every .6'; fresh (F); weak (R2). [Glen Rose Formation]		720											
		2.85																							719
125		2.88																							718
126		3.37																							717
127		3.98																							716
128		3.23																							715
129		7.23	23	5.0 5.0	100	F	R1				2000-22	SHALE: greenish gray (5GY 4/1); fresh (F); very weak (R1). [Glen Rose Formation]		714											
130		6.82				F-SW	R1-R2						2000-23	LIMESTONE: micrite; white (2.5YR 8/1); with interstitials filled with shale; rip ups common. [Glen Rose Formation]		713									
131		2.5				F	R1							SHALE: greenish gray (GLEY1 6/5); massive; fresh to slightly weathered (F to SW); very weak (R1). [Glen Rose Formation]		712									
132		3.43												LIMESTONE: micrite/packstone; white (2.5YR 8/1); shale around rip up clasts present in groupings .6' thick and .6' apart; each individual layer .0001' thick; limestone weathering resistant; fresh (F); weak (R2). [Glen Rose Formation]		711									
133		2.57	24	5.0 5.0	100	F	R2					Very disturbed beds.		710											
134		2.75																						709	
135		3.47																						708	
136		4.55																						707	
137		4.57	25	5.0 5.0	100									706											
138		4.28																						706	

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
139		2												705
		2												
140		2.75							2000-25				Increase in shale density.	704
141		4.47	25	5.0 5.0	100									703
142		3.28												702
143		4.02												701
144		2.3												700
145		2.5	26	5.0 5.0	100				2000-26					699
146		3.55				F	R2							698
147		4.73											Shale rich. Large rip up clasts.	697
148		2.55												696
149		2.52												695
150		3.12	27	5.0 5.0	100								Increasingly micritic, with shale-rich zones.	694
151		2.8												693
152		2.1							2000-27					692
153		3.37	28	5.0 5.0	100									691

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
154		1.57												690
		1.57												
155		2.25							2000-28					689
156		1.57	28	5.0 5.0	100									688
157		1.85				F	R2				St,R0,Ti			687
158		1.85										Packstone dominant.		686
159		1.9												685
160		1.7	29	4.9 5.0	98				2000-29			LIMESTONE: packstone with interbedded shales; white (2.5YR 8/1) to greenish gray (5GY 6/1); bedding not distinct; rip ups common surrounded by shale .0001' thick; fresh (F); weak (R2). [Glen Rose Formation]		684
161		1.98												683
162		1.65												682
163		1.35										Oolites or dissolution features.		681
164		1.17				F	R2					Calcite-filled vugs.		680
165		1.05	30	5.0 5.0	100									679
166		1.08							2000-30			Worm burrows.		678
167		1.33												677
168		1.17	31	5.0 5.0	100				2000-31			Calcite-filled vugs.		676

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)	
169		1.83										LIMESTONE: packstone with interbedded shales; white (2.5YR 8/1) to greenish gray (5GY 6/1); bedding not distinct; rip ups common surrounded by shale .0001' thick; fresh (F); weak (R2). [Glen Rose Formation] Large rip up clasts.		675	
		1.83												674	
170		1.15	31	5.0	100	F	R2							673	
171		1.37		5.0									Shale-rich layer.	672	
172		2.02												671	
173		1.67											LIMESTONE: micrite with interbedded shales and rip ups of packstone; reddish gray (2.5YR 6/1); shale is .0001' thick; fresh (F); weak to medium strong (R2 to R3). [Glen Rose Formation]	670	
174		1.42													669
175		2.02	32	5.0	100										668
176		1.12								2000-32					667
177		1.38													666
178		2.42				F	R2-R3							665	
179		2.83												664	
180		1.67	33	5.0	100									663	
181		1.6								2000-30				662	
182		1.5												661	
183		1.8	34	5.0	100	F	R2-R3					Gradual change to wackestone.	No Sample B-2000-33 indicated on log	661	

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
184		1.83										LIMESTONE: packstone; reddish gray (2.5YR 6/1); interbedded shale .0001' thick; fresh (F); weak to medium strong (R2 to R3). [Glen Rose Formation]		660
185		1.58	34	5.0 5.0	100	F	R2-R3							659
186		1.67							2000-34					658
187		1.57												657
188		1.37												656
189		1.48												655
190		1.28	35	5.0 5.0	100	F-SW	R1-R2					SHALE: very dark greenish gray (10Y 3/1); fine laminae; fossil rich; very weak to weak (R1 to R2). [Glen Rose Formation]		654
191		4.83							2000-35					653
192		7.3										LIMESTONE: wackestone; reddish gray (2.5YR 6/1); calcite filled vugs present; shale at 193.5' and 195.0'. [Glen Rose Formation]		652
193		1.83												651
194		3.17												650
195		3.95	36	4.9 5.0	98	F-SW	R2							649
196		2.2												648
197		4.1							2000-36					647
198		2.87	37	5.0 5.0	100		R1		2000-37					646



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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
199		3										SHALE: with sandy layers; grayish green (10Y 3/1); sand is grayish green (5G 5/2); bedding visible, .02' to .2' thick bands of sand every 2' to 3'. [Glen Rose Formation]		645
		3				F-SW	R1							644
200		8.42												644
			37	5.0 5.0	100									643
201		7.1										LIMESTONE: wackestone; reddish gray (2.5YR 6/1); calcite filled vugs present; shale with sand at 203.5'; coal seam at 204.7'. [Glen Rose Formation]		643
202		4.37												642
						F-SW	R2						low H2O return	641
203		1.37												641
									2000-38					640
204		6.08												640
														639
205		2.65	38	5.0 5.0	100	F-SW	R1					SHALE: with sandy layers; grayish green (10Y 3/1); sand is grayish green (5G 5/2); bedding visible, .02' to .2' thick bands of sand every 2' to 3'. [Glen Rose Formation]	grey H2O return	639
														638
206		7.32										LIMESTONE: packstone; white (2.5YR 8/1); no distinct bedding; fossil rich; at 210' shale, fine laminae; at 211' highly disturbed bedding; rip up clasts common; at 212' shale ~30% of rock in thin layers; shale tapers off at 213'. [Glen Rose Formation]		638
207		4.05												637
														636
208		2.97												636
									2000-39					635
209		2.72												635
						F	R1-R2							634
210		2.87	39	5.0 5.0	100									634
211		1.87												633
212		2.37												632
213		2.87	40	5.0 5.0	100									631

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
214		2.55				F	R1-R2							630
		2.55				F	R1-R2							
215		2.53	40	5.0 5.0	100	F	R2		2000-40			SHALE: with interbedded limestone; black (N2.5); fine bedding, .01' thick alternating with .005' thick limestone. [Glen Rose Formation]		629
216		2.88												628
217		3.33										LIMESTONE: packstone with interbedded shales; white (2.5YR 8/1) to greenish gray (5GY 6/1); bedding not distinct; rip ups common, surrounded by shale .001' thick. [Glen Rose Formation]		627
218		3.18				F	R2							626
219		6.12												625
220		2.68	41	5.0 5.0	100		R2		2000-41			SHALE: black (N2.5); massive; fresh (F); weak (R2). [Glen Rose Formation]		624
221		2.45				F	R2							623
222		4.7										SANDSTONE: greenish gray (10GY 4/1); fine grained bedding visible; interbedded with clasts and layers of packstone (reddish gray 2.5YR 6/1) to 227.7'; very weak to extremely weak (R1 to R0); sandstone is fine grained; well sorted; well rounded; 230.1' gradual introduction of shale-like beds. [Glen Rose Formation]		622
223		4.22												621
224		2.72												620
225		3.62	42	5.0 5.0	100	F	R0-R1							619
226		2.32												618
227		2.17							2000-42				H2O artesian flow between runs	617
228		0.8	43	5.0 5.0	100									616

Project Name and Job Number  
 TXU Comanche Peak Col  
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**ROCK LOG**  
**Boring No. B-2000**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
229		1.28												615
		1.28												
230		0.48												614
			43	5.0 5.0	100									
231		0.7												613
						F	R0-R1							
232		0.7												612
233		2.32											Disturbed bedding.	611
234		2.62												610
235		3.3	44	5.0 5.0	100								Micrite from 234.4' to 235'	609
236		0.68												608
						F	R0-R1							
237		0.32												607
238		0.45												606
239		3.75												605
240		5.98	45	4.8 5.0	96									604
241		4.2												603
						F	R2							
242		2.87												602
243		1.83	46	5.0 5.0	100									601

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2000</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)	
244	[Hatched pattern]	4.37	46	5.0 5.0	100	F	R2						Limited H2O return in 3rd ft R46	600	
245		4.42												2000-46	SHALE: black (N2.5); massive; fresh (F); weak (R2). [Glen Rose Formation]
246	[Dotted pattern]	16.93	47	5.0 5.0	100	F	R2						grey H2O return	598	
247		12.55													
248	[Dotted pattern]	6.43	47	5.0 5.0	100	F	R1						LIMESTONE: micrite; greenish gray (10Y 4/1); rip up clasts are dominant texture; few fossils. [Glen Rose Formation]	596	
249		4.47													
250	[Dotted pattern]	2.82	48	5.0 5.0	100	F	R0-R2						SANDSTONE and SHALE: interbedded; greenish gray (10GY 6/1); alternates in .5' to .2' beds; shale is very weak to extremely weak (R1 to R0); sandstone is well rounded; sorted; fine to small grained and noncalcareous to calcareous; visible beds; well cemented; weak to very weak (R2 to R1). [Glen Rose Formation]	594	
251		1.77													grey H2O return
252	[Dotted pattern]	4.13	48	5.0 5.0	100	F	R0-R2						No Sample B-2000-47 indicated on log	592	
253		5.78													Color change to pinkish, (2.5YR 8/2) at 253.0' Bedding apparent at 255.0'
254	[Dotted pattern]	10.15	49	4.9 5.0	98	F	R0-R2						white/cloudy H2O return	590	
255		3.8													Less cemented; clay in matrix?
256	[Dotted pattern]	1.15	49	4.9 5.0	98	F	R0-R2							2000-48	588
257		1.47													
258	[Dotted pattern]	0.83	49	4.9 5.0	98	F	R0-R2						Disturbed bedding; dewatering structures?	586	

Heavily broken during movement, no cement!

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**ROCK LOG**  
**Boring No. B-2000**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
259		2.17												585
		2.17				F	R0-R2					Color change to light gray (10YR 7/2).	No Sample B-2000-49 indicated on log	584
260		2.68												584
			49	4.9 5.0	98									583
261		1.28									Some return lost to H2O	SANDSTONE: light gray (10YR 7/2); extremely weak (R0); fresh (F); well sorted; well rounded; contains cross bedding; no more shales; Glen Rose/Twin Mountain Contact?. [Twin Mountain Formation]	artesian flow	583
262		1.83				F	R0							582
263		0.03												581
									2000-50					580
264		0.75									Fractured into 0.4 foot pieces	Cross bedding.	contact	580
265		0.32	50	4.4 5.0	88							SANDSTONE: clay matrix; greenish gray (10Y 6/1) to light gray (10YR 7/2); distinct beds; fresh (F); extremely weak (R0); dewatering structures; occasional cobbles. [Twin Mountain Formation]	cloudy H2O return	579
266		0.87												578
267		1.4					R0							577
268		1.12												576
269		8.25									Heavily fractured; 0.3 foot recovered; remainder lost or void			575
270		0.57	51	3.8 5.0	76									574
						F	R1-R2						No Sample B-2000-51 indicated on log	573
271		0.87										SHALE: black (N2.5); massive; weak to very weak (R2 to R1). [Twin Mountain Formation]		573
272		7.98				F	R0					SANDSTONE: with clay matrix; greenish gray (10Y 6/1); fine grained; fresh (F); extremely weak (R0); quartz and feldspathic grains. [Twin Mountain Formation]		572
273		6.42	52	5.0 5.0	100									571

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 TXU Comanche Peak Col  
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**ROCK LOG**  
**Boring No. B-2000**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
274		5.12										SANDSTONE: with clay matrix; greenish gray (10Y 6/1); fine grained; fresh (F); extremely weak (R0); quartz and feldspathic grains. [Twin Mountain Formation]		570
		5.12												
275		0.63							2000-52					569
			52	5.0 5.0	100									
276		1.17												568
						F	R0							
277		2.78												567
278		1.57												566
279		1.57											565	
280		1	53	4.8 5.0	96								No Sample B-2000-53 indicated on log	564
						F	R0							
281		0.3												563
282		0.92											grey H2O return	562
283		0.55												561
284		0.3												560
285		0.53	54	4.8 5.0	96	F	R0		2000-54					559
286		1.65												558
287		0.7											Lower gear	557
288		0.17	55	4.2 5.0	84									556

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-2000**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)	
289		1.17										SANDSTONE: with clay matrix; greenish gray (10Y 6/1); fine grained ; fresh (F); extremely weak (R0); non-calcareous; no cementation. [Twin Mountain Formation]		555	
		1.17													
290		1.17												No Sample B-2000-55 indicated on log	554
			55	4.2 5.0	84										
291		1.77													553
						F	R0								
292		0.93												color change	552
293		2.37							2000-56						551
294		1.02													550
295		1.4	56	4.8 5.0	98									grey H2O return	549
296		1.05											gear change, black H2O return	548	
297		2.62												547	
298		0.68											cloudy H2O return	546	
299		1				F	R0						brown H2O return	545	
300		2.97	57	4.6 5.0	92								No Sample B-2000-57 indicated on log	544	
301		1.62												543	
302		2.57											grey	542	
303		2.12	58	4.9 5.0	98									541	

Project Name and Job Number  
 TXU Comanche Peak Col  
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**ROCK LOG**  
**Boring No. B-2000**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
304		1.68				F	R0							540
		1.68										CONGLOMERATE: ~.001' to .01' clasts; well rounded clasts; matrix of clays and sand; weak (R2); reacts strongly with HCl. [Twin Mountain Formation]		540
305		1.1				F	R2						No Sample B-2000-58 indicated on log	539
			58	$\frac{4.9}{5.0}$	98									538
306		1.62										SANDSTONE: light gray (10YR 7/2) to greenish gray (10GY 6/1); fine grained; well rounded; well sorted; no cementation; no visible bedding. [Twin Mountain Formation]		538
307		1.72											color change	537
308		1.9												536
309		1.37												535
310		1.98	59	$\frac{4.9}{5.0}$	98								grey H2O return	534
311		0.48											No Sample B-2000-59 indicated on log	533
312		0.55				F	R0-R1				Lost .1' end R59			532
313		0.55												531
314		0.77							2000-60			Well cemented 314.0' to 315.4'		530
315		1.83	60	$\frac{4.9}{5.0}$	98									529
316		1.13												528
317		1.45									Lost .1' end R60			527
318		1.85	61	$\frac{4.3}{5.0}$	86								color change	526



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**ROCK LOG**  
**Boring No. B-2000**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
319		2										SANDSTONE: light gray (10YR 7/2) to greenish gray (10GY 6/1); fine grained; well rounded; well sorted; no cementation; no visible bedding. [Twin Mountain Formation]		525
		2					R0-R1						No Sample B-2000-61 indicated on log	524
320		1.5												524
			61	4.3 5.0	86									523
321		0.58												523
						F								522
322		0.28												522
							R0-R1				Lost .1' end R61			521
323		2.73												521
														520
324		1.48												520
														519
325		1.57	62	3.4 5.0	68							SANDSTONE: light gray (10YR 7/2); well sorted; fine grained; well rounded; unconsolidated/uncemented; quartzofeldspathic; extremely weak (R0); no reaction to HCl.	No Sample B-2000-62 indicated on log	519
														518
326		1.25												518
											~ 1.6' lost due to drilling H2O corrosion			517
327		1.7												517
														516
328		2.15												516
														515
329		3.55				F	R0						No Sample B-2000-63 indicated on log	515
														514
330		2	63	4.9 5.0	98									514
														513
331		0.65											at 3:15 driller expressed concerns about hole staying open and recovery	513
														512
332		0.85												512
														511
333		0.73	64	4.9 5.0	98						Lost .1' to H2O end R63			511

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 TXU Comanche Peak Col  
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**ROCK LOG**  
**Boring No. B-2000**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
334		2.12									Heavy Fractured due to drilling H2O corrosion	SANDSTONE: light gray (10YR 7/2); well sorted; fine grained; well rounded; unconsolidated/uncemented; quartzofeldspathic; extremely weak (R0); no reaction to HCl.		510
		2.12												
335		1.67							2000-64			Gradual introduction of subangular limestone clasts, 0.1' to 0.01' diameter.	Increase in strength to R2-R3 from 335.0' to 337.2'	509
			64	4.9 5.0	98	F	R0							
336		0.95												508
337		1.15									Stylolites		return water red-brown	507
						SW	R2					SHALE: grayish green (5G 5/2); massive. [Twin Mountain Formation]		
338		3.08										SHALE: weak red (10R 4/3); fluid alteration in old incipient cracks and blobs of greenish colored shale; medium strong (R3); slightly weathered (SW); massive; no reaction with HCl. [Twin Mountain Formation]	No Sample B-2000-65 indicated on log	506
339		4.52												505
340		4.35	65	5.0 5.0	100								reddish brown H2O recovery	504
341		3.55												503
											Fractured during extraction			
342		3.9												502
343		4.1				F-SW	R2-R3					Fewer alteration colors, occurring at 0.6' intervals.		501
344		6.07												500
345		11.68	66	5.0 5.0	100								No Sample B-2000-66 indicated on log	499
346		4.47												498
347		5.38										Slight reaction to HCl when powdered; weak (R2); fresh to slightly weathered (F to SW).		497
348		10.28	67	5.0 5.0	100								Pale brown H2O recovery	496

Project Name and Job Number  
 TXU Comanche Peak Col  
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**ROCK LOG**  
**Boring No. B-2000**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
349		7.92										SHALE: weak red (10R 4/3); fluid alteration in old incipient cracks and blobs of greenish colored shale; medium strong (R3); slightly weathered (SW); massive; no reaction with HCl. [Twin Mountain Formation]	reddish	495
		7.92												
350		13.18											No Sample B-2000-67 indicated on log	494
			67	5.0 5.0	100									
351		5.12									Some left in hole retrieved with next run			493
352		5.22												492
353		5.52												491
354		5.5												490
355		7.93	68	5.0 5.0	100				2000-68		Broken due to extraction power packing			489
356		4				F-SW							core barrell full, pulling up often, went back for first 1.'	488
						R2-R3								
357		6.27												487
358		10.37										Grayish green (5G 5/2) below this depth.		486
359		3.55										Fine laminae visible.	reddish brown H2O recovery	485
360		5.13	69	5.0 5.0	100									484
361		5.3										Disturbed beds, offset of dewatering structure.	No Sample B-2000-69 indicated on log	483
362		5.43												482
363		6.6	70	5.0 5.0	100									481

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 TXU Comanche Peak Col  
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**ROCK LOG**  
**Boring No. B-2000**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
364		3.7										SHALE: weak red (10R 4/3); fluid alteration in old incipient cracks and blobs of greenish colored shale; medium strong (R3); slightly weathered (SW); massive; no reaction with HCl. [Twin Mountain Formation]		480
		3.7												
365		4.08	70	5.0 5.0	100	F-SW	R2-R3						No Sample B-2000-70 indicated on log	479
366		4.03												478
367		3.03										Cross-bedding visible.		477
368		2.9												476
369		2.2										SHALE: mudstone; grayish green (5G 5/10); dewatering structures and cross bedding. [Twin Mountain Formation]	color change No Sample B-2000-71 indicated on log	475
370		3.5	71	5.0 5.0	100									474
371		3.88											greyish H2O return	473
372		2.25												472
373		2.07												471
374		1.78				F	R2							470
375		3.17	72	5.0 5.0	100									469
376		4.28												468
377		2.7												467
378		2.78	73	5.0 5.0	100									466

Project Name and Job Number  
 TXU Comanche Peak Col  
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**ROCK LOG**  
**Boring No. B-2000**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
379		2.73				F	R2							465
		2.73										CONGLOMERATE: with matrix of shale; .01' to .001' clasts; reddish brown to weak red (10R 5/2). [Twin Mountain Formation]		465
380		3.42				F	R2						reddish brown H2O recovery	464
			73	5.0 5.0	100									
381		3.42										SHALE: mudstone; weak red (10R 5/2); massive; fresh (F); weak (R2); zones of grayish green (5G 5/1); slight reaction to HCl. [Twin Mountain Formation]	No Sample B-2000-73 indicated on log	463
382		5.22												462
383		5.05											cloudy-clear brown H2O recovery	461
384		4.1											No Sample B-2000-74 indicated on log	460
385		4.93	74	5.0 5.0	100								grey H2O return	459
386		2.82											brown H2O return	458
387		3.93				F	R2						reddish brown H2O recovery	457
388		3.6												456
389		2.43												455
390		4.97	75	5.0 5.0	100								No Sample B-2000-75 indicated on log	454
391		3.95												453
392		3.83												452
393		4.42	76	5.0 5.0	100							Old "cracks" healed, with 1 step darker red material at high angles (~65 degrees).		451

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 TXU Comanche Peak Col  
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**ROCK LOG**  
**Boring No. B-2000**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
394		2.72										SHALE: mudstone; weak red (10R 5/2); massive; fresh (F); weak (R2); zones of grayish green (5G 5/1); slight reaction to HCl. [Twin Mountain Formation]		450
		2.72												
395		3.27												449
			76	5.0 5.0	100	F	R2							
396		2.52												448
397		2.87											artesian flow	447
398		4.18										Color change to grayish green (5G 5/10). [Twin Mountain Formation]	contact is gradual	446
399		3.37				F	R2					CONGLOMERATE: grayish green (5G 5/10); clasts sub-angular to rounded; .01' with matrix of shale; no distinct layers; slight reaction to HCl. [Twin Mountain Formation]		445
			77	3.3 3.5	100									
400		3.27				F	R2					CONGLOMERATE: weak red (10R 5/2); matrix; limestone clasts; .01'; subangular to subrounded; no distinct layers; fresh (F); weak (R2). [Twin Mountain Formation]	No Sample B-2000-77 indicated on log	444
401														443
402														442
403														441
404														440
405														439
406														438
407														437
408														436


1' left in hole, redrilling in R77

2000-76

Project Name and Job Number TXU Comache Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-2001 offset</b>	
Type and Diameter of Boring HSA / 7"			Boring Location 32°18'11.01368"N / 97°47'30.36614"W		Total Depth 9.6 feet
Drilling Contractor and Rig TEXPLOR / CME 75			Elevation and Datum 837.71 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 9.6 feet
Sampling Method SPT			Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 4	Date Started 2/9/07
			Borehole Inclination Vertical	Logged by L. Pawiak	Date Completed 2/9/07

Reviewed by / Date \_\_\_\_\_ 2/11/07


Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0	CL						RESIDUAL SOIL (RS) LEAN CLAY medium stiff to stiff, light olive brown (2.5Y5/4), dry to damp			837
1			B-2001 offset 1	11	18		SILTY SAND with gravel pale yellow (2.5Y7/2), angular to subrounded gravel, fine to medium grained; 2cm dia. max gravel size			836
2	SP-SM			10	18					835
3				8						834
4			B-2001 offset 2	4	14		LEAN CLAY medium stiff, light olive brown (2.5Y5/4), some angular to subrounded gravels up to 1.5cm dia., some very fine grained sand			833
5				10	18					832
6				9						831
7	CL		B-2001 offset 3	4	18		stiff to very stiff, color to pale yellow (5Y7/3) with olive yellow (5Y6/6) mottling, some black organics			830
8				9	18					829
9			B-2001 offset 4	2	16		very stiff, color to pale olive (5Y6/3), some calcareous deposits			828
10				25	13					827
11				50/1"						826
12										825
13										824
14										823
15										822

Project Name and Job Number TXU Comache Peak COL 1908				<b>SOIL LOG Boring No. B-2001</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'11.01368"N / 97°47'30.36614"W		Total Depth 301 feet	
Drilling Contractor and Rig Palmerton and Parish / CME 55		Elevation and Datum 837.886 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 9.5 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 4	Date Started 11/28/06	
		Borehole Inclination Vertical	Logged by E. Weldon	Date Completed 12/3/06	

Reviewed by / Date R. Ortiz 12/11/06

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0										837
1	ML		B-2001 1	5	11/18			RESIDUAL SOIL (RS) SILT with gravel and sand stiff, light olive brown (2.5YR5/3), dry, strong reaction to HCl		837
2				7						836
2	GW			5				GRAVEL with sand and silt stiff, olive gray (5Y5/2) to light gray (5Y7/1) to pale yellow (5Y8/2), dry, gravels are <1.6cm, subangular		835
3										835
4			B-2001 2	6	16/18			CLAYEY SILT with sand hard, yellow (2.5Y7/6), dry to damp, some gravel, strong reaction to HCl		834
5				14						833
5				35						833
6	CL/ML								very stiff, weak reaction to HCl below 5.7'	832
6	CL/ML		B-2001 3	8	14/18					831
7				10						831
7				13						830
8										830
9	CL		B-2001 4	13	10/11			LEAN CLAY hard, olive yellow (2.5Y6/6), dry to damp, slight reaction to HCl		829
9				62/5"				limestone fragments at 9.0'		829
10										828
11										827
12										826
13										825
14										824
15										823



Project Name and Job Number TXU Comanche Peak Col 1908		 <b>ROCK LOG Boring No. B-2001</b>	
Type and Diameter of Boring HQ / 4"	Boring Location 32°18'11.01368"N / 97°47'30.36614"W	Total Depth 301 feet	
Drilling Contractor and Rig Richard Simmons / BK-81	Elevation and Datum 837.886 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 9.5 feet
Casing Size and Depth 6" ID / 9.5 feet	Length of Core Barrel and Bit 7.5 feet	No. of Core Boxes 20	Date Started 11/28/06
Borehole Inclination Vertical		Logged by C.Rittel	Date Completed 12/3/06

Reviewed by / Date R. Ortiz 12/11/06

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
10		1.5										LIMESTONE: wackestone; white to very light gray (N9 to N8); weak to medium strong (R2 to R3); slightly weathered (SW); strong reaction to HCl. [Glen Rose Formation]	Augered to 10' to set casing	827
11		1.48				SW	R2-R3							826
12		2.32	1	<u>4.8</u> 5.0	96				2001-1					825
13		2.37												824
14		2.32										SHALE: mudstone; medium light gray (N6); extremely weak to very weak (R0 to R1); slightly weathered (SW); slight to strong reaction to HCl; trace fine sand; increase in shells and hardness below 15.0'. [Glen Rose Formation]		823
15		2.83	2	<u>1.0</u> 1.0	100	SW	R0-R1							822
16		1.22												821
17		1.75												820
18		2.98	3	<u>4.9</u> 5.0	98							Increase in shells and hardness 17.3' to 17.6'. SHALE: mudstone; medium dark gray (N4); extremely weak (R0); slightly weathered (SW); trace fine sand; laminated beds <0.05' thick; slight HCl reaction; shells absent. [Glen Rose Formation]		819
19		1.75							2001-2					818
20		2.12				SW	R0							817
21		1.12												816
22		2.28												815
23		2.8	4	<u>5.0</u> 5.0	100	SW	R2-R3					LIMESTONE: wackestone; very light gray (N8); weak to medium strong (R2 to R3); slightly weathered (SW); strong reaction to HCl. [Glen Rose Formation]		814
24		1.4				SW	R1-R2					LIMESTONE: wackestone to packstone; medium dark gray (N4) to medium gray (N5); very weak to weak (R1 to R2); slightly weathered (SW); violent HCl reaction; rip-up clasts. [Glen Rose Formation]	Darker color	813

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
25		1.35	4	5.0 5.0	100								Rip-up clasts	812
26		0.5							2001-3			LIMESTONE: wackestone to packstone; medium dark gray (N4) to medium gray (N5); very weak to weak (R1 to R2); slightly weathered (SW); violent HCl reaction; rip-up clasts. [Glen Rose Formation]		811
27		1.12												810
28		1.35	5	5.0 5.0	100	SW	R1-R2		2001-4					809
29		2.83										Increase in clay content below 29.0' causing wash-out along beds.		808
30		1.28												807
31		1.4												806
32		5.08				SW	R0-R2					WACKESTONE; interbedded with mudstone; 0.1' thick layers; medium dark gray (N4); extremely weak to weak (R0 to R2); slightly weathered (SW); strong HCl reaction. [Glen Rose Formation]		805
33		2.78	6	5.0 5.0	100									804
34		1.17												803
35		0.88							2001-5					802
36		1.02												801
37		2.58				SW	R1-R2		2001-6				Poor core quality - sticking to barrel	800
38		1.85	7	5.0 5.0	100									799
39		2.63												798

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
40		3.17	7	5.0 5.0	100	SW	R1-R2					LIMESTONE: micrite to packstone; very light gray (N8); very weak to weak (R1 to R2); slightly weathered (SW); strong HCl reaction. [Glen Rose Formation]		797
41		2.15												
42		4.33										SHALE: mudstone; medium dark gray (N4); laminated; extremely weak to very weak (R0 to R1); slightly weathered (SW); no to slight reaction to HCl. [Glen Rose Formation]	Gradational contact	796
43		6.33	8	4.8 5.0	96	SW	R0-R1		2001-7					795
44		4.93										LIMESTONE: packstone; very light gray (N8); slightly weathered (SW). [Glen Rose Formation]		794
45		2.17				SW	NM							793
46														792
47	NM											SHALE: mudstone; medium gray (N5); interbedded with micrite and wackestone; light gray (N7); slightly weathered (SW); extremely weak to weak (R0 to R2); slight to violent reaction to HCl. [Glen Rose Formation]		791
48	NM					SW	R0-R2							790
49	NM		9	5.0 5.0	100									789
50	NM													788
51	NM					SW	R2		2001-8A			LIMESTONE: micrite; light gray (N7); slightly weathered (SW); weak (R2); violent reaction to HCl. [Glen Rose Formation]		787
52		2.5												786
53		7.83										SHALE: mudstone; medium dark gray (N4); slightly weathered (SW); very weak to extremely weak (R1 to R0); slight HCl reaction. [Glen Rose Formation]	End drilling 11/29/06	785
54		4.1	10	4.7 5.0	94	SW	R0-R1							784
55		3.4				SW								783

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
55		4.25	10	4.7 5.0	94	SW	R1-R2		2001-8			LIMESTONE: micrite; light gray (N7); very weak to weak (R1 to R2); slightly weathered (SW); strong reaction to HCl. [Glen Rose Formation]		782
56		3.45				SW	R0-R1					SHALE: mudstone; medium dark gray (N4); slightly weathered (SW); very weak to extremely weak (R1 to R0); slight HCl reaction. [Glen Rose Formation]		781
57		2												
58		2.75	11	5.0 5.0	100	SW	R1-R2		2001-9			LIMESTONE: micrite to wackestone; light gray (N7); very weak to weak (R1 to R2); slightly weathered (SW); strong reaction to HCl; wavy bedding in wackestone. [Glen Rose Formation]	Wavy bedding	780
59		3.22				SW	R0-R1					SHALE: mudstone; medium dark gray (N4); slightly weathered (SW); very weak to extremely weak (R1 to R0); slight HCl reaction. [Glen Rose Formation]		779
60		1.67										LIMESTONE: interbedded micrite and wackestone; very light gray to medium light gray (N8 to N6); wavy beds; very weak to weak (R1 to R2); slightly weathered. (SW); [Glen Rose Formation]		778
61		1.03												777
62		2.78												776
63		1.78	12	5.0 5.0	100									775
64		1.12				SW	R1-R2							774
65		1.57							2001-10					773
66		2.55												772
67		1.75												771
68		2.33	13	4.7 5.0	94									770
69		1.5												769
70														768

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
70		1.83	13	4.7 5.0	94									767
71		0.85								2001-11		LIMESTONE: interbedded micrite and wackestone; very light gray to medium light gray (N8 to N6); wavy beds; very weak to weak (R1 to R2); slightly weathered. (SW); [Glen Rose Formation]		766
72		3.38												765
73		2.68	14	5.0 5.0	100									764
74		1.77								2001-12				763
75		2.67												762
76		2.17										Interbedded micrite and wackestone.		761
77		1.8				SW	R1-R2							760
78		2.33	15	5.0 5.0	100									759
79		1.83												758
80		1.77								2001-13				757
81		2.07												756
82		1.57												755
83		1.7	16	5.0 5.0	100									754
84		1.02												753

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
85		1.47	16	5.0 5.0	100									752
86		1.77								2001-14		LIMESTONE: interbedded micrite and wackestone; very light gray to medium light gray (N8 to N6); wavy beds; very weak to weak (R1 to R2); slightly weathered. (SW); [Glen Rose Formation]	Softer zone; R1; enriched in clay/mud	751
87		1.83												750
88		2.32	17	5.1 5.0	100							Very weak zone (R1), enriched in clay/mud 88.5' to 89.6'.		749
89		2.5								2001-15			Softer zone; R1; enriched in clay/mud	748
90		1.83											Length of recovery stretched due to mechanical breaks.	747
91		1.73										With clay and mud 91' to 92'.		746
92		1.42				SW	R1-R2			2001-16				745
93		2.83	18	5.0 5.0	100									744
94		2.33												743
95		2.87												742
96		1.43												741
97		1.15										Wavy bedding at 97.6'.		740
98		3.5	19	5.0 5.0	100					2001-17		Massive bedding 98' to 101.2'.		739
99		7.13												738

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
100		2.97	19	5.0 5.0	100							LIMESTONE: interbedded micrite and wackestone; very light gray to medium light gray (N8 to N6); wavy beds; very weak to weak (R1 to R2); slightly weathered. (SW); [Glen Rose Formation]		737
101		1.77										Dark gray (N3); with wavy beds.		736
102		1.33				SW	R1-R2			2001-18		Light gray (N7) to medium light gray (N6); planar bedding, massive.		735
103		3.67	20	5.0 5.0	100									734
104		1.17												733
105		1.7										LIMESTONE: packstone; light gray (N7) to medium light gray (N6); slightly weathered (SW); weak (R2); wavy bedding. [Glen Rose Formation]		732
106		1												731
107		2.67				SW	R2							730
108		2.1	21	5.0 5.0	100									729
109		1.9												728
110		1.67				SW-MW	R2-R3			2001-19		LIMESTONE: micrite to wackestone; yellowish gray (5Y 7/2); weak to medium strong (R2 to R3); rip-up clasts of darker material; massive beds; slightly to moderately weathered (SW to MW). [Glen Rose Formation]		727
111		2.17												726
112		1.98										LIMESTONE: wackestone; gradual upper contact; medium strong (R3); slightly weathered (SW); grading to light gray (N7); strong HCl reaction. [Glen Rose Formation]		725
113		1.75	22	4.9 5.0	98	SW	R3							724
114		1.43												723
115												Below 114.5', wavy bedding; alternating beds of dark and light sediments.		723

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	Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
	115		1.82	22	4.9 5.0	98							LIMESTONE: wackestone; gradual upper contact; medium strong (R3); slightly weathered (SW); grading to light gray (N7); strong HCl reaction. [Glen Rose Formation]		722
	116		1.47												721
	117		2.73												720
	118		1.83	23	5.0 5.0	100	SW	R3							719
	119		2.5												718
	120		2.52												717
	121		2.85										SHALE: mudstone; medium dark gray (N4); slightly weathered (SW); extremely weak to very weak (R0 to R1). [Glen Rose Formation]		716
	122		3.2				SW	R0-R1							715
	123		2.38	24	5.1 5.0	100	SW	R2					LIMESTONE: micrite; light gray (N7); slightly weathered (SW); weak (R2). [Glen Rose Formation]		714
	124		4.1				SW	R1					SHALE: mudstone; medium light gray (N6); slightly weathered (SW); very weak (R1). [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	713
	125		3.17										LIMESTONE: wackestone; light gray (N7); slightly weathered (SW); very weak to weak (R1 to R2). [Glen Rose Formation]		712
	126		2.67				SW	R1-R2							711
	127		1.17												710
	128		3.35	25	5.1 5.0	100							SHALE: mudstone; slightly weathered (SW); extremely weak to very weak (R0 to R1). [Glen Rose Formation]		709
	129		2.5				SW							Length of recovery stretched due to mechanical breaks.	708
	130						SW								



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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
130		2.25	25	5.1 5.0	100							LIMESTONE: wackestone; light gray (N7); slightly weathered (SW); very weak to weak (R1 to R2). [Glen Rose Formation]		707
131		1.33								2001-23				706
132		2.07												705
133		3.67	26	5.0 5.0	100									704
134		1.07												703
135		1.73								2001-24				702
136		2.33												701
137		1.98				SW								700
138		2.02	27	5.1 5.0	100		R1-R2							699
139		3.17											Length of recovery stretched due to mechanical breaks.	698
140		2.85								2001-25				697
141		2.17												696
142		4.17												695
143		4.27	28	4.9 5.0	98							Shale interbed 143.0' to 143.3'.		694
144		2.2								2001-26			0.5' of run 29 placed in run 28	693
145														

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
145		2.18	28	4.9 5.0	98									692
146		1.98											End of drilling 12/1/06; start drilling 12/2/06	691
147		5.1												690
148		1.43	29	4.7 5.0	94	SW	R1-R2		2001-27					689
149		0.98												688
150		1.03												687
151		1.1												686
152		3.68				SW	R1					SHALE: mudstone; medium dark gray (N4); very weak (R1); slightly weathered (SW); strong HCl reaction. [Glen Rose Formation]		685
153		2.57	30	5.0 5.0	100							LIMESTONE: wackestone to packstone; light gray (N5); very weak (R1); slightly weathered (SW); wavy beds. [Glen Rose Formation]		684
154		1.35												683
155		1.23												682
156		1.38				SW	R1						Less bedding breaks/mechanical breaks than previous runs	681
157		2.22												680
158		1.95	31	5.1 5.0	100							Grades to packstone at 157.5', and back into wackestone at 162.0'.		679
159		1.7											Length of recovery stretched due to mechanical breaks.	678

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
160		1.6	31	5.1 5.0	100									677
161		1.17												676
162		1.82				SW	R1							675
163		3.3	32	5.0 5.0	100									674
164		4.4											Clay rich zone	674
165		3.1											Clay rich	673
166		1.67										LIMESTONE: wackestone; light gray (N5); very weak (R1); slightly weathered (SW); wavy beds; interbeds of packstone 0.2" thick, spaced roughly 1.0' to 4.0' apart; wackestone dominant texture. [Glen Rose Formation]		672
167		2.17									BJ, Pl, Sl, Tl			671
168		2.25	33	5.0 5.0	100									670
169		1.77												669
170		1.6				SW	R1							668
171		1.87												667
172		1.25											Increase in clays	666
173		1.6	34	5.1 5.0	100									665
174		1.7											Length of recovery stretched due to mechanical breaks.	664
175														663

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
175		1.93	34	5.1 5.0	100							LIMESTONE: wackestone; light gray (N5); very weak (R1); slightly weathered (SW); wavy beds; interbeds of packstone 0.2" thick, spaced roughly 1.0' to 4.0' apart; wackestone dominant texture. [Glen Rose Formation]		662
176		1.27												661
177		1.22												660
178		2.35	35	5.1 5.0	100	SW	R1							659
179		2.28											Length of recovery stretched due to mechanical breaks.	658
180		2.22												657
181		1.77								2001-30				656
182		2.22												655
183		5.12	36	5.0 5.0	100	SW	R0-R1					SHALE: mudstone; dark gray (N3); slightly weathered (SW); extremely weak to very weak (R0 to R1). [Glen Rose Formation]	Sharp contact	654
184		2.62												653
185		NM				SW	R1-R2					LIMESTONE: micrite; very light gray (N8); slightly weathered (SW); very weak to weak (R1 to R2); some wavy interbeds of wackestone/packstone. [Glen Rose Formation]		652
186		2.25												651
187		4.67				SW	R0-R1					SHALE: mudstone; dark gray (N3); slightly weathered (SW); extremely weak to very weak (R0 to R1). [Glen Rose Formation]		650
188		3.85	37	5.0 5.0	100	SW	R1-R2			2001-31		LIMESTONE: micrite; very light gray (N8); slightly weathered (SW); very weak to weak (R1 to R2); some wavy interbeds of wackestone/packstone. [Glen Rose Formation]	Packstone interbeds	649
189		3.18				SW	R0-R1					SHALE: mudstone; dark gray (N3); slightly weathered (SW); extremely weak to very weak (R0 to R1). [Glen Rose Formation]		648

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
190		2.68	37	5.0 5.0	100	SW	R1-R2					LIMESTONE: micrite; very light gray (N8); slightly weathered (SW); very weak to weak (R1 to R2); some wavy interbeds of wackestone/packstone. [Glen Rose Formation]		647
191		0.77										SANDSTONE: medium light gray (N6); fine grained with silts; slightly weathered (SW); very weak (R1); slight HCl reaction; slow to rapid dilatancy; subangular to subrounded; first appearance of sand grains. [Glen Rose Formation]	Gradational contact	646
192		1.67				SW	R1						1st appearance of sands and grains	645
193		4.6	38	4.9 5.0	98	SW	R1					SHALE: mudstone; medium dark gray (N4); very weak (R1); slightly weathered (SW); slight HCl reaction. [Glen Rose Formation]		644
194		1.93										LIMESTONE: wackestone; light gray (N7); weak (R2); slightly weathered (SW). [Glen Rose Formation]		643
195		1.82				SW	R2							642
196		3.72										SANDSTONE: light olive gray (5Y 8/1); slightly weathered (SW); very weak (R1); fine-grained; slight reaction to HCl; slow dilatancy. [Glen Rose Formation]		641
197		3.1							2001-32				Mudstone interbedded with sands	640
198		3.83	39	5.0 5.0	100							LIMESTONE: wackestone; very light gray (N8); slightly weathered (SW); very weak to weak (R1 to R2); strong to violent reaction to HCl; some dark clay interbeds 0.05' to 0.2' thick spaced 0.2' apart. [Glen Rose Formation]		639
199		2.97				SW	R1-R2							638
200		1.85												637
201		2.3										LIMESTONE: micrite; light gray to medium light gray (N7 to N6); very weak to weak (R1 to R2); slightly weathered (SW); some mudstone interbeds 1.0" to 2.0" thick, spaced 2.0' apart. [Glen Rose Formation]	Gradational contact	636
202		3.1												635
203		5.02	40	4.7 5.0	92	SW	R1-R2							634
204		5.43												633

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
205		3.8	40	4.7 5.0	92	SW	R1-R2							632
206		2.38							2001-33			LIMESTONE: wackestone; very light gray to medium light gray (N8 to N6); extremely weak to weak (R0 to R1); slightly weathered (SW); interbeds of clay rich sediments. [Glen Rose Formation]	Gradational contact	631
207		5.47				SW	R0-R1							630
208		3.68	41	5.0 5.0	100									629
209		2.67				SW	R0					SHALE: mudstone; slightly weathered (SW); extremely weak (R0). [Glen Rose Formation]		628
210		2.75										LIMESTONE: wackestone; very light gray to medium light gray (N8 to N6); extremely weak to weak (R0 to R2); slightly weathered (SW); interbeds of clay rich sediments. [Glen Rose Formation]		627
211		2.17				SW	R0-R2							626
212		4.5												625
213		3.68	42	5.1 5.0	100									624
214		1.78				SW	R0-R1					SHALE: mudstone; slightly weathered (SW); extremely weak to very weak (R0 to R1). [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	623
215		1.85												622
216		2.4				SW	R3-R4					SANDSTONE: very light gray (N8); fine grained; slight HCl reaction; subrounded but grading to subangular; slightly weathered (SW); medium strong to strong (R3 to R4). [Glen Rose Formation]		621
217		1.72												620
218		1.82	43	5.1 5.0	100	SW	R1					SHALE: mudstone; greenish gray (5GY 6/1); very weak (R1); slightly weathered (SW); slight HCl reaction; some intervals enriched in fine-grained sand. [Glen Rose Formation]		619
219		1.33											Length of recovery stretched due to mechanical breaks.	618

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**ROCK LOG**  
**Boring No. B-2001**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
220		0.97	43	5.1 5.0	100	SW	R1							617
221		0.1											Rapid drilling	616
222		0.12				SW	R1-R2							615
223		0.15	44	4.0 5.0	80									614
224		1.02							2001-34				Packstone interbeds	613
225													Core loss - sands washing out	612
226		NM				NM	NM							611
227		2.48				SW	R1							610
228		2.98				SW	R2							609
229		2.52	45	5.0 5.0	100	SW	R0-R1						Sulfur smell	608
230		6.35												607
231		5.42												606
232		4.43				SW	R0-R2			2001-35			End of drilling 12/2/06; Begin drilling 12/3/06	605
233		6.03	46	5.0 5.0	100									604
234		6.5											Large core pieces between MB/BB	603
235		2.07												603

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**ROCK LOG**  
**Boring No. B-2001**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
235		2.68	46	5.0 5.0	100							SHALE: mudstone; dark gray (N3); extremely weak to weak (R0 to R2); slightly weathered (SW). [Glen Rose Formation]		602
236		3.58										Decreasing strength to extremely weak to very weak (R0 to R1).	Shell fragments	602
237		7.8				SW	R0-R2						Poor core strength fragments	601
238		6.45	47	5.0 5.0	100									600
239		4.68												599
240		3.43										LIMESTONE: wackestone to packstone.		598
241		1.63								2001-36		SHALE: mudstone; dark gray (N3); extremely weak to very weak (R0 to R1); slightly weathered (SW). [Glen Rose Formation]		597
242		2.1												596
243		5.43	48	4.2 5.0	84							Color change to medium gray (N5) to greenish gray (5GY 6/1). [Glen Rose Formation]		595
244		6.17				SW	R0-R1							594
245		5.53												593
246		1.83												592
247		1.03				SW	R2					SANDSTONE: light gray (N7) to greenish gray (5GY 6/1); fine grained; subangular to subrounded quartz; gradual lower contact; weak (R2); slightly weathered (SW).		591
248		2.13	49	4.9 5.0	100									590
249		3.98				SW	R0-R1					SHALE: mudstone; medium gray (N5) to greenish gray (5GY 6/1); extremely weak to very weak (R0 to R1); slightly weathered (SW). [Glen Rose Formation]	Gradational contact	589
250														588



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**ROCK LOG**  
**Boring No. B-2001**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
250		2.68	49	<del>4.9</del> 5.0	100							SANDSTONE: light gray (N7); fine grained; subangular to subrounded quartz; 10% other lithologies; extremely weak to very weak (R0 to R1); slightly weathered (SW).	Gradational contact	587
251		1.6							2001-37				0.4' core from run 49 recovered	586
252		1.17											Poor core quality - loose sand with some lithic fragments	585
253		1.18	50	<del>4.0</del> 5.0	100									584
254		2.1												583
255		1.88												582
256		1.57				SW	R0-R1							581
257		1.83												580
258		3.57	51	<del>4.2</del> 5.0	84									579
259		3.55												578
260		2.17										Sand coarsening; increasing content of fines.	Slight coarsening of sands	577
261		2.65												576
262		2.2												575
263		7.67	52	<del>4.4</del> 5.0	88				2001-38			SHALE: mudstone; greenish gray (5GY 6/1); very weak (R1); slightly weathered (SW); massive; some very fine sands. [Glen Rose Formation]	Gradational contact	574
264		6.57				SW	R1							573

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**ROCK LOG**  
**Boring No. B-2001**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
265		4.6	52	4.4 5.0	88	SW	R1							572
266		1.6										SANDSTONE: greenish gray (5GY 6/1); very weak (R1) to loose sands; slightly weathered (SW); fine grained; subangular to subrounded. [Glen Rose Formation]	Gradational contact	571
267		2.43											"sugar sands"	570
268		1.83	53	5.0 5.0	100									569
269		NM												568
270		1											Switched to solid barrel for run 54	567
271		0.82												566
272		1.47				SW	R1					Loose 'sugar sand,' wet.	Loose "sugar sands"; wet	565
273		2.35	54	5.0 5.0	100									564
274		1.82							2001-39					563
275		1.65												562
276		1.62										With organic rich zone 271.2' to 279.6'.		561
277		1.7												560
278		2.03	55	5.1 5.0	100								Organics Organic rich zone to 279.6'	559
279		1.58											Length of recovery stretched due to mechanical breaks.	558

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**ROCK LOG**  
**Boring No. B-2001**


Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
280		2.17	55	<del>5.1</del> 5.0	100							SANDSTONE: greenish gray (5GY 6/1); very weak (R1) to loose sands; slightly weathered (SW); fine grained; subangular to subrounded. [Glen Rose Formation]		557
281		2.42												556
282		1.17												555
283		0.88	56	<del>4.5</del> 5.0	100									554
284		1.33											No sample 2001-40 recorded.	553
285		NM				SW	R1							552
286		1.05										Sandstone, as above, loose, massive.		551
287		1.8												550
288		NM	57	<del>4.3</del> 5.0	86									549
289		0.53												548
290		0.33				NM	NM					NO RECOVERY.		547
291		0.35										SANDSTONE: greenish gray (5GY 6/1); very weak (R1) to loose sands; slightly weathered (SW); fine grained; subangular to subrounded; thin, faint bedding present. [Glen Rose Formation]		546
292		0.8				SW	R1							545
293		0.95	58	<del>3.5</del> 5.0	70									544
294		1.02				SW	R0-R1		2001-41			SANDSTONE: medium bluish gray (5B 5/1); slightly weathered (SW); extremely weak to very weak (R0 to R1); coarse grained; organic matter present. [Glen Rose Formation]	Loss of all water circulation	544
295						NM						NO RECOVERY.		543

Project Name and Job Number  
 TXU Comanche Peak Col  
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**ROCK LOG**  
**Boring No. B-2001**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
295		NM	58	3.5 5.0	70	NM	R0-R1					NO RECOVERY.		542
296		NM										SANDSTONE: medium bluish gray (5B 5/1); slightly weathered (SW); weak to medium strong (R2 to R3); granule to pebble sized; subangular to subrounded; organic matter present. [Glen Rose Formation] Medium grained zone 297.1' to 297.6'.	541	
297		NM				SW	R2-R3						Medium grained zone to 297.6'	540
298		NM	59	4.0 5.0	80								Fine-grained zone to bottom of boring	539
299		NM										NO RECOVERY.		538
300		NM				NM	NM							537
301												BOTTOM OF HOLE AT 301.0'		536
302														535
303														534
304														533
305														532
306														531
307														530
308														529
309														528
310														

Project Name and Job Number TXU Comache Peak COL 1908		 <b>SOIL LOG Boring No. B-2002</b>	
Type and Diameter of Boring HSA / 7"	Boring Location 32°18'09.20743"N / 97°47'28.37129"W		Total Depth 302 feet
Drilling Contractor and Rig Fugro / CME 45C	Elevation and Datum 837.213 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 11.2 feet
Sampling Method SPT	Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 5	Date Started 11/8/06
		Borehole Inclination Vertical	Logged by R. Turner
		Date Completed 11/18/06	

Reviewed by / Date                      R. Ortiz 1/10/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
0							<b>RESIDUAL SOIL (RS)</b> CLAYEY SAND medium stiff, light brownish gray (2.5Y6/2), with subangular to angular limestone fragments, strong reaction to HCl		837
1			B-2002 1	9	18/18				836
2				10					835
3	SC			10			very stiff, brownish yellow (10YR6/6)		834
4			B-2002 2	11	11/11	4.51			833
5				50/5"			fewer limestone fragments		832
6							SILT very stiff, brownish yellow (10YR6/8), damp, strong reaction to HCl		831
7	ML		B-2002 3	8	18/18	4.51			830
8				7					829
9			B-2002 4	9		4.51	LEAN CLAY very stiff, light yellow brown (2.5Y6/4), damp, strong reaction to HCl		828
10	CL			50/6"	6/6	4.51		Driller calls bedrock at 9.0' Augered down to 11' to set casing	827
11			B-2002 5	50/3"	3/3		with sand, hard, white (N8), slightly damp, angular limestone clasts to 0.6", strong reaction to HCl		826
12									825
13									824
14									823
15									

Project Name and Job Number TXU Comanche Peak Col 1908		 <b>ROCK LOG Boring No. B-2002</b>	
Type and Diameter of Boring HQ / 4"	Boring Location 32°18'09.20743"N / 97°47'28.37129"W	Total Depth 302 feet	
Drilling Contractor and Rig FUGRO / CME-45C	Elevation and Datum 837.213 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 9 feet
Casing Size and Depth 4" / 11.5 feet	Length of Core Barrel and Bit 8.8 feet	No. of Core Boxes 20	Date Started 11/8/06
Borehole Inclination Vertical		Logged by R. Turner	Date Completed 11/18/06

Reviewed by / Date R. Ortiz 1/10/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
12.0		NM	1	0.5 0.5	100							LIMESTONE: wackestone; sparry; white to very light gray (N8 to N9); thin beds; weak (R2); dry; violent reaction to HCl; moderately weathered (MW). [Glen Rose Formation]	Begin drilling 11/08/06; first run 0.5 feet to get to 12.0'	825
12.8		2.8				MW	R2				Jo, Op, R5 Jo, Op, R5 Jo, Op, R5			824
13.58		2.58												824
14.23		2.63	2	4.9 5.0	84	MW	R1-R2		2002-2			LIMESTONE: wackestone; medium gray (N5); thin to very thin beds; very shaly; moderately weathered (MW); very weak to weak (R1 to R2); damp; strong reaction to HCl. [Glen Rose Formation]		823
15.18		2.68				MW	R1-R2					LIMESTONE: wackestone; medium gray (N5); thin beds; very shaly; moderately weathered (MW); very weak to weak (R1 to R2); damp; strong reaction to HCl. [Glen Rose Formation]	Good water return, clear	822
16.42		2.62										LIMESTONE: wackestone; light gray to medium light gray (N7 to N6); thin beds; fossils; fresh (F); weak (R2); dry. [Glen Rose Formation]		821
17.17		3.17				F	R2							820
18.17		5.2										SHALE: medium dark gray (N4); very thin beds; slightly weathered (SW); very weak (R1); damp; slight reaction to HCl. [Glen Rose Formation]		819
19.17		5.37	3	5.0 5.0	100	SW	R2		2002-3					818
20.17		5.18										LIMESTONE: wackestone; medium light gray (N6); slightly weathered (SW); weak (R2); dry; strong reaction to HCl. [Glen Rose Formation]		817
21.17		5.42				SW	R2							816
22.17		3.45				SW	R1					SHALE: medium dark gray (N4); thin beds; interbeds of wackestone up to 1.0" thick; slightly weathered (SW); very weak (R1); strong reaction to HCl. [Glen Rose Formation]		815
23.17		2.08										LIMESTONE: micrite; very light gray (N8); massive; fresh (F); weak (R2); strong reaction to HCl. [Glen Rose Formation]		814
24.17		1.75	4	5.0 5.0	100	F	R2		2002-4		Bj, Ti, R4			813
25.17		1.93										LIMESTONE: micrite; sandy; light gray to medium light gray (N7 to N6); massive; fresh (F); very weak to weak (R1 to R2); strong reaction to HCl. [Glen Rose Formation]	Sandy micrite badly broken up removing from split tube	812
26.17		1.7				F	R1-R2							811

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
27		1.7	4	5.0 5.0	100		R1-R2					LIMESTONE: micrite; sandy; light gray to medium light gray (N7 to N6); massive; fresh (F); very weak to weak (R1 to R2); strong reaction to HCl. [Glen Rose Formation]		810
28		1.27				F	R1-R2					LIMESTONE: micrite; sandy; light gray to medium light gray (N7 to N6); massive; fresh (F); very weak to weak (R1 to R2); strong reaction to HCl. [Glen Rose Formation]		809
29		0.87										LIMESTONE: wackestone; very light gray to medium light gray (N8 to N6); thin beds; fresh (F); weak (R2); dry; strong reaction to HCl. [Glen Rose Formation]		808
30		1.2	5	5.2 5.0	100	F	R2		2002-5			LIMESTONE: wackestone; very light gray to medium light gray (N8 to N6); thin beds; fresh (F); weak (R2); dry; strong reaction to HCl. [Glen Rose Formation]		807
31		1.7				SW	R1				Bj, T1, R7	SHALE: medium dark gray (N4); very thin beds; slightly weathered (SW); very weak (R1); strong reaction to HCl. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks. Broken up while removing from split tube	806
32		2.05				SW	R2					LIMESTONE: wackestone; very light gray to medium light gray (N8 to N6); massive; fossils; interbeds of shale up to 1.5" thick; slightly weathered (SW); weak (R2); violent reaction to HCl; dry. [Glen Rose Formation]		805
33		2.17										SHALE: medium dark gray (N4); very thin beds; interbeds of wackestone up to 2.0"; slightly weathered (SW); very weak (R1); damp; very slight reaction to HCl. [Glen Rose Formation]		804
34		2.38				SW	R1		2002-6		Bj, T1, R7	SHALE: medium dark gray (N4); very thin beds; interbeds of wackestone up to 2.0"; slightly weathered (SW); very weak (R1); damp; very slight reaction to HCl. [Glen Rose Formation]		803
35		4.57	6	5.0 5.0	100							LIMESTONE: wackestone; very light gray to medium light gray (N8 to N6); thin beds; interbeds of shale up to 0.5" thick; slightly weathered (SW); very weak to weak (R1 to R2); dry; violent reaction to HCl. [Glen Rose Formation]	Good water return, clear	802
36		5.53										LIMESTONE: wackestone; very light gray to medium light gray (N8 to N6); thin beds; interbeds of shale up to 0.5" thick; slightly weathered (SW); very weak to weak (R1 to R2); dry; violent reaction to HCl. [Glen Rose Formation]		801
37		6.03				SW	R1-R2					SHALE: medium dark gray (N4); very thin beds; interbeds of wackestone up to 2.8" thick; slightly weathered (SW); very weak (R1); strong reaction to HCl; damp. [Glen Rose Formation]		800
38		3.42										LIMESTONE: wackestone; very light gray (N8); thin beds; interbeds of shale up to 0.3" thick; slightly weathered (SW); very weak to weak (R1 to R2); dry; violent reaction to HCl. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	799
39		3.7										SHALE: medium dark gray (N4); very thin beds; interbeds of wackestone up to 2.8" thick; slightly weathered (SW); very weak (R1); strong reaction to HCl; damp. [Glen Rose Formation]		798
40		3.47	7	5.3 5.0	100	SW	R1					LIMESTONE: wackestone; very light gray (N8); thin beds; interbeds of shale up to 0.3" thick; slightly weathered (SW); very weak to weak (R1 to R2); dry; violent reaction to HCl. [Glen Rose Formation]		797
41		5.2				SW	R1-R2					LIMESTONE: wackestone; very light gray (N8); thin beds; interbeds of shale up to 0.3" thick; slightly weathered (SW); very weak to weak (R1 to R2); dry; violent reaction to HCl. [Glen Rose Formation]		796
		3.58							2002-7					

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**ROCK LOG**  
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
42		3.58	7	5.3 5.0	100	SW	R1-R2							795
43		3.92							2002-8		Bj, T1, R3	SHALE: medium dark gray (N4); very thin beds; slightly weathered (SW); very weak (R1); very slight to no reaction to HCl; damp. [Glen Rose Formation]		794
44		6.83				SW	R1							793
45		8.03	8	4.9 5.0	98									792
46		6.65												791
47		5.02				SW	R2				Bj, T1, R8	LIMESTONE: wackestone; slightly weathered (SW); weak (R2). [Glen Rose Formation]	Good water return, clear	790
48		5.03										SHALE: medium dark gray (N4); very thin beds; slightly weathered (SW); very weak (R1); damp; no reaction to HCl. [Glen Rose Formation]		789
49		6.77				SW	R1							788
50		6.93	9	5.0 5.0	100				2002-9					787
51		2.97										LIMESTONE: micrite; very light gray (N8); massive; bivalve fossils; fresh (F); weak (R2); dry; violent reaction to HCl. [Glen Rose Formation]		786
52		3.53				F	R2							785
53		5.53										SHALE: medium dark gray (N4); very thin beds; some bioturbation; fresh (F); very weak (R1); damp; no reaction to HCl. [Glen Rose Formation]		784
54		5.77				F	R1							783
55		3.75	10	5.0 5.0	100									782
56		3.8				F	R2					LIMESTONE: wackestone; shaly; medium light to medium gray (N7 to N5); thin beds; bivalve fossils; fresh (F); weak (R2); dry; violent reaction to HCl. [Glen Rose Formation]		781
		5.17							2002-10		Bj, T1, R5			



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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
57		5.17	10	5.0 5.0	100	SW	R1					SHALE: medium dark gray (N4); very thin beds; slightly weathered (SW); very weak (R1); slight reaction to HCl. [Glen Rose Formation]		780
58		4.8							2002-11		Bj, Ti, R5	LIMESTONE: wackestone; very light gray (N8); thin beds; interbeds of shale 0.1" to 2.5" thick; fresh (F); weak (R2); dry; violent reaction to HCl. [Glen Rose Formation]		779
59		3.8				F	R2					LIMESTONE: wackestone; very light gray to medium dark gray (N8 to N4); thin beds; rip-up clasts of shale near 61.0'; fresh (F); weak (R2); dry; violent reaction to HCl. [Glen Rose Formation]		778
60		2.5	11	5.1 5.0	100								Good water return, clear	777
61		4.33											Length of recovery stretched due to mechanical breaks.	776
62		2.78												775
63		1.45												774
64		2.18										Limestone is shaly 63.3' to 64.0'		773
65		1.75	12	5.0 5.0	100				2002-12					772
66		1.83				F	R2							771
67		1.7										Wackestone is shaly and friable from 66.7' to 68.1'		770
68		1.97												769
69		2							2002-13			Wackestone is micritic from 69.0' to 70.3'		768
70		1.8	13	5.1 5.0	100									767
71		1.9										Wackestone is shaly and friable from 70.3' to 71.8'	Length of recovery stretched due to mechanical breaks.	766
		2.03												

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
72		2.03	13	5.1 5.0	100							LIMESTONE: wackestone; very light gray to medium dark gray (N8 to N4); thin beds; rip-up clasts of shale near 61.0'; fresh (F); weak (R2); dry; violent reaction to HCl. [Glen Rose Formation]		765
73		1.47				F	R2					Wackestone is shaly and friable from 73.2' to 74.6'		764
74		1.87												763
75		2.2	14	5.2 5.0	100									762
76		2.33				F	R1		2002-14			SHALE: calcareous; thin beds; medium light gray (N6); fresh (F); very weak (R1); damp; strong reaction to HCl. [Glen Rose Formation]	Good water return, clear Length of recovery stretched due to mechanical breaks.	761
77		2.27										LIMESTONE: wackestone; very light gray to medium dark gray (N8 to N4); thin wavy beds; shale seams up to 0.1"; bioturbated; slightly weathered (SW); weak (R2); dry; violent reaction to HCl. [Glen Rose Formation]		760
78		1.57				SW	R2							759
79		2.17							2002-15					758
80		2.53	15	5.0 5.0	100							SHALE: medium gray (N6); thin beds with interbeds of wackestone up to 0.5" thick; bioturbated; very weak to weak (R1 to R2); damp; slightly weathered (SW); very poorly consolidated; strong reaction to HCl. [Glen Rose Formation]	Crushed zones caused when removing core from split tube	757
81		2.78				SW	R1-R2							756
82		2.85												755
83		2.68										LIMESTONE: wackestone; very light gray to medium dark gray (N8 to N4); interbeds of shale up to 1.0" thick; slightly weathered (SW); very weak to weak (R1 to R2); dry; convoluted thin beds; violent reaction to HCl. [Glen Rose Formation]		754
84		2.25												753
85		2.37	16	5.2 5.0	100	SW	R1-R2							752
86		2.53											Length of recovery stretched due to mechanical breaks.	751
		3.03							2002-16					

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
87		3.03	16	5.2 5.0	100	SW	R1-R2				Bj, Ti, R4			750
88		2.78				SW	R1					SHALE: medium dark gray (N4); very thin beds; interbeds of wackestone up to 0.5"; very weak (R1); slightly weathered (SW); damp; strong reaction to HCl. [Glen Rose Formation]		749
89		2.9				SW	R1-R2					LIMESTONE: wackestone; very light gray to medium dark gray (N8 to N4); interbeds of shale up to 1.0" thick; slightly weathered (SW); very weak to weak (R1 to R2); dry; convoluted thin beds; violent reaction to HCl. [Glen Rose Formation]		748
90		3.05	17	5.0 5.0	100	SW	R1					SHALE: medium dark gray (N4); very thin beds; interbeds of wackestone up to 0.5"; very weak (R1); slightly weathered (SW); damp; strong reaction to HCl. [Glen Rose Formation]	Good water return, clear	747
91		3.12				SW	R2		2002-17			LIMESTONE: wackestone; very light gray to medium gray (N8 to N5); thin convoluted beds; slightly weathered (SW); weak (R2); dry; violent reaction to HCl. [Glen Rose Formation]		746
92		3.18				SW	R1				Bj, Ti, R5			745
93		1.92				SW	R2				Bj, Ti, R5			744
94		2.75				SW	R2		2002-18			SHALE: medium dark gray (N4); very thin beds; very weak (R1); slightly weathered (SW); damp. [Glen Rose Formation]		743
95		1.67	18	5.2 5.0	100							LIMESTONE: wackestone; very light gray to medium light gray (N8 to N6); thin; wavy beds; weak (R2); slightly weathered (SW); dry; violent reaction to HCl. [Glen Rose Formation]		742
96		2.88				F	R2					LIMESTONE: micrite; very light gray (N8); very thin beds to massive; abundant fossils; fresh (F); weak (R2); dry; highly bioturbated. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	741
97		3.68										LIMESTONE: wackestone; very light gray to medium dark gray (N8 to N4); thin wavy beds; interbeds of shale up to 0.5"; fossils; weak (R2); slightly weathered (SW); dry. [Glen Rose Formation]		740
98		1.75				SW	R2		2002-19					739
99		2.5												738
100		2.83	19	5.1 5.0	100									737
101		2.23				SW	R1-R2					LIMESTONE: wackestone; very light gray to medium gray (N8 to N5); very shaly; thin beds; bioturbated; very weak to weak (R1 to R2); slightly weathered (SW); dry; violent reaction to HCl. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	736
		2.32												

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
102		2.32	19	5.1 5.0	100	SW	R1-R2							735
103		2.02										SHALE: medium gray to medium dark gray (N5 to N4); convoluted very thin beds; limestone rip-up clasts; very weak (R1); slightly weathered (SW); damp; slight to strong reaction to HCl. [Glen Rose Formation]		734
104		2.83				SW	R1							733
105		2.78	20	5.3 5.0	100					2002-20		LIMESTONE: wackestone; very light to medium light gray (N8 to N6); thin beds; bioturbated; fresh (F); weak (R2); dry; strong reaction to HCl. [Glen Rose Formation]	Good water return, clear Length of recovery stretched due to mechanical breaks.	732
106		1.78												731
107		1.9				F	R2							730
108		2.03												729
109		2.23												728
110		2.95	21	5.1 5.0	100	F	R1					SHALE: calcareous; medium light gray (N6); very thin beds; fresh (F); very weak (R1); slightly damp; violent reaction to HCl. [Glen Rose Formation]		727
111		3.03								2002-21		LIMESTONE: wackestone; very light gray to medium gray (N8 to N5); thin wavy beds; bioturbated; fresh (F); weak (R2); dry; strong reaction to HCl. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	726
112		2.7				F	R2							725
113		1.7												724
114		2.52												723
115		2.23	22	5.2 5.0	100	F	R2					LIMESTONE: micrite; very light gray (N8); massive; few fossils; fresh (F); weak (R2); dry. [Glen Rose Formation]		722
116		1.95				SW	R1-R2						Length of recovery stretched due to mechanical breaks.	721
		1.78								2002-22				

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
117		1.78	22	5.2 5.0	100					2002-22		LIMESTONE: wackestone; very light gray to medium gray (N8 to N5); thin wavy beds; highly bioturbated; interbeds of shale up to 2.0" thick; very weak to weak (R1 to R2); slightly weathered (SW); dry, except for shale interbeds; strong to violent reaction with HCl. [Glen Rose Formation]		720
118		1.97												719
119		2.17				SW	R1-R2							718
120		1.8	23	5.2 5.0	100									717
121		1.75								2002-23			Length of recovery stretched due to mechanical breaks. Good water return, clear	716
122		1.53				SW	R1					SHALE: medium dark gray (N4); very thin beds; very weak (R1); slightly weathered (SW); damp; strong reaction to HCl. [Glen Rose Formation]		715
123		3.25				SW	R1-R2					LIMESTONE: wackestone; very light gray to medium gray (N8 to N5); thin wavy beds; highly bioturbated; interbeds of shale up to 2.0" thick; very weak to weak (R1 to R2); slightly weathered (SW); dry, except for shale interbeds; strong to violent reaction with HCl. [Glen Rose Formation]		714
124		6.93				SW	R1					SHALE: medium dark gray (N4); very thin beds; very weak (R1); slightly weathered (SW); damp; very slight reaction to HCl. [Glen Rose Formation]		713
125		3.97	24	5.1 5.0	100	SW	R2					LIMESTONE: micrite; very light gray (N8); massive; few fossils; slightly weathered (SW); weak (R2); dry; violent reaction to HCl. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	712
126		2.87				SW	R1					SHALE: light bluish gray (5B 7/1); thin to very thin convoluted beds; limestone clasts; slightly weathered (SW); very weak (R1); damp; slight reaction to HCl. [Glen Rose Formation]		711
127		2.68								2002-24				710
128		3.62										LIMESTONE: wackestone; very light gray to medium dark gray (N8 to N4); thin beds; many interbeds of shale 0.1" to 3.0" thick; very weak to weak (R1 to R2); slightly weathered (SW); dry; violent reaction to HCl. [Glen Rose Formation]		709
129		3.7				SW	R1-R2			2002-25				708
130		6.33	25	5.1 5.0	100									707
131		5.83				SW	R2					LIMESTONE: wackestone; very light gray to medium dark gray (N8 to N4); thin beds; weak (R2); slightly weathered (SW); dry; violent reaction to HCl. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	706
		4.45												

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
132		4.45	25	5.1 5.0	100	SW	R2							705
		3.33				SW	R1					SHALE: medium dark gray (N4); very thin beds; very weak (R1); slightly weathered (SW); damp. [Glen Rose Formation]		704
133		3.23				SW	R2					LIMESTONE: wackestone; very light gray to medium dark gray (N8 to N4); thin beds; weak (R2); slightly weathered (SW); dry; violent reaction to HCl. [Glen Rose Formation]		704
134		4.67	26	5.3 5.0	100	SW	R1					SHALE: medium dark gray (N4); very thin beds; very weak (R1); slightly weathered (SW); damp. [Glen Rose Formation]		703
135		2.33										LIMESTONE: wackestone; very light gray to medium dark gray (N8 to N4); thin wavy beds; numerous shale interbeds up 0.5" thick; weak (R2); slightly weathered (SW); dry; violent reaction to HCl. [Glen Rose Formation]	Good water return, clear Length of recovery stretched due to mechanical breaks.	702
136		2.17							2002-26					701
137		2.47				SW	R2							700
138		2.57												699
139		2.17	27	5.1 5.0	100									698
140		3.17												697
141		2.77				SW	R1					SHALE: medium dark gray (N4); very thin beds; very weak (R1); slightly weathered (SW); damp; strong reaction to HCl. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	696
142		1.77				F	R2					LIMESTONE: wackestone; very light gray to medium light gray (N8 to N6); thin beds; bioturbated; fresh (F); weak (R2); dry; violent reaction to HCl. [Glen Rose Formation]		695
143		4.7												694
144		6.83	28	5.1 5.0	100	F	R1					SHALE: medium dark gray (N4); very thin beds; fresh (F); very weak (R1); damp; strong reaction to HCl; pyritic. [Glen Rose Formation]		693
145		2.8				F	R2					LIMESTONE: wackestone; very light gray to medium light gray (N8 to N6); thin beds; bioturbated; fresh (F); weak (R2); dry; violent reaction to HCl. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	692
146		2.53				F	R1-R2							691

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
147		2.53	28	5.1 5.0	100	F	R1-R2					LIMESTONE: micrite; medium light gray (N6); massive; fresh (F); very weak to weak (R1 to R2); damp; strong reaction to HCl. [Glen Rose Formation]		690
148		2.17										LIMESTONE: wackestone; very light gray to medium dark gray (N8 to N4); thin beds; shaly interbeds up to 1.0" thick; fresh (F); weak (R2); dry; strong to violent reaction to HCl. [Glen Rose Formation]		689
149		6.45								2002-29				688
150		2.17	29	5.0 5.0	100	F	R2						Good water return, clear	687
151		1.25												686
152		1.67												685
153		1.37												684
154		2.47				F	R1-R2					LIMESTONE: micrite; medium gray (N5); massive; very weak to weak (R1 to R2); fresh (F); damp; strong reaction to HCl. [Glen Rose Formation]		683
155		1.97	30	5.0 5.0	100							LIMESTONE: wackestone; very light gray (N8); thin wavy beds; weak (R2); fresh (F); dry; violent reaction to HCl. [Glen Rose Formation]		682
156		1.78												681
157		1.93												680
158		1.28				F	R2							679
159		2.08												678
160		1.9	31	5.0 5.0	100									677
161		2.07												676
		1.92								2002-31				

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
162		1.92	31	5.0 5.0	100							LIMESTONE: wackestone; very light gray (N8); thin wavy beds; weak (R2); fresh (F); dry; violent reaction to HCl. [Glen Rose Formation]		675
163		1.58				F	R2							674
164		2.08												673
165		2.87	32	5.3 5.0	100	F	R1					SHALE: medium dark gray (N4); very thin beds; limestone; rip-up clasts; fresh (F); very weak (R1); damp; strong reaction to HCl. [Glen Rose Formation]	Good water return, clear	672
166		2.07										LIMESTONE: wackestone; very light gray to medium gray (N8 to N5); thin beds; fossiliferous; fresh (F); medium strong (R3); dry; violent reaction to HCl; some bioturbation. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	671
167		2.17												670
168		2.5												669
169		1.93												668
170		1.67	33	4.9 5.0	98									667
171		1.53				F	R3							666
172		1.68												665
173		2.25												664
174		2.7												663
175		2.63	34	5.0 5.0	100									662
176		2.7												661
		2.85				F	R3							661



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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
177		2.85	34	5.0 5.0	100							LIMESTONE: wackestone; very light gray to medium gray (N8 to N5); thin beds; fossiliferous; fresh (F); medium strong (R3); dry; violent reaction to HCl; some bioturbation. [Glen Rose Formation]		660
178		1.53				F	R3							659
179		2.37												658
180		3.07	35	5.0 5.0	100					2002-35		LIMESTONE: wackestone; very light gray to medium light gray (N8 to N6); thin wavy beds; thin seams of shale up to 0.5"; fresh (F); weak (R2); dry. [Glen Rose Formation]		657
181		2.25												656
182		2.63				F	R2							655
183		2.33												654
184		5.5												653
185		9.92	36	5.1 5.0	100	F	R1					SHALE: medium dark gray (N4); very thin beds; fresh (F); very weak (R1); damp; very slight reaction to HCl. [Glen Rose Formation]		652
186		2.57										LIMESTONE: wackestone; very light gray to medium gray (N8 to N5); thin convoluted bedding; fresh (F); weak (R2); dry; violent reaction to HCl. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	651
187		2.87				F	R2							650
188		6.75				F	R1					SHALE: medium dark gray (N4); very thin beds; limestone interbeds up to 0.1"; fresh (F); very weak (R1); damp; slight reaction to HCl. [Glen Rose Formation]		649
189		5.83				F	R2					LIMESTONE; wackestone; very light gray (N8); highly bioturbated; fresh (F); weak (R2); dry; violent reaction to HCl. [Glen Rose Formation]		648
190		5.08	37	4.9 5.0	97	F	R1					SHALE: medium dark gray (N4); very thin beds; limestone interbeds up to 0.1"; fresh (F); very weak (R1); damp; slight reaction to HCl. [Glen Rose Formation]		647
191		4.53				F	R2			2002-37		LIMESTONE: wackestone; very light gray (N8); thin beds; fresh (F); weak (R2); dry; violent reaction to HCl. [Glen Rose Formation]		646
		1.47												

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
192		1.47	37	4.9 5.0	97							SHALE: medium dark gray (N4); sandy (fine sand) with very thin beds; fresh (F); extremely weak to very weak (R0 to R1); damp; no reaction to HCl. [Glen Rose Formation]		645
193		1.62				F	R0-R1							644
194		1.2												643
195		8.2	38	4.8 5.0	96							LIMESTONE: wackestone; very light gray to medium light gray (N8 to N6); thin beds; bioturbated; fresh (F); weak (R2); dry; strong reaction to HCl. [Glen Rose Formation]		642
196		2.67				F	R2							641
197		2.42												640
198		5.03				F	R1-R2					SHALE: light gray to medium dark gray; very thin beds; limestone interbeds up to 0.5" thick; fresh (F); very weak to weak (R1 to R2); damp; strong reaction to HCl. [Glen Rose Formation]	Piece of core fell back into hole, plugged and blocked shoe; managed to recover 3.4'/5.0'	639
199		6.12							2002-39			LIMESTONE: wackestone; very light gray to medium gray (N8 to N5); thin beds; fresh (F); weak (R2); violent reaction to HCl. [Glen Rose Formation]		638
200		5.35	39	3.4 5.0	68									637
201		3.83				F	R2							636
202		3.75											Good water return, clear	635
203		2.4												634
204		4.52	40	3.6 3.5	100	F	R1-R2					SHALE: medium dark gray (N4); very thin beds; interbeds of wackestone up to 0.2" thick; fresh (F); very weak to weak (R1 to R2); damp; slight reaction to HCl. [Glen Rose Formation]		633
205		6.2										LIMESTONE: wackestone; light to medium gray (N7 to N5); thin beds; interbeds of shale up to 3.5" thick; bioturbated; fresh (F); weak (R2); dry; strong reaction to HCl. [Glen Rose Formation]		632
206		2.53				F	R2							631
206		2.6	41	1.5 1.5	100								Stopped at 205.5' since we ran out of water, completed run after getting	631
206		6.82												631

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
207		6.82	41	1.5 1.5	100	F	R1-R2					SHALE: medium dark gray (N4); very thin beds; interbeds of wackestone up to 0.2" thick; fresh (F); very weak to weak (R1 to R2); damp; slight reaction to HCl. [Glen Rose Formation]	water	630
208		2.63				F	R1-R2					LIMESTONE: wackestone; very light to medium dark gray (N8 to N4); thin convoluted beds; fresh (F); very weak to weak (R1 to R2); dry; strong reaction to HCl. [Glen Rose Formation]		629
209		4.25				F	R1					SHALE: medium dark gray (N4); very thin beds; interbeds of wackestone up to 1.5" thick; fresh (F); very weak (R1); slight to strong reaction to HCl. [Glen Rose Formation]		628
210		7.2	42	5.1 5.0	100	F	R1		2002-42				Length of recovery stretched due to mechanical breaks.	627
211		2.83				F	R1-R2					LIMESTONE: wackestone; very light to medium dark gray (N8 to N4); thin convoluted beds; interbeds of shale up to 5.0" thick; fresh (F); very weak to weak (R1 to R2); dry; strong reaction to HCl. [Glen Rose Formation]		626
212		2.4				F	R1-R2					LIMESTONE: wackestone; very light to medium dark gray (N8 to N4); thin convoluted beds; shale seams up to 0.5" thick; fresh (F); very weak to weak (R1 to R2); strong to violent reaction to HCl; dry. [Glen Rose Formation]		625
213		1.75				F	R1-R2					SHALE: medium dark gray (N4); very thin beds; fresh (F); very weak (R1); damp; slight reaction to HCl. [Glen Rose Formation]		624
214		2.83				F	R1-R2					LIMESTONE: wackestone; very light to medium gray (N8 to N5); thin beds; fresh (F); weak (R2); violent reaction to HCl; dry. [Glen Rose Formation]		623
215		5.92	43	5.0 5.0	100	F	R1					SHALE: medium dark gray (N4); very thin beds; fresh (F); very weak (R1); damp; slight reaction to HCl. [Glen Rose Formation]		622
216		4.25				F	R1					LIMESTONE: wackestone; very light to medium gray (N8 to N5); thin beds; fresh (F); weak (R2); violent reaction to HCl; dry. [Glen Rose Formation]		621
217		1.58				F	R2					SANDSTONE: very fine grained; medium dark gray to dark gray (N4 to N3); massive; fresh (F); very weak (R1); damp; slight reaction to HCl; sandstone grades to medium light gray by 221.5'; no reaction to HCl. [Twin Mountain Formation]		620
218		1.93				F	R1						Length of recovery stretched due to mechanical breaks.	619
219		2.12				F	R1							618
220		1.52	44	5.1 5.0	100	F	R1							617
221		0.67				F	R1							616
		0.52				F	R1		2002-44					

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
222		0.52	44	5.1 5.0	100							SANDSTONE: very fine grained; medium dark gray to dark gray (N4 to N3); massive; fresh (F); very weak (R1); damp; slight reaction to HCl; sandstone grades to medium light gray by 221.5'; no reaction to HCl. [Twin Mountain Formation]		615
223		0.53												614
224		0.75				F	R1							613
225		1.27	45	4.6 5.0	92									612
226		0.68				SW	R1					SANDSTONE: fine grained; medium to medium dark gray (N4 to N5); massive; slightly weathered (SW); very weak (R1); damp; no reaction to HCl. [Twin Mountain Formation]		611
227		0.75				F	R1					SHALE: dark gray (N3); very thin beds; sandy; fresh (F); very weak (R1); damp; very slight reaction to HCl. [Twin Mountain Formation]		610
228		1.83				F	R2					LIMESTONE: packstone; very light to medium gray (N8 to N5); thin beds; fresh (F); weak (R2); dry; violent reaction to HCl. [Twin Mountain Formation]	Good water return, clear	609
229		0.75								2002-46				608
230		0.63	46	4.7 5.0	94	SW	R0-R1					SANDSTONE: fine grained medium dark gray (N4); massive; extremely weak to very weak (R0 to R1); slightly weathered (SW); no reaction to HCl; very poorly cemented. [Twin Mountain Formation]		607
231		0.83												606
232		6.05				F	R1					SHALE: dark gray (N3); very thin beds; sandy; fresh (F); very weak (R1); damp; very slight reaction to HCl. [Twin Mountain Formation]		605
233		4.47												604
234		5										LIMESTONE: wackestone; very light to medium gray (N8 to N5); thin beds; rip-up clasts; fresh (F); weak (R2); dry; violent reaction to HCl; no rip-up clasts by 234.5'; slight bioturbation; very thin beds; micritic; rip-up clasts reappear by 237.0'. [Twin Mountain Formation]		603
235		4.6	47	5.0 5.0	100	F	R2							602
236		2.33												601
		1.67												601

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**ROCK LOG**  
**Boring No. B-2002**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
237		1.67	47	5.0 5.0	100	F	R2							600
238		1.93										SHALE: grayish black (N3); very thin beds; fresh (F); very weak (R1); damp; strong reaction to HCl. [Twin Mountain Formation]		599
239		9.35												598
240		5.9	48	5.2 5.0	100	F	R1						Length of recovery stretched due to mechanical breaks.	597
241		4.5										LIMESTONE: wackestone; very light gray to medium gray (N8 to N5); thin beds; rip-up clasts; fresh (F); weak (R2); dry; strong reaction to HCl. [Twin Mountain Formation]		596
242		3.2				F	R2			2002-48				595
243		2.38										SANDSTONE: silty; fine grained; medium gray (N5); massive; fresh (F); very weak (R1); damp; very slight reaction to HCl; very clean grains; subrounded; dominantly quartzitic. [Twin Mountain Formation]		594
244		1.98												593
245		2.3	49	4.2 5.0	84									592
246		7.47												591
247		3.47				F	R1							590
248		0.75								2002-50		Increase in sily content.		589
249		1.25												588
250		1.93	50	4.7 5.0	94									587
251		1.07												586
		3.43												

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**ROCK LOG**  
**Boring No. B-2002**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
252		3.43	50	4.7 5.0	94	F	R1							585
		0.95				F	R2					LIMESTONE: micrite; very light gray (N8); massive; fresh (F); weak (R2). [Twin Mountain Formation]	Gradational contact from micrite to sandstone	584
253		0.83				F	R0-R1					SANDSTONE: fine grained; massive; medium gray (N5); fresh (F); extremely weak to very weak (R0 to R1); damp; no reaction to HCl; sandstone becomes much less silty at 253.5'. [Twin Mountain Formation]		583
254		0.5	51	5.0 5.0	100	F	R0-R1							582
255		0.47									Jo, Ti, R7	SANDSTONE: clean fine grained; medium gray; massive; fresh (F); extremely weak to very weak (R0 to R1); damp; no reaction to HCl; subrounded to rounded grains; primarily quartzitic. [Twin Mountain Formation]		581
256		0.97												580
257		1.18								2002-52				579
258		0.7				F	R0-R1							578
259		0.67	52	5.0 5.0	100									577
260		1.12												576
261		3												575
262		3.85												574
263		9.68				F	R1					SILTSTONE: sandy; medium light gray (N6); massive; very weak (R1); fresh (F); damp; very slight reaction to HCl. [Twin Mountain Formation]		573
264		4.67	53	5.1 5.0	100									572
265		3.1				F	R2					LIMESTONE: micrite; very light gray (N8); fresh (F); weak (R2); dry; strong reaction to HCl. [Twin Mountain Formation]	Length of recovery stretched due to mechanical breaks.	571
266		11.5				F	R1							571

Project Name and Job Number  
 TXU Comanche Peak Col  
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**ROCK LOG**  
**Boring No. B-2002**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
267		11.5	53	5.1 5.0	100	F	R1					SILTSTONE: sandy; medium light gray (N6); massive; very weak (R1); fresh (F); damp; no reaction to HCl. [Twin Mountain Formation]		570
268		4.88										SANDSTONE: medium gray (N5); massive; fresh (F); very weak (R1); damp; no reaction to HCl. [Twin Mountain Formation]	Gradational contact; driller note sulfur smell	569
269		3.85				F	R1							568
270		3.33	54	4.9 5.0	98									567
271		1.38							2002-54			SANDSTONE: medium light gray (N6); massive; fresh (F); extremely weak to very weak (R0 to R1); damp; no reaction to HCl; rounded to subround; clean quartz grains; trace of opaque minerals. [Twin Mountain Formation]		566
272		1.58												565
273		1.33												564
274		1.58												563
275		1.47	55	4.8 5.0	96	F	R0-R1							562
276		1.75												561
277		1.4												560
278		1.93											Return water turned brown	559
279		2.33												558
280		3.63	56	5.0 5.0	100	F	R1					SANDSTONE: brownish black (5YR 2/1); thin beds; fresh (F); very weak (R1); damp; coal seams; sulfur odor; very slight reaction to HCl. [Twin Mountain Formation]		557
281		2.05												556
		2.23				F	R0-R1		2002-56					

Project Name and Job Number  
 TXU Comanche Peak Col  
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**ROCK LOG**  
**Boring No. B-2002**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
282		2.23	56	<u>5.0</u> 5.0	100									555
		1.3				F	R0-R1					SANDSTONE: medium light gray (N6); massive; fresh (F); extremely weak to very weak (R0 to R1); damp; no reaction to HCl; rounded to subround; clean quartz grains; trace of opaque minerals; 1.5" coal seam at 283.8'. [Twin Mountain Formation]		554
283		1.47												553
284		1.37	57	<u>4.7</u> 5.0	94									552
285		1.1										SANDSTONE: medium gray (N5); thin beds to massive; fresh (F); extremely weak to very weak (R0 to R1); damp; very slight reaction to HCl. [Twin Mountain Formation]		551
286		1.35												550
287		1.35												549
288		1.83												548
289		1.63	58	<u>5.0</u> 5.0	100				2002-58			Medium dark gray to dark gray (N4 to N3).		547
290		1.83												546
291		1.57				F	R0-R1					Increased induration; very weak (R1).		545
292		0.3												544
293		0.33												543
294		0.53	59	<u>4.8</u> 5.0	96									542
295		1.95												541
296		1.63												541




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**ROCK LOG**  
**Boring No. B-2002**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
297		1.63	59	4.8 5.0	96							SANDSTONE: medium gray (N5); thin beds to massive; fresh (F); extremely weak to very weak (R0 to R1); damp; very slight reaction to HCl. [Twin Mountain Formation]		540
298		1				F	R0-R1		2002-60					539
299		1.5												538
300		1.57	60	4.9 5.0	98									537
301		1.57				F	R0-R1					SANDSTONE: medium gray (N5) to medium dark gray (N4); fresh (F); extremely weak to very weak (R0 to R1); sulfur odor; no reaction to HCl. [Twin Mountain Formation]		536
302		2.02												535
303													Bottom of hole at 302.1'	534
304														533
305														532
306														531
307														530
308														529
309														528
310														527
311														526

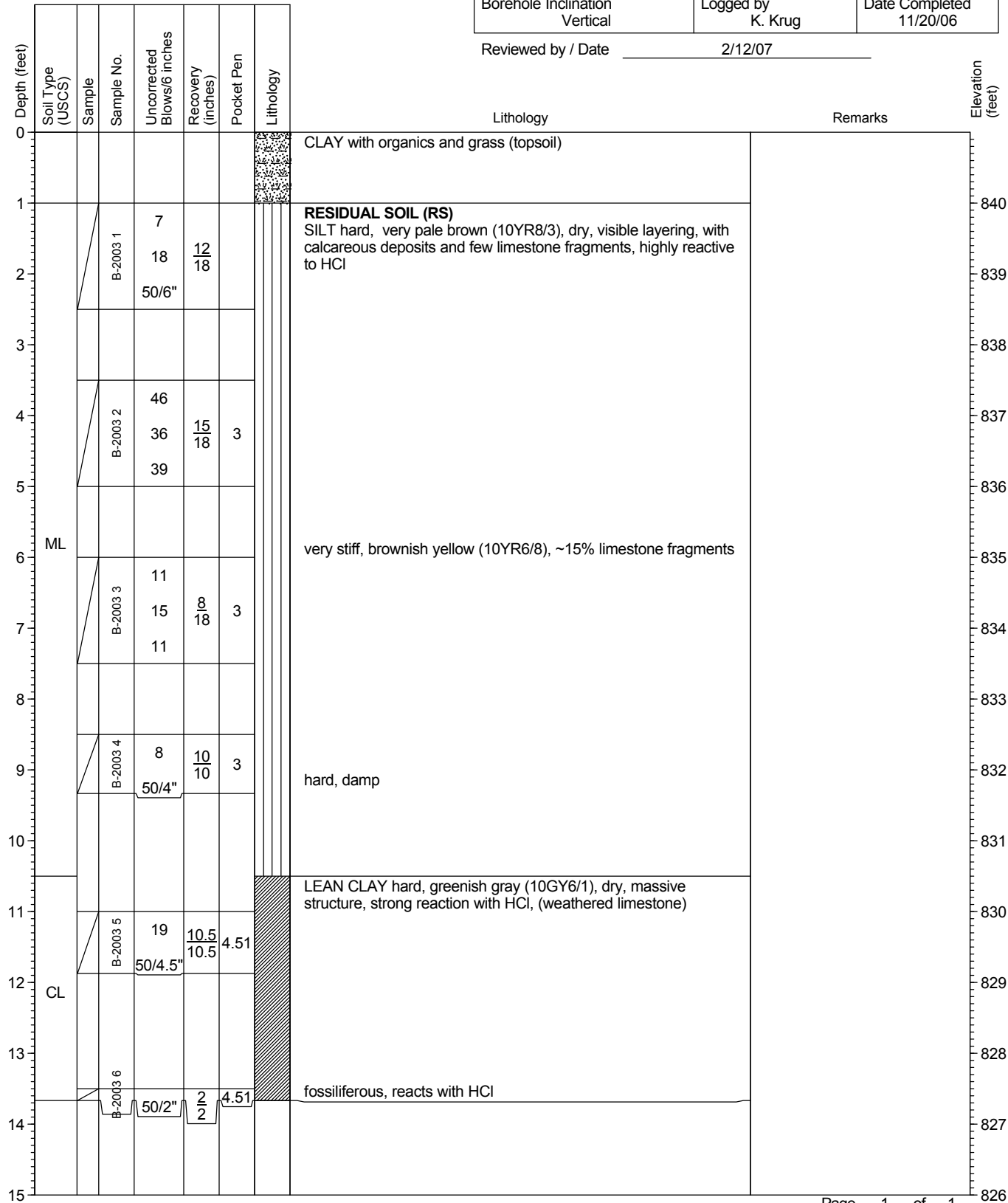
Project Name and Job Number TXU Comache Peak COL 1908		 <b>SOIL LOG</b> <b>Boring No. B-2003 offset</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'06.70815"N / 97°47'29.67923"W	Total Depth 400.3 feet
Drilling Contractor and Rig Richard Simmons Drilling / BK-81 HD		Elevation and Datum 841.14 feet NAVD88	Ground Water Depth DRY Depth to Bedrock 13 feet
Sampling Method SPT		Sample Driving Hammer/Drop R&C / 140 lbs / 30 inches	No. of Samples 4 Date Started 1/26/07
		Borehole Inclination Vertical	Logged by J. Oshun Date Completed 1/31/07


Reviewed by / Date \_\_\_\_\_ R.Ortiz \_\_\_\_\_

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
0							<b>RESIDUAL SOIL (RS)</b> LEAN CLAY with limestone fragments hard, yellow (10YR7/6), dry, few calcareous deposits		841
1	CL		B-2003 offset 1	32	$\frac{6}{10.5}$				840
2				50/4.5"					839
3							LEAN CLAY light olive brown (2.5Y4/4), damp		838
4	CL		B-2003 offset 2	6	$\frac{18}{18}$				837
5				12			LEAN CLAY with gravel very stiff, yellow (2.5Y7/6)		836
6				10					835
7	CL		B-2003 offset	3	$\frac{0}{18}$				834
8				3					833
9				5					832
10			B-2003 offset 3	30	$\frac{18}{18}$		LEAN CLAY very stiff, light yellowish brown (2.5Y6/4)		831
11				34			hard, light olive brown (2.5Y5/4), damp		830
12	CL		B-2003 offset 4	31	$\frac{10}{12}$				829
13				5			dark gray (2.5Y4/1), dry		828
14				50/6"					827
15									826

Project Name and Job Number TXU Comache Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG Boring No. B-2003</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'06.70815"N / 97°47'29.67923"W		Total Depth 253 feet	
Drilling Contractor and Rig Palmerston and Parish / CME 55		Elevation and Datum 840.998 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 13.8 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 6	Date Started 11/7/06	
		Borehole Inclination Vertical	Logged by K. Krug	Date Completed 11/20/06	

Reviewed by / Date \_\_\_\_\_ 2/12/07 \_\_\_\_\_



Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. B-2003 offset</b>	
Type and Diameter of Boring HQ / 4			Boring Location 32°18'06.70815"N / 97°47'29.67923"W		Total Depth 400.3 feet
Drilling Contractor and Rig Richard Simmons / BK-81			Elevation and Datum 841.14 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 13 feet
Casing Size and Depth 4" / 13 feet			Length of Core Barrel and Bit 5 feet	No. of Core Boxes 26	Date Started 1/26/07
			Borehole Inclination Vertical	Logged by J.Oshun	Date Completed 1/31/07

Reviewed by / Date R.Ortiz 2/5/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
13		1.4	1	5.1 2.0	100	SW	R2-R3		2003-os-5			LIMESTONE, wackestone, light gray (N7), medium strong (R3), moderately weathered, highly weathered along fractures. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	828
14		1.51												
15		1.4												826
16		2.1				SW	R1					LIMESTONE: packstone, extremely weathered, highly porous, pinkish yellowish gray (5YR 8/1 -5Y8/1), medium strong R3. [Glen Rose Formation]		825
17		2.1	2	5.0 5.0	100				2003-os-6			LIMESTONE: silty wackestone, silt bed 16.7' 16.9', medium gray, weak to medium strong (R2-R3), slightly weathered, fossiliferous, violent reaction to HCl, abundant clasts, many bioturbations 19'-20'. [Glen Rose Formation]		824
18		1.72												
19		1.47				SW	R2							822
20		2.17												821
21		1.67									JT, JRC 3	SHALE: medium dark gray (N4), very weak (R1), slightly weathered, no reaction to HCl. [Glen Rose Formation]		820
22		2.5	3	5.0 5.0	100	SW	R0-R2		2003-os-7					819
23		3.32												
24		2.4												817
25		1.5				SW	R0-R2				JT, JRC 5			816
26		1.38	4	5.1 5.0	100									815
27		1.96												

Project Name and Job Number  
 TXU Comanche Peak Col  
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**ROCK LOG**  
**Boring No. B-2003 offset**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)	
28		2.43	4	5.1 5.0	100							LIMESTONE: wackestone, medium gray, weak (R2), slightly weathered, moderate to slight reaction to HCl. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	813	
29		1.95												2003-os-8	812
30		2.17	5	5.0 5.0	100	SW	R0-R2					SHALE: with wackestone interbeds, thinly spaced shale, medium gray (N5), extremely to very weak (R0-R1), slightly weathered, no reaction to HCl, wackestone is light-medium light gray (N7-N6), weak to medium strong, calcereous to silty in matrix, moderate reaction to HCl, wackestone is bioturbated, SAA: fine grained clasts. [Glen Rose Formation]	Drill sound increases	811	
31		2.02												2003-os-9	810
32		1.85												2003-os-10	809
33		4.62												808	
34		3.5	6	4.7 5.0	94	F	R2							807	
35		5.1												806	
36		3.5												805	
37		2.43	7	5.0 5.0	100									804	
38		1.6												803	
39		3.83	7	5.0 5.0	100									802	
40		3.67												801	
41		3.85												800	
42		3.98	7	5.0 5.0	100									799	
43														799	

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**ROCK LOG**  
**Boring No. B-2003 offset**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
43		2.25	7	51.0 51.0	100	F	R2							798
44		2.28												2003-05-11
45		2.67	8	51.0 51.0	100	SW	R0-R1				JT, JRC 4	SHALE: calcareous siltstone-mudstone, medium dark gray (N4), extremely weak-very weak (R0-R1), massive, fossils <9%, slight reaction to HCl. [Glen Rose Formation]		796
46														4.17
47		4.03												794
48		3.13												793
49		3.87				SW	R3				JT, JRC 1	LIMESTONE: micrite, very light gray (N8), clasts poor, fresh, R3. [Glen Rose Formation]		792
50														3.52
51		4.38												790
52		4.23	9	51.0 51.0	100	SW	R1					LIMESTONE, wackestone, medium light to light gray (N7-N6), medium strong (R3), abundant silt filled bioturbations, fine grained clasts, strong reaction to HCl. [Glen Rose Formation]		789
53														4.23
54		2.85				SW	R2							787
55														4.23
56		4.35	10	51.0 51.0	92	SW	R0					SHALE: calcareous siltstone, medium gray (N5), fine grained, very weak, (R1), slightly weathered, violent reaction to HCl, SAA: wackestone inclusion. [Glen Rose Formation]		785
57		3.83				F	R2-R3							784
58														2003-05-13

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**ROCK LOG**  
**Boring No. B-2003 offset**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
58		4.1	10	5.0 5.0	92	F	R3					LIMESTONE: silt wackestone, medium lighth gray (N6), weak (R2), fine grained, violent reaction to HCl, bioturbated, slightly weathered. [Glen Rose Formation]		783
59		3.68				F-SW						2003-08-13		782
60		2.3	11	5.0 5.0	100	SW	R2-R3					SHALE: mudstone/claystone, medium dark gray (N4), amssive, extremely weak (R0), fresh, no reaction to HCl. [Glen Rose Formation]		781
61		2.68										780		
62		2.58										LIMESTONE: silty wackestone, medium lighth gray (N6), heavily bioturbated, slight reaction to HCl, weak (R2), slightly weathered, SAA: shale bed, no bioturbations, pure carbonate matrix, medium strong (R3), fresh, strong reaction to HCl, very light gray (N8), fine grained, SAA: alternating layers of higher and lower concentrations of silt in matrix, rip up clasts in silty layers, very strong reaction to HCl, SAA: rip up clasts in section of high silt percentage matrix. [Glen Rose Formation]		779
63		1.62										2003-08-14		778
64		2.5												777
65		2.02												776
66		2.68												775
67		2.43	12	5.0 5.0	100	SW	R2-R3							774
68		2.38										2003-08-15		773
69		1.97										JT, JRC 4 JT, JRC 4		772
70		0.85												771
71		3.67	13	5.0 5.0	100	SW	R2-R3							770
72		4.35										JT, JRC 4		769

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**ROCK LOG**  
**Boring No. B-2003 offset**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)										
73		2.1	13	5.0 5.0	100							LIMESTONE: silty wackestone, medium light gray (N6), heavily bioturbated, slight reaction to HCl, weak (R2), slightly weathered, SAA: shale bed, no bioturbations, pure carbonate matrix, medium strong (R3), fresh, strong reaction to HCl, very light gray (N8), fine grained, SAA: alternating layers of higher and lower concentrations of silt in matrix, rip up clasts in silty layers, very strong reaction to HCl, SAA: rip up clasts in section of high silt percentage matrix. [Glen Rose Formation]		768										
74		1.67																					767	
75		2.08	14	5.0 5.0	100						JT, JRC 5	LIMESTONE: silty wackestone, medium light gray (N6), heavily bioturbated, slight reaction to HCl, weak (R2), slightly weathered, SAA: shale bed, no bioturbations, pure carbonate matrix, medium strong (R3), fresh, strong reaction to HCl, very light gray (N8), fine grained, SAA: alternating layers of higher and lower concentrations of silt in matrix, rip up clasts in silty layers, very strong reaction to HCl, SAA: rip up clasts in section of high silt percentage matrix. [Glen Rose Formation]		766										
76		2.95																					765	
77		2.27																						764
78		2																						763
79		1.97	15	5.0 5.0	100	SW	R2-R3					LIMESTONE: silty wackestone, medium light gray (N6), heavily bioturbated, slight reaction to HCl, weak (R2), slightly weathered, SAA: shale bed, no bioturbations, pure carbonate matrix, medium strong (R3), fresh, strong reaction to HCl, very light gray (N8), fine grained, SAA: alternating layers of higher and lower concentrations of silt in matrix, rip up clasts in silty layers, very strong reaction to HCl, SAA: rip up clasts in section of high silt percentage matrix. [Glen Rose Formation]		762										
80		2.52																					761	
81		3.05																						760
82		3.18	16	5.0 5.0	92							LIMESTONE, packstone, medium light gray (N6) - light bluish gray (5B 7/1), silt filled bioturbations, medium strong (R3), slightly weathered. [Glen Rose Formation]		759										
83		3.33																					758	
84		1.98	16	5.0 5.0	92							LIMESTONE, packstone, medium light gray (N6) - light bluish gray (5B 7/1), silt filled bioturbations, medium strong (R3), slightly weathered. [Glen Rose Formation]		757										
85		1.67																					756	
86		1.72															SW	R2						755
87		1.97	16	5.0 5.0	92							LIMESTONE, packstone, medium light gray (N6) - light bluish gray (5B 7/1), silt filled bioturbations, medium strong (R3), slightly weathered. [Glen Rose Formation]		754										
88																	SW	R3						



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**ROCK LOG**  
**Boring No. B-2003 offset**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)										
88		2.18	16	51.0 5.0	92							LIMESTONE: wackestone, very light gray (N8) with fine grained bluish clasts, medium strong (R3), slightly weathered, silt filled bioturbations throughout. [Glen Rose Formation]		753										
89		2.48												752										
90		2.25	17	51.0 5.0	100	SW	R3				JRC 5	LIMESTONE, packstone, medium bluish gray (5B 5/1), weak (R2), dense clasts, silt 20 - 30%, no reaction to HCl, slightly weathered. [Glen Rose Formation]		751										
91		2.35												750										
92		2.08												749										
93		1.58												748										
94		1.35	18	51.0 5.0	100	SW	R3					LIMESTONE, wackestone: very light gray (N8), with fine grained bluish clasts, medium strong (R3), slightly weathered, silt-filled bioturbations throughout, SAA: alternating silt beds. [Glen Rose Formation]		747										
95		1.8														746								
96		2.5				F	R3									745								
97		3.02	19	51.0 5.0	100							LIMESTONE, micrite, medium light gray to medium dark gray (N6-N4), laminated, medium strong (R3), fresh, strong reaction to HCl, SAA: finely laminated. [Glen Rose Formation]		744										
98		3.08												F	R2									743
99		2.68	19	51.0 5.0	100	SW	R2-R3				JT, JRC 2	LIMESTONE: packstone, medium light gray to medium dark gray (N6N4), laminated, medium strong (R3), fresh, strong reaction to HCl. [Glen Rose Formation]		742										
100		2.6																						741
101		3.02												F-SW	R3								LIMESTONE: packstone, medium light gray (N6), with bluish clasts, medium strong (R3), fresh, grading to wackeston. [Glen Rose Formation]	
102		2.83	SW	R2										739										
103																								

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**ROCK LOG**  
**Boring No. B-2003 offset**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
103		3.12	19	5.0 5.0	100	SW	R2		2003-08-23			LIMESTONE, wackestone, medium light gray (N6), weak (R2), slightly weathered, thin, closely spaced silt beds <0.5" thick, very strong reaction to HCl. [Glen Rose Formation]		738
104		2.25				SW	R3				LIMESTONE: micrite, very light gray (N8), medium strong (R3), fresh, violent reaction to HCl. [Glen Rose Formation]		737	
105		3.02				SW	R2				SAA: grades to wackestone, increase in a bundance of bluish gray clasts, decrease in strength, slightly weathered, silt bioturbatuions, strong reaction to HCl. [Glen Rose Formation]		736	
106		4.43	20	5.0 5.0	100				2003-08-24			LIMESTONE: wackestone, light gray (N8), medium strong (R3), slightly weathered, bioturbations/coal seams, SAA: coal seam. [Glen Rose Formation]		735
107		2.58				SW	R0						734	
108		1.78												733
109		1.83	21	5.0 5.0	100				2003-08-25			LIMESTONE, packstone, medium bluish gray (5B 5/1), weak (R2), slightly weathered, moderte reaction to HCl. [Glen Rose Formation]		732
110		3.08				SW	R2-R3							731
111		3.57												730
112		2.53	22	5.0 5.0	100				2003-08-25			LIMESTONE: micrite, light gray (N7), laminated, medium strong reaction to HCl, few fractures, few bioturbations. [Glen Rose Formation]		729
113		2.77				F-SW	R3							728
114		1.9												727
115		1.83	22	5.0 5.0	100				2003-08-25		JT, JRC 6			726
116		1.93												725
117		2.22												724
118														

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**ROCK LOG**  
**Boring No. B-2003 offset**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
118		3.85												723
119			22	5.0	100	F-SW	R3					LIMESTONE: micrite, light gray (N7), laminated, medium strong reaction to HCl, few fractures, few bioturbations. [Glen Rose Formation]		722
120		2.93												721
121		2.02										LIMESTONE, wackestone, medium light gray (N6), abundant shale beds, silty matrix, no reaction to HCl, slightly weathered, weak (R2). [Glen Rose Formation]		720
122		3.08												719
123			23	5.0	100	SW	R2-R3							718
124		2.07												717
125		3.62								2003-05-27		SHALE: mudstone, extremely weak (R0), slightly weathered, abundant fossils, no reaction to HCl, weak laminations. [Glen Rose Formation]		716
126		3.35										LIMESTONE: wackestone, light gray (N7), weak to medium strong (R2-R3), slightly weathered, large bioturbations, violent reaction to HCl. [Glen Rose Formation]		715
127		3.02												714
128			24	5.0	100									713
129		2.3												712
130		2.65				SW	R2			2003-05-28				711
131		5.38											End drilling 1/27/07: Begin drilling 1/28/07	710
132		6.18	25	5.0	100									709
133		6.18								2003-05-29				709

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**ROCK LOG**  
**Boring No. B-2003 offset**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
133		2.55	25	5.0 5.0	100							LIMESTONE: wackestone, light gray (N7), weak to medium strong (R2-R3), slightly weathered, large bioturbations, violent reaction to HCl. [Glen Rose Formation]		708
134		2.68												707
135		1.35												706
136		4.52	26	5.0 5.0	100	SW	R2							705
137		3.18												704
138		4.88												703
139		3.35	27	5.0 5.0	100									702
140		1.68												701
141		2.17												700
142		3.35	28	5.0 5.0	100									699
143		2.18												698
144		2.02												697
145		1.85	28	5.0 5.0	100	F	R1					LIMESTONE: micrite, light gray (N7), massive, medium strong (R3), fresh, bioturbations 144.6-145, strong reaction to HCl, silty matrix, abundant coal seams, vugs. [Glen Rose Formation]		696
146		4.17												695
147		4.02												694
148														

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**ROCK LOG**  
**Boring No. B-2003 offset**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
148		2.85	28	5.0 5.0	100	F	R1					LIMESTONE: micrite, light gray (N7), massive, medium strong (R3), fresh, bioturbations 144.6-145, strong reaction to HCl, silty matrix, abundant coal seams, vugs. [Glen Rose Formation]		693
149		1.8												692
150		3									JT, JRC 2			691
151		2.68	29	5.0 5.0	100	F	R3					LIMESTONE: wackestone, medium to medium light gray (N5-N6), medium strong (R3), fresh, vugs, some bioturbations, silty matrix, abundant fossils,, SAA: abundant vugs, minor bioturbations throughout, less silt. [Glen Rose Formation]		690
152		2.02												689
153		1.85												688
154		1.43												687
155		2.18												686
156		2.25	30	5.0 5.0	100	F-SW	R3							685
157		1.85												684
158		1.43												683
159		1.18												682
160		1.08	31	5.0 5.0	100									681
161		1.63												680
162		1.3												679
163														

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**ROCK LOG**  
**Boring No. B-2003 offset**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
163		1.28	31	5.0 5.0	100	F-SW	R3				JT, JRC 2	LIMESTONE: wackestone, medium to medium light gray (N5-N6), medium strong (R3), fresh, vugs, some bioturbations, silty matrix, abundant fossils,, SAA: abundant vugs, minor bioturbations throughout, less silt. [Glen Rose Formation]		678
164		1.17									JT, JRC 3			677
165		1.83									JT, JRC 3			676
166		2.17	32	5.0 5.0	100	F-SW	R2-R3					LIMESTONE: micrite, light to very light gray (N7-N8), medium strong (R3), fresh, slightly weathered, minor bioturbations. [Glen Rose Formation]		675
167		1.85												674
168		1.67												673
169		1.83	33	4.9 5.0	98	F-SW	R1					LIMESTONE: wackestone, heavily bioturbated, medium light gray (N6), weak (R2), slightly weathered, violent reaction to HCl, SAA: many vugs/bioturbations filled with silt, bioturbated throughout, increased clast size and density with depth, fossiliferous. [Glen Rose Formation]		672
170		1.98												671
171		2.1												670
172		2.78	34	5.0 5.0	100	SW	R1							669
173		2.6												668
174		1.6												667
175		2.28	34	5.0 5.0	100	SW	R1							666
176		1.98												665
177		14.62												664
178														

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**ROCK LOG**  
**Boring No. B-2003 offset**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
178		1.62	34	5.0 5.0	100							LIMESTONE: wackestone, heavily bioturbated, medium light gray (N6), weak (R2), slightly weathered, violent reaction to HCl, SAA: many vugs/bioturbations filled with silt, bioturbated throughout, increased clast size and density with depth, fossiliferous. [Glen Rose Formation]		663
179		1.52												662
180		1.02	35	4.6 5.0	98	SW	R1							661
181		2.23												660
182		1.6												659
183		1.47												658
184		1.63	36	5.0 5.0	100	SW	R3				JT, JRC 1			657
185		1.73												656
186		2.68												655
187		4.33	37	5.0 5.0	100	F	R0					LIMESTONE, micrite, light gray (N7), medium strong(R3), fresh, violent reaction to HCl. [Glen Rose Formation]		654
188		4.57												653
189		4.02	37	5.0 5.0	100	F	R3					LIMESTONE: wackestone, light gray (N7), weak to medium strong (R2-R3), slightly weathered, large bioturbations, violent reaction to HCl. [Glen Rose Formation]		652
190		3.17												651
191		4.35												650
192		3.68	37	5.0 5.0	100	F	R1					SHALE: siltstone, dark gray (N3) with greenish tint, very weak (R1), fresh, strong reaction to HCl. [Glen Rose Formation]		649
193														649

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**ROCK LOG**  
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)		
193		3.32	37	5.0 5.0	100	F	R0					LIMESTONE: micrite, very light gray (N8), medium strong, fresh, very strong reaction to HCl, very few clasts. [Glen Rose Formation]		648		
194		0.93				SW-MW	R3						SANDSTONE: with sandy shale interbeds, sandstone is porous, cohesive, very weak (R1), fine frained, rounded, medium dark gray (N4), shale is silty/sandy, very weak (R1), medium dark gray (N4). [Glen Rose Formation]		647	
195		1.18	38	5.0 5.0	100	SW	R1-R2					LIMESTONE: micrite grading to wackestone, light gray (N7) with bluish gray clasts, few voids, medium strong (R3), slightly weathered, SAA: packstone bed, shale, bed, shale, interbeds, sandy shale, muddy sandstone. [Glen Rose Formation]		646		
196		4.27									2003-05-37			SAA: muddy sandstone. [Glen Rose Formation]		645
197		1.35														644
198		2.07							SW	R1-R2						643
199		2.42	39	5.0 5.0	100									642		
200						SW	R1-R2						SHALE: sandy siltstone, medium dark gray, very weak (R1), slightly weathered, fossil rich, strong reaction to HCl. [Glen Rose Formation]		641	
201		1.33				F	R2						LIMESTONE: wackestone, light gray (N7), with blue/gray clasts, medium strong (R3), fresh, violent reaction to HCl. [Glen Rose Formation]		640	
202		2.6				SW	R1-R2					SANDSTONE: muddy, fine grained, medium dark gray (N4), extremely weak (R0), slightly weathered, SAA: limestone interbed. [Glen Rose Formation]		639		
203		2.32	40	5.0 5.0	100									638		
204		3.52											LIMESTONE: wackestone with limey shale interbeds < 2" thick, weak (R2), slightly weathered, some bioturbation, violent reaction to HCl, 10% silt, SAA: rich in fossils, strong reaction to HCl, very weak to weak (R1-R2), silty matrix, thin, alternative beds of shale and wackestone 205' to 206.7'. [Glen Rose Formation]		637	
205		2.98				SW	R0						636			
206		2.35											635			
207		4.02											634			
208																



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**ROCK LOG**  
**Boring No. B-2003 offset**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
208		5.1	40	5.0 5.0	100	SW	R0					LIMESTONE: wackestone with limey shale interbeds < 2" thick, weak (R2), slightly weathered, some bioturbation, violent reaction to HCl, 10% silt, SAA: rich in fossils, strong reaction to HCl, very weak to weak (R1-R2), silty matrix, thin, alternative beds of shale and wackestone 205' to 206.7'. [Glen Rose Formation]		633
209		4.1										632		
210		2.05	41	4.8 5.0	96	F	R0-R1				JT, JRC 4	LIMESTONE: micrite interbedded with siltstone, beds <4" thick, MICRITE: light gray (N7), weak (R2), slightly weathered, SILTSTONE: medium dark gray (N4), very weak (R1). [Glen Rose Formation]		631
211		3.3										630		
212		4.85										629		
213		3.3	42	5.0 5.0	100	F	R0					LIMESTONE: wackestone, medium gray (N5), weak (R2), slightly weathered, abundant silt filled bioturbations, vugs containing sand and carbonate, violent reaction to HCl. SAA: shale bed. [Glen Rose Formation]		628
214		2.17										627		
215		1.97										626		
216		4.1	43	5.0 5.0	100	SW	R0					LIMESTONE: sandy micrite with quartz clasts, weak to very weak (R1-R2), fresh, violent reaction to HCl. [Glen Rose Formation]		625
217		3.18										624		
218		2.26										623		
219		1.53	43	5.0 5.0	100	F-SW	R2					SANDSTONE: limey sandstone, medium gray (N5), extremely weak (R0), fresh, fine grained, subrounded, strong reaction to HCl. [Twin Mountain Formation]		622
220		1.78										621		
221		1.8										620		
222		1.28	43	5.0 5.0	100	F	R0					SHALE: sandy siltstone, medium dark gray (N4), extremely weak to very weak (R0-R1), fresh, slight reaction to HCl. [Twin Mountain Formation]		619
223												618		

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**ROCK LOG**  
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)				
223		1.18	43	5.0 5.0	100	F	R0					SANDSTONE: medium gray (N5), extremely weak (R0), fresh, contains fossils and pyrite, fine, subangular grains, pyrite clasts up to .1". [Twin Mountain Formation]		618				
224		0.97														617		
225		0.77															616	
226		1.07	44	5.0 5.0	78	F	R2					LIMESTONE: wackestone with sand, light gray (N7), weak (R2), violent reaction to HCl, fossil rich, grades to sandy siltstone. [Twin Mountain Formation]		615				
227		1.55														614		
228		2.5															613	
229		2.47				F	R0-R1			2003-05-40		LIMESTONE: silty micrite, massive, medium light gray (N6), weak (R2), fresh, strong reaction to HCl. [Twin Mountain Formation]		612				
230		5.17	45	4.9 5.0	98	SW	R1					SILTSTONE/CLAYSTONE: medium dark gray (n4), extremely weak (R0), massive, abundant fossils, fresh. [Twin Mountain Formation]		611				
231		0.17														610		
232		10.42														609		
233		6.52	46	5.0 5.0	100	F-SW	R0-R1					LIMESTONE: silty micrite, massive, medium light gray (N6), weak (R2), fresh, strong reaction to HCl. [Twin Mountain Formation]		608				
234		7.25																607
235		6.35																
236		2.83											605					
237		3.1											604					
238																		

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**ROCK LOG**  
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
238		3.25												603
239		4	46	5.0 5.0	100									602
240						F	R1-R2							601
241		5.02												600
242		3.32												600
242		2.98	47	5.0 5.0	100	F	R0-R1							599
243														598
244		3.58											Length of recovery stretched due to mechanical breaks.	598
244		3.8												597
245														596
245		4.37												596
246														595
247		1.17												595
247														594
248		0.12	48	3.3 5.0	66	F	R1							594
248		0.13												593
249		0.17												592
250														591
251		1.2												591
251														590
252		0.17	49	3.8 5.0	76									590
252														589
253		0.25												589

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
253		0.1												588
254		3.17	49	3.8 5.0	76									587
255		3.83												586
256		1.68												585
257		1.52	50	4.5 5.0	80	F	R1			2003-05-43			584	
258		1.7												583
259		1.25												582
260		0.93												581
261		2.35				F	R2							580
262		4.92	51	5.0 5.0	100									579
263		2.3												578
264		1.17												577
265		0.73				F	R0-R1							576
266		1.35	52	5.1 5.0	100									575
267		0.97												574
268														

SANDSTONE: dark greenish gray (5 G 4/1), very weak to extremely weak (R0-R1), fresh, very fine grained, silty matrix, no reaction to HCl. [Twin Mountain Formation]

SANDY SILTSTONE: greenish gray (5G 6/1), very weak (R1), fresh, extremely fine grained, no reaction to HCl. [Twin Mountain Formation]

SANDSTONE: greenish gray (5G 6/1), fine, subangular grains, well sorted, large fossils, extremely weak (R0), friable, fresh, cross bedding. [Twin Mountain Formation]

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
268		1.38	52	5.1 5.0	100	F	R0-R1					SANDSTONE: greenish gray (5G 6/1), fine, subangular grains, well sorted,, large fossils, extremely weak (R0), frable, fresh, cross bedding. [Twin Mountain Formation]	Length of recovery stretched due to mechanical breaks.	573
269		3.68												572
270		1.85	53	5.2 5.0	100	F	R0-R1		2003-05-44			SANDSTONE: medium gray (N5), massive, extremely weak (R0), fresh, poorly sorted, very fine to fine, subangular grains. [Twin Mountain Formation]	Length of recovery stretched due to mechanical breaks.	571
271		2.63												570
272		1.77	54	4.8 5.0	96	F	R0					SILTSTONE, grayish green (5G 6/1), extremely weak to very weak (R0-R1), fresh, amssive, some sand a nd rip up clasts. [Twin Mountain Formation]	Length of recovery stretched due to mechanical breaks.	569
273		2.27												568
274		1.18	55	5.0 5.0	100	F	R1					SANDSTONE: medium gray (N5), massive, extremely weak (R0), fresh, poorly sorted, very fine to fine, subangular grains. [Twin Mountain Formation]		567
275		3.33												566
276		2.17	56	5.0 5.0	100	F	R1		2003-05-45			SANDSTONE: medium gray (N5), massive, extremely weak (R0), fresh, poorly sorted, very fine to fine, subangular grains. [Twin Mountain Formation]		565
277		2.83												564
278		1.25	57	5.0 5.0	100	F	R1					SANDSTONE: medium gray (N5), massive, extremely weak (R0), fresh, poorly sorted, very fine to fine, subangular grains. [Twin Mountain Formation]		563
279		1.1												562
280		1.77	58	5.0 5.0	100	F	R1					SANDSTONE: medium gray (N5), massive, extremely weak (R0), fresh, poorly sorted, very fine to fine, subangular grains. [Twin Mountain Formation]		561
281		2.85												560
282		1.18	59	5.0 5.0	100	F	R1					SANDSTONE: medium gray (N5), massive, extremely weak (R0), fresh, poorly sorted, very fine to fine, subangular grains. [Twin Mountain Formation]		559
283		1.18												558

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**Boring No. B-2003 offset**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
283		0.98										SANDSTONE: medium gray (N5), massive, extremely weak (R0), fresh, poorly sorted, very fine to fine, subangular grains. [Twin Mountain Formation]		558
284			55	5.0 5.0	100									557
285		0.77												556
286		1.35												555
287		1.6							2003-05-46					554
288		1.68	56	4.7 5.0	100									553
289		1.37												552
290		1.32				F	R1							551
291		1.02											Strong sulfur smell from core	550
292		2.05												549
293		2.13	57	5.0 5.0	100								548	
294		1.52											547	
295		1.25											546	
296		1.17								2003-05-47			545	
297		1.77	58	4.4 5.0	92	F	R1					SILTSTONE: medium dark gray (N3) with grayish black (N2) laminations, fresh, very weak to weak (R1-R2). [Twin Mountain Formation]	544	
298		1.83				F	R1					SANDSTONE: medium gray (N5), very weak (R1), poorly sorted, medium grained, subrounded. [Twin Mountain Formation]		

Project Name and Job Number  
 TXU Comanche Peak Col  
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**ROCK LOG**  
**Boring No. B-2003 offset**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
298		1.85												543
299			58	<u>4.4</u> 5.0	92	F	R1					SANDSTONE: greenish gray (5G 6/1), unconsolidated, extremely weak (R0), fine grained, subrounded, medium sorted. [Twin Mountain Formation]		542
300		1.02												541
301		1.17										SAA: wackestone bed. [Twin Mountain Formation]		540
302		2.33												539
303		3.85	59	<u>4.7</u> 5.0	94									538
304		1.17												537
305		0.9												536
306		0.77											End drilling 1/29/07: Begin drilling 1/30/07	535
307		0.78				F	R1		2003-05-48					534
308		0.52	60	<u>1.6</u> 5.0	36									533
309		0.35												532
310		0.17												531
311		0.33												530
312			61	<u>4.5</u> 5.0	90									529
313		0.38												

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**ROCK LOG**  
**Boring No. B-2003 offset**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
313		0.68												528
314		0.43	61	4.5 5.0	90									527
315		0.57												526
316		0.33												525
317		0.67	62	4.5 5.0	80									524
318		1.85												523
319		2.02												522
320		1.68				F	R1							521
321		1.25												520
322		0.68	63	4.7 5.0	94									519
323		0.73												518
324		0.25												517
325		0.23												516
326		1.25	64	5.0 5.0	100									515
327		1.17												514
328														

SAA: wackestone bed. [Twin Mountain Formation]



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**ROCK LOG**  
**Boring No. B-2003 offset**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)		
328		1.02	64	5.0 5.0	100	F	R1							513		
329		3.83												SANDY SILTSTONE: greenish gray (5G 6/1), extremely weak to very weak (R0-R1), fresh, extremely fine grained, no reaction to HCl, rip up clasts up to 1.4" in diameter. [Twin Mountain Formation]		512
330		3.65							F	R1						511
331		2.9	65	5.0 5.0	100								Brownish red water return	510		
332		5.35												MUDSTONE/CLAYSTONE: reddish moderate brown (5YR 3/4), very weak (R1), fresh, massive, rip up clasts of green silt, interbeds of green mudstone. [Twin Mountain Formation]		509
333		4.48														508
334		5.67	66	5.0 5.0	100									507		
335		5.38														506
336		5.17							F	R1						505
337		5.68	67	4.5 5.0	90									504		
338		4.32														503
339		4.65														502
340		4.07	67	4.5 5.0	90									501		
341		3.85														500
342		3.83							F	R0-R1					SAA: increase in silt, fossils. [Twin Mountain Formation]	499
343																

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**ROCK LOG**  
**Boring No. B-2003 offset**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
343		5.32										SAA: increase in silt, fossils. [Twin Mountain Formation]		498
344		5.1	67	4.5 5.0	90									497
345		5.17												496
346		4.1												495
347		5.83	68	5.0 5.0	100	F	R0-R1						Considerable stick up (4'), remaining core was retrieved by sending sample to back down	494
348		4.6												493
349		4.4												492
350		4.5												491
351		3.33										SANDSTONE: reddish moderate brown (5 YR 4/4), very weak (R1), fresh, fine, grained. [Twin Mountain Formation]		490
352		4.75	69	5.0 5.0	100									489
353		4.63				F	R1							488
354		2.87												487
355		2.68												486
356		2.77	70	5.0 5.0	100	F	R1					MUDSTONE/CLAYSTONE: reddish moderate brown (5YR 3/4), very weak (R1), fresh, massive . [Twin Mountain Formation]		485
357		4.87												484
358														

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**ROCK LOG**  
**Boring No. B-2003 offset**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
358		3.73				F								483
359			70	5.0 5.0	100							SANDSTONE: interbedded clayey sandstone, reddish moderate brown (5YR 4/4) and sand stone: light bluish gray (5B 7/1), very weak (R1). [Twin Mountain Formation]		482
360		2.83												481
361		3.1				F	R1							480
362		2.08												479
363			71	5.0 5.0	100							SANDSTONE: interbedded with siltstone, sandstone is greenish gray (5 G 6/1), siltstone is reddish moderate brown (5Yr 4/4), siltstone .5-3" thick, some cross-bedding, some pinchout, fresh, very weak (R1). [Twin Mountain Formation]		478
364		2.12												477
365		2.47												476
366		2.93				F	R1							475
367		2.93												474
368			72	5.0 5.0	100									473
369		4.25												472
370		3.17												471
371		4.85												470
372			73	5.2 5.0	100	F	R1					SANDSTONE: very fine grained clayey sandstone, greenish gray (5 G 6/1), very weak (R1), fresh, subrounded grains, well sorted, some weak bedding, friable. [Twin Mountain Formation]		469
373		2.97												469
		3.15												
		2.52												

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**ROCK LOG**  
**Boring No. B-2003 offset**


Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
373		2.3												468
374			73	5.2 5.0	100	F	R1					SANDSTONE: very fine grained clayey sandstone, greenish gray (5 G 6/1), very weak (R1), fresh, subrounded grains, well sorted, some weak bedding, friable. [Twin Mountain Formation]	Length of recovery stretched due to mechanical breaks.	467
375		2.12												466
376												SANDSTONE: clay rich sandstone, greenish gray (5G 6/1), extremely weak to very weak (R0-R1), fresh, extremely fine grained, friable. [Twin Mountain Formation]		465
377		3.745												464
378		3.52												463
379			74	5.0 5.0	100	F	R1							462
380		2.37												461
381		3.35												460
382		3.6												459
383												SILTSTONE: reddish moderate brown (5YR 4/1), rip up clasts of greenish gray sandstone, clay rich, very weak (R1), fresh. [Twin Mountain Formation]	End drilling 1/30/07: Begin drilling 1/31/07	458
384		2.9												457
385		3.62												456
386			75	4.3 5.0	86									455
387		3.85												454
388		3.67				F	R1							
		2.82												
		2.25												
			76	3.3 5.0	66									
		3.42												
		3.65												

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**ROCK LOG**  
**Boring No. B-2003 offset**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
388		3.13	76	5.0	66	F	R1					SILTSTONE: reddish moderate brown (5YR 4/1), rip up clasts of greenish gray sandstone, clay rich, very weak (R1), fresh. [Twin Mountain Formation]		453
389		3.17												452
390		2.73	77	5.0	100	F	R1					SANDSTONE: extremely fine grained, very weak (R1), fresh, reddish moderate brown (5 YR 4/4), greenish gray rip up clasts and interbeds, subangular grains. [Twin Mountain Formation]		451
391		3.05												450
392			78	5.0	100	F	R1					SANDSTONE: alternating beds of olive gray (5Y 4/1), dark greenish gray (5G 4/1), medium gray (N5), moderate brown (5YR 4/4), fine grained, very weak (R1), fresh to slightly weathered. [Twin Mountain Formation]	Run 78 drilled only 3' contains stick up from 77	449
393		3.12												448
394		4.48	79	5.0	100	F	R1							447
395		3.2												446
396		3.62	218	3.2	100	F	R1							445
397														444
398		10.62	79	5.0	100	F	R1							443
399		2.1												442
400														441
401														440
402														439
403														

Project Name and Job Number TXU Comanche Peak Col 1908		 WLA William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. B-2003</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'06.70815"N / 97°47'29.67923"W		Total Depth 253 feet	
Drilling Contractor and Rig Palmerston and parish inc. / CME55		Elevation and Datum 840.998 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 13.8 feet	
Casing Size and Depth 4"		Length of Core Barrel and Bit 8.6 feet	No. of Core Boxes 26	Date Started 11/8/06	
		Borehole Inclination Vertical	Logged by K. Krug	Date Completed 11/15/06	

Reviewed by / Date \_\_\_\_\_ 2/12/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
14		2.3												827
15		1.62							2003-1					826
16			1	4.0 4.0	100	F	R2-R3							825
17		1.25												824
18		2.08												823
19														822
20		5												821
21		2.32												820
22			2	4.9 5.0	38	F	R2							819
23		3.4												818
24		3.4												817
25		6.83							2003-2					816
26						F	R0							815
27		4.7												814
28		3.97												813
29			3	5.0 5.0	100	F	R2							812
30		2.52												811
31		3.18												810
32									2003-3					809
33		1												808
34		1.18	4	5.0 5.0	100	F	R2							807

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 1908



**ROCK LOG**  
**Boring No. B-2003**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
29		0.67										LIMESTONE: micrite; interbedded with shale; greenish gray (10Y 7/1); fresh (F); weak (R2); no reaction to HCl; 0.1' layers of shale with no reaction to HCl; limestone reacts strongly to HCl; below 28', thin shale laminae (0.001') surround rip-up clasts. [Glen Rose Formation]		812
30		0.9												811
31			4	5.0 5.0	100	F	R2							810
		1.13												
32		1.98												809
33									2003-4					808
		3.05												
34		4.83												807
35									2003-5			Shale-rich zone 34.6'-35.3'.		806
		2.67	5	5.0 5.0	100	F	R2							
36		8.05												805
37												Shale-rich zone 36.9'-37.2'.	Driller changing gears a lot trying to drill faster	804
		6.1												
38												Coal seam at 38.0'.		803
		0.98										Shale-rich zone 38.4'-39.2'.		
39						F	R2							802
		2.8												
40														801
		2.63	6	5.0 5.0	100							LIMESTONE: micrite; with interbedded shale; light greenish yellow (10Y 7/2); fresh (F); very weak to weak (R1-R2); shale layers (0.001') surround rip-up clasts. [Glen Rose Formation]		800
41														
		2.9												
42						F	R1-R2							799
		2.7							2003-6					
43														798
		3.68	7	4.8 5.0	96									

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-2003</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
44		1.75				F	R1-R2					LIMESTONE: micrite; with interbedded shale; light greenish yellow (10Y 7/2); fresh (F); very weak to weak (R1-R2); shale layers (0.001') surround rip-up clasts. [Glen Rose Formation]		797
45		2.4												796
46			7	4.8 5.0	96							SHALE: greenish gray (10Y 7/1); massive; fresh (F); extremely weak (R0). [Glen Rose Formation]		795
47		5.13							2003-7				Brownish gray water return	794
48		5.22				F	R0							793
49		5.05												792
50		6.62				F	R1-R2					LIMESTONE: micrite; white (N8); recrystallized calcite. [Glen Rose Formation]		791
51		3.52	8	4.9 5.0	98				2003-8			SHALE: with interbedded micrite (10Y 7/1); massive; 0.1'-0.2' layers of micrite every 0.6'-1'; slight reaction to HCl; micrite shows strong reaction to HCl. [Glen Rose Formation]	greenish gray water return	790
52		4.4				F	R2							789
53		6.9												788
54		2.22										LIMESTONE: micrite; white (N8); fresh (F); weak (R2); rip-up clasts common. [Glen Rose Formation]		787
55		2.2				F	R2							786
56		5.8	9	4.9 5.0	98									785
57		7.3							2003-9			SHALE: with interbedded limestone; greenish gray (10Y 6/1); massive; limestone 0.1' thick; fresh (F); very weak (R1); moderate reaction to HCl. [Glen Rose Formation]		784
58		10.95				F	R2							783
		5.3	10	5.0 5.0	100	F						Micrite interbed 58.5'-59.3'.		



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**ROCK LOG**  
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
59		9.77	10	5.0 5.0	100	F	R1-R2					Micrite interbed 58.5'-59.3'.		782
60		6.68				F	R1							
61		2.78										LIMESTONE: micrite/wackestone with interbedded shale; white (N8); fresh (F); weak (R2); shale occurs in 0.01' thick layers and surrounding rip-up clasts, and in 0.1'-0.01' thick non-planar layers. [Glen Rose Formation]		780
62		3.13				F	R2		2003-10					779
63		2.38												778
64		2.42										Common shale layers are thin (0.001'), rip-up clasts are dominant structure.		777
65		2.47	11	5.0 5.0	100	F	R2		2003-11					776
66		2.46												775
67		3.6												774
68		2.37												773
69		1.07										Shale is weathered.		772
70		2.62	12	5.0 5.0	100	F	R2							771
71		2.98												770
72		1.9												769
73		1.38	13	5.0 5.0	100	F	R2		2003-12					768

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**ROCK LOG**  
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
74		2.12												767
75		1.12							2003-13					766
76			13	5.0 5.0	100	F	R2							765
77		2.33												764
78		2.58												763
79		1.32												762
80		0.72												761
81		1.9	14	5.0 5.0	100	F	R2							760
82		1.92												759
83		1.62							2003-14					758
84		1.47												757
85		1.18												756
86		1.33	15	5.0 5.0	100	F	R2							755
87		1.83												754
88		1.38							2003-15					753
		1.31	16	5.0 5.0	100	F	R2							

LIMESTONE: micrite/wackestone with interbedded shale; white (N8); fresh (F); weak (R2); shale occurs in 0.01' thick layers and surrounding rip-up clasts, and in 0.1'-0.01' thick non-planar layers. [Glen Rose Formation]  
 Small calcite crystals on limestone.

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**ROCK LOG**  
**Boring No. B-2003**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
89		1.18										LIMESTONE: micrite/wackestone with interbedded shale; white (N8); fresh (F); weak (R2); shale occurs in 0.01' thick layers and surrounding rip-up clasts, and in 0.1'-0.01' thick non-planar layers. [Glen Rose Formation]		752
90		1.73												751
91			16	5.0 5.0	100	F	R2		2003-16					750
92		1.87												749
93		1.27												748
94		3.68										Shaly zones 0.5'-1.0' thick, separated by micrite/wackestone with trace shale.	K. Krug Ceases logging, T Cambell begins logging	747
95		1.1												746
96		3.13	17	5.0 5.0	100	F-SW	R2		2003-17					745
97		2.02												744
98		3.03												743
99		2.63										Increased fossil content.		742
100		1.18										LIMESTONE: micrite/wackestone; white (N9); few shale layers (0.001'-0.1' thick), fresh to slightly weathered; rip-up clasts common, strong effervescence.		741
101		1.42	18	5.2 5.0	100	F	R2							740
102		2.02											Length of recovery stretched due to mechanical breaks.	739
103		2.38												738
103		1.47	19	5.0 5.0	100	F	R1-R2							738

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2003</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
104		0.87										LIMESTONE: micrite/wackestone; white (N9); few shale layers (0.001'-0.1' thick), fresh to slightly weathered; rip-up clasts common, strong effervescence.		737
105		2.1												736
106			19	5.0 5.0	100	F	R1-R2					SHALE: fresh; very weak (R1); common rip-up clasts; trace fossils. [Glen Rose Formation]		735
107		2.2												734
108														733
109		1.18										LIMESTONE: micrite/wackestone; white (N8); with few shale beds; trace fossils; rip-up clasts; strong reaction to HCl; weak to medium strong (R2-R3); Shaly zone at 113.0'. [Glen Rose Formation]		732
110		1.43												731
111		1.48	20	5.0 5.0	100	F	R2							730
112		2.18												729
113		1.98												728
114												Shaly zone at 113'.		727
115		1.55												726
116		1.22												725
117		1.47	21	5.0 5.0	100	F	R3							724
118		1.3												723
		2.1												
		2.02	22	5.0 5.0	100	F	R3						No breaks in sample except last 1"	

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**ROCK LOG**  
**Boring No. B-2003**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
119		1.37												722
120		1.53							2003-22					721
121		2.83	22	5.0 5.0	100	F	R3							720
122		2.28												719
123		1.97												718
124		4.85				F	R0							717
125		8.2	23	5.0 5.0	100	F	R3					SHALE: very dark greenish gray (5GY 4/1), fresh (F), extremely weak (R0). [Glen Rose Formation]		716
126		3.38				F	R3		2003-23					715
127		6.75				F	R3					LIMESTONE: micrite/wackestone; white (N8); medium strong (R3); fresh (F); shale filled vugs; strong effervescence. [Glen Rose Formation]		714
128		4.13				F	R0					SHALE: very dark greenish gray (5GY 4/1); fresh (F); extremely weak (R0); weak effervescence. [Glen Rose Formation]		713
129		2.4							2003-24					712
130		1.4	24	5.0 5.0	100	F	R0-R2					LIMESTONE: micrite/wackestone; White(N9); fresh (F); weak (R2); strong reaction to HCl; common rip-up clasts; fossils; strong effervescence. [Glen Rose Formation]		711
131		2.97				F	R0-R2							710
132		4.57												709
133		1.72	25	5.0 5.0	100	F	R0-R2							708

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-2003</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
134		2.27							2003-25			LIMESTONE: micrite/wackestone; White(N9); fresh (F); weak (R2); strong reaction to HCl; common rip-up clasts; fossils; strong effervescence. [Glen Rose Formation]		707
135		1.28												706
136			25	5.0 5.0	100	F	R0-R2							705
137		2.73												704
138		2.35												703
139		2.05											702	
140		2.58											701	
141		3.67	26	5.0 5.0	100	F	R0-R2						700	
142		4.07											699	
143		5.6							2003-26				698	
144		4.65										Shale/mudstone layer from 143.6'-144.3'.	697	
145		2.8											696	
146		3.6	27	5.0 5.0	100	F	R0-R2						695	
147		5.9											694	
148		6.93										Increased shale content 147.5'-148.0'.	693	
		3.48	28	5.0 5.0	100	F	R1					End drilling 11/13/06: Begin Drilling 11/14/06		

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-2003</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
149		3.47										LIMESTONE: micrite; greenish gray (5GY 6/1) with interbedded mudstone; contact with mudstone gradational throughout; fresh (F); very weak (R1); slight reaction to HCl. [Glen Rose Formation]		692
150		1.92											Light greenish gray water return	691
151			28	5.0 5.0	100	F	R1							690
152		2.27												689
153		6.83												688
154		6.83										LIMESTONE: wackestone; white (N9); abundant rip-up clasts; color as above; common fossils and fossil grains; strong effervescence throughout except weak effervescence 157.5'-158.0'; fresh (F); very weak (R1). [Glen Rose Formation]		687
155		2.87												686
156		3.08	29	5.0 5.0	100					2003-28				685
157		3.23				F	R1							684
158		3.07												683
159		4.55										LIMESTONE: wackestone; white(N9); mud in 0.001' thick layers; fresh (F); very weak (R1); fossil content increases with depth; strong reaction to HCl. [Glen Rose Formation]		682
160		2.18								2003-29				681
161		2.2	30	5.0 5.0	100							LIMESTONE: wackestone; white (N9); fresh (F); very weak (R1); mud in very thin laminae(0.001 thick); strong effervescence. [Glen Rose Formation]		680
162		2				F	R1							679
163		3.18												678
		3.37	31	5.0 5.0	100	F	R2							

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-2003</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
164		3.6										LIMESTONE: wackestone; light greenish gray (5 GY 8/1); weak (R2); fresh (F); sparse ooids; rip-up clasts common; sparse fossils; strong reaction to HCl. [Glen Rose Formation]		677
165		2.8												676
166			31	5.0 5.0	100	F	R2							675
167		2.73												674
168		2.87												673
169		4.35								2003-30		MUDSTONE: bluish gray (5B 7/1); common rip-up clasts; micrite inclusions common up to one inch in diameter; very weak (R1); fresh (F); slight effervescence. [Glen Rose Formation] Few calcite grains.		672
170		4.02												671
171		3.62	32	5.0 5.0	100							LIMESTONE: micrite/wackestone; white (N9); with thin laminae of shale (.001' thick) in small groupings; 0.5" to 8" apart; common rip-up clasts throughout; sparse fossils and fossil clasts; few calcite grains. [Glen Rose Formation]		670
172		2.75				F	R1							669
173		2.83												668
174		4.35										LIMESTONE: wackestone; light greenish gray (5 GY 8/1); very weak (R1); fresh (F); sparse ooids; rip-up clasts common; sparse fossils; strong reaction to HCl; increase mud content. [Glen Rose Formation]		667
175		1.68												666
176		0.75	33	5.0 5.0	100	F	R1							665
177		0.75												664
178		2												663
		2.32	34	5.0 5.0	100	F	R3							



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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
179		2.98										LIMESTONE: micrite; white (N9); common rip-up clasts; mud-layers 0.001' thick; fresh (F); medium strong (R3); strong effervescence; trace coarse, subangular to subrounded quartz grains. [Glen Rose Formation]		662
180		2.53												661
181		5.18	34	5.0 5.0	100	F	R3							660
182		3.72												659
183		4												658
184		2.57											Recovered 4' for run; tried to pull extra 1' sample no recovery, will take 3' core 188-191	657
185		1.95	35	5.0 5.0	100	F	R1							656
186		1.82												655
187		8.52										SHALE: very dark greenish gray (5GY 4/1); fresh (F); very weak (R1); common rip-up clasts; trace fossils; common very fine grained, subangular quartz crystals, evenly distributed. [Glen Rose Formation]		654
188		7.82										LIMESTONE: micrite; white (N9); common rip-up clasts; mud-layers 0.001' thick; trace quartz grains; fresh (F); medium strong (R3); strong effervescence. [Glen Rose Formation]		653
189		2.57				F	R3							652
190		3.18	36	5.0 5.0	100	F	R1							651
191		5.13				F	R1					SHALE: very dark greenish gray (5GY 4/1); fresh (F); very weak (R1); common rip-up clasts; trace fossils. [Glen Rose Formation]		650
192		2.75				F	R2					LIMESTONE: Wackestone; greenish gray (5GY 6/1); common rip-up clasts; fresh (F); weak (R2). [Glen Rose Formation]		649
193		8.55	37	5.0 5.0	100	F	R3							648

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
194		3.08				F	R3					LIMESTONE: micrite; few rip-up clasts with sub-horizontal bedding planes; fresh (F); medium strong (R3); common shale beds. [Glen Rose Formation]		647
195		0.95		5.0	100							SANDSTONE: greenish gray (5GY 6/1); very fine grained; angular to sub angular; well sorted; trace pyrite; no reaction to HCl; very weak (R1); fresh (F); interbedded with shale below 196.4'. [Glen Rose Formation]		646
196		3.63	37	5.0										645
197		6.5				F	R1							644
198		1.5												643
199		1.03				F	R0					SANDSTONE: white (N9); fine grained; subangular; slight reaction to HCl; extremely weak (R0); fresh (F); common black calcite (?) grains; very fine to coarse; massive; trace clay layers. [Glen Rose Formation]		642
200		4.4	38	5.0	100						2003-33	SHALE: interbedded with limestone rip-ups; and unconsolidated clay rich sand; fresh (F); weak (R2); gradational basal contact; moderate reaction to HCl. [Glen Rose Formation]		641
201		4.13				F	R2							640
202		4.18												639
203		3.52				F	R1					SANDSTONE: greenish gray (5GY 6/1); very fine grained; angular to sub angular; well sorted; trace pyrite; slight to strong reaction to HCl; very weak (R1); fresh (F); common rip-up clasts. [Glen Rose Formation]		638
204		3.02												637
205		2.82	39	4.9	100									636
206		2.23		5.0		F	R1-R2					SANDSTONE: white (N9); very fine grained; subangular; well sorted; trace pyrite; with medium gray (N5) calcite (?) grains; common rip-up clasts and few subhorizontal bedding planes; some interbedded shale; moderate to strong effervescence. [Glen Rose Formation]		635
207		3.05												634
208		4	40	4.9	100	F	R2							633

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
209		2.52										SANDSTONE: white (N9); very fine grained; subangular; well sorted; trace pyrite; with medium gray (N5) calcite (?) grains; common rip-up clasts and few subhorizontal bedding planes; some interbedded shale; moderate to strong effervescence. [Glen Rose Formation]		632
210		2												631
211			40	4.9 5.0	100	F	R2							630
212		3.12												629
213		2.3												628
214		3.55								2003-34			Subhorizontal bedding absent below 213.6'.	627
215		2.65												626
216		1.92	41	5.0 5.0	100	F	R2						SANDSTONE: with common micrite rip-up clasts; strong effervescence throughout sample; trace pyrite; very fine grained; subangular; well sorted; micrite is in clasts up to 3" diameter; trace pyrite and shell hash; fresh (F); weak (R2). [Glen Rose Formation]	625
217		2.75												624
218		2.03											Few fossiliferous shale layers, especially 218.0'-218.5'.	623
219		4.18											622	
220		2.67											621	
221		1.43	42	5.0 5.0	100	F	R2					SANDSTONE: white (N9); with common micrite rip-up clasts; weak effervescence; sand is very fine grained; fresh (F); extremely weak (R0); subangular with few carbonate grains; micrite occurs in clasts up to 3" diameter; trace fine shell hash; sharp basal contact. [Glen Rose Formation]	620	
222		1.35											619	
223		2.42											618	
		3.48	43	4.5 5.0	100	F	R0							

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
224		0.3										SAND: greenish gray (5 GY 6/1); very poorly cemented; very friable; fine grained; very well sorted; subangular; fresh (F); extremely weak (R0); uniform; core holds together but easily crushed with minor pressure; does not effervesce; gradational basal contact. [Glen Rose Formation]		617
225		0.2												616
226		43	4.5 5.0	100	F	R0			2003-35					615
227		1.4												614
228		2.43								2003-36			613	
229		1.13										SANDSTONE: dark greenish gray (5 GY 4/1); interbedded with shale/mudstone clasts; sand is very fine to fine; common shell hash but whole shells rare; sandstone strongly effervesces; mudstone shows no to slight effervescence; abundant sinusoidal bedding. [Glen Rose Formation]  Color change to white (N9), 230.0'-230.6'; sample grading to noneffervescent shale below 231.6.	612	
230		2.7												611
231		3.23	44	5.0 5.0	100	F	R2						610	
232		9.28											609	
233		7.17										SHALE: highly fractured; horizontal to subhorizontal bedding; soft; friable; fresh to slightly weathered (F-SW); extremely weak (R0). [Glen Rose Formation]	608	
234		5				F	R2						607	
235		3.53								2003-37			606	
236		2.57	45	4.6 5.0	92							SANDSTONE: very dark greenish gray (5GY 3/1); abundant limestone clasts; strong effervescence throughout unit; trace calcite grains; bedding is generally horizontal to subhorizontal; fresh (F); weak to medium strong (R2-R3). [Glen Rose Formation]	605	
237		3.27				F	R2-R3							604
238		3.95												603
		2.82	46	5.0 5.0	100	F	R4						End drilling 11/14/06: Begin Drilling 11/15/06 K	


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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
239		12.8				F	R4					LIMESTONE: Wackestone; white (N8); rip-up clasts dominate texture; fresh (F); strong (R4); fossil rich. [Glen Rose Formation]	Krug Logging again	602
240		5.77										SHALE: Black (N1); very thin bedding; very weak (R1). [Glen Rose Formation]		601
241			46	5.0 5.0	100									600
242		4.65				F	R1							599
243		3.75												598
244		2.65												597
245		2.2										SANDSTONE: Grayish green (10GY 6/1); fine grained; well rounded and well sorted; clay matrix; no reaction to HCl; fresh (F); extremely weak (R0) Rip ups of wackestone; fossil rich. [Glen Rose Formation]		596
246			47	4.5 5.0	90	F	R0							595
247		2.32												594
248		0.6												593
249		0.67												592
250		0.77											11/15/06- core barrel stuck in hole	591
251		1.02	48	5.0 5.0		F	R0							590
252		0.62											Outer barrel stuck in hole- hole called at 253' B-2003 offset drilled to total depth of 400' to replace this boring	589
253		0.62												588
												BOTTOM OF HOLE AT 253'		

Project Name and Job Number TXU Comache Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-2004</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'08.74045"N / 97°47'32.27067"W		Total Depth 300 feet	
Drilling Contractor and Rig Fugro / CME 45C		Elevation and Datum 850.528 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 8.8 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 4	Date Started 11/19/06	
		Borehole Inclination Vertical	Logged by R. Turner	Date Completed 11/28/06	

Reviewed by / Date J.Wesling 12/5/06

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
0							<b>RESIDUAL SOIL (RS)</b> LEAN CLAY stiff, pale yellow (2.5Y7/3), angular grains, few calcareous deposits, strong reaction to HCl		850
1			B-2004 1	33					849
2				47	18/18	2.5			848
3				71					847
4	CL		B-2004 2	22			very pale brown (10YR8/4), becomes silty near 4.5'		846
5				16	18/18	4.51			845
6				14					844
7			B-2004 3	22	10/10	4.51	hard, light yellowish brown to brownish yellow (10YR6/4 to 6/8), sandier near 7.0'		843
8				50/4"					842
9			B-2004 4	4	4/4	4.51	light yellowish brown, (2.5Y6/4)	Augered to 10' to set casing	841
10								Bedrock at 8.8'	840
11									839
12									838
13									837
14									836
15									

Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. B-2004</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'08.74045"N / 97°47'32.27067"W		Total Depth 300 feet	
Drilling Contractor and Rig Fugro / CME-45c		Elevation and Datum 850.528 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 8.8 feet	
Casing Size and Depth 4 inch / 10 feet		Length of Core Barrel and Bit 13.6 feet	No. of Core Boxes 20	Date Started 11/19/06	
		Borehole Inclination Vertical	Logged by R.Turner	Date Completed 11/28/06	

Reviewed by / Date J.Wesling 12/5/06

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
10		1.8	1	$\frac{1.0}{1.0}$	100							LIMESTONE: micrite; sparitic; light yellowish gray (5Y 8/1); massive; slightly weathered (SW); strong (R4); strong reaction to HCl; interbeds of brown claystone up to 2.0" thick. [Glen Rose Formation]		840
11		1.13							2004-5					839
12		2				SW	R4						Crush Zone	838
13		1.87	2	$\frac{5.3}{5.0}$	100								Length of recovery stretched due to mechanical breaks.	837
14		0.97												836
15		2.37										SHALE: calcareous; medium gray to medium dark gray (N5 to N4); very thin beds; slightly weathered (SW); very weak to weak (R1 to R2); damp; slight reaction to HCl; interbed of wackestone 4.5" thick. [Glen Rose Formation]		835
16		2												834
17		0.75												833
18		2.35	3	$\frac{4.7}{5.0}$	94									832
19		4.63				SW	R1-R2							831
20		2.58							2004-6					830
21		5.67											Shale becomes less calcareous and softer; no reaction to HCl; very weak (R1).	829
22		4.1							2004-7					828
23		1.97	4	$\frac{4.9}{5.0}$	98						JO, He, R3 JO, He, R4	LIMESTONE: micrite; sparitic; very light gray (N8); massive; abundant bivalve fossils; slightly weathered (SW); strong (R4); violent reaction to HCl. [Glen Rose Formation]		827
24		1.5				F	R2							826

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2004</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
25		1.7	4	4.9 5.0	98	F	R2					SHALE: calcareous; medium dark gray (N4); thin beds; few fossils; slightly bioturbated; fresh (F); weak (R2); dry; slight to violent reaction to HCl. [Glen Rose Formation]		825
26		2.15										LIMESTONE: wackestone; medium gray (N5); thin beds; few fossils; slightly bioturbated; fresh (F); weak (R2); dry; slight to violent reaction to HCl. [Glen Rose Formation]		824
27		2.25				F	R2							823
28														
29		1.87	5	4.9 5.0	98					2004-8				822
30		2.17				F	R1-R2					SHALE: medium dark gray (N4); very thin beds; fresh (F); very weak to weak (R1 to R2); damp; slight to no reaction to HCl. [Glen Rose Formation]		821
31		3.07												820
32		1.33										LIMESTONE: wackestone; very light gray to medium dark gray (N8 to N4); thin beds; shaly intervals up to 7.0" thick, some bioturbated; fresh (F); weak (R2); dry; strong to violent reaction to HCl. [Glen Rose Formation]		819
33		1.77												818
34		1.83	6	5.0 5.0	100					2004-9	BJ, T1, R4			817
35		0.75												816
36		1.4				F	R2							815
37		1.83												814
38		1.23	7	5.1 5.0	100							Becomes lighter; very light gray to medium gray (N8 to N5); no shaly intervals.		813
39		1.07								2004-10				812
40		0.53											Length of recovery stretched due to mechanical breaks.	811



Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-2004**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
40		0.68	7	5.1 5.0	100	F	R2							810
41		1.5											End of drilling 11/19/06; Begin drilling 11/20/06	809
42		1.73												808
43		4.08	8	4.2 5.0	84	F	R1							807
44		5.02							2004-11					806
45		2.65											Good water return	805
46		1.15												804
47		2.23							2004-12		JO, He, R6			803
48		2.3	9	5.0 5.0	100	F	R1-R2							802
49		2.53												801
50		1.78												800
51		2.47												799
52		1.87							2004-13					798
53		4.02	10	4.7 5.0	94	F	R1							797
54		4.47												796

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2004</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
55		5.37	10	4.7 5.0	94	F	R1					SHALE: medium dark gray to dark gray (N4 to N3); very thin beds; traces of pyrite; fresh (F); very weak (R1); damp; slight reaction to HCl. [Glen Rose Formation]		795
56		1.98				F	R2					LIMESTONE: wackestone; very light gray to medium light gray (N8 to N6); thin beds; bivalve fossils; fresh (F); weak (R2); dry; violent reaction to HCl. [Glen Rose Formation]		794
57		4.37									BJ, Ti, R4	SHALE: medium dark gray (N4); very thin beds; interbeds of wackestone 0.4" to 1.0" thick; fresh (F); very weak (R1); damp; very slight reaction to HCl. [Glen Rose Formation]		793
58		2.88	11	5.0 5.0	100	F	R1		2004-14				792	
59		4.68											791	
60		2.95											790	
61		1.38				F	R1-R2					LIMESTONE: wackestone; very light gray to medium gray (N8 to N5); thin beds; very thin interbeds of shale; fresh (F); very weak to weak (R1 to R2); violent reaction to HCl; dry. [Glen Rose Formation]		789
62		2.68											788	
63		3.92	12	5.0 5.0	100	F	R1		2004-15			SHALE: medium dark gray (N4); very thin beds; fresh (F); very weak (R1); strong reaction to HCl. [Glen Rose Formation]		787
64		4.23											786	
65		3.65											785	
66		1.58				F	R1-R2					LIMESTONE: wackestone; very light gray to medium gray (N8 to N5); thin convoluted beds; shale seams; fresh (F); very weak to weak (R1 to R2); violent reaction to HCl. [Glen Rose Formation]		784
67		4.33				F	R1					SHALE: medium dark gray (N4); very thin beds; fresh (F); very weak (R1); strong reaction to HCl. [Glen Rose Formation]		783
68		2	13	5.1 5.0	100								782	
69		1.45				F	R1-R2				BJ, Ti, R4	LIMESTONE: wackestone; very light gray to medium gray (N8 to N5); thin beds; interbeds of shale up to 2.0" thick; fresh (F); very weak to weak (R1 to R2); dry; violent reaction to HCl. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	781
70														

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
70		0.97	13	5.1 5.0	100				2004-16			LIMESTONE: wackestone; very light gray to medium gray (N8 to N5); thin beds; interbeds of shale up to 2.0" thick; fresh (F); very weak to weak (R1 to R2); dry; violent reaction to HCl. [Glen Rose Formation] Shale interbeds disappear; thin shale seams (up to 0.1") persist.		780
71		0.62												779
72		1.02												778
73														778
74		0.73	14	5.0 5.0	100							Rip-up clasts		777
75		0.8												776
76									2004-17					775
77		0.75												775
78		0.82												774
79		1.97				F	R1-R2		2004-18					773
80		2.02	15	5.0 5.0	100									772
81		1.25												771
82		2.23												770
83		1.98												769
84		1.8												768
85		0.97	16	5.0 5.0	100				2004-19					767
		1.88												766
														766

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
85		1.85	16	5.0	100							LIMESTONE: wackestone; very light gray to medium gray (N8 to N5); thin beds; interbeds of shale up to 2.0" thick; fresh (F); very weak to weak (R1 to R2); dry; violent reaction to HCl. [Glen Rose Formation]		765
86		2.73										No shale seams from 87.0' to 89.3'		764
87		0.75												763
88		0.72	17	5.0	100	F	R1-R2							762
89		1.73												761
90		1.97								2004-20				760
91		2.17												759
92		2.37				F	R1					SHALE: calcareous; medium gray (N5); convoluted beds; limestone rip-up clasts; fresh (F); very weak (R1); damp; slight to no reaction to HCl. [Glen Rose Formation]		758
93		0.75	18	5.0	100					2004-21				757
94		0.85										LIMESTONE: wackestone; very light gray to medium gray (N8 to N5); thin convoluted beds; rip-up clasts; fresh (F); weak (R2); dry; violent reaction to HCl. [Glen Rose Formation]		756
95		1.03				F	R2							755
96		1.03												754
97		3.05				F	R2					LIMESTONE: wackestone; very light gray to medium gray (N8 to N5); thin convoluted beds; few rip-up clasts; fresh (F); weak (R2); dry; violent reaction to HCl. [Glen Rose Formation]		753
98		1.67	19	5.0	100									752
99		1.78				F	R2			2004-22		LIMESTONE: wackestone; very light gray to medium gray (N8 to N5); thin beds; few rip-up clasts; fresh (F); weak (R2); dry; violent reaction to HCl. [Glen Rose Formation]		751
100														

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
100		3.02	19	5.0	100							LIMESTONE: wackestone; very light gray to medium gray (N8 to N5); thin beds; few rip-up clasts; fresh (F); weak (R2); dry; violent reaction to HCl. [Glen Rose Formation]		750
101		0.9												749
102		1.58												748
103		1.53	20	5.1	100	F	R2			2004-23		Shaly interval from 103.2' to 103.7'		747
104		1.33											Length of recovery stretched due to mechanical breaks.	746
105		1.18												745
106		1.4												744
107		1.7				F	R2			2004-24		LIMESTONE: micrite; shaly; medium light gray (N6); very thin beds; some bioturbation; fresh (F); weak (R2); dry; strong reaction to HCl. [Glen Rose Formation]		743
108		1.3	21	5.0	100	F	R2					LIMESTONE: packstone; medium to medium dark gray (N5 to N4); massive; fresh (F); weak (R2); dry; violent reaction to HCl. [Glen Rose Formation]		742
109		1.23										LIMESTONE: wackestone; very light gray to medium light gray (N8 to N6); thin beds; shaly zones 0.5" to 3.0" thick; fresh (F); weak (R2); dry; violent reaction to HCl. [Glen Rose Formation]		741
110		1.85												740
111		1.25				F	R2							739
112		2.08												738
113		0.92	22	5.0	100									737
114		1.68				F	R2			2004-25		LIMESTONE: packstone; shaly; medium dark gray (N4); abundant rip-up clasts; bivalve fossils; fresh (F); weak (R2); damp; slight to strong reaction to HCl. [Glen Rose Formation]		736
115														

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
115		3.9	22	5.0	100	F	R2							735
116		1.17				F	R2							734
117		1.53												733
118		0.85	23	4.9	98	F	R2							732
119		1.7		5.0										731
120		1.85												730
121		1.37								2004-26				729
122		1.2				F	R3			2004-27				728
123		1.05	24	5.0	99									727
124		1.97		5.0										726
125		0.77												725
126		0.97				F	R2							724
127		3.37												723
128		1.6	25	5.0	100	F	R2							722
129		1.3		5.0										721
130										2004-28				

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
130		0.98	25	5.0 5.0	100							LIMESTONE: wackestone; very light gray to medium light gray (N8 to N6); thin beds; bioturbation; fresh (F); weak (R2); violent reaction to HCl. [Glen Rose Formation]		720
131		1.42				F	R2					Rip-up clasts by 131.5'		719
132		2.33												718
133		1.93	26	5.0 5.0	100							SHALE: medium dark gray (N4); very thin beds; fresh (F); very weak (R1); no reaction to HCl; damp. [Glen Rose Formation]		717
134		4.67				F	R1							716
135		2.48										LIMESTONE: wackestone; very light gray to medium gray (N8 to N5); thin beds; shale seams; fresh (F); weak (R2); dry; violent reaction to HCl. [Glen Rose Formation]		715
136		1.92				F	R2			2004-29				714
137		4.85				F	R2					SHALE: medium gray (N5); very thin beds; fresh (F); weak (R2); damp; strong reaction to HCl. [Glen Rose Formation]		713
138		2.2	27	5.1 5.0	100	F	R1-R2					LIMESTONE: micrite; very light gray (N8); very thin beds; fresh (F); very weak to weak (R1 to R2); dry; strong reaction to HCl. [Glen Rose Formation]		712
139		2.67										LIMESTONE: wackestone; very light gray to medium light gray (N8 to N6); convoluted thin beds; rip-up clasts; fresh (F); very weak to weak (R1 to R2); dry; violent reaction to HCl. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	711
140		2.88								2004-30				710
141		2.72					R1-R2							709
142		3.03												708
143		1.52	28	4.9 5.0	98									707
144		2.05										Wackestone is highly bioturbated 143.5' to 145.0'		706
145														

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
145		1.9	28	4.9 5.0	98							LIMESTONE: wackestone; very light gray to medium light gray (N8 to N6); convoluted thin beds; rip-up clasts; fresh (F); very weak to weak (R1 to R2); dry; violent reaction to HCl. [Glen Rose Formation] From 146.0' to 149.2', wackestone is much more shaly and dark (N4) and is very bioturbated; shaly zones are weak (R1).	No sample 2004-31 recorded	705
146		2.45							2004-31					704
147		1.63				F	R1-R2							703
148		1.58	29	5.0 5.0	100							LIMESTONE: wackestone; very light gray to medium dark gray (N8 to N4); thin beds; bioturbation; shale interbeds up to 1.8" thick; fresh (F); very weak to weak (R1 to R2); dry; violent reaction to HCl. [Glen Rose Formation]		702
149		1.38												701
150		1.45												700
151		2.05										LIMESTONE: packstone; medium gray to medium dark gray (N5 to N4); thin beds; rip-up clasts; thin seams of pyritic shale; fresh (F); weak (R2); dry; strong to violent reaction to HCl. [Glen Rose Formation]		699
152		3.3				F	R1-R2		2004-32					698
153		0.97	30	5.0 5.0	100									697
154		1.37												696
155		3.83												695
156		5.15												694
157		1.8				F	R2							693
158		5.4	31	5.0 5.0	100									692
159		2.32												691
160														



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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
160		3.63	31	5.0	100	F	R2					LIMESTONE: micrite; medium gray (N5); very thin beds; fresh (F); weak (R2); dry; violent reaction to HCl. [Glen Rose Formation]		690
161		1.02				F	R2					LIMESTONE: wackestone; very light gray to medium light gray (N8 to N6); thin beds; fresh (F); weak (R2); violent reaction to HCl. [Glen Rose Formation]		689
162		1.17										LIMESTONE: packstone; light to medium gray (N7 to N5); thin beds; rip-up clasts; fresh (F); weak (R2); dry; strong reaction to HCl. [Glen Rose Formation]		688
163		1.23	32	5.1	100									687
164		0.87				F	R2						Length of recovery stretched due to mechanical breaks.	686
165		1.2												685
166		1.5								2004-33			End of drilling 11/21/06, begin drilling 11/27/06	684
167		1.62										LIMESTONE: wackestone; very light gray to medium light gray (N8 to N6); thin beds; some rip-up clasts; few bivalve fossils; subhorizontal stylolites; fresh (F); weak (R2); strong reaction to HCl; dry. [Glen Rose Formation]		683
168		1.28	33	5.0	100	F	R2							682
169		1.02												681
170		1.32												680
171		1.12										LIMESTONE: packstone; very light gray to medium gray (N8 to N5); thin beds; rip-up clasts; fossils; thin shaly seams 0.1" to 0.5"; fresh (F); weak (R2); dry; violent reaction to HCl. [Glen Rose Formation]		679
172		1.7				F	R2							678
173		1.27	34	4.8	96									677
174		1.42								2004-34				676
175														

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
175		1.43	34	4.0 5.0	96	F	R2							675
176		3.05				F	R1-R2					LIMESTONE: wackestone; shaly; light gray to medium dark gray (N7 to N4); massive with large rip-up clasts; fossils in rip-up clasts; fresh (F); very weak to weak (R1 to R2); damp; strong to violent reaction to HCl. [Glen Rose Formation]		674
177		2.5												673
178		1.03	35	5.0 5.0	100	F	R2					LIMESTONE: wackestone; very light gray to medium gray (N8 to N5); thin beds; shaly seams 0.1" to 0.6"; fresh (F); weak (R2); dry; fossils; violent reaction to HCl. [Glen Rose Formation]		672
179		0.97												671
180		1.1										LIMESTONE: wackestone; very light gray to medium gray (N6 to N8); thin wavy beds; rip-up clasts; fresh (F); weak (R2); dry; violent reaction to HCl		670
181		1.32												669
182		1.68												668
183		1.92	36	5.0 5.0	100									667
184		1.48												666
185		1.42				F	R2							665
186		1.15										Wackestone becomes lighter in color; very light gray to medium light gray (N8 to N6).		664
187		1.67												663
188		1.3	37	5.0 5.0	100									662
189		1.37										Sub-horizontal stylolites present from 189.0' to 190.1'		661

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
190	[Lithology Pattern]	1.53	37	4.6 5.0	100	F	R2					LIMESTONE: packstone; very light gray to medium gray (N8 to N5); thin beds; rip-up clasts; fossils; thin shaly seams 0.1" to 0.5"; fresh (F); weak (R2); dry; violent reaction to HCl. [Glen Rose Formation]		660
191		1.08												659
192	[Lithology Pattern]	1.37	38	4.6 5.0	92	F	R2					LIMESTONE: wackestone; very light gray to medium light gray (N8 to N6); thin beds; few fossils; fresh (F); weak (R2); dry; violent reaction to HCl. [Glen Rose Formation]		658
193		1.18												657
194	[Lithology Pattern]	1.13	38	4.6 5.0	92	F	R2					LIMESTONE: wackestone; very light gray to medium light gray (N8 to N6); thin beds; few fossils; fresh (F); weak (R2); dry; violent reaction to HCl. [Glen Rose Formation]		656
195		2.22												655
196	[Lithology Pattern]	2.58	38	4.6 5.0	92	F	R1					SHALE: medium dark gray (N4); very thin beds; few bivalve fossils; fresh (F); very weak (R1); damp; slight reaction to HCl. [Glen Rose Formation]		654
197		3.88												653
198	[Lithology Pattern]	2.27	39	5.0 5.0	100	F	R2					LIMESTONE: wackestone; very light gray to medium light gray (N8 to N6); thin beds; fresh (F); weak (R2); violent reaction to HCl. [Glen Rose Formation]		652
199		3.77												651
200	[Lithology Pattern]	1.57	39	5.0 5.0	100	F	R2					SHALE: medium dark gray (N4); very thin beds; fresh (F); very weak (R1); damp. [Glen Rose Formation] LIMESTONE: wackestone; very light gray to medium gray (N8 to N5); thin convoluted beds; shale seams up to 2.0" thick; fresh (F); weak (R2); dry; violent reaction to HCl. [Glen Rose Formation]		650
201		1.93												649
202	[Lithology Pattern]	3.63	40	4.6 5.0	92	F	R1					SHALE: calcareous; medium dark gray (N4); very thin beds; fresh (F); very weak (R1); damp; strong reaction to HCl. [Glen Rose Formation] LIMESTONE: micrite; very light gray to medium light gray (N8 to N6); very thin beds; fresh (F); weak (R2); dry; violent reaction to HCl. [Glen Rose Formation]		648
203		1.42												647
204	[Lithology Pattern]	2.08	40	4.6 5.0	92	F	R1					SANDSTONE: fine grained; medium bluish gray (5B 7/1); rip-up clasts; thin beds; fresh (F); very weak (R1); dry; no reaction to HCl. [Glen Rose Formation]		646
205														

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
205		2.32	40	<del>4.6</del> 5.0	92	F	R1					SHALE: medium dark gray (N4); very thin beds; coal clasts; fresh (F); very weak (R1); damp; very slight reaction to HCl. [Glen Rose Formation]		645
206		2.75				F	R1							644
207		2.93				F	R2					LIMESTONE: packstone; medium light gray to medium dark gray (N7 to N4); thin beds; shale seams up to 0.2" thick; bivalve fossils; fresh (F); dry; weak (R2); violent reaction to HCl. [Glen Rose Formation]		643
208		2.75	41	<del>4.7</del> 5.0	94	F	R2							642
209		3.35				F	R1					SANDSTONE: fine grained; medium bluish gray (5B 7/1); rip-up clasts; thin beds; fresh (F); very weak (R1); dry; no reaction to HCl. [Glen Rose Formation]		641
210		3.2				F	R1					SHALE: medium dark gray (N4); very thin beds; fresh (F); very weak (R1); damp; no reaction to HCl. [Glen Rose Formation]		640
211		2.08				F	R2					SANDSTONE		639
212		2.27				F	R2					SHALE: sandy; medium gray to medium dark gray (N5 to N4); very thin beds; fresh (F); very weak (R1); damp; slight reaction to HCl		638
213		1.98	42	<del>4.8</del> 5.0	96							LIMESTONE: packstone; very light gray to medium dark gray (N8 to N4); thinly bedded to massive; micritic interbeds; fresh (F); weak (R2); dry; strong reaction to HCl. [Glen Rose Formation]		637
214		3.68										LIMESTONE: wackestone; very light gray to medium dark gray (N8 to N4); thin wavy to convoluted beds; fresh (F); weak (R2); dry; violent reaction to HCl. [Glen Rose Formation]		636
215		6.13										Wackestone becomes micritic at 214.0'.		635
216		5.15				F	R2					By 216.4' wackestone is less micritic.		634
217		6.33										Rip-up clasts from 217.1' to 218.3'.		633
218		1.77	43	<del>5.0</del> 5.0	100									632
219		1.53												631
220														

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
220		2.45	43	5.0 5.0	100							LIMESTONE: wackestone; very light gray to medium dark gray (N8 to N4); thin wavy to convoluted beds; fresh (F); weak (R2); dry; violent reaction to HCl. [Glen Rose Formation] Micritic zone from 220.7' to 221.7'; many interbeds of medium dark gray (N4) micrite.		630
221		4.25												629
222		1.37				F	R2							628
223		1.63	44	4.5 5.0	90				2004-39					627
224		1.43												626
225		1.7												625
226		2.42				F	R2							624
227		5.08				F	R1							623
228		1.47	45	5.0 5.0	100									622
229		2.17												621
230		2.02											620	
231		1.58				F	R1					Photo of run 46 shows 2.7'/5.0' recovery; went back and retrieved what fell out of the barrel for 4.8'/5.0'	619	
232		0.67											618	
233		0.32	46	4.8 5.0	96				2004-40			Sandstone becomes poorly cemented by 232.2'.	617	
234		0.2											616	
235														

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
235		0.25	46	4.8 5.0	96	F	R1							615
236		0.52				F	R1					SHALE: sandy; medium dark gray (N4); very thin beds; sand lenses; fresh (F); very weak (R1); damp; no reaction to HCl. [Twin Mountain Formation]		614
237		1.17				F	R1					SANDSTONE: silty sandstone; medium bluish gray (5B 5/1); massive; fresh (F); very weak (R1); damp; no reaction to HCl. [Twin Mountain Formation]		613
238		2.2	47	4.5 5.0	90	F	R1					SHALE: sandy; medium dark gray (N4); very thin beds; fresh (F); very weak (R1); damp; no reaction to HCl. [Twin Mountain Formation]		612
239		0.67										SANDSTONE: silty sandstone; medium bluish gray (5B 5/1); massive; fresh (F); very weak (R1); damp; no reaction to HCl. [Twin Mountain Formation]		611
240		1.05				F	R1							610
241		1.28												609
242		6.07				F	R1					SHALE: medium dark gray (N4); very thin beds; fresh (F); very weak (R1); damp; no reaction to HCl. [Twin Mountain Formation]		608
243		5.73	48	4.9 5.0	98					2004-41		LIMESTONE: wackestone; very light gray to medium gray (N8 to N5); thin beds; bioturbated; fresh (F); weak (R2); dry; strong reaction to HCl; shaly. [Twin Mountain Formation]		607
244		5.1												606
245		7.58												605
246		2.23				F	R2							604
247		1.58												603
248		2.73	49	4.8 5.0	96									602
249		5.02				F	R1					SHALE: medium dark gray (N4); very thin beds; fresh (F); very weak (R1); damp; no reaction to HCl; bioturbated. [Twin Mountain Formation]		601
250														

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-2004**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
250		4.88	49	4.8 5.0	96							SHALE: medium dark gray (N4); very thin beds; fresh (F); very weak (R1); damp; strong reaction to HCl. [Twin Mountain Formation]		600
251		4.3				F	R1							599
252		3.97												598
253		1.08	50	5.0 5.0	100	F	R2		2004-42			LIMESTONE: packstone; light gray to medium gray (N7 to N5); thin convoluted beds; rip-up clasts; fresh (F); weak (R2); violent reaction to HCl. [Twin Mountain Formation]		597
254		1.38				F	R1					SANDSTONE: medium light gray to medium dark gray (N6 to N4); massive; fresh (F); very weak (R1); damp; very slight reaction to HCl; coal clasts. [Twin Mountain Formation]		596
255		1.4												595
256		6.67										SANDSTONE: fine grained; medium light gray (N6); massive; fresh (F); very weak (R1); damp; no reaction to HCl. [Twin Mountain Formation]		594
257		0.43												593
258		0.4	51	5.0 5.0	10									592
259		2.62												591
260		2.2				F	R1					Sandstone is thinly bedded from 259.8' to 261.7'.		590
261		0.8												589
262		0.58												588
263		1.02	52	5.0 5.0	100									587
264		3.15												586
265									2004-43				Shaly zone in sandstone 264.3' to 264.7'.	

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**ROCK LOG**  
**Boring No. B-2004**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
265		1.47	52	5.0 5.0	100							SANDSTONE: fine grained; medium light gray (N6); massive; fresh (F); very weak (R1); damp; no reaction to HCl. [Twin Mountain Formation]		585
266		0.87												584
267		0.95												583
268		1.23	53	4.9 5.0	98									582
269		1.7				F	R1							581
270		0.83												580
271		0.68												579
272		0.38												578
273		1.2	54	4.9 5.0	98									577
274		4.4												576
275		5.45				F	R1		2004-44			SHALE: medium dark gray (N4); very thin beds; thin interbeds of fine sand up to 0.4" thick; fresh (F); very weak (R1); damp; no reaction to HCl. [Twin Mountain Formation]		575
276		1.68												574
277		1.02										SANDSTONE: fine grained; medium light gray to medium gray (N6 to N5); thin beds to 279.2'; few clasts of coal; fresh (F); very weak (R1); damp; no reaction to HCl. [Twin Mountain Formation]		573
278		0.53	55	4.8 5.0	96	F	R1							572
279		1.35												571
280												Sandstone is massive and shaly from 279.2' to 282.9'.		571



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**ROCK LOG**  
**Boring No. B-2004**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
280		1.7	55	4.8 5.0	96									570
281		1.2												569
282		1.78				F	R1							568
283		1.1	56	4.9 5.0	98				2004-45					567
284		0.92												566
285		2.02												565
286		0.4												564
287		0.73												563
288		1.58	57	4.8 5.0	96									562
289		0.7												561
290		0.9				F	R1							560
291		0.23												559
292		0.35							2004-46					558
293		0.25	58	4.5 5.0	90									557
294		0.27												556
295														


Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-2004</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
295	Dotted pattern	0.28	58	4.5 5.0	90	F	R1					SANDSTONE: shaly; medium light gray to medium gray (N6 to N5); massive; fresh (F); very weak (R1); damp; no reaction to HCl; grains in sand are primarily subrounded to rounded quartz grains. [Twin Mountain Formation] From 296.2' to 298.5' sandstone has many small (~0.1") layers of coal.		555
296		0.33												554
297		0.42												553
298		0.45	59	3.8 4.0	95									552
299		0.83												551
300														
301											BOTTOM OF HOLE AT 300'		549	
302													548	
303													547	
304													546	
305													545	
306													544	
307													543	
308													542	
309													541	
310														541

Project Name and Job Number TXU Comache Peak COL 1908		 WLA William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-2005</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'08.98107"N / 97°47'31.88572"W		Total Depth 226 feet	
Drilling Contractor and Rig Fugro / CME 45C		Elevation and Datum 848.723 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 4.6 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 2	Date Started 11/29/06	
		Borehole Inclination Vertical	Logged by R. Turner	Date Completed 12/2/06	

Reviewed by / Date \_\_\_\_\_ R.Ortiz 12/13/06

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
0									848
1	ML		B-2005 1	13	16/18		RESIDUAL SOIL (RS) SANDY SILT with calcareous deposits, very dense, yellow (2.5Y7/6), violent reaction to HCl		847
2				25					846
3				32					845
4	CL		B-2005 2	6	11/11	4.51	LEAN CLAY hard, olive yellow (2.5Y6/8) to light greenish gray (Gley1,7/1) mottles, slight to strong reaction to HCl		844
5				50/5"				Augered to 6' to set the casing.	844
6								Bedrock at 4.6'	843
7									842
8									841
9									840
10									839
11									838
12									837
13									836
14									835
15									834

Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG Boring No. B-2005</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'08.98107"N / 97°47'31.88572"W		Total Depth 226 feet	
Drilling Contractor and Rig FUGRO / CME-45C		Elevation and Datum 848.723 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 4.6 feet	
Casing Size and Depth 4.5 OD PVC / 6 feet		Length of Core Barrel and Bit 13.6 feet	No. of Core Boxes 15	Date Started 11/29/06	
		Borehole Inclination Vertical	Logged by R.Turner	Date Completed 12/2/06	

Reviewed by / Date R.Ortiz 12/13/06

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
6		1.48										SHALE: claystone; dark yellowish orange (10YR 6/6); very thinly bedded; interbeds of sparite 0.5" to 3.0" thick; moderately weathered (MW); very weak (R1); slight reaction to HCl; very soft. [Glen Rose Formation]		842
7		1.5				MW	R1							841
8		1.3	1	5.0 5.0	100				2005-3					840
9		0.93										LIMESTONE: micrite; sparry; very light gray (N8); massive; interbeds of orange claystone 1.0" to 2.0" thick; slightly weathered (SW); strong (R4); dry; violent reaction to HCl. [Glen Rose Formation]		839
10		1.43				SW	R4							838
11		1.3										SHALE: claystone; dark yellowish orange (10YR 6/6); massive; damp; moderately weathered (MW); very weak (R1); very soft; strong reaction to HCl. [Glen Rose Formation]		837
12		1.78				MW	R1							836
13		1.82	2	5.1 5.0	100	SW	R2					LIMESTONE: micrite; shaly; medium dark gray (N4) to medium light gray (N6); very thin beds; damp; weak (R2); slightly weathered (SW); strong reaction to HCl. [Glen Rose Formation]		835
14		2.02				SW	R1		2005-4				Length of recovery stretched due to mechanical breaks.	834
15		1.53				SW	R2					SHALE: medium dark gray (N4); damp; very weak (R1); slightly weathered (SW); slight reaction to HCl. [Glen Rose Formation]		833
16		1.23				SW	R2					LIMESTONE: micrite; shaly; light to medium gray (N7 to N5); very thin beds; slightly weathered (SW); weak (R2); dry; strong reaction to HCl. [Glen Rose Formation]		832
17		2.6				F	R2					LIMESTONE: packstone; medium light gray (N6); rip up clasts; thin beds; fresh (F); weak (R2); dry; strong reaction to HCl. [Glen Rose Formation]		831
18		4.78	3	5.0 5.0	100	F	R1		2005-5			SHALE: medium dark gray (N4); very thin beds; fresh (F); very weak (R1); damp; no reaction to HCl. [Glen Rose Formation]		830
19		2.92												829
20		1.93				F	R2					LIMESTONE: wackestone; medium light gray to medium gray (N6 to N5); thin beds; fossils; fresh (F); weak (R2); dry; violent reaction to HCl. [Glen Rose Formation]		829
21						F	R1					SHALE: medium dark gray (N4); very thin		828

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**ROCK LOG**  
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
21		0.93										beds; fresh (F); very weak (R1); damp; no reaction to HCl. [Glen Rose Formation]		827
22		0.6				F	R4					LIMESTONE: micrite; sparitic; very light gray (N8) to light brown (5YR 6/4); thin beds; dissolution vugs at 21.5' along bedding plane; fresh (F); strong (R4); dry; violent reaction to HCl. [Glen Rose Formation]		826
23		1.53	4	5.1 5.0	100				2005-6			SHALE: sandy; medium dark gray (N4); massive; slightly weathered (SW); very weak (R1); damp; strong reaction to HCl. [Glen Rose Formation]	Crush zone caused while removing core from barrel	825
24		0.92				SW	R1						Length of recovery stretched due to mechanical breaks.	824
25		2.3										SHALE: sandy; medium to medium dark gray (N5 to N4); very thin beds; fossiliferous (bivalves); fresh (F); weak (R2); damp; no reaction to HCl. [Glen Rose Formation]		823
26		0.83												822
27		2.17				F	R2							821
28		5.48	5	5.1 5.0	100									820
29		3.17							2005-7				Length of recovery stretched due to mechanical breaks.	819
30		2.03				F	R2					LIMESTONE: packstone; very light gray to medium dark gray (N8 to N4); fossiliferous; fresh (F); weak (R2); dry. [Glen Rose Formation]		818
31		1.82				F	R2					LIMESTONE: micrite; medium dark gray (N4); massive; fresh (F); weak (R2); dry; strong reaction to HCl. [Glen Rose Formation]		817
32		2.25							2005-8			LIMESTONE: wackestone; very light gray to light gray (N7 to N8); thin beds; interbeds of shaly micrite 1.4" to 1.5" thick; fossiliferous near 31.5'; fresh (F); weak (R2); dry; violent reaction to HCl. [Glen Rose Formation]		816
33		0.8	6	5.0 5.0	100	F	R2							815
34		1.63												814
35		1.02				F	R1					LIMESTONE: packstone; shaly; medium dark gray (N4); massive; fresh (F); very weak (R1); strong reaction to HCl. [Glen Rose Formation]	Crush zone caused while removing core from barrel	813
36						F								

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-2005</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
36		2.37										LIMESTONE; wackestone; very light gray to medium dark gray (N8 to N4); fresh (F); weak (R2); thin beds; small rip up clasts. [Glen Rose Formation]		812
37		1.92												811
38		1.07	7	5.0	100									810
39		1.95				F	R2		2005-9					810
40		2.7												809
41		3.03												808
42		4												807
43		3.62	8	5.1	100	F	R1					SHALE: medium dark gray (N4); very thin beds; interbeds of limestone 0.5" to 0.9" thick; fresh (F); very weak (R1); slight reaction to HCl; damp. [Glen Rose Formation]		806
44		1.48												805
45		1.53				F	R2					LIMESTONE: wackestone; very light gray (N8); thin beds; fresh (F); weak (R2); dry; violent reaction to HCl. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	804
46		1.58							2005-10			LIMESTONE: wackestone; shaly; very light gray to medium gray (N8 to N5); thin beds; rip up clasts; interbeds of shale 0.5" to 2.9" thick; fresh (F); very weak to weak (R1 to R2); dry; slight to violent reaction to HCl; gastropod and bivalve fossils. [Glen Rose Formation]		803
47		2.93												802
48		1.62	9	5.0	100	F	R1-R2							801
49		2.65							2005-11					800
50		2.47												799
51														798

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
51		1.87				F								797
52		3.68										SHALE: medium dark gray (N4); very thin beds; fresh (F); very weak (R1); no reaction to HCl; traces of pyrite near 52.4' and 54.9'. [Glen Rose Formation]		796
53		4.8	10	5.0 5.0	100	F	R1							795
54		4.98												794
55		2.38								2005-12				793
56		5.02				F	R2					LIMESTONE: wackestone; micritic; light to medium light gray (N8 to N6); fresh (F); weak (R2); dry; violent reaction to HCl. [Glen Rose Formation]		792
57		4.43				F	R1					SHALE: pyritic; medium dark gray (N4); very thin beds; interbeds of limestone 0.5" to 2.0" thick; fresh (F); very weak (R1); no reaction to HCl; damp. [Glen Rose Formation]		791
58		7.7	11	5.0 5.0	100									790
59		2.56				F	R2					LIMESTONE; wackestone; very light gray to light gray (N8 to N7); thin beds; rip up clasts; dry; fresh (F); weak (R2); violent reaction to HCl. [Glen Rose Formation]		789
60		2.57				F	R2			2005-13		LIMESTONE: wackestone; very light gray to medium light gray (N8 to N6); thin beds; fresh (F); weak (R2); dry; violent reaction to HCl. [Glen Rose Formation]		788
61		2.42												787
62		5.37				F	R1					SHALE: pyritic; medium dark gray (N4); very thin beds; fresh (F); very weak (R1); damp; very slight reaction to HCl. [Glen Rose Formation]		786
63		2.85	12	4.9 5.0	98									785
64		3.67				F	R2							784
65		2.13				F	R1			2005-14		LIMESTONE; wackestone; very light gray to medium light gray (N8 to N6); thin beds; highly bioturbated near 64.6'; subhorizontal stylolites; fresh (F); weak (R2); dry; violent reaction to HCl; very small bivalve and gastropod fossils up to 0.1" wide. [Glen Rose Formation]		783

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
66		3.92				F	R1					SHALE: medium dark gray (N4); very thin beds; high bioturbations and fossils near 67.0'; fresh (F); very weak (R1); damp; slight reaction to HCL. [Glen Rose Formation]		782
67		3.15										LIMESTONE: wackestone; very light gray (N8); thin convoluted beds; rip up clasts; shale interbeds 0.3" to 2.5" thick; bivalve fossils; fresh (F); weak (R2); dry; violent reaction to HCl. [Glen Rose Formation]		781
68		2.73	13	4.6 5.0	98	F	R2					LIMESTONE: micrite; very light gray (N8); massive; subhorizontal stylolites; fresh (F); weak (R2); dry; strong reaction to HCl. [Glen Rose Formation]		780
69		3.78										LIMESTONE: micrite; very light gray (N8); massive; subhorizontal stylolites; fresh (F); weak (R2); dry; strong reaction to HCl. [Glen Rose Formation]		779
70		2.34				F	R2					LIMESTONE: micrite; very light gray (N8); massive; subhorizontal stylolites; fresh (F); weak (R2); dry; strong reaction to HCl. [Glen Rose Formation]		778
71									2005-15			LIMESTONE: wackestone; very light gray to medium light gray (N8 to N6); thin beds; highly bioturbated from 71.2' - 71.7'; fresh (F); weak (R2); dry; violent reaction to HCl. [Glen Rose Formation]	Gradational contact	777
72		2.15										LIMESTONE: wackestone; very light gray to medium light gray (N8 to N6); thin beds; highly bioturbated from 71.2' - 71.7'; fresh (F); weak (R2); dry; violent reaction to HCl. [Glen Rose Formation]		776
73		1.65				F	R2					LIMESTONE: wackestone; very light gray to medium light gray (N8 to N6); thin beds; highly bioturbated from 71.2' - 71.7'; fresh (F); weak (R2); dry; violent reaction to HCl. [Glen Rose Formation]		775
74		1.78	14	5.0 5.0	100							LIMESTONE: wackestone; very light gray to medium light gray (N8 to N6); thin beds; highly bioturbated from 71.2' - 71.7'; fresh (F); weak (R2); dry; violent reaction to HCl. [Glen Rose Formation]		774
75		1.5										Highly bioturbated from 74.8' to 75.5'. LIMESTONE: wackestone; very light gray to medium light gray (N8 to N6); thin beds; fresh (F); weak (R2); dry; strong reaction to HCl. [Glen Rose Formation]		773
76		2.13							2005-16			Rip up clasts from 76.2' to 76.7'.		772
77		4.18												771
78		1.3							2005-17			Highly bioturbated from 78.2' to 78.8'.		770
79		3.25	15	5.0 5.0	100	F	R2				Jo, HE, R8			769
80		1.05												768
81		1.98												768



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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
81		1.2										LIMESTONE: wackestone; very light gray to medium light gray (N8 to N6); thin beds; fresh (F); weak (R2); dry; strong reaction to HCl. [Glen Rose Formation] Highly bioturbated from 81.6' to 83.2'.		767
82		1.18												766
83		1.18	16	5.0 5.0	100									765
84		0.03								2005-18				764
85		1.15				F	R2					Wackestone is shaly from 84.8' to 85.4'.		763
86		1.43												762
87		1.67										Wackestone is shaly and highly bioturbated from 86.8' to 91.0'.		761
88		2.5	17	5.0 5.0	100					2005-19				760
89		2.92												759
90		4.07				F	R1-R2					LIMESTONE: wackestone; very light gray to medium gray (N8 to N6); thin convoluted beds; highly bioturbated; fresh (F); very weak to weak (R1 to R2); dry; violent reaction to HCl. [Glen Rose Formation]		758
91		1.1										LIMESTONE: packstone; shaly; very light gray to medium gray (N8 to N5); thin convoluted beds; bioturbated; subhorizontal stylolites; fresh (F); very weak to weak (R1 to R2); dry to slightly damp; violent reaction to HCl. [Glen Rose Formation]		757
92		1.1				F	R1-R2							756
93		1.18	18	4.9 5.0	98					2005-20				755
94		0.95												754
95		1.97				F	R1					LIMESTONE: wackestone; shaly; medium light gray to medium gray (N7 to N5); thin beds; interbeds of shale 0.2" to 1.5" thick; bivalve fossils; fresh (F); very weak (R1); slightly damp; violent reaction to HCl. [Glen Rose Formation]		753
96														

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
96		1.92										LIMESTONE: wackestone; shaly; medium light gray to medium gray (N7 to N5); thin beds; interbeds of shale 0.2" to 1.5" thick; bivalve fossils; fresh (F); very weak (R1); slightly damp; violent reaction to HCl. [Glen Rose Formation]		752
97		0.97				F	R1		2005-21					751
98												LIMESTONE: packstone; shaly; very light gray to medium gray (N8 to N5); thin beds; bioturbated; fresh (F); very weak to weak (R1 to R2); dry; strong reaction to HCl. [Glen Rose Formation]		750
99		1.8	19	5.0 5.0	100									749
100		1.42				F	R1-R2							748
101		1.32												748
102		1.3				F	R1					LIMESTONE: micrite; medium gray (N5); massive; fresh (F); very weak (R1); dry. [Glen Rose Formation]		747
103		1.37							2005-22			LIMESTONE: wackestone; shaly; medium light gray to medium gray (N7 to N5); thin beds; bioturbation; fresh (F); very weak to weak (R1 to R2); dry; violent reaction to HCl. [Glen Rose Formation]		746
104		1.05	20	5.2 5.0	100	F	R1-R2							745
105		1.7											Length of recovery stretched due to mechanical breaks.	744
106		4.17				F	R1					SHALE: medium dark gray (N4); very thin beds; fresh (F); very weak (R1); damp; no reaction to HCl. [Glen Rose Formation]		743
107		3.08										LIMESTONE: packstone; very light gray to medium gray (N8 to N5); thin beds; bioturbated from 106.6' to 107.5'; fresh (F); weak (R2); dry; strong reaction to HCl. [Glen Rose Formation]		742
108		2.6							2005-23					741
109		1.43	21	4.8 5.0	96	F	R2					Shaly from 108.6' to 109.2'.		740
110		1.4												739
111		1.88												738

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2005</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
111		0.97										LIMESTONE: packstone; very light gray to medium gray (N8 to N5); thin beds; bioturbated from 106.6' to 107.5'; fresh (F); weak (R2); dry; strong reaction to HCl. [Glen Rose Formation]		737
112		2.63				F	R2					Grains and clasts in packstone are very coarse from 111.4' to 113.7'; this zone also has up to 50% shale and only has a slight reaction to HCl.		736
113		2.03	22	4.9 5.0	98									
114		1.87				F	R2		2005-24			LIMESTONE: micrite; medium light gray (N6); massive; bioturbated; fresh (F); weak (R2); dry; violent reaction to HCl. [Glen Rose Formation]		735
115		1.68										LIMESTONE: wackestone; very light gray to medium gray (N8 to N5); thin beds; interbeds of shale 0.3" to 1.1" thick; fossils from 119.2' to 120.0'; also bioturbation in this zone; fresh (F); weak (R2); dry; violent reaction to HCl; slight reaction to HCl. [Glen Rose Formation]		734
116		1.3												733
117		2.187				F	R2							732
118		2.02	23	5.0 5.0	100				2005-25					731
119		1.78										Fossils, bioturbation 119.2' to 120.0'.		730
120		1.58												729
121		1.1				F	R2					LIMESTONE: micrite; medium light gray (N6); very thin beds; bioturbated; fresh (F); weak (R2); dry; strong reaction to HCl. [Glen Rose Formation]		728
122		2.3												727
123		1.68	24	4.8 5.0	95				2005-26			LIMESTONE: wackestone; very light gray to medium light gray (N8 to N6); thin beds; some bioturbation; fresh (F); weak (R2); dry; violent reaction to HCl. [Glen Rose Formation]		726
124		1.77				F	R2							725
125		2.52												724
126														723

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2005</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
126		2.02										LIMESTONE: wackestone; very light gray to medium light gray (N8 to N6); thin beds; some bioturbation; fresh (F); weak (R2); dry; violent reaction to HCl. [Glen Rose Formation]		722
127		1.98							2005-27					721
128		1.3	25	5.0 5.0	100									720
129		2.33				F	R2				Jo, HE, R7			719
130		2.43												718
131		3.08							2005-28					717
132		4.23												716
133		4.13	26	4.9 5.0	98	F	R1					SHALE: medium dark gray to dark gray (N4 to N3); very thin beds; bivalve fossils; coal clasts; fresh (F); very weak (R1); damp; no reaction to HCl. [Glen Rose Formation]		715
134		2.57				F	R2					LIMESTONE: wackestone; very light gray to medium light gray (N8 to N6); thin beds; bioturbated; fresh (F); weak (R2); dry; violent reaction to HCl. [Glen Rose Formation]		714
135		5.28				F	R2					LIMESTONE: micrite; medium light gray (N6); very thin beds to massive; fresh (F); weak (R2); dry; strong reaction to HCl. [Glen Rose Formation]		713
136		2.78							2005-29			LIMESTONE: wackestone; very light gray to medium light gray (N8 to N6); thin beds; highly bioturbated; fresh (F); weak (R2); dry; violent reaction to HCl. [Glen Rose Formation]		712
137		3.47				F	R2							711
138		2.18	27	5.0 5.0	100									710
139		4.52				F	R1					SHALE: medium gray (N5); massive; bioturbated; fresh (F); very weak (R1); damp; no reaction to HCl. [Glen Rose Formation]		709
140		5.28				F	R2							708
141														

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2005</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
141		1.58										LIMESTONE: packstone; very light gray to medium gray (N8 to N5); thin beds; highly bioturbated; fresh (F); weak (R2); dry; violent reaction to HCl. [Glen Rose Formation]		707
142		2.67							2005-30					706
143		1.2	28	5.0	99							Shaly zone, 143.0' to 143.35'.		705
144		2.68				F	R2					Medium dark gray (N4) from 144.1' to 145.1'.		704
145		1.33												703
146		1.32												702
147		1.25							2005-31					701
148		1.08	29	5.0	100							LIMESTONE: wackestone; very light gray to medium light gray (N8 to N6); thin beds; bioturbated; few subhorizontal stylolites; fresh (F); weak (R2); dry; strong reaction to HCl. [Glen Rose Formation]		700
149		1.78				F	R2							699
150		3.92				F	R1					LIMESTONE: micrite; medium gray (N5); very thin beds; fresh (F); very weak (R1); dry; strong reaction to HCl. [Glen Rose Formation]		698
151		2.37										LIMESTONE: wackestone; very light gray to medium gray (N8 to N5); very thin to thin beds; fresh (F), weak (R2); dry; violent reaction to HCl. [Glen Rose Formation] Slightly bioturbated, 152.1' to 153.4'.		697
152		2.08												696
153		2.27	30	5.0	100	F	R2							695
154		2.92										Shaly and medium dark gray (N4) from 153.7' to 154.5'; very small (0.1") bivalve fossils in this zone.		694
155		2.7												693


Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-2005**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
156		2.93										LIMESTONE: wackestone; very light gray to medium gray (N8 to N5); very thin to thin beds; fresh (F), weak (R2); dry; violent reaction to HCl. [Glen Rose Formation]		692
157		2.85				F	R2		2005-32					691
158		3.33	31	5.0	100							LIMESTONE: micrite; medium gray (N5); very thin beds; bioturbated; fresh (F); very weak (R1); slightly damp; violent reaction to HCl; pyritic near 158.2'. [Glen Rose Formation]		690
159		1.12				F	R1							689
160		1.07										LIMESTONE: wackestone; medium light gray to medium gray (N7 to N5); thin beds; fresh (F); weak (R2); dry; violent reaction to HCl. [Glen Rose Formation]		688
161		0.97												687
162		1.12										Shaly and highly bioturbated from 162.2' to 165.4'.		686
163		1.07	32	5.0	100	F	R2							685
164		0.62												684
165		0.85												683
166		0.8										LIMESTONE: packstone; very light gray to light bluish gray (N8 to 5B 7/1); thin beds; rip up clasts; subhorizontal stylolites; slight bioturbation; fresh (F); weak (R2); strong reaction to HCl. [Glen Rose Formation]		682
167		0.87							2005-33					681
168		0.75	33	5.1	100	F	R2							680
169		0.65											Length of recovery stretched due to mechanical breaks.	679
170		1.17												678

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2005</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
171		2	34	4.6 5.0	98	F	R2					<p>LIMESTONE: packstone; very light gray to light bluish gray (N8 to 5B 7/1); thin beds; rip up clasts; subhorizontal stylolites; slight bioturbation; fresh (F); weak (R2); strong reaction to HCl. [Glen Rose Formation]</p> <p>Bivalve fossils.</p> <p>Highly bioturbated, with many small (&lt;0.1" to 0.2") bivalve fossils, 173.6' to 174'. Shale, medium dark gray (N4).</p>		677
172		1.32												676
173		1.57												675
174		1.78												674
175		2.53												673
176		1.2												672
177		0.77												671
178		0.95												670
179		0.97												669
180		1.03												668
181	0.9	35	5.0 5.0	100	F	R2					<p>LIMESTONE: wackestone; very light gray to medium light gray (N8 to N6); thin beds; slight bioturbation; subhorizontal stylolites; fresh (F); weak (R2); dry; violent reaction to HCl. [Glen Rose Formation]</p>		672	
182	1.95												671	
183	0.95												670	
184	0.98												669	
185	1												668	
186													667	
													666	
													665	
													664	
													663	

Jo, HE, R6

2005-34

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2005</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
186		2.42										LIMESTONE: wackestone; very light gray to medium gray (N8 to N6); thin beds; bioturbated from 184.3' to 186.3'; fresh (F); weak (R2); dry; violent reaction to HCl. [Glen Rose Formation]		662
187		0.92												661
188		0.6	37	5.0 5.0	100									660
189		0.58								2005-35				660
190		0.88				F	R2							659
191		1.3												658
192		1.47												657
193		1.52	38	5.0 5.0	100									656
194		3.07				F	R1				BJ, Ti	SHALE: medium dark gray (N4); very thin beds; pyritic; fresh (F); very weak (R1); damp; no reaction to HCl. [Glen Rose Formation]		655
195		3.57				F	R1					SHALE: dark gray (N3); very thin beds; fresh (F); very weak (R1); damp; no reaction to HCl. [Glen Rose Formation]		654
196		1.57								2005-36		LIMESTONE: wackestone; very light gray to medium light gray (N8 to N6); thin beds; bioturbated; bivalve fossils; fresh (F); weak (R2); dry; violent reaction to HCl. [Glen Rose Formation]		653
197		2.76				F	R2							652
198		2.7	39	4.9 5.0	98	F	R1					SHALE: medium dark gray (N4); very thin beds; fresh (F); very weak (R1); damp; no reaction to HCl. [Glen Rose Formation]		651
199		1.27				F	R2					LIMESTONE: wackestone; very light gray to medium light gray (N8 to N6); thin beds; bivalve fossils; seams of shale 0.2" to 2.6" thick; fresh (F); weak (R2); dry; violent reaction to HCl. [Glen Rose Formation]		650
200		3.05				F	R1					SHALE: medium dark gray (N4); very thin beds; fresh (F); very weak (R1); strong reaction to HCl. [Glen Rose Formation]		649
201														648




Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2005</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
201		4.33				F	R1					LIMESTONE: micrite; very light gray (N8); very thin beds; fresh (F); very weak (R1); strong reaction to HCl. [Glen Rose Formation]		647
202		0.8				F	R1					SANDSTONE: light bluish gray (5B 7/1); massive; fresh (F); very weak (R1); no reaction to HCl. [Glen Rose Formation]		646
203		2.02	40	5.0 5.0	100							SHALE: medium dark gray (5B 7/1); massive; fresh (F); very weak (R1); no reaction to HCl. [Glen Rose Formation]		645
204		3.33				F	R1							644
205		1.82										LIMESTONE: packstone; very light gray to medium light gray (N8 to N6); massive; thin interbeds of shale <0.1" to 0.3"; fresh (F); weak (R2); dry; strong reaction to HCl; many bivalve fossils. [Glen Rose Formation]		643
206		1.45				F	R2							642
207		2.78												641
208		1.77	41	4.8 5.0	96	F	R1					SHALE: sandy; medium dark gray (N4); very thin beds to massive; fresh (F); very weak (R1); damp; no reaction to HCl. [Glen Rose Formation]		640
209		3.5				F	R2					LIMESTONE: packstone; very light gray to medium gray (N8 to N5); massive to thinly bedded; micritic at contacts; fresh (F); weak (R2); dry. [Glen Rose Formation]		639
210		3.35										LIMESTONE: packstone; very light gray to medium gray (N8 to N5); thin beds; fresh (F); weak (R2); dry; strong reaction to HCl; highly bioturbated from 211.6' to 212.2'. [Glen Rose Formation]		638
211		2.68				F	R2					Highly bioturbated, 211.6' to 212.2'.		637
212		3.68										LIMESTONE: wackestone; shaly; very light gray to medium gray (N8 to N5); thin beds; slight bioturbation; fresh (F); very weak to weak (R1 to R2); damp; strong reaction to HCl. [Glen Rose Formation]		636
213		4.67	42	4.8 5.0	96									635
214		2.47				F	R1-R2					Pyritic zone, 214.1' to 214.3'.		634
215		4.47												633

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2005</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
216		4.38										LIMESTONE: wackestone; shaly; very light gray to medium gray (N8 to N5); thin beds; slight bioturbation; fresh (F); very weak to weak (R1 to R2); damp; strong reaction to HCl. [Glen Rose Formation]		632
217		1.7												631
218			43	5.0 5.0	100	F	R1-R2							630
219		2.22							2005-38					629
220		4.5												628
221		1.37										LIMESTONE: packstone; very light gray to medium gray (N8 to N5); thin, convoluted beds; highly bioturbated; many shale-filled burrows; small (<0.1") bivalve fossil fragments; fresh (F); very weak to weak (R1 to R2); slightly damp; strong to violent reaction to HCl. [Glen Rose Formation]		628
222		2.7												627
223		1.98				F	R1-R2							626
224		2.33	44	4.6 5.0	92									625
225		1.85							2005-39					624
226		2.23				F	R1					SANDSTONE: medium dark gray (N4); massive; fresh (F); very weak (R1); no reaction to HCl. [Glen Rose Formation]		623
227														622
228														621
229														620
230														619
231														618
												BOTTOM OF HOLE AT 226.0'.		

Project Name and Job Number TXU Comache Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-2006</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'10.22084"N / 97°47'31.29884"W		Total Depth 226 feet	
Drilling Contractor and Rig Geotechnology / CME 55		Elevation and Datum 844.994 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 18 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 7	Date Started 12/4/06	
		Borehole Inclination Vertical	Logged by A. Streig	Date Completed 12/13/06	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 1/10/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0										844
1	GP-GM		B-2006 1	33	17/18			RESIDUAL SOIL (RS) LIMESTONE FRAGMENTS with silt and clay very dense, pale yellow (2.5Y7/4), damp, white mottles, strong reaction to HCl		843
2				50						842
3				49						841
4	ML		B-2006 2	7	18/18			SILT with limestone fragments and calcareous deposits very stiff, pale yellow (2.5Y8/4), damp, interbedded platy limestone chips with, strong reaction to HCl (weathered bedrock),		840
5				13						839
6				35						838
7	CL		B-2006 3	7	18/18			LEAN CLAY medium stiff, pale yellow (2.5Y7/4) with some lighter mottles, damp, 10% angular clasts and sands, with calcareous deposits strong reaction to HCl	SPT hammer dropped about 4 blows beyond 18"	837
8				8						836
9				7						835
10	CL		B-2006 4	6	118/18			light gray (2.5Y7/1) with few limestone fragments and pale yellow mottles (2.5Y8/4)		834
11				6						833
12	ML		B-2006 5	50/5"	5/5			SILT with limestone fragments hard, light yellowish brown (2.5Y6/4), damp, ~20% angular clasts <0.5" diameter, strong reaction to HCl		832
13										831
14	CL		B-2006 6	9	11/11			LEAN CLAY, very hard, light greenish gray (5GY7/1), damp, slight reaction to HCl (weathered clayey limestone)		830
15				50/5"						

Project Name and Job Number TXU Comache Peak COL 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">SOIL LOG</h2> <h2 style="margin: 0;">Boring No. B-2006</h2>
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Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
15									
16	CL		B-2006 7	50/4"	Q/4		LEAN CLAY, very hard, light greenish gray (5GY7/1), damp, slight reaction to HCl (weathered clayey limestone) <i>(Continued from previous page)</i>		829
17									828
18							auger refusal at 18.0'		827
19									826
20									825
21									824
22									823
23									822
24									821
25									820
26									819
27									818
28									817
29									816
30									815




Undisturbed sample  
SH = Shelby; P = Pitcher; O = other



Driven (2.5 to 3.0 inch) with liners  
MC = Modified California; O = other



Standard Penetration Test (SPT) sampler

Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG Boring No. B-2006</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'10.22084"N / 97°47'31.29884"W		Total Depth 226 feet	
Drilling Contractor and Rig Geotechnology / CME 55		Elevation and Datum 844.994 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 18 feet	
Casing Size and Depth 4" / 18.5 feet		Length of Core Barrel and Bit 8.7 feet	No. of Core Boxes 14	Date Started 12/4/06	
		Borehole Inclination Vertical	Logged by A.Streig , R.Turner	Date Completed 12/13/06	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 1/10/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)				
19		1.28	1	2.0 2.5	80	MW	R1		2006-7			LIMESTONE: sparite, white (N9), medium to coarse, secondary growth crystals, crystalline structure, amssive, moderatley weathered, very weak, strong reaction to HCl. [Glen Rose Formation]		826				
20		5.9				MW	R1					SILTSTONE/SHALE: moderate yellow (5Y 7/6), highly weathered, extremely weak, massive, poorly sorted clay and clasts, mottled color, strong reaction to HCl. [Glen Rose Formation]		825				
21		4.13				MW	R1					SILTSTONE/SHALE: calcareous shale, medium light gray (N7), fine grained, moderatley weathered, very weak, laminations, abundant shell fragemtns, strong reaction to HCl, diffuse under boundary over 0.1', diffuse lower boundary over 3', grades into a claystone. [Glen Rose Formation]		824				
22		6.07	2	5.0 5.0	100	MW	R1		2006-8			SILTSTONE/SHALE: calcareous siltstone, light gray (N7), fine grained, slightly weathered, weak, fine lamiations, only reacts to HCl when scratched, slight to strong reaction, graditional upper contact, sharp planar lower contact. [Glen Rose Formation]		823				
23		5.57				MW	R1						SILTSTONE/SHALE: shale, medium gray (N5), fine grained, modertley weathered, very weak, fine laminations, some silt interbeds <1" thick, doesnot react to HCl. [Glen Rose Formation]		822			
24		ND				MW	R1						SILTSTONE/SHALE: siltstone with wackestone, interbeds, fine grain, modertley weathered, weak to very weak, fine laminations, wackestone interbed 0.5" thick (at 27.9 to 28.4'), clay coctent in siltstone increases with depth, slight reaction to HCl, strong at upper contact, fossils (shells), along upper contact, sheels in wackestone interbeds. [Glen Rose Formation]		821			
25		7.17	3	5.0 5.0	100	MW	R1		2006-9			LIMESTONE: wackstone, very light gray (N8), fine grain, slightly weathered, weak, massive, . [Glen Rose Formation]		820				
26		6.83				MW	R1									819		
27		3.83				MW	R1									818		
28		3.83	4	5.0 5.0	100	SW	R1-R2		2006-10					817				
29		4.05																816
30		4.03																815
31		5.87	4	5.0 5.0	100	SW	R1-R2		2006-10					814				
32		5.93																813
33		2.1																812
		1.9												812				

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)								
34		1.9	4	5.0 5.0	100	SW	R1-R2					LIMESTONE: wackstone, very light gray (N8), fine grain, slightly weathered, weak, massive, . [Glen Rose Formation]		811								
35		3.07																				810
36		ND																				
37		6.9	5	4.7 5.0	100	MW	R1					LIMESTONE: wackstone, with shale interbeds, very light gray (N8), shale color is medium gray (N5), wackstone is massive, shale is finely laminated, shale interbeds 1' thick to 0.25", strong reaction to HCl. [Glen Rose Formation]		808								
38		4.52																				807
39		9.17													MW	R1		2006-11		SILTSTONE/SHALE: shale, medium gray (N5), fine grain, moderatley weathered, very weak, laminations <0.25' thick, wackstone interbeds, sloght reaction to HCl. [Glen Rose Formation]		806
40		6.38										LIMESTONE: wackstone with shale interbeds, very light gray (N8), shale color is medium gray (N5), wackstone is massive, shale is finely laminated, shale interbeds 1" to 3" thick, interbeds shown in lithology colum, wackstone strong reaction to HCl, very fine grain wackstone oraganic seam <0.25" thick at 38.2".. [Glen Rose Formation]		805								
41		8.72												804								
42		ND	6	5.0 5.0	100	MW	R1							803								
43		5.05																				802
44		6.52																				801
45		3.25												800								
46		3.37												799								
47		5.37	7	4.2 5.0	100	MW	R1							798								
48		2.9																				797
		2.07																				

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
49		2.07										SILTSTONE/SHALE: shale, medium gray (N5), fine grain, moderately weathered, very weak, very finely laminated, fossils in upper 6" of unit, slight reaction to HCl in upper 6", overall no reaction to HC;. [Glen Rose Formation]		796
50		11.68	7	4.2 5.0	100	MW	R1			2006-13				795
51		10.33												794
52		5.77				MW	R1					LIMESTONE: wackestone, very light gray (N8), fine to medium grain, slightly weathered, weak, amssive, abundant shells, strng reaction to HCl when scatched, very wavy, irregular upper contact, difuse over 1". [Glen Rose Formation]	Water recycling starting with Run 14	793
53		7.05												
54		7.3	8	4.9 5.0	94	MW	R1					SILTSTONE/SHALE: shale, medium gray (N5), moderately weathered, very weak, fine laminations, wackestone interbeds, wackestone interbeds 1" to 0.25" thick, <10% wackestone interbeds >90% shale, frequent mechanical breaks along bedding planse /laminations (5B), very slight to no reaction to HCl. [Glen Rose Formation]		791
55		7.47												790
56		6								2006-14		LIMESTONE: wackestone, very light gray (N8), fine grain, moderately weathered, very weak, massive, bioturbation, strong reaction to HCl. [Glen Rose Formation]		789
57		ND				MW	R1							788
58		6.08											787	
59		8.62	9	4.9 5.0	98							SHALE: mudstone, medium gray (N5), fine grain, moderatly wethered, very weak, fine laminations, small <0.5" thick interbeds, shale has very slight to no reaction to HCl. [Glen Rose Formation]		786
60		5.27				MW	R1							785
61		5.05								2006-15			784	
62		6.42				MW	R1					LIMESTONE: wackestone, light gray (N7), fine grain, slightly weathered, weak, massive, 70% wackestone, 30% silt, higher silt contact gives wacksetone a streaked appearance, abundant shells,s trong reaction to HCl. [Glen Rose Formation]		783
63		9.95	10	5.0 5.0	100	MW	R1							782
		9.25												

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
64		9.25				MW	R1					SHALE: MUDSTONE, medium gray (N5), fine grain, moderately weathered, very weak, fine laminations, shell fragments along base of unit, wackestone interbed 1" to 0.3" thick above base of unit, no reaction to HCl. [Glen Rose Formation]		781
65		6.43	10	5.0 5.0	100	MW	R1		2006-16					780
66		6.57				SW	R2						LIMESTONE: wackestone, very light gray (N8), few grains, slightly weathered, weak, shell fragments throughout, massive, some healed fractured, filled with darker finer material (silt), strong reaction to HCl. [Glen Rose Formation]	
67		2.85										SILTSTONE/SHALE: calcareous shale, medium light gray (N6), fine grained, slightly weathered, weak, shell fragments along base, slight to strong reaction to HCl. [Glen Rose Formation]		778
68		2.82										LIMESTONE: wackestone, very light gray (N8), to light gray (N7), fine grained, massive at top of unit, deformed laminations below 67.5', slightly weathered, weak, shells in upper foot, angular organic clast (coal/peat), about 0.5' diameter at 67'. Strong reaction to HCl. [Glen Rose Formation]		777
69		2.75	11	5.0 5.0	100									776
70		2.65				SW	R2							775
71		1.87							2006-17					774
72		1.25												773
73		2.02												772
74		1.75	12	5.1 5.0	100							LIMESTONE: wackestone, light gray (N7), to fine to medium grain, slightly weathered, weak, massive, bioturbations, strong reaction to HCl, gradational upper contact over 2", wackestone continues to grade from fine to medium grain. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	771
75		1.75												770
76		2.78				SW	R2		2006-18				Inner barrel got plugged up, tried to wash it out with water	769
77		1.67	13	5.0 5.0	100									768
78		ND							2006-19					767
		3.67												



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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)									
79		3.67	13	5.0 5.0	100	SW	R2						LIMESTONE: wackstone, very light gray (nN8), fine grain, slightly weathered, weak, deformed 0.5" thick beds to laminations, darker gray fine material (silt) accumulated along deformed bedding planes, bedding is horizontal and slightly wavy, strong reaction to HCl. [Glen Rose Formation]	766									
80		4.02														765							
81		ND															764						
82		4.02	14	5.0 5.0	100	SW	R2							763									
83		2.75																					762
84		2.17																					
85		2.4	15	5.0 5.0	100	SW	R2							760									
86		6.53																					759
87		4																					
88		3.17	16	5.0 5.0	100	SW	R2							757									
89		1.53																					756
90		1.38																					
91		1.97	17	5.0 5.0	100	SW	R2							754									
92		1.53																					753
93		2.52																					
		2.5																					

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
94		2.5	16	5.0 5.0	100	SW	R2					LIMESTONE: wackstone, very light gray (nN8), fine grain, slightly weathered, weak, deformed 0.5" thick beds to laminations, darker gray fine material (silt) accumulated along deformed bedding planes, bedding is horizontal and slightly wavy, strong reaction to HCl. [Glen Rose Formation]		751
95		1.37												750
96		3.15												749
97		2.53	17	5.0 5.0	100	SW	R2			2006-23		LIMESTONE: packstone, medium light gray (N6), medium to coarse grain, slightly weathered, weak beds 0.25" to laminations, wavy laminations, gradual upper contact over 1", strong reaction to HCl. [Glen Rose Formation]		748
98		4.37												747
99		1.37												746
100		2.22	18	5.0 5.0	100	SW	R2					LIMESTONE: wackstone, very light gray (N8), very fine grain, slightly weathered, weak, silt content increases with depth, strong reaction to HCl. [Glen Rose Formation]		745
101		2.22												744
102		2.98												743
103		3.98	19	4.9 5.0	98	SW	R2				2006-24	SILTSTONE/SHALE: calcareous siltstone, very light gray (N8), very fine grain, slightly weathered, weak beds 1" thick to fine laminations, very strong and dark laminations, strong reaction to HCl. [Glen Rose Formation]		742
104		2.33												741
105		2.17												740
106		2.17	19	4.9 5.0	98	SW	R2					LIMESTONE: wackstone, very light gray (N8), medium grain, slightly weathered, weak, few silty laminations, strong reaction to HCl. [Glen Rose Formation]		739
107		4.38												738
108		3.5												737
		3.88				SW	R2							737

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)		
109		3.88	19	4.9 5.0	98	SW	R2					LIMESTONE: packstone, medium light gray (N6), medium grain, slightly weathered, weak, bioturbation, amssive to some bedding, strong reaction to HCl. [Glen Rose Formation]		736		
	3.03														735	
110		2.37				SW	R2							734		
111		1.1	20	5.0 5.0	100							LIMESTONE: micrite, light gray (N7), very fine grains, slightly weathered, weak, fine laminations, packstone interbeds 0.25" thicj at uper conatct, strong reaction to HCl. [Glen Rose Formation]		733		
112		2.92														732
113		1.75														731
114		3.58	21	5.0 5.0	100							LIMESTONE: wackstone, very light gray (N8), slightly weathered, weak, deformed 0.25" thick beds (wavy) to massive, fine to medium grain, strong reaction to HCl. [Glen Rose Formation]		730		
115		1.87														729
116		2.73												SW	R2	728
117		2.78	22	4.9 5.0	98									727		
118		2.47														726
119		3.12														725
120		3.07	23	4.9 5.0	98									724		
121		4.68														723
122		2.87												SW	R1	722
123		2.03														

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
124		2.03	22	4.9 5.0	98	SW	R1				2006-28	LIMESTONE: micrite, light gray (N7), very fine grain, slightly weathered, weak, massive, some bioturbation, unit is well sorted, very silty, strong reaction to HCl. [Glen Rose Formation]		721
125		2.5												720
126		1.67												719
127		4.4	23	4.9 5.0	98	SW	R1			2006-29	LIMESTONE: wackstone, light gray (N7) to medium light gray (N8), fine grained, moderately weathered, 0.5" thick beds to fine laminations, bioturbation is causing mottled appearance, strong reaction to HCl. [Glen Rose Formation]		718	
128		2.6											717	
129		2.6											716	
130		7.32	24	5.0 5.0	100	SW	R1				SILTSTONE/SHALE: shale, medium gray (N5), fine grain, moderately weathered. [Glen Rose Formation]		715	
131		1.93											714	
132		5											713	
133		ND	25	5.0 5.0	100	MW	R1			2006-30	MUSDTONE: calcareous shale, medium light gray (N6), fine grain, slightly weathered, weak, fine laminations. [Glen Rose Formation]		712	
134		3.12											711	
135		3.12											710	
136		3.83	26	5.0 5.0	100	MW	R1			2006-31	LIMESTONE: wackestone, very light gray (N8), moderately weathered, very weak, beds 2" thick to laminations, wavy deformed bedding, reacts to HCl. [Glen Rose Formation]		709	
137		6.28											708	
138		3.75											707	
		2.57												

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)				
139		2.57	25	5.0 5.0	100	MW	R1					LIMESTONE: wackestone, very light gray (N8), fine grain, moderately weathered, weak, very deformed and wavy bedding, small silt interbeds and highly deformed, abundant silty interbeds in upper foot of unit, bioturbation and mixing, strong reaction to HCl, coarsens downward. [Glen Rose Formation]		706				
140		2.3				MW	R1									705		
141		2.77															704	
142		4	26	5.0 5.0	100	MW	R2					LIMESTONE: wackestone, very light gray (N8), to light gray (N7), fine to medium grain, moderately weathered, weak, deformed bedding, burrow and voids filled with darker material. [Glen Rose Formation]		703				
143		3.93																702
144		2.97																
145		2.27	27	5.0 5.0	100	MW	R2					SILTSTONE/SHALE: calcareous shale, medium light gray (N6), fine grained, slightly weathered, weak, fine laminations, grades to calcareous siltstone from 150.7". [Glen Rose Formation]		700				
146		2.5																699
147		4.17																
148		2.67	28	5.0 5.0	100	MW-SW	R1-R2					LIMESTONE: wackestone, with silt interbeds, light gray (N7), fine grain, moderately to slightly weathered, weak, massive, laminated silt interbeds below 159.8", interbeds 0.25 to 4" thick, gradational contacts above. [Glen Rose Formation]		697				
149		3.22																696
150		2.03																
151		4.55	28	5.0 5.0	100	MW-SW	R1-R2					LIMESTONE: wackestone, with silt interbeds, light gray (N7), fine grain, moderately to slightly weathered, weak, massive, laminated silt interbeds below 159.8", interbeds 0.25 to 4" thick, gradational contacts above. [Glen Rose Formation]		694				
152		2.6																693
153		3.98																
		3.4																

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
154		3.4	28	5.0 5.0	100							LIMESTONE: wackestone, with silt interbeds, light gray (N7), fine grain, moderately to slightly weathered, weak, massive, laminated silt interbeds below 159.8", interbeds 0.25 to 4" thick, gradational contacts above. [Glen Rose Formation]		691
155		3.37												690
156		2.88												689
157		2.17	29	5.0 5.0	100	MW-SW	R1-R2							688
158		1.97												687
159		2												686
160		3.17	30	4.9 5.0	98	F	R2					LIMESTONE: packstone, medium to medium light gray (N7-N6), thin convoluted beds, recrystallized bivalve fossils, F, R2, dry, violent reaction to HCl. [Glen Rose Formation]		685
161		1.38												684
162		3.02												683
163		1.28	31	5.0 5.0	100	F	R2					LIMESTONE: packstone, very light to medium light gray (N8-N6), thin convoluted beds to massive, silty from 166.2' to 166.7' and from 167.1' to 167.5', bivalve fossils, violent reaction to HCl. [Glen Rose Formation]		682
164		1.18												681
165		1.7												680
166		2.32	31	5.0 5.0	100	F	R2							679
167		2.4												678
168		2.28												677
		1.78												

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
169		1.78	31	5.0 5.0	100	F	R2					LIMESTONE: packstone, very light to medium light gray (N8-N6), thin convoluted beds to massive, silty from 166.2' to 166.7' and from 167.1' to 167.5', bivalve fossils, violent reaction to HCl. [Glen Rose Formation]		676
170		1.68												675
171		1.92												674
172		4.67	32	5.0 5.0	100	F	R2					LIMESTONE: wackestone, very light gray (N8), massive, fossils, F, R2, dry, violent reaction to HCl. [Glen Rose Formation]		673
173		4.4												672
174		1.73												671
175		1.93	33	5.0 5.0	100	F	R2					LIMESTONE: micrite medium light gray (N6), massive, F R1, damp. Strong reaction to HCl. [Glen Rose Formation]		670
176		3.23												669
177		3.53												668
178		3.83	34	5.0 5.0	100	F	R2					LIMESTONE: wackestone, very light to medium light gray (N8-N7), massive to thin beds, subhorizontal stylolites, F, R2, dry, violent reaction to HCl. [Glen Rose Formation]		667
179		4.45												666
180		2.6												665
181		3.97	34	5.0 5.0	100	F	R2					LIMESTONE: micrite, medium light gray (N6), massive, F R1, damp, weak reaction to HCl. [Glen Rose Formation]		664
182		2.22												663
183		4.5												662
		5.68												

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
184		5.68	34	5.0 5.0	100	F	R2					LIMESTONE: wackestone, very light to medium light gray (N8-N6), thin wavy beds, subhorizontal stylolites from 180.2', F, R2, dry, violent reaction to HCl. [Glen Rose Formation]		661
185		1.82												660
186		2.02												659
187		2.68	35	4.9 5.0	97	F	R2					LIMESTONE: packstone, light to medium light gray (N7- N6), thin convoluted beds, subhorizontal sutures, few fossils, F, R2, dry, strong reaction to HCl. [Glen Rose Formation]		658
188		1.77												657
189		2.22												656
190		1.73	36	5.0 5.0	100	F	R2					SHALE: calcereous shale, medium dark to dark gray (N4-N3), very thin beds, F, R1, damp, weak to strong reaction to HCl. [Glen Rose Formation]		655
191		3.88												654
192		7.45												653
193		6.48	37	4.3 5.0	86	F	R2					LIMESTONE: micrite, very light gray (N8), massive, few fossils, F, R2, dry, violent reaction to HCl. [Glen Rose Formation]		652
194		5.17												651
195		6.1												650
196		5.9	38	5.0 5.0	100	F	R2					SHALE: calcereous shale, dark gray (N3), amssive, interbed of micrite from 194.8' to 195.1', F R1, damp, strong reaction to HCl. [Glen Rose Formation]		649
197		6.67												648
198		7.22												647
		5.8										SANDSTONE: shaly sandstone, dark gray (N3), massive, R, R1, damp, slight reaction to HCl. [Glen Rose Formation] LIMESTONE: micrite, very light gray (n8), massive to thin beds, burrows from 179.9' to 198.2', F, R1, dry, strong reaction to HCl. [Glen Rose Formation]		



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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)								
199		5.8	37	4.3 5.0	86	F	R1					SANDSTONE: medium bluish gray (5B 5/1), massive, well sorted, rounded quartz grains, F, R1, damp, no reaction to HCl. [Glen Rose Formation]		646								
200		1.67																				645
201		3.35																				644
202		10.28	38	4.6 5.0	92	F	R2					LIMESTONE: packstone, very light to light gray (N8-N7), massive, F, R2, dry, strong reaction to HCl. [Glen Rose Formation]		643								
203		5.25																			642	
204		2.9																				641
205		11.75	39	5.0 5.0	100	F	R0-R1					SANDSTONE: shaly sandstone, medium dark gray N4, thin beds, interbeds of shale up to 2.5" thick, F, R0-R1, damp, very slight reaction to HCl. [Glen Rose Formation]		640								
206		5.9																			639	
207		7.93																				638
208		2.05	40	5.0 5.0	99	F	R2					LIMESTONE: micrite, very light to medium gray (N8-N5), very thin beds, F R2, dry, strong reaction to HCl. [Glen Rose Formation]		637								
209		4.92																			636	
210		5.67																				635
211		5.53	40	5.0 5.0	99	F	R1-R2					LIMESTONE: packstone, very light to medium light gray (N8-N6), massive few fossil fragments, some burrow F, R2, dry, strong reaction to HCl. [Glen Rose Formation]		634								
212		5.75																			633	
213		4.25																				632
		4.5												632								

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2006</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
214		4.5										LIMESTONE: wackestone, very light to medium dark gray (N8-N4), thin convoluted beds to massive, many fossil fragments, burrows from 212.1' to 213.2', F, R1-R2, dry, violent reaction to HCl. [Glen Rose Formation]		631
		4.18	40	5.0 5.0	99	F	R1-R2							630
215		4.17												
216		7.53												628
217		3.92												627
218		3	41	4.7 5.0	94	F	R1						LIMESTONE: micrite, light gray (N7), massive, few burrows (infilled with packstone), F, R1, dry, violent reaction to HCl. [Glen Rose Formation]	626
219		3.73												
220		2.42										LIMESTONE: packstone, very light to medium light gray (N8-N6), thin convoluted beds, many burrows, fossil fragments, F, R2, dry, violent reaction to HCl. [Glen Rose Formation]	624	
221		3.67											623	
222		6.18										SANDSTONE: greenish gray (5G 6/1), massive few burrows, F, R1, damp, no reaction to HCl. [Glen Rose Formation]	622	
223		2.65	42	5.0 5.0	100	F	R1						SANDSTONE: greenish gray (5G 6/1), massive few burrows, F, R1, damp, no reaction to HCl. [Glen Rose Formation]	621
224		1.87												
225		2.72										LIMESTONE: packstone, very light gray to medium gray (N8-N5), massive, few. Subhorizontal stylolites, sand from 224.9' to 225.2', F, R2, dry, violent reaction to HCl. [Glen Rose Formation]	619	
226													Bottom of hole at 226'	618
227													617	
228														

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
229														616
230														615
231														614
232														613
233														612
234														611
235														610
236														609
237														608
238														607
239														606
240														605
241														604
242														603
243														602

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
244														601
245														600
246														599
247														598
248														597
249														596
250														595
251														594
252														593
253														592
254														591
255														590
256														589
257														588
258														587

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
259														586
260														585
261														584
262														583
263														582
264														581
265														580
266														579
267														578
268														577
269														576
270														575
271														574
272														573
273														572

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**ROCK LOG**  
**Boring No. B-2006**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
274														571
275														570
276														569
277														568
278														567
279														566
280														565
281														564
282														563
283														562
284														561
285														560
286														559
287														558
288														557

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**ROCK LOG**  
**Boring No. B-2006**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
289														556
290														555
291														554
292														553
293														552
294														551
295														550
296														549
297														548
298														547
299														546
300														545
301														544
302														543
303														542

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**ROCK LOG**  
**Boring No. B-2006**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
304														541
305														540
306														539
307														538
308														537
309														536
310														535
311														534
312														533
313														532
314														531
315														530
316														529
317														528
318														527



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**ROCK LOG**  
**Boring No. B-2006**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
319														526
320														525
321														524
322														523
323														522
324														521
325														520
326														519
327														518
328														517
329														516
330														515
331														514
332														513
333														512

Project Name and Job Number  
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**ROCK LOG**  
**Boring No. B-2006**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
334														511
335														510
336														509
337														508
338														507
339														506
340														505
341														504
342														503
343														502
344														501
345														500
346														499
347														498
348														497

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**ROCK LOG**  
**Boring No. B-2006**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
349														496
350														495
351														494
352														493
353														492
354														491
355														490
356														489
357														488
358														487
359														486
360														485
361														484
362														483
363														482

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**ROCK LOG**  
**Boring No. B-2006**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
364														481
365														480
366														479
367														478
368														477
369														476
370														475
371														474
372														473
373														472
374														471
375														470
376														469
377														468
378														467

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**ROCK LOG**  
**Boring No. B-2006**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
379														466
380														465
381														464
382														463
383														462
384														461
385														460
386														459
387														458
388														457
389														456
390														455
391														454
392														453
393														452

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**ROCK LOG**  
**Boring No. B-2006**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
394														451
395														450
396														449
397														448
398														447
399														446
400														445
401														444
402														443
403														442
404														441
405														440
406														439
407														438
408														437

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**ROCK LOG**  
**Boring No. B-2006**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
409														436
410														435
411														434
412														433
413														432
414														431
415														430
416														429
417														428
418														427
419														426
420														425
421														424
422														423
423														422

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**ROCK LOG**  
**Boring No. B-2006**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
424														421
425														420
426														419
427														418
428														417
429														416
430														415
431														414
432														413
433														412
434														411
435														410
436														409
437														408
438														407



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**ROCK LOG**  
**Boring No. B-2006**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
439														406
440														405
441														404
442														403
443														402
444														401
445														400
446														399
447														398
448														397
449														396
450														395
451														394
452														393
453														392

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**ROCK LOG**  
**Boring No. B-2006**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
454														391
455														390
456														389
457														388
458														387
459														386
460														385
461														384
462														383
463														382
464														381
465														380
466														379
467														378
468														377

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**ROCK LOG**  
**Boring No. B-2006**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
469														376
470														375
471														374
472														373
473														372
474														371
475														370
476														369
477														368
478														367
479														366
480														365
481														364
482														363
483														362

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**ROCK LOG**  
**Boring No. B-2006**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
484														361
485														360
486														359
487														358
488														357
489														356
490														355
491														354
492														353
493														352
494														351
495														350
496														349
497														348
498														347

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**ROCK LOG**  
**Boring No. B-2006**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
499														346
500														345
501														344
502														343
503														342
504														341
505														340
506														339
507														338
508														337
509														336
510														335
511														334
512														333
513														332

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**ROCK LOG**  
**Boring No. B-2006**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
514														331
515														330
516														329
517														328
518														327
519														326
520														325
521														324
522														323
523														322
524														321
525														320
526														319
527														318
528														317

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**ROCK LOG**  
**Boring No. B-2006**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
529														316
530														315
531														314
532														313
533														312
534														311
535														310
536														309
537														308
538														307
539														306
540														305
541														304
542														303
543														302


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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
544														301
545														300
546			7	4.2 -495.0	84									299
547			6	5.0 -501.0	100									298
548			5	4.7 -507.0	94									297
549			4	5.0 -513.0	100									296
550			3	5.0 -519.0	100									295
551			2	5.0 -525.0	100									294
552			1	2.0 -531.0	80									293
553														292
554														291
555														290
556														289
557														288
558														287



Project Name and Job Number TXU Comache Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-2007</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'10.39277"N / 97°47'30.27188"W		Total Depth 225 feet	
Drilling Contractor and Rig Fugro / CME 45C		Elevation and Datum 841.231 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 12.5 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 5	Date Started 12/12/06	
		Borehole Inclination Vertical	Logged by M. Buga	Date Completed 12/15/06	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 1/10/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
0							<b>RESIDUAL SOIL (RS)</b> LIMESTONE FRAGMENTS with silt and sand dense, brown (7.5YR4/4), damp		841
1	GP-GM		B-2007 1	14	13/18				840
2				18					839
3				15					838
4	ML		B-2007 2	6	18/18		SILT medium stiff, yellowish brown (10YR5/6), with calcareous deposits		837
5				6					836
6				6					835
7	CL		B-2007 3	6	18/18		LEAN CLAY with limestone fragments stiff, moist, brownish yellow (10YR6/6), with calcareous deposits		834
8				6					833
9				18					832
10	ML		B-2007 4	8	18/18		SANDY SILT dense, yellowish brown (19YR5/8), moist, friable		831
11				11					830
12				10			light yellowish brown (10YR6/4), damp to moist		829
13				25	18/18				828
14				50/6"					827
15							Augered down to 14' to set the casing	Bedrock at 12.5'	

Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG Boring No. B-2007</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'10.39277"N / 97°47'30.27188"W		Total Depth 225 feet	
Drilling Contractor and Rig Fugro / CME-45C		Elevation and Datum 841.231 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 12.5 feet	
Casing Size and Depth 4" / 14 feet		Length of Core Barrel and Bit 8.6 feet	No. of Core Boxes 15	Date Started 2/12/06	
		Borehole Inclination Vertical	Logged by M. Buga	Date Completed 2/15/06	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 1/10/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
14		2.35	1	1.0 1.0	100							LIMESTONE, sparite, white, fresh, med strong-weak, violent hcl reaction, voids in planar weathered section	Started rock coring	827
15		2.33					R2-R3				BJ, Pl, Ro, Op			826
16		2.17							2007-6					825
17		2.08	2	5.0 5.0	98						Rfm Pl, Sl, Op Rf, wa, Sm, Op	LIMESTONE, wackestone, dark grey, fresh, weak, strong hcl reaction, rip up clasts, shell fragments	300-400 down pressure, 100% water return	824
18		2.25												823
19		2.3					R2					LIMESTONE, micrite, dark grey, fresh, weak, slight hcl reaction		822
20		1.62												821
21		1.82				F						SHALE, very dark greenish grey, fresh, very weak, none-very slight hcl reaction, planar bedding		820
22		1.78	3	5.0 5.0	100		R1						closer to 300psi down press, 100 % water return	819
23		1.98					R2					LIMESTONE, wackestone, grey, fresh, weak, strong hcl reaction, clasts .2-.1"		818
24		2					R2-R3					LIMESTONE, micrite, light grey, fresh, med strong violent hcl reaction, interbedded with shells		817
25		1.97							2007-7			LIMESTONE, micrite, light grey, fresh, med strong, violent hcl reaction		816
26		2					R3				BJ			815
27		1.77	4	5.0 5.0	100									814
28		2.47					R2					LIMESTONE, wackestone, grey, fresh, weak, slight-strong hcl reaction, grades to packstone 29.1-29.45		813
29														

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
29		2.5	4	5.0	100							LIMESTONE, packstone, light grey, fresh, weak-med strong, strong to violent hcl reaction, shale 33.15-33.5, 33.45-33.75, 34.05-34.1, micrite/packstone 34.15-34.7	300-400psi, 100% water return	812
30		1.3								2007-8				811
31		1.07												810
32							R2-R3							809
33		1	5	5.0	100									808
34		2.33										SHALE, very dark grey, fresh, very weak, no hcl reaction, occasional interclasts 35.9-36		807
35										2007-9				806
36		3.5											300psi,	805
37		6				F	R1					LIMESTONE, micrite, with shale interbeds, weak, violent hcl reaction		804
38							R2			2007-10		SHALE, very dark greenish grey, fresh, very weak, no hcl reaction, desiccation chunks	400psi	803
39		5.45	6	5.2	100		R1					LIMESTONE, packstone, light grey, fresh, weak-med strong, violent hcl reaction	300psi 300-400psi Length of recovery stretched due to mechanical breaks.	802
40							R2-R3					LIMESTONE, micrite, light grey, fresh, med strong, violent hcl reaction		801
41		2.67									Bj, Wa, Ro, Op	LIMESTONE, packstone, light grey, fresh, med strong, violent hcl reaction, shale interbed from 39.7-39.9		800
42		2.97					R3				Rf, Wa, Ro, Op			799
43														798
44		2.08												798
		2.83												
		7	7	5.0	100									
		2.4												
		3.17								2007-11		LIMESTONE, micrite with shale interbeds, light grey, fresh, med strong, violent hcl reaction, shale 42.5-42.6, 43.1-43.3, 43.7-43.95		

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2007</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
44		3.15	7	5.0	100		R2					LIMESTONE, wackestone, med light grey, fresh, weak, violent hcl reaction, clasts 1"		797
45		3										SHALE, very dark greenish grey, fresh, very weak, no hcl reaction, desiccation cracks	300psi	796
46		3.03									Bj, Ma, Sl, Op		795	
47		3.25	8	5.1	100		R1		2007-12				794	
48		2.78											Length of recovery stretched due to mechanical breaks.	793
49		3.83				F	R3					LIMESTONE, micrite, light grey, fresh, med strong, violent hcl reaction, shale 49.5-49.85	300-400psi, 100%	792
50		4									Bj, Pl, Sl, Tl		791	
51		4.73					R1					SHALE, dark greenish grey, fresh, very weak,		790
52		4.08	9	5.0	100								789	
53		2.45											788	
54		2.83					R3		2007-13		Wa, Sl, Op	Limestone, micrite-packstone, light grey (N7), fresh, med strong, violent hcl reaction		787
55		4.25											786	
56		3.25				F-SW	R1		2007-14			SHALE, very dark greenish grey, fresh-slightly weathered, very weak, no hcl reaction, micrite 55.6-55.8		785
57		4.17	10	5.0	100								784	
58		1.63				F	R2-R3						783	

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
59		5.87	10	5.0	100	F	R1					Limestone, packstone, med light grey (N6), fresh, weak-med strong, violent HCl reaction		782
60		2.03				F-SW	R1					SHALE, same as above	switched to draining water, water returns estimated	781
61		1.92				F	R3				Rf, Ro, Op	LIMESTONE, micrite, med light grey, fresh, med strong, violent hcl reaction		780
62		2.17	11	5.2	100	F	R3				Bj, Wa, Ro, Op	LIMESTONE, packstone, med light grey, fresh, med strong, violent hcl reaction, wackestone at bottom.5'		779
63		2.13				F-SW	R1					SHALE, very dark greenish grey, fresh-slightly weathered, slight hcl reaction, sparse rip up clasts, very weak	Length of recovery stretched due to mechanical breaks.	778
64		1.83									Rf, Pl, Sl, Tl	LIMESTONE, wackestone-packstone, light grey, fresh, med strong, violent hcl reaction		777
65		1.2											300-400psi down pressure, good water return 100%	776
66		1.67												775
67		1.33	12	5.2	100									774
68		1.4				F	R3						Length of recovery stretched due to mechanical breaks.	773
69		1.5												772
70		2.2												771
71		1.73												770
72		2	13	5.0	100									769
73		1.83										LIMESTONE, wackestone with top 0.4' micrite, light grey, med light grey, fresh, med strong, violent hcl reaction		768
74														

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
74		1.43	13	5.0	100						Bj, Si, Pl, Op			767
75		1.75							2007-17			LIMESTONE, packstone, light grey, fresh, med strong, violent hcl reaction, gradational lower contact		766
76		2.92					R3					LIMESTONE, wackestone, med light grey, fresh, med strong, violent hcl reaction		765
77		2.33	14	5.2	100							LIMESTONE, packstone, med light grey, fresh, med strong, violent hcl reaction		764
78		2.28											Length of recovery stretched due to mechanical breaks.	763
79		2.02					R2		2007-18			LIMESTONE, wackestone with shale, interbed, fresh, weak, violent hcl reaction shale 78.9-79.5, 79.15-79.2		
80		1.95					R3					LIMESTONE, micrite, med light grey, fresh, med strong, violent hcl reaction		761
81		2.05				F						LIMESTONE, packstone, med light grey, fresh, med strong, violent hcl reaction		760
82		5.08	15	5.0	100							LIMESTONE, wackestone, med light grey, fresh, weak-med strong, violent hcl reaction, 81.85-82.1 packstone, 94.25-84.35 coal seam		759
83		5.32					R2-R3							758
84		2.72							2007-19					757
85		1.57												756
86		2.47										LIMESTONE, packstone-micrite, light grey, fresh, R3,-R4, violent hcl reaction, wackestone interbed 86-86.1, 86.2-86.45, micritic from 86.85-87.25 with oolites, oolites from 86.6-88.5		755
87		2	16	5.1	100		R3-R4							754
88		2.25							2007-20				Length of recovery stretched due to mechanical breaks.	753
89							R2							

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
89		3	16	5.1 5.0	100		R2					LIMESTONE, wackestone, grey, fresh, weak, strong-violent hcl reaction, clayey, silty spots towards base	300-400psi down pressure, good water return 100%	752
90		1.67					R2							751
91		2.22					R3-R4					LIMESTONE, micrite, light grey, fresh, med strong, violent hcl reaction, grades to packstone at 91.5-91.8		750
92		1.95	17	5.0 5.0	100		R2					LIMESTONE, wackestone, med light grey, fresh, weak, violent hcl reaction		749
93		1.4					R3					LIMESTONE, packstone, light grey, fresh, med strong, violent hcl reaction, grades to wackestone in bottom .1'		748
94		2.33					R3							747
95		2.33					R2-R3					LIMESTONE, wackestone, grey, fresh, weak-med strong, violent hcl reaction, 95.4-95.85		746
96		1.27					R2-R3					LIMESTONE, packstone-wackestone, grey, fresh, med strong to weak, violent hcl reaction, packstone 96.15-96.6		745
97		1.67	18	5.0 5.0	100		R3					LIMESTONE, packstone-micrite, med light grey, fresh, med strong, violent hcl reaction, bottom .2' are micritic, planar bedding		744
98		6.1					R3							743
99		4.33					R2-R3					LIMESTONE, micrite, med light fresh, weak to med strong, strong hcl reaction, bioturbation, burrows 99.5-99.85, convoluted to planar bedding		742
100		1.67					R3					LIMESTONE, packstone, med light grey, fresh, med strong, violent hcl reaction, oolitic, 101.7-102.1 planar bedding occasional convoluted beds mixed with micrite		741
101		3.1					R3							740
102		3.33	19	5.1 5.0	100		R3					LIMESTONE, micrite, med light grey, fresh, med strong, violent hcl reaction		739
103		3.67											Length of recovery stretched due to mechanical breaks.	738
104														

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
104		1.62	19	5.1 5.0	100		R2					LIMESTONE, wackestone, grey, fresh, weak, violent hcl reaction		737
105		2.43					R3					LIMESTONE, packstone, med light grey, fresh, med strong, violent hcl reaction, oolitic		736
106		3.18					R2					LIMESTONE, wackestone, grey, fresh, weak, violent hcl reaction		735
107		2.07	20	5.0 5.0	100		R3		2007-24			LIMESTONE, packstone, grey, fresh, med strong, violent hcl reaction	300-400psi down pressure, good water return 100%	734
108		1.83					R2					LIMESTONE, wackestone, with mudstone, grey, fresh, weak, strong hcl reaction, laminations, convoluted bedding with rip up clasts		733
109		1.97					R3					LIMESTONE, micrite, med light grey, fresh, med strong, violent hcl reaction, packstone interbed 107.65-108, 108.6-108.85		732
110		2.57												731
111		2.63				F								730
112		1.85	21	5.0 5.0	100		R2-R3							729
113		1.78												728
114		1.43					R3		2007-25			LIMESTONE, micrite, med light grey, fresh, med strong, violent hcl reaction, occasional laminations, 114.5-114.8 rip up clasts, 113.8 pyrite vein in mud		727
115		2.37												726
116		2.3												725
117		2.08	22	5.0 5.0	100		R2					LIMESTONE, wackestone, med grey, fresh, weak, strong to violent hcl reaction		724
118		3.83												723
119									2007-26					



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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
119		2.47	22	5.0 5.0	100		R3					LIMESTONE, packstone, light grey, fresh, med strong, violent hcl reaction		722
120		2.63										LIMESTONE, wackestone, fresh, weak-med strong, violent hcl reaction, 121-121.1, 121.3-121.65, 121.7-121.9 packstone	300-400psi down pressure, good water return 100%	721
121		2.18												720
122		3.47	23	5.1 5.0	100		R2-R3						Length of recovery stretched due to mechanical breaks.	719
123		4.47												718
124		5										LIMESTONE, wackestone, packstone, grey, fresh, weak-med strong, violent hcl reaction		717
125		6.63					R1					SHALE, very dark greenish grey, fresh, very weak, slight to strong hcl reaction, rip up clasts and shell fragments		716
126		3					R3					LIMESTONE, micrite, med light grey, fresh, med strong, violent hcl reaction, voids filled with clay-dissolution		715
127		5.23	24	5.0 5.0	100		R1					SHALE, very dark greenish grey, fresh, very weak, slight to strong hcl reaction, veining toward top		714
128		4.77					R2-R3					LIMESTONE, packstone, grey, fresh, medium strong to strong, violent hcl reaction		713
129		6.37					R3					LIMESTONE, wackestone-packstone, fresh, med strong, strong-violent hcl reaction, .5" clasts and smaller 130.5-130.8 packstone		712
130		3.28					R2					LIMESTONE, wackestone, med grey, fresh, weak, strong hcl reaction, bottom .4' clayey/shale		711
131		5.78												710
132		7.53	25	5.0 5.0	100		R3					LIMESTONE, wackestone, -packstone, med light grey, fresh, med strong, strong hcl reaction		709
133		6.67										LIMESTONE, packstone, med grey, fresh, med strong, violent hcl reaction		708
134														

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
134		3.77	25	5.0 5.0	100		R2					LIMESTONE, wackestone, med grey, fresh, weak, strong hcl reaction, .5"-1" clasts		707
135		1.7					R3					LIMESTONE, packstone, light grey, fresh, med strong, violent hcl reaction, oolitic	300-400psi down pressure, good water return 100%	706
136		1.63					R2		2007-30			LIMESTONE, wackestone, med light grey, fresh, weak, violent hcl reaction		705
137		3.37	26	5.0 5.0	100		R2					LIMESTONE, packstone, med light grey, fresh, weak-med strong, violent hcl reaction, 137.9-138.5 wackestone, 138.5-139.1 packstone		704
138		5.07					R2-R3					LIMESTONE, wackestone-packstone, med light grey, fresh, weak-med strong, strong-violent hcl reaction, 140.6-141 packstone, 141-141.4 micritic		703
139		5.83					R2-R3					LIMESTONE, wackestone-packstone, med light grey, fresh, weak-med strong, strong-violent hcl reaction, 140.6-141 packstone, 141-141.4 micritic		702
140		3.97					R2-R3					LIMESTONE, wackestone-packstone, med light grey, fresh, weak-med strong, strong-violent hcl reaction, 140.6-141 packstone, 141-141.4 micritic		701
141		1.87				F	R2		2007-31			LIMESTONE, packstone-wackestone, grey, fresh, weak, strong-violent hcl reaction, bottom .3' closer to wackestone		700
142		4.1	27	5.0 5.0	100		R2					LIMESTONE, micrite, grey, fresh, med strong, violent hcl reaction, dissolution voids		699
143		2.67					R2					LIMESTONE, wackestone, dark grey, fresh, weak, strong hcl reaction, shaley interbed from 142.8-143.1, begins to grade to packstone at 143.1, 143.4-143.8 packstone		698
144		3.5					R3					LIMESTONE, micrite, light grey, fresh, med strong, violent hcl reaction, dissolution		697
145		2.07					R2					LIMESTONE, wackestone, very dark grey, fresh, weak, strong hcl reaction, sparse clasts		696
146		6.67					R3					LIMESTONE, wackestone, very dark grey, fresh, weak, strong hcl reaction, 146.6-147 packstone, more shaley 146.4-145.6, sparse clasts, 150.1 wackestone, 150.7-151.3 more shale some pyrite at 150.85		695
147		3.87	28	5.0 5.0	100		R2		2007-32			LIMESTONE, wackestone, very dark grey, fresh, weak, strong hcl reaction, 146.6-147 packstone, more shaley 146.4-145.6, sparse clasts, 150.1 wackestone, 150.7-151.3 more shale some pyrite at 150.85		694
148		3.68					R2					LIMESTONE, wackestone, very dark grey, fresh, weak, strong hcl reaction, 146.6-147 packstone, more shaley 146.4-145.6, sparse clasts, 150.1 wackestone, 150.7-151.3 more shale some pyrite at 150.85		693

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
149		3.5	28	5.0 5.0	100							LIMESTONE, wackestone, very dark grey, fresh, weak, strong hcl reaction, 146.6-147 packstone, more shaley 146.4-145.6, sparse clasts, 150.1 wackestone, 150.7-151.3 more shale some pyrite at 150.85	300-400psi down pressure, good water return 90-100%	692
150		3.8					R2		2007-33					691
151		7.25												690
152		0.95	29	5.0 5.0	100		R3					LIMESTONE, micrite-packstone, grey, fresh, med strong, violent hcl reaction, dissolution		689
153		0.78										LIMESTONE, packstone, grey, fresh, weak-med strong, strong-violent hcl reaction, 154.1-154.5 micritic		688
154		1.02					R2-R3							687
155		2.4					R2					LIMESTONE, wackestone, grey, fresh, weak, strong hcl reaction		686
156		1.78												685
157		1	30	5.1 5.0	100							LIMESTONE, packstone, grey, fresh, weak-med strong, strong-violent hcl reaction, slightly closer to wackestone, from 157-157.2, 160.3-161.1 micritic packstone, 161.4-161.8 micrite		684
158		0.95											Length of recovery stretched due to mechanical breaks.	683
159		0.8					R2-R3							682
160		2.27												681
161		1.8												680
162		0.88	31	5.0 5.0	100									679
163		1.02					R3					LIMESTONE, micrite, grey, fresh, med strong, violent hcl reaction, 163.6-163.9 packstone, 164.1-164.2 wackestone, 164.5-164.6 wackestone		678
164														

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
164		2.83	31	5.0	100		R3							677
165		3.88					R2-R3			2007-34		LIMESTONE, packstone, grey, fresh, weak-med strong, violent hcl reaction, grades to wackestone, more micritic in upper	300-400 down pressure	676
166		2.33					R2-R3							675
167		4.77	32	5.1	100		R2					LIMESTONE, wackestone, grey, fresh, weak, strong-violent hcl reaction, gradational lower contact		674
168		2.67					R2					LIMESTONE, packstone, grey, fresh, med strong, violent hcl reaction, 169.2-169.6 micritic, 170.6-171.6 more micritic, 174.25-174.6 wackestone	Length of recovery stretched due to mechanical breaks.	673
169		5.77												672
170		2.33												671
171		1.25				F								670
172		1.2	33	5.2	100									669
173		1.58					R3						Length of recovery stretched due to mechanical breaks.	668
174		1.72												667
175		2.13								2007-35		LIMESTONE, micrite,-packstone, grey to light grey, fresh, med strong, violent hcl reaction, 178.3-178.7 wackestone, 181.6-182 wackestone-packstone		666
176		1.27												665
177		1.77	34	5.0	100									664
178		1.62												663
179														

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
179		1.33	34	5.0	100							LIMESTONE, micrite, -packstone, grey to light grey, fresh, med strong, violent hcl reaction, 178.3-178.7 wackestone, 181.6-182 wackestone-packstone		662
180		1.73												661
181		1.45											300-400 down pressure	660
182							R3							659
183		1.12	35	5.0	100									658
184		1.02							2007-36					657
185		0.9												656
186		1.93										SHALE, very dark greenish grey, fresh, very weak, very slight-slight hcl reaction, sparse bedding, coal seam at 186.85-186.9, convoluted beds/rip up clasts 187-187.1, occasional shell fragments		655
187		4.13				F	R1				Bj, Pl, Sm, Ti			654
188		3.43	36	5.0	100							LIMESTONE, micrite, light grey, fresh, med strong, violent hcl reaction		653
189		0.77					R3					LIMESTONE, micrite-packstone, grey, fresh, med strong, some dissolution		652
190		1.22										LIMESTONE, wackestone, med grey, fresh, weak, slight-strong hcl reaction, 190.3-190.6 micrite		651
191		2.73					R2					LIMESTONE, wackestone, grey, fresh, med strong, violent hcl reaction		650
192		2.12					R3					LIMESTONE, micrite, grey, fresh, med strong, violent hcl reaction, heavy dissolution 191.7-191.85		649
193		4.87	37	5.0	100							SHALE, very dark greenish grey, fresh, very weak, planar bedding, rip up clasts,		648
194		0.83					R3					LIMESTONE, micrite, light grey, fresh, med strong, violent hcl reaction		647

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
194		0.6	37	5.0 5.0	100							greenish grey, fresh, very weak, slight-strong hcl reaction, massive fine-med grained, 196.35-196.7 shaley interbed with rip up clasts convoluted beds	no psi, let her drift	647
195		0.63					R1						0 psi down pressure, 300psi	646
196		2.22												645
197		2.43	38	4.9 5.0	98							SANDSTONE/MUDSTONE, very dark greenish grey, fresh, very weak, slight-strong hcl reaction, very fine-fine grained		644
198		1					R3					LIMESTONE, micrite, grey, fresh, med strong violent hcl reaction, oolitic, 197.9-198.2 packstone, 199.25-199.5 wackestone		643
199		1.33												642
200		2.3					R1					SANDSTONE, greenish grey, fresh, very weak, no-very slight hcl reaction, fines downward	no psi	641
201		5.88							2007-38			SHALE/MUDSTONE, very dark greenish grey, fresh, very weak, no to very slight hcl reaction, planar bedding, very thinly bedded, rip up clasts		640
202		3.62	39	5.0 5.0	100		R2-R3					LIMESTONE, micrite, light grey, fresh, weak-med strong, strong hcl reaction, interbedded with sandstone (fine grained), 202.202.55 oolitic micrite, 202.55-203.35 micritic sandstone, 203.55-203.7 shale	rig jacked toward end of foot water loss	639
203		8.47												638
204		8.83					R2					LIMESTONE, packstone, grey, fresh, weak, violent hcl reaction		637
205		6.17												636
206		10.53					R1-R2					LIMESTONE, wackestone, with sandy shaley beds, dark grey, fresh, very weak-weak, strong hcl reaction, mixed planar bedding and convoluted beds with rip up clasts, 206.5-206.9 shale, 206.9-207.5 micritic with bottom .2' shale		635
207		7	40	5.0 5.0	100									634
208		7.87					R2					LIMESTONE, wackestone, dark grey, fresh, weak, strong-violent hcl reaction, more shale content near base		633
209							R3							

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
209		4.75	40	5.0	100		R3					LIMESTONE, micrite, grey, fresh, med strong, violent hcl reaction, some dissolution		632
210		5.33										LIMESTONE, wackestone, dark grey, fresh, weak, strong hcl reaction		631
211		5.25					R2		2007-39			LIMESTONE, micrite, interbedded with sandstone and shale beds, dark grey, fresh, weak, violent hcl reaction, planar bedding, very thinly spaced, very thin beds occasional rip up clasts and convoluted beds 211.55-211.7 rip up clasts and convoluted beds		630
212		3.83	41	5.0	100							LIMESTONE, packstone, grey, fresh, med strong, violent hcl reaction, 213.2-213.4 wackestone		629
213		2												628
214		3.5					R3							627
215		1.97												626
216		2				F	R1-R2					LIMESTONE, wackestone, dark grey, fresh, very weak to weak, violent hcl reaction grades to shale		625
217		4.37	42	5.0	100							SHALE, very dark greenish grey, fresh, very weak, slight hcl reaction, shell fragments, rip up clasts, top .4' sandy, 217.85-218.3 sandstone, convoluted beds 218.15-218.25		624
218		0.65										LIMESTONE, micrite, grey, fresh, med strong, violent hcl reaction		623
219		1.45					R3							622
220		1.72										SANDSTONE, greenish grey, fresh, weak, no-very slight hcl reaction, large limestone clasts to rip up clasts at 220.1-220.3, 220.4-220.5, 220.7-220.8, 220.9-221.25, sandstone coarsen to med grained at 223	Ops, down pressure, poor water return	621
221		1.38												620
222		1.83	43	5.0	100		R2		2007-40					619
223		0.6												618
224														


Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-2007**


Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
224		0.38	43	51.0	100	F	R2							617
225													bottom of hole	616
226														615
227														614
228														613
229														612
230														611
231														610
232														609
233														608
234														607
235														606
236														605
237														604
238														603
239														



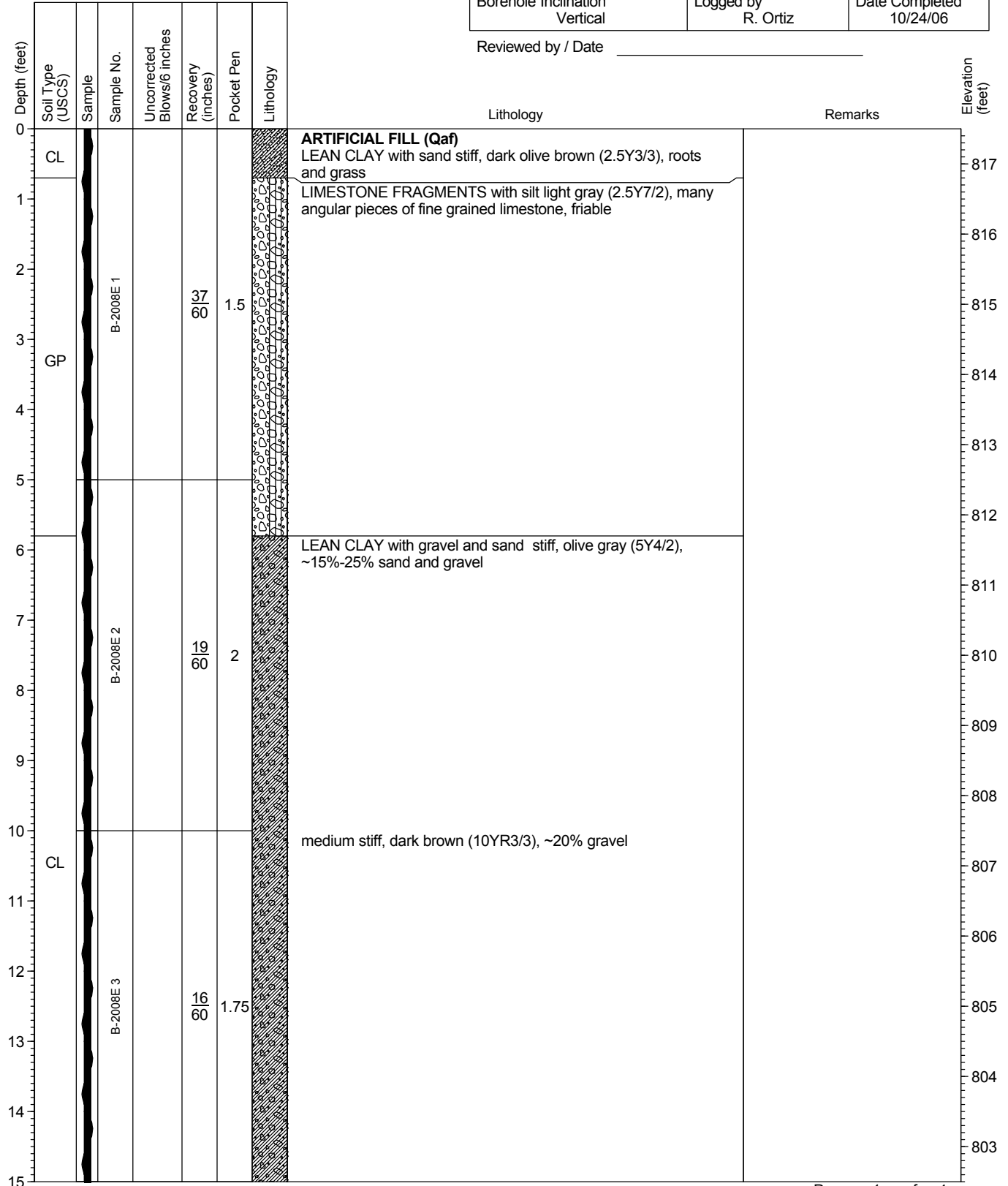
Project Name and Job Number TXU Comache Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-2008 offset</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'09.21386"N / 97°47'29.14203"W		Total Depth 13 feet	
Drilling Contractor and Rig Fugro / CME 45C		Elevation and Datum 840.92 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 13 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 5	Date Started 12/12/06	
		Borehole Inclination Vertical	Logged by M. Buga	Date Completed 12/12/06	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 12/13/06

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0										840
1			B-2008 offset 1	39	11/11			RESIDUAL SOIL (RS) LIMESTONE FRAGMENTS very dense, gray (5YR7/1), dry, crystalline; (weathered limestone ledge)		839
2				50/5"						838
3								SANDY LEAN CLAY hard, dark yellowish brown (10YR4/6), damp to moist, occasional cobbles		837
4			B-2008 offset	33	18/18					836
5	CL			19						835
6				15						834
7			B-2008 offset	7	18/18			medium stiff, color to yellowish brown (10YR5/6)		833
8				5						832
9				6						831
10			B-2008 offset	39	18/18			SILTY SAND dense, brownish yellow (10YR6/8), damp to moist		830
11	SM			25						829
12				17						828
13			B-2008 offset	10	8/8			CLAYEY SAND medium dense, yellowish brown (10YR5/4), damp		827
14	SC			50/2"						826
15								Top of Bedrock at 13'	Auger refusal	

Project Name and Job Number TXU Comache Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-2008E</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'09.21386"N / 97°47'29.14203"W		Total Depth 67 feet	
Drilling Contractor and Rig TEXPLOR / CME 75		Elevation and Datum 817.5 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 61.8 feet	
Sampling Method CME Continuous Core		Sample Driving Hammer/Drop NA / NA	No. of Samples 11	Date Started 10/24/06	
		Borehole Inclination Vertical	Logged by R. Ortiz	Date Completed 10/24/06	

Reviewed by / Date \_\_\_\_\_



Project Name and Job Number TXU Comanche Peak COL 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">SOIL LOG</h2> <h2 style="margin: 0;">Boring No. B-2008E</h2>
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Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
15							Lithology		Elevation (feet)
15							LEAN CLAY with gravel and sand stiff, olive gray (5Y4/2), ~15%-25% sand and gravel <i>(Continued from previous page)</i>		802
16							stiff, light yellowish brown (2.5Y6/3), dry, ~20% angular limestone clasts		801
17			B-2008E 4		16/60	1.5			800
18									799
19									798
20									797
21									796
22			B-2008E 5		14/60				795
23	CL								794
24									793
25							medium stiff, yellow (2.5Y7/6), dry		792
26									791
27			B-2008E 6		25/60	1			790
28									789
29									788
30									



Undisturbed sample  
SH = Shelby; P = Pitcher; O = other












Driven (2.5 to 3.0 inch) with liners  
MC = Modified California; O = other



Standard Penetration Test (SPT) sampler

Project Name and Job Number TXU Comanche Peak COL 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">SOIL LOG</h2> <h2 style="margin: 0;">Boring No. B-2008E</h2>
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Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
30	CL		B-2008E 7	60	60	1	LEAN CLAY with gravel and sand stiff, olive gray (5Y4/2), ~15%-25% sand and gravel <i>(Continued from previous page)</i> light yellowish brown (2.5Y6/3), some limestone fragments			787
31							damp to moist		786	
32										785
33	GP		B-2008E 8	60	16	1	LIMESTONE GRAVEL with sand gray, dry			784
34										783
35										782
36	ML		B-2008E 9	60	18	60	moist to wet			781
37										780
38										779
39	ML		B-2008E 9	60	18	60	water draining from split barrel			778
40										777
41										776
42	ML		B-2008E 9	60	18	60	SILT with gravel stiff, olive yellow (2.5Y6/6), moist to wet			775
43										774
44										773
45	ML		B-2008E 9	60	18	60	soft to very soft, pale yellow (5Y7/4), wet			773
44										773
45										773

 Undisturbed sample SH = Shelby; P = Pitcher; O = other	 Driven (2.5 to 3.0 inch) with liners MC = Modified California; O = other	 Standard Penetration Test (SPT) sampler
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Project Name and Job Number  
 TXU Comache Peak COL  
 1908



**SOIL LOG**  
**Boring No. B-2008E**

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
45							GRAVELLY SAND with silt gray (N5/0), wet, ~40% gravel		772
46									771
47			B-2008E 10		13 60				770
48									769
49									768
50	SP-SM						loose to medium dense, pale yellow (5Y8/2), fine to coarse sand		767
51									766
52			B-2008E 11		26 60				765
53									764
54									763
55									762
56							Switched to mud rotary to reach top of bedrock, no samples taken. Top of Bedrock reached at 61.8.' For verification continued drilling with tricone bit to 67.' Bottom of hole at 67.'		761
57									760
58									759
59									758
60									758




Undisturbed sample  
 SH = Shelby; P = Pitcher; O = other



Driven (2.5 to 3.0 inch) with liners  
 MC = Modified California; O = other




Standard Penetration Test (SPT) sampler

Project Name and Job Number TXU Comache Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-2008</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'09.21386"N / 97°47'29.14203"W		Total Depth 225 feet	
Drilling Contractor and Rig Fugro / CME 45C		Elevation and Datum 840.624 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 12.5 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 1	Date Started 12/3/06	
		Borehole Inclination Vertical	Logged by R. Turner	Date Completed 12/6/06	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 1/10/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
0									840
1	GP		B-2008 1	16	17	0.75	RESIDUAL SOIL LIMESTONE FRAGMENTS with sand dense, yellow (10YR6/6), angular clasts, fine sand to 0.3" gravel, slight reaction to HCl		839
2				45	17.5				838
2.5				50/5.5"				Top of Bedrock at 12.5.' See Rock Log for 2.4' to 12.5.'	838
3									837
4									836
5									835
6									834
7									833
8									832
9									831
10									830
11									829
12									828
13									827
14									826
15									826

Project Name and Job Number TXU Comanche Peak Col 1908		 WLA William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. B-2008</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'09.21386"N / 97°47'29.14203"W		Total Depth 225 feet	
Drilling Contractor and Rig Palmerston and Parrish / CME-55		Elevation and Datum 840.624 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 12.5 feet	
Casing Size and Depth 4 inch / 13.5 feet		Length of Core Barrel and Bit 8.8 feet	No. of Core Boxes 15	Date Started 12/6/06	
		Borehole Inclination Vertical	Logged by A Tillery, K. Krug, R. Turner	Date Completed 12/6/06	

Reviewed by / Date R. Ortiz 1/10/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
4		2.92	1	0.7 1.3	50							LIMESTONE: micrite; sparitic; grayish orange (10YR 7/4); massive; interbeds of highly weathered (HW) shale; medium toughness; slow dilatancy; slight to strong HCl reaction; fresh (F); strong (R4). [Glen Rose Formation]		836
5		0.58												835
6		0.92												834
7		0.77	2	2.5 5.0	50	F-HW	R4							833
8		0.63												832
9		0.9												831
10		1.65												830
11		1.25												829
12		1.28	3	4.8 5.0	94						Bj, Ti, R6			828
13		1.2									Jo, He, R6	LIMESTONE: sparite; very light gray (N8); abundant bivalve fossils; massive; subhorizontal stylolites; vuggy along natural joint; fresh (F); strong (R4); dry; strong HCl reaction. [Glen Rose Formation]	Top of Bedrock	828
14		1.17									Jo, Ti, R6 Jo, Ti, R7			827
15		1.95				F	R4				2008-2			826
16		2.4									Jo, He, R5 Jo, Ti, RT5			825
17		2.83	4	5.0 5.0	94						Jo, Ti, R5 Jo, Ti, R5			824
18		1.78				F	R1				2008-3	LIMESTONE: micrite; shaly; medium gray (N5); massive; fresh (F); very weak (R1); damp; strong HCl reaction. [Glen Rose Formation]		823
														822

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-2008**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
19		1.78										LIMESTONE: micrite; shaly; medium gray (N5); massive; fresh (F); very weak (R1); damp; strong HCl reaction. [Glen Rose Formation]		821
20		2.05	4	5.0	94	F	R1						gradational contact	820
21		2.43								2008-4		SHALE: medium light gray (N6); very thin beds; pyritic; fresh (F); very weak (R1); damp; no HCl reaction; becomes medium dark gray (N4) at 21.4'. [Glen Rose Formation]		819
22		4.37				F	R1							818
23		1.75	5	5.1	100									817
24		0.98				F	R2					LIMESTONE: wackestone; medium light gray (N6); thin beds; fossils; bioturbated; fresh (F); weak (R2); dry; strong HCl reaction. [Glen Rose Formation]		816
25		3.85										SHALE: medium gray (N5); very thin beds; pyritic; fossils; bioturbated; fresh (F); very weak (R1); damp; no HCl reaction. [Glen Rose Formation] Wackestone beds 1.0" to 3.0" thick from 25.3' to 26.7'.		815
26		2.8				F	R1							814
27		2.97								2008-5		LIMESTONE: wackestone; very light gray (N8) to medium light gray (N5); thin beds; fresh (F); weak (R2); dry; violent HCl reaction. [Glen Rose Formation]		813
28		0.92	6	5.0	100								27.9' to 29.4': wackestone is shaly and bioturbated, with bivalves.	812
29		2.57				F	R2							811
30		1.02												810
31		3.2								2008-6		LIMESTONE: packstone; very light gray (N8) to medium light gray (N6); thin beds; many small (< 0.1") fossils; bioturbated; fresh (F); weak (R2); violent reaction to HCl. [Glen Rose Formation]		809
32		1.97	7	4.9	98								gradational contact	808
33		0.77				F	R2							807
		3.88											Wackestone turns to medium gray (N5).	



Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-2008**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
34		3.88												
35		6.02	7	4.9	98	F	R2							806
		3.08								2008-7		Highly bioturbated from 35.0' to 35.8.		805
36		6.3				F	R1					SHALE: dark gray (N3); very thin beds; interbeds of limestone 0.5" to 0.8" thick; bioturbated; fresh (F); very weak (R1); damp; very slight HCl reaction. [Glen Rose Formation]		804
37		5.57	8	5.0	100							LIMESTONE: wackestone; very light gray (N8); thin beds; interbeds of shale 0.2" to 0.9"; fresh (F); weak (R2); dry; violent HCl reaction. [Glen Rose Formation]		803
38		2.08												802
39		1.87				F	R2							801
40		2.12												800
41		2.7								2008-8		LIMESTONE: packstone; very light gray (N8) to medium gray (N5); thin convoluted beds; highly bioturbated; shaly from 41.5' to 42.5'; fresh (F); weak (R2); strong HCl reaction. [Glen Rose Formation]		799
42		2.98	9	5.0	100	F	R2					LIMESTONE: wackestone; very light gray (N8); thin beds; fresh (F); weak (R2); strong HCl reaction. [Glen Rose Formation]	gradational contact	798
43		3.68				F	R2							797
44		2.22				F	R2					LIMESTONE: packstone; very light gray (N8) to medium light gray (N6); thin convoluted beds; highly bioturbated; bivalve fossils; fresh (F); weak (R2); violent HCl reaction. [Glen Rose Formation]	gradational contact	796
45		2.18												795
46		6.83	10	5.0	100	F	R1					SHALE: medium dark gray (N4) to dark gray (N3); very thin beds; fresh (F); very weak (R1); damp; no HCl reaction. [Glen Rose Formation]	gradational contact	794
47		9.42								2008-9				793
48		8.52												792

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-2008**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
49		8.52												
		4.68	10	5.0	100	F	R2						gradational contact	791
50														
		4.85												
51						F	R1							790
		7.33												789
52														
		8.68	11	5.1	100									788
53														
		2.47											Length of recovery stretched due to mechanical breaks.	787
54						F	R2							
		3.62								2008-10				786
55														
		11.3												785
56														
		10.08				F	R1							784
57														
		10.42	12	5.0	100									783
58														
		8.22				F	R2							782
59										2008-11				
		6.25												781
60						F	R1							
		5.1												780
61														
		3.85	13	5.0	100									779
62						F	R2							
		3.75								2008-12				778
63														
		2.57												777

If, T1, R7

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-2008**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
64		2.57	13	5.0 5.0	100								Highly bioturbated from 64.2' to 65.2'.	776
65		2.35												
66		4.78												
67		3.17	14	5.0 5.0	100								774	
68		1.07												
69		1.6												
70		1.9	15	5.0 5.0	100	F	R2						771	
71		2.45												
72		1.53												
73		2.12	16	5.0 5.0	100							Bioturbated from 71.5' to 72.3'.	769	
74		1.22												
75		1.6												
76		1.57	16	5.0 5.0	100	F	R2					LIMESTONE: packstone; medium light gray (N5) to medium gray (N5); thin beds; bioturbated; fresh (F); weak (R2); dry; violent HCl reaction. [Glen Rose Formation]	766	
77		2.12												
78		2.15												
		2				F	R2					LIMESTONE: wackestone; very light gray (N8) to medium light gray (N6); thin beds; interbeds of shale 0.4" to 3.5" thick; subhorizontal stylolites; fresh (F); weak	763	
														762

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-2008**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
79		2										(R2); dry; violent HCl reaction. [Glen Rose Formation]		761
		1.85	16	<u>5.0</u> 5.0	100									
80														
		2.27												
81														
		2.3							2008-16					759
82														
		3.22	17	<u>4.9</u> 5.0	98									
83														
		3											Length of recovery stretched due to mechanical breaks.	757
84														
		2.63												756
85														
		1.53							2008-17					755
86						F	R2							
		1.57												754
87														
		1.42	18	<u>5.0</u> 5.0	100									753
88														
		1.47												752
89														
		3.08												751
90														
		1.25							2008-18					750
91														
		1.75												749
92			19	<u>4.9</u> 5.0	98									
		2.85												748
93														
		1.55												747

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-2008</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
94		1.55												
		2.07	19	4.50	98									746
95														
		1.93				F	R2							745
96														
		1.53												744
97														
		2.27	20	5.00	100									743
98														
		3.75				F	R2					LIMESTONE: micrite; medium light gray (N6); very thin beds; some bioturbation; fresh (F); weak (R2); dry; violent HCl reaction. [Glen Rose Formation]	gradational contact	742
99														
		2.3												
100												LIMESTONE: packstone; light to medium gray (N5); thin beds; subhorizontal stylolites; fresh (F); weak (R2); dry; violent HCl reaction. [Glen Rose Formation]	gradational contact	741
		1.25				F	R2							740
101														
		1.53												739
102														
		1.55	21	5.00	100							LIMESTONE: wackestone; medium light gray (N6); thin beds; bioturbated; fresh (F); weak (R2); dry; violent HCl reaction. [Glen Rose Formation]		738
103						F	R2							
		2.3												737
104												LIMESTONE: packstone; very light gray (N8) to medium light gray (N6); thin convoluted beds; bioturbated; fresh (F); weak (R2); dry; violent HCl reaction. [Glen Rose Formation]		736
		3.07												
105						F	R2							
		3.07												735
106														
		3.67												
107			22	5.00	100	F	R1					LIMESTONE: micrite; medium light gray (N6) to medium gray (N5); very thin beds; fresh (F); very weak (R1); dry; violent HCl reaction. [Glen Rose Formation]	gradational contact	734
		1.95												733
108						F	R2					LIMESTONE: packstone; very light gray (N8) to medium gray (N5); thin beds; fresh (F); weak (R2); dry; violent HCl reaction. [Glen Rose Formation]		732
		1.62												

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-2008</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)									
109		1.62	22	5.0 5.0	100							LIMESTONE: packstone; very light gray (N8) to medium gray (N5); thin beds; fresh (F); weak (R2); dry; violent HCl reaction. [Glen Rose Formation]		731									
		3.3																					
110		2.27																			Bioturbation, 110.6' to 111.3'.		730
111		2.4														F	R2				Shaly damp zone, 111.6' to 112.9'.		729
112		1.62	23	5.0 5.0	100								gradational contact	728									
113		1.27																			LIMESTONE: micrite; very light gray (N8) to medium light gray (N6); very thin beds; fresh (F); weak (R2); dry; strong HCl reaction. [Glen Rose Formation]		727
114		1.48														F	R2						726
115		2.17	24	5.0 5.0	99								gradational contact	725									
116		1.72																			LIMESTONE: wackestone; medium light gray (N6) to light gray (N7); thin beds; some bioturbation; fresh (F); weak (R2); dry; violent HCl reaction. [Glen Rose Formation]		724
117		1.92														F	R2						723
118		5.5																					722
119		6.22				F	R2					LIMESTONE: packstone; medium light gray (N6) to light gray (N7); thin beds; bioturbation burrows; fresh (F); weak (R2); dry; strong HCl reaction. [Glen Rose Formation]		721									
120		2.22	25	5.0 5.0	99								gradational contact	720									
121		2.18																			LIMESTONE: wackestone; very light gray to medium gray (N8 to N5); thinly bedded; bioturbations; fresh (F); weak (R2); dry; violent reaction to HCl. [Glen Rose Formation]		719
122		2.97														F	R2				Highly bioturbated, 122.1' to 123.4'.		718
123		5.5												717									

Project Name and Job Number  
 TXU Comanche Peak Col  
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**ROCK LOG**  
**Boring No. B-2008**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
124		5.5	25	5.0 5.0	99	F	R2							716
		2.93												
125		6.83				F	R1						gradational contact	715
126		5.95												
127		5.68	26	5.0 5.0	100	F	R2							714
128		3.67												
129		3.63				F	R1			2008-25			gradational contact	713
130		4.33												
131		7.33				F	R2						gradational contact	712
132		12.83												
133		9.67	27	4.9 5.0	98	F	R2							711
134		6.17												
135		3.63				F	R2						gradational contact	710
136		7.83												
137		6.85	28	5.0 5.0	100	F	R2							709
138		1.47												
														708
														707
														706
														705
														704
														703
														702

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-2008</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
139		1.47	28	5.0 5.0	100							LIMESTONE: packstone; light gray (N7) to medium gray (N5); thin beds; bioturbated from 135.0' to 137.5'; fresh (F); weak (R2); dry; strong HCl reaction. [Glen Rose Formation]		701
140		1.73												700
141		1.63												699
142		1.77												698
143		5.13	29	4.9 5.0	98	F	R2				LIMESTONE: micrite; shaly; medium bluish gray (5B 5/1); very thin beds; fresh (F); very weak (R1); strong HCl reaction; dry. [Glen Rose Formation]	rip up clasts at contact	697	
144		6.92											696	
145		6.53	30	4.9 5.0	98						Darker, more shaly, bioturbated below 146.5'.		695	
146		5.65											694	
147		11.78											693	
148		10.2											692	
149		10.7	31	5.0 5.0	100	F	R2				LIMESTONE: packstone; light gray (N7) to medium light gray (N6); thin beds; burrows; fresh (F); weak (R2); dry; violent HCl reaction. [Glen Rose Formation]	gradational contact	691	
150		9.65											690	
151		4.12											689	
152		5.85											688	
153		3.23											687	
		0.53												



Project Name and Job Number  
 TXU Comanche Peak Col  
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**ROCK LOG**  
**Boring No. B-2008**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
154		0.53												686
155		1	31	5.0	100									685
156		2.1												684
157		1.62							2008-30					683
158		3.22	32	5.0	100									682
159		3.68				F	R2							681
160		2.35												680
161		2.33										Subhorizontal stylolites from 160.8' to 163.4'.		679
162		2.7												678
163		2.4	33	5.0	99									677
164		2.37												676
165		2.3										LIMESTONE: wackestone; very light gray (N8) to light gray (N7); thin beds; bioturbated; fresh (F); weak (R2); dry; violent HCl reaction. [Glen Rose Formation]	gradational contact	675
166		3.02				F	R2							674
167		7.13	34	5.0	100							LIMESTONE: packstone; light gray (N7) to medium gray (N5); thin convoluted beds; burrows; fresh (F); weak (R2); dry; violent HCl reaction. [Glen Rose Formation]	gradational contact	673
168		7.55				F	R2							672
		3.8				F	R2		2008-31				gradational contact	

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2008</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
169		3.8	34	5.0 5.0	100	F	R2					LIMESTONE: wackestone; very light gray (N8) to medium light gray (N6); thin beds; some burrows; fresh (F); weak (R2); dry; violent HCl reaction. [Glen Rose Formation]		671
170		3.52												670
171		3.07												669
172		2.87	35	4.9 5.0	98						Bivalve fossils, 171.1' to 172.5'.		668	
173		3.2											667	
174		3.7											666	
175		2.92	36	5.0 5.0	100	F	R2			2008-32	Subhorizontal stylolites from 175.0' to 176.8'.	gradational contact	665	
176		2.27											664	
177		2.82											663	
178		2.52	37	5.0 5.0	100	F	R2				Subhorizontal stylolites from 178.7' to 180.6'.		662	
179		2.32											661	
180		2.27											660	
181		2.33	37	5.0 5.0	100								659	
182		5.52											658	
183		2.28											657	
		1.97												657

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2008</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)				
184		1.97	37	51.0 5.0	100	F	R2					LIMESTONE: packstone; very light gray (N8) to medium gray (N5); thin convoluted beds; many burrows; some bivalve fossils; fresh (F); weak (R2); dry; violent HCl reaction; subhorizontal stylolites from 175.0' to 176.8'; 178.7' to 180.6'. [Glen Rose Formation]		656				
185		2.1																655
186		2.7																654
187		7.87	38	4.8 5.0	96	F	R1							653				
188		5.92														gradational contact	652	
189		1.58																651
190		6.58	39	4.8 5.0	96	F	R2							650				
191		3.83														gradational contact	649	
192		3.43																648
193		5.2	40	4.8 5.0	96	F	R1							647				
194		3.68														gradational contact	646	
195		3.17																645
196		1.93	40	4.8 5.0	96	F	R2							644				
197		2.92																643
198		2.47																642
		1.63												642				

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2008</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
199		1.63												
		2.95	40	4.08 5.0	96	F	R2					Burrows from 199.1' to 199.5'.		641
200						F	R1					SHALE: dark gray (N3); very thin beds; very weak (R1); fresh (F); damp; no HCl reaction. [Glen Rose Formation]		640
201		4.93				F	R1					SANDSTONE: dark gray (N3); very thin beds; fresh (F); very weak (R1); damp; no HCl reaction; interbeds of shale 1.0" thick. [Glen Rose Formation]		639
202		4.25				F	R2					LIMESTONE: packstone; very light gray (N8) to medium light gray (N6); thin beds; fresh (F); weak (R2); strong HCl reaction. [Glen Rose Formation]		638
203		3.47	41	5.0 5.0	100	F	R1					SANDSTONE: dark gray (N3); very thin beds; fresh (F); very weak (R1); damp; no HCl reaction; interbeds of shale 1.0" thick. [Glen Rose Formation]		637
204		5.43				F	R1					LIMESTONE: micrite; medium dark gray (N4); very thin beds; fresh (F); very weak (R1); damp; violent HCl reaction. [Glen Rose Formation]		636
205		5.5										LIMESTONE: wackestone; very light gray (N8) to medium light gray (N6); thin wavy beds; fresh (F); weak (R2); violent HCl reaction. [Glen Rose Formation]		635
206		8.27										Shaly, with burrows and bioturbations, from 205.0' to 206.7'.		634
207		7.03				F	R2							633
208		8.87	42	5.0 5.0	100									632
209		6.07												631
210		2.45												630
211		5.72				F	R2					LIMESTONE: packstone; light gray (N7); thin beds; fresh (F); weak (R2); dry; violent reaction to HCl. [Glen Rose Formation]	gradational contact	629
212		9.85	43	5.0 5.0	100	F	R1					LIMESTONE: micrite; light gray (N7) to medium dark gray (N4); very thin beds; few burrows; fresh (F); very weak (R1); slightly damp; strong HCl reaction. [Glen Rose Formation]		628
213		4.68										LIMESTONE: packstone; very light gray (N8) to medium dark gray (N4); thin beds; many burrows; fresh (F); weak (R2); dry; violent HCl reaction; shaly from 217.2' to 218.1'. [Glen Rose Formation]		627
		4.08				F	R2							

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2008</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
214		4.08										LIMESTONE: packstone; very light gray (N8) to medium dark gray (N4); thin beds; many burrows; fresh (F); weak (R2); dry; violent HCl reaction; shaly from 217.2' to 218.1'. [Glen Rose Formation]		626
		4.47	43	5.0	100									
215		2.6												625
216		2.6				F	R2							624
217		4.63	44	5.0	99							Shale interbed 217.6' to 217.8'.		623
218		1.13												
219		1.75										SANDSTONE; medium bluish gray (5B 5/1); massive to thinly bedded; fresh (F); very weak (R1); damp; no HCl reaction. [Twin Mountain Formation]		621
220		2.7								2008-36				620
221		1.77										Silty sand zone from 221.8' to 222.6'; medium gray (N5).		619
222		1.73	45	4.7	94	F	R1							618
223		0.48												617
224		0.85												616
225													Total depth drilled 225.0'.	615
226														614
227														613
228														612

Project Name and Job Number TXU Comanche Peak Col 1908		 <b>ROCK LOG Boring No. B-2008E</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'09.21386"N / 97°47'29.14203"W	Total Depth 67 feet
Drilling Contractor and Rig TEXPLOR / CME 75		Elevation and Datum 817.5 feet NAVD88	Ground Water Depth DRY
Casing Size and Depth 4"		Length of Core Barrel and Bit	No. of Core Boxes
		Borehole Inclination Vertical	Logged by R. Ortiz
			Date Completed 10/24/06

Reviewed by / Date \_\_\_\_\_

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
0													1105 begin drilling	817
1												GRAVEL, with silt, light grey, many angular pieces of fine grained limestone, strong effervescent, friable, (boulder?), fill		816
2														815
3														814
4														813
5														812
6												SILT, with gravel and sand olive grey, stiff, 15-25% sand and gravel, fill		811
7														810
8														809
9														808
10												SILT with gravel, dark brown, medium stiff, 20% gravel, fill		807
11														806
12														805
13														804
14														803
15														

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-2008E**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
15														802
16														801
17														800
18														799
19														798
20														797
21														796
22														795
23														794
24														793
25														792
26														791
27														790
28														789
29														788
30														

Project Name and Job Number  
 TXU Comanche Peak Col  
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**ROCK LOG**  
**Boring No. B-2008E**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
30												SILT with sand and clay to CLAY with sand light yellowish brown, medium stiff, fill		787
31														786
32														785
33														784
34														783
35												SILT, with sand, damp to moist, same as above		782
36												GRAVEL, dry, grey with sand, limestone gravel		781
37													auger has "walked" off the hole 1 ft to south, lunch 1210	780
38														779
39														778
40												GRAVEL, same as above, moist to wet		777
41														776
42												SILT, with gravel, olive yellow, moist to wet, fill	water draining from split barrel	775
43														774
44														773
45														



Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-2008E**


Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
45												CLAY, with gravel, pale yellow, wet, soft to very soft,	free water on sample barrel	772
46												SAND, gravelly some minor silt, grey, wet 40% gravel, fill		771
47														770
48														769
49														768
50												SAND, gravelly with silt, same as above		767
51												SAND, with gravel and silt pale yellow wet, fine to coarse sand, loose to medium dense, fill	100% water loss to formation, driller states that this feels like solid rock, not a boulder	766
52														765
53														764
54														763
55												NO Sample, mud rotary to 67	rig has more auger only 55' of auger. as per instructions from J. Wesling, rig will switch to mud rotary drilling to reach top of bedrock	762
56														761
57														760
58														759
59													1430	758
60														

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908




**ROCK LOG**  
**Boring No. B-2008E**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
60														757
61														756
62														755
63														754
64													250 gals used for 5ft of drilling	753
65														752
66													120 gals for 2ft	751
67													bottom of hole	750
68														749
69														748
70														747
71														746
72														745
73														744
74														743
75														

Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-2009-I offset</b>	
Type and Diameter of Boring HSA / 8"		Boring Location 32°18'07.84148"N / 97°47'29.82984"W		Total Depth 10.5 feet	
Drilling Contractor and Rig GeoTechnology / CME-55		Elevation and Datum 843.18 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 10.5 feet	
Sampling Method Standard		Sample Driving Hammer/Drop 140lbs / 30 inches	No. of Samples 4	Date Started 12/14/06	
		Borehole Inclination Vertical	Logged by M. Strane	Date Completed 12/14/06	

Reviewed by / Date F. Syms 12/14/06

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0								SILT with sand, light reddish grey, medium toughness, low plasticity, slow dilatancy, very stiff, rock in top 4" of sample, dry		843
1	CL		B-2009-I offset 1	21	16					842
2				26	18					841
3				28						840
4	ML		B-2009-I offset 2	6	14			SILT with clay, pale yellow, med to high toughness, med plasticity, none to slow dilatancy, medium stiff to stiff, damp to moist, some large clasts		839
5				18	15					838
6				50/3					Rig shaking, gravel?	837
7	ML		B-2009-I offset 3	38	17			SILT, light yellowish brown, low toughness, none to low plasticity, none to slow dilatancy, hard		836
8				50	17.5					835
9	CL		B-2009-I offset 4	50/5.5				CLAY with silt, brownish yellow high toughness, low plasticity, slow dilatancy, hard	Gradational contact	834
10				52/6	6			WEATHERED BEDROCK with silty matrix, yellow		833
11					6					832
12										831
13										830
14										829

Project Name and Job Number TXU Comanche Peak Col 1908					<h1 style="margin: 0;">ROCK LOG</h1> <h2 style="margin: 0;">Boring No. B-2009-I</h2>		
Type and Diameter of Boring HQ / 4"			Boring Location 32°18'07.84148"N / 97°47'29.82984"W		Total Length 225.7 feet		
Drilling Contractor and Rig Boart Longyear / 44TMA			Elevation and Datum 842.974 feet NAVD88		Ground Water Depth NA	Length to Bedrock 13.59 feet	
Casing Size and Depth 4" / 17 feet			Length of Core Barrel and Bit 13.5 feet		No. of Core Boxes 14	Date Started 11/29/06	
			Borehole Inclination 65 Degrees		Logged by E. Weldon	Date Completed 12/3/06	

Reviewed by / Date         R. Ortiz 12/3/06        

Length (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Length (feet)
18.00		1.28									Bps rough	LIMESTONE: grainstone to packstone; very light gray (N8) to light gray (N7); fine to coarse grained; violent HCl reaction; thin to medium spacing of laminae; shelly; with coal and anthracite laminae.	Begin rock coring, HQ, borehole drilled at 65 degree angle.	827
19.00		NM	1	4.4	91	MW-SW	R2				Bps mod rough			826
20.00		0.65		4.4					1009-I-1		Bps, Bps		no water loss.	825
21.00		1.08												824
22.00		NM										LIMESTONE: silty packstone to wackestone; olive gray (5 y 4/1); muddy matrix; supports abundant rip-up clasts of grainstone; strong HCl reaction; lacks coal laminae, bioturbated.	beginning of run 2, contact abrupt.	823
23.00		1.62												822
24.00		1.13	2	4.2	100	SW	R3					SILTSTONE: to fine grained sandstone; grayish black (N2); grains coarse silt to very fine sand; no gradation in size; slightly weathered; medium strong; bedding unclear due to extensive bioturbation; no HCl reaction.	Abrupt contact	821
25.00		1.73		4.1					1009-I-2					820
26.00		NM											pull steel casing and insert pvc	
27.00		1.32									BPS smooth	CLAYSTONE: medium gray (N5); very thinly bedded; no variation in grain size; slightly weathered; weak to extremely weak; no HCl reaction.		819
28.00		2.63												818
29.00		2.12	3	4.8	96	SW	R0-R2					LIMESTONE: wackestone; medium gray (N5) to white (N9); very thinly to thinly bedded; bioturbated; soft sediment deformation; strong HCl reaction; slightly weathered; medium strong.	begin drilling 0845,	817
30.00		1.63		5.0					1009-I-3					816
31.00		1.3											J.W. J.B. B.G. here	
32.00		3.28											wavy contact	815

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2009-I</h2>
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Length (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Length (feet)				
33		1.55	4	5.0 5.0	100	SW	R3					LIMESTONE: wackestone to micrite; white (N9) to medium gray (N5); very thinly to thinly bedded; intensely bioturbated; soft sediment deformation; strong HCl reaction except in claystone layers; slightly weathered; medium strong; sharp basal contact.	abrupt contact	813				
34		1.23														LIMESTONE: packstone; light gray (N7); massive; abundant grains of shell; strong HCl reaction.	abrupt contact	812
35		3.68														LIMESTONE: wackestone; medium gray (N5) to medium dark gray (N4); very thinly bedded; rip-up clasts of packstone; strong HCl reaction.	abrupt contact	811
36		2.73								1009-I-4		LIMESTONE: packstone; light gray (N7); thinly to very thinly bedded; channeled; strong HCl reaction; abrupt basal contact.	abrupt contact	810				
37		2.7										LIMESTONE: wackestone; medium gray (N5) as above; very jumbled; turbulent environment; with grains; many shell fragments; very coarse to silt sized; strong HCl reaction, slightly weathered to fresh; medium strong.	abrupt contact	809				
38		2.7	5	5.0 5.0	96	SW-F	R3							808				
39		1.83														no water loss	808	
40		1.9														driller slowed last 1 ft, slower in claystone	807	
41		6.45								1009-I-5		CLAYSTONE: with limestone beds; thinly bedded; rip-up clasts of white packstone; occasional chert gravel; clay has no HCl reaction; packstone has strong HCl reaction; slightly weathered; fresh; extremely weak claystone; strong packstone abrupt basal contact.		806				
42		3.97											805					
43		11.8	6	5.0 5.0	100	SW-F	R1-R3						fast to slow drilling	804				
44		NM															803	
45		5.67														LIMESTONE: packstone; crystalline matrix; massive to very thinly bedded; slight weathering; strong to very weak darker areas; rip-up clasts; soft sediment deformation in beds; strong HCl reaction, few vugs, 51.5'-52.6' heavily bioturbated.	abrupt contact	802
46		1.57								1009-I-7			801					
47		2.88				SW-F							801					
		3.52																

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Length (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Length (feet)
48		3.52	7	5.0 5.0	100	SW	R1-R3					LIMESTONE: packstone; crystalline matrix; massive to very thinly bedded; slight weathering; strong to very weak darker areas; rip-up clasts; soft sediment deformation in beds; strong HCl reaction, few vugs, 51.5'-52.6' heavily bioturbated.	good water return, no loss	800
49		3.2						799						
50		2.67						798						
51		2.67	8	5.0 5.0	100	SW-F	R1-R3					CLAYSTONE to SHALE: greenish gray (5 GY 6/1) to dark gray (N3); fines downward; sandy clay to fine shale; fossils; thinly bedded to very thinly bedded; fresh; medium strong to extremely weak; rip-up clasts; slight HCl reaction.	slow drilling broke off 4" too high, collected on next run	797
52		3.6						796						
53		3.6						795						
54		3.03						794						
55		7.3											793	
56		6.2											792	
57		5.8										LIMESTONE: packstone; layered; fresh; very weak to medium strong; interbedded with shale; shells; strong HCl reaction; bioturbated; clayey laminae; fissile.	abrupt contact	791
58		2.75	9	5.0 5.0	100	F	R1-R3					LIMESTONE: packstone; layered; fresh; very weak to medium strong; interbedded with shale; shells; strong HCl reaction; bioturbated; clayey laminae; fissile.	abrupt contact	790
59		5.07						789						
60		5.5						788						
61		4.63										CLAYSTONE: dark greenish gray (5 G 4/1) to greenish gray (5 G 6/1); very thinly bedded; fresh; weak; pyrite granules; slight channeling; 61.4'-61.5'; coarsens with more shells.	abrupt contact	788
62		3.65												787
		2.78												

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Length (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Length (feet)				
63		2.78	10	5.1 5.0	100	F-SW	R2-R3					LIMESTONE: packstone; light gray (N7); thinly bedded to massive; interlayers of wackestone; shells throughout; bioturbated 63.2'-63.4'; fresh; medium strong; rip-up clasts; strong HCl reaction.		786				
64		4.75														CLAYSTONE: dark greenish gray (5 G 4/1) to greenish gray (5 G 6/1); very thinly bedded; fresh; weak; pyrite granules; slight channeling; 61.4'-61.5'; coarsens with more shells.	Length of recovery stretched due to mechanical breaks.	785
65		4.78															broke off quite high, 1300 Cody will try to grab it	784
66		6.47								009-I-10				783				
67		4.58												782				
68		3.82	11	5.0 5.0	100	SW-F	R1-R3					LIMESTONE: packstone; light gray (N7); thinly bedded to massive; interlayers of wackestone; shells throughout; bioturbated 63.2'-63.4'; fresh; medium strong; rip-up clasts; strong HCl reaction.		781				
69		5.9														CLAYSTONE: dark greenish gray (5 G 4/1) to greenish gray (5 G 6/1); very thinly bedded; fresh; weak; pyrite granules; slight channeling; 61.4'-61.5'; coarsens with more shells.	retrieved last 2.7 from run 10, no loss, fits perfectly	780
70		5.72																779
71		1.98								009-I-11		LIMESTONE: packstone; light gray (N7); massive; laminae of wackestone; convoluted; 1.5 cm thick; muddy; fresh; medium strong; shell rich; strong HCl reaction; bioturbated; shell rich.		778				
72		NM												777				
73		4.25	12	5.0 5.0	100	F	R2-R3					CLAYSTONE: grayish black (N2); coarsens downward; very thin laminae; shell rich; light brown (5 YR 5/6); with well rounded gravels.		776				
74		NM														LIMESTONE: micrite; very light gray (N8); massive; very fine grained; fresh; strong; crystalline.		775
75		1.73														LIMESTONE: packstone; light gray (N7) to medium light gray (N6); thinly layered; rip-up clasts; soft sediment deformation; strong HCl reaction.		774
76		1.82								009-I-12				773				
77		3.27												772				
		1.88												771				

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Length (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Length (feet)					
78		1.88	13	5.0	100	F	R3					LIMESTONE: packstone; light gray (N7) to medium light gray (N6); thinly layered; rip-up clasts; soft sediment deformation; strong HCl reaction.	J.Wesling here, labeling jars	773					
79		2																no water loss	772
80		2.8																	
81		3.7	14	5.0	100	F	R1-R3					LIMESTONE: micrite; grading to wackestone; light gray (N7); massive; very finely laminated; gradational basal contact.	water delivery	770					
82		2.68																769	
83		3.47																	768
84		4.17	15	5.0	100	F	R1-R3					LIMESTONE: packstone; light gray (N7); rip-up clasts and soft sediment deformation throughout; strong HCl reaction; shells present.		767					
85		4.5																766	
86		1.68															LIMESTONE: micrite to packstone; massive; very light gray (N7); stretched burrows; strong HCl reaction; soft sediment deformation.		765
87		4	15	5.0	100	F	R1-R3					LIMESTONE: packstone; light gray (N7) to medium dark gray (N4); medium to coarse gravel; soft sediment deformation; shells; strong HCl reaction; fresh; weak to medium strong.		764					
88		4.35																763	
89		2.48																	762
90		NM	15	5.0	100	F	R1-R3					LIMESTONE: wackestone; dark gray (N3); with clasts of packstone; shells; strong HCl reaction; soft sediment deformation.		761					
91		1.37															LIMESTONE: micrite; or fine packstone; light gray (N7); massive; shells.		760
92		1.82															LIMESTONE: packstone; as above; fresh, weak to med strong, strong hcl reaction.		760
		5.87																	



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Length (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Length (feet)						
93		5.87	16	5.0 5.0	100	F	R2-R3					LIMESTONE; packstone; as above; biotubated burrows infilled with shell rich mud layer at 92.2'-92.6'.	incorrect label on hard sample 2009-16, fix later	759						
94	NM																		758	
95		2.42														009-I-16				757
96		3.55	17	5.0 5.0	100	SW-F	R2-R3					PACKSTONE: as above but increasing muddy shell rich matrix downward to contact; very light gray (N8) to dark gray (N3) in muddy interlayers.	stopped drilling 12/11/06-12/06start drilling	756						
97		2.68																	755	
98		1.6																		754
99		1.72																	water loss	753
100		2.12								009-I-17			752							
101		2.2	18	5.0 5.0	100	SW-F	R1-R2					LIMESTONE: packstone; very light gray (N8); massive; lacks layered grains; shell fragments; strong HCl reaction.		751						
102		3.92																750		
103		3.95														LIMESTONE: packstone; dark gray (N3) to light gray (N7); very thinly bedded with interlaminae of dark grey mud; shell rich; fresh; medium strong; strong HCl reaction.		749		
104		2.87														LIMESTONE: packstone; with laminae of wackestone; light gray (N7) to dark gray (N3); fresh; weak to medium strong.		748		
105		2.5																747		
106		1.48								009-I-20 009-I-18			746							
107		2.32																		
	NM																			

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	Length (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Length (feet)						
	108		NM	19	5.0 5.0	100	F	R2-R3					LIMESTONE: packstone; as above with texture changes from laminated to pinch and swell with lighter colored packstone clasts; soft sediment deformation; strong HCl reaction; shells abundant.	no water loss	745						
	109		2.03																		744
	110		1.18																		
	111		1.5										LIMESTONE: micrite; light olive gray (5 Y 6/1); very fine grained; massive with bioturbation; shells; finely laminated downward; fresh; very strong HCl reaction; strong.		742						
	112		2.08													741					
	113		2.77													740					
	114		1.42	20	5.0 5.0	100	F	R2-R3					LIMESTONE: packstone; medium grained; pinch and swell texture.		739						
	115		1.62														LIMESTONE: packstone; medium to coarse grained; laminated 115.3'-115.7', fine to medium grained; light gray (N7) to dark gray (N3); fresh; medium strong to weak; strong HCl reaction; abundant shells.		738		
	116		NM														LIMESTONE: wackestone; light olive gray (5 Y 6/1); fine to coarse grained; fresh; strong HCl reaction.		737		
	117		2.07												736						
	118		2.2	21	5.0 5.0	100	F	R2-R3					LIMESTONE: packstone; very light gray (N8) to olive gray (5 Y 4/1); medium to coarse grained; pinch and swell matrix; matrix fines downward; fresh; medium strong; strong HCl reaction; shells; soft sediment deformation.	abrupt contact	735						
	119		2																		734
	120		2.47																		733
	121		2										LIMESTONE: micrite and calcareous claystone; light olive gray (5 Y 6/1) to very light gray (N8); laminated; inclusions of wackestone; soft sediment deformation; strong to slight HCl reaction; fresh; strong.		732						
	122		2.3 1.08																		

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Length (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Length (feet)						
123		1.08	22	5.1 5.0	100	F	R3					LIMESTONE: packstone; medium dark gray (N4) to light gray (N7); medium to coarse grained; pinch and swells; fresh; medium strong; strong hcl reaction; soft sediment deformation is pervasive; bioturbation from 123.3'-123.8'; increase ni mud matrix with depth.	Length of recovery stretched due to mechanical breaks.	732						
124		2.3																	731	
125		1.5																		730
126		2.85	23	5.0 5.0	100	F	R3-R4		009-I-22			LIMESTONE: micrite; olive gray (5 Y 4/1); very thin to medium grained; massive; strong HCl reaction; fresh; very strong. CLAYSTONE: shale; olive gray (5 Y 4/1); very thinly to thinly bedded; no HCl reaction; soft sediment deformation.	no water loss	729						
127		3.23																	728	
128		2.15																		727
129		1.65																		726
130		2.15							009-I-23			LIMESTONE: packstone; light olive gray ( 5 Y 6/1); fine to medium grained; very thinly to thinly laminated; pinch and swell features; fresh; medium strong; strong HCl reaction.		725						
131		2.3										LIMESTONE: wackestone; light olive gray (5 Y 6/1); massive with interbeds of soft sediment deformation; pinch and swell; fresh; strong; strong HCl reaction.		724						
132		2.25												723						
133		2	24	5.0 5.0	100	F	R3-R4							722						
134		1.83																721		
135		3.22																720		
136		1.93							009-I-24					719						
137		2.88 3.78																		

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Length (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Length (feet)				
138		3.78	25	5.0 5.0	100	F	R3-R4					LIMESTONE: wackestone; light olive gray (5 Y 6/1); massive with interbeds of soft sediment deformation; pinch and swell; fresh; strong; strong HCl reaction.	run 25 broke off .7' too high collected in next run	718				
139		3.87																717
140		3.75																
141		3.08										CLAYSTONE: calcareous; grayish olive green (5 GY 3/2); very fine grained; shells; parallel bedding; fresh; weak; strong HCl reaction; thinly bedded.	abrupt contact	715				
142		5.83										LIMESTONE: packstone; light olive gray (5 Y 6/1) to light gray (N7); fine grained; sediment slumping in lowest 0.5'; fresh; strong.		714				
143		3.78	26	5.0 5.0	100	F	R1-R3					LIMESTONE: wackestone; grading into packstone; lowest 1' coarsening to packstone; massive; bioturbated; fresh; medium strong; strong HCl reaction; clay zone from 148.3'-148.5'.		713				
144		3.95																712
145		5.88																711
146		4										LIMESTONE: packstone; light olive gray (5 Y 6/1) to dark greenish gray (5 Y 4/1); medium grained; thinly bedded micritic to muddier layers (darker); fining downwead; fresh; strong HCl reaction; shells present, shale/claystone layer 148.3'-148.5'.		710				
147		4.37												709				
148		4	27	5.0 5.0	100	F	R2-R3							708				
149		4.92														LIMESTONE: packstone; light olive gray (5 Y 6/1) to light gray (N7); fine grained; fresh; strong.	abrupt contact	707
150		4.52																706
151		3.13												706				
152		NM 3.03																

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	Length (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Length (feet)
	153		3.03	28	5.0 5.0	100	F	R2-R3					LIMESTONE: packstone; light olive gray (5 Y 6/1) to light gray (N7); fine grained; fresh; strong.	abrupt contact	705
	154		3										LIMESTONE: wackestone; greenish gray (5 GY 6/1) with micrite inclusions; very fine grained; coarsens downward to packstone; fresh; weak; strong HCl reaction.		704
	155		2.97										LIMESTONE: packstone; light olive gray (5 Y 6/1) to very light gray (N6); similar to above; fining slightly downward; increasing micritic inclusions.		703
	156		3	29	5.0 5.0	100	F	R2-R3					J. Wesling assisting	702	
	157		3.87											701	
	158		3.08											700	
	159		2.8	30	5.0 5.0	100	F	R3					CLAYSTONE: dark greenish gray (5 GY 4/1); fine to medium grained; very thin to thinly layered; slight HCl reaction; burrows filled with wackestone; strong HCl reaction.	699	
	160		4.37											LIMESTONE: packstone; as above but coarsens downward to contact.	698
	161		4											LIMESTONE: wackestone; medium dark gray (N4); massive silt to fine sand; medium to strongly bioturbated; sediment deformation; pinch and swell and burrows; strong HCl reaction; fresh; semidium strong; bioturbated from 160.7'-163.9'.	697
	162		NM	30	5.0 5.0	100	F	R3					CLAYSTONE: dark greenish gray (5 GY 4/1); fine to medium grained; very thin to thinly layered; slight HCl reaction; burrows filled with wackestone; strong HCl reaction.	696	
	163		6.2										LIMESTONE: packstone; as above but coarsens downward to contact.	695	
	164		3.1										LIMESTONE: wackestone; medium dark gray (N4); massive silt to fine sand; medium to strongly bioturbated; sediment deformation; pinch and swell and burrows; strong HCl reaction; fresh; semidium strong; bioturbated from 160.7'-163.9'.	694	
	165		4.55	30	5.0 5.0	100	F	R3					CLAYSTONE: dark greenish gray (5 GY 4/1); fine to medium grained; very thin to thinly layered; slight HCl reaction; burrows filled with wackestone; strong HCl reaction.	693	
	166		3.92										LIMESTONE: packstone; as above but coarsens downward to contact.	692	
	167		3.35 3.45										LIMESTONE: wackestone; as above; interbeds of clay; very thinly irregular interlaminae filled with darker coarse material.	691	

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	Length (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Length (feet)					
	168		3.45	31	5.1 5.0	100	F	R3					LIMESTONE: wackestone; as above; interbeds of clay; very thinly irregular interlaminae filled with darker coarse material.	no water loss	691					
	169		3.87																Length of recovery stretched due to mechanical breaks. abrupt contact	690
	170		2.98								009-I-29				689					
	171		1.82												688					
	172		1.68	32	5.0 5.0	100	F	R2-R3					LIMESTONE: packstone; light gray (N7) to medium dark gray (N4); medium to coarse grained; crudely bedded; fresh; weak to medium strong; bioturbated; rip-up clasts; strong HCl reaction.	faster drilling	687					
	173		1.48																cold, windy	686
	174		2.53																	
	175		3.03												684					
	176		1.28												683					
	177		1.23	33	5.1 5.0	100	F	R2					LIMESTONE: packstone; light gray (N7); massive mud to coarse grained; weak; fresh; abundant shells; strong HCl reaction; soft sediment deformation.	Length of recovery stretched due to mechanical breaks. faster drilling	682					
	178		1.12																	681
	179		1.35																	
	180		0.65												679					
	181		0.75											no water loss	678					
	182		1.02 0.85																	

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Length (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Length (feet)				
183		0.85	34	5.0 5.0	100	SW	R1					LIMESTONE: packstone; light gray (N7); massive mud to coarse grained; weak; fresh; abundant shells; strong HCl reaction; soft sediment deformation.		677				
184		0.92																676
185		0.83																675
186		1.15	35	5.0 5.0	100	F	R1					CLAYSTONE: with packstone clasts 1-5 cm; pinch and swell texture; medium gray (N5) to very light gray (N8); thinly bedded; fresh; extremely weak to very weak; strong HCl reaction in packstone; no reaction in clay; shells.	1645	674				
187		2.78																673
188		2.95																LIMESTONE: packstone as above; with mud/shell rich interlaminae; medium to very thinly spaced; fresh to slightly weathered; weak to very weak.
189		1.92									671							
190		1.3							009-I-31		670							
191		1.88	36	5.0 5.0	100	SW-F	R0-R2					CLAYSTONE: with packstone interclasts as above but with less clay; gastropods; fresh to slightly weathered; weak.		669				
192		1.97															668	
193		1.65															LIMESTONE: packstone; light olive gray (5 Y 6/1); fine to medium grained; fresh to slightly weathered; thinly spaced; shell rich; coarsens downward; shells abundant; wavy laminae; abundant silt (1 mm to 1 cm thick); thicker laminae of silt/clay with shells; may be deformed burrows.	667
194		2.18									666							
195		2.67									665							
196		1.98											665					
197		2.18 1.58																


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	Length (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Length (feet)					
	198		1.58	37	5.0 5.0	100	SW-F	R1-R2					LIMESTONE: packstone; light olive gray (5 Y 6/1); fine to medium grained; fresh to slightly weathered; thinly spaced; shell rich; coarsens downward; shells abundant; wavy laminae; abundant silt (1 mm to 1 cm thick); thicker laminae of silt/clay with shells; may be deformed burrows.	J.wesling here, cold windy, hard to write	664					
	199		1.98																	663
	200		1.5																	662
	201		1.4								009-I-32				661					
	202		1.62												660					
	203		1.77	38	5.0 5.0	100	SW-F	R1-R2					LIMESTONE: wackestone; as above but slightly weathered; weak; matrix is finer grained; interlaminae thinning to 0.5 cm; very thinly spaced; pinch and swell; bioturbation; strong HCl reaction.		659					
	204		1.78																	658
	205		1.68																	657
	206		1.63										LIMESTONE: packstone; as above.		656					
	207		1.67										CLAYSTONE: dark gray (N3) to greenish black (5 GY 2/1); with interlaminae of light olive gray (5 Y 6/1); very thinly bedded; very fine grained.		655					
	208		2.4	39	4.9 5.0	98	R1-R2						LIMESTONE: packstone; light olive gray (5 Y 6/1); same as above with finer grained; more massive; soft sediment deformation which increases with depth.		654					
	209		2.97																653	
	210		2																652	
	211		1.93								009-I-33		CLAYSTONE: to calcareous claystone; olive grey (5 Y 4/1); more clay rich and less limey downward; strong to no HCl reaction; very fine sand; shell fragments; fresh; very weak; interbed of packstone from		651					
	212		2.98 2.68																	



Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2009-I</h2>
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Length (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Length (feet)
213		2.68	40	5.0	100	SW-F	R1-R2					211.7'-211.9'. LIMESTONE: packstone; fine to medium grained; fresh; medium strong; medium spaced; interlayers of shelly micrite; slightly reactive to HCl; burrows; massive; greenish gray (5 GY 6/1).		650
214		3.1		5.0								CLAYSTONE: shale as above; shells at upper contact.		649
215		2.87										LIMESTONE: micrite to wackestone; greenish grey (g GY 6/1); coarsens downward; very fine to medium grained; burrows filled with sandy silt; soft sediment deformation; fresh; strong; strong HCl reaction.		648
216		3.58										SANDSTONE: light olive gray (5 Y 6/1); very fine to fine laminations; weakly layered bedding; thinly spaced; slightly weathered; very weak; shell; strong to slight HCl reaction; bioturbated; fresh.		647
217		1.43										CLAYSTONE: as above.		646
218		1.87	41	5.0	100	SW-F	R0-R2						no water loss	645
219		3.02		5.0								LIMESTONE: packstone; light olive gray (5 Y 6/1); fine to medium grained; interlayers spaced very thinly to thin; fresh; medium strong; shell fragments; soft sediment deformation; burrows; strong HCl reaction; sandstone interbed 221.3'-221.6'.		644
220		2.8								009-I-34				643
221		1.73										LIMESTONE: packstone; light olive gray (5 Y 6/1); fine to medium grained; interlayers spaced very thinly to thin; fresh; medium strong; shell fragments; soft sediment deformation; burrows; strong HCl reaction.	drilling fast like sand, low pressure	642
222		1.38										CLAYSTONE: to shale; as above.		641
223		2	42	4.7	94	F	R0-R2					SANDSTONE: browner color than above but similar.		640
224		2.7		5.0								CLAYSTONE: calcareous; not fissile; may be siltstone; similar to 217.1'-218.9'; coarsens to silt and fine micrite from 223.4'-223.6'; siltstone at lower contact.		639
225		2.18										LIMESTONE, packstone, as above		638
226													Total depth drilled: 225.7'.	638
227														

Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG Boring No. B-2010</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'07.73186"N / 97°47'30.85096"W		Total Depth 226.4 feet	
Drilling Contractor and Rig Palmerston and Parrish / CME-55		Elevation and Datum 846.408 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 9 feet	
Casing Size and Depth 4" / 9 feet		Length of Core Barrel and Bit 8.56 feet	No. of Core Boxes 15	Date Started 12/6/06	
		Borehole Inclination Vertical	Logged by A Tillery, K. Krug, R. Turner	Date Completed 12/15/06	

Reviewed by / Date R. Ortiz 1/10/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
9.00		1.78				SW-F	R2				Fractures	SAPROLITE: white(N9); massive; crystalline; weak (R2); slightly weathered (SW); mild to strong HCl reaction. [Glen Rose Formation]	Top of Bedrock	837
10.00		1.43							2010-5			CLAY: pale yellow (2.5 YR 7/4); massive; no reaction to HCl; very weak to extremely weak. [Glen Rose Formation]	good gray water return	836
11.00		1.37	1	5.0 4.4	84	SW-F	R0							835
12.00		2.12										LIMESTONE: wackestone; greenish gray (5 GY 6/1). [Glen Rose Formation]		834
13.00		1.53				SW-F	R1-R2					SHALE: greenish gray (5 GY 6/1); extremely weak (R0); fresh (F); mild HCl reaction. [Glen Rose Formation]		833
14.00		2.55									Fractures every .1-.05'	LIMESTONE: wackestone; greenish gray (5 GY 6/1); weak (R2); fresh (F); strong HCl reaction. [Glen Rose Formation]	gray water return, 90%	832
15.00		1.9												831
16.00		1.15	2	5.1 5.0	100	F	R1-R2					SHALE: greenish gray (5 GY 6/1). [Glen Rose Formation]		830
17.00		3.22							2010-6			LIMESTONE: wackestone. [Glen Rose Formation]		829
18.00		3.5				F	R1-R2					SHALE: greenish gray (5 GY 6/1); extremely weak (R0); fresh (F); mild HCl reaction. [Glen Rose Formation]		828
19.00		2.8										LIMESTONE: packstone; white (N9); weak (R2); fresh. [Glen Rose Formation]		827
20.00		1.97					R0					SHALE: greenish gray (5 GY 6/1); weak (R2); fresh (F); fine grained; very finely laminated; calcareous; strong HCl reaction. [Glen Rose Formation]		826
21.00		1.08	3	5.0 5.0	96	F F	R1-R2					SAPROLITE: white (N9); massive; crystalline; small vugs; strong HCl reaction; fresh (F); extremely weak to weak. [Glen Rose Formation]		825
22.00		0.93												824
23.00		2.35							2010-7		fracture			823
24.00		1.65	4	5.0 5.0	100	F	R2							823

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2010</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
24		1.65										LIMESTONE: wackestone; greenish gray (5 GY 6/1); weak (R2); fresh (F); mild to strong HCl reaction; rip-up clasts; dark horizontal bands are dominant texture. [Glen Rose Formation]		822
25		2.23				F	R2							821
26		2.2	4	5.0 5.0	100									820
27		2.67										SHALE: greenish gray (5 GY 6/1); massive; extremely weak (R0); fresh (F); mild reaction to HCl. [Glen Rose Formation]		819
28		3.33				F	R1			2010-8				818
29		2.83								2010-9				817
30		2.18				F	R2					LIMESTONE: wackestone or packstone; white (N9). [Glen Rose Formation]		816
31		2.37	5	5.1 5.0	100							LIMESTONE: wackestone; greenish gray (5 GY 6/1); fresh (F); weak (R2). [Glen Rose Formation]	gray water return, 90%	816
32		1.95					R2-R3					LIMESTONE: packstone; white (N9); fine dark nonlinear banding; fossil rich; calcite crystals as blue dots; fresh (F); weak to strong; violent HCl reaction; interbedded shales 0.05' thick, spaced 0.1-0.2' apart; nonlinear with no distinct layer; contact very fossil rich; with disturbed beds from 33.5'-39.4'; at 39.4'-40.3' interbeds thicken to 0.1' thick, 40.3'-41.4' shale interbeds return to previous size. [Glen Rose Formation]		815
33		1.37												814
34		2.32				F				2010-10	Heavily fractured .05' pieces		hydro pressure 1100 psi, down pressure 200psi	813
35		2.33												812
36		2.03	6	5.1 5.0	100		R2						gray water return, 90%	811
37		2.22												810
38		1.97				F								809
39		2.7	7	5.0 5.0	100									808

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
39		2.7				F	R2							807
40		4.75					R1							806
41		3.15	7	5.0 5.0	100	F								805
42		6.55					R0			2010-11		SHALE: claystone; greenish gray (5 GY 6/1); massive; extremely weak (R0); mild HCl reaction; wet. [Glen Rose Formation]		804
43		5.77				F	R0					LIMESTONE: packstone; rip-ups clasts common. [Glen Rose Formation]		804
44		2.17				F	R2					SHALE: claystone; greenish gray (5 GY 6/1); massive; extremely weak (R0); mild HCl reaction; wet. [Glen Rose Formation] LIMESTONE: packstone; with interbedded shales; white (N9); shale interbeds 0.3' thick every 0.4-0.2'; very weak to extremely weak; fresh (F); strong HCl reaction; very fossil rich; calcite crystals appear as blue dots; shale interbeds 0.05' thick, still nonplanar; undulatory; spaced 0.1'-0.2' apart 46.8'-48.7'. [Glen Rose Formation]		803
45		1.65									Fractured		gray water return, 90%	801
46		3.37	8	5.3 5.0	100	F	R0				Fractured		hydro pressure 1000 psi, downpressure 350 psi	800
47		3.87												799
48		3								2010-12				798
49		3.48				F	R1							797
50		2.48												796
51		3.12	9	5.0 5.0	100									795
52		5.67										SHALE: greenish gray (5 GY 6/1); massive; mild reaction to HCl; fresh (F); very weak. [Glen Rose Formation]		794
53		7.57				F	R1							793
54		4.83	10	5.0 5.0	100									793

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
54		4.83				F								792
55		3.68				F	R2					LIMESTONE: packstone; white (N9); fresh (F); fossil rich; disturbed; no bedding; weak (R2); strong to violent HCl reaction. [Glen Rose Formation]		791
56		4.28	10	5.0 5.0	100									790
57		4.48				F	R0-R1		2010-14		Fractures every .1'	SHALE: interbedded layers of limestone 0.1'-0.2'; grayish green (6 Y 5/10); shale is massive; mildly reactive to HCl; very weak. [Glen Rose Formation]		789
58		4.9												788
59		2.47				F	R1-R2		2010-15			LIMESTONE: packstone; white (N9); fossil rich; disturbed bedding; shell fragments; very weak to weak; fresh (F); strong HCl reaction. [Glen Rose Formation]	cloudy water return (gray)	787
60		4.57												786
61		5.58	11	5.0 5.0	100	F	R2				Fracture			785
62		5.5										SHALE: greenish black (5 GY 2/1); massive; weak (R2); fresh (F); slight HCl reaction. [Glen Rose Formation]	down pressure 300 psi, hydro pressure 950 psi	784
63		4.75				F	R2						80% return, dark gray	783
64		2.57				F	R2					LIMESTONE, packstone, light grey, fresh, weak, strong hcl reaction, fossil rich, disturbed, no bedding. [Glen Rose Formation]		782
65		4.9				F	R1					SHALE: same as above, but very weak. [Glen Rose Formation]		781
66		2.82	12	5.0 5.0	100				2010-16			LIMESTONE: packstone; light gray (N7); no distinct beds; interwoven shale 0.05' thick occurring throughout sample at 0.6'-0.2' intervals; strong HCl reaction; calcite crystals appear as blue dots; color change to white (N9) at 68.5'; gradual increase in rip-up clasts below 68.5'; gradual basal contact. [Glen Rose Formation]		780
67		2				F	R1							779
68		2.02												778
69		1.47	13	5.0 5.0	100	F	R2-R3				Fracture			778

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
69		1.47												777
70		1.92												776
71		1.95	13	5.0 5.0	100	F	R2-R3					LIMESTONE: packstone; light gray (N7); no distinct beds; interwoven shale 0.05' thick occurring throughout sample at 0.6'-0.2' intervals; strong HCl reaction; calcite crystals appear as blue dots; color change to white (N9) at 68.5'; gradual increase in rip-up clasts below 68.5'; gradual basal contact. [Glen Rose Formation]		775
72		1.77												774
73		2.22				F	R1-R3					LIMESTONE: wackestone; interbedded shales; light gray (N7); fresh (F); strong HCl reaction; weak (R2); shales very thin (.01' thick); spaced throughout; stylolites present; rip-up clasts dominate texture; calcite crystals as blue dots. [Glen Rose Formation]		773
74		1.85												772
75		1.88											hydro pressure 130 psi, down pressure 400 psi	771
76		3.15	14	5.0 5.0	100	F	R2						gray water return	770
77		2.03												769
78		3.32												768
79		3.15										Increased density of calcite crystals at 79'.	80% water return	767
80		1.73												766
81		1.65	15	5.0 5.0	100	F	R2							765
82		2.92												764
83		1.38												763
84		2.75	16	5.0 5.0	100	F	R2							763

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**ROCK LOG**  
**Boring No. B-2010**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
84		2.75												762
85		1.33												761
86		1	16	5.0 5.0	100	F	R2					Rip-up clasts increase in size 0.05'-0.06' surrounded by shales at 86'.		760
87		2							2010-20					759
88		4.7												758
89		3.45									Fracture every .1'			757
90		4.08												756
91		1.83	17	5.0 5.0	100	F	R2		2010-21			LIMESTONE; wackestone; with interbedded shales; light gray (N7); chole occurs in 0.05'-0.1' bands around rip-up clasts; fresh (F); weak (R2); strong reaction to HCl; calcite crystals appear at blue dots; shale slightly eroded. [Glen Rose Formation]	gray water return	755
92		1.42												754
93		1.6												753
94		1.88											80% return	752
95		1.97												751
96		2.1	18	5.1 5.0	100	F			2010-22				hydro pressure 1000 psi, downpressure 250 psi	750
97		1.67												749
98		3.22												748
99		2.42	19	5.2 5.0	100	F	R2					LIMESTONE; wackestone; same as above. [Glen Rose Formation]		748

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
99		2.42										LIMESTONE: wackestone; same as above. [Glen Rose Formation]		747
100		1.43												746
101		1.53	19	5.0	100	F	R2			2010-23				745
102		1.55												744
103		2.15												743
104		3.05								2010-24		LIMESTONE: packstone/micrite; greenish gray (5 GY 6/1); fine lamella bedding; heavily disturbed; shale occurs as 0.05'-0.01' thick non-planar beds; rip-up clasts; calcite blue dots. [Glen Rose Formation]		742
105		2.55										LIMESTONE: wackestone with interbedded shales; light gray (N7); shale occurs as 0.05'-0.01' thick nonplanar bands; rip-up clasts present; calcite crystals occur as blue dots. [Glen Rose Formation]	gray water return 80%	741
106		1.67	20	5.0	100	F	R2							740
107		1.42												739
108		2.62										fine lamella bedding 107.6'-108.2'.		738
109		2.02								2010-25				737
110		1.85											hydro pressure 1000 psi, downpressure 300 psi	736
111		3.05	21	5.0	100	F	R2					Very gradual increase of shale to 20% at 111'-115', surrounds large rip up clasts.		735
112		2.83												734
113		5.08												733
114		1.67	22	5.0	100	F	R2					LIMESTONE: micrite; white (N9); fine lamella bedding to crystalline structure. [Glen Rose Formation]		733



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**ROCK LOG**  
**Boring No. B-2010**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
114		1.67										LIMESTONE: wackestone with interbedded shales; light gray (N7); shale occurs as 0.05'-0.01' thick nonplanar bands; rip-up clasts present; calcite crystals occur as blue dots. [Glen Rose Formation]		732
115		1.45												731
116		1.3	22	5.0 5.0	100	F	R2		2010-26					730
117		3.7												729
118		2.43												728
119		3.23												727
120		1.62											light gray water return 80%	726
121		3.05	23	5.5 5.0	100	F	R2		2010-27			LIMESTONE: micrite; white (N9); fine lamella bedding to crystalline structure. [Glen Rose Formation]		725
122		2.35												724
123		1.92												723
124		2.22												722
125		2.02							2010-28			Burrows from 124.3'-126.7'.		721
126		1.43	24	4.9 5.0	98	F	R2							720
127		1.88											Abundant fossil fragments near 127.8'.	719
128		2.23												718
129		2.42	25	0.5 5.0	4100	F	R2							718

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)	
129		2.42										Micritic zone 129.3'-129.8'.		717	
130		1.88				F	R2							716	
131		4.63	25	0.5 5.0	4100						Highly Fractured zone	SHALE: medium dark gray (N4) to dark gray (N3); very thin beds; fresh, very weak; no HCl reaction. [Glen Rose Formation]		715	
132		3.17				F	R1						LIMESTONE: wackestone; light gray (N8); thin beds; many bivalve and gastropod fossils; fresh (F); weak (R2); dry; strong HCl reaction. [Glen Rose Formation]		714
133		3.5				F	R2		2010-29				LIMESTONE: shaley micrite; medium gray (N5); massive; fresh (F); weak (R2); damp; strong HCl reaction. [Glen Rose Formation]		713
134		5.18				F	R1						LIMESTONE: packstone; very light gray (N8) to medium light grey (N6); thin beds; highly bioturbated; burrows; infilled with coarser material; bivalve fossil fragments; fresh (F); weak (R2); dry; violent HCl reaction. [Glen Rose Formation]	gradational contact	712
135		5.28				F	R2						Micrite from 136.7'-137'.		
136		2.55	26	5.2 5.0	100							Shaley zone from 137.7'-139.1'.		710	
137		3.4				F	R2		2010-30					709	
138		4.53												708	
139		5.52							2010-31					707	
140		2.7				F	R2							706	
141		2.63	27	5.0 5.0	99							Shaley zone from 141.1'-141.9'.		705	
142		1.98												704	
143		3.72				F	R2							703	
144		2.05	28	5.2 5.0	100							Shaley zone from 143.4'-143.9'.			

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
144		2.05												702
145		2.07												701
146		2.1	28	5.2 5.0	100	F	R2			2010-32		Pyritic shale layer 145.5'-145.7'.		700
147		1.53										LIMESTONE: wackestone; very light gray (N8) to light gray (N7); thin beds subhorizontal stylolites few burrows; fresh (F); weak (R2); dry; strong HCl reaction. [Glen Rose Formation]		699
148		3.47										Micrite from 147.5'-147.9'.		698
149		3.83					R2					Very weak shale zone from 149'-150.1'.		697
150		2.53				F								696
151		1.45	29	4.8 5.0	96		R1-R2					Very weak shale zone from 151.3'-151.8'.		695
152		2.28				F	R2					LIMESTONE: packstone; light gray (N7); thin beds; some pyrite; fresh (F); weak (R2); dry; strong HCl reaction. [Glen Rose Formation]		694
153		4.68										SHALE: calcareous shale; dark gray (N3); very thin beds; fresh (F); very weak (R1); damp; strong HCl reaction. [Glen Rose Formation]		693
154		2.43								2010-33		LIMESTONE: wackestone; very light gray (N8) to medium gray (N5); thin beds; shaley burrows; some pyrite in shale rich section; fresh (F); weak (R2); dry; strong HCl reaction; fossil fragments <.1" from 156'-156.6'. [Glen Rose Formation]		692
155		2.2												691
156		2.87	30	5.0 5.0	100	F	R1							690
157		2.55												689
158		2.4												688
159		1.77	31	5.0 5.0	100	F								688

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2010</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
159		1.77										LIMESTONE: packstone; light gray (N7) to medium light gray (N6); thin convoluted beds; abundant bioturbation; fossil fragments; bivalve and gastropod; fresh (F); weak (R2); dry; violent HCl reaction. [Glen Rose Formation]	gradational contact	687
160		1.2												686
161		1.28	31	5.0 5.0	100	F	R2							685
162		1.9												684
163		1.35										Coarser grained at 162.3'.		683
164		1.53												682
165		1.15												681
166		1.37	32	5.0 5.0	100	F	R2							680
167		1.8												679
168		1.07												678
169		2.37												677
170		1.12				F	R2							676
171		1.28	33	4.9 5.0	98									675
172		1.28				F	R2					LIMESTONE: wackestone; very light gray (N8) to medium light gray (N6); thin beds; subhorizontal sutures; fresh (F); weak (R2); dry; violent HCl reaction. [Glen Rose Formation]		674
173		1.78				F	R1-R2					LIMESTONE: packstone; very light gray (N7) to medium gray (N5); thin convoluted beds; highly bioturbated; shaley zones up to 3" thick; fresh (F); very weak to weak; dry except in shaley zones; violent HCl reaction. [Glen Rose Formation]		673
174		2.62	34	5.0 5.0	100									

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
174		2.62										LIMESTONE: packstone; very light gray (N7) to medium gray (N5); thin convoluted beds; highly bioturbated; shaley zones up to 3" thick; fresh (F); very weak to weak; dry except in shaley zones; violent HCl reaction. [Glen Rose Formation]		672
175		1.4				F	R1-R2							671
176		1.47	34	5.0 5.0	100								gradational contact	670
177		1.27				F	R2		2010-35			LIMESTONE: wackestone; very light gray (N8); thin wavy beds; few burrows; fresh (F); weak (R2); dry; violent HCl reaction. [Glen Rose Formation]		669
178		1.25												668
179		1.58				F	R2					LIMESTONE: packstone; light gray (N7) to medium gray (N5); thin beds; subhorizontal sutures; fresh (F); weak (R2); dry; violent HCl reaction; bivalve fossils; thin clay seams (0.02"-0.05"); burrows. [Glen Rose Formation]	gradational contact	667
180		1.47												666
181		2.1	35	5.2 5.0	100									665
182		1.28				F	R2							664
183		1.93												663
184		0.9												662
185		0.95												661
186		1.2	36	5.0 5.0	100	F	R2		2010-36					660
187		1.15												659
188		1.63												658
189		1.2	37	5.0 5.0	99	F	R2						gradational contact	

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
189		1.2										LIMESTONE: wackestone; very light gray (N8) to medium light gray (N6); thin wavy beds; burrows 0.1-0.3" infilled with packstone; fresh (F); weak (R2); dry; strong HCl reaction. [Glen Rose Formation]		657
190		1.33												656
191		1.33	37	5.0 5.0	99	F	R2							655
192		1.45												654
193		3.58									Highly Fractured zone	SHALE: medium dark gray (N4); very thin beds; fresh (F); very weak (R1); damp; no HCl reaction. [Glen Rose Formation]		653
194		3.33				F	R1							652
195		3.28				F	R2					LIMESTONE: wackestone; very light gray (N8); micritic to 195.1; thin beds; fresh (F); weak (R2); dry; violent HCl reaction. [Glen Rose Formation]		651
196		3.27	38	5.0 5.0	99	F	R1						gradational contact	650
197		2.03				F	R1							649
198		2.2				F	R2			2010-37		LIMESTONE: wackestone; very light gray (N8) to medium light gray (N6); thin beds; bivalve fossils; shale interbeds 0.6-1.6" thick; fresh (F); weak (R2); dry; violent HCl reaction. [Glen Rose Formation]	gradational contact	648
199		3.97				F	R1				Highly Fractured zone	SHALE: dark gray (N3); very thin beds; fresh (F); weak (R2); damp; slight HCl reaction. [Glen Rose Formation]		647
200		2.18				F	R1					LIMESTONE: micrite; very light gray (N8); very thin beds; burrows; fresh (F); very weak (R1); dry; violent HCl reaction. [Glen Rose Formation]		646
201		0.73	39	4.8 5.0	96	F	R1					SANDSTONE: fine sandstone; medium gray (N5); massive; fresh (F); very weak (R1); no HCl reaction. [Glen Rose Formation]		645
202		2.1									Highly Fractured zone			644
203		1.98				F	R1					SHALE: sandy; medium dark gray (N4); massive; fresh (F); very weak (R1); damp; no HCl reaction. [Glen Rose Formation]	gradational contact	643
204		1.5	40	5.0 5.0	99									643


Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2010</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
204		1.5										LIMESTONE: wackestone; very light gray (N8) to light gray (N7); thin beds; bivalve fossils; fresh (F); weak (R2); dry; violent HCl reaction; sparitic up to 40%; recrystallized. [Glen Rose Formation]		642
205		1.3				F	R2							641
206		2.47	40	5.0 5.0	99					2010-38		SANDSTONE: shaley sandstone; medium dark gray (N4) to dark gray (N3); massive; fresh (F); weak (R2); damp; no HCl reaction. [Glen Rose Formation]		640
207		1.67				F	R1				Highly Fractured zone			639
208		1.95				F	R2					LIMESTONE: wackestone; very light gray (N8) to light gray (N7); fresh (F); weak (R2); dry; violent HCl reaction; 5" shale interbed from 208.5'-208.9', fresh; very weak (R1); dry; strong HCl reaction. [Glen Rose Formation]		638
209		1.7				F	R1					Shale interbed from 208.5'-208.9'. LIMESTONE: micrite; very light gray (N8), massive; [Glen Rose Formation]		637
210		3.18				F	R1					LIMESTONE: shaley wackestone; light gray (N7) to medium gray (N5); thin beds; water escape structures; few burrows; fresh (F); very weak (R1); strong HCl reaction, dry. [Glen Rose Formation]		636
211		3.17	41	4.9 5.0	98	F	R1							635
212		3.05												634
213		3.77										SHALE: calcareous shale; dark gray (N3); thinly bedded to very thinly bedded; interbeds of limestone 0.5-5" thick; pyritic; fresh (F); very weak (R1); strong HCl reaction; damp. [Glen Rose Formation]	gradational contact	633
214		4.03				F	R1			2010-39				632
215		3.2												631
216		2.03	42	5.0 5.0	100	F						LIMESTONE: shaley wackestone; very light gray (N8) to medium light gray (N6); burrows; thin beds; fossil fragments; fresh (F); very weak to weak; dry; strong HCl reaction. [Glen Rose Formation]	gradational contact	630
217		2.18												629
218		3.9				F	R1							628
219		3.48	43	4.9 5.0	98	F	R1					SHALE: medium dark gray (N4); very thin beds; fresh (F); very weak (R1); damp; no HCl reaction. [Glen Rose Formation]		628

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2010</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
219		3.48										LIMESTONE, wackestone, very light to medium light grey, thin convoluted beds, highly bioturbated, burrows infilled with packstone, fossils, F, R2, dry, strong hcl reaction. [Glen Rose Formation]		627
220		2.25												626
221		2.28	43	4.0 5.0	98	F	R2							625
222		2.47												624
223		2.48												623
224		2.78									Highly Fractured zone		LIMESTONE: micrite; dark gray (N3) from 223.7'-224.4'; light grey (N7) from 224.4'-226'; massive' shaley near top; fresh (F); very weak (R1); damp to dry; violent HCl reaction. [Glen Rose Formation]	
225		0.97	44	5.0 3.0	100	F	R2							621
226		1.25				F	R1					SANDSTONE: calcareous sandstone; medium gray (N5); massive; fresh (F); very weak (R1); weak to slight HCl reaction. [Glen Rose Formation]	Total depth drilled: 226.4'. BOTTOM OF HOLE AT 226.4	620
227														
228														618
229														617
230														616
231														615
232														614
233														613
234														613



Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. B-2010 offset</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'07.73186"N / 97°47'30.85096"W		Total Depth 9 feet	
Drilling Contractor and Rig TEXPLOR / CME 75		Elevation and Datum 846.55 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock	
Casing Size and Depth 4"		Length of Core Barrel and Bit	No. of Core Boxes	Date Started 2/10/07	
		Borehole Inclination Vertical	Logged by M. Zellman	Date Completed 2/10/07	


Reviewed by / Date \_\_\_\_\_ R. Ortiz 2/11/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology		Elevation (feet)
												Description	Remarks	
0														846
1														845
2														844
3														843
4														842
5														841
6														840
7														839
8														838
9														837
10														836
11														835
12														834
13														833
14														832
15														

Project Name and Job Number TXU Comache Peak COL 1908		 WLA William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-2011-I offset</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'08.80851"N / 97°47'31.14886"W		Total Depth 8.5 feet	
Drilling Contractor and Rig Geotechnology / CME 55		Elevation and Datum 846.73 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 8.5 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 3	Date Started 12/13/06	
		Borehole Inclination Vertical	Logged by R. Turner	Date Completed 12/13/06	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 1/10/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
0							<b>ARTIFICIAL FILL (Qaf)</b> LEAN CLAY with limestone fragments mottled white (N8) and yellowish brown (10YR5/8), strong reaction to HCl, soft to medium stiff		846
1	CL		B-2011-I offset 1	4	15/18	1.5			845
2				4					844
3			B-2011-I offset 2	2					843
4				8	10/9	4.51	<b>RESIDUAL SOIL (RS)</b> SILT hard, mottled white (N8) and yellowish brown (10YR5/6), violent reaction to HCl		842
5				50/3"					841
6	ML		B-2011-I offset 3	22	18/18	4.51	light yellowish brown (2.5Y6/4)		840
7				35					839
8			B-2011-I offset	30					838
9				50/6"	0/0			Bedrock at 8.5.' Soil log for B-2011-I drilled at 90 degrees.	837
10									836
11									835
12									834
13									833
14									832
15									831

Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG Boring No. B-2011-I</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'08.80851"N / 97°47'31.14886"W		Total Length 225.6 feet	
Drilling Contractor and Rig Boart Longyear / 44 TMA		Elevation and Datum 847.082 feet NAVD88	Ground Water Depth NA	Length to Bedrock 15.04 feet	
Casing Size and Depth 4" / 17.3 feet		Length of Core Barrel and Bit 8.6 feet	No. of Core Boxes 14	Date Started 12/3/06	
		Borehole Inclination 65 Degrees	Logged by E. Weldon	Date Completed 12/12/06	

Reviewed by / Date R. Ortiz 12/13/06

Length (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Length (feet)
17		0.67									BB	SHALE: siltstone; greenish gray (5G 6/1); very fine sand to silt; massive; slightly weathered (SW); weak (R2); some vugs up to 0.7 cm deep, occasionally; slight reaction to HCl; fines downward; burrows infilled with pale green (10G 6/2) mud; some 1 cm rip-ups. [Glen Rose Formation]	12/4/06 09:35 Begin run 1 @ 16.6' fining downward, 16.6'-17.6' gradational over 0.3'	832
18		1.03	1	4.0 4.0	100	F-SW	R2		2011-I-1		MB, green clay filled burrows	SHALE: siltstone; dusky yellow green to grayish green (5GY 5/2 to 10 GY 5/2); laminated (1 mm beds); slightly weathered (SW); weak (R1); rip up (?) clasts (=1 cm); no HCl reaction. [Glen Rose Formation]	contact gradational over 0.2' contact gradual	831
19		2.83										LIMESTONE: packstone; greenish gray (5GY 6/1); weakly layered very thinly; slightly weathered (SW); weak to medium strong (R2-R3); fossiliferous. [Glen Rose Formation]	contact abrupt contact abrupt	830
20		3.1										SHALE: calcareous; dusky yellow green to grayish green (5GY 5/2 to 10 GY 5/2); very thinly laminated (1 mm beds); slightly weathered (SW); weak (R1); grayish green rip up (?) clasts (=1 cm); slight HCl reaction; burrows (3-4 cm infilled with packstone. [Glen Rose Formation]	stopped; set PVC casing to 17.1'	829
21		4.42									BB, med rough	SHALE: calcareous; same as previous. [Glen Rose Formation]		828
22		2.98									2011-I-2	LIMESTONE: packstone; light olive gray (5Y 6/1) (damp); massive, laminated; slight to moderate weathering (at laminae); medium strong; fossiliferous; strong HCl reaction. [Glen Rose Formation]		827
23		2.3	2	5.0 5.0	94	SW-MW	R0-R2				BPS, slightly rough BPS, med rough			826
24		1.73									BPS, sl. smooth			825
25		1.88									BB, sl. rough		contact abrupt	824
26		1.92												823
27		1.68												822
28		2.12	3	5.0 5.0	100	SW	R0-R2					SHALE: siltstone, clay-ey; dusky yellow green (5GY 5/2); massive; slightly weathered (SW); medium strong to weak (R3-R2); no HCl reaction; vugs at bottom 0.2'. [Glen Rose Formation]	contact gradational over 0.1'	821
29		3.85											coarsening downward, 27.4'-29.4'	820
30		4.98									2011-I-3	SHALE: grayish green (5G 5/2); slightly fissile; very fine grained; no HCl reaction; laminated; weak (R2); slightly weathered (SW). [Glen Rose Formation]	contact abrupt, planar	819
31		3.4									BPS, sl. smooth		coarsening downward, 30'-31.4'	818

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Length (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Length (feet)				
32		3.67	4	5.0 5.0	100	SW-MW	R0-R3					LIMESTONE: wackestone; light gray (N7); fossiliferous; rip-ups; strong HCl reaction. [Glen Rose Formation]	contact abrupt, wavy, scoured	818				
33		1.77														LIMESTONE: wackestone; light olive gray (5Y 6/1); massive to very thinly bedded; rip up clastst; slightly weathered (SW); medium strong (R3); fossiliferous with depth; shells more abundant at contact; strong HCl reaction; weak (R2) and slightly weathered (SW). [Glen Rose Formation]	coarsening downward, 31.9'-33.6' (100% water return)	817
34		2.62														LIMESTONE: packstone; light gray to light olive gray (N7 to 5Y 6/1); fine to medium grained; finely laminated from 34.8' to 35.6'; strong HCl reaction; bioturbated. [Glen Rose Formation]		816
35		1.23												2011-I-4			coarsening downward	815
36		1.8	5	5.1 5.0	100	SW	R3							814				
37		2.28															813	
38		1.82															812	
39		1.3												2011-I-5	BB, sl. smooth	Length of recovery stretched due to mechanical breaks.	811	
40		1.18											810					
41		1.55	6	5.0 5.0	100	SW	R3							809				
42		1.58															808	
43		4.98														SHALE interbeds; greenish black (5GY 2/1); very slight HCl reaction; sharp irregular contacts; some coal/plant material clay-rich, interlaminated very finely	contact abrupt contact abrupt	807
44		1.87																806
45		3.48							2011-I-6		coal-rich clay/shale interbed, no HCl reaction pyrite	contact abrupt	805					
46		5.23										SHALE: grayish green (10G 4/2) to grayish olive green (5GY 3/2); very fine grained; slightly fissile; very weak to weak (R1-R2); fresh (F); thinly spaced interbeds of light gray packstone; slight to very slight HCl						

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-2011-I</b>
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Length (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Length (feet)
47		6.32										reaction; packstone rip up clasts. [Glen Rose Formation]		
48		3.15	7	5.0 5.0	100	SW	R0-R3			▶	BB, very rough	LIMESTONE: packstone; light olive gray (5Y 6/1); medium to fine grained; slightly weathered (SW); weak to medium strong (R2-R3); fossiliferous;bioturbated; strong HCl reaction; massive; pyrite and coal (lignite) present in laminae. [Glen Rose Formation]	contact abrupt, wavy	804
49		1.67												803
50		3.57							2011-I-7			CLAY-COAL(?) -rich interbed; light olive black (5Y 2/1); chert (?) clast; shells, slight HCl reaction	contact abrupt, wavy contact abrupt	802
51		3.37												801
52		3												800
53		3.23	8	5.0 5.0	100	SW	R3							799
54		2.87							2011-I-8			LIMESTONE: packstone to wackestone; extremely rich in gastropods; bioturbated; strong reaction to HCl. [Glen Rose Formation]	contact abrupt and planar contact abrupt and planar contact abrupt	798
55		1.97												797
56												SHALE; olive black (5Y 2/1); very fine; no grading in grain size; fresh (F); weak (R1); fissile; lacks fossils except in lowest 0.2'; minor bioturbation; HCl reaction none or very slight or pyrite. [Glen Rose Formation]		796
57		8												795
58		6.13	9	5.0 5.0	100	F-SW	R1		2011-I-9					794
59		5												793
60		2.98										LIMESTONE: micrite; medium light grey (N6); some shale interbeds; fresh (F); medium strong (R3); strong HCl reaction. [Glen Rose Formation]	contact abrupt and planar RUN 9 broke 0.3' too high at bottom	792
61		4.2											Driller overdrilled barrel -- he	

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Length (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Length (feet)								
62		6.05	10	5.0	100	F-SW	R0-R3					SHALE: olive black (5Y 2/1); fresh (F); verk weak (R1); fissile; lacks fossils except in lowest 0.2'; minor bioturbation; HCl reaction very slight. [Glen Rose Formation]	apologized and won't do it again! -- RUN 10 is compressed and broken as a result contact abrupt	791								
63		6.03																				790
64		3.53																				
65		NM												788								
66		3.03	11	5.0	100	F-SW	R0-R3					LIMESTONE: micrite; medium light grey (N6); massive; fresh (F); medium strong (R3); fossiliferous; strong HCl reaction; soft sediment deformation and increasing mud/clay. [Glen Rose Formation]	Cody overdrilled 0.3' again in RUN 11 contact abrupt	787								
67		3.73																		SHALE: olive black (5Y 2/1); very fine; fresh (F); verk weak (R1); fissile; minor bioturbation; increase in fossiliferous within 0.5' of lower contact [Glen Rose Formation]		786
68		2.73																			Length of recovery stretched due to mechanical breaks.	785
69		NM												784								
70		2.93	12	5.0	100	F-SW	R0-R3					LIMESTONE: wackestone; medium light gray (N6); fine to coarse grained; slightly weathered (SW); weak (R2); extensive soft sediment deformation; strong HCl reaction; fossiliferous. [Glen Rose Formation]	contact irregular, abrupt	783								
71		3.62																		end drilling 5 pm 12/5/06, 9 am begin drilling from 70.6' irregular contact	782	
72		5																			Note: Recovery photo should read 5.0/5.0	781
73		2.9										LIMESTONE: micrite; medium light grey (N6); massive; fresh (F); medium strong (R3); strong HCl reaction; fossiliferous. [Glen Rose Formation]	contact abrupt	780								
74		2.88										LIMESTONE: wackestone; medium light gray (N6); fine to coarse grained; slightly weathered (SW); weak (R2); interlaminae (1mm to 1 cm thick) of silty clay with shells (strong HCl reaction) very thinly spaced; extensive soft sediment deformation; strong HCl reaction; shells present. [Glen Rose Formation]		779								
75		3.33										contact abrupt	778									
76		1.93										SHALE/CLAYSTONE with shells										

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Length (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Length (feet)
77		1.3	13	5.0 5.0	100	F-SW	R3					LIMESTONE: packstone; light olive grey (5Y 6/1); fine to medium grained; fresh to slightly weathered (F-SW); medium strong (R3); upper 1' (75.6'-76.5') is massive and contains one 1cm thick clay layer and clay infilled vugs (2 ~1cm size); below 76.5' the packstone is very thinly laminated with silty/clayey laminae (1mm to 1cm thick, olive gray (5Y 4/1)) and spaced very thinly; pervasive soft sediment boudinage gives mottled appearance; strong HCl reaction; fossiliferous. [Glen Rose Formation]	Photos of RUN 12, 13, 14 taken in core box because had to retake photos of RUN 12, 13, 14 because shutter not open all the way	777
78		1.55						776						
79		1.03						775						
80		1.57												774
81		1.73	14	5.0 5.0	100	SW	R2-R3					LIMESTONE: wackestone; similar to packstone above but increased mud matrix	Coarsening downward sequence from 75.3' to 85.7' ending in scoured contact	773
82		1.88						772						
83		3.4						771						
84		1.67												770
85		3.1											contact gradual	770
86		2.3	15	5.0 5.0	100	SW	R2-R3					LIMESTONE: packstone; light olive grey (5Y 6/1); fine to medium grained; fresh to slightly weathered (F-SW); medium strong (R3); pervasive soft sediment boudinage; strong HCl reaction; fossiliferous; coarsens downward with accompanying increase in mud matrix. [Glen Rose Formation]	contact scoured, abrupt coarsens downward 85.7' to 88'	769
87		2.43						768						
88		1.95						767						
89		1.83										LIMESTONE: wackestone; similar to packstone above but increased mud matrix	Note: Photo of RUN 15 should read 5.1/5.1 for recovery, not 5.0/5.0	766
90		1.83										LIMESTONE: packstone; light gray (N7) to light olive gray (5Y 6/1); fine to medium grained; fresh to slightly weathered (F-SW); weak to medium strong (R2-R3); strong HCl reaction; soft sediment deformation increase with mud content. [Glen Rose Formation]	contact scoured and abrupt, increased mud at contact	766
91		1.82											mud content increases	765

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	Length (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Length (feet)
	92		NM											downwards 88' to 92.8'	764
	93		2.13	16	5.0	100	F-SW	R2-R3					LIMESTONE: packstone; light gray (N7) to light olive gray (5Y 6/1); fine to medium grained; fresh to slightly weathered (F-SW); weak to medium strong (R2-R3); strong HCl reaction; soft sediment deformation/boudinage; fossiliferous. [Glen Rose Formation]	scoured contact, abrupt	763
	94		1.95												762
	95		1.58												761
	96		3											Note RUN 17 photo mislabeled RUN 16 RUN 17 broke off high (0.3'); marked 100.6' on core in RUN 18	760
	97		2.55												759
	98		2.88	17	5.0	100	F-SW	R2							758
	99		2.43												757
	100		1.58										LIMESTONE: packstone; same as above. [Glen Rose Formation]	contact abrupt, wavy	756
	101		2.17										LIMESTONE: packstone; same as above. [Glen Rose Formation]	mud and laminations increasing downward 99.2' to 102.4' contact abrupt, irregular	755
	102		1.53										LIMESTONE: packstone; same as above. [Glen Rose Formation]	contact abrupt, irregular	754
	103		2.73	18	5.0	100	F-SW	R2							753
	104		2												752
	105		1.63											coarser grains and increasing mud downward, 102.4' to 105.6'	751
	106		1.5										LIMESTONE: packstone; same as above. [Glen Rose Formation]	contact irregular, abrupt coarser grains and increasing mud	751



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	Length (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Length (feet)								
	107		2.4	19	5.0	100	F-SW	R2-R3					LIMESTONE: wackestone; medium light gray (N6); fine to coarse grained; slightly weathered (SW); weak (R2); soft sediment deformation; strong HCl reaction; fossiliferous. [Glen Rose Formation]	downward, 105.6' to 108' contact gradational over 0.1'	750								
	108		2.33																	LIMESTONE: packstone; with mottled appearance due to deformed (soft sediment deformation) burrows infilled with wackestone; grades to wackestone. [Glen Rose Formation]	contact abrupt and irregular	749	
	109		1.25																			coarser grains and increasing mud downward, 108' to 110.8' contact gradual over 0.3'	748
	110		1.5										LIMESTONE: wackestone; medium light gray (N6); fine to coarse grained; slightly weathered (SW); weak (R2); soft sediment deformation; strong HCl reaction; fossiliferous. [Glen Rose Formation]	contact abrupt contact gradual increasing mud content 110.8' to 111.5' contact abrupt	747								
	111		2.13	20	5.0	100	F-SW	R1-R2					LIMESTONE: packstone; light olive gray (5Y 6/1); medium to fine grained; massive to very finely bedded; fresh to slightly weathered (F-SW); medium strong to weak (R3-R2); fossiliferous; strong HCl reaction; soft sediment deformation in upper 1.3'. [Glen Rose Formation]	contact abrupt	746								
	112		1.3																		finer downward, 111.5' to 114.1'	745	
	113		1.73																				744
	114		NM										LIMESTONE: micrite; light olive gray (5Y 6/1) to greenish gray (5GY 6/1); finely laminated; fresh (F); very weak to weak (R1-R2); strong strong HCl reaction. [Glen Rose Formation]	contact abrupt	743								
	115		1.92											no water loss									
	116		1.98										LIMESTONE: wackestone; medium dark gray (N4); silt matrix; fresh to slightly weathered (F-SW); weak (R2); irregular bedding and boudinage features very thickly bedded; bedding roughly planar. [Glen Rose Formation]	contact abrupt, wavy	742								
	117		1.07										LIMESTONE: packstone; light olive gray (5Y 6/1); medium to coarse grained; slightly weathered (SW); medium strong (R3); strong HCl reaction; fossiliferous. [Glen Rose Formation]	contact abrupt, scoured	741								
	118		1.62	21	5.0	100	F-SW	R2-R3							740								
	119		1.65																				739
	120		1.22																		LIMESTONE: packstone; light olive gray (5Y 6/1); medium to fine grained; with wackestone interbeds; dark medium gray (N4); slightly weathered (SW); extremely weak (R0); fossiliferous; strong HCl reaction. [Glen Rose Formation]	contact gradational over 0.2'	738
	121		1.5												737								

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Length (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Length (feet)
122		2.4	22	5.0	100	F-SW	R0-R2					LIMESTONE: packstone; light olive gray (5Y 6/1); medium to fine grained; with wackestone interbeds; dark medium gray (N4); slightly weathered (SW); extremely weak (R0); fossiliferous; strong HCl reaction. [Glen Rose Formation]		736
123		1.82												
124		3										LIMESTONE: packstone; light olive gray (5Y 6/1); medium to fine grained; finely laminated with mud-rich laminae to massive to very finely bedded with no mud; slightly weathered (SW); weak; fossiliferous; strong HCl reaction. [Glen Rose Formation]	contact abrupt	734
125		1.72								2011-I-22			Photo RUN 23 should read RUN "23" not Run 22	733
126		3	23	5.0	100	SW	R2							732
127		2.65												
128		2.65								2011-I-23			contact abrupt, scoured, wavy	730
129		2.27										LIMESTONE: packstone; same as previous. [Glen Rose Formation]	contact gradational 0.2'	729
130		1.72										LIMESTONE: wackestone; same as previous		728
131		1.4	24	5.0	100	SW	R2					SHALE: calcareous; light olive gray (5Y 6/1); very fine grained and massive to weakly bedded; fresh to slightly weathered (F-SW); weak (R2); burrows. [Glen Rose Formation]	contact abrupt, rip up clasts of siltstone above contact	727
132		3												
133		1.22										LIMESTONE: packstone; light olive gray (5Y 6/1); medium to fine grained; weakly bedded; slightly weathered (SW); weak (R2); soft sediment deformation; strong HCl reaction; fossiliferous; [Glen Rose Formation]	abrupt, rip up clasts of packstone above contact	725
134		1.5								2011-I-24				724
135		3.18											contact abrupt, wavy	724

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Length (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Length (feet)								
137		3.22	25	5.0 5.0	100	F-SW	R2					LIMESTONE: wackestone; olive gray (5Y 4/1); coarse to medium grained with mud matrix; thinly laminated; rip up clasts; fossiliferous; strong to violent HCl reaction. [Glen Rose Formation]	no water loss	723								
138		2.07																		LIMESTONE: packstone; light olive gray (5Y 6/1); fine grained; soft sediment deformation; weakly to irregularly bedded; fossiliferous; varies; fresh to slightly weathered (F-SW); weak (R2); [Glen Rose Formation]	contact abrupt, very irregular	722
139		3																				721
140		2								2011-I-25				720								
141		3.22	26	5.0 5.0	100	F-SW-MW	R0-R2					LIMESTONE: wackestone; medium light gray (N6) to light olive gray (5Y 6/1); very fine to medium grained; fresh to slightly weathered (F-SW); weak (R2); fossiliferous; soft sediment deformation; strong HCl reaction. [Glen Rose Formation]	gradational over 0.5'	719								
142		4.4																			718	
143		4.88																				717
144		1.12										SHALE: calcareous; medium dark gray (N4); fissility increasing downward; extremely weak (R0); moderately weathered; (vugs 1-2 cm deep); thin fossiliferous arranged parallel to bedding abundant; no HCl reaction in the clay/shale; no pyrite. [Glen Rose Formation]		716								
145		2.48								2011-I-26		LIMESTONE: packstone; light olive gray (5Y 6/1); very fine to silt/clay size grains; burrows; soft sediment deformation; slightly weathered (SW); weak. [Glen Rose Formation]		715								
146		3.85																				
147		4.43										SHALE: calcareous; dark greenish gray (5G 4/1) to dark gray (N3); silt to clay size grain; no gradation; slightly weathered (SW); extremely weak (R0); bioturbation; strong HCl reaction. [Glen Rose Formation]	contact gradational over 0.1'	714								
148		NM	27	5.0 5.0	100	SW	R0-R2					LIMESTONE: packstone, fine grained; light olive gray (5Y 6/1); soft sediment deformation; slightly weathered (SW); weak (R2); fossiliferous; strong HCl reaction. [Glen Rose Formation]	interval from 147.7' to 150' similar to packstone to wackestone packages above, coarsens downward	713								
149		NM																				712
150		1.73								2011-I-27				711								
151		3.85											contact gradational 5:40 pm, will log in the morning	710								

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Length (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Length (feet)				
152		4.13	28	5.0	100	F-SW	R0-R2					LIMESTONE: wackestone; olive gray (5Y 4/1); fresh to slightly weathered (F-SW); weak (R2); soft sediment deformation; fossiliferous; strong HCl reaction. [Glen Rose Formation]	contact abrupt, irregular	709				
153		3.9						5.0								LIMESTONE: packstone; very light gray (N8); dry; slightly weathered (SW); weak (R2). [Glen Rose Formation]		708
154		2.5																707
155		2.43									BB, very rough			706				
156		2.22	29	5.0	100	F-SW	R1-R2						5 pm stop drilling	706				
157		2.5						5.0								LIMESTONE: wackestone; grayish black (N2); very weak (R1); slightly weathered (SW); strong HCl reaction, bedding very thin; soft sediment deformation. [Glen Rose Formation]	contact abrupt, irregular	705
158		2.45						5.0								LIMESTONE: packstone; light olive gray (5Y 6/1) to very light gray (N8) (dry); fine to coarse grained; fresh to slightly weathered (F-SW); fossiliferous; soft sediment deformation; rip ups of packstone; strong HCl reaction. [Glen Rose Formation]		704
159		2.37											703					
160		1.52											702					
161		1.78	30	5.0	100	F-SW	R1-R2						no water loss	701				
162		2.92						5.0									700	
163		4.02						5.0									contact gradational	699
164		2.35										LIMESTONE: wackestone; olive gray (5Y 4/1); silt sized matrix with packstone clasts (very light gray (N8); fresh to slightly weathered (F-SW); weak (R2); moderately well layered with clasts oriented parallel to bedding spaced thinly and regularly; clasts show boudinage; soft sediment deformation; fossiliferous; strong HCl reaction. [Glen Rose Formation]	contact gradational over 0.1'	698				
165		2.1											contact gradational over 0.1'	697				
166		2.47										LIMESTONE: packstone; light olive gray (5Y 6/1); massive; fresh (F); medium strong (R3); fossiliferous; strong HCl	contact abrupt					

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Length (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Length (feet)								
167		3.07	31	5.0 5.0	100	F-SW	R0-R2					reaction. [Glen Rose Formation]	contact gradational over 0.3'	696								
																				LIMESTONE: wackestone; same as previous [Glen Rose Formation]		
168		3.78																		LIMESTONE: packstone; light olive gray (5Y 6/1); massive; fresh (F); medium strong (R3); fossiliferous; soft sediment deformation; strong HCl reaction. [Glen Rose Formation]	contact gradational over 0.1'	695
169		3.03										SHALE: calcareous claystone; dark greenish gray (5G 4/1); \ fresh (F); verk weak (R1); strong HCl reaction; wackestone interlaminated very finely. [Glen Rose Formation]	no water loss	694								
170		2.83										LIMESTONE: wackestone; light olive gray (5Y 6/1); fines downward; slightly weathered (SW); weak (R2); very thin and thin; soft sediment deformation; strong HCl reaction; fossiliferous. [Glen Rose Formation]		693								
171		3.27												692								
172		3.58										SHALE: calcareous claystone; olive gray (5Y 4/1); strong HCl reaction; fossiliferous; fresh (F); extremely weak (R0). [Glen Rose Formation]	contact gradational over 0.2'	691								
173		2.1	32	5.0 5.0	100	F-SW	R0-R2					LIMESTONE: packstone; light olive gray (5Y 6/1); pyrite fills small vugs (1-2mm); fresh to slightly weathered (F-SW); weak to medium strong (R2-R3); fossiliferous; strong HCl reaction; grades into wackestone below; slight soft sediment deformation. [Glen Rose Formation]	contact abrupt, wavy	690								
174		1.4																				689
175		1.4																			LIMESTONE: wackestone; olive gray (5Y 4/1); fresh to slightly weathered (F-SW); weak (R2); soft sediment deformation; fossiliferous; strong HCl reaction. [Glen Rose Formation]	contact gradational over 0.1'
176		2.5										LIMESTONE: packstone; same as previous. [Glen Rose Formation]		687								
177		2.37										LIMESTONE: wackestone; same as previous. [Glen Rose Formation]	contact gradational over 0.1'	686								
178		1.58	33	5.0 5.0	100	SW-MW	R1					LIMESTONE: packstone; light olive gray (5Y 6/1); fresh to slightly weathered (F-SW); weak to medium strong (R2-R3); fossiliferous; strong HCl reaction; grades into wackestone below. [Glen Rose Formation]	contact gradational over 0.3'	685								
179		1.25																				684
180		1																				683
181		1.43																				

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Length (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Length (feet)
182		0.87										LIMESTONE: packstone; light olive gray (5Y 6/1); fresh to slightly weathered (F-SW); weak to medium strong (R2-R3); fossiliferous; strong HCl reaction; grades into wackestone below. [Glen Rose Formation]		682
183		1.22	34	5.0	100	F-SW	R1-R3						no water loss	681
184		0.85		5.0										680
185		0.92												679
186		0.95											drilling fast, ~100% water return	678
187		0.75												677
188		1.22	35	5.0	100	SW	R1-R2							676
189		2.35												675
190		2.42										LIMESTONE: wackestone; light olive gray (5Y 6/1) to olive gray (5Y 4/1); slightly weathered (SW); very weak (R1); soft sediment deformation (boudinage packstone clasts); fossiliferous; strong HCl reaction. [Glen Rose Formation]	contact gradational over 1'	675
191		1.92										LIMESTONE: packstone; same as previous. [Glen Rose Formation]	contact abrupt, irregular	674
192		1.17												673
193		1.42	36	5.0	100	SW	R2							672
194		1.58												671
195		NM												670
196		1.5												669

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	Length (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Length (feet)
	197		2.57										LIMESTONE: packstone; same as previous. [Glen Rose Formation]	no water loss	668
	198		2.25	37	5.0	100	SW	R1-R2							667
	199		1.78												666
	200		1.73												665
	201		1.68										LIMESTONE: packstone; same as previous'. [Glen Rose Formation]	12/06/06, 12:00, drilling put on hold due to ?; stopped 0.1' into RUN 38 (10 seconds), will pull out ~ 30' rod 12-12-06, 10:10 am, begin drilling from 200.6, RUN 38	664
	202		1.67												663
	203		1.5	38	4.9	98	SW	R1-R2						100% water return	662
	204		1.25												661
	205		1.65												660
	206		1.47												659
	207		1.05												658
	208		1.62	39	4.8	96	SW	R0-R2							657
	209		1.37												656
	210		2.58												655
	211		4.22										SHALE: calcareous; dark greenish gray (5GY 4/1) to dark gray (N3); fresh (F); extremely weak (R0); some bioturbation; slight to very slight HCl reaction; fossiliferous. [Glen Rose Formation]	lifter slipped -- left some in hole; probably in clay -- yes! drilling slower; Cody will only do 4'	654



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	Length (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Length (feet)
	212		3.4	40	4.2 4.0	100	F-SW	R0-R2					LIMESTONE: packstone; light olive gray (5Y 6/1); massive and fine to very fine sand to coarse size grains; slightly weathered (SW); weak (R2); shells replaced by coarse crystalline CaCO3; strong HCl reaction; soft sediment deformation; burrows. [Glen Rose Formation]	run for RUN 40, he will do 1 foot RUN and collect the sample stickup from RUN 39; does not want to compress sample or overfill barrel	655
	213		2.5												654
	214		2.87										SHALE: calcareous; dark greenish gray (5GY 4/1) to dark gray (N3); silt to clay size grains; slightly fissile; fresh (F); extremely weak (R0); some bioturbation or soft sediment deformation visible; slight to strong HCl reaction. [Glen Rose Formation]	contact gradational over 0.1'	653
	215		1.9	41	1.0 1.0	100	F-SW	R0-R1					LIMESTONE: packstone; same as previous. [Glen Rose Formation] SHALE: same as previous. [Glen Rose Formation]	contact abrupt, soft sediment deformation, wavy	652
	216		2.58												651
	217		3.07										LIMESTONE: packstone; same as previous. [Glen Rose Formation] SHALE: calcareous; dark greenish gray (5GY 4/1) to dark gray (N3); slightly fissile; fresh to slightly weathered (F-SW); extremely weak (R0); some bioturbation;; strong HCl reaction; no hydrocarbons or odor; fossiliferous. [Glen Rose Formation]	contact gradational over 0.3'	650
	218		2.62	42	4.6 5.0	92	F-SW	R0-R2					LIMESTONE: micrite; greenish gray (5GY 6/1); fresh (F); medium strong (R3); massive; strong HCl reaction; burrows; fossiliferous. [Glen Rose Formation]	contact gradational over 0.1'	649
	219		0.83										SANDSTONE: calcareous; greenish gray (5GY 6/1) to dark greenish gray (5GY 4/1) with brownish gray (5YR 4/1) sand filled burrows; silty; quartz-rich; medium well-sorted; fresh to slightly weathered (F-SW); extremely weak (R0); bioturbated; slightly to none HCl reaction; fossiliferous; pyrite. [Glen Rose Formation]	coarsens downward 217.6' to 218.9' contact gradual over 0.1'; 0.5 cm fine sand on top coarsens	648
	220		1.57										SHALE: greenish black (5G 2/1); with one pyrite-rich sand interbed at 220.6'-220.7'; slightly weathered (SW); extremely weak (R0); fossiliferous. [Glen Rose Formation]	Cody exchanges one 10' rod (too thin); inventory remains at 23 10' rods	647
	221		2.27										LIMESTONE: packstone; light olive gray (5Y 6/1); fine to coarse grained; fresh to slightly weathered (F-SW); weak to medium strong (R2-R3); pyrite; strong HCl reaction; fossiliferous. [Glen Rose Formation]		646
	222		3.32	43	4.3 4.0	86	SW	R0-R2						water delivery	645
	223		2.13												644
	224		2.25										SANDSTONE: calcareous; olive gray (5Y 4/1); fine to medium grained; massive; well sorted; slightly weathered (SW); extremely weak (R0); strong HCl reaction; fossiliferous. [Glen Rose Formation]	pulled up after 4', recovered ~0.5' stick up from RUN contact gradational over 0.4'	643
	225		3.37	44	0.9 1.0	90	SW	R0					SHALE: olive gray (5Y 4/1); fissile; fresh to slightly weathered (F-SW); extremely weak to weak (R0-R2); 2-3 mm thick layers; lacks shells; no HCl reaction;	contact gradual? some loss? photo for RUN 44 should say 0.9/1.0 not 1.0/1.0 for	642
	226														



Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2011-I</h2>
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	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	
227												SANDSTONE: greenish black (5GY 2/1) to olive gray (5Y 4/1); thinly laminated; clay rich to sand rich; slightly weathered (SW); extremely weak (R0); fine to medium grained; well sorted; quartz rich; strong HCl reaction; some bioturbation. [Glen Rose Formation]	recovery and RQD end of core sample 1:15 terminate borehole at 225.6' Bottom of boring at 225.6 feet	641
228														640
229														639
230														638
231														637
232														636
233														635
234														634
235														633
236														632
237														631
238														630
239														629
240														
241														

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908




**ROCK LOG**  
**Boring No. B-2011-I**

Length (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Length (feet)
242														628
243														627
244														626
245														625
246														624
247														623
248														622
249														621
250														620
251														619
252														618
253														617
254														616
255														615
256												BOTTOM OF HOLE AT 255.6'		615

Project Name and Job Number TXU Comache Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-2012</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'07.04791"N / 97°47'31.13925"W		Total Depth 150 feet	
Drilling Contractor and Rig Palmerton and Parish / CME 55		Elevation and Datum 847.192 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 8.5 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 3	Date Started 1/10/07	
		Borehole Inclination Vertical	Logged by Strane	Date Completed 1/16/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 1/27/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0								<b>RESIDUAL SOIL</b> FAT CLAY medium stiff, yellowish brown (10YR5/8)		847
1	CH		B-2012 1	16	6					846
2				13	18			dark brown		845
3				8						844
4			B-2012 2	50/6"	6			LEAN CLAY with limestone fragments hard, brownish yellow (10YR6/6)		843
5										842
6	CL							limestone ledge at 5.5'		841
7			B-2012 3	16	18			yellow (10YR7/8), dry to damp with depth; increasing granular, subangular clasts		840
8				23	18					839
9			B-2012 4	50/0"	0			Auger refusal at 8.5'	Bedrock at 8.5'	838
10										837
11										836
12										835
13										834
14										833

Project Name and Job Number TXU Comanche Peak Col 1908		 WLA William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. B-2012</b>	
Type and Diameter of Boring HQ/NQ / 4"		Boring Location 32°18'07.04791"N / 97°47'31.13925"W		Total Depth 150 feet	
Drilling Contractor and Rig Palmerton and Parrish / CME 55		Elevation and Datum 847.192 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 8.5 feet	
Casing Size and Depth 4" / 8.5 feet		Length of Core Barrel and Bit 8 feet	No. of Core Boxes	Date Started 1/10/07	
		Borehole Inclination Vertical	Logged by Strane	Date Completed 1/16/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 1/27/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
9		5.67									JRC8, <.1' aperture, recrystallized 0	LIMESTONE: wackestone; yellowish gray (5Y 8/1); weak to medium strong (R2-R3); moderately to highly weathered (MW-HW); weathering increases with depth; fossils; dry to damp; weak reaction to HCl. [Glen Rose Formation]		838
10		4	1	2.8 3.5	72.8	MW-HW	R2-R3							837
11		1.33							2012-4					836
12		2.38												835
13		2.5												834
14		1.23	2	5.0 5.0	100							LIMESTONE: wackestone with silty matrix; weak to medium strong (R2-R3), increases with depth; slightly weathered (SW); weak to no reaction to HCl. [Glen Rose Formation]		833
15		2.23												832
16		5.4				SW	R2-R3		2012-5			Fossiliferous; flecks of vitreous material (pyrite?). [Glen Rose Formation]		831
17		2.48												830
18		2.88										Increased silt content. [Glen Rose Formation]		829
19		2.52	3	5.0 5.0	100				2012-6					828
20		1.27				SW	R1					SILTSTONE: greenish gray (5G 6/1); damp; very weak (R1); highly fractured; slightly weathered (SW); no reaction to HCl. [Glen Rose Formation]		827
21		1.78				F	R4					LIMESTONE: wackestone; very light gray (N8); strong (R4); fresh; moderate reaction to HCl; fossiliferous. [Glen Rose Formation]		826
22		1.43										Fossiliferous 21.7-22.		825
23		1.47	4	4.7 5.0	94	SW	R2-R3		2012-7					824

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2012</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)		
24		1.47	4	4.7 5.0	94	SW	R2-R3					LIMESTONE: wackestone/packstone; medium light gray to medium gray (N5-N6); weak to medium strong (R2-R3); slightly weathered (SW); dry to damp; weak to moderate reaction to HCl; few rip-up clasts. [Glen Rose Formation]		823		
25		1.35				SW	R2-R3						LIMESTONE: wackestone; medium gray (N5); weak to medium strong (R2-R3); slightly weathered (SW); dry to damp; moderate reaction to HCl. [Glen Rose Formation]		822	
26		2.28				SW	R2-R3							SHALE: medium dark gray (N4); very weak (R1); slightly weathered (SW); damp; no to weak reaction to HCl; some visible laminations. [Glen Rose Formation]		821
27		3.2	5	5.0 5.0	98	SW	R2-R3					LIMESTONE: wackestone with shale interbeds; medium dark gray (N4); damp; very silty; weak reaction to HCl; slightly weathered (SW). [Glen Rose Formation]	Samples not in sequence	820		
28		2.12				SW	R1									819
29		1.25				SW	R2-R3									818
30		1.75				SW	R2-R3			2012-9	JRC5, crack zone with weathering		817			
31		1.42				F-SW	R4			2012-10	JRC6	LIMESTONE: sparite; very light gray to white (N8-N9); fresh to slightly weathered (F-SW); dry; sand-sized rip-up clasts; strong (R4). [Glen Rose Formation]		816		
32		2.37				SW	R3			2012-8		LIMESTONE: wackestone with silty interbeds; light gray (N7); medium strong (R3); dry to damp; slightly weathered (SW). [Glen Rose Formation]		815		
33		1.32				SW	R2-R3				JRC1, slightly weathered			814		
34		1.48				SW	R2-R3			2012-11	JRC2	LIMESTONE: packstone with wackestone lenses; medium light gray to light gray (N6-N7); weak to medium strong (R2-R3); slightly weathered (SW); dry to damp; strong reaction to HCl. [Glen Rose Formation]		813		
35		1.05	6	5.0 5.0	100	SW	R2-R3					LIMESTONE: wackestone with packstone lenses; medium light gray to light gray (N6-N7); weak to medium strong (R2-R3); slightly weathered (SW); dry to damp; violent reaction to HCl; . [Glen Rose Formation]		812		
36		1.07				SW	R2-R3									811
37		1.22				SW	R2-R3								Grades to pure wackestone near bottom of run.	810
38		0.75	7	4.6 5.0	92									809		
		2.38														

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
39		2.38												808
40		8.67				SW	R2-R3					LIMESTONE: wackestone with shale interbeds; light gray to very light gray (N7-N8); weak to medium strong (R2-R3); moderate to violent reaction to HCl; dry to damp; slightly weathered (SW). [Glen Rose Formation]		807
41		4.67	7	4.6 5.0	92							SHALE: medium dark gray (N4); very weak (R1); slightly weathered (SW); very weak reaction to HCl; damp. [Glen Rose Formation]		806
42		6.83				SW	R1			2012-12		Wackestone interbed (.1')		805
43		10.02												804
44		1.98								2012-13		LIMESTONE: sparite with silt filled cracks and vugs; light gray to very light gray (N7-N8); medium strong to strong (R3-R4); fresh to slightly weathered (F-SW); grades to wackestone. [Glen Rose Formation]		803
45		1.95	8	5.0 5.0	100	F-SW	R3-R4							802
46		4.33											Sample 2012-14 collected, depth not recorded, location in run unknown	801
47		3.43										LIMESTONE: wackestone with sparite lenses; medium light gray to very light gray (N6-N8); medium strong (R3); slightly weathered (SW); dry; strong reaction to HCl. [Glen Rose Formation]		800
48		5.97				SW	R3							799
49		4.33												798
50		4.75	9	3.6 5.0								SHALE: medium dark gray (N4); very weak (R1); slightly weathered (SW); damp; few laminations; no reaction to HCl. [Glen Rose Formation]	Core shattered by rod vibration	797
51		5.12												796
52		7.33				SW	R1							795
53		9.5	10	4.8 5.0	96									794
		6.95								2012-16			Samples not in sequence	

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
54		6.95	10	4.8 5.0	96	SW	R1	Pressuremeter	2012-15			LIMESTONE: wackestone; medium light gray (N6); medium strong (R3); slightly weathered (SW); dry to damp; moderate reaction to HCl; abundant fossils. [Glen Rose Formation]	6" short, depth = 56.5 .3' of NQ retrieved with HQ run	793
55		7.03				SW	R3							792
56		4.07	11	5.0 5.0	100	SW	R1	Pressuremeter			Some drill flush/visible laminations.	LIMESTONE: wackestone interbeds; medium dark gray (N4); very weak (R1); slightly weathered (SW); damp; few laminations; no reaction to HCl. [Glen Rose Formation]		791
57		2.57				SW	R1							790
58		4	11	5.0 5.0	100	SW	R2-R3					LIMESTONE: wackestone with silt filled cracks; weak to medium strong (R2-R3); slightly weathered (SW); dry to damp; light gray to very light gray (N7-N8). [Glen Rose Formation]		789
59		1.65				SW	R2-R3							788
60		1.97	12	5.0 5.0	86	SW	R1				Silt-filled cracks	SHALE: medium dark gray to dark gray (N3-N4); very weak (R1); slightly weathered (SW); damp; visible laminations; no reaction to HCl. [Glen Rose Formation]		787
61		5.17				SW	R1							786
62		3.2	12	5.0 5.0	86	SW	R2-R3					LIMESTONE: wackestone with silt filled cracks; medium dark gray to medium gray (N4-N5); weak to medium strong (R2-R3); dry to damp; cracks up to (0.5'); slightly weathered (SW); violent reaction to HCl. [Glen Rose Formation]		785
63		2.15				SW	R2-R3							784
64		0.75	13	5.0 5.0	100	SW	R1					SHALE: medium dark gray to dark gray (N3-N4); very weak (R1); slightly weathered (SW); damp; visible laminations; no reaction to HCl. [Glen Rose Formation]		783
65		3.27				SW	R1							782
66		3.5	13	5.0 5.0	100	SW	R2-R3					LIMESTONE: wackestone with silt filled cracks; medium dark gray to medium gray (N4-N5); weak to medium strong (R2-R3); dry to damp; cracks up to (0.5'); slightly weathered (SW); violent reaction to HCl. [Glen Rose Formation]		781
67		2.18				SW	R2-R3							780
68		5.38	13	5.0 5.0	100	F	R4					LIMESTONE: packstone; medium gray to medium light gray (N5-N6); strong (R4); fresh(F); dry; strong reaction to HCl. [Glen		779
		3.18				F	R4							

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
69		3.18				F	R4				Mud-filled void	Rose Formation]		778
		2.7						Pressuremeter	2012-20			LIMESTONE: micrite; very light gray (N8); fresh (F); dry; strong (R4); violent reaction to HCl. [Glen Rose Formation]		
70			13	5.0 5.0	100							LIMESTONE: wackestone; medium light gray (N6); weak (R2); damp; slightly weathered (SW); abundant fossils. [Glen Rose Formation]		777
		4.18						Pressuremeter	2012-19					776
71		3.3												775
72		4.32				SW	R2							774
73		2.98												773
74		5.25	14	5.0 5.0	100									772
75		4.19				SW	R2 to R3					LIMESTONE: packstone with wackestone lenses; medium gray to light gray (N5-N7); weak to medium strong (R2-R3); slightly weathered (SW); dry; some wackestone rip-up clasts; strong reaction to HCl. [Glen Rose Formation]	Grades to wackestone	771
76		1.53												770
77		2.68												769
78		1.27	15	5.0 5.0	100							LIMESTONE: wackestone; light gray to very light gray (N7-N8); medium strong (R3); slightly weathered (SW); dry; some silty burrows and packstone lenses (up to .25"). [Glen Rose Formation]		768
79		1.18				SW	R3							767
80		1.53							2012-22					766
81		3.92	16	5.0 5.0	100									765
82		3.2												764



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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
84		3.2										LIMESTONE: wackestone; light gray to very light gray (N7-N8); medium strong (R3); slightly weathered (SW); dry; some silty burrows and packstone lenses (up to .25"). [Glen Rose Formation]		763
85		2	16	5.0 5.0	100	SW	R3							
86		1.52												
87		1.93												760
88		ND												759
89		ND										LIMESTONE: packstone with wackestone lenses; medium gray (N5); weak (R2); damp; slightly weathered (SW); contains some extremely weak (R0) mud lenses; moderate reaction to HCl. [Glen Rose Formation]	Samples not in sequence	758
90		17	4.7 5.0	94				Pressuremeter	2012-15					
91		1.25												756
92		1.55												755
93		1.25				SW	R2					Sparry wackestone 92.6' - 93.9'.		754
94		2.08												753
95		2.67	18	5.0 5.0	100									752
96		3.03												
97		2.82				F	R4					LIMESTONE: wackestone, sparry; very light gray (N7); strong (R4); fresh (F); dry; violent reaction to HCl. [Glen Rose Formation]		750
98		3.82	19	5.0 5.0	5	SW-MW	R1-R2					LIMESTONE: packstone; medium gray to medium light gray (N5-N6); very weak to weak (R1-R2); slightly to moderately weathered (SW-MW); damp; high sand content; moderate reaction to HCl. [Glen		749
		1.87					F	R4						

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
99		1.87										Rose Formation]		748
		3.25										LIMESTONE: wackestone, sparry; very light gray (N7); strong (R4); fresh (F); dry; violent reaction to HCl. [Glen Rose Formation]		747
100		4.8	19	5.0 5.0	5					2012-27				746
101		2.45				F	R4							745
102		2.72												744
103		2.15												743
104		2.23	20	5.1 5.0	100									742
105		1.35								2012-28		LIMESTONE: packstone, sparry; medium light gray to very light gray (N6-N8); medium strong (R3); dry to damp; some silty crack zones (< .1"); slightly weathered (SW) . [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	741
106		2.72												740
107		3.08				SW	R3					More mud -> more wackestone-like.		739
108		2.92												738
109		1.67	21	5.0 5.0	100									737
110		1.8										LIMESTONE: packstone, sparry, medium dark gray to medium gray (N4-N5); medium strong (R3); slightly to moderately weathered (SW-MW); dry to damp; strong reaction to HCl. [Glen Rose Formation]		736
111		1.88				SW-MW	R3			2012-29				735
112		2.58												734
113		2.92	22	5.1 5.0	100	SW	R3			2012-30				

Project Name and Job Number  
 TXU Comanche Peak Col  
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**ROCK LOG**  
**Boring No. B-2012**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)	
114		2.92										LIMESTONE: wackestone, sparry; light gray to very light gray (N7-N8); medium strong (R3); fresh to slightly weathered (F-SW); dry; react violently to HCl; some mud filled cracks; some burrows, sparse fossils. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	733	
		1.52													732
115			22	5.1 5.0	100	SW	R3								731
		1.38													730
116		1.67										LIMESTONE: packstone light gray (N7); medium strong (R3); dry to damp; slightly weathered (SW); some burrows; strong reaction to HCl. [Glen Rose Formation]		729	
117		1.57				F	R3								728
118		3.02										LIMESTONE: siltstone; light brownish gray (5YR 6/1); medium strong (R3); fresh (F); dry; high silt content; reacts weakly to HCl. [Glen Rose Formation]		727	
119		2.92	23	5.0 5.0	100										726
120		3.37													725
121		3.75								2012-31		LIMESTONE: wackestone; very light gray to light gray (N7-N8); medium strong (R3); fresh (F); dry; strong reaction to HCl. [Glen Rose Formation]		724	
122		2.68													723
123		2										LIMESTONE: wackestone; very light gray to light gray (N7-N8); medium strong (R3); fresh (F); dry; strong reaction to HCl. [Glen Rose Formation]		722	
124						F	R3				2012-32				721
125		3.45	24	5.0 5.0	100										720
126		1.98												719	
127		5.07													
128		4.82	25	5.0 5.0	100										
		3.5													

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
129		3.5	25	5.0 5.0	100	F	R3		2012-33			LIMESTONE: wackestone; very light gray to light gray (N7-N8); medium strong (R3); fresh (F); dry; strong reaction to HCl. [Glen Rose Formation]		718
130		4.3				F	R3							
131		10.47				F	R1					SHALE: dark gray to medium dark gray (N3-N4); very weak (R1); slightly weathered (SW); damp; no reaction to HCl; massive. [Glen Rose Formation]		716
132		5.28										LIMESTONE: wackestone, micritic; very light gray (N7); medium strong (R3); fresh (F); dry; violent reaction to HCl. [Glen Rose Formation]		715
133		5.02				SW	R3		2012-34			SHALE: grades to wackestone; dark greenish gray (5G 4/6); to medium gray (N5); very weak to weak (R1-R2); slightly weathered (SW); damp; no reaction to HCl; .2' micrite interbed. [Glen Rose Formation]		714
134		6.05				SW	R1 to R2							
135		7.73	26	5.0 5.0	100							LIMESTONE: wackestone; medium light gray to very light gray (N6-N8); medium strong (R3); dry; slightly weathered (SW); micritic texture grading to packstone; strong reaction to HCl; abundant fossils in lower half. [Glen Rose Formation]		712
136		5.42				SW	R3							711
137		5.02												710
138		6.12							2012-35			LIMESTONE: packstone with wackestone lenses and rip-up clasts; medium light gray to light gray (N6-N7); medium strong (R3); slightly weathered (SW); damp to dry; strong reaction to HCl; some silt filled cracks. [Glen Rose Formation]		709
139		4.95												
140		2.87	27	5.0 5.0	100									707
141		2.22				SW	R3							706
142		2.13												705
143		2.88	28	5.0 5.0	100									704
		2.42												

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908




**ROCK LOG**  
**Boring No. B-2012**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
144	[Lithology symbols]	2.42	28	5.0 5.0	100	SW	R3		2012-36			LIMESTONE: packstone with wackestone lenses and rip-up clasts; medium light gray to light gray (N6-N7); medium strong (R3); slightly weathered (SW); damp to dry; strong reaction to HCl; some silt filled cracks. [Glen Rose Formation]		703
145		2.7												702
146		2.08												701
147		4.17												700
148	[Lithology symbols]	7.13	29	3.0 3.0	100	F	R3		2012-37			LIMESTONE: micritic wackestone with silt filled burrows; very light gray (N7); medium strong (R3); dry; fresh (F); violent reaction to HCl. [Glen Rose Formation]		699
149	[Lithology symbols]													698
150												Bottom of hole at 150'		697
151														696
152														695
153														694
154														693
155														692
156														691
157														690
158														689

Project Name and Job Number TXU Comache Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-2013</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'09.54492"N / 97°47'31.24423"W		Total Depth 150.5 feet	
Drilling Contractor and Rig TEXPLOR / CME 75		Elevation and Datum 846.955 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 3.5 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 2	Date Started 1/12/07	
		Borehole Inclination Vertical	Logged by G. VanEitten	Date Completed 1/22/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 1/27/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0										846
1	CL		B-2013 1	7	18			RESIDUAL SOIL (RS) LEAN CLAY very stiff, dark grayish brown (2.5Y4/2), dry, with calcareous deposits		845
2				7	18					844
3				13						844
3.5	ML		B-2013 2	44/1"	1			SILT with sand and limestone fragments hard, pale yellow (2.5Y8/3), dry, ~20% gravel	Bedrock at 3.5'	843
4										843
5										842
6										841
7										840
8										839
9										838
10										837
11										836
12										835
13										834
14										833
15										832

Project Name and Job Number TXU Comanche Peak Col 1908		 WLA William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. B-2013</b>	
Type and Diameter of Boring NQ / 4"		Boring Location 32°18'09.54492"N / 97°47'31.24423"W		Total Depth 150.5 feet	
Drilling Contractor and Rig Texplor / CME 75		Elevation and Datum 846.955 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 3.5 feet	
Casing Size and Depth 4" / 3.5 feet		Length of Core Barrel and Bit 8.6 feet	No. of Core Boxes 8	Date Started 1/12/07	
		Borehole Inclination Vertical	Logged by G. Van Etten	Date Completed 1/22/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 1/30/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)	
4		1.57	1	0.9 2.0	0							LIMESTONE: sparitic wackestone; pale yellow orange (10YR 8/2); very broken up; slightly weathered (SW); weak (R2). [Glen Rose Formation]	Good water return (light gray/brown)	843	
5		1.6												842	
6		1.7												841	
7		1.53	2	2.5 5.0	50	SW	R2					Clayey between joints.		840	
8		1.67												839	
9		1.12												838	
10		1.75	3	5.0 5.0	100									837	
11		1.33											SHALE: moderate yellow (5Y 7/6); slightly weathered (SW); very weak (R1); changes to medium dark gray (N4). [Glen Rose Formation]		836
12		1.17												835	
13		1.25	4	5.0 5.0	72	SW	R1							834	
14		1.08												833	
15		1.5												832	
16		1.57	4	5.0 5.0									Good water return	831	
17		2.83											Becomes dark greenish gray (5G 4/1) and extremely weak (R0).	830	
18		2.33					SW	R0						829	

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2013</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
19		1.62	4	5.0 5.0	72	SW	R0				JT, 5-10 degree dip; Na; Sl; FI	LIMESTONE: sparitic packstone; very light gray (N8); slightly weathered (SW); extremely weak (R0); [Glen Rose Formation]  Texture is broken up; fossils.		828
20		2.05												827
21		1.82	5	5.0 5.0	100	F	R1					LIMESTONE: shaly packstone; dark greenish gray (5GY 4/1); fresh (F); very weak (R1); fossiliferous. [Glen Rose Formation]		826
22		1.83												825
23		1.5												824
24		1.6												823
25		1.75	4			F	R0					SHALE: dark green gray (5G 7/1); very thin layers of shale; fresh (F); extremely weak (R0). [Glen Rose Formation]		822
26		4												821
27		3.8												820
28		2.13	6	4.7 5.0	94							LIMESTONE: wackestone; medium bluish gray (5B 5/1); rip-up clasts; fresh (F); very weak (R1). [Glen Rose Formation]		819
29		1.83												818
30		2.33												817
31		1.17	7	5.0 5.0	100	F	R1						Good water return; 1800 psi on the hydraulic gauge	816
32		0.95												815
33		0.92												814



Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG  
 Boring No. B-2013**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
34	[Lithology pattern]	1.03	7	51.0	100	F	R1					LIMESTONE: wackestone; medium bluish gray (5B 5/1); rip-up clasts; fresh (F); very weak (R1). [Glen Rose Formation]		813
35		0.78												812
36		1.17												811
37		1.5												810
38		0.92												809
39	0.97	808												
40	1.18	8	51.0	100	F	R0						SHALE: medium dark gray (N4); .05' thick limestone layers; fresh (F); extremely weak (R0). [Glen Rose Formation]		807
41	1.7													806
42	1.62													805
43	1.57	9	51.0	100	F	R1						LIMESTONE: packstone; very light gray (N8); to medium gray (N5); shale layers .01 to .2' thick; fresh (F); very weak (R1). [Glen Rose Formation]		804
44	1.33													803
45	1.38													802
46	1.67	10	51.0	100	F	R1						Good water return		801
47	1.5													800
48	1.25													799

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-2013</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)		
49		1.83	10	5.0 5.0	100	F	R1							798		
50		2.33												SHALE: medium dark gray (N4); massive; fresh (F); extremely weak (R0). [Glen Rose Formation]		797
51		4.58							F	R0					End of drilling 1/12/07 Good water return (light gray); 1000 psi	796
52		4.48												795		
53		4.32	11	5.0 5.0	100	F	R1					LIMESTONE: sparite; very light gray (N8); very thin beds; fresh (F); very weak (R1); bivalve fossils. [Glen Rose Formation]		794		
54		4							F	R1				SHALE: medium dark gray (N4); limestone interbeds .01'-.2' thick; fresh (F); extremely weak (R0). [Glen Rose Formation]		793
55		3.57							2013-13					792		
56		4.58				F	R0							791		
57		3.33												790		
58		3.83	12	5.0 5.0	100					2013-14		LIMESTONE: packstone; light gray (N7); wavy thin beds; fresh (F); very weak (R1); bioturbation and bivalve fossils. [Glen Rose Formation]		789		
59		2.17							F	R1						788
60		4												787		
61		2.83										SHALE: medium dark gray (N4); massive; fresh (F); extremely weak (R0); damp. [Glen Rose Formation]	Limestone/Shale contact at 60' Good water return	786		
62		1.78	13	4.8 5.0	96	F	R0			2013-15				785		
63		1.73												wavy limestone beds from 62.6 - 62.9.		784


Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-2013**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
64		5.08	13	4.6	96	F	R0					SHALE: medium dark gray (N4); massive; fresh (F); extremely weak (R0); damp. [Glen Rose Formation]		783
65		5.17		5.0										
66		1.43												781
67		1.42												780
68		2.87	14	5.0	100									779
69		1.67		5.0									less shale interbeds.	
70		1.4												777
71		1												776
72		1.17				F	R1							775
73		1	15	4.9	98									774
74		1.12		5.0										
75		1.2												772
76		0.83											Good water return	771
77		1.13	16	5.0	100									770
78		1.08		5.0									bioturbation more prevalent.	

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-2013</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)	
79		1.08	16	<del>5.0</del> 5.0	100	F	R1					LIMESTONE: packstone; light gray (N7); wavy interbeds fo shale; fresh (F); very weak (R1); bioturbation; moderate reaction to HCl. [Glen Rose Formation]		768	
80		1.22												767	
81		0.83	766												
82		1.08	765												
83		1.12	17	<del>5.0</del> 5.0	100									2013-19	764
84		1.27	763												
85		1.12	762												
86		0.87	761												
87		1.08	760												
88		1.13	18	<del>5.0</del> 5.0	100									2013-20	759
89	1.25	758													
90	1.17	757													
91	0.73	756													
92	1.12	19	<del>4.9</del> 5.0	98	2013-21	755									
93	1.25	754													

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-2013</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
94		1.05	19	4.9 5.0	98							LIMESTONE: packstone; light gray (N7); wavy interbeds fo shale; fresh (F); very weak (R1); bioturbation; moderate reaction to HCl. [Glen Rose Formation]		753
95		1.33												752
96		1.28												751
97		1.5	20	5.0 5.0	100	F	R1					some thin sandstone beds.		750
98		0.75												749
99		1.3												748
100		1.57	21	5.0 5.0	100							LIMESTONE: wackestone; light gray (N7); fresh (F); very weak (R1). [Glen Rose Formation]	Good water return	747
101		1.03												746
102		1.15												745
103		1.38	22	5.0 5.0	92	F	R1					LIMESTONE: wackestone; light gray (N7); fresh (F); very weak (R1). [Glen Rose Formation]		744
104		1.12												743
105		1.67												742
106		1.12	22	5.0 5.0	92							very thin clay laminations from 104 - 104.5.		741
107		1.33												740
108		0.88												739

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-2013**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)	
109		1.47	22	5.0 5.0	92							LIMESTONE: wackestone; light gray (N7); fresh (F); very weak (R1). [Glen Rose Formation]		738	
110		1.25												737	
111		1.42	23	5.0 5.0	100	F	R1						Length of recovery stretched due to mechanical breaks.	736	
112		2.8												2013-25	735
113		1.42												734	
114		1.33												733	
115		1.6	24	5.0 5.0	100								Good water return	732	
116		1.12												731	
117		1.58												2013-26	730
118		2.07	25	5.1 5.0	100	F	R1							729	
119		1.87												728	
120		3	25	5.1 5.0	100									727	
121		1.28												726	
122		1.63												725	
123		1.77	2013-27	724											

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2013</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)				
124		4.75	25	5.1 5.0	100	F	R1					LIMESTONE: micritic wackestone; yellowish gray (5Y 7/2); massive; fresh (F); very weak (R1); some bioturbation; mild reaction to HCl. [Glen Rose Formation]		723				
125		2.9																722
126		2.17	26	4.8 5.0	96	F	R2					LIMESTONE: packstone; medium light gray (N6); fresh (F); very weak (R1); many rip-up clasts; bioturbation; mild reaction to HCl. [Glen Rose Formation]	Start of drilling 1/22/07; 1800 psi	721				
127		1.5																720
128		1.55																719
129		1.6																718
130		5.42	27	5.0 5.0	100	F	R0					SHALE: medium dark gray (N4); massive; fresh (F); extremely weak (R0); some bivalve fossils. [Glen Rose Formation]		717				
131		10.5															716	
132		3.7														LIMESTONE: wackestone; light gray (N7); fresh (F); weak (R2); bioturbations. [Glen Rose Formation]		715
133		3.5										SHALE: medium light gray (N6); fresh (F); very weak (R1). [Glen Rose Formation]		714				
134		3.25	28	4.9 5.0	98	F	R2					LIMESTONE: wackestone; very light gray (N8); massive; fresh (F); weak (R2). [Glen Rose Formation]	Good water return	713				
135		3																712
136		1.83																711
137		3.17										SHALE: with limestone rip-up clasts; medium gray (N5); .1' thick interbeds of limestone; fresh (F); extremely weak (R0). [Glen Rose Formation]		710				
138		3.25												709				


Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-2013**


Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)		
139		3.17	28	4.9 5.0	98	F	R0							708		
140		1.5												LIMESTONE: packstone; medium light gray (N6); fresh (F); very weak (R1); many rip-up clasts; bioturbation; some oolites. [Glen Rose Formation]		707
141		1.7														706
142		2.6								2013-31				705		
143		2.47	29	5.0 5.0	100								.2' layer of extremely weak (R0) shale.	704		
144		2.07							F	R1						703
145		2.5												702		
146		1.78												701		
147		2.08												700		
148		3.92	30	5.0 5.0	100									699		
149		2.45											2013-32			698
150		1.55				F	R1						LIMESTONE: wackestone; light gray (N7); fresh (F); very weak (R1); few bioturbations; moderate reaction to HCl. [Glen Rose Formation]	697		
151													Bottom of boring at 150.5'	696		
152														695		
153														694		



Project Name and Job Number TXU Comache Peak COL 1908				<h1 style="margin: 0;">SOIL LOG</h1> <h2 style="margin: 0;">Boring No. B-2014</h2>	
Type and Diameter of Boring HSA / 7"			Boring Location 32°18'07.30404"N / 97°47'29.17122"W		Total Depth 150 feet
Drilling Contractor and Rig Fugro / CME 45			Elevation and Datum 839.407 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 8.5 feet
Sampling Method SPT			Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 3	Date Started 1/9/07
			Borehole Inclination Vertical	Logged by M. Angell	Date Completed 1/16/07

Reviewed by / Date \_\_\_\_\_ R. Ortiz 1/7/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
0							<b>ARTIFICIAL FILL (Qaf)</b> LEAN CLAY with sand and limestone fragments very dark gray (5Y3/1)		839
1		B-2014 1		50/2"	2/2"		light greenish gray (Gley8/1)		838
2							brownish yellow (10YR6/6)		837
3	CL								836
4		B-2014 2		7	18/18				835
5				9					834
6				9					833
7		B-2014 3		4	13/13		<b>RESIDUAL SOIL (RS)</b> LEAN CLAY with sand, silt, and limestone fragments very stiff, yellow (2.5Y7/6), fine sand		833
8	CL			50/.75"			auger refusal at 8.5'		832
9									831
10									830
11									829
12									828
13									827
14									826
15									825

Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG Boring No. B-2014</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'07.30404"N / 97°47'29.17122"W		Total Depth 150 feet	
Drilling Contractor and Rig Fugro / CME 45		Elevation and Datum 839.407 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 8.5 feet	
Casing Size and Depth 4 / 8.5 feet		Length of Core Barrel and Bit 5 feet	No. of Core Boxes 10	Date Started 1/9/07	
		Borehole Inclination Vertical	Logged by M. Angell	Date Completed 1/16/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 1/17/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology		Remarks	Elevation (feet)
												SW	R0		
9		2.33	1	1.5 1.5	100	SW F	R0 R0						LIMESTONE: wackestone; olive yellow (5Y 6/8); slightly weathered (SW). [Glen Rose Formation]	Refusal, stop drilling 1640, 1650 install 4" pvc casing to 8.5	830
10									2014-1				LIMESTONE: wackestone; light bluish gray (5B 7/1); no HCl reaction; medium sand intervals. [Glen Rose Formation]		
11		4.17							2014-2				SHALE: mudstone with thin sand layers; light bluish gray (5B 7/1). [Glen Rose Formation]		829
12		4.17											LIMESTONE: packstone; very pale brown (10YR 7/3). [Glen Rose Formation]		828
13		6.33	2	5.0 5.0	100								LIMESTONE: packstone; light greenish gray (5G 8/1); fossiliferous. [Glen Rose Formation]		827
14		6.33											Fossiliferous limestone with severely weathered sandy claystone interbed.		826
15		6.33				SW-F	R0-R2						Pyrite.		825
16		7.33											Abundant clasts; no HCl reaction; fine grained.		824
17		7.33							2014-3						823
18		7.33	3	4.8 5.0	96										822
19		8.17											SANDSTONE: fine grained; bluish gray (5B 5/1); no HCl reaction. [Glen Rose Formation]		821
20		8.17				F	R2								820
21		4.83				F	R0						LIMESTONE: packstone; medium dark gray (N4); laminated; clast-supported. [Glen Rose Formation]		819
22		3.33	4	4.7 5.0	94	F	R0						SHALE: medium dark gray (N4). [Glen Rose Formation]		818
23		3.67				F	R2	Pressuremeter	2014-4						817
23		4.5				F	R2						LIMESTONE: packstone; very light gray to light gray (N8-N7); sandy; laminated; clast-supported. [Glen Rose Formation]		816

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2014</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
24		4.5	4	4.7 5.0	94	F	R2	Pressuremeter				SHALE: mudstone; medium light gray (N6); grades to wackestone; slight reaction to HCl. [Glen Rose Formation]		815
		3.58				F	R2							
25						F	R2					LIMESTONE: packstone; light gray (N7); darkened to very light gray (N8) 24.2'- 24.4'. [Glen Rose Formation]		814
26		3.33										LIMESTONE: wackestone; medium gray (5); minor calcareous clasts. [Glen Rose Formation]		813
27		3.02							2014-5			LIMESTONE: wackestone; medium gray to light gray (N5-N7); calcareous; some zones are matrix supported (packstone). [Glen Rose Formation]		812
28		2.67	5	5.0 5.0	100									811
		2.25				F	R1-R2							
29														810
30		2.5												809
31		3.67												808
32		3.17									JT, healed with sand and clay			807
33		3.67	6	5.0 5.0	100	F	R1					SHALE: medium dark gray (N4); very slight reaction to HCl; laminated. [Glen Rose Formation]		806
		3.35				F	R1							
34												LIMESTONE: wackestone; white (N9); thinly bedded; thin shale beds; fine matrix. [Glen Rose Formation]		805
35		3.5				F	R0		2014-6			SHALE: claystone; medium light gray (N6); laminated; calcareous. [Glen Rose Formation]		804
36		4.58				F	R1					SHALE: medium dark gray (N4); no reaction to HCl; fresh (F). [Glen Rose Formation]		803
37		6.33	7	5.0 5.0	100	F	R0		2014-7			LIMESTONE: wackestone; white (N9); medium grained; laminated with shale interbeds (<0.05'). [Glen Rose Formation]		802
		4.5				F	R0-R1							
38		6.33										SHALE: medium dark gray (N4); no reaction to HCl; fresh (F). [Glen Rose Formation]		801
												LIMESTONE: wackestone; white (N9); medium grains in fine matrix; slight to moderate reaction to HCl; stylolites (<0.1 spacing). [Glen Rose Formation]		

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2014</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)								
39		6.33	7	5.0 5.0	100	F	R0-R1					LIMESTONE: wackestone; white (N9); medium grains in fine matrix; slight to moderate reaction to HCl; stylolites (<0.1 spacing). [Glen Rose Formation]		800								
40		5.67																		LIMESTONE: packstone; very light gray to white (N8-N9); moderate reaction to HCl; fossiliferous; shale laminae. [Glen Rose Formation]		799
41		4.17	8	4.3 5.0	86	F	R1							798								
42		5.67																				797
43		7.33																				796
44		9.17																				795
45		10.5	9	5.0 5.0	100	F	R0							794								
46		6.58																		SHALE: medium dark gray (N4); no reaction to HCl; gradational to fine sandy clay 47.4' - 47.5'. [Glen Rose Formation]		793
47		5.67																				792
48		4.83											791									
49		4.08	10	5.0 5.0	100	F	R2							790								
50		4.43																				789
51		5.17												788								
52		5												787								
53		6												786								
		6.33																				

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2014</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)		
54		6.33	10	5.0	100	SW	R2							785		
55		4.92		5.0						2014-10		SHALE: claystone; medium light gray (N6); laminated; calcareous; minor rip-ups; slight reaction to HCl. [Glen Rose Formation]			784	
56		5.25	11	5.0	100	SW	R0							783		
57		5.67														782
58		5.33				5.0		SW	R1		2014-11		LIMESTONE: packstone; very light gray (N8); . [Glen Rose Formation]			781
59		6.42						SW	R0					SHALE: mudstone; weakly laminated; medium dark gray (N4). [Glen Rose Formation]		
60		4.67	12	5.0	100	SW	R2							779		
61	ND													LIMESTONE: packstone; clasts up to 0.1' . [Glen Rose Formation] LIMESTONE: wackestone; fine sand matrix with medium sand; light gray (N7); stylolites; rip up clasts; laminated. [Glen Rose Formation]	No drill rate due to eccentricity, therefore very slow	778
62	ND							F	R2							777
63	ND										Pressuremeter	2014-12				776
64	ND		13	5.0	100	F	R2							775		
65	ND										Pressuremeter			LIMESTONE: packstone; medium light gray (N6); with sandy stringers form convolute beds; stylolites. [Glen Rose Formation]		774
66		4.67												LIMESTONE: packstone; laminated; light gray (N7); stylolites. [Glen Rose Formation]		773
67		5.17	13	5.0	100	F	R2							772		
68		5.37														771
		5.2														

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-2014**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)		
69		5.2	13	5.0 5.0	100	F	R2					LIMESTONE: wackestone; laminated; medium light gray. [Glen Rose Formation]		770		
70		4.92				F	R2			2014-13						
71		6.2	14	5.0 5.0	100	F	R2					LIMESTONE: wackestone; fine-med sand; medium light gray (N6); with local minor packstone layers; light gray (N7); stylonitic. [Glen Rose Formation]		769		
72		6.38											F	R2		
73		5.33				F	R2								2014-14	
74		5.67				F	R2									
75		6.17	15	5.0 5.0	100	F	R2					LIMESTONE: packstone; clasts .1' stylonitic; light gray (N7). [Glen Rose Formation]		765		
76		4.42											F	R2		
77		3.83											F	R2		
78		4.17	F	R2			2014-15									
79		3.67	16	4.8 5.0	96	F	R2					LIMESTONE: wackestone; medium grains; fine matrix; very light gray (N8). [Glen Rose Formation]		761		
80		1.33											F	R2		
81		10	18	4.8 5.0	96	F	R2					LIMESTONE: packstone; with mudstone stringers; .05' spacing. [Glen Rose Formation]	1/15/07, de-ice rig 1130-1215, 1220 doing NQ rate, not applicable due to NQ wobble, slows drilling	759		
82		15.17												NO RECOVERY. [Glen Rose Formation]	758	
83		23.17												LIMESTONE: packstone; clasts avg .05'; vary .01-.15' color; medium gray (N5); clasts light gray; stylonitic. [Glen Rose Formation]	757	
								Pressuremeter						755		

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
84		23.17	16	4.8 5.0	96	F	R2	Pressuremeter						755
		20.57				F	R2							754
85		3.92	17	5.0 5.0	100	F	R2			2014-17		LIMESTONE: wackestone; with minor color change; medium light gray to light gray (N6-N7); stylolitic. [Glen Rose Formation]		753
86		3.97				F	R2							752
87		1.58				F	R2							751
88		3.33	18	5.0 5.0	100	F	R2			2014-18		LIMESTONE: wackestone; medium light gray (N6); fine matrix; medium class; stylolitic. [Glen Rose Formation]		750
89		2.67				F	R2							749
90		3.67	19	5.0 5.0	100	F	R2					LIMESTONE: wackestone; very light gray (N8); fine - medium matrix; medium clasts; grades down to. [Glen Rose Formation]		748
91		3.17				F	R2							747
92		2.17				F	R2							746
93		2.42	18	5.0 5.0	100	F	R2					LIMESTONE: packstone; with mudstone interstices; very light gray (N8); clasts .05' flatten at very sharp contact. [Glen Rose Formation]		745
94		2.75				F	R2							744
95		2.33	19	5.0 5.0	100	F	R2-R3					LIMESTONE: wackestone; fine to medium matrix; coarse clasts; laminated; stylolitic. [Glen Rose Formation]		743
96		2.75				F	R2							742
97		3	19	5.0 5.0	100	F	R2-R3			2014-19		LIMESTONE: packstone; with mud interstices; clasts .1' very light gray. [Glen Rose Formation]		741
98		2.67				F	R3							

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
99		2.67	19	5.0 5.0	100	F	R3							
		3.42				F	R1							
100						F	R2					LIMESTONE: micrite with mudstone laminae at base; medium light gray (N6); sharp basal contact. [Glen Rose Formation]		
		3.17				F	R2					LIMESTONE: wackestone; medium size grains; grading into weakly packstone at base with rip ups. [Glen Rose Formation]		739
101						F	R2					LIMESTONE: interbedded coarse wackestone; finer wackestone; micrite; sharp basal contact. [Glen Rose Formation]		
		3.67				F	R2					Limestone; wackestone; same as above; no micrite. [Glen Rose Formation]		738
102			20	5.0 5.0	100	F	R2							
		2.83				F	R2							LIMESTONE: packstone; fine-med grained with micrite clasts .05"; minor lignite clasts. [Glen Rose Formation]
103						F	R2							
		2.5				F	R2					LIMESTONE: wackestone; fine-medgrained; to medium at base; massive; light gray. [Glen Rose Formation]		736
104						F	R2							
		1.33				F	R2							735
105			21	5.0 5.0	100	F	R2							
		3.33				F	R2							LIMESTONE: packstone; med-coarse matrix; locally minor fine; with rip ups .01-.05' medium to medium light gray. [Glen Rose Formation]
106						F	R2							
		3.75				F	R2					LIMESTONE: micrite; very fine grain with wackestone inclusions; grades into mudstone laminae at base; light to medium light gray at base. [Glen Rose Formation]		733
107						F	R2					LIMESTONE: wackestone; light gray (N7); fine-med grained; laminated; medium grained; rip ups 107.5-107.6; stylonitic 107.8-108. [Glen Rose Formation]		732
108			22	5.0 5.0	100	F	R2							
		2.67				F	R2							LIMESTONE: packstone; very light gray (N8); medium fine grained; with coarse wackestone inclusions. [Glen Rose Formation]
109						F	R2					LIMESTONE: wackestone; light gray (N7); fine grained; laminated; 108.3-108.7; massive e108.7-11. [Glen Rose Formation]		730
		2.33				F	R2					LIMESTONE: wackestone; medium grained; light gray (N7); laminated stylonitic. [Glen Rose Formation]		729
110						F	R2							
		3.17				F	R2							728
111			4	5.0 5.0	100	F	R2							
		3.42				F	R2							
112						F	R2							
		4				F	R2							727
113						F	R2							
		3.67				F	R2					LIMESTONE: micrite; fine grained; very light gray (N8); shale inclusion 113.2-113.3. [Glen Rose Formation]		726



Project Name and Job Number  
TXU Comanche Peak Col  
1908



**ROCK LOG**  
**Boring No. B-2014**


Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
114		3.67	22	5.0 5.0	100	F	R2							725
		3.5				F	R2							LIMESTONE: wackestone; fine grained massive 114.7-115. [Glen Rose Formation]
115		4.08				F	R2							724
116		3.75				F	R2							723
117		3.83	23	5.0 5.0	100	F	R3							722
		4.17				F	R2							LIMESTONE: wackestone; medium light gray (N6); laminated; fine grained. [Glen Rose Formation]
118		4.38				F	R2							721
119		2.83				F	R2							720
120		2.5				F	R2							719
121		2.17	24	5.0 5.0	100	F	R2							718
		1.75				F	R2							LIMESTONE: packstone; medium fine; light gray. [Glen Rose Formation]
122		4.5				F	R0							717
123		3.42				F	R0							716
124		2.42	25	5.0 5.0	100	F	R2							715
		4.17				F	R0-R2							SILTY CLAYSTONE; calcareous laminated; medium dark gray. [Glen Rose Formation]
125		2.5				F	R1							714
126						F	R2							713
127						F	R0-R2							712
128						F	R1							711

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2014</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)									
129		2.5	25	5.0 5.0	100	F	R2					LIMESTONE: wackestone; fine with medium clasts; very light gray (N8); minor fossils near base; massive. [Glen Rose Formation]		710									
		5.92																			LIMESTONE: micrite; mudstone; laminated with muddy packstone 128-128.1. [Glen Rose Formation]		
130		3.17	26	5.0 5.0	100	F	R2					LIMESTONE micritic packstone; upper section very fine grading down to stylonitic packstone; very light very stylonitic at base. [Glen Rose Formation]		709									
131		4.42																			LIMESTONE: packstone; laminated; local stylonites; medium light gray (N6); micrite 131.4-132.1. [Glen Rose Formation]		708
132		6.17																			Shale: mudstone with silt; laminated; med. light gray (N5)		707
133		6.42																			LIMESTONE: packstone; locally laminated; fines; medium light gray (N6); wackestone w/inclusions 134.5-135. [Glen Rose Formation]		706
134		7.17	27	5.0 5.0	100	F	R2					LIMESTONE packstone; very light gray (N8); stylonitic; laminated. [Glen Rose Formation]		705									
135		6.17																			LIMESTONE: wackestone; fine-med with inclusions .05' fining to contact 137.2. [Glen Rose Formation]	704	
136		5.67																			LIMESTONE: packstone; light gray to very light gray (N7-N8); laminated. [Glen Rose Formation]	703	
137		4.17	28	5.0 5.0	100	F	R2					LIMESTONE: packstone; very light gray (N8); medium grain stylonitic. [Glen Rose Formation]		702									
138		2.75																			LIMESTONE: wackestone; medium light gray (N6); laminated; fine matrix; medium grains and inclusions .05'. [Glen Rose Formation]	701	
139		2.67	28	5.0 5.0	100	F	R2					LIMESTONE: packstone; very light gray (N8); medium grain stylonitic. [Glen Rose Formation]		700									
140		2.25																			LIMESTONE: wackestone; medium light gray (N6); laminated; fine matrix; medium grains and inclusions .05'. [Glen Rose Formation]	699	
141		1.83																			LIMESTONE: wackestone; medium light gray (N6); laminated; fine matrix; medium grains and inclusions .05'. [Glen Rose Formation]	698	
142		3.17	28	5.0 5.0	100	F	R2					LIMESTONE: wackestone; medium light gray (N6); laminated; fine matrix; medium grains and inclusions .05'. [Glen Rose Formation]		697									
143		2.75																			LIMESTONE: wackestone; medium light gray (N6); laminated; fine matrix; medium grains and inclusions .05'. [Glen Rose Formation]	696	


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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
144		2.75	28	5.0 5.0	100	F	R2					SHALE: mudstone; micritic 142.8-142.9. [Glen Rose Formation]		695
145		1.67				F	R2		LIMESTONE: wackestone; fine to medium grained; light gray laminated inclusions near base. [Glen Rose Formation]		694			
146		2.25				F	R2				LIMESTONE: wackestone; massive; light gray (N7); gradational lower contact. [Glen Rose Formation]		694	
147		3.17				F	R2				LIMESTONE: wackestone; medium light gray (N6); inclusions; few clasts. [Glen Rose Formation]		693	
148		2.67	29	5.0 5.0	100							LIMESTONE: wackestone; medium light gray (N6); grades to light gray 147.3-147.9; inclusions .01'. [Glen Rose Formation]		692
149		2.33				F	R1		MICRITIC MUDSTONE; with slight and inclusions borderline wackestone laminated. [Glen Rose Formation]		691			
150		ND				F	R2				LIMESTONE: wackestone; very light gray; medium grained; massive; micritic from 149.7-150. [Glen Rose Formation]		690	
150											BOTTOM OF HOLE AT 150.0'	bottom of hole	689	
151													688	
152													687	
153													686	
154													685	
155													684	
156													683	
157													682	
158													681	

Project Name and Job Number TXU Comache Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-2015</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'06.22925"N / 97°47'31.00136"W		Total Depth 200 feet	
Drilling Contractor and Rig Fugro / CME 45		Elevation and Datum 846.679 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 7.3 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 3	Date Started 1/23/07	
		Borehole Inclination Vertical	Logged by S. Dee	Date Completed 1/25/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 1/30/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0										846
1			B-2015 1	3	12/18			<b>RESIDUAL SOIL (RS)</b> LEAN CLAY with sand and calcareous deposits soft to medium stiff, moderate brown (5YR4/4), damp, 10% gravel, strong reaction to HCl		845
2				3						844
3				5						844
4	CL		B-2015 2	50/5.5"	5.5/5.5			hard, with limestone fragments, very pale orange (10YR8/2), dry, 10% gravel and chert pieces, strong reaction to HCl		843
5										842
6			B-2015 3	4	6/6			color to grayish orange (10YR7/4), damp, 5%-10% limestone fragments (rest of sample at 6.0' not taken because of lack of rod connections)	hammer attachments not available for rest of SPT sample	841
7										840
8								Augered to top of rock at 7.3'	Bedrock at 7.3'	839
9										838
10										837
11										836
12										835
13										834
14										833
15										832

Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG Boring No. B-2015</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'06.22925"N / 97°47'31.00136"W		Total Depth 200 feet	
Drilling Contractor and Rig Fugro Austin / CME 45		Elevation and Datum 846.679 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 7.3 feet	
Casing Size and Depth 4 / 7.3 feet		Length of Core Barrel and Bit 8.6 feet	No. of Core Boxes 13	Date Started 1/23/07	
		Borehole Inclination Vertical	Logged by S. Dee	Date Completed 1/25/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 1/30/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
8.00		0.8	1	2.9	100	MW	R2		2015-4			LIMESTONE: wackestone; very light gray (N8) to dark yellowish orange (10YR 6/6); bedded with (<.01') of claystone; weak (R2); moderately weathered (MW); strong reaction to HCl. [Glen Rose Formation].		839
9.00		0.92										Interbed of claystone		838
10.00		1.2												837
11.00		1.7							2015-5					836
12.00		2.05	2	5.0	100	SW	R0					SHALE: medium dark gray (N4); very thinly bedded; extremely weak (R0); slightly weathered (SW); [Glen Rose Formation].		835
13.00		1.03				SW	R2					LIMESTONE: packstone; medium dark gray (N4); massive; weak (R2); slightly weathered (SW); [Glen Rose Formation].		834
14.00		1.15												833
15.00		3.02										SHALE: medium dark gray (N4); very thinly bedded (<.01'); extremely weak (R0); slightly weathered (SW); no reaction to HCl; [Glen Rose Formation].		832
16.00		3.63												831
17.00		3.8	3	5.0	100	SW	R0							830
18.00		ND												829
19.00		3							2015-6					828
20.00		ND				F	R2					LIMESTONE: wackestone; white (N9); massive; weak (R2); fresh (F); clasts are fossils; strong reaction to HCl; [Glen Rose Formation]. Coal seam at 20.3'		827
21.00		1.88	4	5.0	100									826
22.00		1.27				SW	R2		2015-7					825

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2015</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
23		1.27										LIMESTONE: packstone; medium dark gray (N4); bedded with abundant interbeds (<0.1') of siltstone; weak (R2); slightly weathered (SW); strong reaction to HCl; abundant fossils and burrows; [Glen Rose Formation].		824
24		1.4	4	5.0	100	SW	R2							823
25		1.37												822
26		3.08										SHALE: dark gray (N3); very thinly bedded (<0.01'); extremely weak (R0); fresh (F); [Glen Rose Formation].		821
27		4.17				F	R0			2015-8				820
28		4.25	5	5.0	100	SW	R2					LIMESTONE: packstone; medium light gray (N8); weak (R2); slightly weathered (SW); [Glen Rose Formation].		819
29		1.83				F	R0					SHALE: dark gray (N3); very thinly bedded; extremely weak (R0); fresh (F); [Glen Rose Formation].		818
30		2.08				SW	R2					LIMESTONE: wackestone; very light gray (N8); weak (R2); slightly weathered (SW); abundant interbeds of shale; [Glen Rose Formation].		817
31		0.93										LIMESTONE: wackestone; very light gray (N8); massive with zones of abundant interbeds of shale (< 0.1'); weak (R2); slightly weathered (SW); strong reaction to HCl; abundant fossils; [Glen Rose Formation].		816
32		0.97												815
33		0.68	6	5.0	100									814
34		0.72				SW	R2							813
35		0.9								2015-9				812
36		2.03										Varies between packstone and wackestone but mostly wackestone (matrix supported).		811
37		1.92	7	5.0	100									810
		0.75										Abundant bioturbation		

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2015</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
38		0.75								2015-10		Shale interbed		809
39		3.75	7	5.0 5.0	100	SW	R2					LIMESTONE: wackestone; very light gray (N8); massive with zones of abundant interbeds of shale (< 0.1'); weak (R2); slightly weathered (SW); strong reaction to HCl; abundant fossils; [Glen Rose Formation]. Shale interbed		808
40		1.62												807
41		4.12				F	R0					SHALE: medium dark gray (N4); very thinly bedded; extremely weak; fresh. [Glen Rose Formation]		806
42		3.98								2015-11		LIMESTONE: wackestone; very light gray (N8); massive with zones of abundant interbeds of shale (<0.1'); weak; slightly weathered; reacts strongly to HCl; abundant fossils. [Glen Rose Formation]		805
43		0.93	8	5.0 5.0	100									804
44		1.63												803
45		2.33				SW	R2							802
46		2.02										LIMESTONE: wackestone; very light gray (N8); massive with zones of abundant interbeds of shale (<0.1'); weak; slightly weathered; reacts strongly to HCl; abundant fossils; abundant bioturbation from 48.0'-48.8'. [Glen Rose Formation]	Pull-down pressure = 150 psi; system pressure = 1300 - 1500; good water return (gray)	801
47		1.97												800
48		2.23	9	5.0 5.0	100					2015-12				799
49		1.78												798
50		2.88										SHALE: medium dark gray (N4); very thinly bedded; extremely weak; fresh; slight reaction to HCl; beds are <0.01' thick. [Glen Rose Formation]		797
51		6.28								2015-13				796
52		6.8	10	4.9 5.0	98	F	R0							795
		5.97												

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
53		5.97	10	4.9 5.0	98	F	R0							794
54		2.9				SW	R2							LIMESTONE: packstone; massive; very light gray (N8); weak; slightly weathered; reacts to HCl. [Glen Rose Formation]
55		4.52										SHALE: medium dark gray (N4); very thinly bedded; extremely weak; fresh; slight reaction to HCl; abundant shale interbeds <0.01' thick; interbeds of packstone from 53.9'-54.0', 54.6'-54.7', and 55.5'-55.6'. [Glen Rose Formation]		792
56		4.9				F	R0							791
57		5.25												790
58		1.28	11	5.0 5.0	100									789
59		1.7				SW	R2							LIMESTONE: wackestone; massive with interbeds of shale (<0.1'); very light gray (N8); weak; slightly weathered; reacts strongly to HCl; shale interbed 59.6'-59.8'. [Glen Rose Formation]
60		3.25												787
61		4.35				F	R0					SHALE: medium dark gray (N4); very thinly bedded (<0.1'); extremely weak; fresh; no reaction to HCl; some clasts of limestone in the shale matrix. [Glen Rose Formation]		786
62		3.65												785
63		4.65	12	5.2 5.0	100	SW	R2							784
64		5.03				F	R0							SHALE: medium dark gray (N4); very thinly bedded (<0.1'); extremely weak; fresh; no reaction to HCl; some clasts of limestone in the shale matrix. [Glen Rose Formation]
65		2.22												782
66		1.92	13	4.8 5.0	96	SW	R2							781
67		2.07												LIMESTONE: wackestone; very light gray (N8); massive with zones of shale interbeds (<0.1'); weak; fresh to slightly weathered; reacts strongly to HCl. [Glen Rose Formation]
		2.22												



Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-2015</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
68		2.22												779
69		1.38	13	4.8 5.0	96	SW	R2			2015-16		Abundant shale interbeds; rip-up clasts and burrows from 68' to 75'		778
70		1.3												777
71		1.47												776
72		1.88								2015-17				775
73		0.88	14	5.0 5.0	100	SW	R2							774
74		1.18												773
75		1.33												772
76		1.45										LIMESTONE: wackestone; very light gray (N8); massive with zones of shale interbeds(<0.1'); weak; fresh to slightly weathered; reacts strongly to HCl. [Glen Rose Formation]		771
77		0.9										Abundant shale interbeds 76.2' to 77' and 78' to 78.6'; beds are <0.1'		770
78		1.6	15	5.0 5.0	100	SW	R2			2015-18				769
79		1.37												768
80		1.87												767
81		1.13										Abundant shale interbeds 80.2' to 82'; bioturbation throughout		766
82		1.98	16	5.0 5.0	100	SW	R2							765
		2.17												

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-2015</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
83		2.17							2015-19			LIMESTONE: wackestone; very light gray (N8); massive with zones of shale interbeds (<0.1'); weak; fresh to slightly weathered; reacts strongly to HCl. [Glen Rose Formation]		764
84		1.42	16	5.0	100	SW	R2							763
85		1.57												762
86		1.07										Abundant shale interbeds 86.6 to 89'; bioturbation throughout		761
87		1.35												760
88		0.88	17	5.0	100	SW	R2							759
89		1.17							2015-20					758
90		1.1												757
91		1.2				SW	R2					LIMESTONE: packstone; very light gray (N8); massive with zones of shale interbeds (<0.1'); weak; slightly weathered. [Glen Rose Formation]		756
92		1.03							2015-21					755
93		0.87	18	5.0	100							LIMESTONE: wackestone; very light gray (N8) to medium light gray (N6); massive with abundant interbeds (<0.1') shale; oolitic in places; abundant rip-up clasts; weak; slightly weathered. [Glen Rose Formation]		754
94		1.1												753
95		1.17				SW	R2							752
96		1.23												751
97		1.97	19	5.0	100									750
		1.37										Abundant bioturbation fro 97.0'-98.8'.		

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-2015</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)				
98		1.37	19	5.0 5.0	100	SW	R2					LIMESTONE: wackestone; very light gray (N8) to medium light gray (N6); massive with abundant interbeds (<0.1') shale; oolitic in places; abundant rip-up clasts; weak; slightly weathered. [Glen Rose Formation]		749				
99		1.13														LIMESTONE: wackestone; very light gray (N8) to medium light gray (N6); massive with abundant interbeds (<0.1') shale; oolitic in places; abundant rip-up clasts; weak; slightly weathered. [Glen Rose Formation]		748
100		1.22														LIMESTONE: wackestone; very light gray (N8) to medium light gray (N6); massive with abundant interbeds (<0.1') shale; oolitic in places; abundant rip-up clasts; weak; slightly weathered. [Glen Rose Formation]		747
101		0.73	20	5.0 5.0	100	SW	R2					Unusually large clasts from 101.5'-101.7' (0.01'-0.02').		746				
102		1.2														Primarily packstone with zones of matrix supported wackestone		745
103		1.42																744
104		0.82																743
105		2.25	21	5.0 5.0	100	SW	R2					LIMESTONE: packstone; very light gray (N8); massive with zones of shale interbeds (<0.1'); weak; slightly weathered; shale interbeds absent 106.8'-108.3'; abundant blue oolitic clasts throughout. [Glen Rose Formation]		742				
106		1.45																741
107		1.62																740
108		1.13																739
109		1.2	22	5.0 5.0	100	SW	R1					SHALE: siltstone; light olive gray (5Y 6/1); very thinly bedded; very weak; slightly weathered. [Glen Rose Formation]		738				
110		1.2																737
111		1.25																736
112		2.3												735				
		1.25					R2											

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
113		1.25				SW	R2					LIMESTONE: packstone; very light gray (N8); massive with zones of shale interbeds (<0.1'); weak; slightly weathered; shale interbeds absent 106.8'-108.3'; abundant blue oolitic clasts throughout. [Glen Rose Formation]		734
114		1.75	22	5.0 5.0	100				2015-25					733
115		1.63										LIMESTONE: wackestone; very light gray (N8); massive with occasional interbeds (<0.1') of shale/siltstone; weak; slightly weathered; reacts strongly to HCl. [Glen Rose Formation]		732
116		1.95												731
117		1.17												730
118		1.88	23	4.8 5.0	96				2015-26		Zone of increased clast abundance 116.2'-177.7'; very few shale interbeds below 117.7'.			729
119		2.1												728
120		1.82												727
121		2.17				SW	R2					LIMESTONE: wackestone; very light gray (N8); massive with occasional interbeds (<0.1') of shale/siltstone; weak; slightly weathered; reacts strongly to HCl; very few shale interbeds to 122.6'; abundant shale interbeds from 122.6'-126.0' (<0.1' beds). [Glen Rose Formation]		726
122		1.83												
123		1.75	24	4.9 5.0	98				2015-27					724
124		2.7												723
125		2.38												722
126		2.27	25	4.9 5.0	98									721
127		1.63												720
		1.38							2015-28					

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
128		1.38	25	4.9 5.0	98	SW	R2					LIMESTONE: wackestone; very light gray (N8); massive with occasional interbeds (<0.1') of shale/siltstone; weak; slightly weathered; reacts strongly to HCl; very few shale interbeds to 122.6'; abundant shale interbeds from 122.6'-126.0' (<0.1' beds). [Glen Rose Formation]	Stopped drilling at 8:15 am 1/25/07	719
129		2.25										718		
130		2.97										717		
131		7.02	26	5.0 5.0	100	F	R0				LIMESTONE: micrite; massive; weak; fresh; slight reaction to HCl. [Glen Rose Formation]		716	
132		3.92				F	R2				715			
133		4.17				F	R0 to R1				714			
134		6.25				F	R2				713			
135		1.93				F	R2				712			
136		1.82				LIMESTONE: micrite; very light gray (N8); weak; fresh; massive. [Glen Rose Formation]	711							
137		1.62	LIMESTONE: wackestone; with abundant interbeds for shale/siltstone (<0.1'); weak; slightly weathered; reacts strongly to HCl. [Glen Rose Formation]	710										
138		3.9	27	5.0 5.0	100						Abundant bioturbation and rip-up clasts throughout; highly variable.	709		
139		1.75	28	5.0 5.0	100	SW	R2					Abundant fossils	708	
140		1.82				707								
141		1.82				706								
142		1.85										705		
		1.37												

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-2015**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
143		1.37										LIMESTONE: wackestone; with abundant interbeds for shale/siltstone (<0.1'); weak; slightly weathered; reacts strongly to HCl. [Glen Rose Formation]		704
144		1.55	28	5.0 5.0	100									703
145		1.3							2015-31					702
146		1.87												701
147		1.68				SW	R2							700
148		1.92	29	5.0 5.0	100				2015-32					699
149		4.25												698
150		1.63												697
151		2												696
152		2				F	R1					SHALE: dark gray (N3); thinly bedded; very weak; fresh; abundant medium grained clasts. [Glen Rose Formation]		695
153		3.15	30	5.0 5.0	100							LIMESTONE: micrite; sparitic; massive; weak; fresh; recrystallized interlocking grains; reacts strongly to HCl. [Glen Rose Formation]		694
154		3.52				F	R2							693
155		3.45												692
156		1.82				SW	R2							691
157		3.28	31	5.0 5.0	100									690
		1.32												

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-2015**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
158		1.32							2015-33					689
159		0.75	31	5.0 5.0	100	SW	R2							688
160		1.02												687
161		1												686
162		1.17												685
163		1.58	32	5.0 5.0	100	SW	R2							684
164		1.72											Pull-down pressure = 50 psi; system pressure = 1000 psi; good water return (gray)	683
165		1.25												682
166		1.05										LIMESTONE: wackestone; very light gray (N8) to light gray (N7); massive with fewer shale interbeds than above; weak; slightly weathered; abundant bioturbation, fossils and rip-up clasts throughout. [Glen Rose Formation]	681	
167		1.6												680
168		1.35	33	4.0 5.0	98	SW	R2					Fossiliferous 168' to 168.3'	679	
169		1.3							2015-34					678
170		1.53												677
171		1.83	34	4.0 5.0	98	SW	R2					High concentration of shale interbeds 171.3' to 173.2'	676	
172		1.9												675
		1.97												

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**ROCK LOG**  
**Boring No. B-2015**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)	
173		1.97										LIMESTONE: wackestone; very light gray (N8) to light gray (N7); massive with fewer shale interbeds than above; weak; slightly weathered; abundant bioturbation, fossils and rip-up clasts throughout. [Glen Rose Formation]		674	
		1.8	34	4.9 5.0	98	SW	R2							673	
174		1.75												672	
175		2.02												671	
176		1.8												670	
177		2.2	35	5.0 5.0	100	SW	R2							669	
178		1.68												668	
179		2.05											High concentration of shale interbeds (<0.1')		667
180		1.67												Pull-down pressure = 50 psi; system pressure = 1000 psi; good water return (gray)	666
181		1.87													665
182		1.27	36	5.0 5.0	100	SW	R2							664	
183		1.8												663	
184		1.9												662	
185		1.62												661	
186		1.82	37	5.0 5.0	100	SW	R2							660	
187		1.38										Oolitic in isolated zoned, particularly from		660	




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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
188		1.38										189.5'-191.3' LIMESTONE: wackestone; very light gray (N8) to light gray (N7); massive with fewer shale interbeds than above; weak; slightly weathered; abundant bioturbation, fossils and rip-up clasts throughout. [Glen Rose Formation]		659
189		1.7	37	5.0 5.0	100	SW	R2			2015-36				658
190		1.42												657
191		2.02												656
192		3.3												655
193		4.58	38	5.0 5.0	100	F	R0					SHALE: dark gray (N3); very thinly bedded (<0.01'); extremely weak; fresh; moderate reaction to HCl; some beds contain fossils. [Glen Rose Formation]		654
194		1.87										LIMESTONE: wackestone; massive; weak; slightly weathered; reacts strongly to HCl; micritic in places. [Glen Rose Formation]		653
195		2.4				SW	R2							652
196		3.73										SHALE: dark gray (N3); very thinly bedded; extremely weak; fresh; wackestone interbed from 195.6'-195.8'. [Glen Rose Formation]		651
197		1.57										LIMESTONE: wackestone; very light gray (N8); massive; weak; fresh; reacts to HCl. [Glen Rose Formation]		650
198		2.92	39	5.0 5.0	100	F	R0			2015-37		SHALE: dark gray (N3); very thinly bedded; extremely weak; fresh; wackestone interbed from 195.6'-195.8'. [Glen Rose Formation]		649
199		3.7										LIMESTONE: micrite; silty very light gray (N8); bedded; weak; fresh; reacts to HCl. [Glen Rose Formation]		648
200		1.9					R1					SHALE: siltstone; sandy; dark greenish gray (5G 4/1); very weak; fresh; moderate reaction to HCl. [Glen Rose Formation]		647
201												BOTTOM OF HOLE AT 200'		646
202														645

Project Name and Job Number TXU Comache Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-2016</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'04.64128"N / 97°47'30.28038"W		Total Depth 150 feet	
Drilling Contractor and Rig Palmerston and Parish / CME 55		Elevation and Datum 841.04 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 8.5 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 4	Date Started 12/16/06	
		Borehole Inclination Vertical	Logged by M. Buga	Date Completed 12/17/06	

Reviewed by / Date R.Ortiz 1/10/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
0							<b>RESIDUAL SOIL (RS)</b> SILT with limestone fragments hard, yellow (2.5Y7/6), dry to damp, some calcareous deposits and clay		841
1			B-2016 1	11					840
2				22	13/18	2.3			839
3				6			limestone ledge at 2.5'		838
4	ML		B-2016 2	50/4"	4/4		color to very pale brown (10YR8/3), dry		837
5									836
6			B-2016 3	40	8/8	1.25			835
7				50/2"			very stiff to hard, color to light yellowish brown (10YR6/4), damp hard, color to yellowish brown (10YR5/6)		834
8									833
9			B-2016	50/0"	0/0		Augered to 9.5' to set casing	Bedrock at 8.5'	832
10									831
11									830
12									829
13									828
14									827
15									

Project Name and Job Number TXU Comanche Peak Col 1908		 WLA William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. B-2016</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'04.64128"N / 97°47'30.28038"W		Total Depth 150 feet	
Drilling Contractor and Rig PALMERTON and PARISH / CME-55		Elevation and Datum 841.04 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 8.5 feet	
Casing Size and Depth 4" / 9.5 feet		Length of Core Barrel and Bit 8.8 feet	No. of Core Boxes 10	Date Started 12/16/06	
		Borehole Inclination Vertical	Logged by M.Buga	Date Completed 12/17/06	

Reviewed by / Date R.Ortiz 1/10/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
10		3.25				F	R2					SANDSTONE, greenish gray (5 GY 6/1), fresh, weak, massive, no reaction to HCL	0 - 150 psi down press, water is being drained	831
11		3.23	1	3.7 3.7	100							SANDSTONE/ CLAYSTONE, greenish gray (5GY 6/1), fresh, very weak, no HCL reaction, massive	water recovery tough to judge	830
12		4.43												829
13		3.55				F	R1		2016-5					828
14		6.38												827
15		3.9												826
16		1.9	2	5.0 5.0	100							LIMESTONE, micrite, light gray (N7), fresh, weak, medium strong, violent HCL reaction, sandy interbed 16.0' to 16.2'	core barrel stuck, tripped out pipe 10:30 - 11:00	825
17		1.35				F	R2-R3		2016-6		FRACTURED			824
18		1.67												823
19		2.52				F	R2					LIMESTONE, wackestone, medium light gray (N6), fresh, weak, strong reaction to HCL, clasts < 0.25"	0 - 150 psi down press	822
20		3.03												821
21		2.25	3	5.0 5.0	100	F	R2-R3		2016-7			LIMESTONE, micrite, medium light gray (N6), fresh, weak, medium strong, strong to violent reaction to HCL		820
22		4.45										CLAYSTONE, dark greenish gray (5 G 4/1) fresh, very weak, no reaction to HCL		819
23		4.92				F	R1							818
24		3.05	4	5.0 5.0	100									817
		3				F								

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2016</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
25		3				F	R2-R3					LIMESTONE, wackestone, medium gray (N5), weak to medium strong, strong to violent reaction to HCL, more shaley matrix near base		816
26		1.8				F	R3					LIMESTONE, micrite, medium light gray (N6), fresh, medium strong, violent reaction to HCL		815
27		1.35	4	5.0 5.0	100	F	R2					LIMESTONE, wackestone, medium gray (N5), fresh, weak, violent reaction to HCL		814
28		1.52				F	R3					LIMESTONE, micrite, medium light gray (N6), fresh, medium strong, violent reaction to HCL, 127.5' to 127.85' packstone		813
29		2.8									HIGHLY FRACTURED	LIMESTONE, wackestone, medium gray (N5), fresh, weak to medium strong, violent reaction to HCL, 30.25' - 30.4' packstone, 30.5' - 30.8' packstone		812
30		2.03												811
31		1.43	5	5.0 5.0	100									810
32		1.25				F	R2-R3							809
33		1.35											Ran 1/2 of run, no recovery, tripping run out after run 6	808
34		2.3												807
35		11.1												806
36		2.6	6	5.0 5.0	98	F	R3					LIMESTONE, packstone, medium light gray (N6), fresh, medium strong, violent reaction to HCL		805
37		4.87				F	R1					SHALE, dark greensih gray ( 5G 4/1), fresh, very weak, strong reaction to HCL, 36.65' - 37' micrite		804
38		4.6				F	R1					LIMESTONE, micrite, light gray (N7), fresh, medium strong, violent reaction to HCL		803
39		1.6	7	5.0 5.0	92	F	R3							802
		2.1												

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2016</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
40		2.1										LIMESTONE, packstone, light gray (N7), fresh, medium strong, violent reaction to HCL, 40.2' - 40.6' micrite, 40.8' - 41.0' wackestone and expansive clay		801
41		2.88	7	5.0	92	F	R3							800
42		2.47												799
43		2.53												798
44		3.57				F	R2					LIMESTONE, wackestone, medium gray (N5), fresh, weak, violent reaction to HCL, fossiliferous		797
45		2.1												796
46		2.53	8	5.0	100							SHALE, dark greenish gray (5 G 4/1), fresh, very weak, none to very slight reaction to HCL, desiccation cracks		795
47		6.12												794
48		4.47				F	R1							793
49		3.02												792
50		2.95				F	R3					LIMESTONE, packstone, medium light gray (N6), fresh, medium strong, violent HCL reaction		791
51		4.95	9	5.0	100							same as previous shale unit		790
52		5.08				F	R1							789
53		2.22												788
54		1.92	10	5.0	100	F	R3					LIMESTONE, micrite, medium light gray (N6), fresh, medium strong, violent reaction to HCL		787
		2.78				F	R2					LIMESTONE, wackestone, medium gray (N5), frsh, weak, violent reaction to HCL		787

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2016</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
55		2.78				F	R2					SHALE, dark greenish gray ( 5 G 4/1), fresh, very weak, no reaction to HCL		786
56		5.53	10	5.0	100	F	R1							785
57		5.63								2016-12				784
58		2.9				F	R2 to R3					LIMESTONE, packstone, medium gray (N5), fresh, weak to medium strong, violent reaction to HCL		783
59		3.85				F	R1					SHALE, dark greenish gray (5 G 4/1), fresh, very weak, no HCL reaction		782
60		4.73				F	R3			2016-13		LIMESTONE, packstone, medium light gray (N6), fresh, medium strong, violent reaction to HCL, fossiliferous		781
61		3.03	11	4.8	96	F	R2					LIMESTONE, wackestone, medium light gray to medium gray (N5 - N6), fresh, weak to medium strong, violent reaction to HCL		780
62		2.78				F	R3					LIMESTONE, micrite, light gray (N7), fresh, medium strong, violent reaction to HCL		779
63		1.72				F	R3							778
64		1.77										LIMESTONE, wackestone, medium light gray (N6), frsh, weak to medium strong, violent reaction to HCL, oolitic, 65.0' - 65.3' packstone, 65.3' - 66.7' very tightly spaced wackestone, 67.3' - 67.5' packstone oolities, 70.0' - 70.9' clasts are fewer		777
65		1.52								2016-14				776
66		1.55	12	5.0	100	F	R2 to R3							775
67		1.53												774
68		1.57												773
69		1.95	13	4.9	98									772
		2.73												

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
70		2.73										LIMESTONE, wackestone, medium light gray (N6), frsh, weak to medium strong, violent reaction to HCL, oolitic, 65.0' - 65.3' packstone, 65.3' - 66.7' very tightly spaced wackestone, 67.3' - 67.5' packstone oolities, 70.0' - 70.9' clasts are fewer		771
71		2.37												770
72		1.6	13	4.9 5.0	98	F	R2 to R3							769
73		2.4								2016-15				768
74		1.9												767
75		1.33				F	R3						LIMESTONE: PACKSTONE , medium light gray (N6), fresh, medium strong, violent reaction to HCL, oolite gradational	766
76		2.03	14	5.0 5.0	100	F	R2			2016-16			LIMESTONE, wackestone, medium gray to medium light gray ( N5- N6), fresh, weak, violent eraction o HCL, oolitic	765
77		3.32				F	R2							764
78		1.95				F	R3						LIMESTONE, packstone, medium light gray, fresh, medium strong, violent reaction to HCL	763
79		2.33				F	R2						LIMESTONE, wackestone, medium gray (N5), fresh, weak, strong reaction to HCL	762
80		2.38				F	R3					LIMESTONE, packstone, medium light gray (N6), fresh, medium strong, violent reaction to HCL,	761	
81		1.28	15	5.0 5.0	100					2016-17		LIMESTONE, wackestone, medium light gray (N6), fresh, medium strong, violent reaction to HCL, 81.8' - 82.0' packstone	760	
82		2.57				F	R3						759	
83		3.67											758	
84		3.7	16	5.0 5.0	100								757	
		2.63												

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)		
85		2.63	16	5.0 5.0	100	F	R3					LIMESTONE, packstone, medium light gray (N6), fresh, medium strong, violent HCL reaction		756		
		0.75				F	R3							LIMESTONE, wackestone, medium light gray, fresh, medium strong, violent HCL reaction, oolitic		755
86		2.63				F	R3							LIMESTONE, packstone, medium light gray (N6), fresh, medium strong, violent reaction to HCL, oolitic		754
87		2.03	17	5.0 5.0	100	F	R3			2016-18		LIMESTONE, wackestone, medium light gray (N6), fresh, weak, violent reaction to HCL, oolitic		753		
88		2.37				F	R2							LIMESTONE, micrite, medium light gray (N6), fresh, medium strong, violent reaction to HCL		752
89		2.92				F	R2					2016-19		LIMESTONE, wackestone, medium gray to medium light gray (N5 - N6), fresh, weak, strong to violent reaction to HCL		751
90		1.43	18	5.0 5.0	100	F	R3					LIMESTONE, packstone, medium light gray (N6), fresh, medium strong, violent HCL reaction		750		
91		1.95				F	R2							LIMESTONE, wackestone, medium gray (N5), fresh, weak, violent reaction to HCL, oolitic		749
92		3.58				F	R2							LIMESTONE, packstone, medium light gray (N6), fresh, medium strong, violent HCL reaction		748
93		1.67	19	5.0 5.0	100	F	R3					LIMESTONE, wackestone, medium gray (N5), fresh, weak, violent reaction to HCL, oolitic		747		
94		1.7				F	R2							LIMESTONE, packstone, light gray (N7), fresh, medium strong, violent reaction to HCL		746
95		1.48				F	R2					2016-20		LIMESTONE, wackestone, medium light gray (N6), fresh, weak to medium strong, violent reaction to HCL, oolitic, clayey interbeds		745
96		1.42	19	5.0 5.0	100	F	R3					LIMESTONE, wackestone, medium light gray (N6), fresh, weak to medium strong, violent reaction to HCL, oolitic, clayey interbeds		744		
97		1.57				F	R3							LIMESTONE, wackestone, medium light gray (N6), fresh, weak to medium strong, violent reaction to HCL, oolitic, clayey interbeds		743
98		2.57				F	R2 to R3							LIMESTONE, wackestone, medium light gray (N6), fresh, weak to medium strong, violent reaction to HCL, oolitic, clayey interbeds		742
99		2.62														



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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
100		2.62				F								741
101		2.43	19	5.0	100	F	R3		2016-21			LIMESTONE, packstone, medium gray (N5), fresh, medium strong, violent reaction to HCL, oolitic		740
102		2.17				F	R3							739
103		2.27				F	R3							738
104		1.45				F	R2-R3					LIMESTONE, micrite, medium gray (N5), fresh, medium strong, violent reaction to HCL		737
105		1.58				F	R3					LIMESTONE, wackestone, medium gray (N5), fresh, weak to medium strong, violent reaction to HCL, oolitic		736
106		1.5	20	5.0	100	F						LIMESTONE, packstone, medium light gray (N6), fresh, medium strong, violent reaction to HCL, oolitic		735
107		1.73				F	R2		2016-22			LIMESTONE, wackestone, medium gray (N5), fresh, weak, strong to violent reaction to HCL, planar bedding, convoluted bedding, rip up clasts		734
108		3.12				F	R3							733
109		1.92				F	R3					LIMESTONE, micrite, medium gray (N5), fresh, medium strong, violent reaction to HCL		732
110		1.8				F	R3					LIMESTONE, packstone, medium gray (N5), fresh, medium strong, violent reaction to HCL, oolitic, micrite with dissolution		731
111		2.35	21	5.0	100	F	R3		2016-23			LIMESTONE, micrite, medium gray (N5), fresh, medium strong, strong to violent reaction to HCL, oolitic, soft sediment deformation in to 0.7'		730
112		2.55				F						LIMESTONE, wackestone, medium gray (N5), fresh, medium strong, strong to violent reaction to HCL, oolitic		729
113		2.02				F	R3							728
114		2.37	22	5.0	100	F								727
		1.62				F								

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
115		1.62				F	R3 to R4					LIMESTONE, micrite, medium light gray (N6), fresh, medium strong to strong, violent reaction o HCL		726
116		1.67	22	5.0 5.0	100							LIMESTONE, wackstone, medium gray (N5), fresh, medium strong, violent reaction to HCL		725
117		1.53							2016-24					724
118		1.62												723
119		2.03							2016-25					722
120		2.55												721
121		1.43	23	5.0 5.0	100	F	R3							720
122		1.97												719
123		1.95												718
124		1.72							2016-26					717
125		1.97												716
126		4.05	24	5.0 5.0	100	F	R1					SHALE, greenish gray ( 5 G 4/1), fresh, very weak, non to very slight HCL reaction, dessication		715
127		4.4												714
128		1.83				F	R3 to R4					LIMESTONE, micrite, medium light gray (N6), fresh, medium strong to strong, violent reaction to HCL, dissolution		713
129		4.95	25	5.0 5.0	100									712
		4.97				F	R1							

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**ROCK LOG**  
**Boring No. B-2016**


Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
130		4.97				F	R1					SHALE, dark greenish gray (5G 4/1), fresh, very weak, no to very slight reaction to HCL		711
131		2.85							2016-27			LIMESTONE, wackstone, medium gray (N5), fresh, weak to medium strong, violent HCL reaction		710
132		4	25	5.0 5.0	100	F	R2 to R3							709
133		4.05				F	R3					SHALE, very dark greenish gray (5G 4/1), fresh, very weak, slight to strong reaction to HCL		708
134		3.4										LIMESTONE, wackstone, medium light gray (N6), fresh, weak to medium strong, violent reaction to HCL, oolitic		707
135		3.25												706
136		3.33	26	5.0 5.0	100									705
137		2.37												704
138		2.98				F	R2 to R3		2016-28					703
139		1.4												702
140		1.45												701
141		2.8	27	5.0 5.0	100				2016-29					700
142		1.45										LIMESTONE, packstone, medium light gray (N6), fresh, medium strong, violent reaction to HCL, oolitic		699
143		1.47				F	R3		2016-30					698
144		4.27	28	5.0 5.0	100	F	R2					LIMESTONE, wackstone, medium gray (N5), fresh, weak, strong reaction to HCL		697
		2.68												

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**ROCK LOG**  
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
145		2.68	28	5.0 5.0	100	F	R2		2016-30					696
		2.68				F	R3							695
146		2.47				F	R3							694
147		5.63				F	R1							693
148		2.72	29	5.0 1.8	100	F	R2 to R3						692	
149		2.55												
150														690
151														689
152														688
153														687
154														686
155														685
156														684
157														683
158														682
159														

Project Name and Job Number TXU Comache Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-2017</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'10.69107"N / 97°47'31.88619"W		Total Depth 150 feet	
Drilling Contractor and Rig Fugro / CME 45C		Elevation and Datum 845.367 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 14.5 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 6	Date Started 12/17/06	
		Borehole Inclination Vertical	Logged by R. Turner	Date Completed 12/19/06	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 1/10/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
0							<b>RESIDUAL SOIL (RS)</b> SANDY LEAN CLAY very stiff, very dark grayish brown (10YR3/2), subangular to angular fine sand grains, some small limestone gravel, trace roots, slight reaction to HCl		845
1			B-2017 1	3					844
2				15	13/18	2.5			843
3	CL			12					842
4	CL		B-2017 2	50/2.5"	2.5/2.5	1.5	hard, increased limestone gravel, color to olive yellow (2.5Y6/8), damp  thin limestone beds from about 4.0' to 5.0'		841
5									840
6			B-2017 3	15	18/18	1.2	SANDY SILT dense, olive yellow (2.5Y6/8), damp, traces of subangular limestone gravels up to 0.3" diameter, strong reaction to HCl		839
7	ML			15	18/18				838
8				11					837
9			B-2017 4	6	18/18	2	LEAN CLAY olive yellow (2.5Y6/8), damp, stiff, few limestone fragments and calcareous deposits, slight reaction to HCl		836
10	CL			5	18/18				835
11				6					834
12			B-2017 5	50/5"	5/5		SILT hard, olive yellow (2.5Y6/6), damp, slight reaction to HCl		833
13	ML								832
14			B-2017 6	13	17.5/17.5		SANDY SILT hard, olive yellow (2.5Y6/8), damp, strong reaction to HCl (weathered limestone)		831
15	ML			30	17.5/17.5		Augered to 16' and got SPT refusal bedrock at 14.5'	Bedrock at 14.5'	831

Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG Boring No. B-2017</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'10.69107"N / 97°47'31.88619"W		Total Depth 150 feet	
Drilling Contractor and Rig Fugro / CME 45C		Elevation and Datum 845.367 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 14.5 feet	
Casing Size and Depth 4" / 16 feet		Length of Core Barrel and Bit 8.8 feet	No. of Core Boxes 9	Date Started 12/17/06	
		Borehole Inclination Vertical	Logged by R. Turner	Date Completed 12/19/06	

Reviewed by / Date R. Ortiz 1/10/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
16		1.62												829
17		1.85				SW	R3		2017-7		JO, Ti, R4	LIMESTONE: sparite; very light gray (N7) massive; vuggy and weathered to an olive yellow (color along natural joints; slightly weathered (SW); medium strong (R3); dry; strong HCl reaction		828
18		1.1	1	3.5 4.0	76						JO, Tj, R3			827
19		2.62												826
20		1.3				SW	R2		2017-8			LIMESTONE: packstone; shaly; thin convoluted beds; many fossil fragments; many burrows; very light gray (N7) to medium gray (N5); pyritic from 20.95'-22.0'; slightly weathered (SW); weak (R2); dry; strong HCl reaction		825
21		2												824
22		1.78	2	5.0 5.0	100	F	R1						Gradational contact	823
23		2.27										Wackestone interbed from 23.1'-23.4'.		822
24		1.83				F	R1					SHALE: calcareous; medium dark gray (N4); very thin beds; fresh (F); very weak (R1); damp; strong HCl reaction; shale less calcareous with depth;	Gradational contact	821
25		2.93												820
26		2.83				F	R2					Bioturbated limestone interbed 25.75'-26.0'.		819
27		1.6	3	5.0 5.0	100	F	R2							818
28		0.97				F	R2		2017-9		Highly Fractured zone	LIMESTONE: wackestone; very light gray (N7); thin beds; bivalve fossils; fresh (F); weak (R2); dry; violent HCl reaction		817
29		1.53				F	R2					LIMESTONE: packstone; very light gray (N8) to medium gray (N5); thin beds; shaly zones with fossil fragments; fresh (F); weak (R2); dry; violent HCl reaction;		816
30		2.65	4	5.1 5.0	100	F	R1-R2					LIMESTONE: wackestone; very light gray (N8) to medium light gray (N6); thin beds to massive; some burrows damp; fresh (F); very weak to weak (R1-R2); dry; violent HCl		815

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-2017</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
31		1.97										reaction Shaly zone from 30.9'-31.6'; fossils near shaly zone.		814
32		1.4							2017-10					813
33		4	4	5.1 5.0	100	F	R1-R2					Shaly zone from 32.75'-32.9'; fossils near shaly zone.	Length of recovery stretched due to mechanical breaks.	812
34		1.17												811
35		1.38												810
36		1.75							2017-11		Highly Fractured zone	SHALE: calcareous; medium dark gray (N4); massive fresh (F); very weak (R1); damp; slight HCl reaction		809
37		2.3				F	R1					LIMESTONE: shaly wackestone; very light gray (N8) to medium gray (N5); thin wavy beds; shale seams 0.1"-2"; fresh (F); very weak to weak (R1-R2); dry; strong HCl reaction		808
38		2.65	5	5.1 5.0	100	F	R1-R2				Highly Fractured zone		Length of recovery stretched due to mechanical breaks.	807
39		4.33										SHALE: calcareous; medium dark gray (N4); very thin beds; pyritic; limestone interbeds 0.2'-2.1"; thick fresh (F); very weak (R1); damp; strong HCl reaction		806
40		5.5												805
41		1.02										LIMESTONE: shaly wackestone; very light gray (N8) to light gray (N7); thin beds; burrows; shale interbed 0.1"-1.3" thick; subhorizontal stylolites; burrows in shaly sections; sand below 43'; fresh (F); weak (R2); dry; violent HCl reaction		804
42		1.7												803
43		2.03	6	5.1 5.0	100	F	R2		2017-12				Length of recovery stretched due to mechanical breaks.	802
44		2.23												801
45		2.93												800
46		2.43	7	5.0 5.0	100									800

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-2017</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
46		2.62				F	R2							799
47		2.58							2017-13					798
48		7	7	5.0 5.0	100							SHALE: medium dark gray (N4) to dark gray (N3); very thin beds; pyritic; fresh (F); very weak (R1); damp; very slight HCl reaction		797
49		3.62												796
50		3.72				F	R1							795
51		2.72												794
52		2.93				F	R2					Abundant shell fragments at 51.0'-51.2'. LIMESTONE: wackestone; very light gray (N7); thin beds; bivalve fossils; fresh (F); weak (R2); dry		793
53		3.7	8	5.0 5.0	100							SHALE: medium dark gray (N4); very thin beds; pyritic; interbeds of limestone 0.5"-1.2" thick; fossils in limestone interbeds; fresh (F); very weak (R1); damp; very slight HCl reaction		792
54		4.2				F	R1							791
55		3.97							2017-14					790
56		1.4								crush zone				789
57		1.82				F	R1-R2					LIMESTONE: wackestone; shaly; very light gray (N8) to medium light gray (N6); thin convoluted beds; shale seam .1"to.8"; thick burrows; fresh (F); very weak to weak (R1-R2); dry; violent HCl reaction	Crush zones caused while removing core from split tube	788
58		2.08	9	5.0 5.0	100				2017-15					787
59		3.93										SHALE: dark gray (N3); very thin beds; fresh (F); very weak (R1); damp; slight HCl reaction;		786
60		2.98				F	R1							785
61		1.87	10	5.0 5.0	100	F	R1							785



Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2017</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
61		2.77				F	R1					LIMESTONE: shaly wackestone; very light gray (N8) to medium light gray (N6); thin beds; many burrows; fresh (F); very weak (R1); dry; strong HCl reaction	Gradational contact	784
62		3.97				F	R1					SHALE: medium dark gray (N4); very thin beds; fresh (F); very weak (R1); damp; no HCl reaction		783
63			10	5.0 5.0	100							LIMESTONE: wackestone; very light gray (N8) to medium light gray (N6); thin beds; subhorizontal stylolites; burrows; fresh (F); weak (R2); dry; violent HCl reaction;		782
64		1.78								2017-16				781
65		1.8				F	R2					Shale bed 65.4'-65.7'.		780
66		1.85												779
67		1.6												778
68		1.82	11	5.0 5.0	100	F	R2					0.1"-0.5" thick shale seams near 68';		777
69		1.92								2017-17				776
70		1.15										Below 69.5', wackestone is more shaly; darker in color and contains more shell fragments.		775
71		1.07								2017-18				774
72		1.32												773
73		2.22	12	5.0 5.0	100	F	R2							772
74		1.77												771
75		2.3												770
76		1.38	13	5.0 5.0	100	F								

Project Name and Job Number  
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**ROCK LOG**  
**Boring No. B-2017**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
76		1.92												769
77		0.85							2017-19					768
78		13	13	5.0 5.0	100	F								767
79		0.92												766
80		2.23												765
81		1.08												764
82		2.4												763
83		1.6	14	5.0 5.0	100	F	R1 to R2		2017-20					762
84		0.92												761
85		2.45												760
86		2.47												759
87		3.6												758
88		2.83	15	5.1 5.0	100	F	R1 to R2						Length of recovery stretched due to mechanical breaks.	757
89		0.92												756
90		1.12							2017-21					755
91		1.18	16	5.0 5.0	100	F	R2							

LIMESTONE: shaley wackestone; very light to medium gray (N8-N5); thin beds; shale seams 0.1" to 2.2"; many burrows; burrows infilled with saley packstone and shell fragments; fresh (F); very weak to weak (R1-R2); violent HCL reaction

More micritic and massive from 82.9'-84.1'.

Subhorizontal stylolites from 87.6'-88.9'; no burrows in this zone.

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
91		1.35										LIMESTONE: shaly wackestone; very light to medium gray (N8-N5); thin beds; shale seams 0.1" to 2.2"; many burrows; burrows infilled with saley packstone and shell fragments; fresh (F); very weak to weak (R1-R2); violent HCL reaction Shaly from 91.2'-93.3'.		754
92		2.92												753
93			16	5.0 5.0	100									752
94		1.72				F	R2			2017-22		shale interbed from 93.2'-93.5'.		751
95		2.02												750
96		1.73												749
97		1.63												748
98		1.6	17	5.0 5.0	100	F	R1					SHALE: medium light gray (N6); massive; burrows; fresh (F); very weak (R1); damp; no HCl reaction. [Glen Rose Formation]		747
99		1.47										LIMESTONE: packstone; shaly; very light gray (N8) to medium light gray (N6); thin beds; shale interbeds 1-3" thick; fresh (F); very weak to weak (R1-R2); dry; strong HCl reaction. [Glen Rose Formation]		746
100		1.28				F	R1-R2			2017-23				745
101		1.1										LIMESTONE: wackestone; light to medium light gray (N6); thin beds to massive; few burrows; fresh (F); very weak to weak (R1-R2); dry; shaly strong HCl reaction. [Glen Rose Formation]		744
102		2.17				F	R1-R2							743
103		3.4	18	4.9 5.0	98							Very thin micritic laminations from 102.4'-102.7'.		742
104		1.85								2017-24		LIMESTONE: packstone; shaly; very light gray (N8) to medium light gray (N6); thin beds; shale interbeds 1-3" thick; fresh (F); very weak to weak (R1-R2); dry; strong HCl reaction. [Glen Rose Formation]		741
105		0.78				F	R1-R2							740
106		1.7	19	5.0 5.0	100	F	R1							

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
106		1.78										LIMESTONE: wackestone; shaly; very light gray (N8) to medium light gray (N6); massive; burrows; fossil shell fragments; fresh (F); very weak (R1); strong HCl reaction. [Glen Rose Formation]		739
107		1.43				F	R1							738
108		1.78	19	5.0 5.0	100							LIMESTONE: packstone; shaly; light gray to medium gray (N5-N7); thin convoluted beds; bioturbated; shell fragments; fresh (F); very weak (R1); dry; strong HCl reaction. [Glen Rose Formation]	Gradational contact	737
109		1.87				F	R1							736
110		2.57								2017-25		LIMESTONE: micrite; shaly; light gray (N7); thin beds; fresh (F); very weak (R1); damp. [Glen Rose Formation]		735
111		0.8										LIMESTONE: packstone; light to medium light gray (N6); thin beds; burrows; shaly; fresh (F); very weak (R1); strong HCl reaction. [Glen Rose Formation]		734
112		1.02	20	5.1 5.0	100									733
113		0.97				F	R1			2017-26			Length of recovery stretched due to mechanical breaks.	732
114		2.68												731
115		1.97												730
116		1.45										LIMESTONE: shaly wackestone; light to medium light gray (N6-N7); thin beds; few burrows; broken shell fragments; fresh (F); weak (R2); dry; slight to strong HCl reaction. [Glen Rose Formation]		729
117		1.57	21	5.0 5.0	100									728
118		2.1				F	R2							727
119		1.47												726
120		0.98	22	5.0 5.0	100	F	R1 to			2017-27				725
121														

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-2017</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
121		1.73					R2					LIMESTONE: shaly wackestone; light to medium light gray (N6-N7); thin beds; few burrows; broken shell fragments; fresh (F); very weak to weak (R1-R2); dry; slight to strong HCl reaction. [Glen Rose Formation]		724
122		2.83					R1 to R2							723
123			22	5.0 5.0	100	F	R1 to R2							722
124		1.68										Coal seam (0.1") at 123.6'.		721
125		1.55								2017-28				720
126		1.48												719
127		2.1				F	R1 to R2							718
128		2.92	23	5.0 5.0	100							Intact bivalve fossils near 127.2'		717
129		3.03								2017-29				716
130		5.75				F	R1					SHALE: medium dark gray (N4); very thin beds; fresh (F); very weak (R1); damp; very slight HCl reaction. [Glen Rose Formation]		715
131		1.17				F	R2					LIMESTONE: wackestone; light gray (N7); massive; coal seams; fresh (F); weak (R2); dry; slight HCl reaction. [Glen Rose Formation]		714
132		5.05										SHALE: dark greenish gray (5GY 4/1); very thin beds; coal seams; fresh (F); very weak (R1); damp; no HCl reaction. [Glen Rose Formation]	Gradational contact	713
133		3.7	24	5.0 5.0	100	F	R1			2017-30				712
134		4.67										LIMESTONE: packstone; light to medium gray (N5); thin bedding; burrows; fossil fragments; fresh (F); very weak (R1); dry; violent HCl reaction. [Glen Rose Formation]	Gradational contact	711
135		2.45				F	R1							710
136		4.67	25	5.0 5.0	100									710

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-2017**


Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
136		3.78												709
137		2.3												708
138		2.3	25	5.0 5.0	100	F	R1-R2							707
139		1.37												706
140		4.67								2017-31				705
141		2.27												704
142		1.25	26	5.1 5.0	100	F	R1-R2						Length of recovery stretched due to mechanical breaks.	703
143		1.75								2017-32				702
144		0.83												701
145		1.68												700
146		5.17												699
147		1.35	27	5.0 5.0	99	F	R1-R2							698
148		2.28												697
149		3.17												696
150														695
151														695

LIMESTONE: wackestone; shaly; very light gray (N8) to medium light gray (N6); thin convoluted beds; many burrows; bivalve fossils; fresh (F); very weak to weak (R1-R2); dry; violent HCl reaction. [Glen Rose Formation]

Shaly and darker from 140.2'-141.3', with fossil fragments;


Shale interbed 146.5'-146.8'.

BOTTOM OF HOLE AT 150'

Project Name and Job Number TXU Comache Peak COL 1908		 WLA William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-2018</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'09.87162"N / 97°47'32.12241"W		Total Depth 8.1 feet	
Drilling Contractor and Rig Palmerton and Parish		Elevation and Datum 848.698 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 8.1 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 3	Date Started 1/25/07	
		Borehole Inclination Vertical	Logged by T. Glidden	Date Completed 1/27/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz


Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0										848
1	ML		B-2018 1	9	12/18	3.5		RESIDUAL SOIL (RS) SILT with limestone fragments very stiff to hard, yellow (2.5Y8/6), dry		847
2				24						846
3				44						845
4	CL		B-2018 2	11	15/17	4.51		LEAN CLAY and few calcareous deposits with sand stiff to hard, olive yellow (2.5Y6/8), dry		844
5	CL/ML			31				CLAYEY SILT very stiff to hard, pale yellow (2.5Y2/3), dry		843
6				50/5"						842
7	CL		B-2018 3	15	18/18	2		LEAN CLAY with limestone fragments and calcareous deposits stiff to very stiff, yellow (2.5Y8/6), dry to damp,		841
8				8				- silt increase proximal to start of bedrock		840
9				16						839
10										838
11										837
12										836
13										835
14										834
15										834

Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG Boring No. B-2018</b>	
Type and Diameter of Boring HSA / 8"		Boring Location 32°18'09.87162"N / 97°47'32.12241"W		Total Depth 8.1 feet	
Drilling Contractor and Rig Palmerton and Parrish / CME-55		Elevation and Datum 848.698 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock	
Casing Size and Depth 4"		Length of Core Barrel and Bit	No. of Core Boxes	Date Started 1/25/07	
		Borehole Inclination Vertical	Logged by T.Glidden	Date Completed 1/27/07	

Reviewed by / Date \_\_\_\_\_

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology		Elevation (feet)
													Remarks	
0														848
1														847
2														846
3														845
4														844
5														843
6														842
7														841
8														840
9														839
10														838
11														837
12														836
13														835
14														834
15														834



Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. B-2018-OFFSET</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'09.87162"N / 97°47'32.12241"W		Total Depth 200 feet	
Drilling Contractor and Rig B. Longyear / 44TMA		Elevation and Datum 848.698 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 14.1 feet	
Casing Size and Depth 4" / 14.1 feet		Length of Core Barrel and Bit 8.6 feet	No. of Core Boxes 13	Date Started 1/25/07	
		Borehole Inclination Vertical	Logged by G. De Pascale	Date Completed 1/27/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)								
15.0		4.4	1	1.9 1.9	100	F	R1					SHALE, Claystone, medium light gray (N6); Fresh, no reaction to HCL	Hit thin rock bed @ 8.5' with soil underneath; 14.1' = top of bedrock, no soil samples between 8.5' and 14.1'	834								
16.0		3.2																				833
17.0		3.4	2	4.9 5.0	98	SW	R0					SHALE, Claystone; greenish gray (5G 6/1); S1; R0; some fossil inclusions; no reaction to HCL.	Run 1 = short to get in lin with cody's drilling - no sample 1 (short rod)	832								
18.0		4.2																				831
19.0		3.2																				830
20.0		3.1																				829
21.0		2.3	3	4.9 5.0	98	F	R1					LIMESTONE; PACKSTONE; very light gray (N8); R1; fresh; strong reaction to HCL; oxidized towards to P. and fossils present.		828								
22.0		3.4																				827
23.0		3.6																				826
24.0		3.4	4	5.0 5.0	100	F	R0-R1					SHALE; calcareous shale; medium gray (N5); slight reaction to HCL; fossils present; very little structure.		825								
25.0		2.2																				824
26.0		2.1																				823
27.0		5.3	4	5.0 5.0	100	F	R0-R1					SHALE; CLAYSTONE; medium gray (N5); no reaction to HCL; some shells present; R0; Fresh; horizontal thin beds		822								
28.0		5.3																				821
29.0		2.2										SHALE; CLAYSTONE with limestone clasts; medium light gray (N6); slight reaction to HCL; wavy beds @top, massive below clast		820								

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2018-OFFSET</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)				
30		2.3	4	5.0 5.0	100	F	R0-R1							819				
30		2.3														LIMESTONE; WACKESTONE; very light gray (N8); slight reaction to HCL; thin wavy shale beds present; looks like sluno deposit @ to pf section (29.8)		818
31		2.3															LIMESTONE; WACKESTONE; very light gray (N8); strong reaction to HCL; Fresh; R1; Some very thin shale beds @top of section, massive below	
32		2.5	5	5.1 5.0	100	F	R1							816				
33		3.4														SHALE; calcareous shale; medium gray to very light gray (N5-N9); slight reaction to HCL; thin wackestone beds present (wavy); some fossil-rich zones at bottom of section; limestone beds to ~2' thick. Reaction with HCL.		815
34		2.3											2018-7					814
35		2.1	6	4.9 5.0	100	F	R1							813				
36		1.1																812
37		1.2																811
38		4.1	7	5.1 5.0	100	F	R1							810				
39		3											2018-8			SHALE; claystone; dark gray (N3), no reaction to HCL; horizontal beds with thin limestone beds present; fresh; R0-R1		809
40		3.3																808
41		5	7	5.1 5.0	100	F	R1							807				
42		6.2											2018-9			SHALE; calcareous shale; dark gray (N3), R0; fresh; weak; massive; reacts slightly with HCL; thick white (N9) limestone beds		806
43		2															LIMESTONE; PACKSTONE; very light gray to light gray (N8-N7); fresh; reacts strongly with HCL; thin to thick beds of shale form in section; rip up clasts found; shale between clasts; shale beds are very wavy	
44																		

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-2018-OFFSET</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)				
45		3.5	7	5.1 5.0	100	F	R1					LIMESTONE; PACKSTONE; very light gray to light gray (N8-N7); fresh; reacts strongly with HCL; thin to thick beds of shale form in section; rip up clasts found; shale between clasts; shale beds are very wavy		804				
46		3														LIMESTONE; PACKSTONE; very light gray to medium gray (N5); thin shale beds (.0.1-0.2) present; ripup clasts with shale found between clasts; fossils found between 48.8-50		803
47		3.1																802
48		3.1	8	5.0 5.0	100	F	R0-R1							801				
49		3															800	
50		4.1																799
51		3	9	5.0 5.0	100	F	R1-R0			2018-10		SHALE; CLAYSTONE; medium dark gray (N4); no reaction to HCL; massive; abrupt upper contact.		798				
52		2															797	
53		6													2018-11			796
54		4.4										LIMESTONE; PACKSTONE; very light gray (N8); very strong reaction to HCL; some fossils present; gradational; upper contact with shale; R1		795				
55		4.5	10	5.0 5.0	100	F	R0-R1					SHALE; CLAYSTONE; medium dark gray (N4) with 0.1 thick limestone beds towards bottom of section, R0; fresh; no reaction to HCL for shale and strong reaction for limestone beds		794				
56		3.4															793	
57		3.4																792
58		4.2								2018-12		LIMESTONE; PACKSTONE; light gray to very light gray (N7-N8); R1; strong reaction with HCL; rip-up clasts with claystone between clasts		791				
59		3.1												790				

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-2018-OFFSET</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)			
60		4.1	10	5.0	100	F	R0-R1					LIMESTONE; PACKSTONE; light gray to very light gray (N7-N8); R1; strong reaction with HCL; rip-up clasts with claystone between clasts	Good H2O return	789			
61		4.1		5.0				5.0	SHALE; calcareous shale; dark gray (N3); light reaction to HCL; Fresh; R0	788							
62		3.4	11	5.1	100	F	R0-R1					SHALE; CLAYSTONE; dark gray (N3); no reaction to HCL; some limestone (0.2' thick) @ top of section; very homogenous; R0; Fresh		787			
63		3															786
64		5						5.0	5.0	SHALE; CLAYSTONE; dark gray (N3); no reaction to HCL; limestone bed (~0.2') thick @ base of section; horizontal beds							785
65		4						2018-13				LIMESTONE; PACKSTONE; very light gray to medium gray (N8-N5); strong reaction to HCL; wavy beds of shale present with fossils; rip up clasts present		784			
66		4.3										SHALE; CLAYSTONE; dark gray (N3); no reaction to HCL; limestone bed (~0.2') thick @ base of section; horizontal beds		783			
67		4.1	12	4.9	100	F	R0-R2					LIMESTONE; PACKSTONE; very light gray to medium gray (N8-N5); strong reaction to HCL; shale layers (~0.1') between rip-up clasts; Shale towards bottom		782			
68		3															781
69		2						5.0	5.0	LIMESTONE; WACKESTONE; white (N9); strong reaction to HCL; massive; R2; Fresh							780
70		2						2018-14				LIMESTONE; PACKSTONE; very light gray to medium gray (N8 - N5); strong reaction to HCL; fresh; wavy thin beds of shale present throughout core; R1		779			
71		2.2											778				
72		2.1	13	5.1	100	F	R1							777			
73		2.3						5.0	5.0								776
74		3.4															775

Project Name and Job Number  
 TXU Comanche Peak Col  
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**ROCK LOG**  
**Boring No. B-2018-OFFSET**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
75		3	13	5.1 5.0	100	F	R1							774
		3												
76		4								2018-15		SHALE; CLAYSTONE; meduim light gray (N6); no reaction to HCL; massive.		773
77		2												772
78		3.3										SHALE; CLAYSTONE; very light gray to medium gray (N7 to N5); slight reaction to HCL; very thin wavy beds; limestone thin (<0.1') found as well; R1; fresh		771
79		3.1	14	4.9 5.0	100	F	R1							770
		3.1												
80		3.1								2018-16				769
81		3.1										LIMESTONE; PACKSTONE; light gray to very light gray (N7-N8); strong reaction with HCL; fresh; R2; think (.0.1') claystone beds present		768
82		3.3										SHALE; same as above		767
83		3.3												766
84		3	15	5.2 5.0	100	F	R1							765
		2												
85		1.3								2018-17		LIMESTONE; PACKSTONE; white to very light gray (N9-N8); strong reaction to HCL; wavy beds between clasts (Rip-up); In some place - massive interbeds of shale and limestone.		764
86		2.3												763
87		3	16	5.0 5.0	100	F	R1							762
		3.4												
88														761
89														760

Project Name and Job Number  
 TXU Comanche Peak Col  
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**ROCK LOG**  
**Boring No. B-2018-OFFSET**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
90		3.4	16	5.0 5.0	100	F	R1			2018-18		Calcareous SHALE; medium dark gray (N4); R1; slight reaction to HCL; strong		759
91		3.1										LIMESTONE; PACKSTONE; light gray to white (N8-N9); strong reaction HCL; rip-up clasts present with claystone between clasts.	758	
92		2										LIMESTONE; PACKSTONE; white to very light gray (N9-N8); strong reaction to HCL; rip up clasts present; some thin shale beds (<0.1') as well	757	
93		1.4	17	5.0 5.0	100	F	R1			2018-19				756
94		4										Interbedded SHALES AND LIMESTONES (beds from 0.01' to 0.3') very light gray to medium gray (N8-N5); very slight reaction to HCL; wavy beds	755	
95		2.4											754	
96		2.3	18	5.0 5.0	100	F	R1			2018-20				753
97		2.3										SHALE; very light gray to medium light gray (N7-N6); no reaction to HCL; limestone fragments present	752	
98		2.3											751	
99		1.3	19	5.0	100	F	R1			2018-20				750
100		1.3										LIMESTONE; very light gray (N8); slight reaction to HCL; fresh; R1; wavy rip-up clasts	749	
101		1.2										LIMESTONE; PACKSTONE; very light gray to medium light gray, (N8-N6) pyrite present; rip-up clasts present	748	
102		2.1	19	5.0	100	F	R1			2018-20				747
103		2.2											746	
104		2.1												745

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-2018-OFFSET</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
105		2.3	19	5.0			R0					Calcareous SHALE; light gray (N9); slight reaction to HCL; Fresh		744
		2.3												
106		2.5								2018-21		Oolitic PACKSTONE; very light gray to medium light gray (N8-N6)		743
107												LIMESTONE; PACKSTONE; very light gray to medium gray (N8 to N5); thin (<0.1') shale beds found throughout; fresh		742
108		2.3												741
109		2.2	20	5.1 5.0	100	F	R0					LIMESTONE; WACKESTONE; light gray (N7); strong reaction to HCL; wavy shale beds (thin) towards bottom		740
		2.3												
110														
111		2.4								2018-22		Oolitic LIMESTONE; white to very light gray (N9-N8); massive to layered; strong reaction to HCL; some rip-up clasts present.		738
112		1.3												737
113		2.1												736
114		2.1	21	5.2 5.0	100	F	R0					SHALE; calcareous shale; medium gray (N5); slight reaction to HCL; some limestone fragments present		735
		2.1												
115		1.3												
116		1.4								2018-23				733
117		1.5												732
118		1.4	22	4.9 5.0	100	F	R0-R1							731
		2.1												
119														

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
120		1.4	22	4.9 5.0	100	F	R0-R1					SHALE; calcareous shale; yellowish gray to light gray (5Y 8/1 - N7); strong reaction with HCL; wavy beds		729
		1.4												728
121		0.5												728
122		1.5												727
123		3.2												726
124		5	23	4.9 5.0	100	F	R1					SHALE; calcareous shale; medium gray to light gray (N5 to N7); slight reaction to HCL; some rip-up clasts present		725
		2.1												724
125		1.6												723
126														722
127		2.4										LIMESTONE; PACKSTONE; very light gray to medium gray (N6-N4); strong reaction to HCL; rip-up clasts present; very thin shale beds present		721
128		2.3	24	5.1 5.0	100	F	R0-R1							720
		3												719
129		1.4												718
130														718
131		1.2										SHALE; CLAYSTONE; medium gray to light gray (N5-N7); slight reaction to HCL; some fossils present; R0	Start @ 8:10am on 1/27/07	717
132		4.3	25	4.9 5.0	100	F	R0 to R1							716
		5.1												715
133												LIMESTONE; PACKSTONE; very light gray (N8); strong reaction to HCL; rip-up clasts present; R1		715
134														715



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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
135		4	25	4.9	100	F	R0 to R1					SHALE; calcareous; medium light gray (N6); slight reaction to HCL; thin limestone beds present (<0.1;) R1	Good H2O return	714
		4		5.0										2018-27
136		5										LIMESTONE; PACKSTONE; light gray (N7); slight reaction to HCL; think (<0.1') shale beds present throughout section; R1; Fresh		712
137		4.3												711
138		3.4												711
139		3	26	5.1	100	F	R1					SHALE; CLAYSTONE; medium gray to light gray (N5-N7); very slight reaction to HCL; some thin limestone beds present (<0.1') in section; wavy bedding; R1; fresh		710
		4.1		5.0										2018-28
140		3.1												708
141		3.1												707
142		4.1										LIMESTONE; PACKSTONE; very light gray to medium light gray (N8-N6); strong reaction to HCL; shale beds (<0.1') thick present; rip-up clasts present; oolitic towards bottom; R1		706
143		2.4	27	5.0	100	F	R1					SHALE; Calcareous; medium gray (N5); slight reaction to HCL; wavy beds; small limestone inclusions present; R1		705
144		4		5.0										704
145		3.2										LIMESTONE; PACKSTONE; very light gray to medium light gray (N8-N6); strong reaction to HCL; shale beds (<0.1') thick present; rip-up clasts; R1; wavy beds throughout; fresh; shale bed at 149.5-149.8; slaystone; (N5); some pyrite present		703
146		3												702
147		3.4	28	5.2	100	F	R1							701
148		3.3		5.0										2018-29
149														

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2018-OFFSET</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
150		4.4	28	5.2 5.0	100	F	R1					LIMESTONE; PACKSTONE; very light gray to medium light gray (N8-N6); strong reaction to HCL; shale beds (~0.1') thick present; rip-up clasts; R1; wavy beds throughout; fresh; shale bed at 149.5-149.8; slaystone; (N5); some pyrite present	sample interval every 10' below 150'	699
151		4												698
152		4.2	29	5.0 5.0	100	F	R1					SHALE; Calcareous; medium gray to very light gray (N5-N8); occasional limestone beds (<0.1'); fossils present between 152.7 and 153.6; slight reaction to HCL; fresh; some pyrite present; wavy to massive structures		697
153		4.2												696
154		3.4												695
155		4.3												694
156		3.2	30	5.0 5.0	100	F	R1					LIMESTONE; WACKESTONE; medium light gray to very light gray (N6-N8); strong reaction to HCL; rip-up clasts; irregular beds; fresh; R1	very continuous core- cody isn't breaking anything !!	693
157		4.1												692
158		3.3												691
159		3.5	31	5.1 5.0	100	F	R1					SHALE; calcareous shale; medium light gray to very light gray (N6-N8); slight reaction to HCL; wavy thin irregular beds (~0.1-0.2') fresh; R1		690
160		2.4												689
161		1.5												688
162		2	31	5.1 5.0	100	F	R1					SHALE; calcareous; medium light gray to very light gray (N6-N8); slight reaction to HCL; wavy thin irregular beds (~0.1-0.2'); fossil rid. And bioturbated; some limestone at top of section; R1.		687
163		2.1												686
164		3.1												685

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**ROCK LOG**  
**Boring No. B-2018-OFFSET**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
165		2	31	5.1 5.0	100	F	R1					LIMESTONE; WACKESTONE; Medium light gray to very light gray (N6-N8); strong reaction to HCL; some thin shale beds (<0.1') R1; Fresh		684
		2												1.5
166		2	32	5.1 5.0	100	F	R2					LIMESTONE; PACKSTONE; Medium light gray to very light gray (N6-N8); strong reaction to HCL; fossils present throughout; bioturbated; a few very thin shale beds (<0.05') thick; some wavy beds and rip up clasts; R2; fresh		682
167		3.1												1.2
168		2.2	33	4.9 5.0	100	F	R2-R1					SHALE; CLAYSTONE; medium dark gray to very light gray (N3-N8); very slight reaction to HCL; thin beds (~0.1') and limestone inclusions present (rip up clasts); R1; fresh; slightly weathered		680
169		2.1												1.3
170		2.1	34	5.0 5.0	100	F	R2					LIMESTONE; WACKESTONE; very light gray (N8); strong reaction to HCL; rip up clasts to massive structures; R2; fresh; very fine grained		678
171		1												1.4
172		1.4	34	5.0 5.0	100	F	R2							676
173		1.3												1.3
174		3.1	34	5.0 5.0	100	F	R2							674
175		3												2.3
176		2.3	34	5.0 5.0	100	F	R2							672
177		2.2												2.2
178		2.3	34	5.0 5.0	100	F	R2							670
179		2.3												2.3

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**ROCK LOG**  
**Boring No. B-2018-OFFSET**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
180		2.1	34	5.0 5.0	100	F	R2						LIMESTONE; WACKESTONE; very light gray (N8); strong reaction to HCL; fresh; more deviating horizontal structures present than above (~0.05'), some rip up clasts present and fossils, R2	669
181		2.1												2
182		3.4	35	4.9 5.0	100	F	R2						LIMESTONE; WACKESTONE; medium light gray to very light gray (N6-N8); thin shaly interbeds (~0.1') present; many rip up clasts at 185-185.9 with shale around clasts; wavy beds to massive; fossils present from 185 -185.9; fresh; R2; fine grained	667
183		3.2												666
184		3.2												665
185		2.1												664
186		2.4	36	5.2 5.0	100	F	R1-R2						LIMESTONE; WACKESTONE; very light gray to medium gray (N8-N5); wackestone clasts (clasts supported) with packstone matrix; wackestone clasts are rip-up clasts; strong reaction to HCL; R1-R2; fresh	663
187		2.4												662
188		2.2												661
189		1.4	37	4.9 5.0	100	F	R2-R0							660
190		2.1												659
191		2.4	2.3	4.9 5.0	100	F	R2-R0							658
192		1.5												657
193		2.3	2.4	4.9 5.0	100	F	R2-R0							656
194		2.4												655


Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-2018-OFFSET</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
195		3.2	37	4.9 5.0	100	F	R2-R0					SHALE; CLAYSTONE; dark gray (N4); very soft; unweathered; some small limestone clasts present; no reaction to HCL; R0; weak		654
196		2.2										LIMESTONE; MICRITE; very light gray (N8); massive; R2I fresh	653	
197		2.4										LIMESTONE; WACKESTONE; very light gray (N8); wavy to massive structures; strong reaction to HCL; R2; fresh		652
198		2.3	38	4.2 5.0	100	F	R2-R0					SHALE; CLAYSTONE; dark gray (N3); slight reaction to HCL; one 0.2' bed of wackestone present; shale is R0; fresh and fossil rich		651
199		2.5										LIMESTONE; WACKESTONE; very light gray (N8); wavy to massive bedding; strong reaction to HCL; R2I fresh; thin (<0.1') bed of shale present	650	
200		3.3										2018-35	SHALE; CLAYSTONE; dark gray (N3); slight reaction to HCL; one 0.2' bed of wackestone present; shale is R0; fresh and fossil rich	649
201		4										Bottom of hole	648	
202														647
203														646
204														645
205														644
206														643
207														642
208														641
209														640

Project Name and Job Number TXU Comache Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-2019</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'08.11069"N / 97°47'32.64972"W		Total Depth 150.7 feet	
Drilling Contractor and Rig Richard Simmons Drilling / BK-81 HD		Elevation and Datum 852.574 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 8.7 feet	
Sampling Method SPT		Sample Driving Hammer/Drop R&C / 140 lbs / 30 inches	No. of Samples 3	Date Started 12/16/06	
		Borehole Inclination Vertical	Logged by S. Dee	Date Completed 12/16/06	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 1/29/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0										852
1	ML		B-2019 1	31	17	4		RESIDUAL SOIL (RS) SILT hard, very pale (5YR8/2 or 7/4), dry, (weathered limestone)		851
2				22	17					850
3				50/5"						850
4			B-2019 2	50/2"	2	4		SANDY LEAN CLAY hard, very dark brown (10YR2/2), damp, many organics, rock at bottom of sample		849
5	CL				2					848
6					2					847
7			B-2019 3	27	18	4.3		LEAN CLAY with limestone fragments very stiff to hard, light yellowish brown (10YR6/4)		846
8	CL			15	18					845
9				25						844
10									Auger refusal at 8.7'	844
11									Bedrock at 8.7'	843
12										842
13										841
14										840
15										839

Project Name and Job Number TXU Comanche Peak Col 1908		 WLA William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. B-2019</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'08.11069"N / 97°47'32.64972"W		Total Depth 150.7 feet	
Drilling Contractor and Rig Richard Simmons / BK-51		Elevation and Datum 852.574 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 8.7 feet	
Casing Size and Depth 4" / 8.7 feet		Length of Core Barrel and Bit 7.5 feet	No. of Core Boxes 10	Date Started 12/16/06	
		Borehole Inclination Vertical	Logged by S.Deer	Date Completed 12/17/06	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 1/29/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
9		2.17				SW	R2					LIMESTONE, micrite, very light gray (N8), SW, R2		843
10		2.6										CLAYSTONE, grayish orange (10 YR 7/4), SW, R0, massive to bedded, bedding <0.1" where present, reacts moderatley to HCL, interbed of micrite 2.7' to 3.3'		842
11		2.83	1	<u>4.4</u> 5.0	88	SW	R0							841
12		2.17								2019-4				840
13		2.25				SW	R2					LIMESTONE, micrite, very light gray (N8), SW, R2, bedded SILTSTONE, medium dark gray (N4), F, R0, very thinly bedded (<0.1'), reacts moderatley to HCL, rip up clasts of limestone	Run 2 was a 2 foot run	839
14		3.77				SW	R0							838
15		2.62	2	<u>2.0</u> 2.0	100									837
16		2.57				F	R2					LIMESTONE, micrite, medium light gray (N6), very thinnly bedded, F, R2, reacts strongly to HCL, fossiliferous		836
17		3.25				F	R2					SHALE, medium dark gray (N4), thinnly bedded (0.1' - 0.2'), F, R2, reacts moderatley to HCL		835
18		1.57	3	<u>5.0</u> 5.0	100							LIMESTONE, micrite, medium light gray (N6), massive, F, R2, reacts strongly to HCL		834
19		1.4				F	R2			2019-5				833
20		1.6										LIMEY SILTSTONE, greenish gray ( 5 G 6/1), massive, F, R0, reacts moderatley to HCL, < 5 % clasts of bioturbaions indurated shale		832
21		1.98				F	R0							831
22		2.28	4	<u>5.0</u> 5.0	100									830
23		0.97				F	R1					LIMESTONE, packstone, very light gray (N8), SW, R1, reacts strongly to HCL, massive with interbeds of coal at 23.6'		829

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2019</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)			
24		0.93	4	5.0	100	F	R1					LIMESTONE, packstone, very light gray (N8), SW, R1, reacts strongly to HCL, massive with interbeds of coal at 23.6'		828			
25		1.07											2019-6				
26		1.23	5	5.0	100	F	R1					LIMESTONE, micrite, medium light gray (N6), F, R1, massive, reacts strongly to HCL		826			
27		2.75															825
28		2.1															824
29		1.82	6	5.0	100	F	R0					SILTSTONE, dark gray (N3), massive or very thinly bedded, F, R0, reacts moderatley to HCL		823			
30		1.83											2019-7				822
31		2.72	7	5.0	100	SW	R2					LIMESTONE, packstone, medium light gray (N6), massive, F, R2, reacts strongly to HCL		821			
32		2.35															820
33		1.67															819
34		1.5	7	5.0	100	SW	R0					LIMEY shale, medium dark gray (N4), thinly bedded, SW, R0, poorly indurated		818			
35		1.47															817
36		1.02	7	5.0	100	SW	R2					LIMESTONE, wackestone, medium light gray (N6), SW, R2, fossiliferous, abundant interbeds of shale, reacts strongly to HCL		816			
37		1.8											2019-8				815
38		1.88											814				



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**ROCK LOG**  
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)	
39		1.15	7	5.0 5.0	100							LIMESTONE, wackestone, medium light gray (N6), SW, R2, fossiliferous, abundant interbeds of shale, reacts strongly to HCL		813	
40		1.18												2019-9	812
41		1.43												811	
42		1.9	8	5.0 5.0	100	SW	R2					LIMESTONE, wackestone, medium light gray (N6), SW, R2, fossiliferous, abundant interbeds of shale, reacts strongly to HCL		810	
43		4.63												809	
44		2.13												808	
45		3.3	9	5.0 5.0	100	SW	R0					SILTSTONE, with clay, dark gray (N3), very thinly bedded, SW, R0 LIMESTONE, wackestone, medium light gray (N6), massive, SW,R2, very fine grained matrix with darker fine to medium grained clasts, reacts strongly to HCL		807	
46		3.67												2019-10	806
47		1.83												805	
48		1.25	10	5.0 5.0	100	SW	R2					LIMESTONE, wackestone, medium light gray (N6), massive, SW,R2, very fine grained matrix with darker fine to medium grained clasts, reacts strongly to HCL		804	
49		1.98												2019-11	803
50		2.53												802	
51		2.32	10	5.0 5.0	100	SW	R2					LIMESTONE, wackestone, medium light gray (N6), massive, SW,R2, very fine grained matrix with darker fine to medium grained clasts, reacts strongly to HCL		801	
52		1.47												800	
53		2.08												799	

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2019</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)		
54		1.83	10	5.0 5.0	100	SW	R2							798		
55		2.03												SHALE, dark gray (N3), very thinly bedded, SW, R0, reacts moderatley to HCL, beds are <0.1".		797
56		2.42	11	5.0 5.0	100	SW	R0							796		
57		3.53														795
58		2.68							F	R2				LIMESTONE, wackestone, very light gray (N8), F, R2		794
59		4.05	12	5.0 5.0	100	F	R0					SHALE, dark gray (N3), very thinnly bedded, F, R0, reacts moderatley to HCL		793		
60		5.68							F	R0				SHALE, same as above	At 2:40 PM core barrel stuck and rods were pulled to extract. Started drilling againat 3:10 PM	792
61		3.87	13	4.3 5.0	100	F	R0							791		
62		4.35							F	R2				LIMESTONE, micrite, very light gray (N8), F, R2, bedded with abundant <0.1' undulating interbeds of shale/siltstone, reacts strongly to HCL		790
63		2.53							F	R2						789
64		2.25	13	4.3 5.0	100									788		
65		2.33							F	R0				SILTSTONE, dark gray (N3), F, R0, massive, reacts moderatley to HCL	Some material lost in either run 12 or 13	787
66		3.17	13	4.3 5.0	100	SW	R2							786		
67		2.47							SW	R2				LIMESTONE, wackestone, light gray (N7), SW, R2, bedded with abundant interbeds of shale/siltstone		785
68		2.67				F	R0					SHALE, dark gray (N3), F, R0, very thinnly bedded, reacts strongly to HCL		784		

Project Name and Job Number  
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**ROCK LOG**  
**Boring No. B-2019**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)								
69		2.3	13	4.3 5.0	100	F	R0					SHALE, dark gray (N3), F, R0, very thinly bedded, reacts strongly to HCL		783								
70		3.12										LIMESTONE, wackestone, very light gray (N8), F, R2, massive, bedded with abundant undulatory rip up clasts of shale/siltstone (<0.1')		782								
71		0.83																			781	
72		1.95	14	5.0 5.0	100	F	R2					LIMESTONE, micrite, medium light gray (N6), massive with intermitant <0.1' interlayers of shale/siltstone, F, R2, reacts stronglt to HCL		780								
73		1.3																			779	
74		1.18																				778
75		1.38	15	5.0 5.0	100	F	R2							777								
76		1.33																			776	
77		2.05																				775
78		1.73	16	5.0 5.0	100	F	R2							774								
79		2.37																				773
80		1.7																				772
81		2.03	16	5.0 5.0	100	F	R2							771								
82		1.93																				770
83		2.42																				769

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-2019**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
84		1.77	16	5.0 5.0	100	F	R2					LIMESTONE, micrite, medium light gray (N6), massive with intermitant <0.1' interlayers of shale/siltstone, F, R2, reacts stronglt to HCL		768
85		1.83												767
86		2.68												766
87		2.1	17	5.0 5.0	100	F	R2					LIMESTONE, wackstone, medium light gray (N6), bedded, SW, R2, abundant, undulatory shale interbeds, wackestone contains about 35% light bluish gray ( 5B 7/1), fine grained clasts, abundant rip up clasts and shale/siltstone interbeds from 98' to 99.7', 101' to 101.8' and 104.5' to 105'		765
88		2.37												764
89		1.1												763
90		1.73	18	5.0 5.0	100	SW	R2							762
91		1.98												761
92		3.85												760
93		3.38	19	5.0 5.0	100	SW	R2							759
94		2.02												758
95		1.42												757
96		0.9	19	5.0 5.0	100	SW	R2							756
97		1.93												755
98		1.53												754

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-2019</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
99		1.83	19	5.0 5.0	100							LIMESTONE, wackstone, medium light gray (N6), bedded, SW, R2, abundant, undulatory shale interbeds, wackestone contains about 35% light bluish gray ( 5B 7/1), fine grained clasts, abundant rip up clasts and shale/siltstone interbeds from 98' to 99.7', 101' to 101.8' and 104.5' to 105'		753
100		2.33												752
101		1.22	20	5.0 5.0	100	SW	R2					LIMESTONE, packstone, medium light gray (N7), SW, R2, massive to interbedded with shale and siltstone, reacts strongly to HCL, siltstone interbed from 109' to 109.4', decrease in shale/siltstone interbeds from 112' to 114.4' below 114.4' interbeds and rip up clasts increase, rip up clasts and shale interbeds are much less abundant below 117', siltstone interbeds at 117' to 117.4'		751
102		1.5												750
103		1.62												749
104		1.05												748
105		1.27	21	5.0 5.0	100	SW	R2							747
106		2.27												746
107		2.95												745
108		2.23	22	5.0 5.0	100									744
109		1.5												743
110		0.88	22	5.0 5.0	100									742
111		2.22												741
112		2.45	22	5.0 5.0	100									740
113		1.32												739

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2019</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
114	LITHOLOGY COLUMN	1.35	22	5.0 5.0	100	SW	R2					LIMESTONE, packstone, medium light gray (N7), SW, R2, massive to interbedded with shale and siltstone, reacts strongly to HCL, siltstone interbed from 109' to 109.4', decrease in shale/siltstone interbeds from 112' to 114.4' below 114.4' interbeds and rip up clasts increase, rip up clasts and shale interbeds are much less abundant below 117', siltstone interbeds at 117' to 117.4'		738
115		2.43												737
116		3.23	736											
117		2.8	23	5.0 5.0	100							LIMESTONE, packstone, same as above, rip up clasts and shale interbeds are abundant from 120.5' to 123.2'		735
118	2.05	734												
119	1.82	733												
120		1.8	24	5.0 5.0	99							LIMESTONE, wackestone, light gray (N7), massive, SW, R2, reacts strongly to HCL, matric supported clasts (about 30% to 40%) are fine grained, light bluish gray (5B 7/1), increased zone of rip up clasts and shale/siltstone interbeds from 128.2' to 129.7'		732
121	2.6	731												
122	1.98	730												
123		1.45	25	5.0 5.0	100									729
124	1.52	728												
125	2.27	727												
126		2.6	25	5.0 5.0	100									726
127	1.9	725												
128		1.45												724


Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2019</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
129		1.52	25	5.0 5.0	100	SW	R2					LIMESTONE, wackestone, light gray (N7), massive, SW, R2, reacts strongly to HCL, matric supported clasts (about 30% to 40%) are fine grained, light bluish gray (5B 7/1), increased zone of rip up clasts and shale/siltstone interbeds from 128.2' to 129.7'		723
130		1.9												722
131		1.45												721
132		1.52	26	5.0 5.0	100	SW	R0					SILTSTONE, dark gray (N3), very thinly bedded, SW, R0, reacts moderatley to HCL		720
133		1.9												719
134		3.52												718
135		2.8	27	5.0 5.0	100	SW	R2					LIMESTONE, packstone, very light gray (N8), SW, R2, massive, clasts supported, fossils		717
136		2.83												716
137		1.58												715
138		5.27	28	5.0 5.0	100	SW	R0					SHALE, medium dark gray (N4), bedded, SW, R0, interbeds of limestone from 138.4' to 138.8' and 139.0' to 139.3', reacts moderatley to HCL		714
139		4.17												713
140		3.25												712
141		3.92	28	5.0 5.0	100	SW	R2					LIMESTONE, wackestone, medium light gray (N6), SW, R2, bedded with abundant (<0.1') interbeds of shale/siltstone, rip up clasts are very abundant from 141' to 144.7', bioturbation throughout run 28		711
142		2.27												710
143		1.97												709

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-2019</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
144		2.83	28	5.0 5.0	100	SW	R2					LIMESTONE, wackestone, medium light gray (N6), SW, R2, bedded with abundant (<0.1') interbeds of shale/siltstone, rip up clasts are very abundant from 141' to 144.7', bioturbation throughout run 28		708
145		3.63												707
146		1.98												706
147		1.75	29	5.0 5.0	100	SW	R0					SHALE, medium dark gray (N4), SW, R0, thinnly bedded with rip up clasts of limestone		705
148		1.75												704
149		2.77												703
150		1.83												702
151												BOTTOM OF HOLE AT 150.7'		701
152														700
153														699
154														698
155														697
156														696
157														695
158														694



Project Name and Job Number TXU Comache Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-2020</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'09.27433"N / 97°47'27.42284"W		Total Depth 150 feet	
Drilling Contractor and Rig Fugro / CME 45		Elevation and Datum 832.248 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 10.5 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 5	Date Started 1/25/07	
		Borehole Inclination Vertical	Logged by S. Dee	Date Completed 1/27/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 1/30/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
0							<b>ARTIFICIAL FILL (Qaf)</b> LEAN CLAY soft, moderate brown (5YR4/4), damp		832
1			B-2020 1	1	18/18	0.75			831
2				2					830
3	CL			1					829
4			B-2020 2	5	17/18	1	brownish black (5YR2/1), damp, ~15% gravel (weathered limestone fragments)		828
5				3					827
6				4					826
7	CL		B-2020 3	6	6/18	0.25	LEAN CLAY with sand and limestone fragments soft, grayish brown (5YR3/2), wet, ~15% gravel	Hit water during SPT	825
8				10					824
9			B-2020 4	50/2"	2/2	1.75	<b>RESIDUAL SOIL (RS)</b> LEAN CLAY with sand very stiff, medium dark gray (N4), damp, ~5% gravel, very friable (likely weathered shale)		823
10	CL								822
11			B-2020 5	50/5"	5/5		Shaley Limestone	Bedrock at 10.5'	821
12									820
13									819
14									818
15									817

Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG Boring No. B-2020</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'09.27433"N / 97°47'27.42284"W		Total Depth 150 feet	
Drilling Contractor and Rig Furgo Austin / CME-45		Elevation and Datum 832.248 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 10.5 feet	
Casing Size and Depth 4" / 11.5 feet		Length of Core Barrel and Bit 8.7 feet	No. of Core Boxes 10	Date Started 1/26/07	
		Borehole Inclination Vertical	Logged by Dee	Date Completed 1/27/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 1/30/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
11		ND										CLAY/SHALE: Augered through weathered bedrock to 11.5'		821
12		1.87				SW	R0		2020-6			SHALE: medium dark gray (N3); very thinly bedded (<0.1'); extremely weak (R0); slightly weathered (SW); no reaction to HCl. [Glen Rose Formation]	Began drilling at 9:30 am 1/26/2007, water level before drilling was at 5.5'	820
13		2.3	1	3.5 3.5	100									819
14		1.9										LIMESTONE: packstone; medium gray (N5); weak (R2); slightly weathered (SW); strong reaction to HCl; increased clast/silt content below 14.8'. [Glen Rose Formation]		818
15		3.4				SW	R2		2020-7					817
16		2.58				SW	R0					SHALE: medium gray (N5); and light olive brown in bottom 0.1' R0; SW. [Glen Rose Formation]		816
17		1.42	2	5.0 5.0	100	F	R2					LIMESTONE; MICRITE; very light gray (N8); weak (R2); fresh massive; reacts strongly to HCl. [Glen Rose Formation]		815
18		1.45										LIMESTONE: wackestone; medium gray (N5); weak (R2); slightly weathered (SW); bedded with abundant interbeds (<0.1') of shale; bioturbation of fossils and rip-up clasts. [Glen Rose Formation]		814
19		1.52												813
20		3.38											25% to 50% water loss since start of coring, gray water	812
21		2.3										LIMESTONE: packstone; medium light gray (N6); weak (R2); slightly weathered (SW); bedded with interbeds of shale/silt (<0.1'); reacts strongly to HCl; abundant burrows and rip up clasts. [Glen Rose Formation]		811
22		1.72	3	5.0 5.0	100	SW	R2							810
23		2.28							2020-8					809
24		5.37										shale interbed at 24.3' to 24.6'		808
25		2.05	4	5.0 5.0	100									807

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-2020</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
26		2.05				SW	R2							806
27		12.43							2020-9			SHALE: medium dark gray (N4); very thinly bedded to massive; extremely weak (R0); slightly weathered (SW); slight reaction to HCl; limestone interbed at 26.8' to 26.9'. [Glen Rose Formation]	75% water loss	805
28		4.7	4	5.0 5.0	100	SW	R0							
29		1.42										LIMESTONE: wackestone; light gray (N7); massive with occasional interbeds (<0.1') of shale/siltstone; weak (R2); slightly weathered (SW); high concentration of (<0.1') shale interbeds from 30.2' to 30.7'. [Glen Rose Formation]		804
30		1.33												803
31		4.77							2020-10					802
32		2.37				SW	R2							801
33		2.1	5	5.0 5.0	100									800
34		3.08										shale interbed from 33.6' to 33.8'		799
35		1.17										high concentration of fossils 34.3' to 35.8'	pull down pressure= 200psi, system pressure = 150 psi	798
36		2.05												797
37		4.18										SHALE: medium dark gray (N4); very thinly bedded (<0.1'); extremely weak (R0); fresh (F); slight reaction to HCl. [Glen Rose Formation]	75% water return (gray)	796
38		4.02	6	5.0 5.0	100	F	R0		2020-11					795
39		4.47												794
40		1.22				F	R2							793
40		2.62	7	5.2 5.0	100	F	R0					LIMESTONE: wackestone; very light gray (N8); massive with interbeds (<0.1') of shale; weak (R2); fresh (F); reacts strongly to HCl. [Glen Rose Formation]		792

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2020</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
41		2.62										SHALE: medium to dark gray (N4); very thinly bedded (<0.1'); extremely weak (R0); fresh (F); slight reaction to HCl; limestone interbed from 42.8' to 43'. [Glen Rose Formation]		791
42		4.18				F	R0		2020-12					790
43		7.17	7	5.2 5.0	100							LIMESTONE: wackestone; very light gray (N8); massive with interbeds (<0.1') of shale; slightly weathered (SW) (SW). [Glen Rose Formation]		789
44		3.92												788
45		3				SW	R2					SHALE: dark gray (N3); very thinly bedded (<0.1'); extremely weak (R0); fresh (F); moderate reaction to HCl. [Glen Rose Formation]		787
46		4.05							2020-13					786
47		3.07										LIMESTONE: wackestone; very light gray (N8); bedded with (<0.1') interbeds of shale; R2; SW. [Glen Rose Formation]		785
48		4.28	8	5.0 5.0	100	F	R0							784
49		2.75										SHALE: dark gray (N3); very thinly bedded (<0.1'); extremely weak (R0); fresh (F); moderate reaction to HCl. [Glen Rose Formation]		783
50		4.13				SW	R2							782
51		4.5				F	R0					LIMESTONE: wackestone; very light gray (N8); bedded with abundant (<0.1') interbeds of shale; weak (R2); slightly weathered (SW). [Glen Rose Formation]		781
52		1.67												780
53		1.22	9	5.0 5.0	100							shale interbed from 53.5' to 53.9'; below 53.9' shale interbeds (<0.1') are much less abundant until 55';		779
54		1.8				SW	R2		2020-14					778
55		1.88												777
		1.97	10	5.0 5.0	100									

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-2020**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
56		1.97										shale interbeds (<0.1') are much less abundant until 55';		776
57		1.72								2020-15				775
58		1.35	10	5.0 5.0	100	SW	R2					abundant bioturbation; zones of clasts; supported packstone; interbedded with matrix supported wackestone		774
59		1.43												773
60		1.48												772
61		1.53												771
62		2.08				F	R2					LIMESTONE: packstone; medium gray (N5); bedded; weak (R2); fresh (F); reacts to HCl. [Glen Rose Formation]		770
63		2.87	11	5.0 5.0	100							LIMESTONE: wackestone; very light gray (N8) to light gray (N7); weak (R2); bedded with abundant undulatory interbeds (<0.1') of shale; abundant rip-up clasts and burrows; some fossils; slightly weathered (SW); bluish gray oolites in zones; abundant shale interbeds (<0.1'); burrows and rip up clasts from 71.7' to 75'. [Glen Rose Formation]		769
64		2.88								2020-16				768
65		2.02												767
66		3.18												766
67		2.77				SW	R2							765
68		2.58	12	5.0 5.0	100					2020-17				764
69		2.1												763
70		2.6												762
		2.47	13	5.0 5.0	100									762

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2020</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)	
71		2.47	13	5.0 5.0	100	SW	R2					LIMESTONE: wackestone; very light gray (N8) to light gray (N7); weak (R2); bedded with abundant undulatory interbeds (<0.1') of shale; abundant rip-up clasts and burrows; some fossils; slightly weathered (SW); bluish gray oolites in zones; abundant shale interbeds (<0.1'); burrows and rip up clasts from 71.7' to 75'. [Glen Rose Formation]		761	
72		1.17												760	
73		1.38												759	
74		1.7												2020-18	758
75		1.75												757	
76		2.03	14	5.0 5.0	100	SW	R2				LIMESTONE: packstone; very light gray (N8); weak (R2); slightly weathered (SW); bedded with interbeds (<0.1') of shale; clast supported with abundant oolite clasts; reacts strongly to HCl. [Glen Rose Formation]		756		
77		1.87											755		
78		1.13											754		
79		1.18											2020-19	753	
80		1.37											752		
81		1.02	15	5.0 5.0	100	SW	R2				LIMESTONE: wackestone; very light gray (N8) to medium light gray (N6); massive to bedded with zones of abundant (<0.1') shale/siltstone interbeds; weak (R2); slightly weathered (SW); reacts strongly to HCl; high concentration of shale interbeds (<0.1') 80' to 81.5'; 82.5' to 82.7'; shale/siltstone; interbed from 83.2' to 83.5'; zone of abundant bioturbation 84' to 84.8'. [Glen Rose Formation]		751		
82		1.2											750		
83		1.12											2020-20	749	
84		1.93											748		
85		1.2											747		
		1.18	16	4.9 5.0	98										

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
86	[Lithology Column]	1.18	16	4.9 5.0	98	SW	R2					LIMESTONE: packstone; very light gray (N7); massive to bedded with zones of abundant shale interbeds; weak (R2); slightly weathered (SW); reacts strongly to HCl; clasts are medium grained; often oolitic or other fossils. [Glen Rose Formation]		746
87		0.83												745
88		0.77												744
89	[Lithology Column]	1.67	17	5.0 5.0	100	F	R1				SHALE: medium light gray (N6); very thinly bedded (<0.1'); very weak (R1); fresh (F). [Glen Rose Formation]		743	
90		4.08											742	
91	[Lithology Column]	1.5	18	5.0 5.0	100	SW	R2				LIMESTONE: packstone; very light gray (N8); massive to bedded with interbeds (<0.1') of shale; weak (R2); slightly weathered (SW); oolites; fossil clasts. [Glen Rose Formation]		741	
92		0.75											740	
93	[Lithology Column]	0.87	19	5.0 5.0	100	SW	R2				LIMESTONE: wackestone; very light gray (N8) to medium light gray (N6); bedded with interbeds (<0.1') of shale and silty/sandy zones; weak (R2); slightly weathered (SW). [Glen Rose Formation]		739	
94		1.67											738	
95	[Lithology Column]	1.42	18	5.0 5.0	100	SW	R2				LIMESTONE: packstone; very light gray (N8); massive to bedded with interbeds (<0.1') of shale; weak (R2); slightly weathered (SW); oolites; fossil clasts; large in flux of clastic material from 96.6' to 98'. [Glen Rose Formation]		737	
96		0.88											736	
97	[Lithology Column]	1.05	18	5.0 5.0	100	SW	R2				LIMESTONE: packstone; very light gray (N8); massive to bedded with interbeds (<0.1') of shale; weak (R2); slightly weathered (SW); oolites; fossil clasts; large in flux of clastic material from 96.6' to 98'. [Glen Rose Formation]		735	
98		0.82											734	
99	[Lithology Column]	0.87	19	5.0 5.0	100	F	R1				SHALE: light gray (N7); very thinky bedded; very weak (R1); fresh (F); reacts strongly to HCl. [Glen Rose Formation]		734	
100		2.47											733	
	[Lithology Column]	0.83	19	5.0 5.0	100	SW	R2				LIMESTONE: wackestone; light gray (N7); bedded with (<0.1') sahel interbeds; weak (R2); slightly weathered (SW); bioturbation. [Glen Rose Formation]		733	
		0.83											732	

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)								
101		0.83	19	5.0 5.0	100	SW	R2					LIMESTONE: wackestone; light gray (N7); bedded with (<0.1') sahel interbeds; weak (R2); slightly weathered (SW); bioturbation. [Glen Rose Formation]		731								
		0.88																				
102		1.95												SW	R2				LIMESTONE: packstone; medium gray (N5); bedded with abundant interbeds of shale/siltstone (<0.1') beds; weak (R2); slightly weathered (SW); abundant silt and sand in zones; reacts strongly to HCl; abundant rip up clsts; bioturbation. [Glen Rose Formation]		729	
103		1.17																				728
104		1.6																				727
105		2				F	R1				SHALE: light gray (N7); bedded; very weak (R1); fresh (F);. [Glen Rose Formation]		726									
106		3.43	20	5.0 5.0	100	SW	R2					LIMESTONE: packstone, silty; massive to bedded with abundant interbeds of shale (<0.1') throughout; weak (R2); slightly weathered (SW); reacts strongly to HCl; very clastic with zones of high silt content; light gray (N7) to medium gray (N5); very high silt content from 109.5' to 110.7'; medium dark gray (N4). [Glen Rose Formation]	stoped SPM 1/27/2007, started drilling at 8:30 1/27/2007	725								
107		1.15																				724
108		2.13																				723
109		2.4																				722
110		3.08																				721
111		1.87	21	5.0 5.0	100	SW	R2					LIMESTONE: wackestone; medium light gray (N6); massive to bedded with (<0.1') interbeds (<0.1') of shale and siltstone; weak (R2); slightly weathered (SW); reacts strongly to HCl; abundant bioturbation and rip up clasts. [Glen Rose Formation]		720								
112		1.83																				719
113		2.03																				718
114		2.6																				717
115		1.37										22		4.8 5.0	96							



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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
116		1.37				SW	R2							716
117		4.8				F	R0		2020-27		SHALE: dark gray (N3); very thinly bedded (<0.1'); extremely weak (R0); fresh (F); slight reactiopn to HCl; upper contact has fossil clasts. [Glen Rose Formation]			715
118		3.72	22	4.8 5.0	96							LIMESTONE: wackestone; very light gray (N8); massive; weak (R2) fresh; reacts strongly to HCl; heavily bioturbated. [Glen Rose Formation]		714
119		2.93					R2							713
120		4.65				F	R1				SILTSTONE; medium dark gray (N4); very weak (R1); slightly weathered (SW); interbedded with limestone (<0.1') beds. [Glen Rose Formation]			712
121		2.83										LIMESTONE: packstone, silty; bedded with abundant interbeds of shale/siltstone (<0.1') beds; light gray (N7); slightly weathered (SW); abundant rip-up clasts; weak (R2). [Glen Rose Formation]		711
122		1.5				SW	R2						pull down pressure= 200psi, system pressure = 1700 psi	710
123		1.58	23	5.0 5.0	100									709
124		2.68				SW	R1		2020-28		SHALE: calcareous; medium dark gray (N4); very weak (R1); slightly weathered (SW); bedded with abundant (<0.1'); limestone interbeds; rip up clasts. [Glen Rose Formation]	75% water return (gray)		708
125		1.62										LIMESTONE: wackestone; light gray (N7); weak (R2); to very weak (R1); in zones with abundant shale interbeds; slightly weathered (SW); bedded with (<0.1') interbeds of shale; shale interbed from 128.7' to 128.8'; zone of high interbeds (<0.1') of shale and rip up clasts from 126.4' to 127.1' and 128.2' to 129.3' bioturbation from 129.3' to 120.3'; zones of sbundant shale interbeds from 131' to 131.8' (<0.1') beds; bluish gray fossiliferous clasts from 132' to 134.1'; silty wackestone from 134.1' to 134.7 with abundant rip-up clasts of regular wackestone. [Glen Rose Formation]		707
126		2												706
127		3.28												705
128		1.8	24	5.2 5.0	100	SW	R1-R2		2020-29					704
129		1.92												703
130		1.35												702
		1.38	25	4.9 5.0	98									

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
131		1.38	25	4.9 5.0	98	SW	R1-R2					LIMESTONE: wackestone; light gray (N7); weak (R2); to very weak (R1); in zones with abundant shale interbeds; slightly weathered (SW); bedded with (<0.1') interbeds of shale; shale interbed from 128.7' to 128.8'; zone of high interbeds (<0.1') of shale and rip up clasts from 126.4' to 127.1' and 128.2' to 129.3' bioturbation from 129.3' to 120.3'; zones of sbundant shale interbeds from 131' to 131.8' (<0.1') beds; bluish gray fossiliferous clasts from 132' to 134.1'; silty wackestone from 134.1' to 134.7 with abundant rip-up clasts of regular wackestone. [Glen Rose Formation]		701
		2.13												700
132		0.9												699
		2.02												698
133		3.98	26	5.0 5.0	100	F	R1			2020-30	LIMESTONE: wackestone; light gray (N7); weak (R2); to very weak (R1); in zones with abundant shale interbeds; slightly weathered (SW); bedded with (<0.1') interbeds of shale; siltstone interbed from 134.8' to 135.2'; high concentration of shale interbeds from 136.7' to 137.3' (<0.1'). [Glen Rose Formation]		697	
		1.77											696	
134		1.33											695	
		1.38											694	
135		3.1	27	5.0 5.0	100	SW	R2			2020-31	SHALE: dark gray (N3); very thinly bedded; very weak (R1); fresh (F); abundant bivalve; fossils; reacts to HCl. [Glen Rose Formation]		693	
		2.37											692	
136		2.2											691	
		3.5											690	
137		3	28	5.0 5.0	100					2020-32	LIMESTONE: wackestone; very light gray (N7); bedded with abundant (<0.1') interbeds of shale; weak (R2); slightly weathered (SW); reacts strongly to HCl; very silty/sandy zone from 139.4' to 141.7' and 141.3' to 142.9'; color is medium dark gray in these zones with abundant bivalve fossils; below 142.9' are occasional (<0.1') wavy interbeds of shale.siltstone; rip up clasts; very silty sandy wackestone from 147.2' to 148.1'; abundant fossils throughout run 28; below 148.1' clasts become coarse grained. [Glen Rose Formation]		689	
		1.57											688	
138		1.2											687	
		2											pull down pressure =100psi, system pressure= 1500psi	


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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
146		2	28	5.0 5.0	100	SW	R2					LIMESTONE: wackestone; very light gray (N7); bedded with abundant (<0.1') interbeds of shale; weak (R2); slightly weathered (SW); reacts strongly to HCl; very silty/sandy zone from 139.4' to 141.7' and 141.3' to 142.9'; color is medium dark gray in these zones with abundant bivalve fossils; below 142.9' are occasional (<0.1') wavy interbeds of shale.siltstone; rip up clasts; very silty sandy wackestone from 147.2' to 148.1'; abundant fossils throughout run 28; below 148.1' clasts become coarse grained. [Glen Rose Formation]	75% water return (gray)	686
147		1.83												685
148		2.08												684
149		1.53												683
150		0.9												682
151											BOTTOM OF HOLE AT 150'	Finished drilling at 11:00 am 1/27/2007	681	
152													680	
153													679	
154													678	
155													677	
156													676	
157													675	
158													674	
159													673	
160													672	

Project Name and Job Number TXU Comache Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-2021</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'07.65632"N / 97°47'31.73443"W		Total Depth 150 feet	
Drilling Contractor and Rig Richard Simmons Drilling / BK-81 HD		Elevation and Datum 849.561 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 8.5 feet	
Sampling Method SPT		Sample Driving Hammer/Drop R&C / 140 lbs / 30 inches	No. of Samples 3	Date Started 12/17/06	
		Borehole Inclination Vertical	Logged by S. Dee	Date Completed 12/17/06	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 1/29/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0										849
1	ML		B-2021 1	27	0.0	3.75		RESIDUAL SOIL (RS) SILT with sand and calcareous deposits, hard, very pale brown (10YR8/3), dry		848
2				50/3"						847
3								LEAN CLAY very stiff, brown (7.5Y5/4), dry		846
4			B-2021 2	16	16/18	3.75				845
5				10						844
6	CL		B-2021 3	22	0.0	4	hard			843
7				50/3"						842
8										841
9								Bedrock at 8.5' Augered 0.2' into rock	Bedrock at 8.5'	840
10										839
11										838
12										837
13										836
14										835
15										835

Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. B-2021</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'07.65632"N / 97°47'31.73443"W		Total Depth 150 feet	
Drilling Contractor and Rig Richard Simmons / BK-81		Elevation and Datum 849.561 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 8.5 feet	
Casing Size and Depth 4 PVC / 8.7 feet		Length of Core Barrel and Bit 7.5 feet	No. of Core Boxes 10	Date Started 12/17/07	
		Borehole Inclination Vertical	Logged by S. Dee	Date Completed 1/9/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 1/29/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
9		2.55	1	1.3 1.3	100	SW	R2					LIMESTONE: micrite; very light gray (N8); massive with interbeds of clay; some clay interbeds from 9.3'-9.8'. [Glen Rose Formation]	Begin core drilling at 8.7'.	840
10		1.37										SAND/SILTSTONE: yellowish gray (5 Y 8/1); slightly weathered (SW); extremely weak (R0); reacts moderately to HCL. [Glen Rose Formation]		839
11		2.5										LIMESTONE: micrite; bedded; medium dark gray (N4); slightly weathered (SW); weak (R2); reacts strongly to HCL; <0.1' interbeds of siltstone. [Glen Rose Formation]		838
12		2.83	2	5.0 5.0	100	SW	R2							837
13		2.28												836
14		1.92												835
15		1.45				F	R0					CLAYSTONE: medium dark gray (N4); massive; extremely weak (R0); fresh (F) [Glen Rose Formation]		834
16		1.28										LIMESTONE: micrite; medium light gray (N6); fresh (F); weak (R2); bedded; isolated interbeds of shale; reacts strongly to HCL. [Glen Rose Formation]		833
17		1.45	3	5.0 5.0	100	F	R2							832
18		3.42												831
19		3.02				F	R0					SHALE: medium gray (N5); fresh (F); extremely weak (R0); very thinly bedded. [Glen Rose Formation]		830
20		1.38												829
21		2.32										LIMESTONE: packstone; very light gray (N8); slightly weathered (SW); weak (R2). [Glen Rose Formation]		828
22		1.13	4	5.0 5.0	100	SW	R2					SHALE: medium dark gray (N3); slightly weathered (SW); extremely weak (R0); very thinly bedded. [Glen Rose Formation]		827
23		1.88					R2					LIMESTONE: packstone; very light gray (N8); slightly weathered (SW); weak (R2); massive; fossils. [Glen Rose Formation]		826

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
24		1.88	4	5.0 5.0	100	SW	R2					LIMESTONE: wackestone; medium light gray (N6); slightly weathered (SW); weak (R2); bedded with abundant interbeds of shale/siltstone; rip-up clasts. [Glen Rose Formation]		825
25		1.77												2021-6
26		1.85	5	5.0 5.0	100	F	R2					LIMESTONE: MICRITE; medium gray (N5); weak (R2); massive; reacts strongly to HCL. [Glen Rose Formation]		823
27		2.73												2021-7
28		2.17	6	5.0 5.0	100	SW	R0					SHALE: medium dark gray (N4); slightly weathered (SW); extremely weak (R0); very thinly bedded; reacts moderately to HCL. [Glen Rose Formation]		821
29		3.8												2021-8
30		2.22	7	5.0 5.0	100	F	R2					LIMESTONE: packstone; light gray (N7); fresh (F); weak (R2); bedded; fresh (F)ossils. [Glen Rose Formation]		819
31		2.32												818
32		1.83	7	5.0 5.0	100	SW	R0					SHALE: limey fresh (F); extremely weak (R0); light gray (N7); very thinly bedded. [Glen Rose Formation]		817
33		1.6												816
34		1.43	7	5.0 5.0	100	SW	R2					LIMESTONE: packstone; light gray (N7); slightly weathered (SW); weak (R2); gradational upper contact; bedded with ??? Interbeds of shale/siltstone (<0.1'); occasional rip-up clasts of ???stone in shale beds. [Glen Rose Formation]		815
35		1.02												814
36														813
37														812
38														811

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-2021**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
39		1.02												
		1.77	7	5.0	100	SW	R2		2021-9			LIMESTONE: packstone; light gray (N7); slightly weathered (SW); weak (R2); gradational upper contact; bedded with ??? Interbeds of shale/siltstone (<0.1'); occasional rip-up clasts of ???stone in shale beds. [Glen Rose Formation]		810
40		3.15												809
41		2.03				SW	R2							808
42			8	5.0	100									807
43		2.37												806
44						F	R0					SILTSTONE: medium dark gray (N4); fresh (F); extremely weak (R0); massive. [Glen Rose Formation]		805
45		1.6							2021-10			LIMESTONE: wackestone; medium light gray (N6); slightly weathered (SW); weak (R2); bedded with abundant interbeds of shale/siltstone (<0.1'); >0.1' interbeds of shale 46.2'-46.5'; 49.1'-49.3'; and 49.8'-49.9'; abundant rip-up clasts from 50.3'-50.7'. [Glen Rose Formation]		804
46		2.5												803
47		3.2	9	5.0	100	SW	R2							802
48		2.03												801
49		2.63												800
50		1.9												799
51		2.53	10	5.0	100	F	R2					SILTSTONE: medium dark gray (N4); fresh (F); weak (R2); massive to bedded; with interbeds of better indurated; fissile shale; no reaction to HCL. [Glen Rose Formation]		798
52		1.95												797
53		2.53							2021-12					796

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-2021**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
54		2.53								2021-12		SILTSTONE: medium dark gray (N4); fresh (F); weak (R2); massive to bedded; with interbeds of better indurated; fissile shale; no reaction to HCL. [Glen Rose Formation]		795
		1.93	10	5.0	100	F	R2							
55		1.68				SW	R2					LIMESTONE: packstone; light gray (N8); slightly weathered (SW); weak (R2); reacts strongly to HCL. [Glen Rose Formation]		794
56		3.93										SILTSTONE: medium gray (N5); slightly weathered (SW); extremely weak (R0); bedded with interbeds of better indurated; fissile shale; interbeds of packstone at 57.4'-57.6' and 59.4'-59.6'. [Glen Rose Formation]		793
57		2.02	11	5.0	100	SW	R0							792
58		3.28												791
59		1.98								2021-13				790
60		2.27				SW	R2			2021-14		LIMESTONE: wackestone; light gray (N7); slightly weathered (SW); weak (R2); bedded with abundant interbeds of shale/siltstone; reacts strongly with HCL. [Glen Rose Formation]		789
61		3.02												788
62		3.63	12	5.0	98	F	R0					SILTSTONE: medium dark gray (N4); fresh (F); extremely weak (R0); bedded with interbeds of more fissile; better indurated shale; no reaction to HCL. [Glen Rose Formation]		787
63		2.18												786
64		3.07												785
65		5.17				SW	R2					LIMESTONE: wackestone; medium light gray (N6); slightly weathered (SW); weak (R2). [Glen Rose Formation]		784
66		3.75	13	5.0	100	F	R0					SHALE: dark gray (N3); fresh (F); extremely weak (R0); thinly bedded; no reaction to HCL. [Glen Rose Formation]		783
67		1.52												782
68		2.25				SW	R2			2021-15		LIMESTONE: wackestone; medium light gray (N6); slightly weathered (SW); weak (R2); abundant undulatory interbeds of shale; reacts strongly to HCL; siltstone interbeds at 67.3'-67.6' and 69.6'-69.8'; shale/siltstone interbeds absent from 69.6'-70.7'. [Glen Rose Formation]		781
												Siltstone interbed		



Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-2021**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
69		2.25												
70		1.42	13	5.0	100	SW	R2					LIMESTONE: wackestone; medium light gray (N6); slightly weathered (SW); weak (R2); abundant undulatory interbeds of shale; reacts strongly to HCL; siltstone interbeds at 67.3'-67.6' and 69.6'-69.8'; shale/siltstone interbeds absent from 69.6'-70.7'. [Glen Rose Formation]		780
71		1.45										Siltstone interbed		779
72		2.13												778
73		1.4	14	5.0	100	SW	R2		2021-16					777
74		1.28												776
75		1.2												775
76		1.6												774
77		2.77								2021-17		LIMESTONE: wackestone; medium light gray (N6); slightly weathered (SW); weak (R2); abundant undulatory interbeds of shale; reacts strongly to HCL; abundant (<0.1') interbeds of shale 75'-80'; abundant interbeds of shale and rip-up clasts 79.5'-81' and 82.5'-84.0'; interbeds of shale less abundant below 85.4'. [Glen Rose Formation]		773
78		1.9	15	5.0	100	SW	R2							772
79		2.83												771
80		2.1											Abundant interbeds of shale and rip-up clasts [Glen Rose Formation]	770
81		1.67												769
82		2.07	16	5.0	100	SW	R2							768
83		2.2												767
		2.47								2021-18				766

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-2021**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
84		2.47	16	5.0 5.0	100	SW	R2							765
		2.22												
85		1.5												
86		1.88	17	5.0 5.0	100	SW	R2						764	
87		2.02												
88		2.33												
89		3.02	18	5.0 5.0	100	SW	R2						763	
90		2.58												
91		1.72												
92		2.02	19	5.0 5.0	100	SW	R2						762	
93		1.8												
94		1.7												
95		2.18	19	5.0 5.0	100	SW	R2						761	
96		2.48												
97		1.75												
98		2.02											760	

LIMESTONE: wackestone; medium light gray (N6); slightly weathered (SW); weak (R2); abundant undulatory interbeds of shale; reacts strongly to HCL; increased abundance of shale interbeds from 90.2'-93.1'; 92.6'-92.4'; 93.7'-94.3'; 95.0'-97.7' and 98.1'-98.3'; 101.3'-101.8'; below 108'; lower abundance of shale interbeds. [Glen Rose Formation]

Project Name and Job Number  
 TXU Comanche Peak Col  
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**ROCK LOG**  
**Boring No. B-2021**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
99		2.02												
		1.82	19	5.0	100	SW	R2							750
100		1.05												749
101		1.88				SW								748
102		1.38	20	5.0	100		R2			2021-22				747
103		1.27				F								746
104		1.77												745
105		3.17										LIMESTONE wackestone; as above with intermittent zones of increased shale interbed abundance. [Glen Rose Formation]		744
106		2.77												743
107		1.85	21	5.0	100	SW	R2							742
108		1.6								2021-23				741
109		1.25												740
110		2.78												739
111		2.28				SW	R2							738
112		2.98	22	5.0	100							LIMESTONE: packstone; medium light gray (N6); slightly weathered (SW); weak (R2); abundant interbeds of shale; increasing downward; gradational upper contact; reacts strongly to HCL. [Glen Rose Formation]	Finished drilling 12/20/06, resume drilling 1/8/07.	737
113		2.33				SW	R2			2021-24				736

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2021</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
114		2.33	22	5.0 5.0	100	SW	R2					LIMESTONE: wackestone; light gray (N7); slightly weathered (SW); weak (R2); no shale interbeds above 114.2'-118'; increased abundance of shale interbeds below 118'; reacts strongly to HCL. [Glen Rose Formation]		735
115		2.17				SW	R2							
116		1.33												733
117		2.82												732
118		2.52	23	5.0 5.0	100	SW	R2					LIMESTONE: wackestone; light gray (N7); slightly weathered (SW); weak (R2); shale interbeds end at 120.2'; below 120.2'; rock is massive; highly uniform with 10%-20% fine to medium grained light bluish gray (5 B 7/1) clasts; isolated bioturbation. [Glen Rose Formation]	Finished drilling 1/8/07, resume drilling 1/9/07.	731
119		2.47												
120		3.52												729
121		2.18	24	5.0 5.0	100	SW	R2					LIMESTONE: wackestone; as above; shale interbeds abundant from 125.2'-126.4' and 128.0'-128.5'; burrows throughout to 130.2'; abundant shale interbeds from 130.9'-131.4'. [Glen Rose Formation]		728
122		2.2												
123		3.17												726
124		2.25												725
125		2.5												724
126		1.87	25	5.0 5.0	100	SW	R2							723
127		2.08												
128		2.25												721
		1.87												721


Project Name and Job Number  
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**ROCK LOG**  
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
129		1.87												
		2.02	25	5.0	100	SW	R2							720
130		2.53					R2					SHALE: dark gray (N3); very thinly bedded; moderate reaction to HCL; fossiliferous zones. [Glen Rose Formation]		719
131		2.92												718
132		2.93	26	5.0	100	SW	R0		2021-28					717
133		2.6												716
134		2.8					R2					LIMESTONE: wackestone; slightly weathered (SW); weak (R2); massive with isolated interbeds of shale; shale interbed from 134.7'-135.1'. [Glen Rose Formation]		715
135		2.52												714
136		4.17										SILTY LIMESTONE: slightly weathered (SW); very weak (R1); limestone with ~30% silt; medium gray (N5). [Glen Rose Formation]		713
137		3.02	27	5.0	100	SW	R1					LIMESTONE: packstone; slightly weathered (SW); very weak (R1); medium light gray (N6); reacts strongly to HCL; abundant interbeds of shale; abundant rip-up clasts suspended by shale. [Glen Rose Formation]		712
138		3.28							2021-29					711
139		2.85				F	R0					SHALE: fresh (F); extremely weak (R0); medium dark gray (N4); very thinly bedded. [Glen Rose Formation]		710
140		2.52												709
141		3.33												708
142		2.65	28	5.0	100	SW	R2					LIMESTONE: packstone; slightly weathered (SW); weak (R2); medium light gray (N6); reacts strongly to HCL; abundant interbeds of shale; abundant rip-up clasts; intermittent zones of oolites. Below 145.7'; decrease in abundance of shale interbeds; abundant burrows and bioturbation. [Glen Rose Formation]		707
143		1.77							2021-30					706


Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2021</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)					
144		1.77	28	5.0 5.0	100	SW	R2					LIMESTONE: packstone; slightly weathered (SW); weak (R2); medium light gray (N6); reacts strongly to HCL; abundant interbeds of shale; abundant rip-up clasts; intermittent zones of oolites. Below 145.7'; decrease in abundance of shale interbeds; abundant burrows and bioturbation. [Glen Rose Formation]		705					
145		1.87																	
146		2.95																	
147		3.35																	
148		2.8	29	5.0 5.0	100	SW	R2												702
149		1.82																	
150		1.97												2021-31					700
151											BOTTOM OF HOLE AT 150 FEET	Total depth 150.0', 1/9/07.	699						
152													698						
153													697						
154													696						
155													695						
156													694						
157													693						
158													692						

Project Name and Job Number TXU Comache Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-2022</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'06.89117"N / 97°47'32.44375"W		Total Depth 150 feet	
Drilling Contractor and Rig Richard Simmons Drilling / BK-81 HD		Elevation and Datum 851.979 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 4.5 feet	
Sampling Method SPT		Sample Driving Hammer/Drop R&C / 140 lbs / 30 inches	No. of Samples 2	Date Started 1/9/07	
		Borehole Inclination Vertical	Logged by S. Dee	Date Completed 1/11/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 1/31/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
0									851
0 - 1.75	ML		B-2022 1	50/4"	4/4	0.75	ARTIFICIAL FILL (Qaf) SILT with sand and limestone fragments dense, pale yellow (2.5Y8/3), dry, fine to medium sands, strong reaction to HCl		850
1.75 - 3.5									849
3.5 - 4.5	CL		B-2022 2	47 50/5"	11/11	4.51	RESIDUAL SOIL (RS) LEAN CLAY with sand and limestone fragments (~15%) and calcareous deposits, hard, light brown (7.5YR6/4), reacts to HCl		848
4.5 - 15							Weathered Limestone		847

Project Name and Job Number TXU Comanche Peak Col 1908		 WLA William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. B-2022</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'06.89117"N / 97°47'32.44375"W		Total Depth 150 feet	
Drilling Contractor and Rig Richard Simmons / BK-81		Elevation and Datum 851.979 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 5 feet	
Casing Size and Depth 4" PVC / 4.4 feet		Length of Core Barrel and Bit 7.5 feet	No. of Core Boxes 10	Date Started 1/9/07	
		Borehole Inclination Vertical	Logged by S. Dee	Date Completed 1/11/07	

Reviewed by / Date \_\_\_\_\_ 1/31/07 \_\_\_\_\_

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology		Remarks	Elevation (feet)
5		1.85												Started coring 11/9/06	846
6		2.02													845
7		3.07	1	5.0 5.0	100	W	R0								844
8		2.1													843
9		2.12				SW	R2			2022-3					842
10		1.78													841
11		2.45				SW	R2								840
12		1.95	2	5.0 5.0	100	F	R0								839
13		1.9													838
14		2.1				SW	R0			2022-4					837
15		2.67												Stopped coring 11/9/06, resumed 11/10/06.	836
16		2.52				SW	R2								835
17		2.1	3	5.0 5.0	100					2022-5					834
18		2.95													833
19		2.68				F	R0-R2								832



Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2022</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
20		1.58				F								831
21		1.33										LIMESTONE: wackestone; very light gray (N8); slightly weathered (SW); weak (R2); massive; very fossiliferous with bioturbation; nearly clast supported in upper foot with less fossil/clast abundance downward; reacts strongly to HCl. [Glen Rose Formation]		830
22		1.15	4	5.0 5.0	100	SW	R2			2022-6				829
23		1.43												828
24		3.35					R0					SHALE: slightly weathered (SW); extremely weak (R0); medium gray (N5); reacts strongly to HCl; intermittent zoned with pebble sized limestone clasts (1% to 15%); interbeds (<0.1') of thinly bedded shale increasing below 28'; generally massive. [Glen Rose Formation]		827
25		1.17												826
26		1.35												825
27		1.5	5	4.7 5.0	94	SW	R0			2022-7				824
28		2.02												823
29		2.12												822
30		1.85					R2					LIMESTONE: packstone; medium light gray (N6); slightly weathered (SW); weak (R2); massive; reacts strongly to HCl. [Glen Rose Formation]		821
31		1.4												820
32		1.78	6	5.0 5.0	100	SW	R0					SHALE: dark gray (N3); slightly weathered (SW); extremely weak (R0); very thinly bedded; reacts strongly to HCl. [Glen Rose Formation]		819
33		1.6					R2					LIMESTONE: packstone; medium light gray (N6); slightly weathered (SW); weak (R2); massive; reacts strongly to HCl. [Glen Rose Formation]		818
34		1.35					R2				IF	SHALE: medium dark gray (N4); slightly weathered (SW); extremely weak (R0); massive. [Glen Rose Formation]		817
35										2022-8				

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
35		2.17										LIMESTONE: packstone; medium light gray (N6); slightly weathered (SW); weak (R2); massive until 34.8; where abundant shale interbeds (<0.1') begin; abundant rip-up clasts; fossils and burrow; shale interbed 36.1'-36.3' and 41.5'-41.8'. [Glen Rose Formation]		816
36		1.55												815
37		1.35	7	5.0	100	SW	R2			2022-9				814
38		1												813
39		1.1												812
40		1.5												811
41		3.33					R2			2022-10				810
42		1.8	8	5.0	100	SW								809
43		3.02											SHALE: medium dark gray (N4); SW; R0; very thinly bedded; reacts moderately to HCl. [Glen Rose Formation]	808
44		3.4					R0							807
45		1.67										LIMESTONE: micrite; very light gray (N8); slightly weathered (SW); weak (R2); massive to interbedded (<0.1' beds); with shale; fossil clasts (<15%); burrows; shale interbed from 50.6'-50.9' and 51.3'-51.5'. [Glen Rose Formation]	806	
46		1.63											805	
47		2.68	9	5.0	100	SW	R2			2022-11			804	
48		2.57											803	
49		2.23											802	

Project Name and Job Number  
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**ROCK LOG**  
**Boring No. B-2022**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
50		2.5												801
51		2.32				SW	R2							800
52		1.77	10	5.0 5.0	100									799
53		1.52				F	R0							798
54		2.35								2022-12				797
55		3.67				F	R0							796
56		2.32				SW	R2							795
57		3.03	11	5.0 5.0	100									794
58		3.17				F	R0							793
59		3.68												792
60		2.33				F	R0			2022-13				791
61		2.77				SW	R2							790
62		2.4	12	5.0 5.0	100									789
63		2.98				F	R0			2022-14				788
64		3.33												787

SHALE: dark gray (N2); fresh (F); extremely weak (R0); massive; reacts moderately to HCl. [Glen Rose Formation]

LIMESTONE: micrite; light gray (N7); slightly weathered (SW); weak (R2); massive; burrows. [Glen Rose Formation]

SHALE: medium dark gray (N4); fresh (F); extremely weak (R0); very thinly bedded; cross bedding. [Glen Rose Formation]

LIMESTONE: wackestone; light gray (N7); slightly weathered (SW); weak (R2); fossils abundant; interbeds of shale throughout (<0.1" beds). [Glen Rose Formation]

SHALE: medium dark gray (N4); fresh (F); extremely weak (R0); massive; reacts moderately to HCl. [Glen Rose Formation]

Very damaged core 63'-65'.

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
65		2.17				SW	R2							786
66		2.25										LIMESTONE: wackestone; medium light gray (N6); slightly weathered (SW); weak (R2); abundant (<0.1') interbeds of shale. [Glen Rose Formation]		785
67		2	13	5.0 5.0	100	F	R0					SHALE: medium dark gray (N4); fresh (F); extremely weak (R0); very thinly bedded; reacts moderately to HCl. [Glen Rose Formation]		784
68		1.58										LIMESTONE: wackestone; very light gray (N8); slightly weathered (SW); weak (R2); fossils; interbeds of shale (<0.1'); bioturbation; strongly reacts to HCl; very few shale interbeds (<0.1') from 71.4'-72.7'; rip-up clasts from 72.7'-73.4'. [Glen Rose Formation]		783
69		1.72				SW	R2			2022-15				782
70		1.83												781
71		1.17								2022-16				780
72		1.77	14	5.0 5.0	100	SW	R2							779
73		1.67												778
74		1.7												777
75		1.33										LIMESTONE: wackestone; as above; very few shale interbeds from 75.1'-77'; abundant undulatory (<0.1') shale interbeds and rip-up clasts from 77.0'-79.2'. [Glen Rose Formation]		776
76		1.98												775
77		2.62	15	5.0 5.0	100	SW	R2							774
78		2.17								2022-17				773
79		1.9												772

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2022</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
80		2.27										LIMESTONE: wackestone; as above; abundant undulatory shale beds from 81.0'-82.4'; 86.2'-87.0'; and 89.2'-89.8'; bioturbation throughout. [Glen Rose Formation]		771
81		2.45												770
82		2.1	16	5.0 5.0	100	SW	R2			2022-18				769
83		1.67												768
84		1.8												767
85		1.97												766
86		2.67								2022-19				765
87		1.2	17	5.0 5.0	100	SW	R2							764
88		1.77												763
89		2.08												762
90		2.1										LIMESTONE: wackestone; as above; very high concentration of (<0.1') shale interbeds; rip-up clasts; and burrows from 90'-92.6'. [Glen Rose Formation]		761
91		2.67												760
92		2.17	18	4.7 5.0	94	SW	R2					LIMESTONE: wackestone; as above; color changes to medium bluish gray (5 B 5/1); high concentration of shale interbeds (<0.1') from 95.9'-96.4' and 97.1'-98.4'; large shale interbed from 99.0'-99.4'. [Glen Rose Formation]		759
93		1.77								2022-20				758
94		1.25												757

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-2022</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
95		1.6												756
96		2.83												755
97		2.68	19	5.0	100	SW	R2							754
98		1.83								2022-21				753
99		1.93												752
100		2.35										LIMESTONE: wackestone; as above; abundant bioturbation from 101.5'-102.3'; intermittent zones of shale interbeds (<0.1') throughout. [Glen Rose Formation]		751
101		2.25												750
102		1.75	20	5.0	100	SW	R2							749
103		1.67												748
104		1.53								2022-22				747
105		12.57												746
106		2.17										LIMESTONE: packstone; light gray (N7); fresh (F); weak (R2); reacts strongly to HCl; massive; very few interbeds of shale (<0.1') above 108.2'; high concentration of shale interbeds from 108.2'-109.4' and 110'-110'. [Glen Rose Formation]		745
107		1.85	21	5.0	100	F	R2							744
108		2.02								2022-23				743
109		2.27												742

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-2022</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
110		2.67												741
111		2.92												740
112		3.08	22	5.0 5.0	100		R2					LIMESTONE: wackestone; medium light gray (N6); slightly weathered (SW); weak (R2); reacts strongly to HCl; minimal interbeds of shale. [Glen Rose Formation]		739
113		1.17								2022-24				738
114		1.65										LIMESTONE: packstone; medium light gray (N6); slightly weathered (SW); weak (R2); abundant interbeds of shale (<0.1'); with interbeds of wackestone (<0.5'). [Glen Rose Formation]		737
115		2.17											Stopped coring 11/10/06, resumed 11/11/06.	736
116		2.22										SHALE: mudstone; light gray (N6); fresh (F); very weak to weak (R1-R2)		735
117		2.53	23	5.0 5.0	100	SW	R2-R3					LIMESTONE: packstone; medium light gray (N7); slightly weathered (SW); weak to medium strong (R2-R3); periodic silt filled bioturbations. [Glen Rose Formation]		734
118		1.48										LIMESTONE:wackestone; light gray (N7); weak (R2); slightly weathered (SW); silt filled bioturbation at 3.1' and from 4.6'-5.0'; increasing rip-up clasts with depth. [Glen Rose Formation]		733
119		2.17								2022-25	JRC4			732
120		1.77												731
121		2.25												730
122		2.02	24	5.0 5.0	100		R2							729
123		1.58								2022-26				728
124		2.17										LIMESTONE: wackestone; light bluish gray (5 B 7/1); weak (R2); fresh (F); increasing silt content with depth; decreasing strength; darkening of color; minor shale rip-up clasts; strong HCl reaction; increasing concentration of shale beds (<0.1) beds and silt filled bioturbations below 127'. [Glen Rose Formation]		727


Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2022</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
125		2.32										LIMESTONE: wackestone; light bluish gray (5 B 7/1); weak (R2); fresh (F); increasing silt content with depth; decreasing strength; darkening of color; minor shale rip-up clasts; strong HCl reaction; increasing concentration of shale beds (<0.1) beds and silt filled bioturbations below 127'. [Glen Rose Formation]		726
126		2.15												725
127		3.1	25	5.0 5.0	100	F	R2		2022-27	JO				724
128		2.42												723
129		2.22												722
130		1.5												721
131		3.12										LIMESTONE: packstone; medium dark gray (N4-N5); fresh (F); weak (R2); shale interbeds; rip-up clasts. [Glen Rose Formation]	Gradational contact.	720
132		3.4	26	5.0 5.0	100	F	R2		2022-28					719
133		2.92										SHALE: mudstone; fossiliferous; gradational upper contact; dark gray to medium dark gray (N3-N4); extremely weak to very weak (R0-R1); fresh (F). [Glen Rose Formation]	Gradational contact.	718
134		3.85					R0-R1							717
135		2.92										LIMESTONE; WACKESTONE; slightly weathered; weak (R2); light gray (N7); slightly weathered; weak (R2); strong HCl reaction; silt filled bioturbations. [Glen Rose Formation] SHALE; mudstone; dark greenish gray (5 B 4/1); strong to moderate HCl reaction; very weak (R1); slightly weathered (SW); bioturbation; wackestone interbed 137.1'-137.5'. [Glen Rose Formation]		716
136		5.85					R1							715
137		4.1	27	5.0 5.0	100	SW						LIMESTONE: silty packstone; medium light gray (N7); gradational contact; medium strong (R3); slightly weathered (SW); rip-up clasts of green silt; abundant interbedded (<0.1') silt beds; abundant rip-up clasts and bioturbation. [Glen Rose Formation]	Gradational contact.	714
138		4.73							2022-29					713
139		4.62					R3							712

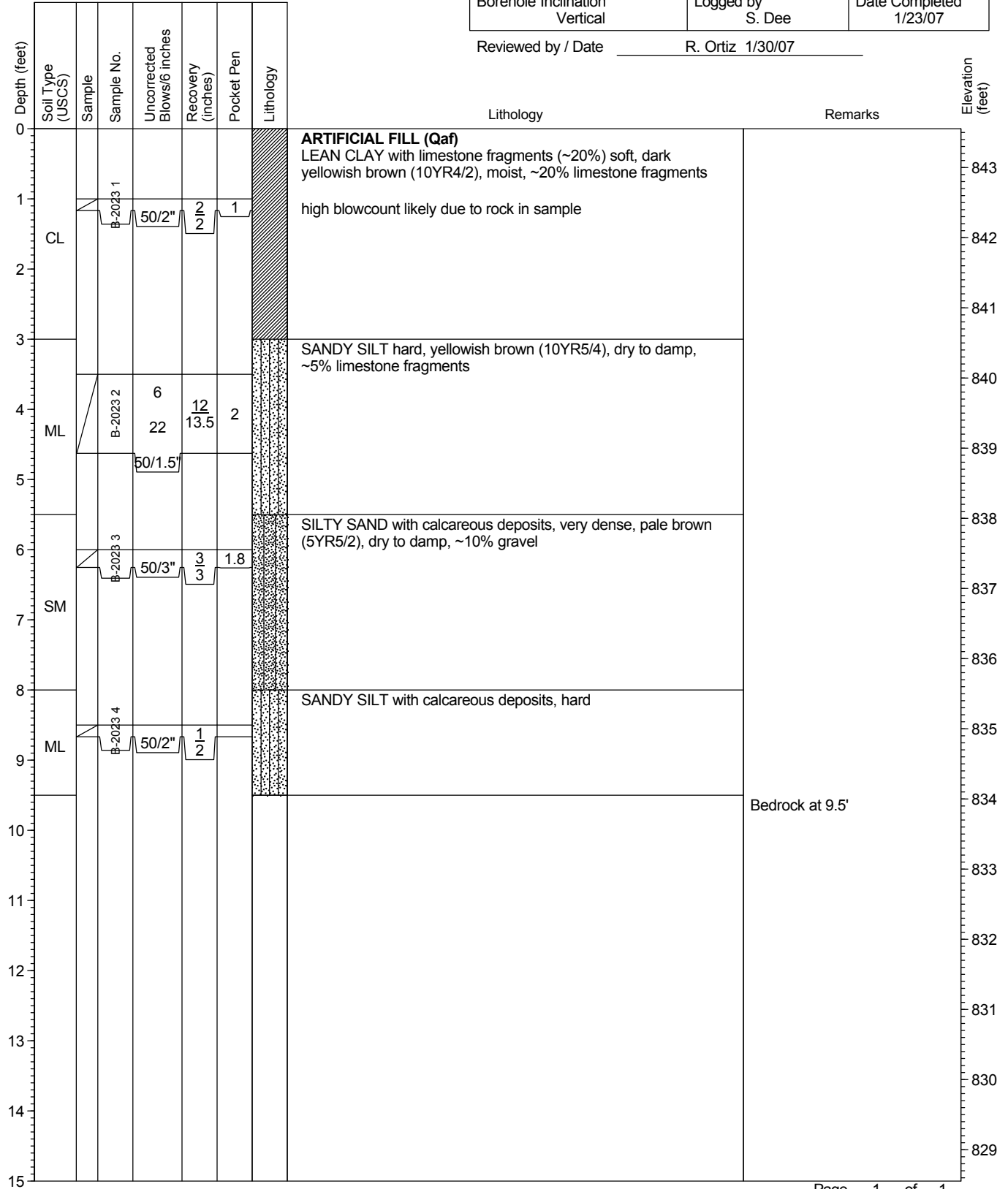



Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2022</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
140		3.18	28	5.0 5.0	100	SW	R3					LIMESTONE: silty packstone; medium light gray (N7); gradational contact; medium strong (R3); slightly weathered (SW); rip-up clasts of green silt; abundant interbedded (<0.1') silt beds; abundant rip-up clasts and bioturbation. [Glen Rose Formation]	Gradational contact.	711
141		3.55										710		
142		3.07										709		
143		1.97										708		
144		2.1										707		
145		1.13										706		
146		2.1										705		
147		1.8										704		
148		2.13										703		
149		NM										702		
150											BOTTOM OF HOLE AT 150 FEET		702	
151														701
152														700
153														699
154														698
155														697

Project Name and Job Number TXU Comache Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-2023</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'07.14539"N / 97°47'30.13802"W		Total Depth 110 feet	
Drilling Contractor and Rig Fugro / CME 45		Elevation and Datum 843.551 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 9.5 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 4	Date Started 1/22/07	
		Borehole Inclination Vertical	Logged by S. Dee	Date Completed 1/23/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 1/30/07



Project Name and Job Number TXU Comanche Peak Col 1908		 WLA William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. B-2023</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'07.14539"N / 97°47'30.13802"W		Total Depth 110 feet	
Drilling Contractor and Rig Furgo Austin / CME - 45		Elevation and Datum 843.551 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 9.5 feet	
Casing Size and Depth PVC 4" / 10 feet		Length of Core Barrel and Bit 8.7 feet	No. of Core Boxes 7	Date Started 1/22/07	
		Borehole Inclination Vertical	Logged by S. Dee	Date Completed 1/23/07	

Reviewed by / Date \_\_\_\_\_ 1/30/07 \_\_\_\_\_

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
10.00			1	0.2 0.5	40	MW	R1					LIMESTONE: wackstone; pale yellowish brown (10YR 6/2); bedded; moderately weathered (MW); very weak (R2) [Glen Rose Formation]		834
11.00														833
12.00		2.03												832
13.00			2	5.0 5.0	100	F	R2					LIMESTONE: packstone; medium dark gray (N4); massive; weak (R2); fresh (F); highly fossiliferous; reacts moderately to strongly to HCL. Interbed of siltstone @ 13.0' to 13.2' and 13.9" to 14.1'. [Glen Rose Formation]	Pull down pressure = 500 psi, system pressure=1500 psi	831
14.00		1.05												830
15.00		3.05												829
16.00		3.05				F	R0					SHALE: dark gray (N3); very thinly bedded; fresh (F); extremely weak (R0) [Glen Rose Formation]		828
17.00		3.02										LIMESTONE: packstone; massive with few interbeds of shale (<0.1'); very light gray (N8); slightly weathered (SW); weak (R2); abundant voids (<0.2") from 17.7' to 19.6'. At 20.3' color changes to medium gray (N5) and burrows become abundant [Glen Rose Formation]		827
18.00		1.02	3	5.0 5.0	100									826
19.00		1.02												825
20.00		1.03				SW	R2							824
21.00		2.03												823
22.00		2.03												822
23.00		2.03	4	4.5 5.0	100									821
24.00		2.05				SW	R2					LIMESTONE: silty micrite; medium gray (N5); very thinly bedded (<0.1'); weak (R2); slightly weathered (SW); occasional pyrite clasts; reacts moderately to HCL [Glen Rose Formation]		820
		3.07				F								

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2023</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
25		3.07	4	4.5 5.0	100							SILTSTONE; dark gray (N3); massive to very thinly bedded; extremely weak (R0); fresh (F); no reaction to HCL [Glen Rose Formation]	Bottom 0.5' of run 4 recovered in run 5.	819
26		4.08				F	R0			2023-8			Pull down pressure = 250 psi, system pressure=1300 psi	818
27		5.07				SW	R2					LIMESTONE: packstone; medium gray (N5); massive; weak (R2); slightly weathered (SW); abundant bioturbation and rip-up clasts [Glen Rose Formation]		817
28		4.05	5	5.0 5.0	100	SW	R1					SHALE; medium dark gray (N4); very thinly bedded (<0.01'); very weak (R1); slightly weathered (SW); ~ 15% fossil clasts; limestone interbed from 28.0 to 28.3'. [Glen Rose Formation]	100% H2O Reurn (gray)	816
29		3.03												815
30		2.03										LIMESTONE: packstone; very light gray (N8); Massive with some interbeds (<0.1') of shale; weak (R2); slightly weathered (SW); abundant (<0.1') interbeds of shale from 30.7' to 32.4' and 33.5' to 35.2'. Abundant fossils; bioturbation and rip-up clasts throughout. Interbed of shale from 36.6' to 36.7'. [Glen Rose Formation]		814
31		2.03												813
32		2.02												812
33		1.02	6	5.1 5.0	100	SW	R2			2023-9				811
34		1.02												810
35		1.03												809
36		2.02												808
37		1.05								2023-10				807
38		3.07	7	5.0 5.0	100	F	R0					SHALE; SILTSTONE; medium dark gray (N4); massive to very thinly bedded; extremely weak (R0); fresh (F). [Glen Rose Formation]		806
39		4.07				SW	R2					LIMESTONE: wackestone; very light gray (N8); massive with abundant (<0.1') shale interbeds; slightly weathered (SW); weak (R2) [Glen Rose Formation]		805
		4.05				F	R0					SHALE; medium dark gray (N4); very thinly bedded (<0.01'); extremely weak (R0);		

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
40		4.05	7	5.0 5.0	100	F	R0					fresh (F); reacts moderately to HCL. Interbeds of wackestone @ 39.4' to 39.8'. [Glen Rose Formation]		804
41		3.03										LIMESTONE: wackestone; very light gray (N8); massive with zones of undulatory shale interbeds (<0.1'); weak (R2); slightly weathered (SW); burrows; reacts strongly to HCL; interbeds of shale (<0.1') are particularly abundant from 43.7' to 45.0'. Abundant fossils from 46.5' to 47.3'; shale interbed from 45.9' to 46.1". Abundant shale interbeds (<0.1') from 46.1' to 47.8' [Glen Rose Formation]	100% H2O Reum (gray)  Pull down pressure = 350 psi, system pressure=1500 psi	803
42		2.03								2023-11				802
43		2.05	8	5.0 5.0	100									801
44		3.03				SW	R2							800
45		2.02												799
46		1.03												798
47		2.05												797
48		3.05	9	4.2 5.0	84					2023-12		SHALE: medium dark gray (N4); very thinly bedded (<0.01'); very weak (R1); fresh (F); no reaction to HCL. [Glen Rose Formation]		796
49		3.14												795
50		8.1				F	R1							794
51		6.08												793
52		5.09												792
53		5.1	10	5.0 5.0	100	F	R2					LIMESTONE: packstone; medium light gray (N6); fresh (F); weak (R2); Burrows; Fossils [Glen Rose Formation]		791
54		6.08				F	R0			2023-13		SHALE: medium dark gray (N4); very thinly bedded (<0.01'); no reaction to HCL. Interbeds of wackestone at 54.1' to 54.2'. Coal interbed @55.3' [Glen Rose Formation]		790
		5.05												

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
55		5.05	10	5.0 5.0	100	F	R0							789
56		3.08												788
57		5.07				SW	R2			2023-14		LIMESTONE: wackestone; medium light gray (N6); massive with abundant interbeds of shale; weak (R2); slightly weathered (SW); reacts strongly to HCL. [Glen Rose Formation]	Pull down pressure = 350 psi, system pressure=2000 psi 100% H2O Reurn (gray)	787
58		4.1	11	5.0 5.0	100									786
59		6.09				F	R0					SHALE: medium dark gray (N4); very thinly bedded (:0.01'); extremely weak (R0); fresh (F); no reaction to HCL; some beds have medium grained clasts. [Glen Rose Formation]		785
60		5.1												784
61		6.05				SW	R2					LIMESTONE: silty wackestone; very light gray (N8); weak (R2); slightly weathered (SW); shale interbeds [Glen Rose Formation]		783
62		3.13									BF	SHALE: siltstone; medium dark gray (N4); massive to very thinly bedded (<0.01'); Extremely weak (R0); slightly weathered (SW); slight reaction to HCL. [Glen Rose Formation]		782
63		8.07	12	5.0 5.0	100	SW	R0			2023-15				781
64		4.07										LIMESTONE: wackestone; very light gray (N8); bedded with abundant undulatory interbeds (<0.1') of shale; weak (R2); slightly weathered (SW); abundant rip-up clasts; fossils and bioturbation. Below 67.9' shale interbeds decrease; clasts become dominantly fine grained bluish gray fossils. [Glen Rose Formation]		780
65		4.03												779
66		2.05												778
67		3.02				SW	R2							777
68		1.02	13	5.0 5.0	100					2023-16				776
69		1.02												775

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)		
70		1.02	13	5.0 5.0	100	SW	R2				BF Limestone: wackestone; very light gray (N8); bedded with abundant undulatory interbeds (<0.1') of shale; weak (R2); slightly weathered (SW); abundant rip-up clasts; fossils and bioturbation. Below 67.9' shale interbeds decrease; clasts become dominantly fine grained bluish gray fossils. [Glen Rose Formation]			774		
71		1.02														773
72		1.03														772
73		2.03	14	5.0 5.0	100	SW	R2				Limestone: packstone; bedded with interbeds of shale (<0.1'); medium gray (N5); weak (R2); slightly weathered (SW); abundant bioturbation; fossils. High concentration of undulatory shale beds from 75.1 to 76.3' and 79.1' to 82' (<0.1'). Varies between packstone; wackestone but is dominantly clast supported. Abundant shale interbeds from 83.4' to 84.8' (<0.1')..	Pull down pressure = 400 psi, system pressure=1400 psi  100% H2O Reurn	771			
74		2.03								2023-17						770
75		2.02														769
76		1.02											2023-18			768
77		1.02				SW	R2				BF Limestone: wackestone; very light gray (N8); bedded with abundant undulatory interbeds (<0.1') of shale; weak (R2); slightly weathered (SW); abundant rip-up clasts; fossils and bioturbation. Below 67.9' shale interbeds decrease; clasts become dominantly fine grained bluish gray fossils. [Glen Rose Formation]			767		
78		1.02	15	5.0 5.0	100										766	
79		1.02													765	
80		1.02													764	
81		1.03				SW	R2				BF Limestone: wackestone; very light gray (N8); bedded with abundant undulatory interbeds (<0.1') of shale; weak (R2); slightly weathered (SW); abundant rip-up clasts; fossils and bioturbation. Below 67.9' shale interbeds decrease; clasts become dominantly fine grained bluish gray fossils. [Glen Rose Formation]			763		
82		2.02													762	
83		1.02	16	5.0 5.0	100										761	
84		1.03													760	
		2.08								2023-19						


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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
85		2.08	16	5.0 5.0	100							LIMESTONE: packstone; bedded with interbeds of shale (<0.1'); medium gray (N5); weak (R2); slightly weathered (SW); abundant bioturbation; fossils. Abundant undulatory (<0.1') shale interbeds; rip-up clasts from 85.2' to 87.4'. Below 87.4' clasts are oolitic. Color varies from very light gray (N8) to medium light gray (N6); High concentration of shale interbeds from 91' to 93.4' (<0.1'). Rip up clasts and burrows throughout. Abundant bioturbation from 95.5' to 97.0'. Abundant (<0.1') shale interbeds from 97.0' to 98.0'. Generally clast supported with some zones of matrix supported wackestone below 98'.		759
		5.08												758
86		5.03							2023-20					757
87		2.02	17	5.0 5.0	100									756
88		1.02												755
89		1.03												754
90		2.03												753
91		2.03							2023-21					752
92		2.02	18	5.0 5.0	100	SW	R2							751
93		1.03											Pull down pressure = 325 psi, system pressure=1500 psi	750
94		2.02										100% H2O Reurn	749	
95		1.02											748	
96		1.03											747	
97		2.02	19	5.0 5.0	100								746	
98		1.03											745	
99		2.05											745	




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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
100		2.05	19	5.0 5.0	100							LIMESTONE: packstone; bedded with interbeds of shale (<0.1'); medium gray (N5); weak (R2); slightly weathered (SW); abundant bioturbation; fossils. Oolitic zones come and go below 100'. Abundant siltstone (<0.1') interbeds from 101.		744
101		3.05												743
102		3.03												742
103		2.03	20	5.0 5.0	100									741
104		2.03							2023-23					740
105		2.03				SW	R2				BF			739
106		2.02												738
107		1												737
108		0.02	21	5.0 5.0	100									736
109		1.03							2023-24					735
110		2											734	
111												BOTTOM OF HOLE AT 110 FEET  Stopped drilling at 2:15 pm on 1/23/07	733	
112													732	
113													731	
114													730	

Project Name and Job Number TXU Comache Peak COL 1908		 WLA William Lettis & Associates, Inc.		<b>SOIL LOG Boring No. B-2024</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'06.24608"N / 97°47'29.41622"W		Total Depth 150 feet	
Drilling Contractor and Rig Palmerton and Parish / CME 55		Elevation and Datum 838.153 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 9.4 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 4	Date Started 1/22/07	
		Borehole Inclination Vertical	Logged by Strane	Date Completed 1/23/07	

Reviewed by / Date \_\_\_\_\_ 1/30/07 \_\_\_\_\_

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
0							<b>ARTIFICIAL FILL</b> LEAN CLAY medium stiff, dark yellowish brown (10YR4/6)		838
1			B-2024 1	8	6 18				837
2	CL			10 7					836
3									835
4			B-2024 2	5 34	12 13.5				834
5				50/1.5"			<b>RESIDUAL SOIL (RS)</b> LIMESTONE FRAGMENTS with silt and clay stiff to hard, yellow (10YR7/8), strong reaction to HCl		833
6									832
7			B-2024 3	3 3 8	14 18		LEAN CLAY with calcareous deposits, medium stiff, light yellow brown (2.5Y6/4), violent reaction to HCl		831
8	CL								830
9			B-2024 4	4	5 8		hard, grayish brown (2.5Y5/2)		829
9.4				50/2"				Bedrock at 9.4'	828
10									827
11									826
12									825
13									824
14									823
15									822

Project Name and Job Number TXU Comanche Peak Col 1908		 WLA William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. B-2024</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'06.24608"N / 97°47'29.41622"W		Total Depth 150 feet	
Drilling Contractor and Rig Palmerion & Parish / CME 55		Elevation and Datum 838.153 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 9.4 feet	
Casing Size and Depth 4" / 9.4 feet		Length of Core Barrel and Bit 8.7 feet	No. of Core Boxes 10	Date Started 1/22/07	
		Borehole Inclination Vertical	Logged by M. Strane	Date Completed 1/23/07	

Reviewed by / Date \_\_\_\_\_ 1/30/07 \_\_\_\_\_

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
10		1.15										LIMESTONE: micrite; Very light gray N8; medium, strong (R3); fresh (F); dry; reacts moderately to strongly to HCL [Glen Rose Formation]		828
11		1.25	1	1.0 2.9	34	F	R3				JRCO vertical slight recrystallization, 1-2mm wide			827
12		2											First run 35", to 12.8'	826
13		2.73												825
14		1.62										LIMESTONE: wackestone; Medium Gray to Medium Light Gray N6-N5; Weak(R2); Dry to Damp; Slightly Weathered (SW); Large Pyrite Clasts at top of Layer; Violent Reaction to HCL [Glen Rose Formation]		824
15		1.7	2	5.0 5.0	100	SW	R2							823
16		2.22												822
17		2.75				SW	R2					LIMESTONE: Silty Wackestone; Medium Dark Gray to Med Gray (N4-N5); Slightly weathered (SW) Dry; no reaction to HCL; Weak (R2) [Glen Rose Formation]	Gradational	821
18		3.07										LIMESTONE: shale; Medium Dark Gray (N4); Extremely Weak (R0); Slightly Weathered (SW); Damp; No Reaction to HCL [Glen Rose Formation]		820
19		2.32				SW	R0							819
20		1.95	3	5.0 5.0	100	SW	R2					LIMESTONE: wackestone with some Packstone interbeds; Medium Gray to Greenish Gray (N5-5G 6/d); Weak (R2); Slightly Weathered (SW); Slight reaction to HCL [Glen Rose Formation]		818
21		1.58												817
22		4				SW	R2					LIMESTONE: silty wackestone; Medium Dark Gray to Medium Gray (N4-N5); Slightly weathered (SW); Dry; no reaction to HCL; Weak (R2); Micrite interbeds [Glen Rose Formation]	Gradational	816
23		2.42												815
24		1.48	4	5.0 5.0	100	SW	R2					LIMESTONE: Wackestone; very light gray to Medium light gray (N6-N8); Weak (R2); Slightly Weathered (SW); Reacts moderately to HCL; Some silty interbeds and silt filled crachs; sand sized rip up clasts; a few oolites [Glen Rose Formation]		814

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2024</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
25		2.17										<p>LIMESTONE: Wackestone; very light gray to Medium light gray (N6-N8); Weak (R2); Slightly Weathered (SW); Reacts moderately to HCL; Some silty interbeds and silt filled crachs; sand sized rip up clasts; a few oolites [Glen Rose Formation]</p>		813
26		1.33	4	5.0 5.0	100				2024-8					812
27		1.8				SW	R2							811
28		2.37							2024-9					810
29		2.33												809
30		3.4	5	5.0 5.0	100									808
31		3.07				SW	R0							807
32		2.73				F-SW	R2-R3							806
33		5.47				SW	R0							805
34		5.2												804
35		2.33	6	5.0 5.0	100									803
36		3.35							2024-10					802
37		5.33				SW	R2						801	
38		3.23	7	4.8 5.0	96								800	
39		6.62											799	

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2024</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
40		3.55										LIMESTONE: wackestone with silty interbeds; Weak (R2); Slightly Weathered (SW); Dry to Damp; Strong Reaction to HCL; abundant silt filled cracks and healed fractures; below 39 feet abundantly Bioturbated; intact burrows;fossiliferous; Lignite inclusions [Glen Rose Formation]		798
41		2.5	7	4.8 5.0	96	SW	R2		2024-11					797
42		3.45										LIMESTONE: silty wackestone; grading into shale; Medium to Medium Dark Gray (N5-N4); Extremely Weak (R0); Fresh to Slightly weathered (F-SW); damp; weak reaction to HCL [Glen Rose Formation]	Gradational	796
43		3.8												795
44		3.78				F-SW	R0						794	
45		3.42	8	5.0 5.0	100							LIMESTONE: wackestone; Very Light Gray (N8); Weak (R2); Fresh (F); Dry; Moderate to Strong Reaction to HCL [Glen Rose Formation]	Gradational	793
46		3.12				F	R2		2024-12					792
47		5.1										SHALE: minor wackestone Interbeds; Medium Gray (N5); Extremely Weak (R0);fresh (F); damp; No reaction to HCL; very fine pyrite grains at ~48.2 [Glen Rose Formation]		791
48		4.12				F	R0							790
49		4.22											789	
50		1.63	9	5.0 5.0	100							LIMESTONE: wackestone; Very Light gray (N8); Weak (R2); Fresh (F); Dry; Strong reaction to HCL; wavy silt interbeds toward bottom of section; very fine to medium pyrite grains [Glen Rose Formation]		788
51		3.28				F	R2		2024-13					787
52		4.4											786	
53		2.77										SHALE: Medium dark gray to dark gray (N4-N3); Slightly Weathered (SW); Extremely weak (R0); Damp; Mediumium Reaction to HCL at top of section; no reaction at base [Glen Rose Formation]		785
54		1.8	10	5.0 5.0	100	SW	R0		2024-14					784

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2024</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
55		2.3				SW	R2					LIMESTONE: micrite with wavy silt interbeds; very light to light gray (N8-N7); Weak (R2); Slightly weathered (SW); Strong Reaction to HCL [Glen Rose Formation]	Gradational	783
56		3.77	10	5.0 5.0	100	SW	R0				SHALE: Medium Dark Gray (N4); Slightly Weathered (SW); Damp; No reaction to HCL; Extremely Weak (R0) [Glen Rose Formation]			
57		3.73										LIMESTONE: micrite; Very light gray to light gray (N8-N7); Fresh (F); Dry; Moderate to Strong reaction to HCL; bioturbation; Silty interbeds; Weak (R2); Silts no longer present at 59 feet [Glen Rose Formation]		781
58		3.23												780
59		1.85												779
60		1.68	11	5.0 5.0	100	F	R2					LIMESTONE: wackestone; Very Light Gray (N8); Weak (R2); Fresh (F); Dry; Moderate to Strong reaction to HCL; decrease in clast material at 64 feet; Increase in clastic material at 65 feet; fine Lignite layer; Increase in silt; decrease in reaction to HCL [Glen Rose Formation]	Gradational  Very little bioturbation throughout	778
61		2.2												
62		4.77								2024-15				776
63		2.23												775
64		2												774
65		0.92	12	5.0 5.0	100	F	R2					LIMESTONE: wackestone; Light gray (N7); weak (R2); Slightly weathered (SW); Dry; Strong reaction to HCL; Wavy silty interbeds [Glen Rose Formation]		773
66		0.92												
67		2.52												771
68		2.02												770
69		1.75	13	5.0 5.0	100	SW	R2			2024-17				769

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-2024</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
70		1.25										LIMESTONE: wackestone; Light gray (N7); weak (R2); Slightly weathered (SW); Dry; Strong reaction to HCL; Wavy silty interbeds [Glen Rose Formation]		768
71		1.07	13	5.0 5.0	100	SW	R2					LIMESTONE: wackestone; Very Light Gray (N8); weak (R2); Fresh (F); Dry; strong Reaction to HCL; Wavy bedding; very little silt; increased silt below 72.8 feet [Glen Rose Formation]		767
72		1.37												766
73		2.02				F	R2							765
74		1.8												764
75		2.13	14	5.0 5.0	100									763
76		1.22								2024-18		LIMESTONE: micritic wackestone; Very Light Gray (N8); Weak (R2); Fresh (F); Dry; Moderate Reaction to HCL [Glen Rose Formation]	Abrupt contact with marked increase in silt content in upper unit	762
77		2.02				F	R2							761
78		2.22												760
79		2.12												759
80		2.08	15	5.0 5.0	100							LIMESTONE: packstone; Medium Gray to Light Gray (N5-N7); weak (R2); Slightly Weathered (SW); some oolites and rip ups; Reacts slightly to HCL; some wackestone and shale interbeds [Glen Rose Formation]	Gradational	758
81		2.38								2024-19				757
82		1.5				SW	R2							756
83		1.97												755
84		1.05	16	5.0 5.0	100									754

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2024</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)	
85		1.95										LIMESTONE: packstone; Medium Gray to Light Gray (N5-N7); weak (R2); Slightly Weathered (SW); some oolites and rip ups; Reacts slightly to HCL; some wackestone and shale interbeds [Glen Rose Formation]	Shattered	753	
		1.95													
86		2.75	16	5.0 5.0	100					2024-20					752
		1.22				SW	R2								751
87															
88		5.05													750
		1.9													749
89															749
90		2.35	17	5.0 5.0	100	SW-F	R2-R3				LIMESTONE: wackestone; Light gray (N7); Weak to Medium Strong (R2-R3); Fresh to slightly weathered (F-SW); Sparse silty vugs; Dry; reacts moderately to HCL [Glen Rose Formation]				748
		2.05								2024-21					747
91						SW	R2				LIMESTONE: packstone; Medium Light Gray to Light Gray; (N6-N7); weak (R2); Slightly Weathered (SW); Damp to dry; Reacts slightly to HCL; Some muddy rip ups; grades to Wackestone [Glen Rose Formation]		746		
92		1.75											746		
93		1.72									LIMESTONE: wackestone; Medium light gray to light gray (N6-N7); Weak (R2); Slightly weathered (SW); dry to damp; some mud rich interbeds; reacts moderately to HCL [Glen Rose Formation]		745		
94		1.37								2024-22			744		
95		2.02	18	5.0 5.0	100	SW	R2						743		
96		1.48											742		
97		1.3									LIMESTONE: packstone; Medium Gray to Light Gray (N5-N7); weak (R2); Slightly Weathered (SW); Dry to Damp; some mud rich interbeds; reacts moderately to HCL [Glen Rose Formation]		741		
98		2.47				SW	R2						740		
99		1.92	19	5.0 5.0	100								739		



Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2024</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
100		2.88										LIMESTONE: wackestone; Light gray (N7); weak (R2); Slightly weathered (SW); Dry; Moderate reaction to HCL; [Glen Rose Formation]		738
101		1	19	5.0 5.0	100	SW	R2					LIMESTONE: packstone; Medium dark gray (N4); Weak (R2); Slightly to moderately weathered (SW-MW); Damp to dry; No reaction to HCL [Glen Rose Formation]	Full of dark clasts	737
102		1.37				SW- MW	R2			2024-23				736
103		2.08												735
104		2.77										LIMESTONE: wackestone; Medium light gray to light gray (N6-N7); Weak (R2); Slightly Weathered (SW); Dry to damp; some packstone rip ups; some micrite interbeds [Glen Rose Formation]		734
105		1.22	20	5.0 5.0	100					2024-24				733
106		1.03				SW	R2							732
107		1.58												731
108		2.47												730
109		1.38				SW	R2					LIMESTONE: packstone; Medium light gray (N6); Weak (R2); Slightly Weathered (SW); Dry; Moderate reaction to HCL [Glen Rose Formation]	Gradational	729
110		1.5	21	5.0 5.0	100							LIMESTONE: micrite grading to wackestone; Light olive gray to light gray (5y 5/1 1-N7); Medium strong (R3); Fresh (F); dry; silt filled vugs [Glen Rose Formation]		728
111		1.22				F	R3			2024-25				727
112		1.53												726
113		1.83	22	5.0 5.0	100	SW	R2					LIMESTONE: wackestone; micrite; Medium light gray to light gray (N6-N7); weak (R2); slightly weathered (SW); dry; some thin silty interbeds; Reacts moderately to HCL; Silty cracks; [Glen Rose Formation]		725
114		1.47												724

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2024</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
115		1.33										LIMESTONE: wackestone; micrite; Medium light gray to light gray (N6-N7); weak (R2); slightly weathered (SW); dry; some thin silty interbeds; Reacts moderately to HCL; Silty cracks; [Glen Rose Formation]		723
116		1.65	22	5.0 5.0	100					2024-26				722
117		2.22												721
118		1.07				SW	R2						5 foot run 4.1 foot recovery	720
119		1.78												719
120		2.08	23	5.0 5.0	100									718
121		4.22								2024-27				717
122		3.85				F	R0				SHALE: Dark gray (N3); extremely weak (R0); Fresh (F); Damp; fossiliferous; No reaction to HCL [Glen Rose Formation]			716
123		4.17				SW	R2				LIMESTONE: wackestone; Medium light gray to light gray (N6-N7); Weak (R2); Slightly weathered (SW); dry; strong reaction to HCL [Glen Rose Formation]		Unconformity	715
124		4				SW	R0-R2				LIMESTONE: micrite; Greenish gray to Medium light gray (5 6 6/1 - N6); Some mud interbeds; extremely weak to weak (R0-R2); Abundant fossils; Slightly weathered (SW) [Glen Rose Formation]			714
125		3.27	24	5.0 5.0	100					2024-28			713	
126		1.5				SW	R2				LIMESTONE: wackestone; Light gray (N7); Weak (R2); Slightly Weathered (SW); Dry; strong reaction to HCL [Glen Rose Formation]		712	
127		2.53											711	
128		3.33	25	4.8 5.0	96	SW	R2				LIMESTONE: packstone with Wackestone interbeds and rip ups; Medium gray to light gray (N5-N7); Weak (R2); Slightly weathered (SW); Dry; Moderate reaction to HCL; Shale Interbeds [Glen Rose Formation]		710	
129		1.1											709	


Healed fracture, 1mm aperture, horizontal, silt filled, unconformity

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2024</h2>
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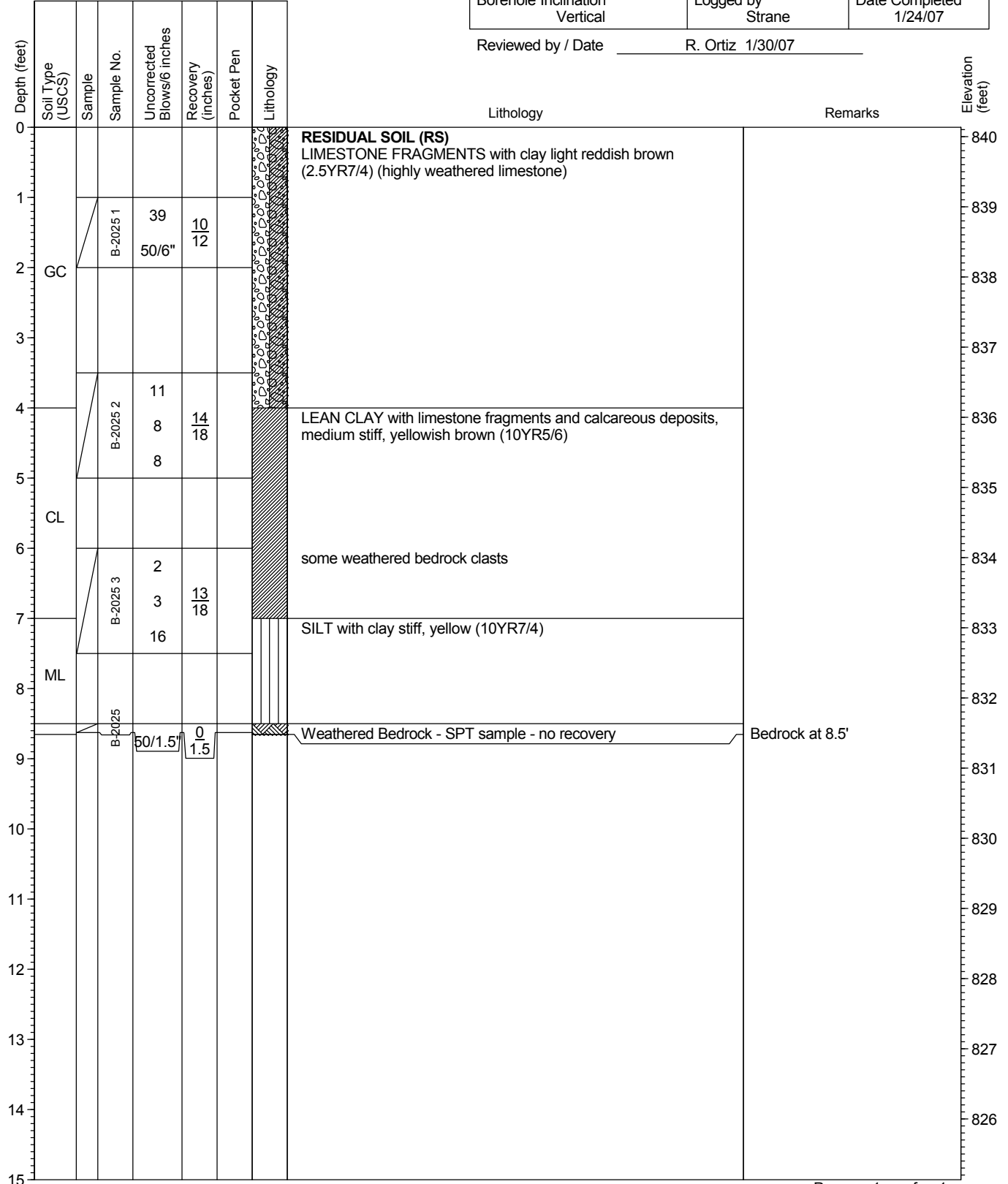
Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)		
130		2.65										LIMESTONE: packstone with Wackestone interbeds and rip ups; Medium gray to light gray (N5-N7); Weak (R2); Slightly weathered (SW); Dry; Moderate reaction to HCL; Shale Interbeds [Glen Rose Formation]		708		
		2.65														
131		1.78	25	4.8 5.0	96										707	
132		3				SW	R2								706	
133		3.12													705	
134		1.45													704	
135		1.3	26	5.0 5.0	100								LIMESTONE: wackestone; Light gray (N7); weak (R2); Slightly weathered (SW); Dry; Reacts moderately to HCL; sparse fossils; some silt laminite; Shale interbed Medium Gray (N5) [Glen Rose Formation]		703	
136		2.52														702
137		1.85														701
138		3.03				SW	R2									700
139		2.47														699
140		2.08	27	5.0 5.0	100											698
141		2.1										LIMESTONE: micritic wackestone grading to wackestone; very light gray to Medium light gray (N6-N8); Medium strong to weak (R2-R3); Slightly Weathered (SW); Dry; reacts strongly to HCL; Shale interbed [Glen Rose Formation]		697		
142		2.8													696	
143		3.75				SW	R2-R3								695	
144		3.55	28	5.0 5.0	100									Unconformity	694	

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2024</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
145		3.47										LIMESTONE: micritic wackestone grading to wackestone; very light gray to Medium light gray (N6-N8); Medium strong to weak (R2-R3); Slightly Weathered (SW); Dry; reacts strongly to HCL; Shale interbed [Glen Rose Formation]		693
146		2.37	28	5.0 5.0	100	SW	R2-R3							692
147		2.2												691
148		4.03												690
149		1.38	29	2.8 2.7	100	SW	R2						Length of recovery stretched due to mechanical breaks.	690
150		1.15							2024-33					
150											BOTTOM OF HOLE AT 150 FEET		688	
151													687	
152													686	
153													685	
154													684	
155													683	
156													682	
157													681	
158													680	
159													679	

Project Name and Job Number TXU Comache Peak COL 1908		 WLA William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-2025</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'05.73697"N / 97°47'29.93430"W		Total Depth 110 feet	
Drilling Contractor and Rig Palmerston and Parish / CME 55		Elevation and Datum 840.131 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 8.5 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 3	Date Started 1/23/07	
		Borehole Inclination Vertical	Logged by Strane	Date Completed 1/24/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 1/30/07



Project Name and Job Number TXU Comanche Peak Col 1908			<b>ROCK LOG</b> <b>Boring No. B-2025</b>		
Type and Diameter of Boring HQ / 4"			Boring Location 32°18'05.73697"N / 97°47'29.93430"W		Total Depth 110 feet
Drilling Contractor and Rig Palmerston&Parish / CME 55			Elevation and Datum 840.131 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 8.5 feet
Casing Size and Depth PVC 4" diameter / 8.5 feet			Length of Core Barrel and Bit 8.7 feet	No. of Core Boxes 7	Date Started 1/23/07
			Borehole Inclination Vertical	Logged by Strane	Date Completed 1/24/07

Reviewed by / Date \_\_\_\_\_ R. Ortiz 1/30/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)	
9		1.12				MW	R2					LIMESTONE: micritic packstone; moderate yellow ( SY 7/6); very weak (R2); moderatley weathered (MW); does not react to HCL; dry	Top of rock	831	
10		3.1	1	3.3 3.5	100	MW	R0-R1		2025-4			LIMESTONE: micrite; silty; meduim gray to light olive gray (N5 to 5Y 10/1) extremely weak to very weak (R0 to R1); dry; moderatley weathered; does not react to HCL		830	
11		2				MW	R0-R1							829	
12		1.03										bedded variable silt content creates minor intervals of calcareous mud; extensive shell fragments		828	
13		5.02												827	
14		2.43				SW-MW	R1-R2		2025-5		JT, JRC5, dissolution apparent oxidation joint surface	LIMESTONE: packstone; medium gray to medium light gray (N8, 5YR 6/1); very weak to weak (R1-R2); slightly to moderately weathered (SW-MW); strong reaction to HCL		826	
15		0.77	2	4.0 5.0	80								No Recovery: calcareous mud present at either end of missing section; section likely washed out	Sample not retrieved on initial attempt, rod pulled to recover core	825
16		0.83				N/A	NA							824	
17		1.87				SW	R2				JRC3	LIMESTONE: wackestone; very light gray to white (N8; N9); weak (R2); slightly weathered (SW); strong reaction to HCL; abundant shell fragments; increased weathering (MW)		823	
18		1.12												822	
19		1.75										LIMESTONE: packstone; medium gray to medium light gray (N5; N6); weak (R2); slightly weathered (SW); strong reaction to HCL	Graditional	821	
20		2.68	3	5.0 5.0	100	SW	R2					LIMESTONE: wackestone; medium to medium dark gray (N5; N4); weak (R2); slightly weathered (SW); strong reaction to HCL; abundant intact shells	Graditional	820	
21		4.53							2025-6					819	
22		5.08				SW	R0					SHALE: dark greenish gray (5G 4/1); extremley weak (R0); slightly weathered (SW); no reaction to HCL; damp		818	
23		4.25	4	5.2 5.0	100									817	
		0.75				SW	R2							817	

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2025</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)		
24		0.75	4	5.2 5.0	100	SW	R2					LIMESTONE: packstone; medium gray (N5); weak (R2); slightly weathered (SW); violent reaction to HCL; bioturbated with mud filled cracks; dry	Gradational Length of recovery stretched due to mechanical breaks.	816		
25		1.37				SW-MW	R1-R2							LIMESTONE: wackestone; white to very light gray (N9; N8); slightly to moderately weathered (SW to MW); violent reaction to HCL; abundant large shell fragments and mud filled cracks; weak to very weak (R1; R2); dry	815	
26		1.17				SW	R2			2025-7				LIMESTONE: wackestone; very light gray (N8); slightly weathered (SW); violent reaction to HCL; weak (R2); dry	814	
27		0.98									LIMESTONE: packstone; light gray (N7); moderately weathered (MW); violent reaction to HCL; bioturbated; abundant rip up clasts throughout; very weak (R1); dry	813				
28		2.45	5	5.0 5.0	100	MW	R1					LIMESTONE: packstone; very light gray (N8); slightly weathered (SW); weak (R2); strong reaction to HCL; dry to damp; shale interbeds begin at 32.9'; max thickness .1'; bioturbated and wavy mud filled cracks throughout		812		
29		1.77								2025-8						811
30		0.85														810
31		1.2	6	5.0 5.0	100	SW	R2							809		
32		1.42														808
33		1.42								2025-9						807
34		3.28	7	4.7 5.0	100	SW	R0					SHALE: dark greenish gray (56 4/1); slightly weathered (SW); extremely weak (R0); no reaction to HCL; with interbedded wackestone; white to very light gray (N9; N8); fresh to slightly weathered (F; SW); weak (R2); strong reaction to HCL; damp		806		
35		2.13														805
36		2.98														804
37		7.1	7	4.7 5.0	100	SW	R1-R2							803		
38		1.08														802
		1.77														

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2025</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
39		1.77										LIMESTONE: wackestone; white to very light gray (N9; N8); fresh to slightly weathered (F-SW); very weak to weak (R1-R2); strong reaction to HCL; dry; lignite present at 38.8'; 0.02'; thick; increased bioturbation and shell fragments at 40.4'; lignite at 42.3'; shale interbed at 42.5'		801
40		2	7	4.7 5.0	100	F-SW	R1-R2							800
41		2.68								2025-10				799
42		1.58										Shale interbed		798
43		1.77										LIMESTONE: wackestone; very light gray (N8); slightly weathered to moderately weathered (SW-MW); substantial shell fragments and mud filled cracks; bioturbated; increased silt content near gradational contact; darkens to medium gray (N5); weak (R2); strong reaction to HCL; decreases towards contact; dry	Gradational	797
44		1.87	8	5.0 5.0	100	SW-MW	R2					SHALE: dark gray (N3); slightly weathered (SW); extremely weak (R0); no reaction to HCL; damp		796
45		5.22								2025-11				795
46		5.62				SW	R0						Run stopped short by .2', compensated on following run	794
47		6.32												793
48		2.63				F-SW	R2			2025-12		LIMESTONE: wackestone; very light gray (N8); fresh to slightly weathred (F-SW); weak (R2); strong reaction to HCL; weathering more pronounced at upper contact; silt filled cracks increase towards lower contact; dry	Gradational	792
49		2.98	9	5.0 5.0	100							SHALE with wackestone interbeds; medium to meduim dark gray (N5; N4); slightly weathered (SW); shale is extremely weak (R0); wackestone interbeds weak (R2); shale no reaction to HCL; wackestone interbeds strong reaction to HCL; damp		791
50		3.12				SW	R0							790
51		3.75												789
52		1.82										LIMESTONE: wackestone; very light gray (N8); slightly weathred (SW); weak (R2); strong reaction to HCL; bioturbation; wavy; mud filled; cracks up to 0.1' thick; contact with underlying shale; abrupt and irregular; strong reaction to HCL		788
53		1.98	10	5.0 5.0	100	SW	R2							787



Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2025</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
54		1.98				SW	R2							786
55		3.2										SHALE: dark gray (N3); slightly weathered (SW); extremely weak (R0); fine interbeds of micrite (1-2 mm); no reaction to HCL; abundant rip up clasts up to 1cm length; damp	785	
56		2.82	10	5.0 5.0	100	SW	R0						784	
57		4.08									2025-13		783	
58		3.03				SW	R2				2025-14	LIMESTONE: wackestone; very light grey (N8); slightly weathered (SW); weak (R2); strong reaction to HCL; bioturbated; abundant mud-filled cracks; dry	782	
59		5.1				SW	R0					SHALE: medium dark gray (N4); slightly weathered (SW); extremely weak (R0); no reaction to HCL; damp	781	
60		2.72	11	5.0 5.0	100	SW	R0					LIMESTONE: wackestone; very light gray to light gray (N8-N7); fresh to slightly weathered (F-SW); dry; weathering increases with depth; weak (R2); strong reaction to HCL; bioturbated; mudfilled cracks; thin lignite at 60.3'; occasional silty interbeds about 0.5'cm thick; marked decrease in shell fragments between 62.3' to 63.3'; rock is fresh (F) to 63.3 slightly weathered (SW) below; bedding is very fine and wavy throughout; several wavy mud filled cracks between 67.5' to 68.3'; minor bioturbation (burrows) in same interval; slightly increased weathering from 68.3' to 69.2'; increased silt between 70.2' to 70.6'; rip up clasts about .2cm at 70.4'; abrupt weathering change at 71.7' rock between 71.7' and 72.2' is never fresh; weathering change marked by wavy contact and increased silt directly above contact; with return to slightly weathered at 72.2'; prevasive wavy; mud-filled cracks throughou	780	
61		1.53											779	
62		2.13				F-SW	R2						778	
63		1.87											777	
64		1.03											776	
65		0.8	12	5.0 5.0	100								775	
66		0.78				SW	R2				2025-15		774	
67		0.95											773	
68		2.08	13	5.0 5.0	100								772	
		1.05												

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2025</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
69		1.05										LIMESTONE: wackestone; very light gray to light gray (N8-N7); fresh to slightly weathered (F-SW); dry; weathering increases with depth; weak (R2); strong reaction to HCL; bioturbated; mudfilled cracks; thin lignite at 60.3'; occasional silty interbeds about 0.5'cm thick; marked decrease in shell fragments between 62.3' to 63.3'; rock is fresh (F) to 63.3 slightly weathered (SW) below; bedding is very fine and wavy throughout; several wavy mud filled cracks between 67.5' to 68.3'; minor bioturbation (burrows) in same interval; slightly increased weathering from 68.3' to 69.2'; increased silt between 70.2' to 70.6'; rip up clasts about .2cm at 70.4'; abrupt weathering charge at 71.7' rock between 71.7' and 72.2' is never fresh; weathering change marked by wavy contact and increased silt directly above contact; with return to slightly weathered at 72.2'; prevasive wavy; mud-filled cracks throughou		771
70		1.53							2025-16					770
71		0.95	13	5.0 5.0	100									769
72		1.78												768
73		1.35									Be, with filled cracks penetrating downward from contact			767
74		1.3							2025-17					766
75		0.75	14	5.0 5.0	100									765
76		0.78				F-SW	R2							764
77		1.15												763
78		2.22												762
79		1.27											761	
80		0.82	15	5.0 5.0	100								760	
81		0.97											759	
82		1.62							2025-18				758	
83		2.07	16	5.0 5.0	100								757	
		1.68												

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-2025</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
84		1.68				F-SW	R2							756
85		1.38	16	5.0 5.0	100							LIMESTONE: packstone; very light to light gray (N8; N7); fresh to slightly weathered (F-SW); dry; weak (R2); strong reaction to HCL; extensive bioturbation to 85.5'; minor wavy silt filled cracks between 86.2' and 86.7'		755
		1.53												
86		1.05				SW	R2							753
87		0.75												
88		0.92												751
89		0.85	17	5.1 5.0	100									
90		0.87										LIMESTONE: packstone; very light to light gray (N8; N7); fresh to slightly weathered (F-SW); dry; weak (R2); strong reaction to HCL; minor wavy silt filled cracks from 87.5' to 89.7'; decreased shell fragments from 89.7' to 90.4. rock is fresher over 92.7' to 93.4' interval; shale interbeds from 91.3' to 91.6'; bioturbation 92.4' to 92.8'	Length of recovery stretched due to mechanical breaks.	749
91		1.43												
92		2.5				SW	R2						Drill rate missed whilst addressing wastewater pit overflow	747
93		0.68	18	5.0 5.0	100									
94		1												745
95		1.33												
96		2.2												743
97		1.47	19	5.0 5.0	100									

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908




**ROCK LOG**  
**Boring No. B-2025**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)	
99	[Lithology Column]	1.47	19	5.0 5.0	100	SW	R2/R2					LIMESTONE: packstone; very light to light gray (N8; N7); fresh to slightly weathered (F-SW); dry; weak (R2); strong reaction to HCL; minor wavy silt filled cracks from 87.5' to 89.7'; decreased shell fragments from 89.7' to 90.4. rocl is fresher over 92.7' to 93.4' interval; shale interbeds from 91.3' to 91.6'; bioturbation 92.4' to 92.8'		741	
100		1.08												2025-22	740
101		1.48												739	
102		1.17	738												
103		1.45	737												
104		1.58	20	5.0 5.0	100	2025-23	736								
105		1.55	F-SW	R2	735										
106		0.98	F-SW	R2	734										
107		2.1	LIMESTONE: micrite; light olive gray to very light gray (SY 6/1) to (N8); fresh to slightly weathered (F-SW); dry strong reaction to HCL; large rip clasts up to 5 cm long and 1.5cm thick of packstone	733											
108		1.4	21	3.0 3.0	100	SW	R2	2025-24	LIMESTONE: packstone; very light gray (N8); slightly weathered (SW); dry; weak (R2); strong reaction to HCL; packstone rip up clasts present from 107.4' to 107.9'	732					
109	0.83	731													
110										BOTTOM OF HOLE AT 110 FEET	Bottom of bore hole	730			
111													729		
112													728		
113													727		

Project Name and Job Number TXU Comache Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-2026</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'04.80417"N / 97°47'28.85847"W		Total Depth 149 feet	
Drilling Contractor and Rig Richard Simmons Drilling / BK-81HD		Elevation and Datum 833.493 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 8.8 feet	
Sampling Method SPT		Sample Driving Hammer/Drop R&C / 140 lbs / 30 inches	No. of Samples 3	Date Started 1/11/07	
		Borehole Inclination Vertical	Logged by Dee/Oshun	Date Completed 1/13/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 1/15/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0								ARTIFICIAL FILL (Qaf) CLAYEY SAND with limestone fragments medium dense, dark reddish brown (5YR3/4), damp		833
1	SC		B-2026 1	9	13/18					832
2				8						831
3				2						830
4			B-2026 2	5	15/18			LEAN CLAY with limestone fragments medium stiff, yellowish brown (10YR5/8)		829
5				5						828
6	CL		B-2026 3	8	15/18			brownish yellow (10YR6/6), damp, with calcareous deposits, increasing limestone gravel content		827
7				5				olive brown (2.5Y4/4), occasional limestone fragments		826
8			B-2026	50/2"	2/2			Weathered bedrock		825
9								augered to 10.0'	Bedrock at 8.8' Augered through weathered bedrock to 10'	824
10										823
11										822
12										821
13										820
14										819
15										818

Project Name and Job Number TXU Comanche Peak Col 1908			<h1 style="margin: 0;">ROCK LOG</h1> <h2 style="margin: 0;">Boring No. B-2026</h2>
Type and Diameter of Boring HQ / 4"	Boring Location 32°18'04.80417"N / 97°47'28.85847"W		
Drilling Contractor and Rig Richard Simmons / BK-81	Elevation and Datum 833.493 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 8.8 feet
Casing Size and Depth PVC 4"	Length of Core Barrel and Bit 7.5 feet	No. of Core Boxes 10	Date Started 1/11/07
	Borehole Inclination Vertical	Logged by J. Oshun	Date Completed 1/13/07

Reviewed by / Date \_\_\_\_\_ R. Ortiz 1/15/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
9												WEATHERED BEDROCK		824
10		1.32				MW	R4				JRC	LIMESTONE: packstone; yellowish gray (5Y 7/2); strong (R4); moderately weathered (MW); fossils; moderate HCL reaction; fractured. [Glen Rose Formation]		823
11		1.58									2026-4	LIMESTONE: wackestone; with silt; medium gray (N5); little to no HCL reaction; weak (R2); slightly weathered; silt filled with bioturbation; increasing shale content. [Glen Rose Formation]		822
12		2.6	1	4.8 5.0	84	SW	R2							821
13		1.82												820
14		2.8												819
15		2.33				MW	R0					SHALE: medium dark gray with green (N4); extremely weak (MW); moderately weathered (R0); no reaction; fossils. [Glen Rose Formation]		818
16		2.65										LIMESTONE: wackestone; light gray (N3); weak (R3); shale interbeds; moderate HCL reaction; slightly weathered (SW); fossiliferous; shale/silt filled bioturbation. [Glen Rose Formation]		817
17		1.1	2	5.0 5.0	100	SW	R2							816
18		1.73												815
19		1.83												814
20		1.77									JRC4	LIMESTONE: packstone; medium light gray (N6); rip-up clasts; shale/silt interbeds between 21'-22.7'; little to no HCL reaction; slightly weathered (SW); weak (R2). [Glen Rose Formation]		813
21		1.92										shale/silt interbeds [Glen Rose Formation]		812
22		1.22	3	5.0 5.0	96	SW	R2							811
23		1.17										LIMESTONE: wackestone; medium light gray (N6); weak (R2); minor shale interbeds; strong reaction to HCL; slightly weathered (SW) [Glen Rose Formation]		810

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2026</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
24		1.32	3	5.0 5.0	96	SW	R2		2026-6			LIMESTONE: wackestone; medium light gray (N6); weak (R2); minor shale interbeds; strong reaction to HCL; slightly weathered (SW) [Glen Rose Formation]		809
25		1.1										LIMESTONE: packstone; abundant shells; medium light gray (N6); weak to medium strong (R2-R3); slightly weathered (SW); rip-up clasts; shale interbed 26.9'-27.2' and 27.4'-27.6'. [Glen Rose Formation]		808
26		1.85												807
27		2.43	4	5.2 5.0	100	SW	R2-R3		2026-7					806
28		1.4											Length of recovery stretched due to mechanical breaks.	805
29		1.8					R1					SHALE: medium dark gray; very weak (R1); abundant wackestone beds; no HCL reaction. [Glen Rose Formation]		804
30		3.02										LIMESTONE: silty wackestone; medium light gray; little to no HCL reaction; medium strong (R3); slightly weathered (SW); shale bed from 30.4-30.7; abundant fossils; abundant shale/silt filled veins; fractured shale bed from 33.0-33.5 with rip-up clasts; shale interbeds from 36.1-36.4 and 36.7-37.0; intermittent <0.1' shale interbeds throughout. [Glen Rose Formation]		803
31		3.83								JRC6				802
32		1.17	5	5.0 5.0	96	SW	R3							801
33		1.57												800
34		2.05							2026-8					799
35		2.8												798
36		2.33							2026-9					797
37		3.57	6	5.0 5.0	100	F	R0							796
38		3.25										SHALE: medium dark gray (N4); fresh (F); extremely weak (R0); very thinly bedded; no reaction to HCL. [Glen Rose Formation]		795

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-2026**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
39		4.83	6	5.0 5.0	100	F	R0					SHALE: medium dark gray (N4); fresh (F); extremely weak (R0); very thinly bedded; no reaction to HCL. [Glen Rose Formation]		794
40		2.5												793
41		2.32				F	R0							792
42		4.23	7	5.0 5.0	100	SW	R2					LIMESTONE: wackestone; light gray (N7); slightly weathered (SW); weak (R2); strong reaction to HCL; fossils. [Glen Rose Formation]		791
43		2.97										SHALE: medium dark gray (N4); fresh (F); extremely weak (R0); very thinly bedded; minor reaction to HCL; interbed of limestone (wackestone) from 44.1'-44.4'. [Glen Rose Formation]		790
44		4.1				F	R0			2026-10		Wackestone		789
45		2.25												788
46		1.62								2026-11		LIMESTONE: wackestone; light gray (N7); slightly weathered (SW); weak (R2); reacts strongly to HCL; abundant (<0.1') interbeds of shale; clasts medium grained; blue. [Glen Rose Formation]		787
47		1.6	8	5.0 5.0	99.1	SW	R2							786
48		1.93												785
49		2.1				F	R0				JT	SHALE: medium dark gray (N4); fresh (F); extremely weak (R0); very thinly bedded; reacts moderately to HCL. [Glen Rose Formation]		784
50		2.85												783
51		2.17				SW	R2					LIMESTONE: wackestone; medium light gray (N6); slightly weathered (SW); weak (R2); abundant interbeds of shale. [Glen Rose Formation]		782
52		2.77	9	5.0 5.0	100							SHALE: medium dark gray (N7); slightly weathered (SW); extremely weak (R0); very thinly bedded; reacts moderately to HCL. [Glen Rose Formation]		781
53		1.83					R2			2026-12				780



Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-2026</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
54		2.18	9	5.0 5.0	100							LIMESTONE: wackestone; medium light gray (N6); slightly weathered (SW); extremely weak (R2); abundant undulatory interbeds of shale; zones of increased clast component; sometimes clast supported (packstone); abundant interbeds of shale; rip-up clasts; burrows and other bioturbation. [Glen Rose Formation]		779
55		1.68												778
56		1.23												777
57		2.1	10	5.0 5.0	100	SW	R2			2026-12				776
58		1.93												775
59		1.83												774
60		1.77												773
61		1.5												772
62		2.17	11	5.0 5.0	100	SW	R1					SHALE: with abundant limestone; medium gray (N4); rip-up clasts; slightly weathered (SW); very weak (R1); very thinly bedded; cross beds. [Glen Rose Formation]		771
63		1.8								2026-13				770
64		2.07										LIMESTONE: packstone; medium light gray (N6); fresh (F); weak (R2); abundant interbeds of shale; blue medium grained clasts at 75%; clast percentage varies from 50% wackestone to 75% packstone; high concentration of <0.01' shale interbeds and rip-up clasts from 66.0'-67.1' and 68.8' to 70.0'. [Glen Rose Formation]		769
65		1.5												768
66		1.22				F	R2							767
67		1.2	12	5.0 5.0	100									766
68		1.02								2026-14				765
										2026-15				

Project Name and Job Number  
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**ROCK LOG**  
**Boring No. B-2026**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
69		1	12	5.0 5.0	100	F	R2							764
70		1.67												763
71		2.18												762
72														762
73		1.25	13	5.0 5.0	100	F	R2						abundant bioturbation	761
74		1.72								2026-16				760
75		2.12												759
76		2.17												758
77		2.58								2026-17			LIMESTONE: packstone; same as above; abundant interbeds of shale and rip-up clasts from 75.0'-77.1'; abundant bioturbation throughout; abundant shale interbeds from 80.0'-81.4'; 81.7'-83.4'; 84.1'-84.8'; abundant shale filled bioturbations; shale interbed ~84.5'-85.0 ft. [Glen Rose Formation]	757
78		1.27	14	5.0 5.0	100	F	R2							756
79		1.18												755
80		1.43												754
81		1.33												753
82		1.5	15	5.0 5.0	100	F	R2							752
83		2.67												751
		1.88												750

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2026</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
84		2.02	15	5.0 5.0	100	F	R2							749
85		1.23					R2-R3			2026-18		LIMESTONE: wackestone; light gray (N7); weak to medium strong (R2-R3); shale filled bioturbation; very strong HCL reaction. [Glen Rose Formation]		748
86		1.18												747
87		2.02	16	5.0 5.0	100	SW						LIMESTONE: packstone; medium light gray (N6); weak (R2); abundant shale interbeds; abundant silt filled bioturbations; very strong HCL reaction; silt bioturbation; brownish black coal seams at 91.2'; R2; SW [Glen Rose Formation]		746
88		1.48					R2			2026-19				745
89		1.23												744
90		1.3												743
91		2.37										brownish black coal seams		742
92		2.32	17	5.0 5.0	100	SW	R2			2026-20	JRC6, bedding fracture	LIMESTONE: micrite; bed at upper boundary of fracture; bioturbation and silt beds increase with depth; abundant fossils. [Glen Rose Formation]		741
93		1.32										LIMESTONE: packstone; medium light gray (N6); weak (R2); abundant shale interbeds; abundant silt filled bioturbations; very strong HCL reaction; silt bioturbation; shale interbeds. [Glen Rose Formation]		740
94		1.65												739
95		1.23												738
96		2.67	18	5.0 5.0	100	F	R2-R3					LIMESTONE: wackestone; light olive gray (5 Y 6/1); weak to medium strong (R2-R3); fresh (F); strong reaction to HCL. [Glen Rose Formation]		737
97		1.85												736
98		1.82				SW	R2			2026-21		LIMESTONE: packstone with shale; weak (R2); violent HCL reaction; slightly weathered (SW); abundant rip-up clasts; silt-filled bioturbations; gradational basal contact. [Glen Rose Formation]		735

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2026</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
99		2.15	18	5.0 5.0	100							LIMESTONE: packstone with shale; weak (R2); violent HCL reaction; slightly weathered (SW); abundant rip-up clasts; silt-filled bioturbations; gradational basal contact.. [Glen Rose Formation]		734
100		1.22				SW	R2							733
101		1.17												732
102		1.5	19	5.0 5.0	100							LIMESTONE: wackestone; light to medium light gray (N7-N6); fresh (F); weak to medium strong (R2-R3); packstone rip-up clasts. [Glen Rose Formation]	Gradational contact.	731
103		1.27				F	R2-R3			2026-22				730
104		1.47												729
105		1.3				SW	R2					LIMESTONE: packstone; same as above. [Glen Rose Formation]		728
106		1.67										LIMESTONE: packstone; light gray (N7); medium strong (R3); fresh (F); shale interbeds from 108.6'-110'; packstone crossbed at 107.9'; very strong HCL reaction. [Glen Rose Formation]		727
107		1.25	20	5.0 5.0	100									726
108		1.82				F	R3					crossbed		725
109		1.47								2026-23				724
110		1.17										LIMESTONE: wackestone; same as above; medium light gray (N6); shaly matrix; weak (R2); slightly weathered (SW); strong HCl reaction; abundant shale beds and silt filled bioturbations; shaly wackestone with wackestone rip-up clasts below 115'; coal seam and fossil bed ~117.4'-117.7'. [Glen Rose Formation]		723
111		2.98												722
112		2.52	21	5.1 5.0	100	SW	R2							721
113		1.87											Length of recovery stretched due to mechanical	720

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
114		1.82	21	5.1 5.0	100	SW	R2		2026-24			LIMESTONE: wackestone; same as above; medium light gray (N6); shaly matrix; weak (R2); slightly weathered (SW); strong HCl reaction; abundant shale beds and silt filled bioturbations; shaly wackestone with wackestone rip-up clasts below 115'; coal seam and fossil bed ~117.4'-117.7'. [Glen Rose Formation]	breaks.	719
115		2.17										shaly wackestone with wackestone rip-up clasts below 115		718
116		1.82				SW	R2		2026-5					717
117		1.7	22	5.2 5.0	100							coal seam and fossil bed		716
118		2.18				SW	R0		2026-25			SHALE: mudstone; medium dark gray (N4); slightly weathered (SW); extremely weak (R0); low HCL reaction. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	715
119		3.77									JRC6, shale bed			714
120		3.83				F	R1					LIMESTONE: wackestone interbed; light gray (N7); medium strong (R3); violent HCL reaction; fresh(F). [Glen Rose Formation]		713
121		4.15				SW	R1					SHALE: mudstone; same as above; rip-up clasts of wackestone; dark greenish gray (5G 4/1); very weak (R1); interbedded wackestone. [Glen Rose Formation]		712
122		2.17	23	5.0 5.0	100							LIMESTONE: shaly wackestone; weak (R2); very strong HCl reaction; rip-up clasts; silt bioturbations; medium light gray (N6); with finely bedded shale 123'-125'; increasing shale interbeds; shaly matrix; and shale/silt filled bioturbations with depth.		711
123		2.33				SW	R2		2026-26			finely bedded shale		710
124		2.75												709
125		3.05									JRC7, shale interbed			708
126		3.68												707
127		2.92	24	5.0 5.0	100	SW	R2		2026-27					706
128		2.27												705

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-2026</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
129		2.32	24	5.0 5.0	100	SW	R2							704
130		2.03										LIMESTONE: wackestone; same as above; abundant shale beds with rip-up clasts 130'-131'; medium gray (N5) to dark gray (N6); silt filled bioturbations; weak (R2); slightly weathered (SW); shale interbeds thinly spaces 131'-135'. [Glen Rose Formation]		703
131		1.27											abundant shale beds	702
132		1.87	25	5.0 5.0	100	SW	R2							701
133		1.33												700
134		1.6												699
135		2.77										abundant shale interbeds		698
136		3.83												697
137		2.1	26	4.7 5.0	94	SW	R2					abundant silt-filled bioturbations		696
138		2.42												695
139		2.6										abundant silt-filled bioturbations		694
140		2.1											Inner core barrel stuck. Core stuck inside. Many mechanical breaks due to difficulty of extraction.	694
141		3.9										LIMESTONE: wackestone; same as above; medium gray (N5) to dark gray (N6); silt filled bioturbations; weak (R2); slightly weathered (SW) [Glen Rose Formation]		693
142		3.77	27	5.0 5.0	100	SW	R2							692
143		2.82												691
														690

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-2026</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
144		2.27	27	5.0 5.0	100	SW	R2					LIMESTONE: wackestone; same as above; abundant shale beds with rip-up clasts 130'-131'; medium gray (N5) to dark gray (N6); silt filled bioturbations; weak (R2); slightly weathered (SW); shale interbeds thinly spaces 131'-135'. [Glen Rose Formation]		689
145		2.17										LIMESTONE: wackestone; same as above; medium gray (N5) to dark gray (N6); silt filled bioturbations; weak (R2); slightly weathered (SW) [Glen Rose Formation]		688
146		2.33												687
147			28	4.0 4.0	80	SW	R2							686
148		4.93										grading toward packstone		685
149														684
150												BOTTOM OF HOLE AT 149 FEET		683
151														682
152														681
153														680
154														679
155														678
156														677
157														676
158														675

Project Name and Job Number TXU Comache Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-2027</b>	
Type and Diameter of Boring HSA / 7"			Boring Location 32°18'08.26494"N / 97°47'26.33985"W		Total Depth 75 feet
Drilling Contractor and Rig TEXPLOR / CME 55			Elevation and Datum 826.998 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 13.8 feet
Sampling Method SPT			Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 6	Date Started 1/10/07
			Borehole Inclination Vertical	Logged by G. VanEitten	Date Completed 1/10/07

Reviewed by / Date \_\_\_\_\_ R. Ortiz 1/15/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0								<b>ARTIFICIAL FILL (Qaf)</b> SANDY LEAN CLAY with subangular limestone fragments stiff, pale yellow (5Y8/3), dry		826
1	CL		B-2027 1	5	11.5/18	2				825
2				5						824
3				4						824
4			B-2027 2	3	16/15	2		<b>RESIDUAL SOIL (RS)</b> SANDY LEAN CLAY with small limestone gravel very stiff, pale yellow (5Y7/3), dry		823
5				9						822
6				50/3"						821
7			B-2027 3	11	16/18	3.5		olive brown (2.5Y4/4), slightly moist to damp		820
8				8						819
9	CL		B-2027 4	10	18/18	3.5		light olive brown (2.5Y5/6), slightly damp, few calcareous deposits		818
10				4						817
11			B-2027 5	7	18/18	4.51		hard, olive yellow (2.5Y6/8), dry		816
12				11						815
13				12						814
14			B-2027 6	13	18/18	4.51		light olive brown (2.5Y5/4)		813
15				19				Top of Bedrock at 13.8' Augered to 14.0' to set casing.	Bedrock at 13.8'	812



Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.	<b>ROCK LOG Boring No. B-2027</b>	
Type and Diameter of Boring HQ / 4"			Boring Location 32°18'08.26494"N / 97°47'26.33985"W	
Drilling Contractor and Rig TEXPLOR / CME 75		Elevation and Datum 826.998 feet NAVD88	Ground Water Depth DRY	Total Depth 75 feet
Casing Size and Depth PVC 4" diameter / 14 feet		Length of Core Barrel and Bit 7.95 feet	No. of Core Boxes 4	Date Started 1/10/07
		Borehole Inclination Vertical	Logged by Van Etten	Date Completed 1/10/07

Reviewed by / Date \_\_\_\_\_ R. Ortiz 1/15/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
14		1.42	1	<u>2.1</u> 2.0	40	SW	R2					LIMESTONE: sparite; grayish orange pink (5YR 7/2); thin to slightly layered; slightly weathered (SW); weak (R2) [Glen Rose Formation]		813
15		0.9		<u>4.2</u> 5.0	100	SW	R2			2027-7		LIMESTONE: packstone; yellow gray (5Y 7/2); thin to slightly layered; slightly weathered (SW); weak (R2) [Glen Rose Formation]	Good water return	812
16		1.05	2									LIMESTONE: packstone; yellowish gray (5Y 7/2); slightly layered; slightly weathered (SW); weak (R2); more rip up clasts in packstone; changes to weak (R2) at ~18 feet; weathering profile changes downward to fresh with color; medium light gray (N6) [Glen Rose Formation]		811
17		1.17												810
18		1.52												809
19		1.22												808
20		3.08	3	<u>3.8</u> 4.0	95	F	R0-R2					LIMESTONE: sparry wackestone; medium light gray (N6); shale is thinly bedded and wavy; R0-R2 [Glen Rose Formation]		806
21		1.6												805
22		1.7						R0				SHALE: medium dark (N4); very thin layers; extremely weak (R0); fresh (F) [Glen Rose Formation]		804
23		2	4	<u>1.0</u> 1.0	100	F	R1-R2					LIMESTONE: sparry wackestone; medium light gray (N6); shale interbeds; thin wavy layers; fresh (F); very weak to weak R1-R2 [Glen Rose Formation]		803
24		3.75												802
25		1.27	5	<u>5.0</u> 5.0	100	F								801
26		1.43												800
27		1.5												799
28		1.5												799

Project Name and Job Number  
 TXU Comanche Peak Col  
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**ROCK LOG**  
**Boring No. B-2027**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
29		1.57	5	5.0 5.0	100	F	R1-R2					LIMESTONE: sparry wackestone; medium light gray (N6); shale interbeds; thin wavy layers; fresh (F); very weak to weak R1-R2 [Glen Rose Formation]	Good water return	798
30		1.33					R2			LIMESTONE: sparry wackestone; medium light gray (N6); shale interbeds; thin wavy layers; fresh (F); weak (R2) [Glen Rose Formation] shale interbeds	797			
31		1.13									796			
32		1.6	6	4.7 5.0	94	F	R2					SHALE: medium dark gray (N4); massive with incipient fractured; fresh (F); weak to very weak (R2-R1) [Glen Rose Formation]	795	
33		3.73					R1-R2				794			
34		5.63									793			
35		5.27											792	
36		1.5	7	5.0 5.0	100	F	R2					LIMESTONE: sparry packstone; medium to light gray (N6); weak (R2); fresh (F) [Glen Rose Formation]		791
37		5.75									2027-11	SHALE: medium dark gray (N4); (0.01' to 0.1') interbedded layers of limestone; fresh (F); very weak (R1) [Glen Rose Formation]		790
38		5.25					R1				2027-12			789
39		3.5											788	
40		3.75	8	5.1 5.0	100	F	R2					LIMESTONE: packstone; medium gray (N5); wavy shale interbeds; fresh (F); weak (R2) [Glen Rose Formation]		787
41		1.5										786		
42		2.18									2027-13			785
43		4.32				F	R1				SHALE: medium dark gray (N4); massive with many incipient fractures; fresh (F); no reaction to HCL [Glen Rose Formation]		784	

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 TXU Comanche Peak Col  
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**ROCK LOG**  
**Boring No. B-2027**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
44		3	8	5.1	100	F	R2					LIMESTONE: packstone; medium light gray (N6); wavy interbeds of shale; fresh (F); weak (R2) [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks. Good water return	783
45		2		5.0		F								782
46		3	9	4.6	98	F	R0					SHALE: medium dark gray (N4); massive; fresh (F); extremely weak (R0) [Glen Rose Formation]		781
47		3.65												5.0
48		2	10	4.6	98	F	R2					LIMESTONE: packstone; medium light gray (N6); wavy shale layers of (0.01' to 0.1') thick; weak (R2); fresh (F); fossiliferous; packstone has many rip up clasts; less shale interbeds (below 51.5') [Glen Rose Formation]		779
49		2												5.0
50		3.33	11	4.8	96	F	R2							777
51		1.25												5.0
52		1.33	10	4.6	98	F	R2							775
53		1.42												5.0
54		1.08	11	4.8	96	F	R2							773
55		1.17												5.0
56		1.17	11	4.8	96	F	R2							771
57		1.08												5.0
58		1.43												769

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-2027**


Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
59														768
60		1.25	11	4.8 5.0	96	F	R2						Good water return	767
61		1.17												766
62		1.48												765
63		1.63												764
64		1.33	12	5.0 5.0	100	F	R2							763
65		1.08												762
66		0.97												761
67		0.97												760
68		0.92												759
69		0.8	13	4.6 5.0	98	F	R2							758
70		0.75												757
71		2.25												756
72		0.72												755
73		0.77	14	4.1 4.0	82	F	R2							754
		1.2												

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**ROCK LOG**  
**Boring No. B-2027**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
74		1.03	14	$\frac{4.1}{4.0}$	82	F	R2							753
75												BOTTOM OF HOLE AT 75 FEET	End of hole	752
76														751
77														750
78														749
79														748
80														747
81														746
82														745
83														744
84														743
85														742
86														741
87														740
88														739




Project Name and Job Number TXU Comache Peak COL 1908		 WLA William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-2028</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'06.56476"N / 97°47'26.04534"W		Total Depth 75.5 feet	
Drilling Contractor and Rig TEXPLOR / CME 55		Elevation and Datum 823.736 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 41.5 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 17	Date Started 1/11/07	
		Borehole Inclination Vertical	Logged by G. VanEtten	Date Completed 1/12/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 1/15/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0										823
0 - 1	ML							ARTIFICIAL FILL (Qaf)		
								SILT with sand medium stiff, yellow (2.5Y7/6), dry to damp		
1 - 2			B-2028 1	6						822
				28	18/18	3		SILT with gravel and sand hard, pale brown (10YR6/3), dry		
				33						821
2 - 3										
3 - 4										820
4 - 5	ML		B-2028 2	18				very stiff		
				8	15/18					819
				7						818
5 - 6										
6 - 7			B-2028 3	4						817
				4	16/18	4				816
				7				LEAN CLAY with sand stiff, black (10YR2/7) to gray (10YR5/1), dry		
7 - 8										815
8 - 9										814
9 - 10			B-2028 4	3						
				3	14/18	1.5				813
				4						812
10 - 11	CL									
11 - 12			B-2028 5	2				becomes more silty		811
				2	16/18					810
				2						809
13 - 14										
14 - 15	GP-GC		B-2028 6	42				CLAYEY GRAVEL hard, gray (5Y5/4), dry, (limestone fragments)		809
				8	12/18					
	CL			2				LEAN CLAY with sand and limestone fragments soft, gray (5Y5/4) dry, 20% gravel		809

Project Name and Job Number TXU Comache Peak COL 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">SOIL LOG</h2> <h2 style="margin: 0;">Boring No. B-2028</h2>
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Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)	
15	CL		B-2028 7	4	11/12		LEAN CLAY with sand and limestone fragments soft, gray (5Y5/4) dry, 20% gravel <i>(Continued from previous page)</i>		808	
16				3					807	
17	GM		B-2028 8	20/0"			LIMESTONE FRAGMENTS medium dense, pale yellow (2.5Y7/3), dry		806	
18				9	2/18				805	
19				11					804	
20				32					803	
21				B-2028 9	12				6/18	802
22					12					801
23					13					800
24					8					800
25				B-2028 10	17				13/18	799
24					10					798
26	CH		B-2028 11	11	15/18		FAT CLAY with sand stiff, black (5YR2.5/1), moist		797	
27				23					796	
28	GP						GRAVEL hard, white (2.5Y8/1), dry		795	
29	CL		B-2028 12	12	18/18	2.75	RESIDUAL SOIL (RS) LEAN CLAY with sand very stiff, olive brown (2.5Y4/3), damp		794	
30				8					794	

 Undisturbed sample SH = Shelby; P = Pitcher; O = other	 Driven (2.5 to 3.0 inch) with liners MC = Modified California; O = other	 Standard Penetration Test (SPT) sampler
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Project Name and Job Number  
 TXU Comache Peak COL  
 1908



**SOIL LOG**  
**Boring No. B-2028**

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
30	CL	B-2028 13	3	5	18/18	3.5	<b>RESIDUAL SOIL (RS)</b> LEAN CLAY with sand very stiff, olive brown (2.5Y4/3), damp (Continued from previous page)		793
31							with calcareous deposits	792	
32								791	
33	GM	B-2028 14	12	18	18/18	4	SILTY GRAVEL medium dense, pale yellow (5Y5/2), damp		790
34							LEAN CLAY with limestone fragments very stiff, olive gray (5Y5/2), damp	789	
35								788	
36	CL	B-2028 15	8	28	12/18	4.51	hard, color to yellow (5Y7/8)		787
37								786	
38								785	
39	GM	B-2028 16	49	50/3.5"	10/9.5		SILTY GRAVEL with limestone fragments very dense, white (5Y8/1), dry		784
40								783	
41								782	
42		B-2028 17	27	49	14/18	4.51	weathered shale, hard, black (5Y2.5/1), dry	Bedrock at 41.5'	781
43									780
44									779
45									



Undisturbed sample  
 SH = Shelby; P = Pitcher; O = other




Driven (2.5 to 3.0 inch) with liners  
 MC = Modified California; O = other



Standard Penetration Test (SPT) sampler



Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. B-2028</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'06.56476"N / 97°47'26.04534"W		Total Depth 75.5 feet	
Drilling Contractor and Rig TEXPLOR / CME 75		Elevation and Datum 823.736 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 41.5 feet	
Casing Size and Depth PVC 4" diameter / 42.5 feet		Length of Core Barrel and Bit 7.95 feet	No. of Core Boxes 2	Date Started 1/11/07	
		Borehole Inclination Vertical	Logged by M. Buga	Date Completed 1/12/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 1/15/07


Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
43		0.67										SHALE: meduim dark gray (N4); fresh (F); extremely weak (R0); thin limestont layers .2' thick. [Glen Rose Formation]	Top of bedrock	781
44		0.75				F	R0						No water return, using plain water, frilling stopped at 45' to refill water, GSA rock color chart	780
45		0.68	1	3.4 5.0	68									779
46		3.13												778
47		3.15												777
48		3										LIMESTONE: packstone; medium light gray (N6); fresh (F); weak (R2); .3' thick shale interbeds. [Glen Rose Formation]		776
49		1.3				F	R2							775
50		1.17	2	5.0 5.0	100									774
51		0.5												773
52		0.67												772
53		1.83												771
54		1.97												770
55		0.98	3	5.0 5.0	100	F	R2							769
56		0.85										LIMESTONE: packstone; medium light gray (N6) to medim gray (N5); rip up clasts common; fresh R2. [Glen Rose Formation]	No water return	768
57		0.92												767

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-2028</b>
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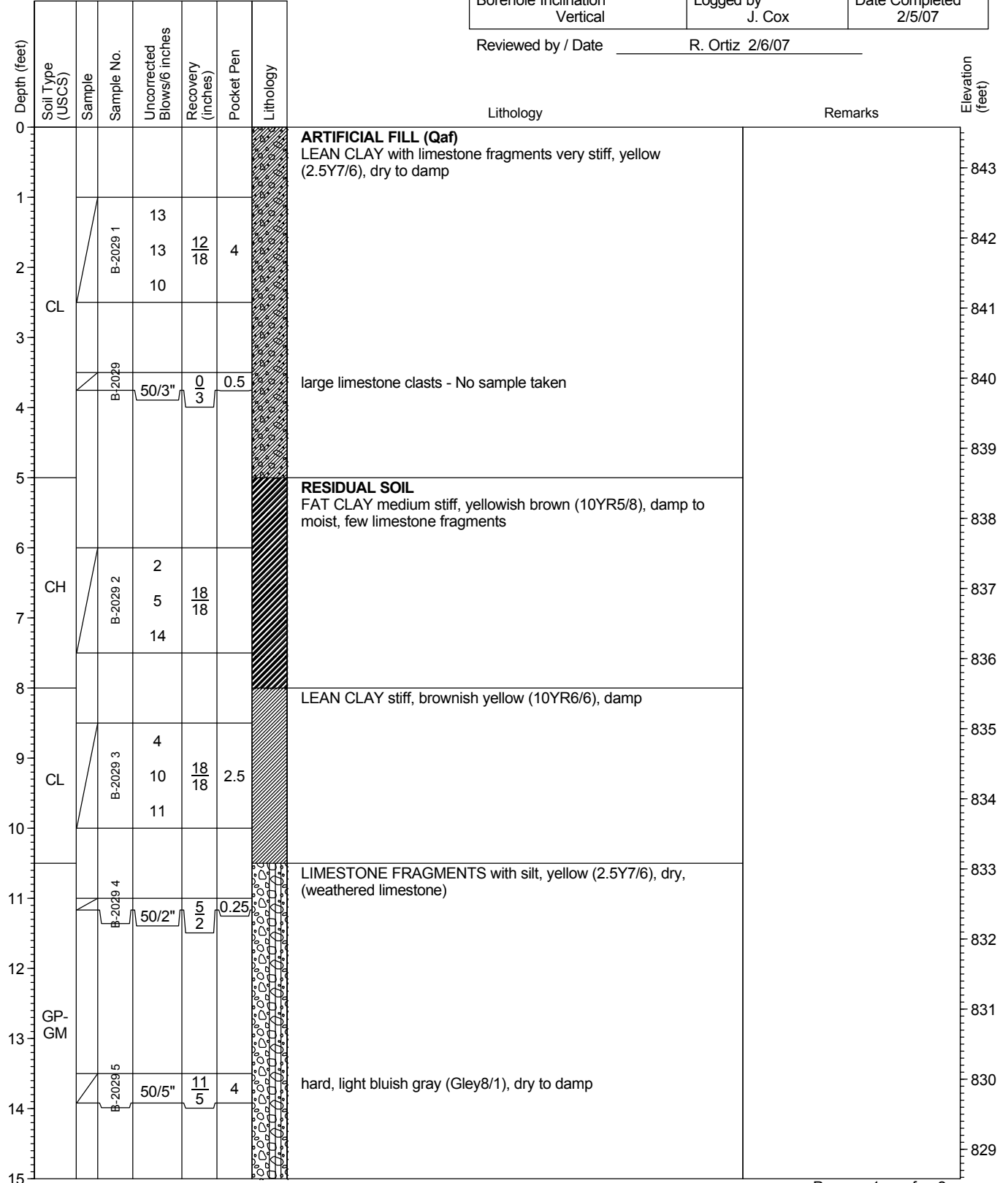
Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
58		1.3										LIMESTONE: packstone; medium light gray (N6) to medim gray (N5); rip up clasts common; fresh R2. [Glen Rose Formation]		766
59		1.22												765
60		0.92	4	5.0	100	F	R2							764
61		0.85								2028-21				763
62		0.9												762
63		1.8												761
64		0.92												760
65		1.08	5	5.0	100	F	R2			2028-22				759
66		0.97												758
67		0.87												757
68		0.8												756
69		0.88								2028-23				755
70		0.9	6	5.0	100	F	R2					No water return	754	
71		0.97										LIMESTONE: packstone; medium light gray (N6) rip up clasts common; fresh (F); weak (R2); some fossils present. [Glen Rose Formation]	753	
72		1.03											752	

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-2028</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
73		0.8										LIMESTONE: packstone; medium light gray (N6) rip up clasts common; fresh (F); weak (R2); some fossils present. [Glen Rose Formation]		751
74		0.87	7	3.0	100	F	R2		2028-24					750
75		0.53												749
76												BOTTOM OF HOLE AT 75.5		748
77														747
78														746
79														745
80														744
81														743
82														742
83														741
84														740
85														739
86														738
87														737

Project Name and Job Number TXU Comache Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-2029</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'09.69373"N / 97°47'30.20691"W		Total Depth 151 feet	
Drilling Contractor and Rig Geotechnology / CME 55		Elevation and Datum 843.578 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 15.5 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 5	Date Started 1/28/07	
		Borehole Inclination Vertical	Logged by J. Cox	Date Completed 2/5/07	

Reviewed by / Date                      R. Ortiz 2/6/07



Project Name and Job Number TXU Comache Peak COL 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">SOIL LOG</h2> <h2 style="margin: 0;">Boring No. B-2029</h2>
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Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
15							Lithology		828
16								Bedrock at 15.5'	827
17									826
18									825
19									824
20									823
21									822
22									821
23									820
24									819
25									818
26									817
27									816
28									815
29									814
30									




Undisturbed sample  
 SH = Shelby; P = Pitcher; O = other



Driven (2.5 to 3.0 inch) with liners  
 MC = Modified California; O = other



Standard Penetration Test (SPT) sampler

Project Name and Job Number TXU Comanche Peak Col 1908		 WLA William Lettis & Associates, Inc.		<b>ROCK LOG Boring No. B-2029</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'09.69373"N / 97°47'30.20691"W		Total Depth 151 feet	
Drilling Contractor and Rig Geotechnology / CME-55		Elevation and Datum 843.578 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 15.5 feet	
Casing Size and Depth 4" pvc / 15 feet		Length of Core Barrel and Bit 8.7 feet	No. of Core Boxes 10	Date Started 1/28/07	
		Borehole Inclination Vertical	Logged by J. Cox	Date Completed 2/5/07	

Reviewed by / Date R. Ortiz 2/6/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
16		3.67									JT, PL-ST, Ro, OP	LIMESTONE: wackestone; 15.5'-16.1' light gray (N7); 16.1'-16.3' sandy LIMESTONE: very weak (R1); dusky yellow (5 Y 6/4); 16.3'-16.5 silty matrix; fossiliferous; very weathered; olive gray (5 Y 3/2); fossils abundant 16.5'-19.3'; limestone wackestone; very pale orange (10 YR 8/2); very weathered LIMESTONE: weak; abundant fossils; moderate reaction to HCl. [Glen Rose Formation]	Begin HQ wireline coring 1/29/07 Filled apertures at 17.0', 17.05', 17.25', 17.45', 17.6', 17.7', 17.75'; all very dissolved, some secondary mineralization.	828
17		1.87				MW	R1				JT, PL, Ro, OP JT, PL, Ro, OP JT, PL, Ro, OP, secondary mineralization			827
18		1.42	1	4.8 5.0	75						JT, PL, OP, Ro, ??? Very dissolved.			826
19		1.38									JT, Wa, Sl, Ti			825
20		4.67									JT, P1, OP, S JT, P1, OP, S	LIMESTONE: shaly packstone; medium gray (N5); slightly weathered (SW); weak (R2); abundant fossils; looks to be fossil supported; strong reaction to HCl; gradational contact to shale at end of run. [Glen Rose Formation]		824
21		3.12				SW	R2							823
22		2.75	2	3.5 3.5	100							SHALE: medium gray (N5); thinly laminated; slightly weathered (SW); weak (R2); gradational contacts on both ends. [Glen Rose Formation]		822
23		2.6												821
24		1.05										LIMESTONE: shaly packstone; medium gray (N5); slightly weathered (SW); weak (R2); abundant fossils; looks to be fossil supported; strong reaction to HCl; gradational contact to shale at end of run. [Glen Rose Formation]	Pressure meter interval #1, 24'-29'.	820
25		3.83				SW	R2							819
26		1.68												818
27		1.53	3	5.3 5.0	100						Pressuremeter			817
28		2.75				MW-SW	R0-R1				Pressuremeter	SHALE: medium dark gray (N8); thick bedded; very weak (R1); slight reaction to HCl; slightly to moderately weathered; some medium sized angular clasts throughout. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	816
29		3.77												815
30		3.97	4	4.5 4.5	93	F-SW	R1-R2					MUDSTONE; yellowish gray (5 Y 7/2); very fine grained; extremely weak (R0); some angular clasts throughout. [Glen Rose Formation]	Very abrupt change in lithology; possibly some washout of	814
		3.17									JT, Pl, Sl, Ti	LIMESTONE: wackestone; light gray (N7);		814

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2029</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)	
31		3.17										slightly weathered (SW); weak (R2); abundant fossils; strong reaction to HCl; at 29.0'. [Glen Rose Formation]  LIMESTONE: packstone; medium light gray (N6); slightly weathered (SW); weak (R2); abundant fossils; medium to fine grained; thin shale beds (<0.05') occasional; rip-up clasts start at 31.0'; very strong reaction to HCl; thin interbeds of shale 37.1'-37.2' and 37.3'-37.5'; shale bed from 38.5'-38.9'; very weak (R1) (R2); fresh; slight reaction to HCl. [Glen Rose Formation]	extremely soft shale.  Slow drill rates due to switch from HQ to NQ.  Pressure meter interval #2, 33.5'-38.5'.	813	
32		2.5	4	4.5 4.5	93	F-SW	R1-R2			2029-8					812
33		2.25													811
34		0.75													810
35		7.83												809	
36		7.42												808	
37		7.82	5	4.3 5.0	86	F-SW	R1-R2	Pressuremeter						807	
38		8.08						Pressuremeter						806	
39		8.25												805	
40		8.75										SHALE: very weak (R1); fresh (F); slight reaction to HCL [Glen Rose Formation]  LIMESTONE: wackestone; medium light gray (N6); slightly weathered (SW); weak (R2); fine grained; deformed beds of shale (<0.1') throughout; strong reaction to HCl; small coal seam at 39.1'; shale bed 45.35'-45.5'. [Glen Rose Formation]	804		
41		6.75	6	2.3 3.0	76	F-SW	R1-R2							803	
42		5.25												802	
43		6.42												801	
44		4.53												800	
45		2.5	7	4.5 5.0	90	F-SW	R1-R2							799	
		6.08													

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2029</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
46		4.57	7	4.5 5.0	90	F-SW	R1-R2							798
47		5.83				F-SW	R1-R2						Stopped coring 1/29/07, begin 1/30/07	797
48		3.75												796
49		6.25	8	5.0 5.0	100	SW	R1					SHALE: medium dark gray (N9); fresh to slightly weathered (SW); very weak (R1); thinly bedded; fine grained; some bioturbation; no reaction to HCl. [Glen Rose Formation]		795
50		8.25												794
51		7.33												793
52		4.33				SW	R2					LIMESTONE: wackestone; medium light gray (N6); slightly weathered (SW); weak (R2); fine grained; abundant fossils; moderate reaction to HCl. [Glen Rose Formation]	Slow drill rates due to switch from HQ to NQ.	792
53		12										SHALE: medium gray (N5); fresh to slightly weathered (SW); very weak (R1); thinly bedded; limestone interbed at 53.0'-53.05' and 53.7'-53.9'; pyrite at joint at 53.9'. [Glen Rose Formation]	Pressure meter interval #3, 51.5'-55.5'.	791
54		16	9	4.6 5.0	82	F	R1	Pressuremeter			JT, Pl, Sm, Ti.	limestone interbed limestone interbed		790
55		12						Pressuremeter						789
56		11.83				SW	R2					LIMESTONE: wackestone; medium light gray (N6); slightly weathered (SW); weak (R2); fine grained; abundant fossils; moderate reaction to HCl; coal seam at 55.6'.. [Glen Rose Formation]		788
57		6												787
58		6.75	10	4.9 5.0	98							SHALE: medium dark gray (N4); fresh to slightly weathered (SW); very weak (R1); thinly bedded; mild reaction to HCl; limestone interbeds at 58.2'-58.3' and 58.8'-59.0'. [Glen Rose Formation]		786
59		5.5				F	R1					limestone interbed limestone interbed		785
60		4.17												784



Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-2029**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
61		6.67	10	4.5 5.0	98	SW	R2					LIMESTONE: wackestone; medium light gray (N6); slightly weathered (SW); weak (R2); fine grained; massive; abundant fossils; strong reaction to HCl. [Glen Rose Formation]		783
62		6.08	11	2.5 2.5	100	SW	R1					SHALE: medium dark gray (N4); fresh to slightly weathered (SW); very weak (R1); thinly bedded; no reaction to HCl. [Glen Rose Formation]		782
63		6.25				SW	R2		LIMESTONE: wackestone; light gray (N7); slightly weathered (SW); weak (R2); fine to medium grained; massive; strong reaction to HCl; shale bed 65.0'-65.3'. [Glen Rose Formation]		781			
64		2.75				SW	R2					780		
65		8.33	12	4.8 5.0	96	SW	R2	Pressuremeter					Pressure meter interval #4, 64'-69'	779
66		8.75												778
67		6												777
68		9	13	2.5 2.5	100	SW	R2	Pressuremeter					Run broken too much to take adequate sample.	776
69		8.75												775
70		1.25												774
71		1.42	14	5.1 5.0	100	SW	R2							773
72		0.62												772
73		1.75												LIMESTONE: wackestone; light gray (N7); slightly weathered (SW); weak (R2) (R2); fine to medium grained; massive; strong reaction to HCl; large rip-up clasts throughout. [Glen Rose Formation]
74		1.08	14	5.1 5.0	100	SW	R2							770
75		1.28												769
76		1.58												Length of recovery stretched due to mechanical breaks.

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-2029</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
76		2.67	14	5.1 5.0	100	SW	R2							768
77		1.53										LIMESTONE: packstone; medium gray (N5); fresh; weak (R2); secondary wackestone filled bioturbation (<10%); medium grained; massive; strong reaction to HCl. [Glen Rose Formation]	Good water return, gray color.	767
78		1.55												766
79		1.75	15	5.0 5.0	100	F	R2							765
80		1.77												764
81		7.5												763
82		1.33										LIMESTONE: wackestone; light gray (N7); fresh; weak (R2); massive bioturbation; strong reaction to HCl; rip-up clasts; occasional fine grains. [Glen Rose Formation]		762
83		1.75	16	2.7 2.5	100	F	R2							761
84		1												760
85		9.97											Pressure meter interval #5, 84'-89'.	759
86		10.08												758
87		8.78	17	5.0 5.0	96	F	R2		Pressuremeter				Run broken too much to take adequate sample.	757
88		8.1										LIMESTONE: packstone; medium light gray (N6); weak (R2); fresh; massive; medium grained; rip-up clasts abundant; bioturbation; abundant fossils; moderate reaction to HCl. [Glen Rose Formation]		756
89		5.42							Pressuremeter					755
90		1.67	18	2.0 2.0	100	F	R2							754
		2.58									JT, Pl, Sl, Tt			

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2029</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
91		2.58	18	2.0 2.0	100	F	R2					LIMESTONE: packstone; medium light gray (N6); weak (R2); fresh; massive; dry; medium grained; bioturbated; strong reaction to HCl. [Glen Rose Formation]		753
92		2.25										LIMESTONE: packstone; medium light gray (N6); weak (R2); fresh; massive; dry; medium grained; bioturbated; strong reaction to HCl; very thin shale bed at 91.4' causing bedding break as well as 94.8'. [Glen Rose Formation]		752
93		1.75										very thin shale bed [Glen Rose Formation]		751
94		2.08	19	5.1 5.0	100	F	R2							750
95		1.67								2029-17			Length of recovery stretched due to mechanical breaks.	749
96		1.33												748
97		3.08												747
98		2.75												746
99		2.08	20	4.9 5.0	98	F	R2			2029-18		LIMESTONE: wackestone; light gray (N7); fresh; weak (R2); massive; dry; slightly bioturbated; very strong reaction to HCl; few fossils. [Glen Rose Formation]		745
100		2.38												744
101		4.08												743
102		2.83									JT, Wa, Ro	LIMESTONE: wackestone; medium light to light gray (N6-N7); fresh; weak (R2); massive; abundant bioturbated areas; very strong reaction to HCl; abundant fossils; joint at 101.6' filled with coal in seam; joints at 104.0' and 104.3'; secondary mineralization inside joint. [Glen Rose Formation]		742
103		1.87												741
104		2.08	21	5.0 5.0	90	F	R2				JT, Pl, Sl, Ti JT, Pl, Sm, Ti			740
105		1.82												739
		1.83												

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2029</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
106		1.83	21	5.0 5.0	90	F	R2							738
107		2.42										LIMESTONE: packstone; medium gray (N5); fresh; weak (R2); massive; medium grained; abundant fossils; abundant areas of bioturbation; very strong reaction to HCl. [Glen Rose Formation]		737
108		2.27												736
109		3.08	22	5.0 5.0	100	F	R2					LIMESTONE: wackestone; light gray (N7); fresh; weak (R2); massive; dry; slightly bioturbated; very strong reaction to HCl; joint at 111.8'; open but secondary mineralization around edges of joint. [Glen Rose Formation]		735
110		3.07												734
111		2.88												733
112		2									JT, PI, SI, OP			732
113		1.95												731
114		1.7	23	5.0 5.0	100	F	R2					LIMESTONE: MICRITE; light gray (N7); fresh; weak (R2); massive; dry; very smooth clean LIMESTONE: few fossils; very strong reaction to HCl. [Glen Rose Formation]		730
115		2.22												729
116		2.58												728
117		2.78												727
118		2.25												726
119		2.58	24	5.1 5.0	100	F	R2							725
120		2.08											Length of recovery stretched due to mechanical breaks.	724
		2.17												

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
121		2.17	24	5.1 5.0	100	F	R2							723
122		2										LIMESTONE: wackestone; medium light gray (N6); fresh; weak (R2); massive rip-up clasts abundant; bioturbated; moderate reaction to HCl. [Glen Rose Formation]		722
123		2.35												721
124		2.27	25	4.9 5.0	98	F	R2							720
125		1.7												719
126		2.53								2029-23				718
127		3.5												717
128		8.93				F	R1					SHALE: medium dark gray (N4); very thinly bedded; very weak (R1); slightly damp; abundant fossils; weak reaction to HCl. [Glen Rose Formation]		716
129		6.25	26	4.7 5.0	94							LIMESTONE: wackestone; light gray (N7); weak (R2); fresh to slightly weathered (SW); from 128.1'-129.3' - very large rip-up clasts filled with shale mudstone matrix; very strong reaction to HCl; thinly bedded limestone from 129.4'-130.2'; fine grained. [Glen Rose Formation]		715
130		10								2029-24		LIMESTONE: wackestone; light gray (N7); weak (R2); fresh to slightly weathered (SW); from 128.1'-129.3' - very large rip-up clasts filled with shale mudstone matrix; very strong reaction to HCl; thinly bedded limestone from 129.4'-130.2'; fine grained. [Glen Rose Formation]		714
131		9.25				SW-F	R2							713
132		3.25												712
133		3.08												711
134		2.75	27	5.1 5.0	100	SW-F	R1-R2					LIMESTONE: packstone; medium gray (N5); many shale interbeds; fresh to slightly weathered (SW); very weak to weak (R1-R2); becomes much more shaly from 133.8' to 134.1'. [Glen Rose Formation]		710
135		3.25				SW-F	R1					SHALE: medium dark gray (N4); thinly bedded; very weak (R1); some small limestone interbeds; weak reaction to HCl. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	709
		3.08				SW-F	R1-R2			2029-25				

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-2029</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
136		3.08	27	5.1 5.0	100							LIMESTONE: packstone; medium gray (N5); many shale interbeds; fresh to slightly weathered (SW); very weak to weak (R1-R2). [Glen Rose Formation]		708
137		2.83										LIMESTONE: packstone; medium gray (N5); large rip-up clasts; medium grained; fresh; weak (R2); abundant fossils; strong reaction to HCl; light gray wackestone clasts from 138.6'-139.5'; thin shale layer (0.1') at 139.5'; causing bedding break. [Glen Rose Formation]		707
138		3.75												706
139		3.9	29	5.0 5.0	100	SW-F	R1-R2			2029-26		wackestone clasts		705
140		3.78										Thin shale interbed		704
141		3.63												703
142		3.25										LIMESTONE: packstone; medium light gray (N6); less rip-up clasts than above; fresh; weak (R2); shale bed (<0.1') at 145.3' causing bedding break. [Glen Rose Formation]		702
143		2.92												701
144		2.33	30	5.0 5.0	100	F	R2			2029-27				700
145		2.77												699
146		2.5										shale bed (<0.1')		698
147		3.42										LIMESTONE: wackestone; medium light gray (N6); fresh; weak (R2); massive; dry; fine grained; abundant fossils; some areas of small rip-up clasts; strong reaction to HCl; several small coal nodules at 150.0' to 150.2'; pyrite clast at 148.6'. [Glen Rose Formation]		697
148		4.83												696
149		4.97	31	5.0 5.0	100	F	R2							695
150		4.42												694
		4.17								2029-28				

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-2029**


Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
151		4.17	31	5.0 5.0	100	F	R2							693
151												BOTTOM OF HOLE AT 151 FEET	Bottom of hole 151.0'	692
152														691
153														690
154														689
155														688
156														687
157														686
158														685
159														684
160														683
161														682
162														681
163														680
164														679
165														

Project Name and Job Number TXU Comache Peak COL 1908		 WLA William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-2030 offset</b>	
Type and Diameter of Boring HSA / 7"			Boring Location 32°18'09.28154"N / 97°47'33.33612"W		Total Depth 151.4 feet
Drilling Contractor and Rig TEXPLOR / CME 75			Elevation and Datum 852.552 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 8.5 feet
Sampling Method SPT			Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 3	Date Started 2/13/07
			Borehole Inclination Vertical	Logged by J. Cox	Date Completed 2/13/07

Reviewed by / Date \_\_\_\_\_ 2/13/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0										852
1										851
2			B-2030 offset 1	22						850
				19	14/18	1				850
				16						850
3	ML									850
4			B-2030 offset 2	50/5"	5/5	2	yellow (2.5Y7/6)			849
5										848
6										847
7	CL		B-2030 offset 3	4	16/18	4.51	LEAN CLAY with sand hard, olive yellow (2.5Y6/6)			846
				9						845
				26						845
8										844
9									Bedrock at 8.5'	844
10										843
11										842
12										841
13										840
14										839
15										838



Project Name and Job Number TXU Comanche Peak Col 1908		 WLA William Lettis & Associates, Inc.		<b>ROCK LOG Boring No. B-2030</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'09.28154"N / 97°47'33.33612"W		Total Depth 151.4 feet	
Drilling Contractor and Rig Boart Longyear / 44 TMA		Elevation and Datum 852.552 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 10.2 feet	
Casing Size and Depth 4" PVC		Length of Core Barrel and Bit 8.6 feet	No. of Core Boxes 11	Date Started 2/9/07	
		Borehole Inclination Vertical	Logged by G. Van Etten	Date Completed 2/10/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 2/11/07 \_\_\_\_\_

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
18		5.8				F/SW	R2					LIMESTONE: wackestone; medium gray (N5); fresh to slightly weathered (F-SW); weak (R2); few pyrite clasts and fossils; very mild reaction to HCl. [Glen Rose Formation]	Good water return; light gray	834
19		4.75	1	2.6 3.8	73							SHALE; dark greenish gray (5G 4/1); fresh (F); weak (R2); few wavy limestone layers; very mild reaction to HCl. [Glen Rose Formation]	PVC casing spinning with rod	833
20		4.93				F	R1			2030-1			Metal clamp put around PVC pipe to keep it from riding up with the water	832
21		5.63												831
22		4.53										LIMESTONE: wackestone; very light gray (N8); fresh (F); weak (R2); shell hash from 22.3' to 24.9'; several very thin wavy shale interbeds; very mild reaction to HCl; several vugs and bioturbations. [Glen Rose Formation]	600 psi down pressure pulled the rod due to loose catcher	830
23		3.97												829
24		3.48	2	4.7 5.0	94					2030-2				828
25		3.27												827
26		3.58				F	R2							826
27		4.47												825
28		2.72												824
29		3.38	3	3.9 4.0	98									823
30		6.43								2030-3				822
31		6.62	4	1.0 1.0	100	F	R0			2030-4		SHALE; dark greenish gray (5G 4/1); fresh (F); extremely weak (R0); few fossils; very mild reaction to HCl. [Glen Rose Formation]	good water return	821
32		6.23	5	5.1 5.0	100	F	R1							820
		2.17												

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-2030</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
33		2.17										LIMESTONE: wackestone; medium dark gray (N4); fresh (F); very weak (R5); large shell fossils at upper contact; some bioturbations; mild reaction to HCl; 33.8' wackestone changes to very light gray (N8); and has less shale matrix; 34.7' to 34.8' is a 0.1' thick layer of shale; increase in rip up clasts. [Glen Rose Formation]	very cold and windy	819
34		3.22	5	5.1 5.0	100	F	R1		2030-5					818
35		2.32												817
36		1.38												816
37		4.3										LIMESTONE: packstone; medium light gray (N6); fresh (F); very weak (R1); many wavy shale interbeds and rip up clasts; fossil fragments abundant; moderate reaction to HCl; 0.1' thick shale interbed at 37.1' with a lense of coal. 42.5' to 43.0' zone of 0.1' shale layers spaced 0.1' apart. [Glen Rose Formation]		815
38		2.62												814
39		2.47	6	4.9 5.0	98									813
40		1.9							2030-6			stopped drilling to rear cultings pit	812	
41		1.28				F	R1						811	
42		3.72											810	
43		6.38											809	
44		4.08	7	4.8 5.0	96								808	
45		6.1				F	R0		2030-7			water refill good water return	807	
46		5.68				F	R0/R1					~ 600 psi down pressure	806	
47		4.3	8	5.0 5.0	100	F	R1						805	
		2.25												

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
48		2.25										LIMESTONE: packstone; light gray (N7); numerous thin wavy shale interbeds; fresh; very weak; few pyrite clasts; fossils; moderate reaction to HCl; small; rounded rip up clasts are more abundant. [Glen Rose Formation]	talked to TX4 guy	804
49		4.47										Shale		803
50		4.25	8	5.0 5.0	100									802
51		2.82				F	R1			2030-8				801
52		4.58										Shale bed from 52.1' to 52.3'		800
53		3.3												799
54		3.5	9	4.7 5.0	94									798
55		6.4								2030-9		SHALE; medium dark gray (N4); massive; fresh (F); extremely weak (R0); no reaction to HCl. [Glen Rose Formation]	rip up clasts at contact	797
56		6.53				F	R0							796
57		7.5												795
58		3.97				F	R1					LIMESTONE: wackestone; light gray (N7); many fossils; fresh (F); very weak (R1); moderate reaction to HCl. [Glen Rose Formation]		794
59		5.4	10	4.6 5.0	92	F	R0/R1			2030-10		SHALE; medium dark gray (N4); many 0.1' thick limestone interbeds space 0.05' to 0.5' apart; fresh (F); extremely weak to very weak (R0-R1); mild reaction to HCl. [Glen Rose Formation]		793
60		5.95												792
61		7.88				F	R0					SHALE; medium drak gray (N4); massive; fresh (F); extremely weak (R0); very few fossils; very mild reaction to HCl. [Glen Rose Formation]	Good water return; light gray	791
62		4.33	11	5.0 5.0	100	F	R1						end of drilling on 02/09/07	790
		3.42												

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
63		3.42				F	R1		2030-11			LIMESTONE: packstone; medium light gray (N6); thin wavy shale interbeds spaced 0.1' to 0.2' apart; fresh (F); very weak (R1); many rip up cloasts; fossils at contacts; moderate reaction to HCl. [Glen Rose Formation]		789
64		3.92												
65		3.85	11	5.0 5.0	100	F	R0					SHALE; dark greenish gray (5G 4/1) to medium dark gray (N4); massive with several very thin limestone layers; fresh (F); extremely weak (R0); very mild reaction to HCl. [Glen Rose Formation]	downpressur ranging from 300 to 600 psi	788 787
66		4.28												
67		4.95												
68		4.42				F	R1					LIMESTONE: packstone; medium gray (N5); fresh (F); very weak (R1); abundant shell fossils and swirled shale interbeds; moderate reaction to HCl. [Glen Rose Formation]		785
69		5.5	12	5.0 5.0	100	F	R0					SHALE; medium dark gray (N4); massive; fresh (F); extremely weak (R0); several small organic and pyrite clasts intermixed; no visible reaction to HCl. [Glen Rose Formation]		784 783
70		3.83												
71		2.68				F	R1		2030-12			LIMESTONE: packstone; light gray (N7); numerous large swirled shale interbeds; fresh (F); very weak (R1); few bioturbations and fossils; strong reaction to HCl. [Glen Rose Formation]	drilling rate picking up	782
72		4.67												
73		1.87				F	R1					LIMESTONE: wackestone; light gray (N7); fresh (F); very weak (R1); numerous stylolites; strong reaction to HCl. [Glen Rose Formation]		781 780
74		2.92	13	5.0 5.0	100	F	R1		2030-13			LIMESTONE: packstone; medium light gray (N6); fresh (F); very weak (R1); numerous rip up clasts and swirled shale interbeds; moderate reaction to HCl. [Glen Rose Formation]		779 778
75		1.92												
76		1.37				F	R1					LIMESTONE: packstone; medium light gray (N6); fresh (F); very weak (R1); numerous rip up clasts and swirled thin interbeds of shale; moderate reaction to HCl. [Glen Rose Formation]	good, splashing; light gray water return	777
77		1.75	14	5.0 5.0	100									776
		1.7												775

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
78		1.7				F	R1							774
79		2.88	14	5.0 5.0	100				2030-14			LIMESTONE: wackestone; medium light gray (N6); fresh (F); very weak (R1); few rip up clasts; occasional pyrite grains with coarse sandy matrix in places; mild reaction to HCl; few fossils of shells. [Glen Rose Formation]	gradational contact	773
80		1.83				F	R1							772
81		2.55											* pictures of runs 11 -14 have the date as 02/09/07 when it should be 02/10/07; run 15 is correct	771
82		2.85												770
83		4.15										LIMESTONE: packstone; medium light gray (N6); fresh (F); very weak (R1); abundant rip up clasts with thin shale interbeds between; coarse sand in limestone; strong reaction to HCl. 87.8 tp 87.9' is a 0.2' thick layer of shale with packstone rip up clasts in it. [Glen Rose Formation]		769
84		2.83	15	5.0 5.0	100				2030-15					768
85		2.35												767
86		2.75				F	R1							766
87		3.13											cerregated pipe placed around rod to act as splash guard	765
88		2.9												764
89		1.5	16	5.0 5.0	100									763
90		1.13												762
91		2.1				F	R1		2030-16			LIMESTONE: packstone; medium light gray (N6); fresh (F); very weak (R1); abundant rip up clasts with thin shale interbeds between; few fossils; strong reaction to HCl; limestone becomes granular; large shell fossils and thicker shale interbeds. [Glen Rose Formation]	good water return	761
92		4.32	17	5.0 5.0	100								5 minute break to get new batteries for camera	760
		3.82												760

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
93		3.82										LIMESTONE: packstone; medium light gray (N6); fresh (F); very weak (R1); abundant rip up clasts with thin shale interbeds between; few fossils; strong reaction to HCl; limestone becomes granular; large shell fossils and thicker shale interbeds. [Glen Rose Formation]		759
94		3.5	17	5.0 5.0	100	F	R1							758
95		1.38												757
96		1.3												756
97		2.42										LIMESTONE: wackestone; very light gray (N8); fresh (F); very weak (R2); granular; strong reaction to HCl. [Glen Rose Formation]		755
98		2.4				F	R1							754
99		3.52	18	5.0 5.0	100							LIMESTONE: packstone; medium gray (N5) to very light gray (N8); many rip up clasts; some fossils; few organic lenses; 100.8' to 101.2' is a zone that is predominantly shale interbeds; very thin shale interbeds give packstone "leopard skin" appearance.; dark gray and granular from 104' to 104.9'. [Glen Rose Formation]		753
100		1.75												752
101		2.18												751
102		2.7				F	R1						took a break in drilling to look at next boring location	750
103		1.22											749	
104		2.12	19	5.0 5.0	100							LIMESTONE: packstone; medium light gray (N6) to very light gray (N8); fresh (F); very weak (R2); moderate reaction to HCl. [Glen Rose Formation]		748
105		2.07												747
106		1.3				F	R1						Good water return; light gray	746
107		2.17	20	5.0 5.0	100	F	R1						~600 psi downpressure	745
		2.22												745

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-2030</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)	
108		2.22										LIMESTONE: wackestone; medium light gray (N6); fresh (F); very weak (R1); some bioturbations and fossils; shale interbeds are very thin and planar forming sharp contacts; mild to moderate HCl reaction; very thin shale lamination from 109.4' to 109.7'; shale layers swirled around limestone at contact; granular texture; 111.9' to 112.4' are many very thin shale laminations; several small pyrite and organic clasts intermixed. [Glen Rose Formation]	weather is getting better; less wind	744	
109		2.8	20	5.0 5.0	100				2030-20					743	
110		1.9				F	R1								742
111		1.12													741
112		2.07								2030-21					740
113		2.22													739
114		1.97	21	5.1 5.0	100							LIMESTONE: packstone; medium dark gray (N4); fresh (F); very weak (R1); large rounded rip up clasts in abundance of shale interbeds; many bioturbations; some fossils; violent reaction to HCl; coarse sand with limestone. [Glen Rose Formation]	738		
115		1.95				F	R1							737	
116		2.07											736		
117		3.95				F	R1					John Neidzelski by to check up	735		
118		0.93										very sharp contact	734		
119		2.25	22	5.0 5.0	100	F	R1					LIMESTONE: wackestone; medium light gray (N6); fresh (F); very weak (R1); thin swirled shale layers and bioturbations present; few fossils; slightly grainy texture; violent reaction to HCl. [Glen Rose Formation]	733		
120		1.98								2030-22				732	
121		3.25				F	R1					good water return	731		
122		3.75	23	5.0 5.0	100								730		
		2.47													


Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-2030</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
123		2.47										LIMESTONE: wackestone; medium light gray (N6); fresh (F); very weak (R1); some very thin wavy shale interbeds and bioturbation; few fossils; violent reaction o HCl; changes to medium gray (N5); 123.2' the wackestone changes from medium gray (N5) to light gray (N7) and is almost micritic; several obvious bioturbations; large bioturbations and several small organic clasts; 0.02' thick oolites. [Glen Rose Formation]		729
124		2.22	23	5.0 5.0	100								no wind!	728
125		1.88												727
126		1.98				F	R1							726
127		2.77												725
128		2.93											run 24 came without any breaks	724
129		4.33	24	4.9 5.0	98							LIMESTONE: packstone; medium light gray (N6); fresh (F); very weak (R2); many large rip up clasts swirled with very thin shale interbeds; many very small shell fragments; violent reaction to HCl. [Glen Rose Formation]	723	
130		2.9											gradational contact water tank refilled	722
131		2.3											721	
132		2.68				F	R1						720	
133		3.98											719	
134		3.73	25	5.0 5.0	100								718	
135		3.77											717	
136		8.03				F	R0					good water return	716	
137		5.07	26	5.0 5.0	100	F	R1					~500 psi down pressure	715	
		3.83												




Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2030</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
138		3.83				F	R1						sun breaks	714
139		6				F	R0		2030-26			LIMESTONE: shaly; dark greenish gray (5G 4/1); fresh (F); extremely weak (R0); few bioturbations; calcareous limestone matrix; moderate reaction to HCl. [Glen Rose Formation]		713
140		3.23	26	5.0 5.0	100							LIMESTONE: packstone; medium light gray (N6); fresh (F); very weak (R1); very small rip up clasts and shell fragments; few bioturbations and organic matter; strong reaction to HCl; packstone changes to medium gray (N5); entire rock is rounded rip up clasts and swirled shale interbeds; several small oolites. [Glen Rose Formation]		712
141		2.97												711
142		3.6												710
143		4.57												709
144		6.77	27	5.0 5.0	100									708
145		3.15				F	R1							707
146		2.83							2030-27					706
147		2.53											water refill	705
148		3.52												704
149		3.03	28	4.9 5.0	98									703
150		2.9												702
151		2.25				F	R1					LIMESTONE: packstone; medium light gray (N6); fresh (F); very weak (R1); many rip up clasts; bioturbations and swirled shale interbeds. [Glen Rose Formation]	good water return	701
152									2030-28			BOTTOM OF HOLE AT 151.4'		700

Project Name and Job Number TXU Comache Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-2031</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'07.65554"N / 97°47'32.80039"W		Total Depth 100 feet	
Drilling Contractor and Rig Fugro / CME 45		Elevation and Datum 853.143 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 10.7 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 4	Date Started 2/6/07	
		Borehole Inclination Vertical	Logged by S. Dee	Date Completed 2/7/07	

Reviewed by / Date \_\_\_\_\_ R.Ortiz 2/8/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
0							ARTIFICIAL FILL (Qal) LIMESTONE FRAGMENTS and silt dense, yellow (10YR7/6), dry to damp		853
1	GP-GM		B-2031 1	13	18/18	2.8			852
2				27					851
3				22					850
4			B-2031 2	50/6"	6/6		LEAN CLAY with limestone fragments, and few calcareous deposits, hard, very pale brown (10YR7/3), dry, violent reaction to HCl		849
5	CL								848
6									847
7			B-2031 3	20	18/18	4.51			846
8				17					845
9	CL		B-2031 4	40	8/8	4.51	RESIDUAL SOIL (RS) LEAN CLAY with sand hard, brownish yellow (10YR6/6), damp, ~10% coarse grained shell fragments, strong reaction to HCl		844
10				50/2"			rock in sampler shoe		843
11								Bedrock at 10.7'	842
12									841
13									840
14									839
15									

Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG Boring No. B-2031</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'07.65554"N / 97°47'32.80039"W		Total Depth 100 feet	
Drilling Contractor and Rig FUGRO Austin / CME-45		Elevation and Datum 853.143 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 10.7 feet	
Casing Size and Depth 4" / 10.7 feet		Length of Core Barrel and Bit 8.7 feet	No. of Core Boxes 6	Date Started 2/6/07	
		Borehole Inclination Vertical	Logged by S. Dee	Date Completed 2/7/07	

Reviewed by / Date R.Ortiz 2/8/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
11		0.95				MW	R0					SHALE: Moderate Yellow (5Y 7/6); moderately weathered (MW); extremely weak(R0); no reaction to HCL [Glen Rose Formation]		842
12		1.17							2031-5			LIMESTONE: Micrite; Very light (N8); moderately weathered (MW); weak(R2); massive with occasional(<0.1") interbeds of siltstone; strong reaction to HCL. [Glen Rose Formation]		841
13		0.93	1	4.2 4.3	98	MW	R2					Shale interbed		840
14		0.95										LIMESTONE: Micrite; very light gray(N8);slightly weathered(SW); weak (R2); strong reaction to HCL[Glen Rose Formation]		839
15						SW	R2							838
16		2.73				SW	R1					LIMESTONE: medium Gray (N5); thinly bedded; fresh (F);slightly weathered (SW); very weak (R1); Slight Reaction to HCL[Glen Rose Formation]		837
17						F	W2					LIMESTONE: Micrite; very light gray(N8); Massive; fresh (F); Weak(R2); Strong reaction to HCL[Glen Rose Formation]		836
18		1.7	2	5.0 5.0	100	F	R0		2031-6			SHALE: Medium dark gray (N4); very thinly bedded; fresh (F); extremely weak (R0); Strong reaction to HCL[Glen Rose Formation]		835
19		1.83										LIMESTONE: Wackestone; medium light gray(N6); bedded with abundant (<0.1') interbeds of shale/silt; slightly weathered (SW); weak (R2)[Glen Rose Formation]		834
20		1.35				SW	R2							833
21		1.7										SHALE: Medium gray(N5); massive to very thinly bedded; slightly weathered (SW); extremely weak (R0); slight reaction to HCL[Glen Rose Formation]		832
22		2.12				SW	R0							831
23		2.3	3	5.0 5.0	100				2031-7			LIMESTONE: Wackestone; white (N9); massive; slightly weathered (SW); weak(R2); Violent reaction to HCL; all clasts are fine to medium grained fossils[Glen Rose Formation]		830
24		1.13										Shale interbed		829
25		0.7				SW	R2							828
		1.3	4	5.0 5.0	100									

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-2031**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
26		1.3				SW	R2							827
27		1.42												826
28		2.58	4	5.0 5.0	100									825
29		2.95				SW	R2		2031-8					824
30		3.28												823
31		3.22												822
32		2.68				F	R0		2031-9					821
33		2.58	5	5.0 5.0	100									820
34		1.62				F	R2							819
35		2.25				F	R0							818
36		1.73												817
37		1.35							2031-10					816
38		1.55	6	5.0 5.0	100	SW	R2							815
39		2.8												814
40		2.12												813
		1.07	7	5.0 5.0	100	SW	R2							813

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2031</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
41		1.07										LIMESTONE: Packstone; very light gray (N8); bedded with abundant (<0.1) interbeds of shale/silt; slightly weathered (SW); weak (R2); abundant bioturbation and rip up clasts; clasts are medium to coarse grained; angular and white[Glen Rose Formation]		812
42		1.6				SW	R2							811
43		0.93	7	5.0 5.0	100					2031-11				810
44		3.22				SW	R2					LIMESTONE: Wackestone; very light gray (N8); slightly weathered (SW); weak (R2); bedded with abundant interbeds (<0.1) of shale/silt; strong reaction to HCL[Glen Rose Formation]	interbed of shale from 43.4' to 43.6'	809
45		2.35												808
46		5.18				F	R0					SHALE: Medium dark gray (N4); very thinly bedded; fresh (F); extremely weak (R0); Strong reaction to HCL; abundant fossils throughout[Glen Rose Formation]		807
47		4.45												806
48		3.2	8	5.0 5.0	100					2031-12		LIMESTONE: Wackestone; White (N9); to very light gray (N8); massive with occasional interbeds (<0.1) of shale/silt; strong reaction to HCL; slightly weathered (SW); weak(R2); High concentration of shale interbeds from 49.3 to 49.7 . Abundant bioturbation throughout. Abundant fossils in shale interbeds. High concentration of bivalve fossils from 53.4 to 54.7[Glen Rose Formation] Shale interbed from 49.3' to 49.7'		805
49		2.7												804
50		1.93												803
51		2.03				SW	R2							802
52		2.87												801
53		2.9	9	5.0 5.0	100					2031-13		Shale interbed from 51.9' to 52.1' and 52.6' to 52.9'  Shale interbed		800
54		3.53												799
55		1.8												798
55		3.22	10	5.0 5.0	100	F	R0			2031-14		SHALE: Medium dark gray (N4); very thinly bedded; fresh (F); extremely weak (R0); no reaction to HCL. Abundant fossils from 58.0 to 58.3[Glen Rose Formation]		798

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2031</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
56		3.22										SHALE: Medium dark gray (N4); very thinly bedded; fresh (F); extremely weak (R0); no reaction to HCL. Abundant fossils from 58.0 to 58.3[Glen Rose Formation]	pull down pressure = 375 psi	797
57		7.13				F	R0						system pressure = 1800 psi	796
58		9.78	10	5.0 5.0	100								100% water return (gray)	795
59		6.47				F	R2					LIMESTONE: Wackestone; massive; fresh (F); weak (R2); strong reaction to HCL[Glen Rose Formation]		794
60		3.65										SHALE: Medium dark gray (N4); very thinly bedded; fresh (F); extremely weak (R0); no reaction to HCL [Glen Rose Formation] limestone interbed from 59.9' to 60.3'		793
61		3.13				F	R0					limestone interbed from 60.4' to 60.5'		792
62		5.28								2031-15				791
63		2.33	11	5.0 5.0	100							LIMESTONE: Wackestone; White (N9) to very light gray (N8); massive with occasional interbeds (<0.1) of shale/silt; slightly weathered (SW); weak (R0); Strong reaction to HCL[Glen Rose Formation]		790
64		2.03				SW	R2							789
65		3.07												788
66		4.7										SHALE: Medium dark gray (N4); very thinly bedded; fresh (F); extremely weak (R0); slight reaction to HCL; several (<0.1) interbeds of limestone[Glen Rose Formation]		787
67		3.83				F	R0							786
68		3.63	12	5.0 5.0	100							LIMESTONE: Wackestone; bedded with abundant (<0.1) interbeds of shale; slightly weathered (SW);weak (R2); bioturbated[Glen Rose Formation]		785
69		2.15				SW	R2			2031-16				784
70		4.68				F	R0					SHALE: Medium dark gray (N4); very thinly bedded; fresh (F); extremely weak (R0); slight reaction to HCL; several (<0.1) interbeds of limestone[Glen Rose Formation]		783
		2	13	5.0 5.0	100	SW	R2							783

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908




**ROCK LOG**  
**Boring No. B-2031**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
71		2										LIMESTONE: Wackestone; Massive with zones of abundant (<0.1) interbeds of Shale/silt; slightly weathered (SW); weak(R2); reacts strongly to HCL; Clasts are fine grained; angular and bluish gray; likely fossils; LIMESTONE: wackestone; bedded with abundant (<0.1) interbeds of shale/silt; slightly weathered (SW); weak (R2); strong reaction to HCL; abundant bioturbation and rip up clasts; clasts are gray to bluish gray; fine to medium grained; sub angular and oolitic[Glen Rose Formation]		782
		3.02												781
72														781
		3.3												780
73			13	5.0 5.0	100					2031-17				780
		1.02												779
74														779
		2.48												778
75													pull down pressure = 50psi	778
		1.25												778
76													system pressure = 1300 psi	777
		1.53								2031-18				777
77													100% water return (gray)	776
		0.8	14	5.0 5.0	100									776
78						SW	R2							775
		1.02												775
79														774
		1.98												774
80														773
		1.77												773
81														772
		2												772
82														771
		2.37	15	5.0 5.0	100									771
83										2031-19				770
		1.02												770
84														769
		1.03												769
85														768
		2.4	16	5.0 5.0	100								abundant shale/silt interbeds(<0.1'); bioturbation and rip-up clasts to 88.6; less abundant from 88.6 to 90	768

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2031</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
86		2.4										LIMESTONE: Wackestone; Massive with zones of abundant (<0.1) interbeds of Shale/silt; slightly weathered (SW); weak(R2); reacts strongly to HCL; Clasts are fine grained; angular and bluish gray; likely fossils; LIMESTONE: wackestone; bedded with abundant (<0.1) interbeds of shale/silt; slightly weathered (SW); weak (R2); strong reaction to HCL; abundant bioturbation and rip up clasts; clasts are gray to bluish gray; fine to medium grained; sub angular and oolitic[Glen Rose Formation]		767
		3.22												766
87														766
		1.52	16	5.0 5.0	100									765
88														765
		2.27												764
89														763
		1.08												762
90														762
		2.32												761
91													761	
		1.25											761	
92													760	
		1.53	17	5.0 5.0	100	SW	R2						760	
93													760	
		1.43											759	
94													758	
		1.8											758	
95													757	
		1.25											757	
96													757	
		2.13											756	
97													756	
		1.6	18	5.0 5.0	100								755	
98													755	
		1.18											754	
99													754	
		1.77											753	
100													753	
													753	



Project Name and Job Number TXU Comache Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-2032</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'06.18999"N / 97°47'32.54177"W		Total Depth 100 feet	
Drilling Contractor and Rig Geotechnology / CME 75		Elevation and Datum 852.991 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 15 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 4	Date Started 2/5/07	
		Borehole Inclination Vertical	Logged by L.Pawlak	Date Completed 2/8/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 2/8/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0								<b>ARTIFICIAL FILL (Qaf)</b> LEAN CLAY with sand hard, pale olive (5Y6/4), dry to damp, with calcareous deposits, reacts with HCl		852
1	CL		B-2032 1	50	15/18					851
2				50						850
3	ML		B-2032 2	12	2.5/9			SILT with limestone fragments hard, pale yellow (5Y8/2), dry, reacts with HCl		849
4				50/2.5"				<b>RESIDUAL SOIL (RS)</b> weathered limestone within interbedded clay, olive yellow (5Y6/6 - 5Y6/8), mottled, reacts with HCL		848
5										847
6			B-2032 3	5	17/17					846
7				3						845
8				50/5"						844
9	CL		B-2032 4	50/2.5"	2.5/2.5			weathered limestone bedrock with silt, hard, pale yellow (2.5Y7/3), dry, reacts with HCl		843
10										842
11									Augered through SPT interval 11.0' - 12.5' No B-2032-5 sample taken.	841
12										840
13										839
14			B-2032 6	42	1/7			color to greenish gray (Gley1 6/1)	sampler stuck in hole	838
15				50/1"						838

Project Name and Job Number TXU Comanche Peak Col 1908		 WLA William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. B-2032</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'06.18999"N / 97°47'32.54177"W		Total Depth 100 feet	
Drilling Contractor and Rig GeoProjects / CME 75		Elevation and Datum 852.991 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 15 feet	
Casing Size and Depth 4" / 15 feet		Length of Core Barrel and Bit 13.4 feet	No. of Core Boxes 5	Date Started 2/5/07	
		Borehole Inclination Vertical	Logged by L.Pawlak	Date Completed 2/8/07	

Reviewed by / Date R. Ortiz 2/9/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
15		2.33				SW	R2				JT, slightly rough, 0 degrees	LIMESTONE: wackestone; medium light gray (N6); fine grained; slightly weathered (SW); weak (R2); massive; small black organics; strong reaction to HCl. [Glen Rose Formation]	circulation of water is grayish brown	837
16		4.03				MW	R1-R2					SHALE: medium dark gray (N4); fine grained; moderately weathered; very weak to weak (R1-R2); thinly bedded; pieces of mica (phlogopite) on joint surface; weak reaction to HCl. [Glen Rose Formation]		836
17		7		3.9 4.0	95							LIMESTONE: wackestone; same as above (15' to 15.5); more bioturbation; slightly weathered (SW); less reaction to HCl; more clay content than above. [Glen Rose Formation]		835
18		2.5				SW	R2							834
19		2.45												833
20		3.88				SW-MW	R2					SHALE: medium gray (N5); to greenish gray (5GY 6/1); fine grained; moderately weathered (MW); weak (R2); thin bedded; weak to no reaction to HCl. [Glen Rose Formation]		832
21		2.63										SHALE: siltstone; greenish gray (5GY 6/1); fine grained; moderately weathered (MW); weak (R2); some shell hash. [Glen Rose Formation]		831
22		3.83	8	4.6 5.0	74					2032-5		SHALE: claystone; (5GY 6/1); fine grained; highly to completely weathered at 22.2'; slightly weathered (SW); weak reaction to HCl. [Glen Rose Formation]		830
23		2.58				HW	R2				JT, M4-M5, very closely spaced, slightly to moderately open, moderately rough	PACKSTONE; very light gray (N8); fine grained; highly weathered (HW); significant fossils. [Glen Rose Formation]		829
24		0.93									JT, rough slightly open, M2-M3, black alternative on surface 0 degrees			828
25		ND												827
26		ND										LIMESTONE: wackestone; light gray(N7); fine grained; slightly weathered (SW); weak(R2). [Glen Rose Formation]	gradational	826
27		ND	9	4.9 5.0	96					2032-6				825
28		ND				SW	R2						no runs recorded for run 9 due to phone call to report leaking circulation water	824
29		ND												823
30		4.92	10	5.0 5.0	82						JT, 10 degrees, closely spaced, rough, M4 JT, 0 degrees, rough, clean.			822

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2032</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
30		2.17				MW	R0-R2				M4	SHALE; claystone; medium dark gray; (N4); fine grained; moderately weathered (MW); extremely weak to weak (R0-R2); no reaction to HCl. [Glen Rose Formation]		822
31		2.25				MW	R2					SHALE: medium dark gray (N4); fine grained; moderately weathered (MW); weak (R2); no reaction to HCl; thinly bedded. [Glen Rose Formation]		821
32			10	5.0 5.0	82						2032-7			
33		1.83									JT, 10 degrees, rough, M4,	LIMESTONE: light gray (N7); fine grained; slightly weathered (SW); weak (R2); strong reaction to HCl. [Glen Rose Formation]		820
34		1.75												819
35		2				SW	R2				JT, 0 deg, mod. spaced, slightly rough, M3 JT, 0 deg, slightly open JT, slightly open, M3			818
36		2.25												817
37		2	11	4.6 5.0	78							SHALE: medium to drak gray (N6); fine grained; slightly weathered (SW); thinly bedded; slight reaction to HCl. [Glen Rose Formation]		816
38		1.83				SW	R2					LIMESTONE: wackestone; very light gray (N8); fine to medium grained; slightly weathered (SW); weak (R2); strong reaction to HCl. [Glen Rose Formation]		815
39		1.75									2032-8			814
40		1.72				SW	R2				JT, 0 deg, slightly open, M3, slightly rough			813
41		2												812
42		2.5												811
43		2.33	12	4.7 6.0	94						2032-9			810
44		2.67				SW	R0					CLAYSTONE; medium dark gray; (N4); fine grained; slightly weathered (SW); no reaction to HCl; extremely weak (R0). [Glen Rose Formation]		809
45		2.5				SW	R2					LIMESTONE: wackestone; very light gray (N8); fine to medium grained; slightly weathered (SW); weak (R2); strong reaction to HCl. [Glen Rose Formation]		808

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-2032**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
45		2				SW	R1-R2					SHALE: medium dark gray (N4); fine grained; slightly weathered (SW); medium to very weak (R1-R2); very thin to thin bedding; weak reaction to HCl. [Glen Rose Formation]		807
46		2.67									JT, 20 deg, thin, slightly rough, M4	LIMESTONE: wackestone; very light gray(N8); fine to medium grained; moderately weathered (MW); weak (R2); strong reaction to HCl; interbedded shale up to 10mm thick; very thin at 48.2'. [Glen Rose Formation]		806
47		2.17	13	4.5 4.0	90				2032-10					805
48		3.33				MW	R2							804
49		3.5												803
50		3.72							2032-11					802
51		3.67	14	4.8 5.0	100									801
52		3.33				SW	R3					SHALE: claystone; dark gray (N3); fine grained and slightly weathered (SW); extremely weak (R0); weak reaction to HCl. [Glen Rose Formation]		800
53		3.25				SW	R2					LIMESTONE: wackestone; light gray to medium light gray (N6 to N7); fine grained to medium grained; slightly weathered (SW); weak (R2); thin clay interbeds and significant burrows and shells remaining at 52.4' to 52.7'. Strong reaction to HCl. [Glen Rose Formation]		799
54		2.15							2032-12			SHALE: medium to dark gray (N4); fine grained; slightly weathered (SW); extremely weak (R0); very thin bedding; fossils; weak reaction to HCl. [Glen Rose Formation]		798
55		4.32				SW	R0							797
56		5.75	15	4.6 5.0	92								gray water circulation	796
57		5.43				MW-SW	R2					LIMESTONE: wackestone; very light gray to white (N8- N9); fine grained; slightly to moderately weathered (SW-MW); fossils and bioturbation; strong to violent reaction to HCl. [Glen Rose Formation]		795
58		6.08										SHALE: extremely weak from 57.5 to 58.0; weak from 58' to 58.2'; bedding very thin to thin. [Glen Rose Formation]	drilling is louder	794
59			16	5.0 5.0	100	SW	R0						color change in shale to (5G 6/1) greenish gray	793
60														

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2032</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
60		2.15										SHALE: extremely weak from 57.5 to 58.0; weak from 58' to 58.2'; bedding very thin to thin. [Glen Rose Formation]		792
61		4.73				SW	R0		2032-13			SHALE: 58' to 61'; becomes more fissile at 61'; tiny specks of very fine sand mixed in with interbeds that appear calcareous at 62'; shell hash from 62' to 62.1'. [Glen Rose Formation]		791
62		5.63	16	5.0 5.0	100							LIMESTONE: wackestone; very light gray (N8); fine grained; slightly to moderately weathered; weak (R2); fossils; strong to violent reaction HCl; shale interbeds 3-5mm thick beginning at 63.9'. [Glen Rose Formation]		790
63		5				MW-SW	R2							789
64		4.33												789
65		4.5				SW	R0-R2		2032-14			SHALE: medium dark gray (N4); fine grained; slightly weathered (SW); extremely weak to weak (R0-R2); very thin bedding; fossils at 64.4'; reacts very slightly with HCl. [Glen Rose Formation]		788
66		4.5	17	5.0 5.0	100								drilling loud, gray circulation to water	787
67		5										LIMESTONE: wackestone; very light gray (N8); fine grained; slightly to moderately weathered (SW-MW); weak (R2); fossils; strong to violent reaction HCl.. [Glen Rose Formation]	adjusted recovery by adding 1.7' from run 18 to run 17, adjusted RQD after adjusting recovery	786
68		5.25				MW-SW	R2							785
69		6.95				SW	R0-R2					SHALE: dark gray (N3); fine grained; slightly weathered (SW); very thinly bedded; very weak to no reaction with HCl. [Glen Rose Formation]		784
70		3.92										LIMESTONE: wackestone; very light gray (N8); fine grained; slightly to moderately weathered (SW-MW); weak (R2); fossils; strong to violent reaction HCl; shale interbedded 7mm thick at 71' and at 72.1'; wackestone has very thin interbedding and some fissility; bioturbation from 73' to 74'; thin bedding begins at 74.2' and is still wackestone. [Glen Rose Formation]	picked up 1.7' extra in barrel from run 17, so total recovery is 6.7'	783
71		9.62	18	5.2 5.0	100									782
72		4.33				MW-SW	R2						no sample taken in run 18, too broke up	781
73		6.38											Length of recovery stretched due to mechanical breaks.	780
74		1.33	19	5.0 5.0	100	SW	R2							779
75														778

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)	
75		1.88										LIMESTONE: wackestone; light gray (N7); fine grained; slightly weathered (SW); weak (R2); massive beds 0.9' thick interbedded with laminated zones from 0.3' to 1' thick. Laminations are wavy and deformed; irregular. Few micrite interbeds; micrite at 35 to 35.2'. Bioturbation; bioturbation at 131.7 filled with darker material; including pyrite granules. Small shell fragments from 136 to 137.8'. Slight to strong reactions to HCl. Sparse angular coal fragments. Wackestone has a wavy basal contact; diffuse over 0.5". [Glen Rose Formation]		777	
76		3												776	
77			19	$\frac{5.0}{5.0}$	100	SW	R2							775	
78		4.4								2032-15				774	
79		3.83											773		
80		1.35										LIMESTONE: wackestone; medium to light gray (N6); bioturbation. [Glen Rose Formation]		772	
81		3.83												771	
82			20	$\frac{5.2}{5.0}$	100	SW	R2						Length of recovery stretched due to mechanical breaks.	770	
83		1.75												769	
84		1.78								2032-16				768	
85		4.33										LIMESTONE: wackestone; shale interbed at 87.6' to 87.8'; interbed is extremley weak. [Glen Rose Formation]		no sample taken in run 21, too broken up	767
86		2.15													766
87			21	$\frac{4.3}{5.0}$	86	SW	R2							765	
88		2.67												764	
89		7.18												763	
90		3.77	22	$\frac{4.9}{5.0}$	98	SW	R2								

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**ROCK LOG**  
**Boring No. B-2032**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
90		2.13										LIMESTONE: wackestone; same as above		762
91		2.88				SW	R2							761
92		1.58	22	4.9 5.0	98				2032-17					760
93		5.15				SW	R0					SHALE: medium gray (N4); fine grained; slightly weathered (SW); extremely weak (R0); very thin bedding; very slight to slight reaction to HCl. [Glen Rose Formation]		759
94		7.1										LIMESTONE: wackestone; light gray to medium light gray (N7- N6); slightly weathered (SW); weak (R2); very thin bedding; fossils and bioturbation; strong to violent reaction to HCl. [Glen Rose Formation]		758
95		2.53												757
96		3.15												756
97		2.33	23	5.0 6.0	92	SW	R2							755
98		2.78												754
99		1.35							2032-18					753
100													BOTTOM OF HOLE AT 100 FEET	752
101														751
102														750
103														749
104														748
105														

Project Name and Job Number TXU Comache Peak COL 1908				<b>SOIL LOG</b> <b>Boring No. B-2033</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'06.27388"N / 97°47'31.85974"W		Total Depth 76 feet	
Drilling Contractor and Rig TEXPLOR / CME 75		Elevation and Datum 850.668 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 15.6 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 7	Date Started 2/6/07	
		Borehole Inclination Vertical	Logged by M. Zellman	Date Completed 2/6/07	

Reviewed by / Date R. Ortiz 2/9/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0										850
1			B-2033 1	6						849
2				9	$\frac{18}{18}$					848
3	CL			14						847
4			B-2033 2	4						846
5				9	$\frac{18}{18}$					845
6			B-2033 3	50/2.5"	$\frac{2.5}{2.5}$					844
7	CL									843
8			B-2033 4	19						842
9				26	$\frac{17}{17}$					841
10				50/5"						840
11	GC		B-2033 5	50/5.5"	$\frac{5.5}{5.5}$					839
12										838
13	ML		B-2033 6	50/6"	$\frac{6}{6}$					837
14										836
15	CL/ML		B-2033 7	10	$\frac{6}{11}$					836



Project Name and Job Number TXU Comache Peak COL 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">SOIL LOG</h2> <h2 style="margin: 0;">Boring No. B-2033</h2>
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Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
15	CL/ML									835
16								HSA refusal at 15.6'	Bedrock at 15.6'	835
17										834
18										833
19										832
20										831
21										830
22										829
23										828
24										827
25										826
26										825
27										824
28										823
29										822
30										821




Undisturbed sample  
SH = Shelby; P = Pitcher; O = other



Driven (2.5 to 3.0 inch) with liners  
MC = Modified California; O = other



Standard Penetration Test (SPT) sampler

Project Name and Job Number TXU Comanche Peak Col 1908		 WLA William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. B-2033</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'06.27388"N / 97°47'31.85974"W		Total Depth 76 feet	
Drilling Contractor and Rig Texplore / CME 75		Elevation and Datum 850.668 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 15.6 feet	
Casing Size and Depth 4" / 14 feet		Length of Core Barrel and Bit 8 feet	No. of Core Boxes 4	Date Started 2/6/07	
		Borehole Inclination Vertical	Logged by M. Zellman	Date Completed 2/6/07	

Reviewed by / Date R. Ortiz 2/9/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
16.0	ND	1	0.5 0.4	100								LIMESTONE: micrite; light gray (N7); slightly weathered (SW); weak (R2); very fine to fine grained; dry. 16.7' very close; very thin shale laminations (0.5") thick. [Glen Rose Formation]		835
16.32						SW	R2							834
17.0														833
17.43									2033-8					833
18.0														832
18.28		2	5.0 5.0	100		SW-MW	R1						(0.1') shell	832
19.0														831
19.47														831
20.0														830
20.45						SW	R2							830
21.0														829
21.57						SW	R2					LIMESTONE: wackestone; white (N9); slightly weathered (SW); weak (R2); vuggy with shell fossils. [Glen Rose Formation] / LIMESTONE: wackestone; medium dark gray (N4); slightly weathered (SW); weak (R2). [Glen Rose Formation]		829
22.0														828
22.62														828
23.0														827
23.67		3	5.0 5.0	100					2033-9					827
24.0														826
24.2						SW	R2							826
25.0														825
25.92														825
26.0														824
26.83													Gradational	824
27.0														823
27.217						SW	R2							823
28.0														822
28.225		4	4.5 5.0	90										822
29.0														821
29.23						SW	R1		2033-10					821
30.0														821
30.183						SW	R2							821

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
31		1.83	4		90							LIMESTONE: light gray (N7); slightly weathered (SW); weak (R2); top contact is interbedded with very close; very thin gray shale and shell hash. ~31.0 color change to medium dark gray (N4); many small fossils and shells; fine grained. [Glen Rose Formation]		820
32		1.97				SW	R2							819
33		ND				SW	R2		2033-11			LIMESTONE: wackestone; very light gray (N8); slightly weathered (SW); weak (R2); wavy bedding; many burrows and filled (secondary) with packstone at upper 0.4'		818
34		ND	5	5.0 5.0	100							LIMESTONE: wackestone; medium light gray (N6); slightly weathered (SW); weak (R2); upper contact is interbedded and irregular; wavy. Fine grained with few planar/wavy beds. ~35' many beds and burrows; darkens slightly in color. [Glen Rose Formation]		817
35		ND				SW	R2							816
36		ND				SW	R2							815
37		ND							2033-12					814
38		ND												813
39		1.52	6	5.2 5.0	100	SW	R2					LIMESTONE: packstone: medium light gray (N8); slightly weathered (SW); weak (R2); many fossils and fine grains; bedding is present and planar to sub planar. [Glen Rose Formation]		812
40		1.33										LIMESTONE: wackestone; light gray (N7); slightly weathered (SW); weak (R2); fine grained; wavy beds with (0.1') spacing; many fossils (white). 41.1 to 41.5' and 41.6 to 41.7' shale bedding. 41.8 to 42' very close; very thin laminated beds of shale/wackestone. 42.3 to 42.9' very close; very thin laminated shale limestone. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	811
41		1.32				SW	R2							810
42		1.73												809
43		2.5												808
44		2.63	7	4.9 5.0	100							SHALE: medium gray (N5); slightly weathered (SW); weak (R2); interbedded with micrite (0.1') at 43.8' and (0.2') at 44.1'. Organic/Peat 44.3' lamination. Lower contact is wavy with limestone rip ups. [Glen Rose Formation]		807
45		2.62				SW	R2		2033-13					806

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
46			7		100							<p>LIMESTONE: wackestone; very light gray (N8); slightly weathered (SW); weak (R2); fine to very fine grain; massive to 46'. 46' and below interbedded with close to very close shale laminations (planar to wavy). 48.5' bioturbated zone; many 1-2cm burrows and shale beds. 49.9 0.1' shale; 50.3' 1/4" peat bed; 50.7' (0.1') shale. wackestone very deformed bedding from 51' to 51.6'; many shells and thin shale (wavy) beds; abrupt-wavy lower contact. [Glen Rose Formation]</p>		805
47		3.85												804
48		3.75												803
49		3.83	8	5.0 5.0	100	SW	R2							802
50		2.5							2033-14					801
51		2.02												800
52		3											increased RQs from extra "stickup" below	799
53		3.05												798
54		3.17	9	2.7 5.0	92	SW	R1			2033-15				797
55		3.67												796
56		4.02											795	
57		4				SW	R2						794	
58		3.93	10	4.5 2.5	100					2033-16			793	
59		ND				SW	R1						792	
60		3.25	11	2.5 2.5	100								791	
		3.33												

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
61		3.33	11		100							LIMESTONE: wackestone; light gray (N8); slightly weathered (SW); weak (R2); very fine to fine grained. 61' large burrows and <0.1' shale beds; darkens to medium gray (N6); contains many fine to coarse grains; wavy/deformed bedding interbedded lower contact. [Glen Rose Formation]		790
62		3				SW	R2							789
63		2.92												788
64		3.17	12	5.0 5.0	100					2033-17		SHALE: dark gray (N3); slightly weathered (SW); very weak (R1); upper 0.4' contains many limestone clasts few to none with depth; many planar beds. [Glen Rose Formation]		787
65		3.25				SW	R1							786
66		3.35										LIMESTONE: wackestone; light gray N8; slightly weathered (SW); weak (R2); very fine to fine grained wavy/deformed beds; many burrows filled with micrite. [Glen Rose Formation]		785
67		2.5				SW	R2							784
68		3.22								2033-18		SHALE: medium dark gray (N4); dessicates to 1/8" beds. [Glen Rose Formation]		783
69		2.17	13	5.0 5.0	100							LIMESTONE: wackestone; very light gray (N8); slightly weathered (SW); weak (R2); fine grained; wavy beds; shale interbeds are common; very thin to 0.1'; more shale with depth. 71.0' color change; wackestone very light gray N8; very fine to fine grained; fossils (dark); massive. 72' color change light gray (N7); fine grains; many burrows present with wavy bedding; many fine to medium sub angular grains. [Glen Rose Formation]		782
70		2.02												781
71		1.8												780
72		1.83				SW	R2							779
73		1.62								2033-19				778
74		1.62	14	5.0 5.0	100									777
75		1.35												776
		ND												

Project Name and Job Number  
 TXU Comanche Peak Col  
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**ROCK LOG**  
**Boring No. B-2033**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
76		ND	14		100	SW	R2							775
76													BOTTOM OF HOLE AT 76 FEET	775
77														774
78														773
79														772
80														771
81														770
82														769
83														768
84														767
85														766
86														765
87														764
88														763
89														762
90														761

Project Name and Job Number TXU Comache Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-2034</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'03.96063"N / 97°47'30.02668"W		Total Depth 150.9 feet	
Drilling Contractor and Rig Palmerston and Parish / CME 55		Elevation and Datum 839.116 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 11.9 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 5	Date Started 1/30/07	
		Borehole Inclination Vertical	Logged by G. VanEitten	Date Completed 2/6/07	

Reviewed by / Date R. Ortiz 2/7/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0								<b>ARTIFICIAL FILL (Qaf)</b> Limestone fragments and silt, very dense, white (2.5Y8/1), dry		839
1	ML		B-2034 1	12	12/18					838
2				29						837
3				18						836
4	CL		B-2034 2	5	13/18			<b>LEAN CLAY</b> with calcareous deposits and few limestone fragments, medium stiff		835
5				3						834
6				3						833
7			B-2034 3	30	8/8			<b>RESIDUAL SOIL (RS)</b> Sandy SILT, hard, olive yellow (2.5Y6/6), wet		832
8	ML			50/2"						831
9								light brownish gray (2.5Y6/2)		830
10			B-2034 4	26	15/18					829
11	CL		B-2034 5	27				<b>LEAN CLAY</b> , hard, bluish gray (Gley2,5/1), moist		828
12				24						827
13				50/6"	5/5					826
14										825
15								Augered to 14' to set casing	Bedrock at 11.9'	824

Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG Boring No. B-2034</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'03.96063"N / 97°47'30.02668"W		Total Depth 150.9 feet	
Drilling Contractor and Rig Palmerton and Parrish / CME 55		Elevation and Datum 839.116 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 11.9 feet	
Casing Size and Depth 4" / 14 feet		Length of Core Barrel and Bit 8.6 feet	No. of Core Boxes 10	Date Started 1/30/07	
		Borehole Inclination Vertical	Logged by G. Van Etten	Date Completed 2/6/07	

Reviewed by / Date R. Ortiz 2/7/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
14		2.5							2034-6			LIMESTONE: wackestone; very light gray (N8); fresh(F); weak(R2); 02' thick shale interbed at 15.2'; shell fragments. [Glen Rose Formation]	augered down to 14' from 11.9'	825
15		3	1	1.9 1.9	100	F	R2						good water return, milky white	824
16		2.5										LIMESTONE: wackestone; medium light gray (N6); fresh(F); very weak(R1); massive; many shell fragments. [Glen Rose Formation]		823
17		3.67												822
18		4.75	2	5.0 5.0	100	F	R1						PVC case spinning with rod	821
19		3.75												820
20		4							2034-7			SHALE: medium dark gray (N4); fresh(F); extremely weak(R0); massive; few fossils [Glen Rose Formation]		819
21		6.17												818
22		3.32										SHALE: with limestone matrix; medium gray (N5); fresh(F); very weak(R1); limestone rip-up clasts [Glen Rose Formation]		817
23		2.72	3	5.0 5.0	100	F	R1							816
24		3.38							2034-8			LIMESTONE: wackestone; light gray (N7); very thin wavy shale interbeds; fresh(F); weak(R2) [Glen Rose Formation]		815
25		1.55												814
26		2.32												813
27		3.47	4	4.8 5.0	96	F	R2					LIMESTONE: packstone; medium light gray (N6); very thin wavy shale beds; fresh(F); weak(R2); some bioturbations and rip up clasts [Glen Rose Formation]		812
28		2.25												811
29									2034-9					



Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2034</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
29		1.08												810
		1.08				F	R2							
30			4	4.8 5.0	96							LIMESTONE: packstone; medium light gray (N6); very thin wavy shale beds; fresh(F); weak(R2); some bioturbations and rip up clasts [Glen Rose Formation]	good water return, splashing	809
		0.97											casing spinning with rod	808
31						F	R2						water is very light gray	807
		2.28												
32														
		3.82												
33						F	R0		2034-10			SHALE: medium dark gray (N4); very thin wavy rip up clasts of LIMESTONE: fresh(F); extremely weak(R0) [Glen Rose Formation]	600 psi	806
		3.47	5	5.0 5.0	100							LIMESTONE: packstone; medium light gray (N6); convoluted thin beds; fresh(F); very weak(R1) [Glen Rose Formation]		805
34						F	R1							
		4.18												
35						F	R0					SHALE: dark gray (N3); wavy limestone layers <0.1' thick; .4' apart; fresh(F); extremely weak(R0) [Glen Rose Formation]		804
		3.2												
36											FZ	LIMESTONE: packstone with SHALE: medium dark gray (N4) to medium light gray (N6); convoluted thin wavy shale interbeds; fresh(F); very weak(R1). More rip up clasts. Visible fossils. Thin lenses of organic material (coal?). Fossils and bioturbations abundant. [Glen Rose Formation]		803
		5.47												
37														
		2.4												
38														
		3.77	6	5.0 5.0	100				2034-11					801
39														
		4.32												
40						F	R1							
		2.95												799
41														
		4.87												798
42														
		3.83	7	4.9 5.0	98									797
43														
		4.17												796
44									2034-12					

Project Name and Job Number  
TXU Comanche Peak Col  
1908



**ROCK LOG**  
**Boring No. B-2034**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
44		3.92										SHALE: medium dark gray (N4); massive; fresh(F); extremely weak(R0) [Glen Rose Formation]		795
45		3.92	7	4.9 5.0	98	F	R0					SHALE: medium dark gray (N4); massive; fresh(F); extremely weak(R0). Extremely thin; perfectly flat layers/ laminations of shale beds. [Glen Rose Formation]	good water return, very light gray	794
46		5.5												793
47		8.45				F	R0							792
48		5.17										LIMESTONE: packstone; very light gray (N8); covoluted near contacts; fresh(F); weak(R2); multiple calcified shell fossils. [Glen Rose Formation]		791
49		6.5	8	5.0 5.0	100				2034-13			SHALE with limestone interbeds; medium gray (N5) to light gray (N7); limestone interbeds 0.1' and 0.2' thick spaced 0.5' apart; fresh(F); extremely weak to weak(R0-R2) [Glen Rose Formation]		790
50		5.5									IF, St, Sm, J			789
51		4.75				F	R0						4' run to pick up stick up without overpacking	788
52		6.17										LIMESTONE: packstone; light gray (N7); covoluted wavy beds; fresh(F); very weak(R1); many bioturbations; rip up clasts; and some fossils. [Glen Rose Formation]		787
53		4.32	9	4.1 4.0	100	F	R1		2034-14				Length of recovery stretched due to mechanical breaks.	786
54		3.17												785
55		4.67									FZ	SHALE: medium dark gray (N4); fresh(F) extremely weak(R0); <0.1' thick limestone layers intermixed. Many limestone rip up clasts from 56.6' - 57.5' [Glen Rose Formation]		784
56		3.73	10	0.9 1.0	90				2034-15					783
57		4.18				F	R0							782
58		3.88	11	5.0 5.0	100				2034-16					781
59		4.95												

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-2034**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
59		3.82				F	R0							780
		3.82				F	R1					LIMESTONE: packstone; light gray (N7); thin; wavy; convoluted layers of shale; fresh(F); very weak(R1); bioturbation; fossils towards top [Glen Rose Formation]	rough contact at about 10° angle	779
60		2.73	11	5.0 5.0	100							LIMESTONE: packstone; light gray (N7); thin wavy convoluted beds of shale; fresh(F); very weak(R1); some bioturbation and fossils. * washout of shale interbed at 61.7' [Glen Rose Formation]	good water return, splashing, light gray	778
61		4.45				F	R1		2034-17					777
62		3				F	R1					LIMESTONE: wackestone; very light gray (N8); extremely thin wavy layers of SHALE: fresh(F); very weak(R1) [Glen Rose Formation]		776
63		2.83	12	4.9 5.0	98							LIMESTONE: packstone; medium light gray (N6); covoluted swirled layers of shale intermixed; fresh(F); very weak(R1); many bioturbations; rip up clasts. Fewer rip up clasts ~67' [Glen Rose Formation]		775
64		2.43												774
65		2.08												773
66		2.12												772
67		1.22												771
68		3.07	13	5.0 5.0	100	F	R1		2034-18					770
69		2.4												769
70		2.72												768
71		3.75												767
72		3.05	14	5.1 5.0	100				2034-19					766
73		1.9												766
74														

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-2034</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
74	[Pattern]	2.25	14	5.1 5.0	100	F	R1					LIMESTONE: packstone; medium light gray (N6); thin swirled interbeds of SHALE: fresh(F); very weak(R1); some bioturbations and rip up clasts. ~ 81.5. Rounded rip up clasts. Fewer wavy shale interbeds. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	765
75		2.22											2.2	764
76	[Pattern]	2.2	15	5.0 5.0	100	F	R1					LIMESTONE: wackestone; light gray (N7); fresh(F); very weak(R1); laminar shale beds up to 0.1' thick intermixed [Glen Rose Formation]	PVC casing still spinning with rod	763
77	2.48	2.08											762	
78	[Pattern]	1.48	16	5.0 5.0	100	F	R1					LIMESTONE: wackestone; light gray (N7); fresh(F); very weak(R1); laminar shale beds up to 0.1' thick intermixed [Glen Rose Formation]		761
79	1.5	2.97											760	
80	[Pattern]	2.08	17	5.0 5.0	100	F	R1					LIMESTONE: wackestone; light gray (N7); fresh(F); very weak(R1); laminar shale beds up to 0.1' thick intermixed [Glen Rose Formation]		759
81	2.5	1.12											758	
82	[Pattern]	1.88	18	5.0 5.0	100	F	R1					LIMESTONE: wackestone; light gray (N7); fresh(F); very weak(R1); laminar shale beds up to 0.1' thick intermixed [Glen Rose Formation]		756
83	1.33	1.33											755	
84	[Pattern]	1.5	19	5.0 5.0	100	F	R1					LIMESTONE: wackestone; light gray (N7); fresh(F); very weak(R1); laminar shale beds up to 0.1' thick intermixed [Glen Rose Formation]		754
85	1.92	1.33											753	
86	[Pattern]	1.92	20	5.0 5.0	100	F	R1					LIMESTONE: wackestone; light gray (N7); fresh(F); very weak(R1); laminar shale beds up to 0.1' thick intermixed [Glen Rose Formation]		752
87	2.75	2.75											751	
88	[Pattern]	2.75												751
89	[Pattern]													

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-2034</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
89		1.75												750
		1.75				F	R1							
90			17	5.0 5.0	100								good water return, splashing	749
		2.17				F	R1					LIMESTONE: wackestone; light gray (N7); fresh(F); very weak(R1); very thin shale laminations [Glen Rose Formation]		748
91														
		2.62										LIMESTONE: packstone; medium light gray (N6); fresh(F); very weak(R1); small rip up clasts. [Glen Rose Formation]		747
92														
		1.5												
93														
		2.33	18	5.0 5.0	100		R1			2034-23				746
94						F								
		1.87												745
95														
		1.4												744
96														
		2.17										LIMESTONE: wackestone; very light gray (N8); fresh(F); very weak(R1); 98.6' possible filled fracture; line of shale between limestone [Glen Rose Formation]	paused drilling to get more core boxes	743
97						F	R1							742
		2.32												
98										2034-24				741
		2.05	19	5.0 5.0	100									
99														
		2.02				F	R1					LIMESTONE: packstone; light gray (N7); thin laminations of shale up to 0.1' wide averaging 0.5' apart; fresh(F); very weak(R1); some bioturbation [Glen Rose Formation]		740
100														739
		1.95												
101														
		2.55										LIMESTONE: wackestone; light gray (N7); massive; fresh(F); very weak(R1) [Glen Rose Formation]		738
102						F	R1							737
		1.92	20	5.0 5.0	100									
103														736
		1.47				F	R1							
104														

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2034</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
104		2.47										LIMESTONE: packstone; medium gray (N5); fresh(F); very weak(R1); swirled rip up clasts; grainy texture [Glen Rose Formation]	good water return	735
105		2.47	20	5.0 5.0	100	F	R1		2034-25					734
106		1.75				F	R1					LIMESTONE: packstone; medium gray (N5); fresh(F); very weak(R1); swirled rip up clasts; grainy texture; dark gray limestone rip up clasts [Glen Rose Formation]		733
107		2.5												732
108		1.6												731
109		2	21	5.0 5.0	100					2034-26		LIMESTONE: wackestone; light gray (N7); thin shale layers <0.1' common; fresh(F); very weak(R1); some rip up clasts and bioturbations. ~ 110' more shale interbeds. 111' to 112' is medium gray (N5). ~114 shale interbeds abundant but less than 0.1' wide. ~ 116.5 bioturbation common [Glen Rose Formation]		730
110		2												729
111		2.33												728
112		2.25												727
113		1.57				F	R1			2034-27		600 psi downpressure	726	
114		1.82	22	5.0 5.0	100								725	
115		2.5											724	
116		1.62										sample covered in sheen of silt	723	
117		2.2											722	
118		2.75	23	5.0 5.0	100								721	
119		2.5				F	R1			2034-28				

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h3 style="margin: 0;">Boring No. B-2034</h3>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
119	[Lithology Column]	2.55	23	5.0 5.0	100	F	R1					LIMESTONE: packstone; light gray (N7); fresh(F); very weak(R1); rip up clasts common and thin wavy shale layers [Glen Rose Formation]		720
120		2										LIMESTONE: packstone; light gray (N7); fresh(F); very weak(R1); rip up clasts common; thin wavy shale layers intermixed [Glen Rose Formation]		719
121	[Lithology Column]	2.97	24	5.0 5.0	100	F	R1						718	
122		2.75											LIMESTONE: wackestone; light gray (N7); fresh(F); very weak(R1); few swirled rip up clasts and bioturbations [Glen Rose Formation]	717
123	[Lithology Column]	2.57	25	5.0 5.0	94	F	R1						716	
124		4.55											SHALE: dark gray (N3); fresh(F) extremely weak(R0); few limestone rip up clasts; many fossils [Glen Rose Formation]	715
125	[Lithology Column]	2.72	26	5.1 5.0	100	F	R2						714	
126		2.67											SHALE: medium dark gray (N4); wavy interbeds of limestone; fresh(F); very weak(R1) [Glen Rose Formation]	713
127	[Lithology Column]	3.57	26	5.1 5.0	100	F	R2						712	
128		2.67											LIMESTONE: packstone; medium light gray (N6); fresh(F); very weak to weak(R1-R2); many rip up clasts. ~ 131' more shale interbeds making places (N4); medium dark gray [Glen Rose Formation]	711
129	[Lithology Column]	2.5	26	5.1 5.0	100	F	R2						710	
130		2.58											LIMESTONE: packstone; medium light gray (N6); fresh(F); very weak to weak(R1-R2); many rip up clasts. ~ 131' more shale interbeds making places (N4); medium dark gray [Glen Rose Formation]	709
131	[Lithology Column]	5.3	26	5.1 5.0	100	F	R2						708	
132		3.3											end of drilling on 2/05/07	707
133	[Lithology Column]	2.4	26	5.1 5.0	100	F	R2						706	
134		2.4											little water return, splashing	706

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-2034</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
134	[Lithology Column]	2.27	26	5.1 5.0	100	F	R2					LIMESTONE: packstone; medium light gray (N6); convoluted swirled shale interbeds; fresh(F); weak (R2); many rip up clasts; some bioturbation; few fossils. Less rip up clasts and more bioturbations below 138'. Shale interbed from 142.1' to 142.4' [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.  PVC casing still spinning with rod	705
135		2.27												2.5
136		3.28												703
137		1.95												702
138		2.72	27	4.9 5.0	98	F	R2					LIMESTONE: wackestone; very light gray (N8); fresh(F); weak(R2); many bioturbations; few rip up clasts.	rip up clasts abundant at contacts	701
139	1.92	2034-32												700
140		1.58												699
141		3.62												698
142		3.67												697
143		2.25	28	5.0 5.0	100	F	R2					LIMESTONE: packstone; medium light gray (N6); fresh(F); weak(R2); swirled interbeds of shale. ~147.8 abundant shale interbeds throughout; all less than 0.1' thick [Glen Rose Formation]	water pump had a leak, connection easily fixed	696
144	2.67	2034-33												695
145		2.63												694
146		4.92				F	R2							693
147		2.92	29	4.9 5.0	98									692
148	3.32	2034-34												691
149														




Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-2034**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
149		3.07												690
		3.07				F	R2							
150			29	4.9 5.0	98									689
		2.68				F	R1							
151														688
152														687
153														686
154														685
155														684
156														683
157														682
158														681
159														680
160														679
161														678
162														677
163														676
164														

LIMESTONE: packstone; medium light gray (N6); fresh(F); weak(R2); thin interbeds of shale; fossil fragments; rip up clasts [Glen Rose Formation]  
 BOTTOM OF HOLE AT 150.9 FEET

Project Name and Job Number TXU Comache Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG Boring No. B-2035</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'04.21968"N / 97°47'28.00470"W		Total Depth 100.2 feet	
Drilling Contractor and Rig Palmerston and Parish / CME 55		Elevation and Datum 829.816 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 16.2 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 5	Date Started 1/30/07	
		Borehole Inclination Vertical	Logged by T. Glidden	Date Completed 2/5/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 2/14/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0								<b>ARTIFICIAL FILL (Qaf)</b> LEAN CLAY with sand, stiff, olive brown (2.5Y5/4) to yellowish red (5YR4/6), angular carbonate clasts, reddish oxides, mottled		829
1			B-2035 1	4						828
2				3	12/18					827
3				4						826
4	CL		B-2035 2	5				stiff, dark yellowish brown (10YR4/4)		825
5				8	12/18			very stiff, very dark gray (10YR3/1), dry		824
6				3						823
7			B-2035 3	7				very stiff, brownish yellow (10YR6/8), angular carbonate pebbles scattered throughout		822
8				4	14/18					821
9				4						820
10			B-2035 4	5				LEAN CLAY, medium stiff, light yellowish brown (2.5Y6/4) to olive yellow (2.5Y6/5)		819
11	CL			3	18/18					818
12			B-2035 5	3				very stiff to hard, gray (2.5Y5/1) with yellowish brown (10YR5/8) oxides, fissile		817
13				5	18/18					816
14			B-2035	50/2"	0/2			Weathered Limestone	No sample taken	815

Project Name and Job Number TXU Comache Peak COL 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">SOIL LOG</h2> <h2 style="margin: 0;">Boring No. B-2035</h2>
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Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
15							Weathered Limestone <i>(Continued from previous page)</i>		814
16			B-2035	50/1"	0 1		Top of Bedrock at 16.2'	No sample taken Bedrock at 16.2'	813
17									813
18									812
19									811
20									810
21									809
22									808
23									807
24									806
25									805
26									804
27									803
28									802
29									801
30									800




Undisturbed sample  
SH = Shelby; P = Pitcher; O = other



Driven (2.5 to 3.0 inch) with liners  
MC = Modified California; O = other



Standard Penetration Test (SPT) sampler

Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG Boring No. B-2035</b>	
Type and Diameter of Boring HQ / 4		Boring Location 32°18'04.21968"N / 97°47'28.00470"W		Total Depth 100.2 feet	
Drilling Contractor and Rig Palmerton and Parrish / CME 55		Elevation and Datum 829.816 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 16.2 feet	
Casing Size and Depth 4" PVC / 16.2 feet		Length of Core Barrel and Bit 8.6 feet	No. of Core Boxes 6	Date Started 1/30/07	
		Borehole Inclination Vertical	Logged by T. Glidden	Date Completed 2/5/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 2/14/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
17		1.82	6	$\frac{1.0}{1.0}$	100				2035-6			LIMESTONE: wackestone; light gray (N7); slightly weathered (SW); weak (R2); react to HCl. Silty laminations from 18' to 19.3'; 0.75" silty laminated interbeds at 20.1' and 20.6'. [Glen Rose Formation]	top of bedrock 300 psi, 1900 rpm, good water flow	813
18		1.32												812
19		1.58												811
20		1.92	7	$\frac{5.0}{5.0}$	100	SW	R2							810
21		1.67												809
22		1.75							2035-7					808
23		1.22												807
24		2.17												806
25		6.5	8	$\frac{4.8}{5.0}$	96	MW	R0					SHALE: mudstone; medium bluish gray (5B 5/1); extremely weak (R0); damp; moderately weathered (MW); 2" rip up clast of wackestone at 24.6'; no reaction to HCl; grades to calcareous mudstone from 24.9' to 25.1'. [Glen Rose Formation]		805
26		1.5				SW	R2					LIMESTONE: wackestone; very light gray (N8); slightly weathered (SW); weak (R2); react to HCl; wackestone interbed 26.6' to 26.8' and 27.4' to 27.8'. [Glen Rose Formation]	bit repeatedly stopped and started in first interval; water circulation lost somewhere down hole	804
27		4.22				MW-SW	R0		2035-8			SHALE: mudstone; medium blueish gray (5B 5/1); extremely weak (R0); damp; moderately to slightly weathered (MW-SW); no reaction to HCl; wackestone interbed 26.6' to 26.8' and 27.4' to 27.8'. [Glen Rose Formation]		803
28												LIMESTONE: wackestone; very light gray (N8) to light gray (N7); weak (R2) to very weak (R1); slightly weathered to moderately weathered (SW-MW); reacts to HCl; bioturbated with mud filled cracks thinly spaced from 33.6' to 35.5'; silty laminations 31.5' to 32.0'; shale interbed at 33.4' to 33.8'. [Glen Rose Formation]		802
29		1.6	9	$\frac{4.7}{5.0}$	94	SW-MW	R2-R1							801
30		1.58							2035-9					800
31		6												799

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-2035</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
32		6	9	$\frac{4.7}{5.0}$	94							Shale interbed		798
33						SW-MW	R2-R1					Shale interbed	0.3' added from run 11	797
34		2.52												796
35		1.65	10	$\frac{4.8}{4.8}$	100									795
36		1.63								2035-10		SHALE: mudstone; calcareous; medium dark gray (N4); slightly weathered to moderately weathered (SW-MW); very weak (R1) to extremely weak (R0); no reaction to HCl. [Glen Rose Formation]		794
37		3.12												793
38		5.83				SW-MW	R1-R0							792
39		5.87								2035-11				791
40			11	$\frac{5.0}{5.0}$	100									790
41		3.1				SW	R2					LIMESTONE: wackestone; very light gray (N8) to light gray (N7); slightly weathered (SW); weak (R2); reacts to HCl; recrystallized shells throughout. [Glen Rose Formation]		789
42		5				SW-MW	R0					SHALE: mudstone; calcareous; medium dark gray (N4); slightly to moderately weathered (SW-MW); extremely weak (R0); no reaction to HCl; wackestone interbeds 0.1' at 41.7' and 41.9'. Wackestone interbed at 41.7'. Wackestone interbeds at 41.9'.		788
43		4.83												787
44		2.15												786
45			12	$\frac{5.2}{5.0}$	100	SW-MW	R2-R1					LIMESTONE: wackestone; very light gray (N8) to light gray (N4); slightly to moderately weathered (SW-MW); weak to very weak (R2-R1); react to HCl; bioturbated; with mud-filled burrows. [Glen Rose Formation]		785
46		2.9												784
		3.67				SW	R0							

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2035</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
47		3.67	12	5.2 5.0	100							SHALE: mudstone; calcereous; dark gray (N3); extremely weak (R0); slightly weathered (SW); no reaction to HCl; wackestone interbed 46.2' to 46.5'. [Glen Rose Formation]		783
48		2.87				SW	R0							782
49		1.72				SW-MW	R2-R1					LIMESTONE: wackestone; light gray (N7); slightly to moderately weathered (SW-MW); weak to very weak (R2-R1); thinly spaced silt beds and bioturbations; reacts to HCl. [Glen Rose Formation]	gradational	781
50		3.6	13	5.0 5.0	100	SW-MW	R0					SHALE: mudstone; dark gray (N3); slightly to moderately weathered (SW-MW); extremely weak (R0); no reaction to HCl. [Glen Rose Formation]		780
51		3.25				SW-MW	R0							779
52		1.6				F-SW	R2					LIMESTONE: micrite; very light gray (N8); fresh to slightly weathered (F-SW); weak (R2); bioturbated - gradational with sparry calcite crystals up to 3mm in burrow infill; recrystallized shells and shell fragments throughout; reacts to HCl. [Glen Rose Formation]	gradational 0.2' added to run 15 from run 14	778
53		1.52												777
54		1.72										LIMESTONE: wackestone; very light gray (N8); weak to very weak (R2-R1); slightly to moderately weathered (SW-MW); reacts to HCl. [Glen Rose Formation] Silty lamination from 52.3' to 53.9'. Chalcopryite grains at 52.6'. Bioturbated at 54.4'. Biturbated from 55' to 58.1'.		776
55		1.28	14	5.0 5.0	100									775
56		1.6												774
57		1.13				SW-MW	R2-R1							773
58		1.67												772
59		1.27												771
60		0.97	15	5.0 5.0	100									770
61		1.43										Silty laminae from 59.6' to 61.3'.		769
		1.67												

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-2035**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
62		1.67	15	5.0 5.0	100							LIMESTONE: wackestone; very light gray (N8); weak to very weak (R2-R1); slightly to moderately weathered (SW-MW); reacts to HCl. [Glen Rose Formation]		768
63		1.68										Silty laminations from 62.3 to 62.8'.		767
64		1.17										Oolitic from 63.5' to 66.2'.		766
65		1.57	16	5.1 5.0	100									765
66		1.15												764
67		3							2035-16					763
68		7				SW-MW	R2-R1							762
69		1.88	17	5.0 5.0	100					2035-17		Bioturbated with silt filled burrows from 68.7' to 68.8'.		761
70		0.75												760
71		1.33										Silty laminations and thinly spaced beds from 70.5' to 70.9'.		759
72		3.53												758
73		1.88												757
74		1.85	18	5.0 5.0	100									756
75		1.35				SW	R2					Rip-up clasts from lower unit present at 74.8'.	gradational	755
76		1.15												754

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908




**ROCK LOG**  
**Boring No. B-2035**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
77		1.15	18	5.0 5.0	100					2035-18		LIMESTONE: wackestone; oolitic; very light gray (N7); slightly weathred (SW); weak (R2); strong reaction to HCl; thinly spaced silt beds and bioturbations; laminations 78' to 78.5'; silt-filled burrows 78.6' to 79.2'; thinly spaced silt beds 79.2' to 80.5'; bioturbations at 81.3'. [Glen Rose Formation]	0.1' from run 19 added to run 18	753
78		2.17												752
79		2.27								2035-19				751
80		1.3	19	5.0 5.0	100	SW	R2							750
81		1.8												749
82		1.68												748
83		2.83												747
84		1.5										LIMESTONE: wackestone; very light gray (N8) to light gray (N7); weak to very weak (R2-R1); slightly to moderately weathered (SW-MW); react to HCl; silty laminations with ooids 82.8' to 83.5'; 84.9' to 85.9'. ~ 85.5' increasing ooid content and decreasing grain size towards basal contact. [Glen Rose Formation]	gradational	746
85		0.88	20	5.0 5.0	100									745
86		3.02				SW-MW	R2-R1			2035-20				744
87		2.57												743
88		2.15												742
89		2.5	21	5.0 5.0	100									741
90		3.1				SW-F	R2			2035-21		LIMESTONE: micrite; medium light gray (N6) to light olive gray (5Y 6/1); slightly weathred to fresh (SW-F); weak (R2); react to HCl; fossiliferous; oolitic zones (ripups). [Glen Rose Formation]	gradational	740
91		1.92				SW	R2							739



Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2035</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
92		1.92	21	5.0 5.0	100	SW-MW	R2-R1					LIMESTONE: wackestone; oolitic; very light gray (N7); slightly weathered (SW); weak (R2); reaction to HCl. [Glen Rose Formation]		738
93												LIMESTONE: wackestone; very light gray (N8); slightly to moderately weathered (SW-MW); weak to very weak (R2-R1); mud and oolitic limestone-filled bioturbations (burrows); react to HCl; planar silty laminations 92.5' to basal contact. [Glen Rose Formation]		737
94		2.92				SW-MW	R2-R1		2035-22			LIMESTONE: micrite; oolitic; very light gray (N8) to light olive gray (5Y 6/1); slightly to moderately weathered (SW-MW); weak to very weak (R2-R1); thinly spaced bioturbations towards basal contact. [Glen Rose Formation]		736
95		1.28	22	5.0 5.0	100	SW-MW	R2-R1					LIMESTONE: micrite; oolitic; very light gray (N8) to light olive gray (5Y 6/1); slightly to moderately weathered (SW-MW); weak to very weak (R2-R1); thinly spaced bioturbations towards basal contact. [Glen Rose Formation]	gradational	735
96		0.95				SW-MW	R2-R1					LIMESTONE: wackestone; oolitic; very light gray (N8) to light gray (N7); slightly to moderately weathered (SW-MW); weak to very weak (R2-R1); reacts to HCl; bioturbated 94.8' to 95.5'; silty oolitic laminations from 95.7' to basal contact Bioturbated from 64.9' to 95.5'. Silty oolitic laminations from 95.7' to basal contact.	0.1' added to run 22 from run 23	734
97		1.58				SW-MW	R2-R1					LIMESTONE: micrite; silty; medium light gray (N6) to olive gray (5Y 4/1); slightly to moderately weathered (SW-MW); weak to very weak (R2-R1); reacts to HCl. [Glen Rose Formation]		733
98		2.5	23	3.2 3.2	100	SW-MW	R2-R1					LIMESTONE: micrite; silty; medium light gray (N6) to olive gray (5Y 4/1); slightly to moderately weathered (SW-MW); weak to very weak (R2-R1); reacts to HCl. [Glen Rose Formation]		732
99		1.95				SW-MW	R2-R1		2035-23			LIMESTONE: wackestone; very light gray (N8) to light gray (N7); slightly to moderately weathered (SW-MW); reacts to HCl; abundant fossils in bioturbation infill; weak to very weak (R2-R1). [Glen Rose Formation]		731
100												LIMESTONE: wackestone; very light gray (N8) to light gray (N7); slightly to moderately weathered (SW-MW); reacts to HCl; abundant fossils in bioturbation infill; weak to very weak (R2-R1). [Glen Rose Formation]		730
101												BOTTOM OF HOLE AT 100.2'.		729
102														728
103														727
104														726
105														725
106														724

Project Name and Job Number TXU Comache Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-2036</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'06.15506"N / 97°47'28.34813"W		Total Depth 75 feet	
Drilling Contractor and Rig TEXPLOR / CME 75		Elevation and Datum 832.353 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 5.5 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 2	Date Started 2/9/07	
		Borehole Inclination Vertical	Logged by L.Pawlak	Date Completed 2/9/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 2/11/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
0							<b>RESIDUAL SOIL (RS)</b> LEAN CLAY with sand and gravel, medium stiff, brown (10YR5/3), damp		832
1	CL			4					831
2			B-2036 1	4	18/18		Limestone fragments and clay, white to light gray (2.5Y8/1 to 2.5Y7/1), dry to damp		830
3	GP-GC			10					829
4				7			LEAN CLAY with calcareous deposits and limestone fragments, medium stiff, dark grayish brown (2.5Y4/2), strong to violent reaction to HCl		828
5	CL		B-2036 2	7	18/18				827
6				9			Top of bedrock at 5.5' Augered to 7' to install casing and start rock coring	Bedrock at 5.5'	826
7									825
8									824
9									823
10									822
11									821
12									820
13									819
14									818
15									817

Project Name and Job Number TXU Comanche Peak Col 1908				<b>ROCK LOG</b> <b>Boring No. B-2036</b>	
Type and Diameter of Boring HQ / 7"		Boring Location 32°18'06.15506"N / 97°47'28.34813"W		Total Depth 75 feet	
Drilling Contractor and Rig Texplore / CME 75		Elevation and Datum 832.353 feet NAVD88		Ground Water Depth DRY	Depth to Bedrock 5.5 feet
Casing Size and Depth 4" ID / 6.8 feet		Length of Core Barrel and Bit 8 feet		No. of Core Boxes 4	Date Started 2/9/07
		Borehole Inclination Vertical		Logged by L. Pawlak	Date Completed 2/9/07

Reviewed by / Date \_\_\_\_\_ R. Ortiz 2/11/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
7		1.48										LIMESTONE: wackestone; very light gray (N8); fine to medium grained; slightly weathered (SW); weak (R2); fossils; very thinly bedded; some what vuggy. [Glen Rose Formation]		825
8		1.32	1	<u>2.9</u> 3.0	96	SW	R2					LIMESTONE: wackestone; medium bluish gray (5B 5/1); fine grained; slightly weathered (SW); very weak (R1); very thinly bedded; bioturbations; weak reaction to HCl; at 11.8' there is an increase in silt/clay; color change to dark greenish gray (5G 4/1). [Glen Rose Formation]	planar contact	824
9		0.88								2036-3				823
10		0.92												822
11		0.98				SW	R1							821
12		1.08	2	<u>4.6</u> 5.0	92									820
13		3.33												819
14		3.83				SW	R0			2036-4		SHALE; dark greenish gray (5G 4/1); fine grained; slightly weathered (SW); extremely weak (R0); very thinly bedded; no reaction to HCL. [Glen Rose Formation]	planar contact	818
15		2.92												817
16		1.83										LIMESTONE: wackestone; light gray (N7); fine grained; slightly weathered (SW); weak (R2); very thinly bedded; strong reaction to HCl; at 17.4' there are significant fossils and bioturbations; wavy laminations. [Glen Rose Formation]	wavy contact	816
17		1.08	3	<u>5.0</u> 5.0	100	SW	R2			2036-5				815
18		0.82										Shale interbed		814
19		1.07										LIMESTONE: wackestone; very light gray (N8); slightly weathered (SW); weak (R2); fine grained; massive to 20'. [Glen Rose Formation]		813
20		2.95				SW	R2							812
21		1.22	4	<u>5.0</u> 5.0	100									811

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2036</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
22		1.13										LIMESTONE: wackestone; very light gray (N8); slightly weathered (SW); weak (R2); fine grained; massive to 20'. [Glen Rose Formation]		810
23		0.87	4	5.0 5.0	100	SW	R2		2036-6		Wavy and deformed wackestone bed with medium sized grains and many small fossils from 22.5' to 23.9'.		809	
24		1.23											808	
25		1.15											807	
26		1.12				SW	R1		2036-7		SHALE; dark greenish gray (5G 4/1); slightly weathered (SW); very weak (R1); planar/abrupt lower contact; rare large shells. [Glen Rose Formation]		806	
27		2.92	5	5.0 5.0	100	SW	R2				LIMESTONE: wackestone; very light gray (N8); slightly weathered (SW); weak (R2); fine grains; interbedded with shale 1/8" to 1/4" close; wavy beds; many burrows. [Glen Rose Formation]		805	
28		1.68											804	
29		7.22				SW	R1				SHALE; dark greenish gray (5GY 4/1); slightly weathered (SW); very weak (R1); interbedded with <0.1' wackestone beds at 29' and 30'; some very close; very thin interbedded limestone from 29' to 30.3'. [Glen Rose Formation]		803	
30		2.38											802	
31		2.12							2036-8		LIMESTONE: wackestone; very light gray (N8); slightly weathered (SW); weak (R2); fine grains 0.2' to 0.4' intervals; spacing at very thin wavy shale beds; heavy bioturbation; wavy deformed beds; burrows filled with micrite and wackestone; lower contact is planar. 0.3' shale bed at 31.9' and .2' shale bed at 35.0' [Glen Rose Formation]		801	
32		2.25	6	5.2 5.0	100								800	
33		2.37				SW	R2						799	
34		ND											798	
35		2.52											797	
36		2.68	7	3.9 5.0	78								796	
37												Length of recovery stretched due to mechanical breaks.  increased RQD from above and		

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2036</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
37		2.62										SHALE; medium gray (N5); slightly weathered (SW); very weak (R1); few small fossils; 1" limestone bed at 37.5'; very slightly to no reaction with HCl; lower contact 40' to 40.1'; laminated shale. [Glen Rose Formation]	below	795
38		2.25	7	5.3 5.0	78	SW	R1			2036-9				794
39		ND												793
40		4.5				SW	R2					LIMESTONE: wackestone; very light gray (N8); slightly weathered (SW); weak (R2); burrows and recrystallized shells. [Glen Rose Formation]		792
41		4.17	8	3.0 3.0	100					2036-10		SHALE; medium gray (N5); slightly weathered (SW); interbedded with 1/4" to 1/8" micrite beds; bed spacing is thin to medium. [Glen Rose Formation]		791
42		3.85											mechanical breaks along shale bedding	790
43		4.5				SW	R1							789
44		3.93	9	2.1 2.0	100								Length of recovery stretched due to mechanical breaks.	788
45		1.68										LIMESTONE: wackestone; very light gray (N8). [Glen Rose Formation]		787
46		1.55				SW	R2							786
47		1.5	10	5.1 5.0	86						JO, PL, SM, 30 deg JO, PL, SM, 25 deg			785
48		1.83				SW	R1			2036-11	JO, PL, SM, 25 deg	SHALE; medium dark gray (N4); slightly weathered (SW); very weak (R1); joint set in upper (0.8'); few to no interbedded limestone. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	784
49		1.78												783
50		3.52				SW	R2					LIMESTONE: wackestone; very light gray (N8); slightly weathered (SW); weak (R2); many are very close; very thin shale interbeds. [Glen Rose Formation]		782
51		3.73	11	5.1 5.0	100	SW	R1					SHALE; medium dark gray (N4); slightly weathered (SW); very weak (R1); many shells and fossils; slightly reactive to HCl. [Glen Rose Formation]		781
52										2036-12				

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2036</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)	
52		1.5				SW	R1							780	
53		1.67	11	5.1 5.0	100							LIMESTONE: wackestone; very light gray to medium light gray (N8-N7); slightly weathered (SW); weak (R2); at 53.9 to 54.5' massive very light gray to white (N8-N9); large burrows and rip up clasts common; wavy bedding to sub planar bedding is very close to very thin. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	779	
54		ND												778	
55		1.02												777	
56		1.72				SW	R2							776	
57														775	
58		1.13	12	5.0 5.0	100				2036-13					774	
59		1												773	
60		0.75												772	
61		1.62											LIMESTONE: wackestone; medium light gray to very light gray (N7-N8); fine to medium grains; very close to very thin sub-planar wavy bedding; large burrows filled with micrite. [Glen Rose Formation]		771
62		1.85													770
63		1.65	13	5.0 5.0	100									769	
64		1.72				SW	R2					Increased RQD from below run		768	
65		1.3							2036-14					767	
66		ND	14	5.0 5.0	100								766		
67		1.35							2036-15				766		

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-2036**


Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
67		1.15										LIMESTONE: wackestone; fossils are common and small; white (N9); 66.5' to 68' shale bedding becomes less common; shells are very small ; <1cm burrows common; 70 to 70.7' increased shale content; 70.7 to 72.6' less shale interbeds; increased thin spacing; few to no shells; 72.6' darkens to medium gray (N5) due to increased shale percentage; burrows common and filled with very light gray (N8). [Glen Rose Formation]		765
68		0.75	14	5.0 5.0	100									764
69		1.18												763
70		1.35							2036-16					762
71		1.35				SW	R2							761
72		1.75	15	5.0 5.0	100									760
73		2.9												759
74		1.45												758
75														757
76														756
77													755	
78													754	
79													753	
80													752	
81													751	
82														

Project Name and Job Number TXU Comache Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-2037</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'07.56081"N / 97°47'28.59029"W		Total Depth 150.6 feet	
Drilling Contractor and Rig Richard Simmons Drilling / BK-81 HD		Elevation and Datum 836.488 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 9.5 feet	
Sampling Method SPT		Sample Driving Hammer/Drop R&C / 140 lbs / 30 inches	No. of Samples 4	Date Started 2/6/07	
		Borehole Inclination Vertical	Logged by J. Turner	Date Completed 2/7/07	

Reviewed by / Date R. Ortiz 2/8/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0										836
1			B-2037 1	6	18/18					835
2				4	18/18					834
3				7						833
4	CL		B-2037 2	8	18/18					832
5				41	18/18					831
6				50/3"				hard, greenish black (10GY2.5/1), moist, moderate reaction to HCl		830
7			B-2037 3	50/4"	4/4					829
8										828
9			B-2037 4	5	7/7			yellow (10YR7/8), damp		827
10				50/1"				Auger refusal at 9.5'. Top of Bedrock	Bedrock at 9.5'	826
11										825
12										824
13										823
14										822
15										



Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. B-2037</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'07.56081"N / 97°47'28.59029"W		Total Depth 150.6 feet	
Drilling Contractor and Rig Richard Simmons		Elevation and Datum 836.488 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 9.5 feet	
Casing Size and Depth 4" / 9.5 feet		Length of Core Barrel and Bit 16.7 feet	No. of Core Boxes 10	Date Started 2/6/07	
		Borehole Inclination Vertical	Logged by J. Turner	Date Completed 2/7/07	

Reviewed by / Date R. Ortiz 2/8/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
10		2.37									JO OP R5	LIMESTONE; sparite; white (N9); massive; moderately weathered (MW); very strong (R5) pyrite; fossils; dry; strong reaction to HCl. [Glen Rose Formation]	auger refusal @ 9.5, bedrock depth Glen Rose Fm	826
11		1.83				SW	R5		2037-5					825
12		1.58	1	$\frac{4.7}{4.9}$	84						JO OP R3			824
13		1.83												823
14		3.02										SHALE: claystone; calcareous; medium gray (N5) massive grading into very thinly bedded; slightly weathered (SW); extremely weak (R0); damp; strong reaction to HCl. [Glen Rose Formation]		822
15		1.93				SW	R0		2037-6					821
16		2.4	2	$\frac{2.6}{2.6}$	100									820
17		1.1												819
18		1.77				SW	R2		2037-7			SHALE: mudstone; med. light gray (N6); fine grain; slightly weathered (SW); weak (R2); very thinly bedded; dry. [Glen Rose Formation]	little to no reaction with HCL	819
19		2.68				SW	R1					SHALE; med. gray to med. light gray (N5-N6); very fine grained; slightly weathered (SW); very weak (R1); moist; fissile; very finely bedded; slight reaction to HCl. [Glen Rose Formation]		818
20		2.32	3	$\frac{4.6}{5.0}$	92									817
21		3.8										LIMESTONE: micrite; med. light gray (N6); fine grained; massive; slightly weathered (SW); weak (R2); dry; moderate reaction to HCl; shale interbeds from 22.5' to 23.4' vary in thickness from 0.5" to 2.3". [Glen Rose Formation]		816
22		2.77				SW	R2							815
23		1.22												814
24		1.53	4	$\frac{4.8}{5.0}$	96									813
		1.33				SW	R2					LIMESTONE: wackestone; very light gray (N8); medium grained; slightly weathered (SW); weak (R2); strong reaction to HCl. [Glen Rose Formation]		812

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-2037</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
25		1.33										LIMESTONE: packstone; light to medium gray (N5-N7); medium coarse grained; hummocky; bioturbated texture; clay rich; reacts strongly to HCl. [Glen Rose Formation]		811
26		2.02	4	4.8 5.0	96				2037-8					810
27		1.5												809
28		1.17												808
29		1.77				SW	R2		2037-9					807
30		1.95	5	4.9 5.0	98									806
31		1.88												805
32		3.5												804
33		3.17												803
34		3.08												802
35		2.25	6	5.0 5.0	100	SW	R1-R2					SHALE: mudstone; medium gray (N5); fine grained; slightly weathered (SW); weak (R2); fissile; moist; doesn't reaction with HCl; interbed of limestone 34.1' to 34.45'; very weak (R1). [Glen Rose Formation]	801	
36		2.02											800	
37		1.77							2037-10			LIMESTONE: shaley wackestone; light gray to medium gray (N5-N7); hummocky/wavy bedding; bioturbated; weak (R2); slightly weathered (SW); irregular shale interbeds <0.5" up to 0.35". Medium to coarse grains; small pyrite grains and few fossils; weak (R2). [Glen Rose Formation]	799	
38		2.35				SW	R2						798	
39		5.02	7	5.1 5.0	100								797	
		4.4												

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)					
40		4.4	7	5.1 5.0	100	SW	R2					LIMESTONE: shaley wackestone; light gray to medium gray (N5-N7); hummocky/wavy bedding; bioturbated; weak (R2); slightly weathered (SW); irregular shale interbeds <0.5" up to 0.35". Medium to coarse grains; small pyrite grains and few fossils; weak (R2). [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	796					
41		3.52													2037-11			795	
42		2.3																	794
43		3.35	8	5.1 5.0	100	SW	R2					SHALE: mudstone; dark greenish gray (5GY 4/1); fine; slightly weathered (SW); weak (R2); moist; fissile; fine laminations; does not react with HCl; extremely weak (R0). [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	793					
44		3.85																792	
45		3.02													2037-12				791
46		3.33										LIMESTONE: wackestone; white (N9); medium grained; very weak (R1); reacts strongly to HCl; shale interbeds to 0.35' thick from 47-48. [Glen Rose Formation]	790						
47		3.77											789						
48		3.52	9	5.1 5.0	100	SW	R1					SHALE: mudstone; dark greenish gray (5GY 4/1); fine; slightly weathered (SW); extremely weak (R0); fissile; finely laminated; doesn't react to HCl. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	788					
49		4.35													2037-13			787	
50		4.1																	786
51		3.83										LIMESTONE: wackestone; white (N9); medium-fine grained; fresh (F); hummocky; bioturbated; wackestone reacts strongly to HCl; shale layers do not react; dry. [Glen Rose Formation]	785						
52		2.32											784						
53		2.17	10	5.0 5.0	100	F	R1					Shale interbed	Length of recovery stretched due to mechanical breaks.	783					
54		2.3																	782
		3.2																	

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)	
55		3.2	10	5.0 5.0	100	SW	R1					SHALE: mudstone; dark greenish gray (5GY 4/1); small limestone interbeds <0.1"; slightly weathered (SW); fine grained; shale fissile; mudstone massive; very weak (R1); does not react with HCl. [Glen Rose Formation]		781	
56		3.02				SW	R3						LIMESTONE: wackestone; light gray (N7); medium strong (R3); fresh (F); hummocky; bioturbations; some small mud layers; small fossils. [Glen Rose Formation]		780
57		2.57				SW	R0						SHALE: mudstone; dark greenish gray (5GY 4/1); fine; slightly weathered (SW); extremely weak (R0); fissile; no reaction to HCl. [Glen Rose Formation]		779
58		2.55	11	4.8 5.0	96	SW						LIMESTONE: wackestone; light to medium gray (N5-N7); coarse grained; fresh (F); weak (R2); interbeds of shale and mudstone are fossiliferous; irregular seams of mud in thin beds; limestone has strong reaction to HCl; mud has weak to moderate reaction (R2-R3) with HCl; at 63.0 wackestone becomes dolomitic structure and properties are the same as above; very thin mud layers; reacts moderately to HCl when streaked; at 67.0' to 71.4' wackestone dominates interbeds of packstone up to 0.4' present; packstone finely laminated; muddy; reacts moderately to HCl when streaked; weak (R2); slightly weathered (SW); light gray (N7); same as above.[Glen Rose Formation]	2/7/2007 started drilling at 8:30AM, good water return, light gray, drilling fast	778	
59		3.83													777
60		2.58													776
61		2.68													775
62		1.23	12	5.0 5.0	100	F-SW	R2-R3							774	
63		1.6													773
64		2.12													772
65		2.23	13	5.2 5.0	100									771	
66		1.58													770
67		1.2													769
68		2.02	13	5.2 5.0	100									768	
69		2.57													767
		1.8												767	

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)	
70		1.8	13	5.2 5.0	100							LIMESTONE: wackstone; light to medium gray (N5-N7); coarse grained; fresh (F); weak (R2); interbeds of shale and mudstone are fossiliferous; irregular seams of mud in thin beds; limestone has strong reaction to HCl; mud has weak to moderate reaction (R2-R3) with HCl; at 63.0 wackstone becomes dolomitic structure and properties are the same as above; very thin mud layers; reacts moderately to HCl when streaked; at 67.0' to 71.4' wackstone dominates interbeds of packstone up to 0.4' present; packstone finely laminated; muddy; reacts moderately to HCl when streaked; weak (R2); slightly weathered (SW); light gray (N7); same as above.[Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	766	
71		2.63												2037-17	765
72		2.62												764	
73		2.1	14	5.0 5.0	100	F-SW	R2-R3						stop drilling 9:45 am rig blew hydraulic line, fixed and started drilling by 10:00	762	
74		1.87												2037-18	761
75		2.25												2.5	2.43
76		1.87	15	5.1 5.0	100								Length of recovery stretched due to mechanical breaks.	759	
77		2.5												2037-19	758
78		2.77												3.43	3.7
79		3.18	16	5.0 5.0	100	SW	R1					LIMESTONE: packstone; gray (N6); slightly weathered (SW); weak (R2); coarse to medium laminated; wavy; strong reaction to HCl. [Glen Rose Formation]		756	
80		2.68												2037-20	755
81		1.88												SW	R2
82														753	
83														752	

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
85		1.88	16	5.0 5.0	100	SW	R2					LIMESTONE: wackestone with interbeds of packstone; med light gray (N6); slightly weathered (SW); weak (R2); medium to coarse; wavy; reacts moderately to strongly with HCl; packstone contains some clay; at 87.0' to 89.9' intervals of wackestone and muddy packstone repeat 0.5" -1.5". [Glen Rose Formation]		751
86		1.85												750
87		1.67												749
88		3.33	17	4.7 5.0	100	SW	R0					LIMESTONE: packstone; med. light gray (N6); extremely weak (R0); slightly weathered (SW); coarse; muddy; reacts strongly with HCl. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	748
89		3.78												747
90		2.83												746
91		2.87												745
92		1.7	18	4.7 5.0	94	F	R2					LIMESTONE: wackestone; light gray (N7); fresh (F); weak (R2); medium; massive with discrete small wavy packstone laminations; reacts strongly to HCl. [Glen Rose Formation]	good water return, milky brownish gray	744
93		1.85												743
94		2.02												742
95		2.12												741
96		2.07	19	5.0 5.0	100									740
97		2.17												739
98		1.3												738
99		2.17												737
		2.02												

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)				
100		2.02	19	5.0 5.0	100	F	R2					LIMESTONE: wackestone; light gray (N7); fresh (F); weak (R2); medium; massive with discrete small wavy packstone laminations; reacts strongly to HCl. [Glen Rose Formation]		736				
101		1.3															735	
102		1.75																734
103		1.1	20	5.1 5.0	100	F	R0					LIMESTONE: packstone; claystone; light gray to dark gray (N4-N7); extremely weak (R0); fresh (F); medium to coarse with subangular grains; laminations; finely bedded; wavy; reacts moderately to HCl. [Glen Rose Formation]	good water return, light gray	733				
104		1.02															732	
105		1.43																731
106		2.27															Length of recovery stretched due to mechanical breaks.	730
107		2.33	21	5.1 5.0	100	F	R2					LIMESTONE: wackestone; light gray (N7); fresh (F); weak (R2); fine grained; finely bedded; reacts strongly to HCl. [Glen Rose Formation]		729				
108		2.25															728	
109		2.3															727	
110		3.6																726
111		2.5															Length of recovery stretched due to mechanical breaks.	725
112		2.03	22	5.1 5.0	100	F	R2					LIMESTONE: packstone; claystone; light gray (N7); fresh (F); weak (R2); medium; massive with discrete small wavy packstone laminations; reacts strongly to HCl. [Glen Rose Formation]		724				
113		1.25															723	
114		2.17																722
		1.38																

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)	
115		1.38	22	5.1 5.0	100							LIMESTONE: wackstone; light to medium light gray (N6-N7); fresh (F); weak (R2); medium; finely bedded; thin laminations of clay; reacts strongly to HCl; at 117' wackstone has packstone interbedding; fine beds; 117'-122'; typically beds are <0.5" and medium gray (N5); weak (R2); fresh (F); and reacts moderately with HCl. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	721	
116		1.42												1.83	720
117		3.77												719	
118		3.35	23	5.1 5.0	100	F	R2					LIMESTONE: packstone; light gray to med. light gray (N7-N6); muddy; extremely weak (R0); fresh (F); wavy; finely bedded; reacts moderately to HCl. [Glen Rose Formation]	good water recovery	718	
119		2.93												717	
120		3.17												716	
121		2.85	24	5.0 5.0	100							SHALE: claystone; very dark gray (N3); muddy; extremely weak (R0); fresh (F); moist; fissile; fine; finely bedded; does not react with HCl. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	715	
122		2.9												714	
123		2.67												713	
124		3.33	25	5.1 5.0	100	F	R0					LIMESTONE: micrite; light gray (N7); weak (R2); fresh (F); fine; massive; reacts strongly to HCl. [Glen Rose Formation]	green glauconite marker bed?!	712	
125		2.77												711	
126		2.93												710	
127		2.03	25	5.1 5.0	100	F	R2					LIMESTONE: packstone; muddy with shale interbeds up to 0.4'; weak (R2); fresh (F); coarse grained; reacts strongly with HCl; shale and muds do not react with HCl; 130' soft sediment deformation features; load structures; fossils in shale; 139' hummocky texture; wavy bedding; limestone light gray (N7) to dark gray (N4). [Glen Rose Formation]		709	
128		2.38												708	
129		2.17												707	




Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2037</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
130		2.17	25	$\frac{5.1}{5.0}$	100	F	R2					LIMESTONE: packstone; muddy with shale interbeds up to 0.4'; weak (R2); fresh (F); coarse grained; reacts strongly with HCl; shale and muds do not react with HCl; 130' soft sediment deformation features; load structures; fossils in shale; 139' hummocky texture; wavy bedding; limestone light gray (N7) to dark gray (N4). [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	706
131		3.67												705
132		2.92												704
133		2.25												703
134		2.72												702
135		1.85	26	$\frac{5.1}{5.0}$	100								702	
136		2.58											701	
137		1.62											700	
138		1.77											699	
139		1.52											698	
140	1.77	27	$\frac{5.0}{5.0}$	100	697									
141	2.25				696									
142	2.28				695									
143	1.6				694									
144	2.17				28	$\frac{4.9}{5.0}$	98	693						
144	3.03	692												


Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-2037</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
145		3.03	28	4.9 5.0	98							LIMESTONE: packstone; light to medium gray (N5-N7); weak (R2); fresh (F); coarse; some mud content around grains finely bedded; wavy laminations; slightly reacts with HCl. [Glen Rose Formation]		691
146		3.83												690
147		2.63	29	3.6 3.6	100	F	R2							689
148		2.85												688
149		2.6												687
150		2.83												686
151												BOTTOM OF HOLE AT 150.6'.		685
152														684
153														683
154														682
155														681
156														680
157														679
158														678
159														677

Project Name and Job Number TXU Comache Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-2038 offset</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'10.57050"N / 97°47'29.13727"W		Total Depth 9 feet	
Drilling Contractor and Rig TEXPLOR / CME 75		Elevation and Datum 839.953 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 9 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 3	Date Started 2/13/07	
		Borehole Inclination Vertical	Logged by J. Cox	Date Completed 2/13/07	

Reviewed by / Date \_\_\_\_\_ 2/13/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0										839
1	CL	B-2038 offset o-1		3	18 18		RESIDUAL SOIL (RS) LEAN CLAY with few limestone fragments, stiff, very dark brown (2.5Y3/2)			838
2			6	8		dark yellowish brown (10YR4/4), 15% gravel (limestone pebbles)		838		
3			8					837		
4	ML	B-2038 offset o-2		6	14 18		SILT, stiff, olive yellow (2.5Y6/8), <5% angular limestone clasts			836
5			8	3				835		
6			3					834		
7	CL	B-2038 offset o-3		7	18 18		LEAN CLAY with calcareous deposits, hard, olive yellow (2.5Y6/6),			833
8			11	14				832		
9			14					831		
9		B-2038 offset			O O		Top of Bedrock at 9.0'	Bedrock at 9.0'		831
10										830
11										829
12										828
13										827
14										826
15										825

Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG Boring No. B-2038</b>	
Type and Diameter of Boring Ccore 4" / 10.2 feet		Boring Location 32°18'10.57050"N / 97°47'29.13727"W		Total Depth 151 feet	
Drilling Contractor and Rig Boart Longyear / 44 TMA		Elevation and Datum 836.953 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 10.2 feet	
Casing Size and Depth 4" / 10.2 feet		Length of Core Barrel and Bit 8.6 feet	No. of Core Boxes 10	Date Started 2/6/07	
		Borehole Inclination Vertical	Logged by G. Van Etten	Date Completed 2/8/07	

Reviewed by / Date R. Ortiz 2/8/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
11.0		3.42	1	0.8 0.8	0	SW	R2		2038-1		JT, Pl, Ro, Op JT, Pl, Ro, Op	LIMESTONE: sparite; very pale orange (10YR 8/2); slightly weathered (SW); weak (R2); abundant shell fragments. [Glen Rose Formation]	Augered through weathered bedrock to 10.2' to start rock coring. Sample swollen, difficult to remove from inner barrel.	826
12.0		2.5				SW	R2						Begin coring 2/6/07	825
13.0		3.5				MW	R1		2038-2		JT, Pl, Ro, Op JT, Pl, Ro, Op	LIMESTONE: wackestone; light brown (5YR 5/6); moderately weathered (MW); very weak (R1); very shaley. [Glen Rose Formation]		824
14.0		4.45	2	5.0 5.0	92	F	R2					LIMESTONE: wackestone; medium gray (N5); fresh (F); weak (R2); many fossils; few bioturbations; sparite in places; micritic in others. [Glen Rose Formation]		823
15.0		4.33					R2							822
16.0		3.9										LIMESTONE: wackestone; medium gray (N5); fresh (F); weak (R2); many fossils; few bioturbations; zones of sparite and micrite. [Glen Rose Formation]	Good water return, splashing.	822
17.0		7.4									Vertical joint, Wa, Ro, Op		500 psi	821
18.0		7.5					R0					SHALE; medium dark gray (N4); massive; fresh (F); extremely weak (R0); very few fossils; extremely broken up. [Glen Rose Formation]		820
19.0		7.55	3	4.8 5.0	90	F			2038-3			LIMESTONE: wackestone; light gray (N7) to medium gray (N5); fresh (F); very weak (R1); few rip-up clasts; fossils and bioturbations. [Glen Rose Formation]	Rip-up clasts at contact.	819
20.0		7.43					R1							818
21.0		3.2												817
22.0		4.83										Shale interbed	Stop coring 2/6/07, start 2/7/07	816
23.0		1.62												815
24.0		3.55	4	5.0 5.0	100	F	R1					LIMESTONE: wackestone; light gray (N7) to medium gray (N5); fresh (F); very weak (R1); few rip-up clasts; fossils and bioturbations; with very thin shale interbeds; several coal lenses; and some coarse sand grains in wackestone. [Glen Rose Formation]	Dark mud covering core surface; weathered or ground up shale?	814
25.0		2.3							2038-4					813
		2												812

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-2038**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
26		2	4	5.0 5.0	100	F	R1					LIMESTONE: wackestone; light gray (N7) to medium gray (N5); fresh (F); very weak (R1); few rip-up clasts; fossils and bioturbations; with very thin shale interbeds; several coal lenses; and some coarse sand grains in wackestone. [Glen Rose Formation]		811
27		2.42												810
28		1.93												809
29		4.25	5	5.1 5.0	100	F	R1					Shale interbed		808
30		3.63							2038-5		JT, Wa, Ro, Fi		Length of recovery stretched due to mechanical breaks. Good splashy light gray water return.	807
31		4.12										SHALE; medium gray (N5); fresh (F); very weak; 0.04' thick band of limestone and coal at 30.5'; limestone granules; wackestone interbed 31.9'-32.1'; 0.1' thick limestone layers spaced at 32.2'-32.3'. [Glen Rose Formation]		806
32		6.4					R1							805
33		4.75												804
34		2.92	6	5.0 5.0	100	F	R2		2038-6			LIMESTONE: wackestone; very light gray (N8); very thin wavy shale interbeds in few places; fresh (F); weak (R2). [Glen Rose Formation]		803
35		4.17					R1							802
36		3.92										LIMESTONE: packstone; very light gray (N8); very thin wavy shale interbeds in few places; fresh (F); weak (R2); abundant fossils from 39.0'-40.0'; violent reaction to HCl. [Glen Rose Formation]		801
37		5.25												800
38		3.58					R1		2038-7					799
39		4.25	7	4.8 5.0	96	F						Shale interbed 38.4' to 38.6'	600 psi down pressure	798
40		3.23												797
		3.27												

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2038</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
41		3.27	7	4.8 5.0	96	F	R1					SHALE; medium dark gray (N4); massive; fresh (F); very weak (R1); few fossils; mild reaction to HCl. [Glen Rose Formation]		796
42		4.95							2038-8					795
43		2.42					R0-R1							794
44		7.67	8	4.1 5.0	82	F	R2					LIMESTONE: wackestone; very light gray (N8); fresh (F); weak (R2); fossils. [Glen Rose Formation]		793
45		7.83					R1					SHALE; medium dark gray (N4); massive; fresh (F); very weak (R1); few fossils; mild reaction to HCl. [Glen Rose Formation]	Good water return, splashing, very light gray.	792
46		5.08										SHALE; medium dark gray (N4); massive; fresh (F); very to extremely weak (R1-R0); few fossils; mild reaction to HCl.; limestone interbed 46.9'-47.1'. [Glen Rose Formation]		791
47		7.5					R0-R1							790
48		5.9												789
49		4.9	9	5.0 5.0	100	F						LIMESTONE: packstone; light gray (N7); thin wavy shale interbeds spaced average of 0.1' apart; fresh (F); weak (R2); few bioturbations; many fossil casts and rip-up clasts. [Glen Rose Formation]	Core barrel stuck in rod, overpacked.	788
50		3.67					R2							
51		2.92							2038-9					786
52		8.07										SHALE; medium dark gray (N4); massive; fresh (F); extremely weak (R0); mild reaction to HCl. [Glen Rose Formation]		785
53		4.15					R0							784
54		4.83	10	5.1 5.0	100	F						LIMESTONE: packstone; light gray (N7); thin wavy shale interbeds; fresh (F); weak (R2). [Glen Rose Formation]	Rip-up clasts at contact. Length of recovery stretched due to mechanical breaks.	783
55		6.5					R0		2038-10			SHALE; medium dark gray (N4); massive; fresh (F); extremely weak (R0). [Glen Rose Formation]		782
		7.82												

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-2038**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
56		7.82	10	5.1 5.0	100	F	R0							781
57		6.67										LIMESTONE: wackestone; very light gray (N8); fresh (F); weak (R2); many fossilized shell fragments; violent reaction to HCl. [Glen Rose Formation]		780
58		6												779
59		5.25	11	5.0 5.0	100	F	R2		2038-11					778
60		2.5												777
61		2.53										LIMESTONE: packstone; light gray (N7); fresh (F); weak (R2); many rip-up clasts and pinch and swell features; some bioturbation and fossils; violent reaction to HCl; rip-up clasts gradually becoming smaller in size; oolites and wavy shale interbeds becoming more frequent with depth. [Glen Rose Formation]	Good splashing light gray water return.	776
62		3.63												775
63		2.75												774
64		3	12	5.0 5.0	100	F	R2							773
65		3.57												772
66		4.15												771
67		3.77												770
68		3.67												769
69		3.75	13	5.0 5.0	100	F	R2							768
70		3.5												767
		1.75												

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2038</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
71		1.75	13	5.0 5.0	100	F	R2					LIMESTONE: packstone; light gray (N7); fresh (F); weak (R2); many rip-up clasts and pinch and swell features; some bioturbation and fossils; violent reaction to HCl; rip-up clasts gradually becoming smaller in size; oolites and wavy shale interbeds becoming more frequent with depth. [Glen Rose Formation]	Sunny, hot weather	766
72		3.5												765
73		3.92												764
74		3.82	14	5.0 5.0	100	F	R2					LIMESTONE: packstone; light gray (N7); fresh (F); weak (R2); many rip-up clasts and pinch and swell features; few oolites and shell fossils; some bioturbation; violent reaction to HCl; rip-up clasts becoming larger with depth; and occurrence of shale beds decreasing. [Glen Rose Formation]	Good water return.	763
75		3.47								2038-14				762
76		1.85												761
77		3.1												760
78		3.4												759
79		4.63	15	5.0 5.0	100	F	R2							758
80		3.83												757
81		1.75								2038-15			Good splashing light gray water return.	756
82		2.47										LIMESTONE: wackestone; very light gray (N8); fresh (F); weak; few shale interbeds and fossil casts; violent reaction to HCl. [Glen Rose Formation]		755
83		2.03								2038-16				754
84		2.37	16	4.9 5.0	98	F	R2							753
85		3.55										LIMESTONE: packstone; medium light gray (N6); fresh (F); weak (R2); many rip-up clasts; some bioturbation. [Glen Rose Formation]		752
		2.57												



Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2038</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
86		2.57	16	4.9 5.0	98	F	R2					LIMESTONE: packstone; medium light gray (N6); fresh (F); weak (R2); many rip-up clasts; some bioturbation. [Glen Rose Formation]		751
87		2.83										LIMESTONE: wackestone; very light gray (N8); fresh (F); weak (R2); bioturbation. [Glen Rose Formation]	Gradational contact.	750
88		3.83										LIMESTONE: packstone; medium light gray (N6); fresh (F); weak (R2); shale interbeds give splotchy appearance. [Glen Rose Formation]		749
89		2.12	17	5.0 5.0	100	F	R2							748
90		2.42								2038-17				747
91		2.33												746
92		2.55										LIMESTONE: wackestone; very light gray (N8); fresh (F); weak (R2); large bioturbations; 93.6'-94.7'; wackestone turns medium light gray (N6); almost micritic; 94.7'-95.0'; shale layer with very thin laminations. [Glen Rose Formation]		745
93		2.37								2038-18				744
94		3.25	18	5.1 5.0	100	F	R2							743
95		3.13											Length of recovery stretched due to mechanical breaks.	742
96		1.33												741
97		2.47												740
98		2.47												739
99		2.55	19	5.0 5.0	100	F	R2							738
100		1.7												737
		1.82								2038-19				

JT, Wa, Yr, T

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-2038</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
101		1.82	19	5.0 5.0	100	F	R2					LIMESTONE: packstone; medium light gray (N6); fresh (F); weak (R2); very small rip-up clasts and shale swirls; few bioturbations; moderate reaction to HCl; 0.1' thick shale layer at 102.6'. [Glen Rose Formation]	Stopped coring 2/7/07, begin 2/8/07.	736
102		3.07										LIMESTONE: wackestone; medium light gray (N6); fresh (F); weak (R2); few shale interbeds; bioturbations; coarse sand in limestone; moderate reaction to HCl. [Glen Rose Formation]		735
103		3.42												734
104		2.38	20	5.0 5.0	100	F	R2							733
105		2.15												732
106		2.12											Good splashing light gray water return.	731
107		4.22												730
108		2.62											Cold, cloudy, with wind gusts.	729
109		3.32	21	5.0 5.0	100	F	R2					LIMESTONE: wackestone; predominantly yellowish gray (5Y 7/2); lesser medium light gray (N6); more micritic than above; fresh (F); weak (R2); few shale interbeds; large bioturbations to 109'; coarse sand in limestone; moderate reaction to HCl; several large oolites 111.0'-11.3'; changes back to medium light gray (N6) at 111.5; 0.1' thick shale layer at 113.4'; bioturbation increasing with depth. [Glen Rose Formation]		728
110		2.75												727
111		2.67												726
112		2.57												725
113		2.25												724
114		3.75	22	5.0 5.0	100	F	R2							723
115		3.17												722
		2.62												

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-2038</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
116		2.62	22	5.0 5.0	100	F	R2							721
117		3.6												720
118		3.6										LIMESTONE: packstone; medium light gray (N6); fresh (F); weak (R2); many rip-up clasts and fossil shell fragments; moderate reaction to HCl. [Glen Rose Formation]		719
119		4.12	23	4.5 5.0	90	F	R2							718
120		3.67												717
121		4.5										SHALE; medium dark gray (N4); fresh (F); extremely weak (R0); abundant shell fragments; mild reaction to HCl. [Glen Rose Formation]	Good splashing light gray water return.	716
122		7.5					R0							715
123		4.25										LIMESTONE: wackestone; light gray (N7) to dark greenish gray (5G 4/1); fresh (F); weak (R2); huge filled bioturbations; mild reaction to HCl. [Glen Rose Formation]	Angled contact.	714
124		6.28	24	4.9 5.0	98	F								713
125		4.87												712
126		2.87												711
127		2.92												710
128		4.93					R1					SHALE; medium dark gray (N4); fresh (F); very weak (R1); many limestone rip-up clasts; mild reaction to HCl. [Glen Rose Formation]	Gradational contact.	709
129		3.88	25	5.0 5.0	100	F						LIMESTONE: packstone; medium light gray (N6); fresh (F); weak (R2); many thin wavy shale interbeds; few fossils; several rip-up clasts of "coal;" moderate reaction to HCl; small oolites below 133'. [Glen Rose Formation]	Gradational contact.	708
130		2.75					R2							707
		3												

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2038</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
131		3	25	5.0 5.0	100	F	R2					LIMESTONE: packstone; medium light gray (N6); fresh (F); weak (R2); many thin wavy shale interbeds; few fossils; several rip-up clasts of "coal;" moderate reaction to HCl; small oolites below 133'. [Glen Rose Formation]		706
132		2.83												705
133		4.25								2038-26				704
134		2.78	26	5.0 5.0	100	F	R2							703
135		2.67												702
136		2.42										LIMESTONE: packstone; medium gray (N5); fresh (F); weak (R2); many rip-up clasts and very thin wavy shale layers; few oolites and fossils; moderate reaction to HCl; large bioturbations around 137'. [Glen Rose Formation]	Good water return.	701
137		2.5												700
138		3.83					R2						600 psi down pressure	699
139		4.53	27	5.0 5.0	100	F	R1			2038-27		Shale interbed		698
140		2.77					R2					LIMESTONE: wackestone; very light gray (N8); weak (R2); fresh (F); few fossils; moderate reaction to HCl. [Glen Rose Formation]	Gradational contact.	697
141		2.85										LIMESTONE: packstone; light gray (N7); fresh (F); weak (R2); many rip-up clasts; moderate reaction to HCl; thin layers of "coal" at 141'. [Glen Rose Formation]	Gradational contact.	696
142		4.13										LIMESTONE: wackestone; light gray (N7); fresh (F); weak; very few rip-up clasts or bioturbations; moderate reaction to HCl; oolites and coal clasts form 143.4'-143.8'. [Glen Rose Formation]		695
143		5.42												694
144		4.6	28	5.0 5.0	100	F	R2			2038-28				693
145		3.8											Run 28 came out with breaks.	692
		1.72												

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908




**ROCK LOG**  
**Boring No. B-2038**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
146		1.72	28	5.0 5.0	100	F	R2							691
147		4.48					R1					SHALE; medium gray (N5); fresh (F); very weak (R1); thin wavy shale layers intermixed; few fossils; moderate reaction to HCl. [Glen Rose Formation]	Gradational contact.	690
148		2.07										LIMESTONE: packstone; light gray (N7); fresh (F); weak (R2); thin wavy shale layers intermixed; few fossils; moderate reaction to HCl. [Glen Rose Formation]	Gradational contact.	689
149		1.7	29	5.0 5.0	100	F	R2		2038-29					688
150		1.27												687
151		1.42												686
152												BOTTOM OF HOLE AT 151.0'.	Bottom of boring 151'.	685
153														684
154														683
155														682
156														681
157														680
158														679
159														678
160														677

Project Name and Job Number TXU Comache Peak COL 1908		 WLA William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-2039</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'07.71152"N / 97°47'27.86599"W		Total Depth 76 feet	
Drilling Contractor and Rig TEXPLOR / CME 75		Elevation and Datum 833.488 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 7.5 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 4	Date Started 2/5/07	
		Borehole Inclination Vertical	Logged by MSZ	Date Completed 2/6/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 2/8/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0										833
1	ML		B-2039 1	4	7/7			RESIDUAL SOIL (RS) Sandy SILT, dense, light olive brown to light gray (2.5Y5/4 to 2.5Y7/2), moist to dry		832
2				50/3"						831
3										830
4			B-2039 2	N/A	18/18			LEAN CLAY, medium stiff, olive yellow (2.5Y6/6), damp		829
5	CL		B-2039 3	4	8/8			some calcareous deposits, very stiff, light olive brown (2.5Y5/4)		828
6				50/4"						827
7			B-2039 4	50/5"	3/5			hard, gray (2.5Y6/1) refusal at 7.5'		826
8								Top of Bedrock at 7.5'	Bedrock at 7.5'	825
9										824
10										823
11										822
12										821
13										820
14										819
15										

Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG Boring No. B-2039</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'07.71152"N / 97°47'27.86599"W		Total Depth 76 feet	
Drilling Contractor and Rig TexPlore / CME 75		Elevation and Datum 833.488 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 7.5 feet	
Casing Size and Depth 4" / 7.5 feet		Length of Core Barrel and Bit 8 feet	No. of Core Boxes 4	Date Started 2/5/07	
		Borehole Inclination Vertical	Logged by M. Zellman	Date Completed 2/6/07	

Reviewed by / Date R. Ortiz 2/8/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology		Remarks	Elevation (feet)
8		2.5											LIMESTONE: wackestone; very light gray (N8); fine to medium grains with many fossils; slightly to moderately weathered (SW-MW); weak (R2); very vuggy; moderate weathering in vuggy zones. [Glen Rose Formation]	Start coring 2/5/07, Glen Rose Formation.	825
9		1.75	1	3.4 3.5	98	SW	R2								824
10		1.33													823
11		0.42													822
12		1.5				MW-HW	R0-R1						LIMESTONE: wackestone; very light gray (N8); extremely weak to very weak (R1-R0); moderately to highly weathered (MW-HW); dark yellowish orange (10YR 6/6) weathered coating. [Glen Rose Formation]		822
13		1.5											LIMESTONE: packstone; light gray (N7) to medium gray (N5); very many fine clasts and small with fossils; very wavy beds at 13.2'-13.5'; fewer fossils with depth. [Glen Rose Formation]		821
14		1.68	2	3.9 5.0	78	SW	R2						LIMESTONE: wackestone; medium gray (N5); slightly weathered (SW); weak (R2); fine grains; few fossils. [Glen Rose Formation]		820
15		1.57													819
16		1.77													818
17		2.15				HW	R0						SHALE; dark greenish gray (5GY 4/1); highly weathered (HW); extremely weathered (R0); lower contact is abrupt with limestone rip-ups. [Glen Rose Formation]		817
18		2.3				SW	R2						LIMESTONE: packstone; light gray (N7); slightly weathered (SW); weak (R2); massive with burrows; rip-up clasts and gradational lower contact. [Glen Rose Formation]		816
19		2.25	3	4.8 5.0	96										815
20		2.35				SW	R1						SHALE: claystone; calcareous; medium gray (N5); slightly weathered (SW); very weak (R1); some bedding and burrows filled with wackestone at 18.9'; claystone becomes interbedded with wackestone. [Glen Rose Formation]		814
21		2.37													813
22		1.25	4	5.0 5.0	100	SW	R2								812
		1.37													811

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2039</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)	
23		1.37										LIMESTONE: wackestone; light gray (N8); slightly weathered (SW); weak (R2); massive with small dark fossils and fine grains; darkens to medium gray (N6); below 22' with some thin wavy shale beds present; burrows filled with micrite; shale decreasing below 23.5'; with many wavy deformed beds; more fossils with depth; below 28'; 0.25' of dark gray (N3) shale interbedding of limestone with very thin to thin wavy shale beds. [Glen Rose Formation]		810	
24		1.38	4	5.0 5.0	100	SW	R2								809
25		1.5												2039-8	
26		1.33													807
27		1.67													806
28		1.6					R2								805
29		1.55	5	5.1 5.0	100	SW									804
30		1.62											2039-9		
31		1.62					R1								802
32		1.68													801
33		1.67												800	
34		1.5	6	5.0 5.0	100	SW	R2							799	
35		1.67											2039-10		
36		1.67												797	
37		1.85	7	4.6 5.0	92	SW	R1-R2							796	
		1.75													



Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-2039</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
38		1.75					R1-R2							795
39		1.78										SHALE; medium dark gray (N4); slightly weathered (SW) very weak (R1); interbedded with wackestone from 38.3'-39.3'; at 39.3'; limestone is absent; shale becomes absent; shale burrows free of limestone; shale is slightly weathered (SW); very weak (R1); no reaction to HCl; lower contact is clear and wavy. [Glen Rose Formation]	794	
40		1.85	7	4.6 5.0	92	SW	R1			2039-11			793	
41		1.83											792	
42		3.02					R1			2039-12			791	
43		3.52											790	
44		3.28	8	5.0 5.0	100	SW	R2					LIMESTONE: wackestone; very light gray (N8); slightly weathered (SW); weak (R2); many wavy beds and many small burrows. [Glen Rose Formation]	789	
45		2.83					R1						SHALE; medium dark gray (N4); slightly weathered (SW); very weak (R1); few 0.1' interbeds of wackestone at 44.3'; 44.9'; and 45.7'. [Glen Rose Formation]	788
46		2.73										SHALE; medium dark gray (N4); slightly weathered (SW); very weak (R1); few very thin calcareous stringers; clear lower contact with limestone; rip-up clasts. [Glen Rose Formation]	787	
47		1.8					R1						Stop coring 2/5/07, start 2/6/07.	786
48		1.58										LIMESTONE: wackestone; very light gray (N8) with medium dark gray (N4) shale beds; wackestone is fine grained with fossils and very thin burrows; SW; R2; interbeds of shale are wavy; 0.4' shale bed at 49.8'; limestone is fractured every 0.1'-.02' along shale beds; 0.3' thick shale/limestone clasts at 49.1'.	785	
49		1.62	9	4.2 5.0	82	SW	R1-R2			2039-13			784	
50		1.68											783	
51		1.82											782	
52		2.33	10	5.0 5.0	100	SW	R1-R2						781	
		2.47												

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2039</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
53		2.47					R0-R1					SHALE; medium dark gray (N4); slightly weathered (SW); extremely weak to very weak (R0-R1); noncalcareous; abrupt contacts. [Glen Rose Formation]		780
54		2.72					R2					LIMESTONE: wackestone; light gray (N7); slightly weathered (SW); weak (R2); interbedded with many very thin shale beds. [Glen Rose Formation]		779
55		2.85	10	5.0 5.0	100	SW	R1					SHALE; medium dark gray (N4); slightly weathered (SW); very weak (R1); calcareous; few limestone clasts in upper and lower portion. [Glen Rose Formation]		778
56		2.8					R1 R2					LIMESTONE: wackestone; light gray (N7); slightly weathered (SW); weak (R2); interbedded shale 0.05' thick; containing 2 cm burrow. [Glen Rose Formation]		777
57		2.07					R1					SHALE; medium dark gray (N4); calcareous; slightly weathered (SW); very weak (R1); many limestone rip-up clasts; strong reaction to HCl. [Glen Rose Formation]		776
58		1.9	11	5.1 5.0	100	SW	R2					LIMESTONE: wackestone; very light gray (N8); slightly weathered (SW); weak (R2); fine grained with few burrows and shells; few thin shale beds; below 58'; heavily interbedded with very thin shale; many wavy beds and many burrows. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	775
59		1.92					R2					LIMESTONE: wackestone; medium light gray (N6); slightly weathered (SW); weak (R2); very many close; very thin wavy beds; fine grains; more shale content below 63'; burrows appear at 63'; limestone has strong reaction to HCl; shale has slight reaction to HCl. [Glen Rose Formation]		774
60		1.8					R2							773
61		1.5												772
62		1.35												771
63		1.4	12	5.0 5.0	100	SW	R2							770
64		1.45												769
65		1.45												768
66		1.52	13	5.0 5.0	100	SW	R2							767
67		1.47												766

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908




**ROCK LOG**  
**Boring No. B-2039**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)	
68		1.47	13	5.0 5.0	100	SW	R2					LIMESTONE: wackestone; medium light gray (N6); slightly weathered (SW); weak (R2); very many close; very thin wavy beds; fine grains; more shale content below 63'; burrows appear at 63'; limestone has strong reaction to HCl; shale has slight reaction to HCl. [Glen Rose Formation]		765	
69		1.47												764	
70		1.5												2039-17	763
71		1.57												762	
72		1.5	14	5.0 5.0	100	SW	R2					Few shale interbeds from 72.8' to 75.3'		761	
73		1.35												2039-18	760
74		1.35												759	
75		1.38												758	
76		1.33												757	
77														756	
78														755	
79														754	
80														753	
81														752	
82														751	

Project Name and Job Number TXU Comache Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-2040</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'08.34422"N / 97°47'28.05260"W		Total Depth 100.5 feet	
Drilling Contractor and Rig Fugro / CME 45		Elevation and Datum 835.136 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 8 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 3	Date Started 2/5/07	
		Borehole Inclination Vertical	Logged by S. Dee	Date Completed 2/5/07	

Reviewed by / Date R. Ortiz 2/8/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
0							<b>RESIDUAL SOIL (RS)</b> LEAN CLAY with calcareous deposits, medium stiff, very pale brown (10YR8/3), damp, 5% rounded limestone pebbles		835
1	CL		B-2040 1	4	17/18				834
2				4					833
3				8					832
4			B-2040 2	22	18/18		Sandy SILT with limestone fragments, medium stiff, dark yellowish brown (10YR4/6), damp, 10% subangular limestone pebbles		831
5	ML			6					830
6				5					829
7	CL		B-2040 3	4	10/10		LEAN CLAY, medium stiff to stiff, very pale brown (10YR8/2), damp, 10% angular limestone pebbles, strong reaction to HCl		828
8				50/5.5"			Limestone Rock		827
9								Bedrock at 8.0' Augered through weathered limestone to 9.8' to set casing.	826
10									825
11									824
12									823
13									822
14									821
15									820

Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. B-2040</b>	
Type and Diameter of Boring HQ / 4"			Boring Location 32°18'08.34422"N / 97°47'28.05260"W		Total Depth 100.5 feet
Drilling Contractor and Rig Furgo Austin / CME-45			Elevation and Datum 835.136 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 8 feet
Casing Size and Depth PVC 4" diameter / 9.8 feet			Length of Core Barrel and Bit 8.7 feet	No. of Core Boxes 7	Date Started 2/5/07
			Borehole Inclination Vertical	Logged by S.Deer	Date Completed 2/5/07

Reviewed by / Date R. Ortiz 2/8/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
10.0			1	0.4 0.7	57							LIMESTONE: wackestone; very light gray (N8); massive; moderately weathered (MW); weak (R2); abundant fossils; abundant 0.01' voids. [Glen Rose Formation]		825
11.0		0.8				MW	R2				IF JRC= 8, E, He, moderately spaced RF FRC=8 E2, Op			824
12.0		1.02												823
13.0		0.82	2	5.0 5.0	100				2040-4			LIMESTONE: packstone; silty; massive; slightly weathered (SW); weak (R2); medium gray (N5); reacts strongly to HCl. [Glen Rose Formation] Shale interbed		822
14.0		0.73				SW	R2							821
15.0			3											820
16.0		2.32												819
17.0		3.13				SW	R0					SHALE; dark gray (N3); very thin bedding; slightly weathered (SW); extremely weak (R0); slight reaction to HCl. [Glen Rose Formation]		818
18.0		3.1	3	5.0 5.0	100				2040-5					817
19.0		2.15				SW	R2					LIMESTONE: packstone; massive; slightly weathered (SW); weak (R2); strong reaction to HCl. [Glen Rose Formation]		816
20.0		1.43				F	R1					SILTSTONE; medium dark gray (N4); massive; fresh (F); very weak (R1). [Glen Rose Formation]		815
21.0		3.68				SW	R2					LIMESTONE: packstone; light gray (N7); massive with (0.1') interbeds of shale; slightly weathered (SW); weak (R2). [Glen Rose Formation]		814
22.0		1.75										LIMESTONE: wackestone; light gray (N7); massive with zones of abundant interbeds of shale and siltstone; slightly weathered (SW); weak (R2); strong reaction to HCl. [Glen Rose Formation] Abundant shale interbeds		813
23.0		0.95	4	5.0 5.0	100	SW	R2							812
24.0		0.8							2040-6					811
		1.33												

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2040</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
25		1.33	4	5.0 5.0	100							LIMESTONE: wackestone; light gray (N7); massive with zones of abundant interbeds of shale and siltstone; slightly weathered (SW); weak (R2); strong reaction to HCl. [Glen Rose Formation]		810
26		0.87										Shale interbeds from 23' to 25'		809
27		0.9				SW	R2							808
28		2.83	5	5.0 5.0	100					2040-7				807
29		2.7				SW	R0					SHALE; medium dark gray (N4); slightly weathered (SW); extremely weak (R0); very thinly bedded. [Glen Rose Formation]		806
30		3.65										LIMESTONE: wackestone; very light gray (N8); massive with abundant interbeds of shale and silt (0.1' beds); slightly weathered (SW); weak (R2); clasts are both subangular grains and fossils; shale interbeds from 31.3' to 31.8'		805
31		3.05				SW	R2					LIMESTONE: wackestone; very light gray (N8); massive with abundant interbeds of shale/ silt (0.1' beds); slightly weathered (SW); weak (R2); clasts are both subangular grains and fossils. [Glen Rose Formation]		804
32		3.43										Shale interbed		803
33		1.35	6	5.0 5.0	100	SW	R0			2040-8		SHALE; medium dark gray (N4); very thin bedding with (0.1') interbeds of limestone; slightly weathered (SW); extremely weak (R0); slight reaction to HCl. [Glen Rose Formation]		802
34		2.2										LIMESTONE: wackestone; very light gray (N8); massive with occasional interbeds of shale (<0.1'); slightly weathered (SW); weak (R2); strong reaction to HCl; clasts are bluish gray and usually fossils; abundant burrows and other bioturbation through run 7. [Glen Rose Formation]		801
35		2.63												800
36		1.28				SW	R2							799
37		3.38												798
38		2.28	7	5.0 5.0	100									797
39		2.15										Shale interbed		796
		2.25								2040-9				

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-2040</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
40		2.25	7	5.0 5.0	100	SW	R2							795
41		6.03										SHALE; medium dark gray (N4); fresh (F); extremely weak (R0); very thin bedded; no reaction to HCl. [Glen Rose Formation]		794
42		2.47				F	R0							793
43		2.65	8	5.0 5.0	100									792
44		2.1												791
45		4.02				SW	R2		2040-10			LIMESTONE: wackestone; very light gray (N8); slightly weathered (SW); weak (R2); massive; very bioturbulated. [Glen Rose Formation]		790
46		3.45										SHALE; medium dark gray (N4); very thinly bedded; fresh (F); extremely weak (R0); no reaction to HCl. [Glen Rose Formation]		789
47		2.62				F	R0							788
48		1.9	9	5.0 5.0	100				2040-11					787
49		2.23												786
50		4.03				SW	R2					LIMESTONE: wackestone; very light gray (N8); slightly weathered (SW); weak (R2); massive with occasional (<0.1') interbeds of shale and silt; reacts strongly to HCl; clasts are fine to medium grained; angular grains and fossils. [Glen Rose Formation]		785
51		3.32												784
52		2.87				F	R0					SHALE; medium dark gray (N4); very thin bedded; fresh (F); extremely weak (R0); moderately reacts to HCl. [Glen Rose Formation]	Pull down pressure (200 PSI)	783
53		2.9	10	5.0 5.0	100									782
54		3.95				SW	R2		2040-12			LIMESTONE: wackestone; very light gray (N8); massive with (<0.1') interbeds of shale; slightly weathered (SW); weak (R2). [Glen Rose Formation]	System pressure equals 1800 PSI, 100% water return	781
		2.82				F	R0							

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2040</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
55		2.82	10	5.0 5.0	100	F	R0					SHALE; medium dark gray (N4); very thin bedded; fresh (F); extremely weak (R0); moderately reacts to HCl. [Glen Rose Formation]		780
56		2.23										LIMESTONE: wackestone; very light gray (N8); fine to some medium grained areas; slightly weathered (SW); laminations to 2" thick; shale interbeds; bioturbation. [Glen Rose Formation]		779
57		3.38				SW	R2							778
58		3.03	11	5.0 5.0	100	F	R0					SHALE; medium dark gray (N4); very thinly bedded; fresh (F); extremely weak (R0); fossils. [Glen Rose Formation]		777
59		3.37							2040-13			LIMESTONE: wackestone; very light gray (N4); massive with occasional (<0.1') interbeds of shale and silt; slightly weathered (SW); weak (R2); reacts strongly to HCl; abundant bioturbation; rip-up clasts below 59.5'. [Glen Rose Formation]		776
60		2.62				SW	R2							775
61		2.32										LIMESTONE: packstone; light gray (N7); bedded with abundant interbeds (<0.1') of shale and silt; slightly weathered (SW); weak (R2); abundant bioturbation and rip up clasts. [Glen Rose Formation]		774
62		1.47				SW	R2		2040-14					773
63		0.97	12	5.0 5.0	100									772
64		2.83				SW	R2					LIMESTONE: wackestone; light gray (N7); bedded with abundant interbeds of shale and silt; slightly weathered (SW); weak (R2); strong reaction to HCl. [Glen Rose Formation]		771
65		1.53										LIMESTONE: packstone; light gray (N7); bedded with abundant interbeds (<0.1') of shale and silt; slightly weathered (SW); weak (R2); abundant bioturbation and rip up clasts; clasts vary between fine to medium grained black and brown subrounded grains and medium grained bluish gray subangular crystalline clasts; possible fossils. [Glen Rose Formation]		770
66		2.42				SW	R2							769
67		2.07												768
68		3.22	13	5.0 5.0	100							LIMESTONE: wackestone; light gray (N7); bedded with abundant (<0.1') interbeds of shale and silt; slightly weathered (SW); weak (R2); clasts are dominantly medium to coarse grained subangular crystalline clasts (bluish gray); likely fossils; rip-up clasts from 70.8' to 74.3'. [Glen Rose Formation]		767
69		2.68				SW	R2							766
		1.53												



Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-2040</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
70		1.53	13	5.0 5.0	100							LIMESTONE: wackestone; light gray (N7); bedded with abundant (<0.1') interbeds of shale and silt; slightly weathered (SW); weak (R2); clasts are dominantly medium to coarse grained subangular crystalline clasts (bluish gray); likely fossils; rip-up clasts from 70.8' to 74.3'. [Glen Rose Formation]		765
71		1.07												764
72		0.93												763
73		1.05	14	5.0 5.0	100									762
74		1.97				SW	R2							761
75		1.65												760
76		2.05												759
77		2.93												758
78		3.53	15	5.0 5.0	100								LIMESTONE: packstone; medium light gray (N6); slightly weathered (SW); weak (R2); bedded with abundant (<0.1') interbeds of shale/silt; abundant rip-up clasts. [Glen Rose Formation]	757
79		2.43				SW	R2							
80		1.5										LIMESTONE: wackestone; light gray (N7); massive with occasional interbeds (<0.1') of shale and silt; fresh (F); weak (R2); reacts strongly to HCl; clasts are medium to coarse grained; bluish gray; sunangular fossils (some oolites); rock is dominantly wackestone. [Glen Rose Formation]	755	
81		1.43												754
82		1.22				SW	R2						Pull pressure 280 PSI, system pressure 1500 PSI, 100% water return	753
83		1.12	16	5.0 5.0	100									
84		1.4											751	
		1.72												

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-2040</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
85		1.72	16	5.0 5.0	100							Shale interbeds from 85.3' to 86.2'		750
86		1.47												749
87		1.8				SW	R2					Shale interbeds from 86.7' to 88.2'		748
88		1.93	17	5.0 5.0	100									747
89		1.57								2040-19				746
90		2.03										LIMESTONE: packstone; light gray (N7); bedded with abundant (<0.1') interbeds of shale and silt; slightly weathered (SW); weak (R2); clasts are both fine to medium grained; reacts strongly to HCl. [Glen Rose Formation]		745
91		1.88												744
92		2.32												743
93		3.88	18	5.0 5.0	100	SW	R2							742
94		3.53												741
95		2.03								2040-20				740
96		1.7				SW						LIMESTONE: wackestone; light gray (N7); bedded with abundant interbeds to shale and silt (<0.1' beds); slightly weathered (SW); weak (R2); reacts strongly to HCl; abundant bioturbation and rip-up clasts. [Glen Rose Formation]		739
97		2.6												738
98		2.32	19	5.0 5.0	100		R2							737
99		2.95								2040-21				736
		2.95												

Project Name and Job Number  
 TXU Comanche Peak Col  
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**ROCK LOG**  
**Boring No. B-2040**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
100		2.95	19	51.0	100		R2							735
101													BOTTOM OF HOLE AT 100.5'	734
102														733
103														732
104														731
105														730
106														729
107														728
108														727
109														726
110														725
111														724
112														723
113														722
114														721

Project Name and Job Number TXU Comache Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-2041A</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'08.70943"N / 97°47'27.42697"W		Total Depth 150 feet	
Drilling Contractor and Rig Fugro / CME 45		Elevation and Datum 832.05 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 9 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 4	Date Started 3/6/07	
		Borehole Inclination Vertical	Logged by J. Cox	Date Completed 3/7/07	

Reviewed by / Date                          M. Zellman 3/13/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0										832
1	CL		B-2041A 1	2	16/18		ARTIFICIAL FILL (Qaf) LEAN CLAY, olive yellow (2.5Y6/8), damp to moist, medium stiff, fill, with few angular limestone fragments			831
2				3						830
3				6						829
4			B-2041A 2	15	15/15		SILT with sand, pale yellow (2.5Y7/4), damp to dry, hard			828
5	ML			50/3"						827
6			B-2041A 3	50/1"	1/1		SILT with sand, light yellowish brown (2.5Y6/3), dry, hard			826
7										825
8	ML									824
9			B-2041A 4	50/2.5"	2.5/2.5		SILT with sand, light yellowish brown (2.5Y6/3), dry, hard			823
9.0							Top of Bedrock at 9.0'		Bedrock at 9.0'	823
10										822
11										821
12										820
13										819
14										818
15										817

Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. B-2041-A</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'08.70943"N / 97°47'27.42697"W		Total Depth 150 feet	
Drilling Contractor and Rig Fugro Austin / CME 45		Elevation and Datum 832.05 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 9 feet	
Casing Size and Depth 4" / 9 feet		Length of Core Barrel and Bit 8.7 feet	No. of Core Boxes 10	Date Started 3/6/07	
		Borehole Inclination Vertical	Logged by J. Cox	Date Completed 3/7/07	

Reviewed by / Date M. Zellman 3/11/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology		Remarks	Elevation (feet)
9		2.37	1	1.1 / 1.0	100										823
10		2.15				SW	R2					LIMESTONE: shaley wackestone; medium gray (N5); weak(R2); slightly weathered(SW); abundant fossils; dry to damp; strong reaction to HCL. [Glen Rose Formation]	Top of Bedrock	822	
11		2.57												821	
12		2.5	2	5.0 / 5.0	99	SW	R1		2041-A-5			SHALE: medium dark gray (N4); very weak(R1); slightly weathered(SW); very finely bedded; no reaction to HCL. [Glen Rose Formation]		820	
13		2.42												819	
14		2.6										LIMESTONE: shaley wackestone; medium gray (N5); weak(R2); slightly weathered(SW); abundant fossils; dry to damp; strong reaction to HCL. [Glen Rose Formation]		818	
15		2.25				SW	R2							817	
16		2.33												816	
17		1.5	3	5.0 / 5.0	100	SW	R2					LIMESTONE: micrite; white (N9); weak(R2); slightly weathered(SW); small rip up clasts from 16.9 to 17.2; abundant small fossils; strong reaction to HCL; fine grain. [Glen Rose Formation]		815	
18		1.42												814	
19		1.27							2041-A-6			LIMESTONE: wackestone; medium light gray (N6); weak(R2); slightly weathered(SW); fine to coarse grain; abundant silt filled rip up clasts; strong reaction to HCL. [Glen Rose Formation]		813	
20		1.25												812	
21		1.28				SW	R2		2041-A-7					811	
22		1	4	5.0 / 5.0	100									810	
23		2.33												809	
24															

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2041-A</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
24		2.43	4	5.0 5.0	100							LIMESTONE: wackestone; medium light gray (N6); weak(R2); slightly weathered(SW); fine to coarse grain; abundant silt filled rip up clasts; strong reaction to HCL. [Glen Rose Formation]		808
25		3.9				SW	R2					Shale interbed		807
26		3.97				SW	R1							806
27		3.7	5	4.6 5.0	98	SW	R2			2041-A-8		SHALE: medium dark gray (N4); very weak(R1); slightly weathered(SW); very thin bedding; no reaction to HCL. [Glen Rose Formation]		805
28		4.25				SW	R1					LIMESTONE: wackestone; medium light gray (N6); weak(R2); slightly weathered(SW); fine to coarse grain; abundant silt filled rip up clasts; strong reaction to HCL. [Glen Rose Formation]		804
29		2										SHALE: medium dark gray (N4); very weak(R1); slightly weathered(SW); very thin bedding; no reaction to HCL. [Glen Rose Formation]		803
30		2.08								2041-A-9		LIMESTONE: wackestone; medium light gray (N6); weak(R2); slightly weathered(SW); fine to coarse grain; less rip up clasts from 28.4 to 30.0; large rip up clasts filled with silty matrix from 30.0 to 35.0; strong reaction to HCL. [Glen Rose Formation]		802
31		2				SW	R2							801
32		1.8	6	5.0 5.0	100									800
33		1.93												799
34		2.33												798
35		2.58				SW	R2					LIMESTONE: Packstone; medium gray (N5); weak(R2); slightly weathered(SW); abundant fossils; strong reaction to HCL; fine to coarse grain. [Glen Rose Formation]		797
36		2.92										SHALE: medium dark gray (N4); very weak(R1); slightly weathered(SW); very thin bedding; no reaction to HCL. [Glen Rose Formation]		796
37		6.63	7	5.1 5.0	100	SW	R1							795
38		8.17											Length of recovery stretched due to mechanical breaks.	794
39														

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**ROCK LOG**  
**Boring No. B-2041-A**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
39		7.58	7	5.1	100	SW	R1		2041-A-10					793
40		3.68				SW	R2					LIMESTONE: wackestone; very light gray (N8); weak(R2); slightly weathered(SW); abundant fossils; violent reaction to HCL. [Glen Rose Formation]		792
41		4.5							2041-A-11			SHALE: medium dark gray (N4); very weak(R1); slightly weathered(SW); very thinly bedded, no reaction to HCL. [Glen Rose Formation]		791
42		4.72	8	5.1	100	SW	R1							790
43		4.08											Length of recovery stretched due to mechanical breaks.	789
44		1.6				SW	R2					LIMESTONE: wackestone; very light gray (N8); weak(R2); slightly weathered(SW); abundant fossils; violent reaction to HCL; several large rip up clasts filled with silty matrix. [Glen Rose Formation]		
45		2.25				SW	R2					LIMESTONE: wackestone; light gray (N7); weak(R2); slightly weathered(SW); abundant rip up clasts; abundant fossils; violent reaction to HCL.. [Glen Rose Formation]		787
46		2.58										SHALE: medium gray (N5); very weak(R1); slightly weathered(SW); thinly bedded; No reaction to HCL; some fossils around limestone interbeds. [Glen Rose Formation]		786
47		4.05	9	5.0	100	SW	R1		2041-A-12					785
48		4.08												784
49		3.97				SW	R2					LIMESTONE: wackestone; light gray (N7); weak(R2); slightly weathered(SW); abundant rip up clasts; abundant fossils; violent reaction to HCL.. [Glen Rose Formation]		783
50		2.42										SHALE: medium gray (N5); very weak(R1); slightly weathered(SW); thinly bedded; No reaction to HCL; Gradational contact with Limestone from 51.8 to 52.2. [Glen Rose Formation]		782
51		2.1				SW	R1							781
52		2.17	10	5.0	100							LIMESTONE: wackestone; light gray (N7); weak(R2); slightly weathered(SW); Massive; abundant rip up clasts; abundant fossils; violent reaction to HCL. [Glen Rose Formation]		780
53		1.8				SW	R2							779
54									2041-A-13					

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**ROCK LOG**  
**Boring No. B-2041-A**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
54		2.45	10	5.0 5.0	100	SW	R2							778
55		1.22									Stepped, slightly rough, open	LIMESTONE: wackestone; light gray (N7); weak(R2); slightly weathered(SW); Massive; abundant rip up clasts; abundant fossils; violent reaction to HCL. [Glen Rose Formation] Shale interbed		777
56		1.27												776
57		1.25	11	5.0 5.0	100	SW	R2		2041-A-14					775
58		1.25												774
59		1.42												773
60		1.75												772
61		1.3												771
62		1.25	12	5.0 5.0	100	SW	R2							770
63		1.52							2041-A-15					769
64		1.87											Good H2O Return	768
65		1.83												767
66		2.1												766
67		2	13	4.9 5.0	98	SW	R2							765
68		2.18							2041-A-16					764



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**ROCK LOG**  
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
69		2.03	13	4.50	98	SW	R2					LIMESTONE: wackestone; light gray (N7); weak(R2); slightly weathered(SW); Massive; abundant rip up clasts; abundant fossils; violent reaction to HCL. [Glen Rose Formation]		763
70		1.23												762
71		1.3												761
72		1.5	14	5.0	100	SW	R2							760
73		2.25								2041-A-17				759
74		2.08												758
75		2.27										LIMESTONE: Packstone; medium light gray (N6); weak(R2); fresh(F) to slightly weathered(SW); massive; slightly damp; coarse grained; abundant rip up clasts; abundant fossils; strong reaction to HCL. [Glen Rose Formation]	TLC Safety Drive by	757
76		1.32												756
77		1.13	15	5.0	100	F-SW	R2			2041-A-18				755
78		1.5												754
79		1.67												753
80		2										LIMESTONE: wackestone; medium light gray (N6); weak(R2); fresh(F) to slightly weathered(SW); massive; slightly damp; fine to coarse grain; abundant rip up clasts, abundant fossils. [Glen Rose Formation]		752
81		2.18												751
82		1.5	16	5.0	100	F-SW	R2			2041-A-19				750
83		1.62												749
84														

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
84		1.33	16	5.0	100	F-SW	R2							748
85		1.08										LIMESTONE: wackestone; light gray (N7); weak(R2) massive; fresh(F) to slightly weathered(SW); very few rip up clasts; very few fossils, fine to medium grain; moderately strong reaction to HCL. Gradational contact between wackestone and packstone from 95.0 to 96.0.. [Glen Rose Formation]		747
86		1.28								2041-A-20				746
87		1.78	17	5.0	100	F-SW	R2							745
88		1.83												744
89		3.42												743
90		1.02												742
91		1.03												741
92		1.05	18	5.0	100	F-SW	R2			2041-A-21				740
93		1.03												739
94		1.02												738
95		0.7											737	
96		0.75										LIMESTONE: packstone; medium gray (N5); weak(R2); slightly weathered(SW); massive; abundant rip up clasts; coarse grained; abundant fossils; moderate reaction to HCL. [Glen Rose Formation]	736	
97		1.27	19	5.0	100	SW	R2			2041-A-22				735
98		2.12				SW-F	R2							734
99														

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
99		1.42	19	5.0	100							LIMESTONE: wackestone; light gray (N7); weak(R2) massive; fresh(F) to slightly weathered(SW); very few rip up clasts; very few fossils, fine to medium grain; moderately strong reaction to HCL. [Glen Rose Formation]		733
100		1.43												732
101		2.07												731
102		2.18	20	5.0	100	SW-F	R2		2041-A-23					730
103		2.05												729
104		2.12												728
105		1.15										LIMESTONE: Micrite; light gray (N7); weak(R2); fresh(F) to slightly weathered(SW); massive; dry; no rip up clasts; very few fossils; strong reaction to HCL. [Glen Rose Formation]	727	
106		1.2												726
107		1.93	21	5.0	100	SW-F	R2		2041-A-24					725
108		1.58										Johnnie Postman stopped by	724	
109		1.6												723
110		4.67												722
111		2.5										LIMESTONE: wackestone; light gray (N7); weak(R2), fresh(F) to slightly weathered(SW); massive; dry; occasional rip up clasts; few fossils; strong reaction to HCL. [Glen Rose Formation]	721	
112		1.75	22	5.0	100	SW-F	R2							720
113		1.57							2041-A-25					719
114														

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**ROCK LOG**  
**Boring No. B-2041-A**


Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
114		1.83	22	5.0 5.0	100							LIMESTONE: wackestone; light gray (N7); weak(R2), fresh(F) to slightly weathered(SW); massive; dry; occasional rip up clasts; few fossils; strong reaction to HCL. [Glen Rose Formation]	Good H2O Return	718
115		2.25				SW-F	R2							717
116		2.42												716
117		4.5	23	5.0 5.0	100	SW-F	R1-R2		2041-A-26			SHALE: medium dark gray (N4); very weak(R1); slightly weathered(SW); thinly bedded; some fossils near contacts on both ends of unit. Very slight reaction to HCL. [Glen Rose Formation]		715
118		2.82										LIMESTONE: wackestone; light gray (N7); weak(R2), fresh(F) to slightly weathered(SW); massive; dry; occasional rip up clasts; few fossils; strong reaction to HCL. [Glen Rose Formation]		714
119		3.67				SW-F	R2							713
120		2.07				SW	R1					SHALE: medium dark gray (N4); very weak(R1); slightly weathered(SW); thinly bedded; some fossils near contacts on both ends of unit. Very slight reaction to HCL.. [Glen Rose Formation]		712
121		2.05										LIMESTONE: wackestone; medium light gray (N6); weak(R2); slightly weathered(SW); massive; abundant bioturbation; abundant fossils. [Glen Rose Formation]		711
122		1.28	24	5.1 5.0	100									710
123		1.38							2041-A-27				Length of recovery stretched due to mechanical breaks.	709
124		2.5											Good H2O Return	708
125		2.5				SW	R2							707
126		2.75												706
127		1.97	25	5.0 5.0	100									705
128		1.07							2041-A-28					704
129														

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-2041-A</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
129		1.27	25	5.0 5.0	100							LIMESTONE: wackestone; medium light gray (N6); weak(R2); slightly weathered(SW); massive; abundant bioturbation; abundant fossils. [Glen Rose Formation]	Cable wire wrapped up in spool incorrectly; driller and helper had to let out all the wire and respool correctly.	703
130		1.12												702
131		1.2											701	
132		1.17	26	5.1 5.0	100	SW	R2						700	
133		1								2041-A-29			699	
134		1.18											698	
135		1.57										LIMESTONE: wackestone; medium light gray (N6); weak(R2); slightly weathered(SW); massive; rip up clasts from 135.9 to 136.3. very few fossils, moderate reaction to HCL; Very limey shale at 138.6 to 139.0; Shale interbed at 141.5 and 143.7. [Glen Rose Formation]	697	
136		1.53											696	
137		1.12	27	5.0 5.0	100								695	
138		1.28								2041-A-30			694	
139		2.07											693	
140		1.92				SW	R2						692	
141		1.07											691	
142		1.17	28	5.0 5.0	100								690	
143		2.35								2041-A-31			689	
144														


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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
144	[Lithology Column]	1.45	28	57.0	100	SW	R2					Limestone: packstone; light gray(N7); weak(R2); massive; slightly weathered(SW); abundant fossils; abundant rip up clasts; violent reaction to HCL.. [Glen Rose Formation]		688
145		1.25												687
146		1.28												686
147		1.15	29	57.0	100	SW	R2							685
148		1.2								2041-A-32				
149		1.35											683	
150											BOTTOM OF HOLE AT 150'	Bottom of hole 150.0'	682	
151													681	
152													680	
153													679	
154													678	
155													677	
156													676	
157													675	
158													674	
159														

Project Name and Job Number TXU Comanche Peak COL 1908				<b>SOIL LOG</b> <b>Boring No. B-2042A</b>	
Type and Diameter of Boring HSA / 7"			Boring Location 32°18'07.71444"N / 97°47'27.25919"W		Total Depth 150 feet
Drilling Contractor and Rig Richard Simmons Drilling / BK-81 HD			Elevation and Datum 830.66 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 14 feet
Sampling Method SPT			Sample Driving Hammer/Drop R&C / 140 lbs / 30 inches	No. of Samples 6	Date Started 3/6/07
			Borehole Inclination Vertical	Logged by J. Turner	Date Completed 3/7/07

Reviewed by / Date          R Ortiz 3/13/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0									<b>ARTIFICIAL FILL (Qaf)</b> LEAN CLAY, with sand, some gravel and calcareous deposits, light olive brown (2.5Y5/6), damp, medium stiff, strong reaction to HCL, some organic matter	830
1	CL		B-2042A 1	5						829
2				2	15/18	3.5				828
3				3						828
4	CL		B-2042A 2	5				with gravel, yellow (2.5Y7/8), dry		827
5				5	15/15	4.25				826
6	CL			50/3"				<b>RESIDUAL SOIL (RS)</b> LEAN CLAY, light yellowish bronze, (2.5Y6/3), damp, medium stiff, strong reaction to HCL		825
7			B-2042A 3							824
8	CL			50/4"	4/4	2.75		LEAN CLAY, greenish black (5GY2.5/1), damp, very stiff, slight reaction to HCL, with roots		824
9										823
10			B-2042A 4							822
11				13						821
12				11	10/15	2		Weathered Limestone bedrock ledge, vuggy w/ calcite crystals		821
13				50/3"						820
14			B-2042A 5							819
15	CL			13				LEAN CLAY with sand, greenish black (5GY2.5/1), damp, stiff to hard, slight reaction to HCL		819
16				16	16/16	2		pale yellow (2.5Y7/4) dry, very stiff to hard, strong reaction to HCL, with few weathered limestone fragments		818
17				50/4"						818
18			B-2042A 6							817
19	CL			50/4"	4/4	2		LEAN CLAY w/ gravel, light brownish yellow(2.5Y6/3), moist, stiff, strong reaction to HCL		817
20										816

Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. B-2042-A</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'07.71444"N / 97°47'27.25919"W		Total Depth 150 feet	
Drilling Contractor and Rig Richard Simmons / BK HD81		Elevation and Datum 830.66 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock	
Casing Size and Depth 4" / 14 feet		Length of Core Barrel and Bit 10 feet	No. of Core Boxes 10	Date Started 2/6/07	
		Borehole Inclination Vertical	Logged by J Turner	Date Completed 2/7/07	

Reviewed by / Date \_\_\_\_\_ R Ortiz

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
14		2.25	7	1.0 1.0	100							SHALE; Siltstone; Greenish Gray (5YG 6/1). Fine grained; slightly weathered(SW); very weak(R1); laminated; undulatory; bioturbated; dolomitic; streak has slight reaction to HCl. 15.5 to 15.6 Limestone interbed. 16.2 - 16.3 Shale/claystone interbed [Glen Rose Formation]	With shell hash	816
15		2.78					R1							815
16		2.45												814
17		1.77	8	5.2 5.0	100		R2					LIMESTONE; micrite; White (N9); fine grained; weak (R2); massive; reacts strongly to HCl[Glen Rose Formation]		813
18		1.53												812
19		1.77												811
20		1.52												810
21		1.08				SW							fast drilling rates	809
22		1.07	9	5.0 5.0	100									808
23		1.4					R0							807
24		2.52												806
25		1.67										SHALE; Claystone; Medium dark gray (N4); very fine; finely laminated; extremely weak(R0); Shale finely laminated between limestone interbeds; Contacts sharp; Minor soft sediment deformation; Does not react to HCl[Glen Rose Formation]		805
26		2.18												804
27		3.68	10	5.0 5.0	100									803
28		1.88					R2							802



Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-2042-A**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
29		1.68	10	5.0	100							LIMESTONE; micrite; Very light gray (N8); Weak; slightly weathered(SW); massive with sparse stylolites (.1 to .4 apart); moderate reaction with HCl.[Glen Rose Formation]		801
30		1.77												800
31		1.88												799
32		2.17	11	5.0	100		R2		2042-A-11					798
33		2.22												797
34		2.85				SW								796
35		2.25												795
36		2.8							2042-A-12			SHALE; Medium dark gray (N4). Extremely weak (R0); slightly weathered(SW); Finely laminated; Does not react to HCl[Glen Rose Formation]		794
37		2.52	12	5.0	100		R0							793
38		3.67												792
39		3.02												791
40		2.68					R2					LIMESTONE; wackestone; Very light gray (N8); massive; weak (R2); fresh(F); strong reaction to HCl[Glen Rose Formation]		790
41		2.83										SHALE; Medium dark gray (N4); Extremely weak (R0); fresh(F); Rhythmic limestone interbeds; Fissile; finely laminated; does not react with HCl[Glen Rose Formation]		789
42		3.1	13	5.0	100	F	R0		2042-A-13					788
43		2.02												787
44														

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2042-A</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
44		1.85	13	5.0	100							LIMESTONE; wackestone Very light gray (N8); massive; fine to medium grained; undulatory sub - .1 shale beds and thin stylolites[Glen Rose Formation]		786
45		3.1												785
46		3.22					R1					SHALE; Medium dark gray (N4); very weak (R1); fresh(F); fissile; Shell fragments at 46.1; slightly gradational lower contact[Glen Rose Formation]		784
47		3.02	14	5.0	100				2042-A-14					783
48		2.82												782
49		2.83					R2					LIMESTONE; wackestone. Very light gray (N8); fresh(F); weak (R2); bioturbated near upper contact; massive; strong reaction to HCl[Glen Rose Formation]		781
50		3.17							2042-A-14A			SHALE; medium dark gray (N4) Very weak (R1); fresh(F); sparse shell fragments; finely laminated; does not react to HCl[Glen Rose Formation]		780
51		2.68							2042-A-14B					779
52		2.93	15	5.2	100	F	R1		2042-A-15			LIMESTONE; wackestone; Very light gray (N8) Fossiliferous; massive to finely bedded; undulatory; soft sediment deformation; sub - .1 interbeds of muddy packstone[Glen Rose Formation]		778
53		1.68										SHALE; dark gray (N3); very weak; fresh(F); shells; laminated[Glen Rose Formation]		777
54		1.43										LIMESTONE; wackestone; Very light gray (N8); weak (R2); fresh(F); massive; fine grained. 54.7 stylolites; sub .1 packstone interbeds to 59; gradational lower contact[Glen Rose Formation]		776
55		1.1												775
56		2.02					R2						fast drilling rates	774
57		1.25	16	5.0	100				2042-A-16					773
58		1.45												772

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-2042-A</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
59		1.78	16	5.0	100		R2					Coarse grained		771
60		1.6										LIMESTONE; packstone; Medium gray (N5); Medium to coarse grained; weak (R1); fresh(F); laminated; contains shell fragments; slight reaction to HCl; Gradational lower contact[Glen Rose Formation]		770
61		1.85												769
62		2.18	17	5.2	100		R1		2042-A-17			LIMESTONE; wackestone; contains abundant sub-.1 packstone interbeds to 69.5; Weak (R2); 69.5 to 72.1 pure massive wackestone; fine grained; Bioturbated; Gradational lower contact[Glen Rose Formation]		768
63		2.05												767
64		1.97										fast drilling rates		766
65		1.68				F								765
66		2.17											764	
67		2.02	18	5.1	100								763	
68		1.82					R2		2042-A-18				762	
69		1.43											761	
70		1.1											760	
71		1.98											759	
72		2.18	19	4.9	98							LIMESTONE; packstone; Medium dark gray (N4). Very weak (R1); Laminated; fresh(F); undulatory; bioturbated; slight reaction with HCl[Glen Rose Formation]		758
73		2.68					R1		2042-A-19					757

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**ROCK LOG**  
**Boring No. B-2042-A**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
74		2.1	19	4.9 5.0	98		R1							756
75		1.8										LIMESTONE; wackestone; Very light gray (N8); fresh(F); weak (R2) massive; medium grained; s		755
76		2.17												754
77		2.13	20	4.9 5.0	98									753
78		2.25							2042-A-20					752
79		2.1										LIMESTONE; packstone; medium light gray (N8); coarse to medium grained; fresh(F); weak (R2); laminated; bioturbated; very slight reaction to HCl[Glen Rose Formation]	start drilling for day at 7:45 am, 3/7/07	751
80		1.85												750
81		2.02				F								749
82		2.17	21	5.0 5.0	100		R2					LIMESTONE; wackestone; Very light gray (N8); fine grained; massive; fresh(F); weak (R2); slight reaction to HCl; Carbonate grains medium bluish gray (5B 5/1)[Glen Rose Formation]		748
83		2.35							2042-A-21					747
84		1.85												746
85		1.85												745
86		1.77											fast drilling rates	744
87		1.52	22	5.0 5.0	100								good water return, very light gray	743
88		1.8							2042-A-22					742
89												Increased mud/clay content; reacts with HCl when streaked		742

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-2042-A**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
89		1.83	22	5.0 5.0	100							Increased mud/clay content; reacts with HCl when streaked		741
90		1.43											fast drilling, bluish white water return	740
91		1.37												739
92		1.52	23	5.1 5.0	100		R2		2042-A-23					738
93		2.38												737
94		2.1												736
95		2.68												735
96		2.1				F								734
97		2.23	24	5.0 5.0	100		R1		2042-A-24			LIMESTONE; packstone; Medium dark gray (N4); fresh(F); very weak (R1); coarse grained; laminated; undulatory; bioturbated; does not react to HCl[Glen Rose Formation]	fairly fast drilling rates	733
98		2.18										SHALE; Calcareous. Medium light gray (N6); very weak (R1); fresh(F); finely laminated; clay and silt with calcareous cement. Strong reaction to HCl[Glen Rose Formation]		732
99		1.77										LIMESTONE; wackestone. Light gray (N7) weak (R2); fresh(F); coarse grained; grains abundant; massive; bioturbated; sub -.1' packstone interbeds 99.3 and 99.4. bioturbated.		731
100		2.08												730
101		2.5					R2							729
102		2.18	25	5.1 5.0	100				2042-A-25					728
103		1.77												727
104												LIMESTONE; micrite; Yellowish gray (5Y)		

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-2042-A</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
104		1.97	25	5.1 5.0	100		R2					7/2); fresh(F); weak (R2); fine grained; massive; mottled; slight reaction to HCl[Glen Rose Formation]		726
105		1.43										LIMESTONE; wackestone; Very light gray (N8); fresh(F); very weak (R1); high clay content; massive; fine grained; slight reaction to HCl; medium grained shell fragments[Glen Rose Formation]		725
106		2.63							2042-A-26					724
107		2.68	26	5.0 5.0	100		R1							723
108		2.6												722
109		2.23										LIMESTONE; packstone; Medium gray (N5); very weak (R1); fresh(F); medium grained; abundant shell fragments; fossiliferous; bioturbated; reacts strongly with HCl	drilled to 110'; only recovered to 109.5'. 0.5' dropped was recovered with grabber before drilling run 27.	721
110		2.17										LIMESTONE; wackestone; Very light gray (N8); contains abundant sub-.1' packstone interbeds that are medium dark gray (N4); fresh(F); weak (R2); fine to medium grained; bioturbated; load structures; packstone interbeds have abundant shell fragments; [Glen Rose Formation]		720
111		2.02				F			2042-A-27					719
112		2.18	27	4.9 5.0	98		R2							718
113		2.68												717
114		3.1												716
115		2.23												715
116		2.43					R1					SHALE; medium dark gray (N4) extremely weak (R1); fresh(F); fissile; laminated; sticky clays; does not react with HCl[Glen Rose Formation]	10:50 am. QA assessor from Enercon on-site, stayed outside of barrier.	714
117		2.52	28	5.0 5.0	100							LIMESTONE; wackestone; Light gray (N7); very weak (R1); fresh(F); massive; bioturbated; sub-.1' packstone interbeds; undulatory[Glen Rose Formation]		713
118		3.02					R1		2042-A-28					712
119														

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2042-A</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
119		3.83	28	5.0	100		R1					LIMESTONE; packstone; dark greenish gray (5GY 4/1). Laminated; contains some silt; very weak (R1); fresh(F);[Glen Rose Formation]		711
120		2.5										LIMESTONE; micrite; very light gray (N8); fresh(F); very weak (R1); strong reaction to HCl[Glen Rose Formation]		710
121		2.1					R2					LIMESTONE; packstone; Medium gray (N5); fresh(F); weak (R2); thoroughly bioturbated; some undulatory lamination (bedding) remains; Strong reaction to HCl[Glen Rose Formation]		709
122		2.8	29	5.0	100							LIMESTONE; wackestone; very light gray (N8) fine grained; fresh(F); weak (R2); abundant sub-.1' interbeds of packstone[Glen Rose Formation]		708
123		3.02							2042-A-29			LIMESTONE; packstone; Medium dark gray (N4); bioturbated; fresh(F); very weak (R1); Carbonate grains medium bluish gray (5B 5/1)[Glen Rose Formation]		707
124		1.67												706
125		1.83											11:20 am. QA guy left	705
126		1.97					R1		2042-A-30					704
127		2.32	30	5.2	100									703
128		2.68											fast drilling rate; good water return very light gray	702
129		1.83												701
130		2.1												700
131		2.07					R2					LIMESTONE; wackestone; very light gray (N8) fine grained; massive; styalitic; strong reaction to HCl; bioturbated; weak; fresh(F)	moderate drilling rates, good water return	699
132		2.17	31	5.1	100				2042-A-31					698
133		2.23					R1					LIMESTONE; packstone; medium gray (N5); fresh(F); very weak (R1); medium to coarse grained;		697
134														

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2042-A</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
134		2.43	31	5.1 5.0	100		R1					elevated silt content		
135		2.25					R2					LIMESTONE; wackestone; very light gray (N8); fresh(F); weak (R2)[Glen Rose Formation]		696
136		2.43					R1					LIMESTONE; packstone; medium dark gray (N4); fresh(F); very weak (R1)[Glen Rose Formation]		695
137		2.77	32	4.9 5.0	98		R2					LIMESTONE; wackestone; very light gray (N8); fresh(F); weak (R2)[Glen Rose Formation]		694
138		2.98								2042-A-32		LIMESTONE; packstone; Medium dark gray (N4); medium to coarse grained; shell fragments abundant; weak; fresh(F); Bioturbated; Burrows backfilled with wackestone[Glen Rose Formation]		693
139		3.1												692
140		2.02					R1							691
141		2.25				F							drillers left for drinks, gone for 10 minutes	690
142		2.68	33	5.0 5.0	100					2042-A-33		LIMESTONE; wackestone; Very light gray (N8); fresh(F); weak (R2); Massive with abundant sub-.1' packstone interbeds; convoluted; [Glen Rose Formation]		689
143		2.85												688
144		1.77					R2							687
145		1.8												686
146		1.77											fast drilling rates, good water return	685
147		1.67	34	5.0 5.0	100		R1			2042-A-34		LIMESTONE; packstone; Medium gray (N5); shell hash; fresh(F); very weak (R1); coarse to very coarse[Glen Rose Formation]		684
148		1.93					R2					LIMESTONE; wackestone; light gray (N7); fresh(F); weak (R2); poorly sorted; convoluted laminations; bioturbated;[Glen Rose Formation]		683
149														682




Project Name and Job Number  
 TXU Comanche Peak Col  
 1908

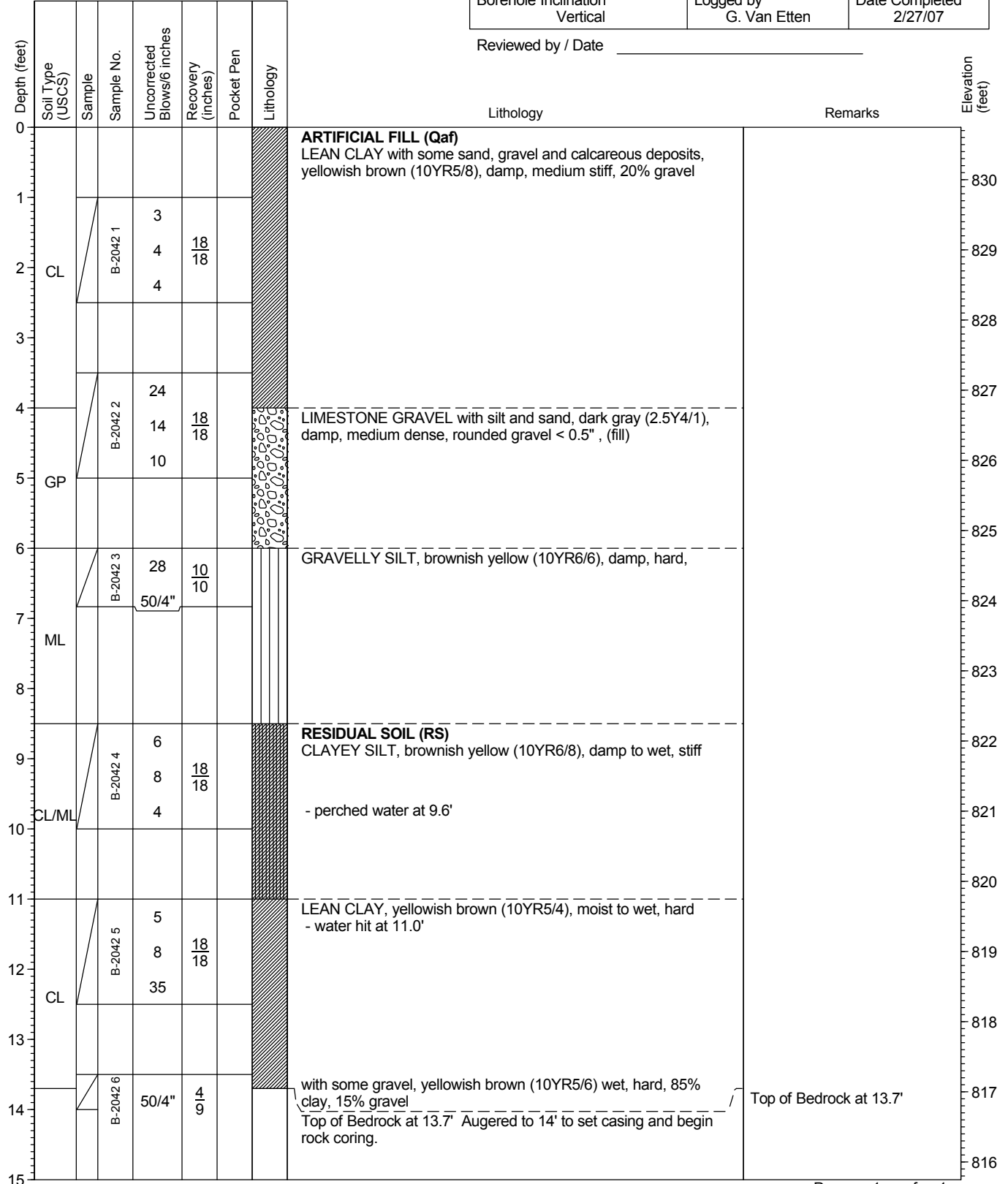



**ROCK LOG**  
**Boring No. B-2042-A**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
149		1.27	34	51.0	100	F	R2							681
150												BOTTOM OF HOLE AT 150'	end of boring	680
151														679
152														678
153														677
154														676
155														675
156														674
157														673
158														672
159														671
160														670
161														669
162														668
163														667
164														666

Project Name and Job Number TXU Comache Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-2042</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'07.71444"N / 97°47'27.25919"W		Total Depth 90 feet	
Drilling Contractor and Rig Fugro / CME 45		Elevation and Datum 830.747 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 13.7 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 6	Date Started 2/26/07	
		Borehole Inclination Vertical	Logged by G. Van Etten	Date Completed 2/27/07	

Reviewed by / Date \_\_\_\_\_



Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG Boring No. B-2042</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'07.71444"N / 97°47'27.25919"W		Total Depth 90 feet	
Drilling Contractor and Rig Fugro / CME-45		Elevation and Datum 830.747 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 13.7 feet	
Casing Size and Depth 4" / 13.5 feet		Length of Core Barrel and Bit 8.7 feet	No. of Core Boxes 6	Date Started 2/26/07	
		Borehole Inclination Vertical	Logged by G. VanEtten	Date Completed 2/27/07	

Reviewed by / Date \_\_\_\_\_

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
14		2	1	1.3 1.3	100	F	R1		2042-7			LIMESTONE; sparite; very light gray (N8); slightly weathered(SW); very weak(R1); shell hash; violent reaction to HCL[Glen Rose Formation]		816
15		0.58											Good water return	
16		1.93				F	R0					SHALE; medium dark gray (N4); fresh(F); extremely weak(R0); very thin limestone interlayers; no reaction to HCL[Glen Rose Formation]		815
17		1.32				F	R2					LIMESTONE; wackestone; very light gray(N8); fresh(F); weak(R2); several stylolites and very thin shale layers; strong reaction to HCL[Glen Rose Formation]		814
18		0.97	2	5.0 5.0	100				2042-8			LIMESTONE; packstone; medium light gray (N6); fresh(F); very weak(R1); rip up clasts and bioturbations common; thin zones with fewer shale interbeds; moderate reaction to HCL[Glen Rose Formation]		813
19		1.03									P1, S1, Op			812
20		1.33				F	R1							811
21		1.5												810
22		1.68												809
23		1.67	3	5.0 5.0	100									808
24		5.27				F	R0		2042-9			SHALE; dark gray (N3); fresh(F); extremely weak(R0); one 0.07' thick limestone layer at 23.2'; mild reaction to HCL[Glen Rose Formation]		807
25		3.67				F	R1					LIMESTONE; packstone; medium light gray (N6); fresh(F); very weak(R1); rip up clasts and bioturbations common; thin zones of fewer shale interbeds; moderate reaction to HCL[Glen Rose Formation]		806
26		5.85										SHALE; medium dark gray (N4); several <.1' thick limestone interbeds spaced .5' apart; fresh(F); extremely weak(R0); mild reaction to HCL; several large rip up clasts[Glen Rose Formation]		805
27		4.72	4	5.0 5.0	100				2042-10			LIMESTONE; wackestone; very light gray (N8); to medium light gray (N6); thin shale layers; several bioturbations; pyrite clasts and stylolites; fresh(F); weak(R2); violent reaction to HCL[Glen Rose Formation]		804
28		0.9				F	R2							803
29														802

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-2042**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
29		1.68	4	5.0	100	F	R2					zone of many shale layers		801
30		3.85										LIMESTONE; packstone; light gray (N7); fresh(F); very weak(R1); many very thin swirled shale interbeds and bioturbations; violent reaction to HCL[Glen Rose Formation]	Good water return	800
31		1.78												799
32		3.32	5	5.1	100	F	R1					Many shell fossils		798
33		4.82								2042-11			Length of recovery stretched due to mechanical breaks.	797
34		2.43												796
35		2.8								2042-12		SHALE; medium dark gray (N4); massive; fresh(F); extremely weak(R0); extremely thin laminations of shale; mild reaction to HCL[Glen Rose Formation]	Drill rig shut down due to hydraulic leak	795
36		4.8				F	R0							794
37		5.9	6	4.9	98									793
38		4.75				F	R2					LIMESTONE; wackstone; very light gray (N8); fresh(F); weak(R2); many fossils and bioturbations[Glen Rose Formation]		792
39		1.58										SHALE; medium dark gray (N4); massive; fresh(F); extremely weak(R0); several .1' to .2' thick interbeds of wackestone[Glen Rose Formation]		791
40		6.42				F	R0			2042-13			Drilling started 2/28/07	790
41		4.87												789
42		5	7	5.0	100									788
43		1.33				F	R1					LIMESTONE; packstone; light gray (N7); fresh(F); very weak(R1); fossiliferous at upper contact; thick shale interbeds swirled every .3'; many bioturbations and rip up clasts; moderate reaction to HCL[Glen Rose Formation]		787

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-2042</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
44		2.35	7	5.0	100	F	R1						Good water return	786
45		3.37										SHALE; medium dark gray (N4); massive; fresh(F); extremely weak(R0); very muddy surface; very mild reaction to HCL[Glen Rose Formation]		785
46		4.68				F	R0							784
47		4.3	8	5.2	100	F	R1					LIMESTONE; packstone; light gray (N7); fresh(F); very weak(R1); many fossils; bioturbations; strong reaction to HCL[Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	783
48		2.2												782
49		4.57				F	R0		2042-14			SHALE; medium light gray (N4); massive; fresh(F); very to extremely weak(R0); mild reaction to HCL[Glen Rose Formation]		781
50		5.45										LIMESTONE; packstone; medium light gray (N6); fresh(F); very weak(R1); large shale layers; rip up clasts and bioturbations; few fossils; violent reaction to HCL[Glen Rose Formation]		780
51		2.5				F	R1							779
52		2.4	9	5.0	100	F	R2		2042-15			LIMESTONE; wackestone; very light gray (N8); fresh(F); weak(R2); many stylolites; mild reaction to HCL[Glen Rose Formation]		778
53		1.02												777
54		0.78										LIMESTONE; packstone; medium light gray( N6); fresh(F); very weak(R1); many rip up clasts; shale and bioturbations; violent reaction to HCL; several oolites at 57'[Glen Rose Formation]		776
55		1.12												775
56		2.02				F	R1						Overcast and windy weather	774
57		1.08	10	5.0	100									773
58		0.85								2042-16		high concentration of shale in packstone		772

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-2042**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
59		1.18	10	5.0 5.0	100	F	R1							771
60		2										LIMESTONE; packstone; medium light gray (N6); fresh(F); very weak(R1); many thin shale interbeds; several bioturbations and fossils; violent reaction to HCL; grades to a more granular textured of limestone; 66.7' is a saprolitic clast[Glen Rose Formation]	Good water return into tub	770
61		2.35												769
62		2.5	11	5.1 5.0	100									768
63		1.23								2042-17			Length of recovery stretched due to mechanical breaks.	768
64		1.07												767
65		1.25												766
66		2.25												765
67		0.83	12	5.0 5.0	100	F	R1							764
68		1.23								2042-18		.2' thick shale layer with limestone rip up clasts at contacts		763
69		1.07										less granular, larger rip up clasts		762
70		1.25												761
71		3.12										more granular		760
72		2.58	13	5.1 5.0	100									759
73		2.73								2042-19			Length of recovery stretched due to mechanical breaks.	758
74														757

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-2042</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
74		1.55	13	5.1 5.0	100	F	R1					more granular		756
75		2										LIMESTONE; packstone; light gray (N7); to medium light gray (N6); fresh(F); weak(R2); many rip up clasts; bioturbations; and thin swirled interbeds; granular texture in most of core; several clasts of saprolite; strong to violent reaction to HCL; very small bioturbations at 82'; grades to a granular texture below 84'[Glen Rose Formation]	Good water return-dark gray	755
76		1.8												754
77		1.5	14	5.0 5.0	100									753
78		3.43												752
79		4.37												751
80		2.72												750
81		3.9				F	R2							749
82		1.38	15	4.9 5.0	98									748
83		1.53												747
84		2.67												746
85		1.67												745
86		1.67												744
87		2.73	16	5.0 5.0	100							LIMESTONE; wackestone; medium light gray(N6); fresh(F); weak(R2); granular; several very thin shale interbeds and bioturbations; strong reaction to HCL[Glen Rose Formation]		743
88		3.7				F	R2							742


Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-2042**


Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
89		1.17	16	51.0	100	F	R2							741
90												LIMESTONE; packstone; medium light gray (N6); fresh(F); weak(R2); granular; many rip up clasts; violent reaction to HCL[Glen Rose Formation]	stopped drilling 2/28/07	740
91														739
92														738
93														737
94														736
95														735
96														734
97														733
98														732
99														731
100														730
101														729
102														728
103														727
104														



Project Name and Job Number TXU Comache Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-2043</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'07.04321"N / 97°47'32.35975"W		Total Depth 55 feet	
Drilling Contractor and Rig Richard Simmons Drilling / BK-81 HD		Elevation and Datum 851.71 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 7 feet	
Sampling Method SPT		Sample Driving Hammer/Drop R&C / 140 lbs / 30 inches	No. of Samples 3	Date Started 2/27/07	
		Borehole Inclination Vertical	Logged by MSZ/ST	Date Completed 2/28/07	

Reviewed by / Date \_\_\_\_\_

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0										851
1	ML		B-2043 1	50/5"	5/5				<b>ARTIFICIAL FILL (Qaf)</b> SILT with limestone fragments (up to 0.5"), pale yellow (2.5Y7/3), hard, fine to coarse subangular to angular, slight reaction to HCL	850
2										849
3										848
4	CL		B-2043 2	5 15 15	18 18				<b>RESIDUAL SOIL (RS) SANDY CLAY</b> w/ few angular limestone fragments, pale yellow (2.5Y8/4), stiff, slight reaction to HCL	847
5										846
6	CL		B-2043 3	50/5.5"	5.5 5.5				SANDY LEAN CLAY, pale yellow (2.5Y7/4), medium stiff, very slight reaction to HCL	845
7									Top of Bedrock at 7'	844
8										843
9										842
10										841
11										840
12										839
13										838
14										837
15										837

Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG Boring No. B-2043</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'07.04321"N / 97°47'32.35975"W		Total Depth 55 feet	
Drilling Contractor and Rig Richard Simmons / BK HD 81		Elevation and Datum 851.71 feet NAVD88		Ground Water Depth DRY	
Casing Size and Depth 4" OD		Length of Core Barrel and Bit 10.6 feet		No. of Core Boxes 4	
		Borehole Inclination Vertical		Logged by M. Strane	
				Date Started 2/27/07	
				Date Completed 2/28/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 2/28/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
7		1.78				F-SW	R3					LIMESTONE: wackestone; very light gray to white (N8-N9); medium strong; slightly weathered to fresh; dry. [Glen Rose Formation]	Top of rock at 7' Moderate to strong reaction to HCL	844
8			1	2.1 3.0	70	NA						CLAY with SILT; olive yellow (2.5Y 6/6); medium dry strength; medium toughness; slow dilatancy; medium to high plasticity (CL). [Glen Rose Formation]	SOIL	843
9		1.78												842
10		2.17							B-2043-4			LIMESTONE: wackestone; very light gray to grayish yellow (N8-5Y8/4); moderately to highly weathered (MW-HW); very weak to medium strong (R1-R3); reacts moderately to HCl. [Glen Rose Formation]		841
11		2.63				MW-HW	R1-R3							840
12		2.33	2	5.0 5.0	100									839
13		2.13												838
14		2.68				SW	R1-R2		B-2043-5			LIMESTONE: wackestone; grading to SHALE; medium dark gray to light gray (N4-N7); weak to very weak (R1-R2); dry to damp; slightly weathered (SW). [Glen Rose Formation]	Reacts moderately to HCL Reacts slightly to HCL	837
15		2.6				SW	R1					SHALE; medium dark gray (N4); slightly weathered (SW); very weak (R1); damp. [Glen Rose Formation]		836
16		1.85				SW-MW	R2					LIMESTONE: wackestone medium gray (N5); very weak to weak (R1-R2); slightly - moderately weathered (SW-MW); dry to damp; approx. .1' diameter of lignite at 16.4' with gypsum crystalization. [Glen Rose Formation]	Slight reaction to HCL	835
17		1.5	3	5.0 5.0	100				B-2043-6					834
18		2.23										SHALE; medium dark gray to medium gray (N4-N5); very weak (R1); slightly weathered (SW); damp; massive. [Glen Rose Formation]		833
19		2.52				SW	R1							832
20		1.5												831
21		1.7	4	5.1 5.0	60	F-SW	R3		B-2043-7		JRC 1-2 little weathering	LIMESTONE: micrite; very light gray to white (N8-N9); fresh to slightly weathered (F-SW); dry; abundant natural healed fractures .1'; reacts strongly to HCL; med. strong (R3). [Glen Rose Formation]		830
22											All 0 degree dip, JRC 1-2			

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2043</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
22		1.23									healed, very close All 0 degree dip, JRC 1-2	LIMESTONE: micrite; very light gray to white (N8-N9); fresh to slightly weathered (F-SW); dry; abundant natural healed fractures .1"; very close shale laminations at 24.3'; reacts strongly to HCL; medium strong (R3). [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	829
23		1.8	4	5.1 5.0	60	F-SW	R3				healed, very close All 0 degree dip, JRC 1-2			
24		2.02									healed, very close All 0 degree dip, JRC 1-2	LIMESTONE: packstone; silty; medium gray (N5); slightly weathered (SW); damp; very weak to weak (R1-R2); moderate to strong reaction to HCL. [Glen Rose Formation]		827
25		2.02									healed, very close All 0 degree dip, JRC 1-2			
26		1.75								B-2043-8				825
27		2.28	5	5.0 5.0	100	SW	R1-R2							824
28		2.43												823
29		2.68										SHALE; dark gray (N3); extremely weak (R0); fresh (F); damp; no reaction to HCL; thin laminations. [Glen Rose Formation]		822
30		2.52				F	R0							821
31		2.93								B-2043-9		LIMESTONE: packstone; medium dark gray (N4-N5); weak (R2); slightly weathered (SW); dry to damp; visible bioturbation and fossils. [Glen Rose Formation]		820
32		2.85	6	5.2 5.0	100	SW	R2							819
33		2.35				F	R3					LIMESTONE: micrite; white (N9); medium strong (R3); fresh (F); dry; violent reaction to HCL. [Glen Rose Formation]	Rip-ups and mixing	818
34		2.05										LIMESTONE: wackestone; light gray (N7); weak (R2); slightly weathered (SW); dry; some silt filled cracks 33.5-33.8. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	817
35		2.77				SW	R2							816
36		2.85	7	5.0 5.0	100	SW-MW	R0-R1							815
37										B-2043-10				

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2043</h2>
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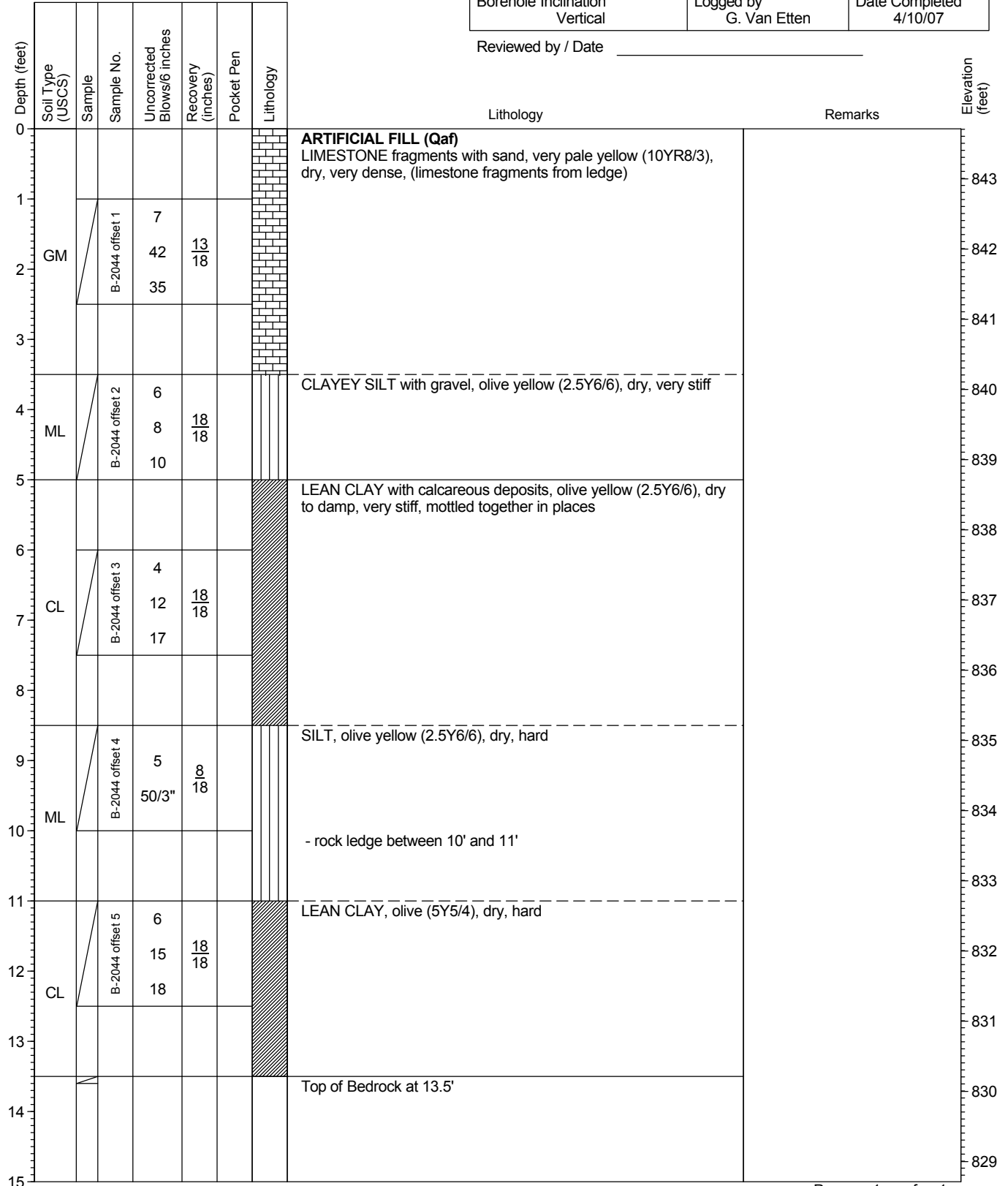
Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
37		3.02										LIMESTONE: wackestone; light gray (N7); very weak (R1); slightly to moderately weathered (SW-MW); damp; extremely weak(R0) 35.6-36; slight to moderate reaction to HCL; extremely weak at 37.7 and 38.4 (<.1'). [Glen Rose Formation]		814
38		2.68	7	5.0	100	SW-MW	R0-R1							813
39		1.97												812
40		2.97												811
41		2.68				F-SW	R0						Driller recirc pump is clogged, can't get water	810
42		2.83	8	5.1	100	SW	R0							809
43		2.72											Length of recovery stretched due to mechanical breaks.	808
44		3.47				SW	R0			B-2043-11				807
45		2.35												806
46		2.17												805
47		2.68	9	5.0	100									804
48		2.32				SW	R2							803
49		1.83								B-2043-12				802
50		2.97												801
51		2.2	10	5.0	100					B-2043-13				800
52														


Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-2043</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)	
52	HHHH	3.23	10	5.0 5.0	100	SW	R2							799	
53		4.13				F	R0						SHALE; dary gray (N7); fresh (F); extremely weak (R0); damp; no reaction to HCL; strong laminations visible. [Glen Rose Formation]		798
54		3.18													
55											BOTTOM OF HOLE AT 55		796		
56													795		
57													794		
58													793		
59													792		
60													791		
61													790		
62													789		
63													788		
64													787		
65													786		
66													785		
67													785		


Project Name and Job Number TXU Comache Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-2044 offset</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'12.39045"N / 97°47'34.36032"W		Total Depth 75.2 feet	
Drilling Contractor and Rig Geotechnology / CME 55		Elevation and Datum 843.71 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 13.5 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 6	Date Started 4/10/07	
		Borehole Inclination Vertical	Logged by G. Van Etten	Date Completed 4/10/07	

Reviewed by / Date \_\_\_\_\_



Project Name and Job Number TXU Comache Peak COL 1908				<b>SOIL LOG Boring No. B-2044</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'12.39045"N / 97°47'34.36032"W		Total Depth 75.2 feet	
Drilling Contractor and Rig Boart Longyear / TMA-44		Elevation and Datum 843.46 feet NAVD88		Ground Water Depth DRY	
Sampling Method		Sample Driving Hammer/Drop		No. of Samples 0	
		Borehole Inclination Vertical		Logged by G. Lidden	
		Reviewed by / Date _____ R. Ortiz 4/9/07		Date Started 4/6/07	
				Date Completed 4/8/07	

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0								- No soil log, Rig not equipped for SPT, see B-2044 Offset		843
1										842
2										841
3										840
4										839
5										838
6										837
7										836
8										835
9										834
10										833
11										832
12										831
13										830
14										829
15										

Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. B-2044</b>	
Type and Diameter of Boring Core / 4"		Boring Location 32°18'12.39045"N / 97°47'34.36032"W		Total Depth 75.2 feet	
Drilling Contractor and Rig Boart Longyear / TMA 44		Elevation and Datum 843.46 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 16.8 feet	
Casing Size and Depth 4 / 16.8 feet		Length of Core Barrel and Bit 8.6 feet	No. of Core Boxes 4	Date Started 4/6/07	
		Borehole Inclination Vertical	Logged by T. Glidden	Date Completed 4/8/07	

Reviewed by / Date R. Ortiz 4/9/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
17												LIMESTONE: wackestone; medium gray (N5); fresh to slightly weathered (F-SW); weak (R2); violent reaction to HCl; bioturbated; abundant shell debris throughout; highly weathered interval 17.2'-17.3' with 0.1' mudded at 17.3'; wackestone from 16.8'-17.7' is very light gray (N8). [Glen Rose Formation]	Top of rock 16.8'; began HQ coring 4/7/07, Glen Rose Formation.	826
18		4.78				F-SW	R2						Stopped drilling due to leakage around casing.	825
19			1	4.2 4.2	100									
20		3.25				F	R2		2044-1			LIMESTONE: Silty wackestone; light gray (N7); fresh (F); weak(R2); slight to no reaction to HCl; occasional rip-up clasts (weathered limestone); siderite inclusions up to 5 mm; few fossils; basal contact marked by silt laminations 20.6'-21.0'. [Glen Rose Formation]		824
21		4.55												823
22						F	R0		2044-2			SHALE; medium dark gray (N4); fresh (F); no to slight reaction to HCl; extremely weak (R0); slightly weathered (SW); with shell debris at basal contact (22.8'-23.0'). [Glen Rose Formation]	20.8'-21.0' not cored.	822
23		5.08												821
24			2	5.0 5.0	100	F	R1-R2					LIMESTONE: wackestone; very light gray (N8) to medium gray (N5); fresh(F); weak to very weak (R1-R2); strong to violent reaction to HCl; bioturbated with mud and silt filled burrows; fossiliferous; wavy laminations. [Glen Rose Formation]		820
25		3.25												819
26		2.45				F	R2					LIMESTONE: wackestone; very light gray (N8); fresh (F); weak (R2); strong to violent reaction to HCl; 0.1' infilled burrow at 24.8' and bioturbated at basal contact; fossiliferous; rip-up clasts at upper contact; weathered joint from 25.8' to 27.4'; marked by iron oxide staining and infill; yellowish gray (5 Y 8/1) to pinkish gray (5 YR 8/1) in this weathering zone. [Glen Rose Formation]		818
27		2.38									Jo, JRC3			817
28		4.12				SW	R2-R1					LIMESTONE: wackestone; very light gray (N8); to medium light gray (N6); slightly weathered (SW) from 27.0' to 27.4'; fresh (F); otherwise strong reaction to HCl; weak to very weak (R1-R2); profusely bioturbated; wavy laminations; fossiliferous; with possible vertebrae bone fragment 0.2' in length at 27.9'; rip-up clasts. [Glen Rose Formation]		816
29			3	5.2 5.2	100									815
30		3.07				F	R2-R1							814
31		3.08							2044-3					813
		1.45												812
		1.13	4	5.0 5.0	100	F						LIMESTONE: wackestone; very light gray (N8) to medium light gray (N6); fresh(F); weak to very weak (R1-R2); violent reaction to HCl; bioturbated; fossiliferous; wavy silt laminations; rip-up clasts; mud interbeds at 33.0' and 33.3'. [Glen Rose Formation]		812



Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2044</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
32		1.13										LIMESTONE: wackestone; very light gray (N8) to medium light gray (N6); fresh(F); weak to very weak (R1-R2); violent reaction to HCl; bioturbated; fossiliferous; wavy silt laminations; rip-up clasts; mud interbeds at 33.0' and 33.3'. [Glen Rose Formation]		811
33		3.57												810
34		4.25	4	5.0 5.0	100	F	R2-R1							809
35		4.92												808
36		5.02							2044-4					807
37		6.93				F	R0		2044-5			SHALE; medium dark gray (N4); fresh (F); extremely weak (R0); slight to strong reaction to HCl; wackestone interbeds up to 0.15'; thin lignite at 36.6' (2mm thick). [Glen Rose Formation]	Stopped coring 4/7/07, began 4/8/07.	807
38		2.78											400 psi downpressure, recirculating.	806
39		3.2	5	5.0 5.0	100							LIMESTONE: wackestone; light gray (N7) to medium light gray (N6); fresh (F); weak (R2); strong to violent reaction to HCl; bioturbated with mud filled burrows; fossiliferous (shell fragments); rip up clasts; thin lignite at 39.7' (2mm thick); ; increased bioturbation at basal contact; mud and silt filled burrow 44.3'-44.6'; with intact shells and shelly debris. [Glen Rose Formation]		805
40		3.58												804
41		3.08				F	R2							803
42		4.78												802
43		4.53												801
44		4.45	6	4.9 5.0	98									800
45		3.62												799
46		4.35				F	R0		2044-6			SHALE: mudstone; Calcareous medium dark gray (N4); fresh (F); extremely weak (R0); none to slight reaction to HCl. [Glen Rose Formation]		798
		7.6	7	5.0 5.0	100				2044-7					797

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2044</h2>
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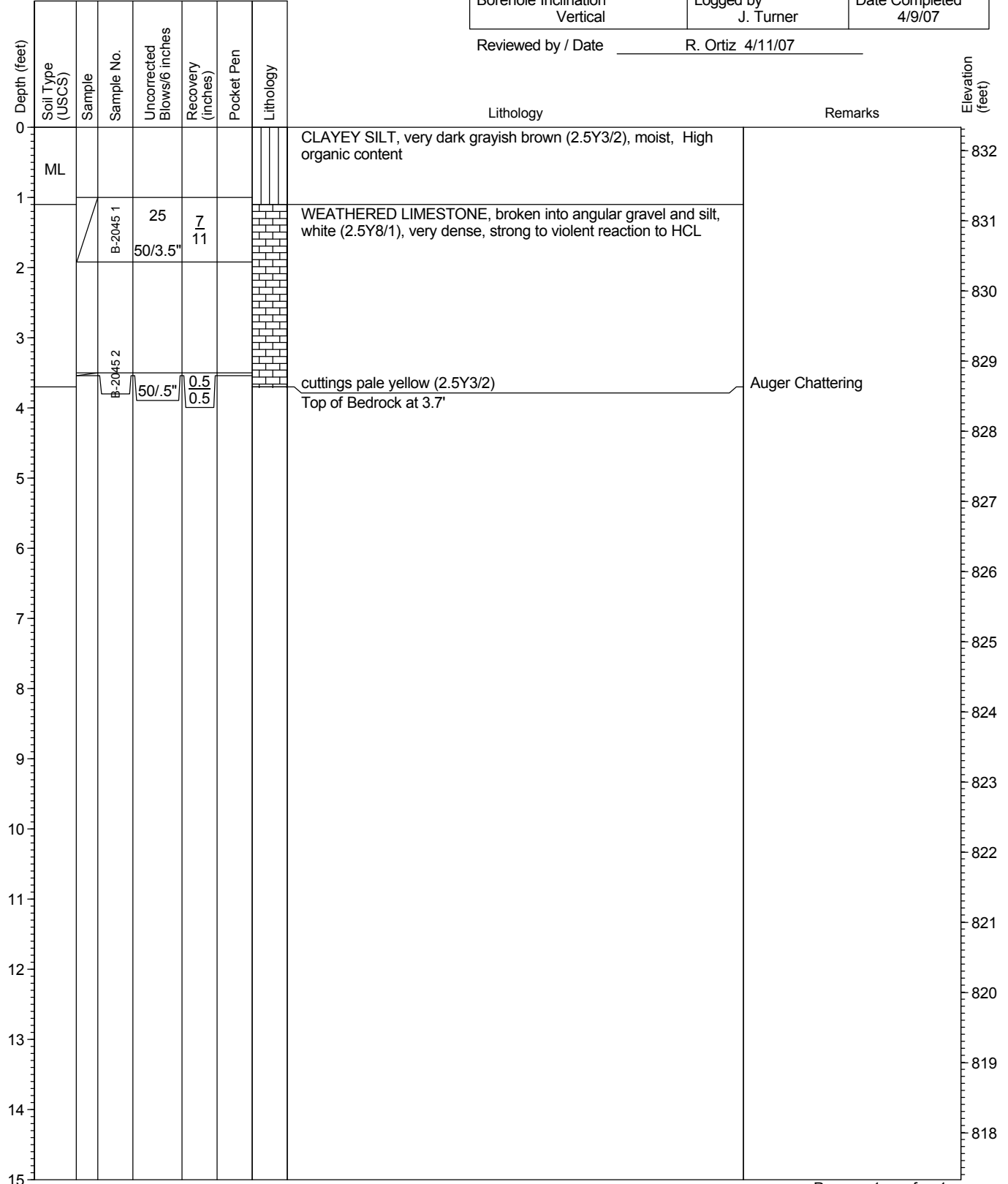
Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
47		7.6										SHALE: mudstone; Calcareous medium dark gray (N4); fresh (F); extremely weak (R0); none to slight reaction to HCl. [Glen Rose Formation]	420 psi downpressure, recirculating.	796
48		6.23				F	R0					LIMESTONE: wackestone; very light gray (N8) to light gray (N7); fresh(F); weak(R2); slight to strong reaction to HCl; fossiliferous. [Glen Rose Formation]		795
49		4	7	5.0 5.0	100	F	R0					SHALE; with interbedded wackestone; mudstone is medium dark gray (N4); wackestone is very light gray (N7); fresh (F); extremely weak (R0); none to slight reaction to HCl. [Glen Rose Formation]		794
50		5.48												793
51		3.67				F	R0							792
52		8.28												791
53		8.02										LIMESTONE: wackestone; light gray (N7) to medium gray (N5); fresh (F); weak (R2); strong reaction to HCl; bioturbated with sand filled burrows; fossiliferous; wavy laminations; rip-up clasts. [Glen Rose Formation]		790
54		4.47	8	5.0 5.0	100	F	R2							789
55		5.2												788
56		2.85										SHALE; medium dark gray (N4); fresh (F); extremely weak (R0); none to slight reaction to HCl; wackestone interbeds up to 0.1'; bone fragment at 55.1'. [Glen Rose Formation]		787
57		4.27				F	R0							786
58		4.45												785
59		8.08	9	5.0 5.0	100	F	R2					LIMESTONE: wackestone; light gray (N7); fresh (F); weak (R2); strong to violent reaction to HCl; bioturbated; fossiliferous; rip-up clasts; thinly interbedded mudstone. [Glen Rose Formation]		784
60		10.1				F	R0					SHALE: Mudstone; Calcareous;; medium dark gray (N4); fresh (F); extremely weak (R0); slight to no reaction to HCl; fossiliferous. [Glen Rose Formation]		783
61		3.13												782
		4.32	10	5.1 5.1	100	F	R2							782


Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2044</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
62		4.32				F	R2					LIMESTONE: wackestone; very light gray (N8); fresh (F); weak (R2); strong reaction to HCl; shell lag at upper contact; fossiliferous; bioturbated; medium spaced mud and shelly debris beds up to 0.05' between 60.3' and 61.2'; . [Glen Rose Formation]	781	
63		4.63				F	R2		2044-10				780	
64		6.1	10	5.1 5.1	100								LIMESTONE: wackestone; white (N9) to very light gray (N8); fresh (F); weak (R2); violent reaction to HCl; fossiliferous. [Glen Rose Formation]	779
65		0											LIMESTONE: wackestone; very light gray (N8); fresh (F); weak (R2); slight to strong reaction to HCl; bioturbated; wavy laminations; fossiliferous; sharp increase in clastic component beginning 70.5'. [Glen Rose Formation]	778
66		1.98												777
67		3.57												776
68		3.23				F	R2							775
69		3.75	11	5.1 5.1	100									774
70		3.78							2044-11					773
71		2.25												772
72		5.7												771
73		5.97	12	3.8 3.8	100	F	R2		2044-12					770
74		5.33											769	
75		2.95											768	
76												BOTTOM OF HOLE AT 75.2'	Total depth drilled: 75.2'	767

Project Name and Job Number TXU Comache Peak COL 1908		 SOIL LOG Boring No. <b>B-2045</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'12.73530"N / 97°47'31.51690"W	
Drilling Contractor and Rig Fugro / CME 45		Elevation and Datum 832.33 feet NAVD88	Ground Water Depth DRY
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 2
		Borehole Inclination Vertical	Logged by J. Turner
		Date Started 4/9/07	
		Date Completed 4/9/07	

Reviewed by / Date                      R. Ortiz 4/11/07



Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. B-2045</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'12.73530"N / 97°47'31.51690"W		Total Depth 75 feet	
Drilling Contractor and Rig Fugro Austin / CME 45		Elevation and Datum 832.33 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 3.7 feet	
Casing Size and Depth 4 / 3.7 feet		Length of Core Barrel and Bit 8.8 feet	No. of Core Boxes 5	Date Started 4/9/07	
		Borehole Inclination Vertical	Logged by J. Turner	Date Completed 4/10/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 4/11/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
4		2.12	3	1.3 1.3	100	HW	R3					LIMESTONE: micrite; yellowish gray (5 Y 8/1); medium strong (R3); highly weathered (HW); vuggy; secondary collite and clay (illite to smectite) in vugs. [Glen Rose Formation]	Begin HQ coring 4/9/07, recirculating.	828
5		0.57							2045-3			LIMESTONE: saprolite; silty and clayey; very pale brown (10 YR 7/4); extremely weak (R0); completely weathered; rock fragments still evident; no reaction to HCl (Wackestone). [Glen Rose Formation]	Glen Rose Formation.  400 psi downpressure, 1200 rpm	827
6		0.7												826
7		0.4	4	4.9 5.0	98	CW	R0							825
8		1.45										SHALE: claystone; yellow (10 R 7/8); extremely weak (R0); completely weathered (CW); micrite bed. [Glen Rose Formation]		824
9		2.18							2045-4			SHALE: greenish gray (5 G 6/1) with yellow (1 YR 7/8); mottles; weathering boundary; extremely weak (R0); highly weathered (HW). [Glen Rose Formation]		823
10		3.6				HW	R0							822
11		3.02										LIMESTONE: saprolite; olive yellow (2.5 Y 6/8); extremely weak (R0); completely weathered (CW). [Glen Rose Formation]		821
12		2.78	5	4.9 5.0	98				2045-5			SHALE: claystone; yellow (2.5 Y 7/6); extremely weak (R0); completely weathered (CW). [Glen Rose Formation]		820
13		0.78				CW	R0							819
14		1.32										LIMESTONE: wackestone; white (N9) to yellow (2.5 Y 5/6); weak (R2) to extremely weak (R0); completely (CW) to slightly weathered (SW). [Glen Rose Formation]		818
15		1.88										LIMESTONE: wackestone; white (N9); 15.0'-15.7'; yellow (2.5 Y 6/1) 15.7'-16.5'; weak (R2); slightly (SW) to highly weathered (HW). [Glen Rose Formation]		817
16		1.93				SW-HW	R2							816
17		1.88	6	5.0 5.0	100	SW	R1					LIMESTONE: packstone; greenish gray (5 Y 6/1); very weak (R1); slightly weathered (SW); laminated; fine grain; sparse fossils; slight reaction to HCl. [Glen Rose Formation]		815
18		0.7				SW	R2-R1		2045-6					814

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2045</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
19		0.7												
		0.98	6	5.0 5.0	100	SW	R2-R1		2045-6			LIMESTONE: wackestone; very light gray (N8) to medium gray (N5); weak (R2) to very weak (R1); slightly weathered; massive to bedded with sub 0.1' packstone beds; slight reaction to HCl; grains densely packed; poorly sorted; fine to coarse silty packstone; silty shale/packstone. [Glen Rose Formation]	Fast drilling, good water return.	813
20		1.43												812
21		1.67												811
22		2.75	7	5.2 5.0	100	SW	R2-R1		2045-7				400 psi downpressure, 1300 rpm.	810
23		2.88											Length of recovery stretched due to mechanical breaks.	809
24		5.13				SW	R0					SHALE: dark greenish gray (5 G 4/1); extremely weak (R0); slightly weathered; fissile; well sorted. [Glen Rose Formation]		808
25		3.58				SW	R0							807
26		3.78												806
27		3.52	8	5.0 5.0	100							LIMESTONE: wackestone; light gray (N7); weak (R2); slightly weathered (SW); massive; fine to medium grain; slight reaction to HCl. 28.3'-28.6' packstone/silty; very weak; 29.4'-24.6' bioturbated packstone bed. [Glen Rose Formation]		805
28		2.12				SW	R2-R1				Jo, Wa, Sl-Ro, Op, 27.5'-27.7'.			804
29		2.18							2045-8					803
30		1.82												802
31		3.1	9	5.0 5.0	100	SW	R2-R0					LIMESTONE: wackestone; light gray (N7); to medium gray (N5); weak (R2) to extremely weak (R0); 30.8'-30.95' packstone/shale laminated; poorly sorted; abundant silty packstone <0.1' interbeds; 31.6'-31.9' shale bed; 32.2'-32.4'; packstone bed; 32.4'-33.5' mottled wackestone/packstone/SHALE: fossiliferous; slight reaction to HCl. [Glen Rose Formation]	400 psi downpressure, 1500 rpm.	801
32		3.22												800
33		3.68												799

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2045</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
34		3.68							2045-9			SHALE: medium dark gray (N4); extremely weak (R0); slightly weathered (SW); fissile; no reaction to HCl. [Glen Rose Formation]	Vacuum truck clean out	798
		7.72	9	5.0	100	SW	R0		2045-9A					
35		4.13												797
36		7.4				SW	R0							796
37		2.67	10	5.0	100				2045-10					795
38		3.72				SW	R2					LIMESTONE: wackestone; very light gray (N8); weak (R2); slightly weathered (SW); fossiliferous; strong (R4) reaction to HCl. [Glen Rose Formation]		794
39		5.37										SHALE: medium dark gray (N4); extremely weak (R0); slightly weathered (SW); fissile; no reaction to HCl; 38.3'-38.9' - sub 0.1' wackestone beds; 39.3'-39.5' - wackestone bed; 4.03'-40.4'; wackestone bed. [Glen Rose Formation]	0.4' not returned. Top of run rotated, some shale/silt/clay possibly washed away.	793
40		6.02				SW	R0							792
41		3.33												791
42		1.92	11	4.5	90	F-SW	R2-R1					LIMESTONE: wackestone; light gray (N7); weak (R2) to very weak (R1); fresh (F) to slightly weathered; abundant wavy sub 0.1' packstone beds 42.2'-43.3'; shale bed with large burrows filled with wackestone 43.3'-48.6'. [Glen Rose Formation]		790
43		2.4							2045-11					789
44		4.53										SHALE: medium dark gray (N4); extremely weak (R0); 44.3'-44.4' is slightly weathered (SW); fissile wackestone bed. [Glen Rose Formation]		788
45		5.63				SW	R0		2045-12					787
46		3.43												786
47		4.32	12	5.0	100									785
48		3.6				SW	R2					LIMESTONE; MICRITE; very light gray (N8); weak (R2); slightly weathered (SW); slight reaction to HCl. [Glen Rose Formation]		784
						SW	R0					SHALE: medium light gray (N6); extremely weak (R0). [Glen Rose Formation]		784


Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-2045</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
49		3.6	12	5.0 5.0	100	SW	R0					SHALE: medium light gray (N6); extremely weak (R0). [Glen Rose Formation]		783
50		6.13				F	R2							LIMESTONE; micrite; white (N9); fossiliferous; weak (R2); fresh (F); shale bed 51.5'-51.9'; extremely weak (R0); very slight reaction to HCl; 52.9'-53.3' is bioturbated; massive; fine grained to 55'. [Glen Rose Formation]
51		2.22	13	5.0 5.0	100	F	R2						Raining.	781
52		4.07												780
53		0.92	14	5.0 5.0	100	F	R2							779
54		2.42												778
55		1.55	15	5.0 5.0	100	F	R2							777
56		1.48												776
57		1.15	16	5.0 5.0	100	F	R2							775
58		3.7												774
59		3.67	17	5.0 5.0	100	F	R2							773
60		2.47												772
61		3.02	18	5.0 5.0	100	F	R2							771
62		3												770
63		3.78	19	5.0 5.0	100	F	R2							769
		2.02												




Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-2045</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)	
64		2.02							2045-15			Limestone: wackestone; light gray (N7); weak (R2); massive; medium grained; sparse carbonate grains; grains are medium bluish gray (5 B 5/1); very slight reaction to HCl; 63.2'-67.0' laminated with <0.01' packstone beds; 66.5'-67.6' large burrows filled with very light gray wackestone. [Glen Rose Formation]		768	
		1.75	15	5.0	100	F	R2							767	
65		2.97												766	
66		3												765	
67		2.78	16	5.0	100	F	R3-R2							764	
68		1.2											Limestone: wackestone; as above; 67.9'-68.9' massive; fine grained; medium strong (R3); fine (<0.05') laminations of packstone; packstone beds 70.4'-70.5' and 71.0'-71.1'; 71.5'-73.2' shows increased mud content. Below 74.2'; very light gray (N9) (<0.05') packstone laminations. [Glen Rose Formation]	763	
69		2.88							2045-16						762
70		2.27													761
71		3.13													760
72		4.3	17	5.0	100	F	R2								759
73		4.6							2045-17					758	
74		1.33												757	
75														756	
76														755	
77														754	
78															
												BOTTOM OF THE HOLE AT 75' Total depth drilled 75.0'.			

Project Name and Job Number TXU Comache Peak COL 1908		 WLA William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-2046</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'12.84479"N / 97°47'30.81327"W		Total Depth 74.5 feet	
Drilling Contractor and Rig Geotechnology / CME 55		Elevation and Datum 828.068 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 10.5 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 4	Date Started 4/9/07	
		Borehole Inclination Vertical	Logged by G. Van Etten	Date Completed 4/10/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 4/11/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
0							SANDY SILT, olive yellow (2.5Y6/6), dry very stiff		828
1			B-2046 1	50/3"	3/3				827
2									826
3									825
4			B-2046 2	2	12/18				824
5	ML			7					823
6				10					822
7			B-2046 3	13	18/18		olive yellow (2.5Y6/6) to olive gray (5Y5/2), dry lean sandy clay 6.6-7.5'		821
8				11					820
9				11					819
10			B-2046 4	2	18/18		with limestone fragments, olive yellow (2.5Y6/6), dry, very hard		818
11				13					817
12				28					816
13									815
14									814
15							Bedrock at 10.5' Augered to 11.0' to set casing and begin rock coring.	Bedrock at 10.5'	813

Project Name and Job Number TXU Comanche Peak Col 1908		 WLA William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. B-2046</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'12.84479"N / 97°47'30.81327"W		Total Depth 74.5 feet	
Drilling Contractor and Rig Geotechnology / CME 55		Elevation and Datum 828.068 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 10.5 feet	
Casing Size and Depth 4" / 10.5 feet		Length of Core Barrel and Bit 8.55 feet	No. of Core Boxes 5	Date Started 4/9/07	
		Borehole Inclination Vertical	Logged by G. Van Etten	Date Completed 4/10/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 4/11/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
11.0		0.58										LIMESTONE; SPARITE, grayish yellow (5 Y 8/4) to yellowish gray (5 Y 7/2), slightly weathered (SW), very weak (R1), many very small shell fragments, massive.	Began HQ coring at 11.0, Glen Rose Formation.	817
12.0		1					R1							816
13.0		2	1	3.1 3.5	89	SW			2046-5			SILTSTONE; moderate yellow (5 Y 7/4) to medium gray (5 Y 7/6), slightly weathered (SW), extremely weak (R0), muddy surface, bioturbation.		815
14.0		3.2					R0							814
15.0		2.77										LIMESTONE; WACKESTONE, medium light gray (N6), fresh (F), very weak (R1), many thin shale rich interbeds with numerous fossil fragments, moderate reaction to HCl.	Good water return, dark brownish gray.	813
16.0		3.03							2046-6					812
17.0		1.33	2	4.9 5.0	98	F	R1							811
18.0		1.5												810
19.0		6.5				F	R0					SHALE, medium gray (N5), fresh (F), extremely weak (R0), calcareous.		809
20.0		2.42				F	R1					LIMESTONE; PACKSTONE, light gray (N7), fresh (F), very weak (R1), many swirled thin shale interbeds, several rip-up clasts, oolites and shell fragments present, moderate reaction to HCl.		808
21.0		7.6							2046-7					807
22.0		4.88	3	4.6 5.0	92	F	R0					SHALE, medium dark gray (N4), fresh (F), extremely weak (R0), many limestone interbeds evenly spaced <0.2' wide, very mild reaction to HCl.		806
23.0		8.72												805
24.0		4.5				F	R2					LIMESTONE; WACKESTONE, very light gray (N8), fresh (F), weak (R2), several shale swirls and stylolites, strong reaction to HCl, thin saprolite lens at 25.0', increasing in swirled, thin shale beds below 27.0', shale lens 27.8'-27.9'.		804
25.0		2.38	4	4.6 5.0	92									803
26.0		4.77												

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2046</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
26		4.77				F	R2					LIMESTONE; WACKESTONE, very light gray (N8), fresh (F), weak (R2), several shale swirls and stylolites, strong reaction to HCl, thin saprolite lens at 25.0', increasing in swirled, thin shale beds below 27.0', shale lens 27.8'-27.9'.		802
27		5.35							2046-8					801
28		4.23	4	4.6 5.0	92	F	R1							800
29		5.77				F	R0-R1					SHALE, medium dark gray (N4), fresh (F), extremely weak (R0), massive.		799
30		3.38				F	R1					LIMESTONE; PACKSTONE, with shell hash, fresh (F), very weak (R1), medium light gray (N6), many shells with shale interbeds.	Good water return, dark gray.	798
31		3.53										SHALE, medium dark gray (N4), fresh (F), extremely weak (R0), massive, no reaction to HCl, sharp basal contact.		797
32		2.55	5	5.0 5.0	100	F	R0						Gradational contact.	796
33		4.33							2046-9					795
									2046-10					794
34		4.5												794
35		3.72				F	R2					LIMESTONE; WACKESTONE, light gray (N7), fresh (F), weak (R2), many fossils, some shale interbeds.	Stopped coring 4/9/07, began 4/10/07.	793
36		5.85				F	R0					SHALE, medium dark gray (N4), fresh (F), extremely weak (R0), massive.		792
37		4.27	6	5.1 5.0	100	F	R1					LIMESTONE; WACKESTONE, medium light gray (N6), fresh (F), very weak (R1), <0.1' thick shale interbeds.		791
38		5.2				F	R0		2046-11			SHALE, medium dark gray (N4), fresh (F), extremely weak (R0), massive, sharp basal contact.	Length of recovery stretched due to mechanical breaks.	790
39		5.55												789
40		3.82	7	4.8 5.0	96	F	R1					LIMESTONE; WACKESTONE, medium light gray (N6), fresh (F), very weak (R1), common bioturbation and swirled shale interbeds, few small saprolite clasts, moderate reaction to HCl.		788
41		4.33												

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2046</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
41		4.33				F	R1							787
42		3.3							2046-12			SHALE, medium dark gray (N4), fresh (F), very to extremely weak (R0-R1), massive, no reaction to HCl.		786
43		2.83	7	4.8 5.0	96	F	R0-R1							785
44		7.28												784
45		5.28				F	R1					LIMESTONE; PACKSTONE, medium gray (N5), fresh (F), very weak (R1), many fossils, rip-up clasts and oolites.	Good water return, light to medium gray.	783
46		4.28				F	R0		2046-13			SHALE, medium gray (N5), fresh (F), extremely weak (R0), fissile.		782
47		2.05	8	5.0 5.0	100							LIMESTONE; WACKESTONE, light gray (N7), fresh (F), very weak (R1), common bioturbation replaced with shale, fossils, several pyrite clasts and stylolites, violent reaction to HCl.		781
48		5.82				F	R1							780
49		5.67				F	R0					SHALE, medium dark gray (N4), fresh (F), extremely weak (R0), massive.		779
50		1.67										LIMESTONE; WACKESTONE, very light gray (N8) to light gray (N7), fresh (F), very weak (R1), sparite from 49.5'-50.3' with stylolites, very thin shale swirls with occasional rip-up clasts below 50.3', matrix supported, moderate reaction to HCL, matrix is finely crushed shell fragments below 56', very thin sparite lenses below 57.6', sharp basal contact.	350 psi downpressure.	778
51		2							2046-14					777
52		2	9	5.1 5.0	100	F	R1							776
53		1.87											Length of recovery stretched due to mechanical breaks.	775
54		2.45												774
55		2.87	10	5.1 5.0	100	F	R1							773
56		3.75												

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-2046</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
56		3.75										LIMESTONE; WACKESTONE, very light gray (N8) to light gray (N7), fresh (F), very weak (R1), sparite from 49.5'-50.3' with stylolites, very thin shale swirls with occasional rip-up clasts below 50.3', matrix supported, moderate reaction to HCL, matrix is finely crushed shell fragments below 56', very thin sparite lenses below 57.6', sharp basal contact.	Length of recovery stretched due to mechanical breaks.	772
57		2.45												771
58		5.17	10	5.1 5.0	100	F	R1		2046-15					770
59		6.33											769	
60		3.92											768	
61		2.82										LIMESTONE; PACKSTONE, light gray (N7), fresh (F), very weak (R1), bioturbation near upper contact, very thin shale swirls around rip-up clasts, matrix is granular, violent reaction to HCl, shale-rich zone 64.6'-65.0'.	Run #11 - no breaks.	767
62		7	11	5.0 5.0	100	F	R1		2046-16					766
63		6.67											765	
64		6.72											764	
65		5.42											763	
66		2.27										LIMESTONE; WACKESTONE, light gray (N7), fresh (F), very weak (R1), several stylolites and thin wavy shale interbeds, few rip-up clasts and fossils, shale-filled bioturbation below 71.0'. Below 72', grades to grainy texture with numerous 1mm wide bluish/gray shell fragments.		762
67		3.33	12	5.0 5.0	100	F	R1		2046-17					761
68		7.42											760	
69		7.37											759	
70		3.95	13	5.0 5.0	100	F	R1						758	
71		3.33												

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-2046**


Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
71		3.33												757
72		2.35												756
73		2.2	13	5.0 5.0	100	F	R1		2046-18			LIMESTONE; WACKESTONE, light gray (N7), fresh (F), very weak (R1), several stylolites and thin wavy shale interbeds, few rip-up clasts and fossils, shale-filled bioturbation below 71.0'. Below 72', grades to grainy texture with numerous 1mm wide bluish/gray shell fragments.		755
74		2.43												754
75														753
76														752
77														751
78														750
79														749
80														748
81														747
82														746
83														745
84														744
85														743
86														

Project Name and Job Number TXU Comache Peak COL 1908		 SOIL LOG Boring No. <b>B-2047</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'13.24168"N / 97°47'27.96754"W	
Drilling Contractor and Rig Palmerton and Parrish / CME 55		Elevation and Datum 793.696 feet NAVD88	Ground Water Depth DRY
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 2
		Borehole Inclination Vertical	Logged by J. Cox
		Date Started 4/6/07	
		Date Completed 4/8/07	

Reviewed by / Date R.Ortiz 4/11/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
0									793
1	CL		B-2047 1	6	10/18		RESIDUAL SOIL (RS) GRAVELLY LEAN CLAY with few calcareous deposits, very dark grayish brown (10YR3/2), damp, stiff, 30% angular to subangular limestone gravel		792
2				5					791
3				13					790
4	CL		B-2047 2	2	7/18		LEAN CLAY, light olive brown (2.5Y5/6), damp, very stiff, w/ some calcareous particles, some rounded pebbles		789
5				3					788
6				7			Top of Bedrock at 5.5'		787
7									786
8									785
9									784
10									783
11									782
12									781
13									780
14									779
15									778



Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. B-2047</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'13.24168"N / 97°47'27.96754"W		Total Depth 75 feet	
Drilling Contractor and Rig Palmerton & Parrish / CME 55		Elevation and Datum 793.696 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 5.5 feet	
Casing Size and Depth 4" / 5.5 feet		Length of Core Barrel and Bit 8.6 feet	No. of Core Boxes 9	Date Started 4/6/07	
		Borehole Inclination Vertical	Logged by J.Cox	Date Completed 4/8/07	

Reviewed by / Date R.Ortiz 4/11/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
6		4.67				MW	R2					LIMESTONE; WACKESTONE, yellowish gray (5 Y 7/2), weak (R2), moderately weathered (MW), abundant fossils, very slight reaction to HCl.	Top of bedrock 5.5'. Began HQ coring 5.5', Glen Rose Formation.	788
7		4	1	1.3 2.8	43									787
8		3.03										MUDSTONE, moderate yellow (5 Y 7/6), very weak (R1), moderately weathered (MW), thinly bedded, no reaction to HCl, limestone bed (as 5.5'-7.0') from 10.5'-11.0'.		786
9		1.67												785
10		1.77				MW	R1							784
11		1.68	2	4.7 5.0	94									783
12		1.93								2047-3				782
13		2												781
14		2.93										LIMESTONE; WACKESTONE, medium light gray (N6), weak (R2), slightly weathered (SW), abundant rip-up clasts, abundant fossils, moderate reaction to HCl, rip-up clasts decreasing 23'-28'.		780
15		3.1												779
16		3.2	3	4.9 5.0	98	SW	R2							778
17		3.17								2047-4				777
18		3.18												776
19		1.42												775
20		4.27	4	5.0 5.0	100	SW	R2							774
		1.33								2047-5				

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-2047**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
21		1.33									Jt, Pl, Sl, Op	LIMESTONE; WACKESTONE, medium light gray (N6), weak (R2), slightly weathered (SW), abundant rip-up clasts, abundant fossils, moderate reaction to HCl, rip-up clasts decreasing 23'-28',		773
22		1.38	4	5.0 5.0	100	SW	R2				Jt, Pl, Sl, Op			772
23		1.33												771
24		1.83												770
25		1.93												769
26		2.03	5	5.2 5.0	100	SW	R2		2047-6					768
27		2.05											Length of recovery stretched due to mechanical breaks.	767
28		2												766
29		2.25												765
30		2.32												764
31		2.37	6	5.0 5.0	100	SW	R2		2047-7					763
32		2.32												762
33		2.5												761
34		1.82				SW	R2							760
35		2.77	7	5.3 5.0	100	F-SW	R2		2047-8					759
		2.95												

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-2047</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)		
36		2.95										LIMESTONE; SILTY PACKSTONE, medium light gray (N6), weak (R2), fresh to slightly weathered (F-SW), abundant rip-up clasts, abundant fossils, shale beds at 35.4' and 36.9', strong reaction to HCl, medium to coarse grains, decreasing silt content below 38.9', rip-up clasts absent 40.4'-40.9'.	Length of recovery stretched due to mechanical breaks.	758		
37		2.65	7	5.3 5.0	100	F-SW	R2								757	
38		2.72													756	
39		2.75													755	
40		2.6							2047-9						754	
41		2.67	8	5.1 5.0	100	F-SW	R2							Length of recovery stretched due to mechanical breaks.	753	
42		2.68														752
43		2.62														751
44		2.67														750
45		2.63														749
46		2.73	9	5.2 5.0	100	F-SW	R2				LIMESTONE; WACKESTONE, light gray (N7), weak (R2), fresh to slightly weathered (F-SW), abundant rip-up clasts, moderate reaction to HCl.		748			
47		2.67							2047-10				747			
48		2.43									LIMESTONE; PACKSTONE, medium light gray (N6), weak (R2), fresh to slightly weathered (F-SW), abundant large rip-up clasts, strong reaction to HCl.		746			
49		2.58	10	5.2 5.0	100	F	R2				LIMESTONE; WACKESTONE, light gray (N7), weak (R2), fresh (F), abundant fossils, occasional rip-up clasts, slightly bioturbated, strong reaction to HCl, very fine grained.		745			
50		2.5											744			
		2.3														

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-2047</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
51		2.3								2047-11		LIMESTONE; WACKESTONE, light gray (N7), weak (R2), fresh (F), abundant fossils, occasional rip-up clasts, slightly bioturbated, strong reaction to HCl, very fine grained.		743
52		2.48	10	$\frac{5.2}{5.0}$	100	F	R2							742
53		2.6												741
54		1.97												740
55		2.03				F	R2							739
56		2	11	$\frac{5.2}{5.0}$	100									738
57		2.17								2047-12			Length of recovery stretched due to mechanical breaks.	737
58		2.42				SW-F	R2					LIMESTONE; PACKSTONE, medium light gray (N6), weak (R2), fresh to slightly weathered (F-SW), abundant fossils, abundant rip-up clasts, medium to coarse grains.		736
59		2.52												735
60		2.5												734
61		2.1	12	$\frac{5.1}{5.0}$	100									733
62		2.17				F-SW	R2			2047-13			Length of recovery stretched due to mechanical breaks.	732
63		2.17												731
64		2.5												730
65		2.6	13	$\frac{5.0}{5.0}$	100	F-SW	R2							729
		2.4												

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-2047**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
66		2.4										LIMESTONE; MICRITE, yellowish gray (5 Y 7/2), weak, fresh, abundant fossils, very slight reaction to HCl.		728
67		2.52	13	5.0 5.0	100	F	R2		2047-14					727
68		2.43												726
69		1.82												725
70		1.85												724
71		1.7	14	5.2 5.0	100	F	R2							723
72		1.72							2047-15			LIMESTONE; WACKESTONE, light gray (N7), weak (R2), fresh (F), abundant rip-up clasts, abundant fossils, dry, massive, strong reaction to HCl.	Length of recovery stretched due to mechanical breaks.	722
73		1.6												721
74		1.43	15	1.7 1.7	100	F	R2							720
75		1.17												719
76													Total depth drilled: 75.0'.	718
77														717
78														716
79														715
80														714

Project Name and Job Number TXU Comache Peak COL 1908		 WLA William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-2048 offset</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'11.90693"N / 97°47'33.58070"W		Total Depth 16.5 feet	
Drilling Contractor and Rig Geotechnology / CME 55		Elevation and Datum 845.92 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 16.5 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 7	Date Started 4/9/07	
		Borehole Inclination Vertical	Logged by G. Van Etten	Date Completed 4/9/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 4/11/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0									<b>ARTIFICIAL FILL (Qaf)</b> - Rock slab on surface	
1									LEAN CLAY w/ calcareous deposits and organics, olive yellow (2.5Y6/6), damp, stiff, 70% silt, 15% gravel, 15% organics	845
2	CL		B-2048 offset 1	3	19/18					844
3				2						
4				11						
5	GW-GM		B-2048 offset 2	9	14/18				LIMESTONE fragments w/ silt, pale yellow (2.5Y7/3), dry, very dense, limestone gravel	842
6				34						841
7				34						840
8	ML		B-2048 offset 3	18	18/18				SANDY SILT w/ limestone, olive yellow (2.5Y6/8), to light brownish gray (2.5Y6/2), dry, hard, 60% silt, 40% clay	839
9				22					- clayey started at 7'	838
10	CL/ML		B-2048 offset 4	33	18/18				CLAYEY SILT, olive yellow (2.5Y6/6), dry to wet (wet from 9.6'-9.7'), hard, 15% organics	837
11				7	16/16				- organic lense, 8.7-8.8'	836
12				15						835
13	CL		B-2048 offset 5	5	18/18				<b>RESIDUAL SOIL (RS)</b> LEAN CLAY, olive (5Y5/3), dry, hard	834
14				12						833
15	CL		B-2048 offset 6	25	18/18				LEAN CLAY w/ calcareous deposits, olive (5Y5/3) to greenish blue (GLY15/1), dry, hard	832
				15					- greenish blue at 14.2'	831
				22	18/18					
				26						

Project Name and Job Number TXU Comanche Peak COL 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">SOIL LOG</h2> <h2 style="margin: 0;">Boring No. B-2048 offset</h2>
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Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
15	CL						[Hatched Box]	LEAN CLAY w/ calcareous deposits, olive (5Y5/3) to greenish blue (GLEY15/1), dry, hard <i>(Continued from previous page)</i>		830
16	CL		B-2048 offset 7	50/3"	3/3		[Hatched Box]	LEAN CLAY, olive (5Y5/4), dry, hard		829
17								Top of Bedrock at 16.5'		828
18										827
19										826
20										825
21										824
22										823
23										822
24										821
25										820
26										819
27										818
28										817
29										816
30										




Undisturbed sample  
SH = Shelby; P = Pitcher; O = other



Driven (2.5 to 3.0 inch) with liners  
MC = Modified California; O = other




Standard Penetration Test (SPT) sampler

Project Name and Job Number TXU Comache Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-2048</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'11.90693"N / 97°47'33.58070"W		Total Depth 151.7 feet	
Drilling Contractor and Rig Boart Longyear / TMA-44		Elevation and Datum 844.181 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 18.4 feet	
Sampling Method		Sample Driving Hammer/Drop	No. of Samples 0	Date Started 4/3/07	
		Borehole Inclination Vertical	Logged by G. Lidden	Date Completed 4/5/07	

Reviewed by / Date R. Ortiz 4/9/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0									SPT tests not conducted due to rig equipment limitations, so no soil log for B-2048	844
1									Driller encountered resistant bed within first foot of drilling, resistant beds and less resistant interbeds, (presumably saprolite and/or muds), were encountered until a depth of 18.4' at which point driller felt confident that competent bedrock had been encountered, rock log therefore begins at 18.4', which is considered depth to bedrock	843
2										842
3										841
4										840
5										839
6										838
7										837
8										836
9										835
10										834
11										833
12										832
13										831
14										830
15										



Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG Boring No. B-2048</b>		
Type and Diameter of Boring HQ / 4"			Boring Location 32°18'11.90693"N / 97°47'33.58070"W		Total Depth 151.7 feet	
Drilling Contractor and Rig Boart Longyear / TMA 44			Elevation and Datum 844.181 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 18.4 feet	
Casing Size and Depth 4" / 18.4 feet			Length of Core Barrel and Bit 8.8 feet	No. of Core Boxes 9	Date Started 4/3/05	
			Borehole Inclination Vertical	Logged by T. Glidden	Date Completed 4/5/05	

Reviewed by / Date R. Ortiz 4/9/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
19		6.95				F-SW	R2					LIMESTONE: silty wackestone; medium light gray (N6) to medium gray (N5); fresh to slightly weathered (F-SW); weak (R2); fossiliferous; strong to violent reaction to HCl; gradational basal contact[Glen Rose Formation]	Competent bedrock. Began HQ coring at 18.8', Glen Rose Formation.	825
20		4.72	1	2.8	100	F-SW	R2					LIMESTONE: silty wackestone; medium light gray (N6) to medium gray (N5); fresh to slightly weathered (F-SW); weak (R2); fossiliferous; slight reaction to HCl; laminated toward basal contact; basal contact gradational[Glen Rose Formation]		824
21		4.1				F-SW	R2					SHALE: shale and calcareous shale; medium dark gray (N4) to dark greenish gray (5 G 4/1); fresh to slightly weathered (F-SW); extremely weak (R0); very slight reaction to HCl; fossiliferous beginning at 23.4'; laminated basal contact[Glen Rose Formation]	Recirculating, 30 off psi downpressure.	823
22		7.12				F-SW	R0							822
23		5.03				F-SW	R0							821
24		5.57	2	5.0	100	F-SW	R1-R2					LIMESTONE: silty wackestone; medium gray (N5); fresh to slightly weathered (F-SW); weak to very weak (R2-R1); fossiliferous (burrows); bioturbated with prominent burrows at upper contact; laminated[Glen Rose Formation]		820
25		2.63				F-SW	R1-R2							819
26		3.48				F	R2					LIMESTONE: wackestone; white (N9) to light gray (N7); fresh (F); weak (R2); fossiliferous (burrows); bioturbated; silt laminations; violent reaction to HCl; silt absent 26.2'-27.2'[Glen Rose Formation]		818
27		2.9												817
28		6.12												816
29		5.85	3	5.0	100									815
30		3.9												814
31		3.35												813
32		2.73				F-SW	R1-R2					LIMESTONE: packstone; very light gray (N8) to medium light gray (N6); fresh to slightly weathered (F-SW); weak to very weak (R2-R1); fossiliferous; variable bioturbation; wavy silt laminations; variable silt content; strong to violent reaction to HCl; occasionally sandy packstone intervals[Glen Rose Formation]		812
33		2.22	4	5.0	100									811
		6.05											Inner barrel stuck.	811

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-2048</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
34		6.05										Shale interbed	Tripped out to retrieve.	810
35		2.67	4	5.0 5.0	100	F-SW	R1-R2					Shale interbed		809
36		3.58										SHALE: calcareous; medium dark gray (N4); fresh (F); extremely weak (R0); slight reaction to HCl; thinly bedded wackestone intervals to 0.2' ft thick; charcoals at 37.2'; slight to moderate reaction to HCl; rip-up clasts throughout[Glen Rose Formation]		808
37		5.82				F	R0							807
38		6.62										LIMESTONE: wackestone; very light gray (N8); fresh (F); weak to very weak (R2-R1); strong reaction to HCl; bioturbated with conspicuous burrows; silty laminations throughout; fossiliferous; rip-up clasts throughout[Glen Rose Formation]		806
39		3.35	5	5.0 5.0	100							Shale interbed		805
40		4.08												804
41		3.75												803
42		4.58				F	R1-R2							802
43		4.67												801
44		4.38	6	5.0 5.0	100							Shale interbed		800
45		3.18										Shale interbed		799
46		2.73										SHALE: calcareous; medium dark gray (N4); fresh (F); extremely weak (R0); no reaction to HCl; bivalve fossils at 45.7'; shell hash 48.6-48.8[Glen Rose Formation]		798
47		7.97	7	5.0 5.0	100	F	R0							797
48		7.35												796
		4.2												

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2048</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
49		4.2				F	R0					LIMESTONE: wackestone; very light gray (N8); fresh (F); weak (R0); slight reaction to HCl; fossiliferous (bivalves); bioturbated 49.7'-49.6'[Glen Rose Formation]		795
50		5.33	7	5.0 5.0	100							SHALE: calcareous; medium dark gray (N4); fresh (F); extremely weak (R0); no to slight reaction to HCl; fossiliferous with wackestone interbeds up to 0.3'[Glen Rose Formation]		794
51		3.45												793
52		6.38				F	R0							792
53		4.4												791
54		4.03	8	5.0 5.0	100							LIMESTONE: wackestone; very light gray (N8); fresh (F); weak to very weak (R2-R1); strong reaction to HCl; bioturbated with silt and shell fragments[Glen Rose Formation]		790
55		4.13				F	R1-R2							789
56		4.33										Shale interbed SHALE: calcareous; medium dark gray (N4); fresh to slightly weathered (F); extremely weak (R0); pervasive shelly debris; no to slight reaction to HCl above 56.4'; decrease in shell debris below 56.4'; HCL below 56.4 is consistantly slight indicatong increasing calcareous component[Glen Rose Formation] SILTY WACKESTONE		788
57		5.85				F-SW	R0							787
58		3.27												786
59		4.82	9	5.0 5.0	100							LIMESTONE: wackestone; very light gray (N8) to light gray (N7); fresh (F); weak to very weak (R2-R1); slight reaction to HCl; bioturbated throughout; very thinly interbedded silts; abundant shell debris; rip-up clasts at basal contact[Glen Rose Formation]		785
60		6.83				F	R1							784
61		4.68					R0					SHALE: medium dark gray (N4); fresh (F); extremely weak (R0); no reaction to HCl[Glen Rose Formation]		783
62		5.47										LIMESTONE: wackestone; very light gray (N8); fresh (F); weak to very weak (R2-R1); strong to violent reaction to HCl; thinly spaced bioturbation with silt and shell debris infill; rip-up clasts throughout; fossiliferous [Glen Rose Formation]		782
63		4.6	10	5.0 5.0	100	F	R1-R2							781
		3.78										SHALE; abundant shell debris		781

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-2048**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
64		3.78				F	R2					LIMESTONE: wackestone; white (N9) to very light gray (N8); fresh (F); weak (R2); fossiliferous; strong to violent reaction to HCL; mud filled burrows at basal contact[Glen Rose Formation]		780
65		2.28	10	5.0 5.0	100	F	R2					LIMESTONE: wackestone; very light gray (N8); fresh (F); weak (R2); strong to violent reaction to HCl; pervasive wavy silt laminations; fossiliferous; bioturbated; rip-up clasts throughout; increasing silt content below 70.1'[Glen Rose Formation]		779
66		2.72				F	R2							778
67		4.22												777
68		3.17												776
69		2.55	11	5.0 5.0	100	F	R2							775
70		3.3												774
71		3												773
72		3.8											32 off psi, recirculating.	772
73		4.82							2048-12					771
74		4.62	12	5.0 5.0	100	F	R2				Jo, JRC3, ???			770
75		3.92												769
76		2.33							2048-13			LIMESTONE: wackestone; very light gray (N8) to light gray (N7); fresh (F); weak (R2); strong to violent reaction to HCl; pervasive wavy silt laminations; fossiliferous; bioturbated; rip-up clasts throughout; mud-filled burrows 76.9'-77.7' and below 85'; silt laminations absent below at 85'[Glen Rose Formation]		768
77		4.57	13	5.0 5.0	100	F	R2							767
78		4.58												766
		3.27												

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**ROCK LOG**  
**Boring No. B-2048**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
79		3.27												765
80		1.88	13	5.0 5.0	100	F	R2						LIMESTONE: wackestone; very light gray (N8) to light gray (N7); fresh (F); weak (R2); strong to violent reaction to HCl; pervasive wavy silt laminations; fossiliferous; bioturbated; rip-up clasts throughout; mud-filled burrows 76.9'-77.7' and below 85'; silt laminations absent below at 85'[Glen Rose Formation]	764
81		1.88												763
82		3.35												762
83		4.18												761
84		4.5	14	5.0 5.0	100	F	R2		2048-14					760
85		3.93												759
86		1.55												758
87		1.97											LIMESTONE: wackestone; as above; burrows continue to 87.6'; laminated silts 87.6'-88.1' and below 88.9'; densely fossiliferous below 89.2'[Glen Rose Formation]	757
88		2.23												756
89		2.47	15	5.0 5.0	100	F	R2							755
90		3.12							2048-15					754
91		2.07											LIMESTONE: wackestone; very light gray (N8) to light gray (N7); weak (R2); strong to violent reaction to HCl; wavy silt laminations; densely fossiliferous; bioturbated; rip-up clasts throughout; fresh (F)[Glen Rose Formation]	753
92		3.43	16	5.2 5.2	100	F	R2							752
93		3.57												751
		2.45												

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)					
94		2.45	16	5.7 5.2	100	F	R2					LIMESTONE: wackestone; light olive gray (5 Y 6/1); fresh; weak; violent reaction to HCl; bioturbated with pervasive burrows[Glen Rose Formation]		750					
95		2.37																749	
96		1.92															LIMESTONE: packstone; medium light gray (N6) to medium gray (N5); fresh (F); weak (R2); violent reaction to HCl; bioturbated wackestone interbeds with packstone infill to 0.3' thick; gradational basal contact[Glen Rose Formation]		748
97		3.35	17	5.0 5.0	100	F	R2					LIMESTONE: wackestone; very light gray (N8) to light gray (N7); fresh (F); weak (R2); strong to violent reaction to HCl; fossiliferous; thin wavy beds; gradational basal contact[Glen Rose Formation]		747					
98		3.02															746		
99		3.02															LIMESTONE: wackestone; medium light gray (N5); fine grained; fresh (F); weak to medium strong (R2-R3); strong to violent reaction to HCl; fossiliferous; thinly bedded to laminated; gradational basal contact[Glen / Rose Formation]		745
100		3.37	18	4.9 4.9	100	F	R3-R2					LIMESTONE: interbedded wackestone and packstone; very light gray (N8) to light gray (N7); fresh (F); weak (R2); violent reaction to HCl; fossiliferous; laminated to thinly bedded[Glen Rose Formation]		744					
101		1.83															743		
102		1.97															LIMESTONE: wackestone; light gray (N7); fresh (F); weak (R2); strong to violent reaction to HCl; fossiliferous; irregularly spaced zones of laminated silts[Glen Rose Formation]	Stopped drilling 4/4/07, began 4/5/07	742
103		1.38	19	5.0 5.0	100	F	R2							741					
104		2.45															740		
105		2.6															LIMESTONE: silty wackestone; fine grained; light gray (N7); fresh (F); weak (R2); slight to strong reaction to HCl; fossiliferous; moderately bioturbated[Glen Rose Formation]		739
106		1.62	19	5.0 5.0	100	F	R2					LIMESTONE: wackestone; very light gray (N9); fresh (F); weak (R2); strong to violent reaction to HCl; bioturbated; fossiliferous; occasional packstone laminae and burrow infill[Glen Rose Formation]		738					
107		3.47															LIMESTONE: packstone; medium dark gray (N4) and very light gray (N8); fresh (F); weak (R2); slight to strong reaction to HCl; wavy laminations; rip-up clasts[Glen Rose Formation]		737
108		3.1																736	

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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
109		2.4										LIMESTONE: silty micrite; white (N9) to light gray (N7); fresh (F); weak (R2); strong reaction to HCL; laminated; calcareous Shale interval 108.8'-109'[Glen Rose Formation]		735
		2.4							2048-19			Shale interbed		
110		1.27	19	5.0 5.0	100	F	R2					LIMESTONE: integrating wackestone and packstone; very light gray (N8); Fresh (F); weak (R2); strong to violent reaction to HCl; bioturbated; wavy laminations; fossiliferous throughout[Glen Rose Formation]		734
111		1.9										LIMESTONE: wackestone; very light gray (N8); fresh (F); weak (R2); strong to violent reaction to HCl; bioturbated; fossiliferous; wavy laminations; rip-up clasts[Glen Rose Formation]		733
112		3.58										LIMESTONE: packstone; very light gray (N8) to medium light gray (N6); fossils; weak (R2); violent reaction to HCl; wavy laminations; bioturbated; rip-up clasts; gradational wackestone zones[Glen Rose Formation]		732
113		3.23										LIMESTONE: packstone; very light gray (N8) to medium light gray (N6); fossils; weak (R2); violent reaction to HCl; wavy laminations; bioturbated; rip-up clasts; gradational wackestone zones[Glen Rose Formation]		731
114		3.15	20	5.7 5.2	100	F	R2					LIMESTONE: silty wackestone; very light gray (N8) to yellowish gray (5 Y 8/1); fine grained; weak (R2); mostly rip-up clasts; strong to violent reaction to HCl; bioturbated at upper contact; increased silt content 117.0'-117.9'[Glen Rose Formation]		730
115		2.57							2048-20			LIMESTONE: silty wackestone; very light gray (N8) to yellowish gray (5 Y 8/1); fine grained; weak (R2); mostly rip-up clasts; strong to violent reaction to HCl; bioturbated at upper contact; increased silt content 117.0'-117.9'[Glen Rose Formation]		729
116		1.72										LIMESTONE: silty wackestone; very light gray (N8) to yellowish gray (5 Y 8/1); fine grained; weak (R2); strong to violent reaction to HCl; moderately bioturbated; rip-up clasts; prominent rip-ups at upper contact; fossiliferous[Glen Rose Formation]		728
117		3.5										LIMESTONE: silty wackestone; very light gray (N8) to yellowish gray (5 Y 8/1); fine grained; weak (R2); strong to violent reaction to HCl; moderately bioturbated; rip-up clasts; prominent rip-ups at upper contact; fossiliferous[Glen Rose Formation]		727
118		2.98										LIMESTONE: silty wackestone; very light gray (N8) to yellowish gray (5 Y 8/1); fine grained; weak (R2); strong to violent reaction to HCl; moderately bioturbated; rip-up clasts; prominent rip-ups at upper contact; fossiliferous[Glen Rose Formation]		726
119		3.48	21	5.0 5.0	100	F	R2					LIMESTONE: wackestone; very light gray (N8) to medium light gray (N7); fresh (F); weak (R2); strong to violent reaction to HCl; fossiliferous; rip-up clasts; wavy laminations; intense bioturbation below 121.7'[Glen Rose Formation]		725
120		4.15										LIMESTONE: wackestone; very light gray (N8) to medium light gray (N7); fresh (F); weak (R2); strong to violent reaction to HCl; fossiliferous; rip-up clasts; wavy laminations; intense bioturbation below 121.7'[Glen Rose Formation]		724
121		3.43										LIMESTONE: wackestone; very light gray (N8) to medium light gray (N7); fresh (F); weak (R2); strong to violent reaction to HCl; fossiliferous; rip-up clasts; wavy laminations; intense bioturbation below 121.7'[Glen Rose Formation]		723
122		3.78	22	5.0 5.0	100	F	R2					LIMESTONE: wackestone; very light gray (N8) to medium light gray (N7); fresh (F); weak (R2); strong to violent reaction to HCl; fossiliferous; rip-up clasts; wavy laminations; intense bioturbation below 121.7'[Glen Rose Formation]		722
123		3.38										LIMESTONE: wackestone; very light gray (N8) to medium light gray (N7); fresh (F); weak (R2); strong to violent reaction to HCl; fossiliferous; rip-up clasts; wavy laminations; intense bioturbation below 121.7'[Glen Rose Formation]		721

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2048</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
124		4.22							2048-22			LIMESTONE: wackestone; very light gray (N8) to medium light gray (N7); fresh (F); weak (R2); strong to violent reaction to HCl; fossiliferous; rip-up clasts; wavy laminations; intense bioturbation below 121.7'[Glen Rose Formation]		720
125		4.7	22	5.0 5.0	100	F	R2							719
126		ND												718
127		4.72												717
128		5.1					R0					SHALE: calcareous; medium dark gray (N4); fresh (F); extremely weak (R0); violent reaction to HCl; fossiliferous[Glen Rose Formation]		716
129		4.02	23	5.0 5.0	100	F	R2					LIMESTONE: wackestone; very light gray (N8); fresh (F); weak (R2); violent reaction to HCl; bioturbated; fossiliferous; rip-up clasts; 0.05' greenish gray (5 G 6/1) mud beds at base of sample[Glen Rose Formation]		715
130		5.87					R0					SHALE: calcareous; greenish gray (5 G 6/1) to light gray (N7); fresh (F); extremely weak (R0); slight to strong reaction to HCl; mildly bioturbated[Glen Rose Formation]		714
131		3.62										LIMESTONE: wackestone; very light gray (N8); fresh (F); weak (R2); violent reaction to HCl; wavy laminations; fossiliferous; rip-up clasts; bioturbated throughout[Glen Rose Formation]		713
132		4.73												712
133		3.42					R2							711
134		5.45	24	5.1 5.1	100	F			2048-24					710
135		4.7												709
136		3.65										LIMESTONE: wackestone; very light gray (N8); fresh (F); weak (R2); violent reaction to HCl; wavy laminations; fossiliferous; rip-up clasts; bioturbated throughout; medium dark gray interval 138.6'-139.5'; gradational basal contact[Glen Rose Formation]		708
137		4.18	25	5.0 5.0	100	F	R2							707
138		2.3												706




Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-2048**


Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
139		3.98							2048-25			LIMESTONE: wackestone; very light gray (N8); fresh (F); weak (R2); violent reaction to HCl; wavy laminations; fossiliferous; rip-up clasts; bioturbated throughout; medium dark gray interval 138.6'-139.5'; gradational basal contact[Glen Rose Formation]		705
140		2.63	25	5.0 5.0	100	F	R2							704
141		2.55												703
142		ND												702
143		2.43												701
144		3.45	26	5.0 5.0	100	F	R2		2048-26			Shale		700
145		4.82												699
146		2.8												698
147		4.03					R2							697
148		3.7				F	R1-R2		2048-27			SHALE: calcareous; medium gray (N5); fresh (F); very weak to extremely weak (R1-R0); strong reaction to HCl; gradational basal contact[Glen Rose Formation]		696
149		4.67	27	5.0 5.1	100	F	R2					LIMESTONE: wackestone; very light gray (N8); fresh (F); weak (R2); violent reaction to HCl; wavy laminations; moderately to mildly bioturbated; fossiliferous; rip-up clasts[Glen Rose Formation]		695
150		3.22												694
151		3.73												693
152												BOTTOM OF HOLE AT 151.7 FEET	Total depth drilled 151.7'	692
153														691

Project Name and Job Number TXU Comache Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-2049</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'12.05915"N / 97°47'32.15036"W		Total Depth 101 feet	
Drilling Contractor and Rig Fugro / CME 45		Elevation and Datum 839.664 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 9.9 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 4	Date Started 4/6/07	
		Borehole Inclination Vertical	Logged by J. Turner	Date Completed 4/9/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 4/11/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
0									
1	CL			3			LEAN CLAY w/ some limestone gravel, dark gray (10YR4/1) silt and white limestone gravel (10YR3/1), moist, medium stiff		839
2			B-2049 1	3	13/18		LEAN CLAY, with light yellowish brown (2.5Y6/4), contains weathered limestone gravel and calcareous deposits, moist, soft, violent reaction to HCL		838
3	CL			3					837
4			B-2049 2	10	13/13	4.5	weathered limestone ledge with silt, white (5Y8/1), dry, very stiff, violent reaction to HCL		836
5				50/1"					835
6	ML						SILT, yellow (2.5Y7/6), dry, hard, slight reaction to HCL		834
7			B-2049 3	15	18/18	4.5			833
8				20			WEATHERED LIMESTONE with clay, light yellowish brown (2.5Y6/3), dry, very dense, strong reaction to HCL		832
9	ML			15					831
9			B-2049 4	11	14/15	4.5	CLAYEY SILT, light yellowish, brown, damp, stiff		831
9	CL			10			LEAN CLAY, olive (5Y4/3), dry to damp, hard		830
10				50/3"					830
10							Top of Bedrock at 9.9' Augered to 11 feet to set casing and start rock coring.		829
11									829
12									828
13									827
14									826
15									825

ROCK LOG TXU\_BORINGS.GPJ WLA9-8-06.GDT 7/11/08

Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-2049</b>
Type and Diameter of Boring HQ / 4"	Boring Location 32°18'12.05915"N / 97°47'32.15036"W		
Drilling Contractor and Rig Fugron Austin / CME 45		Elevation and Datum 839.664 feet NAVD88	Ground Water Depth DRY
Casing Size and Depth 4" / 11 feet		Length of Core Barrel and Bit 8.8 feet	No. of Core Boxes 6
		Borehole Inclination Vertical	Logged by J. Turner
		Date Completed 4/9/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 4/11/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
11.00		2.25									Jo, Wa, Ro, Op	LIMESTONE: wackestone, very light gray (N8); weak (R2); moderately weathered (MW); coarse grain; fossils; slight reaction to HCl. [Glen Rose Formation]	Begin HQ coring at 11.0', 4/8/07, Glen Rose Formation.	828
12.00		1.87				MW	R2				Jo, Wa, Ro, Op			827
13.00		0.77	5	4.9 5.0	98	HW	R0		2049-5			MUDSTONE: calcareous; silty; dark yellowish orange (10 YR 6/6) to 13.9'; medium light gray (N6) to 16'; highly weathered to slightly weathered (HW-SW); abundant shell fragments; laminated; very slight reaction to HCl; poorly sorted; extremely weak (R0). [Glen Rose Formation]		826
14.00		0.68												825
15.00		1.52				SW	R0							824
16.00		3.35										SHALE: silty; dark greenish gray (5 G 4/1); extremely weak (R0); slightly weathered (SW); 17.1'-17.2' wackestone bed; fissile; laminated; sparse shell fragments; no reaction to HCl; 18.3'-21' silty; calcareous; wackestone bed 19.5'-19.7'; interbedded shale and wackestone below 20.5'; gradational basal contact. [Glen Rose Formation]		823
17.00		2.25												822
18.00		2.87	6	5.0 5.0	100	SW	R0		2049-6			Wackestone interbed at 17.1' to 17.2'.		821
19.00		2.78												820
20.00		2.2										Wackestone interbed at 19.5' to 19.7'.		819
21.00		1.75												818
22.00		0.78										LIMESTONE: wackestone; very light gray (N8); weak (R2); slightly weathered (SW); fossiliferous; coarse grained; packstone beds 21.3'-21.4' and 22.0'-22.1'; silty and bioturbated; fine to medium grained; 23.2'-25'. [Glen Rose Formation]		817
23.00		3	7	5.0 5.0	100	SW	R2					Interbed of packstone from 21.3' to 21.4'. Interbed of packstone from 22' to 22.1'.		816
24.00		3.25							2049-7					815
25.00		1.23							2049-8					814

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-2049</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
26		1.35										LIMESTONE: wackestone; as above; becomes light gray (N7); very weak (R1); abundant shell fragments; very slight reaction to HCl; muddy and silty; massive to finely laminated; shale beds 29.1'-29.3' and 29.4'-29.5'; at 29.8'; fine grained; massive; packstone bed 31.1'-31.3'. [Glen Rose Formation]	Fast drilling	813
27		0.53												812
28		0.77	8	4.9 5.0	98	SW	R1							811
29		3.67												810
30		2.33												809
31		4.08												808
32		8.48				SW	R0		2049-9		SHALE: medium dark gray (N4); extremely weak (R0); slightly weathered (SW); fissile; no reaction to HCl; wackestone bed 32.7'-32.8'.  Wackestone interbed from 32.7' to 32.8'.		807	
33		3.38	9	5.0 5.0	100									806
34		2880				SW-F	R2				LIMESTONE: wackestone; light gray (N7); weak (R2); slightly weathered to fresh (SW-F); massive; coarse grain sub 0.1' silty packstone beds 34.3'; 35.4'; and 36.0'-36.2'; very slight reaction to HCl; muddy wackestone 37.0'-38.6'. [Glen Rose Formation]		805	
35		2.12												804
36		2.38											350 psi, 1200 rpm.	803
37		2.3				SW-F	R2							802
38		2.58	10	5.1 5.0	100				2049-10					801
39		3.72												800
40		3.17				SW	R0				Shale interbed	Length of recovery stretched due to mechanical breaks.	799	
41														

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2049</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)	
41		4.13										SHALE: silty; burrows filled with wackestone; medium gray (N5); extremely weak (R0); slightly weathered (SW); fossiliferous; abundant shells; 0.05' burrows 39.9'-41.0'; no reaction to HCl. [Glen Rose Formation]	Three consecutive shale samples taken.	798	
42		2.37							2049-11				300 psi 1000 rpm, slow drilling rate.	797	
43							R0		2049-11A					797	
44		6.23	11	5.0	100	SW			2049-11B				400 psi, 1750 rpm.	796	
45		5.1												795	
46		3.07						R2				LIMESTONE: wackestone; white (N9) to light gray (N7); weak (R2); slightly weathered (SW). [Glen Rose Formation] Shale interbed		794	
47		6.57										Shale interbed SHALE: dark greenish gray (5G 4/1); extremely weak (R0); slightly weathered (SW); fissile; thinly laminated; no reaction no HCl. [Glen Rose Formation]	Slow drilling, 450 psi, 1500 rpm.	793	
48		3.4				SW	R0							792	
49		4.08	12	5.0	100									791	
50		3.35				SW-F	R1					LIMESTONE: wackestone; silty; white (N9) to light gray (N7); very weak (R1); slightly weathered to fresh (SW-F). [Glen Rose Formation]		790	
51		3.28								2049-12				789	
52		4.25				SW-F	R1							788	
53		4.5				SW-F	R0			2049-13		SHALE: dark greenish gray (5G 4/1); extremely weak (R0); fresh to slightly weathered (F-SW); fissile; thinly laminated; well sorted; no reaction to HCl. [Glen Rose Formation]		787	
54		3.52	13	5.0	100				2049-13A					786	
55		4.58				F-SW	R1		2049-13B					785	
56		3.75				F-SW	R0						LIMESTONE: wackestone; muddy; very light gray (N8); very weak (R1); fresh to slightly weathered (F-SW); shell fragments; wavy laminations; bioturbated; slight reaction to HCl. [Glen Rose Formation]		784

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2049</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
56		6.57				F-SW	R0					SHALE: dark greenish gray ( 5G 4/1); extremely weak (R0); fresh to slightly weathered (F-SW). [Glen Rose Formation]		783
57		2.45				F	R2					LIMESTONE: wackestone; white (N9); to light gray (N7); grains medium bluish gray (5B 5/1); weak (R2); fresh (F); massive; with wavy <0.1' packstone interbeds. [Glen Rose Formation]		782
58		2.95	14	5.0 5.0	100									781
59		6.02				F-SW	R0					SHALE: dark greenish gray (5G 4/1); extremely weak (R0); fresh to slightly weathered (F-SW). [Glen Rose Formation]		780
60		1.85				F	R2					LIMESTONE: wackestone; white (N9) becoming very light gray (N8) to medium light gray (N6) below 60'; weak (R2); fresh (F); massive; fine grained. [Glen Rose Formation]		779
61		1.98								2049-14		LIMESTONE: wackestone; as above; becoming silty; weak (R2); fresh (F); massive to slightly laminated; wavy; bioturbated; shell fragments; fine to medium grained; strong reaction to HCl; poorly to moderately sorted; 67'-69.1' is coarse grained; slight reaction to HCl; silty; very weak. 69.1'-70.5' is very light gray (N8); fine grained; massive; weak (R2). 69.8'-70.3' shell fragments; silt content increases to 71'; laminated; with shell fragments; bioturbated below 74'. [Glen Rose Formation]		778
62		1.7												777
63		2.55	15	5.0 5.0	100	F	R2							776
64		2.67												775
65		3.3								2049-15				774
66		2.62					R2							773
67		1.1								2049-16			Fast drilling rates, good water return.	772
68		1.25	16	5.0 5.0	100	F	R1							771
69		1.67												770
70		4.03					R2							769

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2049</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
71		3.12										LIMESTONE: wackestone; as above; becoming silty; weak (R2); fresh (F); massive to slightly laminated; wavy; bioturbated; shell fragments; fine to medium grained; strong reaction to HCl; poorly to moderately sorted; 67'-69.1' is coarse grained; slight reaction to HCl; silty; very weak. 69.1'-70.5' is very light gray (N8); fine grained; massive; weak (R2). 69.8'-70.3' shell fragments; silt content increases to 71'; laminated; with shell fragments; bioturbated below 74'. [Glen Rose Formation]		768
72		4.02												767
73		3.5	17	5.0 5.0	100	F	R2							766
74		2.25												765
75		3.05												764
76		1.72										LIMESTONE: wackestone; as above; very light gray (N8) to medium gray (N5); with bioturbated wavy laminations. 75.1'-75.5' is packstone bed; 75.5' is fine grained wackestone; massive; white (N9); packstone beds 76.6'-78.2' and 78.9'-81' (sub 0.1' beds); 78.2'-78.9' massive. [Glen Rose Formation]	Stopped drilling 4/8/07, start 4/9/07.	763
77		1.35												
78		2.42	18	5.0 5.0	100	F	R2-R1							761
79		2.08												760
80		4.03												759
81		1.87				F	R1					LIMESTONE: packstone; medium gray (N5); very weak (R1). [Glen Rose Formation]  LIMESTONE: wackestone; light gray (N7); with medium bluish gray grains (5B 5/1); coarse to very coarse; weak (R2); fresh (F); massive to faintly laminated packstone beds; slight reaction to HCl. [Glen Rose Formation]		758
82		1.6												757
83		1.33	19	5.0 5.0	100	F	R2							756
84		1.88												755
85		2.03												754
86														

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2049</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
86		2.32										LIMESTONE: packstone; medium light gray (N6); weak (R2); fresh (F); poorly sorted; fine to coarse grained; bioturbated; packstone bed 87.5'-87.9'. [Glen Rose Formation]		753
87		1.02										Wackestone interbed from 87.5' to 87.9'.		752
88		1.43	20	5.0 5.0	100	F	R2							751
89		1.5												750
90		1.17								2049-20		LIMESTONE: wackestone; light gray (N7); weak (R2); fine; massive; fresh (F); sub 0.1 packstone beds; wavy; coarse grained packstone bed 91.6'-92' and 92.4'-92.5'; very slight reaction to HCl; carbonate grains fine to medium grained. [Glen Rose Formation]		749
91		2.45										Packstone interbed from 91.6' to 92'.		748
92		3.12										Packstone interbed from 92.4' to 92.5'.		747
93		2.35	21	4.9 5.0	96	F	R2							746
94		3.38								2049-19				745
95		3.4												744
96		4.25				F	R2-R3			2049-21		LIMESTONE: micrite; light gray (N7); weak to medium strong (R2-R3); fresh (F); massive; well sorted; very slight reaction to HCl. [Glen Rose Formation]		743
97		1.22										LIMESTONE: wackestone; very light gray (N8) to medium gray (N5); weak to medium strong (R2-R3); fresh (F); packstone bed 97.3'-99.6'; massive; 0.1' packstone laminations 98.6'-98.9'; massive; coarse grained; slight reaction to HCl. [Glen Rose Formation]		742
98		1.2	22	5.0 5.0	100							Packstone interbed from 97.3' to 99.6'.	Fast drilling rates.	741
99		2.25				F	R2-R3			2049-22		Packstone interbed from 98.6' to 98.9'.		740
100		2.33												739




Project Name and Job Number  
 TXU Comanche Peak Col  
 1908




**ROCK LOG**  
**Boring No. B-2049**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
101												BOTTOM OF HOLE AT 101 FEET	Total depth drilled: 101.0'	738
102														737
103														736
104														735
105														734
106														733
107														732
108														731
109														730
110														729
111														728
112														727
113														726
114														725
115														724
116														

Project Name and Job Number TXU Comache Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-2050</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'12.19402"N / 97°47'30.01212"W		Total Depth 100.5 feet	
Drilling Contractor and Rig Fugro / CME 45		Elevation and Datum 827.853 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 15 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 6	Date Started 4/5/07	
		Borehole Inclination Vertical	Logged by J. Turner	Date Completed 4/6/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 4/11/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0										
0 - 1	CL		B-2050 1	50/5"	2.5 2.5			RESIDUAL SOILS (RS) SANDY LEAN CLAY, very dark grayish brown (10YR3/2), damp, soft, strong reaction to HCL, organic matter, (top soil and roots)		827
1 - 2								WEATHERED LIMESTONE ledge, (silt and rounded limestone gravel), white (GLEYS/1), dry to damp, hard, strong reaction to HCL		826
2 - 3										825
3 - 4	CL							LEAN CLAY, very dark grayish brown (10YR3/2), damp, stiff, violent reaction to HCL, gravel at bottom		824
4 - 5	CL-ML		B-2050 2	6 5 4	18 18			Auger chatter driller having hard time keeping bore vertical because of slippage off ledges CLAYEY SILT, yellow (2.5Y7/6), damp to dry, medium stiff, sparse subrounded gravel, 10% gravel, strong to violent reaction to HCL		823
5 - 6										822
6 - 7	ML		B-2050 3	5 10 12	18 18	2.5		SANDY SILT w/ some weathered limestone gravel, olive yellow (2.5Y6/8), dry to damp, stiff, violent reaction to HCL, 2.5 (tsf), remnant rock		821
7 - 8										820
8 - 9	CL							LEAN CLAY, olive yellow (2.5Y6/6), damp to dry, very stiff, strong reaction to HCL		819
9 - 10			B-2050 4	16 25 29	18 18	4.5		WEATHERED LIMESTONE ledge with silt and clay, pale yellow (2.5Y7/3), dry, very dense, strong reaction to HCL SILT and COMPLETELY WEATHERED LIMESTONE, yellow (2.5Y8/6), dry, strong reaction to HCL		818
10 - 11	ML									817
11 - 12	ML		B-2050 5	50/5"	5 5			CLAYEY SILT, olive yellow (2.5Y6/6), moist, soft, strong reaction to HCL, limestone fragments at bottom COMPLETELY WEATHERED LIMESTONE w/ limestone fragments, silty, white (N8), dry, violent reaction to HCL - auger chatter		816
12 - 13										815
13 - 14			B-2050 6	50/1.5"	1.5 1.5	0.75				814
14 - 15										813

Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. B-2050</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'12.19402"N / 97°47'30.01212"W		Total Depth 100.5 feet	
Drilling Contractor and Rig Fugro Austin / CME 45		Elevation and Datum 827.853 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 15 feet	
Casing Size and Depth 4 / 15 feet		Length of Core Barrel and Bit 8.8 feet	No. of Core Boxes 6	Date Started 4/5/07	
		Borehole Inclination Vertical	Logged by J. Turner	Date Completed 4/6/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 4/11/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
15		0.75	7	0.5 0.3	100	SW	R2		2050-7			LIMESTONE: packstone; very light gray (N8) to light gray (N7); weak (R2); slightly weathered (SW); strong reaction to HCl; sparse shell fragments; bioturbated; shell fragments become abundant to 17.8'; 17.8' is silty; 18.3'-18.7' shale bed; 18.8'-19.1' is shale; extremely weak. [Glen Rose Formation]	Began HQ coring 4/5/07, Glen Rose Formation.	812
16		1.82												811
17		1.48					R2							810
18		1.53	8	5.0 5.0	10	SW								809
19		2.5					R0							808
20		1.75					R2		2050-8				Recirculating.	807
21		3.87				SW	R2						Good water return.	806
22		7.53				SW	R0		2050-9 2050-9A				Adjacent shale samples taken.	805
23		6.72	9	5.0 5.0	100									804
24		2.25				SW	R2							803
25		2.75												802
26		3.7												801
27		2.42							2050-10					800
28		3.1	10	5.0 5.0	100	SW	R2							799
29		4.62												798
30		2.68												

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2050</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
30		2.68	10	5.0 5.0	100	SW	R2					wackestone among packstone interbeds		
31		4.7										SHALE: medium dark gray (N4); extremely weak (R0); slightly weathered (SW); fissile; laminated; very slight reaction to HCl; abundant shell fragments at 34.2'. [Glen Rose Formation]	797	
32		6.65				SW	R2		2050-11				796	
33		3.17	11	5.0 5.0	100				2050-11A				795	
34		4.7							2050-11B				794	
35		3.78				SW	R0					LIMESTONE: wackestone; very light gray (N8); weak (R2); slightly weathered (SW). [Glen Rose Formation]	793	
36		6.1							2050-12			SHALE: same as 30.5'-34.5'; medium dark gray (N4); extremely weak (R0); slightly weathered (SW); laminated; very slight reaction to HCl; wackestone interbed 36.6'-36.9'; shale becomes dark greenish gray (5 G 4/1) below 36.8'. [Glen Rose Formation]	792	
37		4.38				SW	R0		2050-12A				791	
38		7.7	12	5.0 5.0	100				2050-12B				790	
39		1.83										LIMESTONE: wackestone; white (N9) to light gray (N7); very weak (R1); slightly weathered (SW); fossiliferous; inoceramus shells; silt content increases below 39.7'. [Glen Rose Formation]	789	
40		3.53				SW	R1						788	
41		5.03				SW	R1						787	
42		5.55							2050-13			SHALE: medium dark gray (N4); extremely weak (R0); slightly weathered (SW); laminated; very slight reaction to HCl. [Glen Rose Formation]	786	
43		3.82	13	5.0 5.0	100	SW	R0		2050-13A				785	
44		3.72							2050-13B				784	
45		7.27				SW	R1					LIMESTONE: wackestone; light gray (N7); very weak (R1); fresh to slightly weathered (F-SW); bioturbated; slight reaction to HCl. [Glen Rose Formation]	783	

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2050</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
45		7.27	13	5.0 5.0	100	F-SW	R0					SHALE: medium dark gray (N4); weak (R2); fresh to slightly weathered (F-SW); does not react to HCl. [Glen Rose Formation]	out mud tub. Can't read comment, but know that driller not happy.	782
46		7.77												
47		4.12										LIMESTONE: wackestone; very light gray (N8) to light gray (N7); very weak to weak (R1-R2); packstone interbeds 46.8'-48.5'; shale beds 48.7'-48.8' and 48.9'-50.1'; bioturbated with abundant <0.05' packstone laminations below 50'; gradational basal contact. [Glen Rose Formation] Packstone interbed		781
48		2	14	5.1 5.0	100	F-SW	R1-R2							780
49		2.62											Length of recovery stretched due to mechanical breaks.	779
50		2.02												778
51		1.78										LIMESTONE: packstone; very light gray (N8) to medium light gray (N7); silty; weak (R2); fresh (F); strong reaction to HCl; fossiliferous; abundant shell fragments; bioturbated; high silt content 57.2'-58.0'; wackestone bed 58.0'-58.4'; muddy; silty packstone; very weak (R1) 58.4'-60.1'. [Glen Rose Formation]		777
52		2.22												776
53		1.28	15	5.0 5.0	100	F	R2							775
54		2.05											Fast drilling rate.	774
55		2.18												773
56		2.78												772
57		0.77											Good water return.	771
58		2.62	16	4.9 5.0	98	F	R2-R1							770
59		1.83												769
60		1.6												768

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2050</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
60		1.6	16	4.9 5.0	98	F						LIMESTONE: wackestone; very light gray (N8); weak (R2); fresh (F); massive; fine grained; strong reaction to HCl. [Glen Rose Formation]		767
61		2.28				F-SW	R2					LIMESTONE: packstone; medium dark gray (N4) to very light gray (N8); very weak (R1); fresh to slightly weathered (F-SW); abundant shell fragments; silty and muddy; bioturbated; burrows filled with wackestone. [Glen Rose Formation]		766
62		2.38												765
63		2.32	17	5.0 5.0	100	F-SW	R1							764
64		2.42								2050-17				763
65		1.32				F-SW	R2					LIMESTONE: wackestone; white (N9); weak (R2); fresh (F); strong reaction to HCl; fine to medium grained; massive; sparse <0.05' packstone beds; bioturbated. [Glen Rose Formation]		762
66		2				F-SW	R2							761
67		3.15												760
68		2.2	18	5.1 5.0	100	F-SW	R1					LIMESTONE: packstone; medium gray (N5); burrows filled with wackestone; very light gray (N8); very weak (R1); slight reaction to HCl; fossiliferous; shell fragments; wavy laminations. [Glen Rose Formation]		759
69		4.25								2050-18			Length of recovery stretched due to mechanical breaks.	758
70		4.07											Used 200 gallons of water 35'-70'.	757
71		2.02				F-SW	R1						Good water return.	756
72		0.87										LIMESTONE: wackestone; very light gray (N8) with medium bluish gray (5 B 5/1) carbonate grains; weak (R2); fresh (F); packstone bed 71.6'-71.7'; packstone interbeds <0.1' 72.8'-73.5'. [Glen Rose Formation]		755
73		1.35	19	5.0 5.0	100	F	R2			2050-19		Packstone interbed	350 psi, 1100 rpm.	754
74		1.02												753
75		2.78				F-SW	R1					LIMESTONE: packstone; medium light gray (N6); very weak (R1); fresh to slightly weathered (F-SW). [Glen Rose Formation]		


Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2050</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
75		2.78	19	5.0 5.0	100		R1					LIMESTONE: packstone; medium light gray (N6); very weak (R1); fresh to slightly weathered (F-SW). [Glen Rose Formation]		752
76		1.85				F-SW	R1							
77		1.85				F	R2					LIMESTONE: wackestone; very light gray (N8); weak (R2); fresh (F); massive; fine grained. [Glen Rose Formation]		751
78		2.95	20	5.1 5.0	100	F-SW	R1					LIMESTONE: packstone; medium light gray (N6); very weak (R1); fresh to slightly weathered (F-SW); slight reaction to HCl. [Glen Rose Formation]		750
79		0.98				F	R2					LIMESTONE: wackestone; white (N9); weak (R2); fresh (F); fine grained; massive; wavy laminations of packstone <0.1'; soft sediment deformation features; rip-up clasts. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	749
80		2.1												748
81		1.2				F-SW	R1		2050-20			LIMESTONE: packstone; light gray (N7); very weak (R1); fresh to slightly weathered (F-SW); coarse grain; strong reaction to HCl. [Glen Rose Formation]		747
82		1.42										LIMESTONE: wackestone; very light gray (N8); weak (R2); fresh (F); packstone bed 81.3'-81.6'; at 82.5'; coarse grain; strong reaction to HCl; densely packed grains; silty; muddy; shell fragments; laminated 83.8'-84.5'; micrite bed 84.7'-84.9'; laminated shale/silt/limestone (micrite) 84.9'-85.1'. [Glen Rose Formation]	400 psi, 1600 rpm.	746
83		1.57	21	5.0 5.0	100	F	R2					Packstone interbed		745
84		3.78												744
85		2.27							2050-21			Micrite interbed laminated shale/silt/limestone (micrite)		743
86		1.83										LIMESTONE: packstone; very light gray (N8) matrix; light bluish gray (5 B 4/1) grains; weak (R2); fresh (F); strong reaction to HCl. [Glen Rose Formation]		742
87		1.18										LIMESTONE: wackestone; white (N9) to medium gray (N5) with medium bluish gray (5 B 5/1) grains; very weak (R1); fresh to slightly weathered (F-SW); massive to 87.4'; laminated and silty 87.4' to 89.2'; slight reaction to HCl. 89.2'; massive; white (N9); coarse to very coarse; bioturbated. [Glen Rose Formation]		741
88		2.58	22	5.1 5.0	100	F-SW	R1							740
89		2.33							2050-22				Length of recovery stretched due to mechanical breaks.	739
90		1.52												738

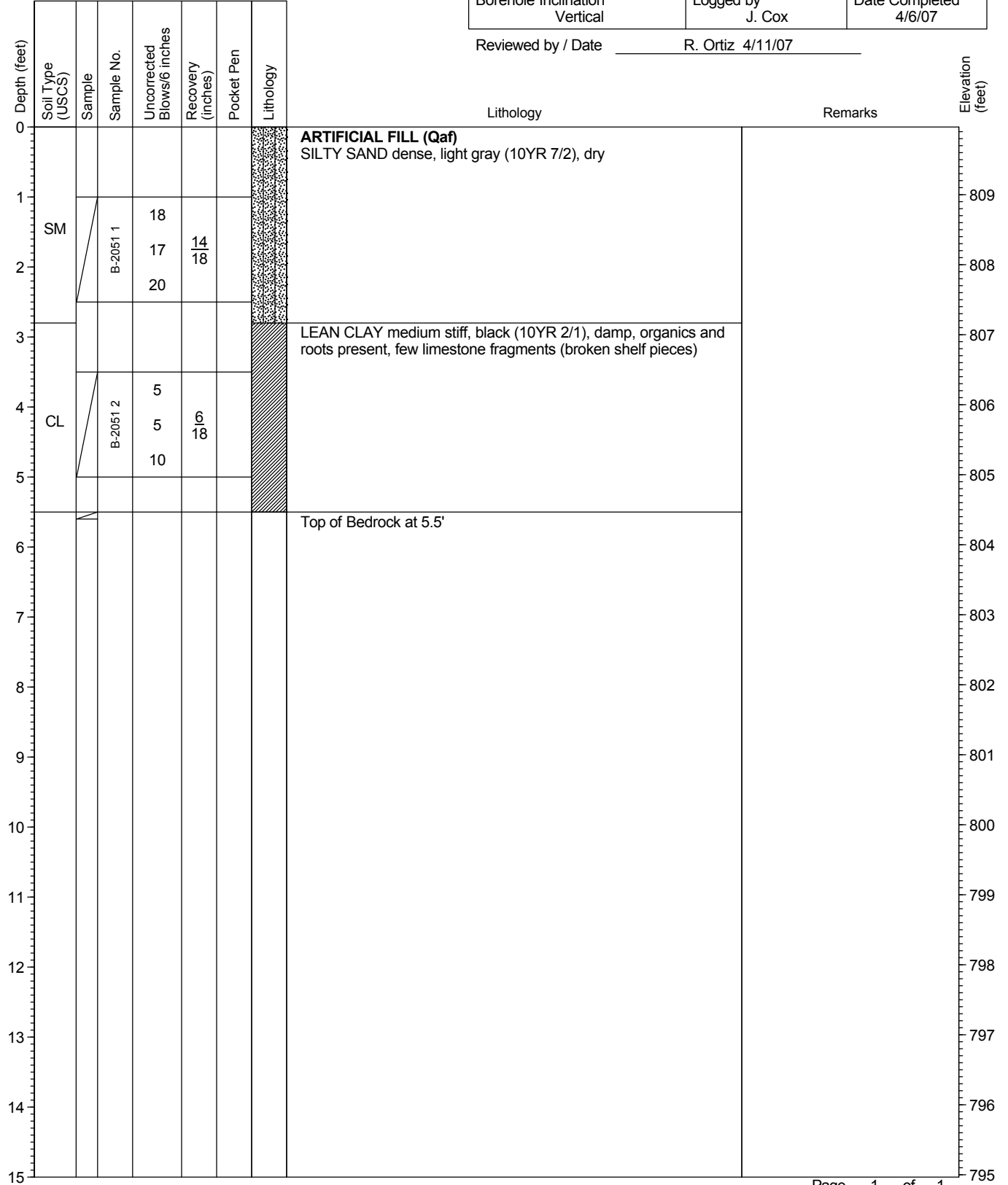
Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2050</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
90		1.52	22	5.1 5.0	100		R1						Vacuum truck cleaning out mud tub.	737
91		1.6					R1					LIMESTONE: packstone; dark gray (N3); very weak (R1); fresh to slightly weathered (F-SW); silty and muddy; burrows filled with wackestone; burrows very light gray (N8); slight reaction to HCl; coarse grained; silty shale bed 92.3'-92.6'. [Glen Rose Formation]	736	
92		1.9				F-SW	R1						silty shale bed	735
93		2.27	23	5.0 5.0	100		R2						LIMESTONE: wackestone; very light gray (N8); weak (R2); fresh (F); massive to faintly laminated; wavy; abundant shell fragments; strong reaction to HCl; coarse grained. [Glen Rose Formation]	734
94		1.38				F	R2		2050-23					733
95		1.58												732
96		1.87												731
97		3.03												730
98		2.52	24	5.0 5.0	100	F	R2							729
99		2.77												728
100		1.08							2050-24					727
101												BOTTOM OF HOLE AT 100.5		726
102														725
103														724
104														723
105														



Project Name and Job Number TXU Comache Peak COL 1908				<b>SOIL LOG Boring No. B-2051</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'12.48880"N / 97°47'28.53218"W		Total Depth 100.4 feet	
Drilling Contractor and Rig Palmerton & Parrish / CME 55		Elevation and Datum 809.966 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 5.5 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 2	Date Started 4/5/07	
		Borehole Inclination Vertical	Logged by J. Cox	Date Completed 4/6/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 4/11/07



Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG Boring No. B-2051</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'12.48880"N / 97°47'28.53218"W		Total Depth 100.4 feet	
Drilling Contractor and Rig Palmerton & Parrish / CME 55		Elevation and Datum 809.966 feet NAVD88	Ground Water Depth DRY		Depth to Bedrock 5.5 feet
Casing Size and Depth 4" / 5.5 feet		Length of Core Barrel and Bit 8.8 feet	No. of Core Boxes 7		Date Started 4/5/07
		Borehole Inclination Vertical	Logged by J. Cox		Date Completed 4/6/07

Reviewed by / Date \_\_\_\_\_ R. Ortiz 4/11/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
6		2.67									Jt, Wa, Sl, Op Jt, Wa, Sl, Ti	LIMESTONE: wackestone; very pale orange (10 YR 8/2); weak (R2); moderately weathered (MW); abundant fossils; strong reaction to HCl; some <0.1' mudstone interbeds causing bedding breaks. [Glen Rose Formation]	Began HQ coring at 5.7', Glen Rose Formation.	804
7		1.88	1	3.1 3.7	68	MW	R2				Jt, Wa, Sl, Op Jt, Wa, Sl, Op		No adequate sample Run #1, none taken.	803
8		4.2												802
9		1.75				HW	R1					MUDSTONE; pale yellowish brown (10 YR 6/2); highly weathered (HW); very weak (R1). [Glen Rose Formation]		801
10		1.78										LIMESTONE: wackestone; light gray (N7); weak (R2); moderately weathered (MW); slightly bioturbated; abundant fossils; strong reaction to HCl. [Glen Rose Formation]		800
11		2.2												799
12		3.9	2	4.8 5.0	96	MW	R2							798
13		1.6												797
14		1.53				SW	R1		2051-3			SHALE: medium dark gray (N4); very weak (R1); slightly weathered (SW); thinly bedded; no reaction to HCl. [Glen Rose Formation]		796
15		2.75												795
16		2.77				SW	R1		2051-4					794
17		3.02	3	4.1 5.0	98				2051-5					793
18		2.97				SW	R2		2051-6			LIMESTONE: wackestone; very light gray (N8); weak (R2); slightly weathered (SW); abundant fossils; slightly bioturbated; strong reaction to HCl. [Glen Rose Formation]		792
19		3				SW	R1					SHALE: medium dark gray (N4); very weak (R1); slightly weathered (SW); thinly bedded; no reaction to HCl. [Glen Rose Formation]		791
20		3	4	5.0 5.0	100	SW	R1					Interbed of limestone from 19.6' to 19.8'. Interbed of limestone from 20.1' to 20.2'.		790
		2.93											Shale too fractured to obtain adequate sample.	

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2051</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
21		2.93				SW	R1							789
22		2.62				SW	R2				Jt. Wa. Cl. Op Is that right? Whats CI?	LIMESTONE: wackestone; light gray (N7); weak (R2); slightly weathered (SW); abundant rip-up clasts; occasional fossil. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	788
23		2	4	5.0 5.0	100	SW	R2			2051-7				787
24		2.5										SHALE: medium dark gray (N4); very weak (R1); slightly weathered (SW); thinly bedded; no reaction to HCl. [Glen Rose Formation]		786
25		2.58				SW	R1					Interbed from 23.8' to 23.9'.		785
26		2.43									2051-8			784
27		2.53	5	5.0 5.0	100	SW	R2				2051-9	LIMESTONE: wackestone; light gray (N7); weak (R2); slightly weathered (SW); abundant rip-up clasts; occasional fossils. [Glen Rose Formation]		783
28		2.67				SW	R1				2051-10	SHALE: medium dark gray (N4); very weak (R1); slightly weathered (SW); thinly bedded; no reaction to HCl. [Glen Rose Formation]		782
29		2.28												781
30		1.83				SW	R2					LIMESTONE: wackestone; light gray (N7); weak (R2); slightly weathered (SW); abundant rip-up clasts; abundant fossils. [Glen Rose Formation]		780
31		1.87										Shale interbed Shale interbed		779
32		1.82	6	5.0 5.0	100	SW	R1					SHALE: medium dark gray (N4); very weak (R1); slightly weathered (SW); thinly bedded. [Glen Rose Formation]		778
33		1.83				SW	R2					Limestone interbed at 31.4'. LIMESTONE: wackestone; light gray (N7); weak (R2); slightly weathered (SW); abundant rip-up clasts; abundant fossils. [Glen Rose Formation]		777
34		1.8									2051-11			776
35		1.4	7	5.2 5.0	100	SW	R2							775
		1.42												

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-2051</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
36		1.42										LIMESTONE: wackestone; light gray (N7); weak (R2); slightly weathered (SW); abundant rip-up clasts; abundant fossils. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	774
37		1.5							2051-12					773
38		1.53	7	5.2 5.0	100	SW	R2							772
39		1.45												771
40		1.25												770
41		1.33												769
42		1.7	8	5.0 5.0	100	SW	R2		2051-13					768
43		1.67												767
44		1.75												766
45		1.8												765
46		1.73									LIMESTONE: wackestone; light gray (N7); weak (R2); slightly weathered (SW); abundant rip-up clasts; abundant fossils; slightly bioturbated; both causing bedding breaks; no rip-up clasts from 48.0' to 48.8'. [Glen Rose Formation]		764	
47		1.68	9	5.0 5.0	100	SW	R2						763	
48		1.78								2051-14	Shale interbed		762	
49		1.6											761	
50		1.33	10	5.2 5.0	100	SW	R2				LIMESTONE: wackestone; same as above; rip-up clasts throughout; slightly coarser grain from 51.0' to 53.8'. [Glen Rose Formation]		760	
		1.27												

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2051</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
51		1.27										LIMESTONE: wackestone; same as above; rip-up clasts throughout; slightly coarser grain from 51.0' to 53.8'. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	759
52		1.42	10	5.2 5.0	100	SW	R2		2051-15					758
53		1.35												757
54		1.77												756
55		1.48										LIMESTONE: packstone; light gray (N7); weak (R2); slightly weathered (SW); massive; dry; medium to coarse grained; abundant fossils; abundant rip-up clasts; no rip-up clasts from 56.5' to 60.0'. [Glen Rose Formation]	755	
56		1.58							2051-16				754	
57		1.52	11	5.0 5.0	100	SW	R2						753	
58		1.57											752	
59		1.5											751	
60		1.43										Good water return.	750	
61		2.05							2051-17				749	
62		1.33	12	5.0 5.0	100	SW	R2						748	
63		1.75											747	
64		1.67											746	
65		1.2	13	5.2 5.0	100	F-SW	R2					Picture states Run 12, should say Run 13.	745	
		1.27												

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2051</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
66		1.27										LIMESTONE: wackestone; light gray (N7); weak (R2); fresh to slightly weathered (F-SW); massive; dry; abundant fossils; abundant rip-up clasts; strong reaction to HCl; micritic limestone from 68.0'-68.4'. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	744
67		1.35							2051-18					743
68		1.23	13	5.0	100	F-SW	R2							742
69		1.32										LIMESTONE: packstone; light gray (N7); weak (R2); fresh to slightly weathered (F-SW); massive; no rip-up clasts; abundant fossils; strong reaction to HCl. [Glen Rose Formation]		741
70		1.65												740
71		1.43												739
72		1.5	14	5.0	100	F-SW	R2							738
73		2												737
74		2.03												736
75		2.33												735
76		2.12												734
77		2.18	15	5.0	100	F-SW	R2					LIMESTONE: wackestone; very light gray (N8); weak (R2); fresh to slightly weathered (F-SW); massive; dry; very few rip-up clasts; abundant fossils; slightly bioturbated; micritic limestone from 75.6'-76.1'. [Glen Rose Formation]		733
78		2.2												732
79		2.3												731
80		2.2	16	5.0	100	F-SW	R2							730
		2.1												

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-2051**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
81		2.1												729
82		1.93												728
			16	5.0	100	F-SW	R2						LIMESTONE: micrite; very light gray (N8); weak (R2); fresh to slightly weathered (F-SW); massive; occasional small bioturbated areas; very few fossils; strong reaction to HCl. [Glen Rose Formation]	727
83		1.92							2051-21					726
84		1.82											LIMESTONE: wackestone; very light gray (N8); weak (R2); fresh to slightly weathered (F-SW); massive; dry; occasional rip-up clasts; abundant fossils; strong reaction to HCl. [Glen Rose Formation]	725
85		1.6												724
86		1.7												723
87		2	17	5.0	100	F-SW	R2		2051-22					722
88		2.03												721
89		2.32												720
90		2.1												719
91		2.17												718
92		2.27	18	5.0	100	F-SW	R2		2051-23					717
93		2.18												716
94		2.78												715
95		3.03	19	5.0	100	SW	RO						SHALE: medium dark gray (N4); very weak (R1); fresh to slightly weathered (F-SW); thinly bedded; no reaction to HCl. [Glen Rose Formation]	715
		3.1												


Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-2051**


Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
96		3.1										LIMESTONE: wackestone; light gray (N7); weak (R2); fresh to slightly weathered (F-SW); occasional rip-up clasts; abundant fossils; strong reaction to HCl. [Glen Rose Formation]		714
97		2.27							2051-24					713
98		2.23	19	5.0	100	SW	R2							712
99		2.3												711
100		2.38	20	1.2 1.0	100									710
101											BOTTOM OF HOLE AT 100.4 FEET	Total depth drilled: 100.4'	709	
102													708	
103													707	
104													706	
105													705	
106													704	
107													703	
108													702	
109													701	
110													700	



Project Name and Job Number TXU Comache Peak COL 1908				<b>SOIL LOG</b> <b>Boring No. B-2052</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'11.17840"N / 97°47'34.17224"W		Total Depth 75 feet	
Drilling Contractor and Rig Richard Simmons Drilling / BK-81 HD		Elevation and Datum 846.57 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 7.5 feet	
Sampling Method SPT		Sample Driving Hammer/Drop R&C / 140 lbs / 30 inches	No. of Samples 3	Date Started 3/22/07	
		Borehole Inclination Vertical	Logged by S. Dee	Date Completed 3/23/07	

Reviewed by / Date \_\_\_\_\_ M. Zellman 3/26/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0										846
1										845
2			B-2052 1	7 4	15 15	1.75			- refusal likely due to boulder damp, ~ 10% angular limestone fragments, reacts strongly to HCl	844
3				50/3"						843
4	CL		B-2052 2	4 7	12 18	3.75				842
5				13						841
6								increasing sand and limestone fregments, refusal likely due to boulder		840
7			B-2052 3	8	10 10	0.75				839
7.5				50/4"						839
8								Top of Bedrock at 7.5'		838
9										837
10										836
11										835
12										834
13										833
14										832
15										832

Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG Boring No. B-2052</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'11.17840"N / 97°47'34.17224"W		Total Depth 75 feet	
Drilling Contractor and Rig Richard Simmons / BK 81		Elevation and Datum 846.57 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 7.5 feet	
Casing Size and Depth 4" / 7.5 feet		Length of Core Barrel and Bit 8.6 feet	No. of Core Boxes 5	Date Started 3/22/07	
		Borehole Inclination Vertical	Logged by S. Dee	Date Completed 3/23/07	

Reviewed by / Date M. Zellman 3/26/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)		
8.00		0.4	4	2.0 2.5	80	MW	R0					SHALE: siltstone; grayish orange (10 YR 7/4); massive; moderately weathered (MW); extremely weak (R0); slight reaction to HCl. [Glen Rose Formation]	Top of rock 7.5'. Began HQ coring 7.5', Glen Rose Formation.	839		
8.93		1.93												LIMESTONE: weathered wackestone; grayish orange (10 YR 7/4); bedded with <0.01' interbeds of silt; highly weathered (HW); shale; medium dark gray (N3); very thinly bedded; fresh (F); extremely weak (R0); slight reaction to HCl. [Glen Rose Formation]		838
9.77		1.77							HW	R1					SHALE: medium dark gray (N3); very thinly bedded; fresh (F); extremely weak (R0); slight reaction to HCl. [Glen Rose Formation]	
10.43		1.43	5	4.0 5.0	80							LIMESTONE: micrite; medium dark gray (N4); slightly weathered (SW); weak (R2); massive; moderate reaction to HCl. [Glen Rose Formation]		836		
11.24		2.4							SW	R2			2052-4			835
12.07		1.43													LIMESTONE: siltstone; gray (N5); massive; fresh (F); extremely weak (R0). [Glen Rose Formation]	
13.42		1.42				F	R0					SHALE: medium dark gray (N4); very thinly bedded; fresh (F); extremely weak (R0). [Glen Rose Formation]		833		
14.87		2.17												832		
16.04		2.77				F	R0							831		
16.83		1.83	6	5.0 5.0	100							LIMESTONE: wackestone; fossiliferous; very light gray (N8); slightly weathered (SW); weak (R2); strong reaction to HCl; clasts are fossils of various shapes colors and sizes; voids interspersed throughout. [Glen Rose Formation]		830		
17.65		1.02							SW	R2						829
18.52		1.52												2052-5		828
19.52		0												827		
20.35		1.83	7	4.4 5.0	88							LIMESTONE: packstone; silty; medium dark gray (N4); bedded with abundant (0.1') interbeds of shale and silt; slightly weathered (SW); weak (R2); gray silt and white fossil clasts. [Glen Rose Formation]		826		
21.52		2.17							SW	R2						825
22.07		2.55							F	R2					LIMESTONE: micrite; medium dark gray (N4); fresh (F); weak (R2); massive; slight reaction to HCl. [Glen Rose Formation]	100% water return (gray).

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2052</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
23		2.55	7	4.4 5.0	88	F	R2		2052-6			LIMESTONE: micrite; medium dark gray (N4); fresh (F); weak (R2); massive; slight reaction to HCl. [Glen Rose Formation]		824
24		2.43					R0			SHALE: dark gray (N3); very thinly bedded; fresh (F); extremely weak (R0); no reaction to HCl. [Glen Rose Formation]		823		
25		2.67	8	5.0 5.0	100	SW	R0					LIMESTONE: wackestone; silty; medium dark gray (N4); bedded; slightly weathered (SW); weak (R2); abundant silty material throughout run and some fossil clasts. [Glen Rose Formation]		822
26		1.8					F			821				
27		1.85					R2			LIMESTONE: wackestone; massive; weak (R2); occasional (<0.1') interbeds of shale and silt; slightly weathered (SW); clasts are bluish gray; fine to medium grained; oolitic to subrounded and tabular fossils; with zones of abundant gray silt clasts; strong reaction to HCl; gradational basal contact. [Glen Rose Formation]		820		
28		1.65	9	4.7 5.0	94	SW	R2		2052-7			LIMESTONE: packstone; medium light gray (N6); massive with zones of abundant (<0.1') shale/silt interbeds; slightly weathered (SW); weak (R2); strong reaction to HCL; clasts are fine to medium grained subrounded white fossils and silt; bioturbations and rip-up clasts throughout. [Glen Rose Formation]		819
29		1.68					R2			818				
30		1.92					R2			Abundant shale interbeds from 30' to 31.4'		817		
31		1.75	10	5.0 5.0	100	F			2052-8					816
32		1.6										815		
33		1.65					R2					814		
34		1.7											813	
35		1.67											812	
36		1.5	10	5.0 5.0	100	F	R0						100% water return (gray).	811
37		2.17					R2			SHALE: medium dark gray (N4); very thinly bedded with (<0.1') interbeds of limestone; fresh (F); extremely weak (R0). [Glen Rose Formation]		810		
		2.77				SW	R2		2052-9					

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2052</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)									
38		2.77	10	5.0 5.0	100	SW	R2					LIMESTONE: wackestone; very light gray (N8); bedded with abundant shale and silt interbeds (<0.1') slightly weathered (SW); weak (R2); clasts are bluish gray oolitic fossils. [Glen Rose Formation]		809									
39		3.5				F	R0							SHALE: dark gray (N3); very thinly bedded; fresh (F); extremely weak (R2); slight reaction to HCl. [Glen Rose Formation]. Interbed of limestone at 39.0' to 39.2'. Interbed of limestone at 39.4' to 39.5'. Interbed of limestone at 39.7' to 39.8'.		808							
40		3.42															807						
41		2.67	11	4.9 5.0	100	SW	R2					LIMESTONE: wackestone; light gray (N7); massive; occasional (<0.1') interbeds of shale and silt; slightly weathered (SW); weak (R2); strong reaction to HCl; abundant bioturbation throughout. [Glen Rose Formation]		806									
42		2.5																			Shale interbed		805
43		3.02																			Shale interbed		804
44		3.1	12	5.0 5.0	100	SW	R2					SHALE: dark gray; very thinly bedded; fresh (F); extremely weak (R0); no reaction to HCl. [Glen Rose Formation]		803									
45		2.82																					802
46		2.57																					801
47		3.85	13	5.2 5.0	100	F	R0					LIMESTONE: wackestone; light gray (N7); massive; fresh (F); weak (R2); abundant bioturbation. [Glen Rose Formation]		800									
48		2.82																					799
49		2.98																					798
50		2.83	13	5.2 5.0	100	SW	R2							797									
51		3.5																					796
52		2.83																					795
		4.03				F	R0																

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2052</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)				
53		4.03	13	5.2 5.0	100	F	R0					SHALE: dark gray; very thinly bedded; fresh (F); extremely weak (R0); no reaction to HCl. [Glen Rose Formation] Limestone interbed from 53.2' to 53.5'.	Length of recovery stretched due to mechanical breaks.	794				
54		3.82												2052-12				793
55		5.52																792
56		3.68	14	5.0 5.0	100	SW	R2					LIMESTONE: wackestone; light gray (N7); bedded; with (<0.1') interbeds of shale and silt; slightly weathered (SW); weak (R2); clasts are fine to medium grained white fossils; reacts strongly to HCl; some bioturbation; rip-up clasts. [Glen Rose Formation]		791				
57		3.5											2052-13				790	
58		2.35															789	
59		3.5	14	5.2 5.0	100	F	R0					SHALE: dark gray (N3); very thinly bedded; fresh (F); extremely weak (R0); slight reaction to HCl. [Glen Rose Formation]		788				
60		2.08															787	
61		3.02															786	
62		3.17	14	5.2 5.0	100	SW	R2					LIMESTONE: wackestone; light gray (N7); bedded with (0.1') interbeds of shale and silt; slightly weathered (SW); extremely weak (R0); bioturbation. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	785				
63		3												2052-14				784
64		1.83																783
65		2.17	15	5.0 5.0	100	SW	R2					LIMESTONE: wackestone; very light gray (N8); massive with occasional (0.1') interbeds of shale and silt; slightly weathered (SW); weak (R2); strong reaction to HCl; fossils; bioturbation. [Glen Rose Formation]		782				
66		2.47														Shale interbed		781
67		1.33																780
		2.02								2052-15			100% water return (gray).					

Project Name and Job Number  
 TXU Comanche Peak Col  
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**ROCK LOG**  
**Boring No. B-2052**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
68		2.02	15	5.0 5.0	100	SW	R2							779
69		2.42												778
70		1.13												777
71		1.5	16	5.0 5.0	100	SW	R2							776
72		2.58												775
73		2.17												774
74		2.75												773
75		2.1												772
75												BOTTOM OF HOLE AT 75 FEET.	Total depth drilled: 75'	771
76														770
77														769
78														768
79														767
80														766
81														765
82														

Project Name and Job Number TXU Comache Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-2053</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'11.43072"N / 97°47'31.29465"W		Total Depth 75 feet	
Drilling Contractor and Rig Richard Simmons Drilling / BK-81 HD		Elevation and Datum 839.095 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 9.5 feet	
Sampling Method SPT		Sample Driving Hammer/Drop R&C / 140 lbs / 30 inches	No. of Samples 4	Date Started 3/23/07	
		Borehole Inclination Vertical	Logged by S. Dee	Date Completed 3/24/07	

Reviewed by / Date \_\_\_\_\_ 3/25/07 \_\_\_\_\_

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
0							<b>ARTIFICIAL FILL (Qaf)</b> LEAN CLAY with sand and calcareous deposits medium stiff, very dark brown (7.5YR 2.5/3), damp, reacts strongly with HCl, abundant organics		839
1	CL		B-2053 1	7					838
2				6	13/18	4.25			837
3				8					836
4	CL		B-2053 2	18	12/18	4	SANDY LEAN CLAY, olive yellow (2.5YR 6/8), about, some small gravel  - weathered boulder at ~4.2'		835
5				34					834
6				28					833
7			B-2053 3	11	17/18	4.5	LEAN CLAY with angular limestone fragments stiff, yellow (2.5YR 8/8)		832
8				14					831
9	CL		B-2053 4	10	7/7	4.5	<b>RESIDUAL SOIL (RS)</b> LEAN CLAY hard, pale olive brown (5Y 6/3), with some shell fragments		830
10				50/1"			Top of Bedrock at 9.5'		829
11									828
12									827
13									826
14									825
15									824

Project Name and Job Number TXU Comanche Peak Col 1908		 WLA William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. B-2053</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'11.43072"N / 97°47'31.29465"W		Total Depth 75 feet	
Drilling Contractor and Rig Richard Simmons / BK 81		Elevation and Datum 839.095 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 9.5 feet	
Casing Size and Depth 4" / 9.5 feet		Length of Core Barrel and Bit 8.6 feet	No. of Core Boxes 5	Date Started 3/23/07	
		Borehole Inclination Vertical	Logged by S. Dee	Date Completed 3/24/07	

Reviewed by / Date M. Zellman 3/25/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
10		1.22	5	0.5 0.3	100							LIMESTONE: wackestone; very light gray (N8); massive; moderately weathered (MW); weak (R2); reacts strongly to HCl; clasts are tabular and subrounded; white and bluish gray; fine to coarse fossils; weathering runs horizontally. [Glen Rose Formation]	Top of rock 9.5', began HQ coring, Glen Rose Formation.	829
11		1.17				MW	R2							828
12		1.42												827
13		1.52	6	4.7 5.0	94				2053-5					826
14		1.72				HW-SW	R1					LIMESTONE: wackestone; silty; grayish orange (10 YR 7/4) and medium gray (N5); thinly bedded; highly weathered to 14.4' (HW); slightly weathered below (SW); very weak (R1); reacts strongly to HCl. [Glen Rose Formation]		825
15		1.98												824
16		1.68				SW	R2					LIMESTONE: wackestone; medium gray (N5); massive; slightly weathered (SW); weak (R2); mudstone reacts to HCl; clasts are fine to medium grained; bluish-gray fossils. [Glen Rose Formation]		823
17		2.75												822
18		1.97	7	5.0 5.0	100							SHALE: medium dark gray (N6); very thinly bedded; fresh (F); extremely weak (R0); slight reaction to HCl. [Glen Rose Formation]		821
19		1.77				F	R0							820
20		2.17							2053-6					819
21		2.22										LIMESTONE: wackestone; silty; medium gray (N5); very thinly bedded; slightly weathered (SW); weak (R2); clasts are dominantly silt with some fine grained fossils. [Glen Rose Formation]		818
22		2.43												817
23		2.02	8	5.0 5.0	100	SW	R2		2053-7			LIMESTONE: wackestone; light gray (N7); massive with zones of abundant silt (<0.1') interbeds; strong reaction to HCl; clasts are light bluish gray and white subrounded fossils; sand rip-up clasts from 23.8' to 25.5'; several lignite nodules; gradational basal contact. [Glen Rose Formation]		816
24		1.75												815
		1.98												815



Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-2053**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
25.00		1.98	8	5.0	100	SW	R2							814
26.00		1.17												813
27.00		1.83				SW	R2		2053-8			LIMESTONE: packstone; medium light gray (N6); thinly bedded with abundant interbeds of shale/silt; slightly weathered (SW); weak (R2); clasts are fine to medium grained bluish gray and white; subrounded fossils and silt grains; strong reaction to HCl; abundant rip-up clasts and bioturbation.	812	
28.00		0.98	9	5.0	100									811
29.00		1.65												810
30.00		2.02				F	R0					SHALE: medium dark gray; very thinly bedded; slightly weathered (SW); extremely weak (R0). [Glen Rose Formation]	809	
31.00		0.8				SW	R2					LIMESTONE: wackestone; light gray (N7); very thinly bedded with interbeds (<0.1') of shale/silt; slightly weathered (SW); weak (R2); clasts are bluish gray; tabular and subrounded fossils. [Glen Rose Formation]	808	
32.00		3.02												807
33.00		4.08	10	5.0	100	F	R0		2053-9			SHALE: dark gray (N5); very thinly bedded; fresh (F); extremely weak (R0); limestone interbeds from 32' to 32.2' and 32.8' to 33.1'. [Glen Rose Formation]	806	
34.00		3.15												805
35.00		1.43				F	R2					LIMESTONE: wackestone; very light gray (N8); massive with rare (<0.1') interbeds of shale/silt; fresh (F); weak (R2); clasts are fine grained; gray to bluish gray; subrounded fossils; high concentration of bioturbation from 40.5' to 41.1'. [Glen Rose Formation]	804	
36.00		1.82							2053-10					803
37.00		1.83										Shale interbed		802
38.00		1.77	11	5.0	100	F	R2							801
39.00		1.98												800
		2.17												

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-2053</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
40		2.17	11	5.0 5.0	100	F	R2					Shale interbed		799
41		1.83					R2							798
42		2										SHALE: medium dark gray (N4); very thinly bedded; fresh (F); extremely weak (R2); slight reaction to HCL.		797
43		2.87	12	4.5 5.0	90	F	R0		2053-11					796
44		2.65												795
45		2.8												794
46		2.85				F	R0		2053-12			LIMESTONE: wackestone; very light gray (N8); massive; fresh (F); bioturbated; weak (R2) [Glen Rose Formation]	Inner barrel stuck in outer barrel, resulted in additional mechanical breaks.	793
47		2.77				F	R2					SHALE: medium dark gray (N4); slightly weathered (SW); extremely weak (R0); strong reaction to HCl. [Glen Rose Formation]		792
48		2.97	13	5.0 5.0	100	SW	R0						100% water return, gray.	791
49		2.05												790
50		2.35										LIMESTONE: wackestone; very light gray (N8); massive with (<0.1') interbeds of shale/silt; slightly weathered (SW); weak (R2); clasts are fine to medium grained bluish gray; tabular and rounded fossils. [Glen Rose Formation]		789
51		1.93				SW	R2							788
52		2.5												787
53		2.33	14	5.0 5.0	100	F	R0		2053-13A			SHALE: medium dark gray (N4); very thinly bedded; fresh (F); extremely weak (R0); strong reaction to HCl; limestone interbed at 52.0' to 52.3'. [Glen Rose Formation]		786
54		2.63							2053-13B					785
		2.85							2053-13C					

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2053</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
55		2.85	14	5.0 5.0	100	SW	R2					LIMESTONE: wackestone; very light gray (N8); slightly weathered (SW); weak (R2); massive with rare (<0.1') interbeds of SHALE: abundant bioturbation. [Glen Rose Formation]		784
56		2.83										SHALE: dark gray (N3); very thinly bedded; fresh (F); extremely weak (R0); slight reaction to HCl. [Glen Rose Formation]		783
57		2.98				F	R0		2053-14					782
58		3.17	15	5.0 5.0	100							LIMESTONE: wackestone; very light gray (N8); massive with rare (<0.1') interbeds of shale/silt; fresh (F); weak (R2); clasts are bluish gray; fine to coarse grained tabular and rounded fossils; abundant bioturbation; interbeds of shale. [Glen Rose Formation]		781
59		3.1				F	R2							780
60		3												779
61		1.93										LIMESTONE; PACKSTONE; medium light gray (N7); very thinly bedded with abundant (<0.1') interbeds of shale/silt; slightly weathered (SW); weak (R2); abundant bioturbation; clasts fine to coarse grained; rounded fossil material and silt grains; reacts strongly to HCl; high concentration of (<0.1') shale/silt interbeds from 65.9' to 67'. [Glen Rose Formation]		778
62		2.02												777
63		2.63	16	5.0 5.0	100	SW	R2							776
64		1.68							2053-15				100% water return, gray.	775
65		2.12												774
66		1.67												773
67		1.85												772
68		1.77	17	5.0 5.0	100	SW	R2					LIMESTONE: wackestone; very light gray (N8); massive with zones of abundant (<0.1') shale/silt interbeds; slightly weathered (SW); weak (R2); clasts are fine to medium grained; tabular to oolitic; white and bluish gray fossils; strong reaction to HCl; abundant bioturbation; abundant (<0.1') interbeds of shale/silt 70.5' to 71' and 72.6' to 74.3'. [Glen Rose Formation]		771
69		1.52							2053-16					770
		1.25												

Project Name and Job Number  
TXU Comanche Peak Col  
1908




**ROCK LOG**  
**Boring No. B-2053**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
70		1.25	17	5.0 5.0	100	SW	R2							769
71		1.5												768
72		1.75												767
73		2.35	18	5.0 5.0	100	SW	R2							766
74		1.88							2053-17					765
75		1.85												764
76											BOTTOM OF HOLE AT 75.0'.		Total depth drilled: 75.0'.	763
77														762
78														761
79														760
80														759
81														758
82														757
83														756
84														755

Project Name and Job Number TXU Comache Peak COL 1908		 WLA William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-2054</b>	
Type and Diameter of Boring HSA / 7"			Boring Location 32°18'11.62191"N / 97°47'30.60538"W		Total Depth 75 feet
Drilling Contractor and Rig TEXPLOR / CME 75			Elevation and Datum 834.535 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 4.5 feet
Sampling Method SPT			Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 2	Date Started 4/9/07
			Borehole Inclination Vertical	Logged by M. Buga	Date Completed 4/10/07

Reviewed by / Date \_\_\_\_\_ R. Ortiz 4/11/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0										834
1				7						833
2	CH		B-2054 1	6	1/18					832
3				5					limestone chunks in bottom of sampler	831
4			B-2054 2	6	11/11				hard, mottled gray (10YR 5/1), yellowish brown (10YR 3/8), and white (10YR 8/1), moist, with ~20% gravel	830
5				50/5"					Bedrock at 4.5' Augered to 5' to set casing.	829
6										828
7										827
8										826
9										825
10										824
11										823
12										822
13										821
14										820
15										

Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. B-2054</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'11.62191"N / 97°47'30.60538"W		Total Depth 75 feet	
Drilling Contractor and Rig Texlore / CME 75		Elevation and Datum 834.535 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 4.5 feet	
Casing Size and Depth 4" / 5 feet		Length of Core Barrel and Bit 8.6 feet	No. of Core Boxes 4	Date Started 4/7/07	
		Borehole Inclination Vertical	Logged by M. Buga	Date Completed 4/10/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 4/11/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
5		2.23	1	1.0 1.0	100						Pl, St, Si, Op, some clay	LIMESTONE; sparite; gray (N6); moderately weathered (MW); weak (R2); slight HCl reaction; voids; organic material; breaks/zones around breaks in core. [Glen Rose Formation]	Began NQ coring at 5.0'; Glen Rose Formation.	829
6		2.67				MW	R2				Pl, Ro, Ti, clay			828
7		1.57									Pl, Ro, Ti, clay PL, Ro, Op, clay Wa, Ro, Op, clay		300 psi downpressure, 100% water return, cloudy gray return water.	827
8		1.3	2	5.0 5.0	92				2054-3		IF, Pl, Ti, Ro			826
9		0.55				HW-CW	R1-R2					LIMESTONE: saprolite; yellow (10 YR 7/8); heavily weathered to completely weathered (HW-CW); no to slight HCl reaction; clay at upper contact; weak to very weak (R2-R1). [Glen Rose Formation]		825
10		0.92				SW	R2					LIMESTONE: wackstone; greenish gray (5GY 6/1); slightly weathered (SW); weak (R2); slight HCl reaction; sparse clasts; less than 0.25" if present. [Glen Rose Formation]		824
11		0.78							2054-4					823
12		0.85				SW	R2					LIMESTONE: micrite; greenish gray (5GY 6/1); massive; slightly weathered (SW); weak (R2); slight HCl reaction; voids; 12.7'-13.1' heavily weathered (HW). [Glen Rose Formation]	Run 3 - inner barrel stuck in outer barrel.	822
13		4.7	3	3.1 5.0	62							LIMESTONE: wackstone; greenish gray (5GY 6/1); slightly weathered (SW); strong HCl reaction; fossiliferous; 13.9'-16' washed out shale?; wackstone at 16'; below 16' sparse clasts; 17.35'-17.9' clasts ~1"; oolitic; fossiliferous; 17.9'-18.3' shale matrix; 18.3'-18.6' packstone; gradational basal contact. [Glen Rose Formation]		821
14		3.82				SW	R2							820
15		3.67												819
16		0.87												818
17		1.17				SW	R2							817
18		2.32	4	5.0 5.0	100									816
19		1.97				SW	R3					LIMESTONE: micrite; med. light gray (N6); slightly weathered (SW); medium strong (R3); violent HCl reaction; oolitic; gradational basal contact (0.05'). [Glen Rose Formation]		815
20						SW	R2							

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2054</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
20		2.3	4	5.0	100	SW	R2		2054-4			LIMESTONE: wackestone; greenish gray (5GY 6/1); slightly weathered (SW); weak (R2); strong HCl reaction; shell fragments; below 21' abundant clasts; matrix contains very small clasts (<0.1"); 21.5'-21.75' packstone; 24.3-36' washed out shale; below 26' wackestone. [Glen Rose Formation]		814
21		2.22											Drill chatter every 6".	813
22		1.83											Drilling slow to avoid chatter.	812
23		1.92	5	5.0	66				2054-5					811
24		3.02				SW	R2							810
25		5.05							2054-6				11:40 am Inner barrel stuck again, driller keeps yanking with winch, rope breaks up high, wire did not whip.	809
26		1.77											Drillers pull some rod out, shut down to repair.	808
27		2.75												807
28		3.02	6	5.0	100	F-SW	R1		2054-7				12:19 pm, drillers fix it.	806
29		5.6												805
30		4.67											Photo for Run 6 is mislabeled as 5.1' recovery.	804
31		3.47				SW	R3-R2							803
32		1.67												802
33		1.53	7	5.0	100	SW	R2							801
34		2.27												800
35														

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2054</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
35		1.67	7	5.0	100	SW	R2		2054-8			LIMESTONE: wackestone; medium light gray to medium gray (N5-N6); slightly weathered (SW); weak (R2); strong HCl reaction; 1"-1.5" clasts; 34.6'-35.0' packstone; organic lens at 34.7'; fossiliferous. [Glen Rose Formation]	Drill chatter, drill slower.	799
36		1.58												798
37		2.67												797
38		9.8	8	5.0	78	SW	R0-R1		2054-9			SHALE; dark greenish gray (5 GY 6/1); slightly weathered (SW); very weak to extremely weak (R1-R0); slight to strong HCl reaction; clayey wet shale from 38.2'-40.7'. [Glen Rose Formation]	Slow drilling in 3 foot.	796
39		6.32												795
40		6.17											2:50 Inner barrel stuck.	794
41		5.17				SW	R3					LIMESTONE: micrite; med. light gray (N6); slightly weathered (SW); medium to strong HCl reaction. [Glen Rose Formation]	Sucking out pit.	793
42		4.38										SHALE; dark greenish gray (5GY 4/1); fresh to slightly weathered (F-SW); very weak (R1); no HCl reaction; sparse micritic clasts; occasional very thin bedding; thinly spaced. [Glen Rose Formation]	Pulling pipe to get inner barrel.	792
43		5.2	9	5.0	100	F-SW	R1-R2		2054-10					791
44		5.5											Inner barrel free, core retrieved, switching to solid barrel.	790
45		5.63				F-SW	R1					LIMESTONE: micrite; med. light gray (N6); slightly weathered (SW); medium strong (R3); violent HCl reaction; 45.3'-45.6' wackestone. [Glen Rose Formation]		789
46		7.75				SW	R2					LIMESTONE: wackestone; dark gray (N4); slightly weathered (SW); weak (R2); strong HCl reaction; ~1"-2" clasts. [Glen Rose Formation]		788
47		2												787
48		3.77	10	5.0	100	F-SW	R1		2054-11			SHALE; dark greenish gray (5GY 4/1); fresh to slightly weathered (F-SW); no HCl reaction; sparse bedding; occasional clasts; 50.0'-50.4' wackestone. [Glen Rose Formation]	300 psi downpressure, 100% water return, cloudy dark gray return water.	786
49		4.15												785

BJ, Wa, St, Op




Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2054</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
50		4.58	10	5.0	100	F-SW	R1					SHALE; dark greenish gray (5GY 4/1); fresh to slightly weathered (F-SW); no HCl reaction; sparse bedding; occasional clasts; 50.0'-50.4' wackestone. [Glen Rose Formation]		784
51		5.98				F-SW	R1		2054-12					783
52		3.33												782
53		2	11	5.0	100	SW	R2-R3					LIMESTONE: packstone; medium light gray (N6); slightly weathered (SW); weak to medium strong (R2-R3); violent reaction to HCl. [Glen Rose Formation]		781
54		3.72				SW	R2					LIMESTONE: wackestone; medium gray (N5); slightly weathered (SW); weak (R2); strong HCl reaction; clasts >1"; 55.0'-55.4' micrite; below 57'; includes abundant; tightly clasts; bioturbation. [Glen Rose Formation]		780
55		3.45												779
56		1.82							2054-13				Stopped drilling 4/9/07, began 4/10/07.	778
57		1.7												777
58		6.95	12	5.0	100	SW	R2							776
59		1.35												775
60		1.97												774
61		1.35				SW	R2		2054-14					773
62		1.13				SW	R2-R3					LIMESTONE: packstone; medium light gray (N6); slightly weathered (SW); weak to medium strong (R2-R3); violent HCl reaction. [Glen Rose Formation]		772
63		0.8	13	5.0	100	SW	R2					LIMESTONE: wackestone; gray (N5); slightly weathered (SW); weak (R2); strong to violent HCl reaction; 64.0-64.3' packstone; 64.5'-66' sparser clasts; below 66' abundant clasts; tightly packed. [Glen Rose Formation]		771
64		1.92												770
65														


Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-2054</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)	
65		1.98	13	5.0	100	SW	R2					LIMESTONE: wackestone; gray (N5); slightly weathered (SW); weak (R2); strong to violent HCl reaction; 64.0-64.3' packstone; 64.5'-66' sparser clasts; below 66' abundant clasts; tightly packed. [Glen Rose Formation]		769	
66		0.92												768	
67		1.08												767	
68		1.08	14	5.0	100	SW	R2							766	
69		1												765	
70		1.8							2054-15					764	
71		2.13				SW	R2-R3						LIMESTONE: packstone; medium light gray (N6); slightly weathered (SW); weak to medium strong (R2-R3); violent HCl reaction; sparse matrix; occasional dissolution features. [Glen Rose Formation]	763	
72		1.3							2054-16						762
73		1.1	15	3.7 4.0	93	SW	R2							LIMESTONE: wackestone; medium light gray to light gray (N5-N6); slightly weathered (SW); weak (R2); violent reaction to HCl; tightly packed large clasts to 73'; less tightly packed below 73'. [Glen Rose Formation]	761
74		1.63													760
75												Total depth drilled: 75.0 ft.	759		
76													758		
77													757		
78													756		
79													755		
80													755		

Project Name and Job Number TXU Comache Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-2055</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'11.96274"N / 97°47'27.70218"W		Total Depth 75 feet	
Drilling Contractor and Rig Palmerton & Parrish / CME 55		Elevation and Datum 815.246 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 5.3 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 2	Date Started 4/9/07	
		Borehole Inclination Vertical	Logged by J. Cox	Date Completed 4/10/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 4/11/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
0							<b>RESIDUAL SOIL (RS)</b> LEAN CLAY stiff, light olive brown (2.5YR 5/3), damp, trace subrounded sand, few calcarous deposits		815
1									814
2	CL		B-2055 1	3	15 18				813
3				4					812
3				32			limestone clasts at bottom of sampler		812
4	ML		B-2055 2	41	50/3"		SILT hard, pale yellow (2.5YR 7/4), dry, with calcarous deposits and weathered limestone fragments		811
5							Top of Bedrock at 5.3'		810
6									809
7									808
8									807
9									806
10									805
11									804
12									803
13									802
14									801
15									800

Project Name and Job Number TXU Comanche Peak Col 1908		 WLA William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. B-2055</b>	
Type and Diameter of Boring HQ / 4"			Boring Location 32°18'11.96274"N / 97°47'27.70218"W		Total Depth 75 feet
Drilling Contractor and Rig Pulmerton & Parrish / CME 55			Elevation and Datum 815.246 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 5.3 feet
Casing Size and Depth 4" / 5.5 feet			Length of Core Barrel and Bit 8.6 feet	No. of Core Boxes 5	Date Started 4/9/07
			Borehole Inclination Vertical	Logged by J. Cox	Date Completed 4/10/07

Reviewed by / Date \_\_\_\_\_ R. Ortiz 4/11/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
6		3.58										LIMESTONE: sparite; grayish yellow (5 Y 8/4); weak to very weak (R1-R2); moderately weathered (MW); abundant fossils; slightly weathered (SW); mudstone beds throughout; moderate reaction to HCl on limestone.	Top of rock 5.3'. Began NQ coring at 5.3', Glen Rose Formation.	809
7		3.5	1	2.7 3.0	90	MW	R1-R2							808
8		3.17												807
9		3.33										LIMESTONE: wackestone; medium light gray (N6); weak (R2); slightly weathered (SW); slightly bioturbated; abundant fossils; strong reaction to HCl; shale beds		806
10		3.65												805
11		3.63	2	3.6 5.0	72	SW	R2		2055-3					804
12		3.47												803
13		3.5												802
14		3.27												801
15		3.33												800
16		3.3	3	4.9 5.0	98	SW	R2		2055-4					799
17		3.32												798
18		3.13										LIMESTONE: packstone; silty; medium gray (N5); weak (R2); slightly weathered (SW); abundant fossils; strong reaction to HCl.		797
19		3.1	4	4.9 5.0	98	SW	R1		2055-5 2055-6			SHALE; medium dark gray (N4); very weak (R1); slightly weathered (SW); thinly bedded; fissile; no reaction to HCl.	Picture states Run 3, should be Run 4.	796
20		3.22												795

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2055</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
21		3.17				SW	R1					SHALE; medium dark gray (N4); very weak (R1); slightly weathered (SW); thinly bedded; fissile; no reaction to HCl.		794
22		3.28	4	4.6 5.0	98							LIMESTONE: wackestone; medium light gray (N6); weak (R2); slightly weathered (SW); abundant fossils; strong reaction to HCl.		793
23		3.03				SW	R2					SHALE; medium dark gray (N4); very weak (R1); slightly weathered (SW); thinly bedded; fissile; no reaction to HCl.		792
24		2.43				SW	R1		2055-7			LIMESTONE: wackestone; medium light gray (N6); weak (R2); slightly weathered (SW); abundant fossils; strong reaction to HCl; abundant shale beds <0.1'.		791
25		2.5				SW	R2					SHALE; medium dark gray (N4); very weak (R1); slightly weathered (SW); thinly bedded; fissile; no reaction to HCl.		790
26		2.38	5	5.0 5.0	100	SW	R1					LIMESTONE: wackestone; medium light gray (N6); weak (R2); slightly weathered (SW); abundant fossils; strong reaction to HCl; abundant shale beds <0.1'.		789
27		2.35										SHALE; medium dark gray (N4); very weak (R1); slightly weathered (SW); thinly bedded; fissile; no reaction to HCl; crushed because of drill problems (see remarks).	No rock retrieved, had to pull pipe and remove rock. Shale was packed into barrel, came out crushed.	788
28		2.67				SW	R2					SHALE; medium dark gray (N4); very weak (R1); slightly weathered (SW); thinly bedded; fissile; no reaction to HCl.		787
29		3.33										SHALE; medium dark gray (N4); very weak (R1); slightly weathered (SW); thinly bedded; fissile; no reaction to HCl.	No adequate sample could be taken.	786
30		4.08												785
31		4.33	6	3.5 5.0	70	SW	R1							784
32		4.35												783
33		4.1												782
34		2.43												781
35		2.33	7	5.0 5.0	100	F-SW	R1							780

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-2055**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
36		2.15												779
37		2.17	7	51.0 5.0	100	F-SW	R1		2055-8					778
38		2.23												777
39		1.85												776
40		1.8												775
41		1.67	8	51.1 5.0	100	F-SW	R2		2055-9					774
42		1.7											Length of recovery stretched due to mechanical breaks.	773
43		1.48									Jt, Wa, Sl, Op			772
44		1.52												771
45		1.5												770
46		1.47	9	51.0 5.0	100	F-SW	R2		2055-10				Good water return.	769
47		1.5												768
48		1.58												767
49		1.82												766
50		1.88	10	51.0 5.0	5	F-SW	R2							765

LIMESTONE: wackestone; medium light gray (N6); weak (R2); fresh to slightly weathered (F-SW); abundant fossils; abundant large rip-up clasts; limestone reacts strongly to HCl; much smaller rip-up clasts starting at 38'.

LIMESTONE: wackestone; same as above; rip-up clasts increase in size starting at 49.2'; shale beds at 48.4'; 50.4'; causing bedding breaks; gradational contact into packstone from 57.5' to 58.3'.


Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-2055</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
51		2				F-SW	R2							764
52		2.02	10	5.0	5	F-SW	R2		2055-11					763
53		1.8									Jt, St, Sl, Op			762
54		2.75												761
55		2.2							2055-12					760
56		2.28	11	5.1	100	F-SW	R2							759
57		2.33											Length of recovery stretched due to mechanical breaks.	758
58		2.25												757
59		2.17										LIMESTONE: packstone; medium light gray (N6); weak (R2); fresh to slightly weathered (SW); abundant fossils; abundant rip-up clasts; large rip-up clasts from 59.5' to 60.0'; strong reaction to HCl; gradational contact with wackestone from 66.8' to 67.7'.	756	
60		2.2												755
61		2.18	12	5.0	100	F-SW	R2							754
62		2.33												753
63		2.25							2055-13					752
64		1.82	13	5.0	100	F-SW	R2							751
65		1.83												750

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-2055</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
66		1.75										LIMESTONE: packstone; medium light gray (N6); weak (R2); fresh to slightly weathered (SW); abundant fossils; abundant rip-up clasts; large rip-up clasts from 59.5' to 60.0'; strong reaction to HCl; gradational contact with wackestone from 66.8' to 67.7'.		749
67		1.82	13	5.0 5.0	100	F-SW	R2		2055-14					748
68		1.65										LIMESTONE: wackestone; light gray (N7); weak (R2); fresh (F); abundant fossils; strong reaction to HCl.		747
69		1.97												746
70		2.48											745	
71		2.43	14	5.1 5.0	100	F-SW	R2		2055-15				744	
72		2.33										Length of recovery stretched due to mechanical breaks.	743	
73		2.37											742	
74		1.42	15	1.7 1.7	100	F-SW	R2						741	
75		1.03											740	
76											BOTTOM OF HOLE AT 75.0'	Total depth drilled: 75.0'.	739	
77													738	
78													737	
79													736	
80													735	



Project Name and Job Number TXU Comache Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-2056</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'09.61661"N / 97°47'33.77532"W		Total Depth 50.6 feet	
Drilling Contractor and Rig Geotechnology / CME 55		Elevation and Datum 852.339 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 5 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 2	Date Started 3/22/07	
		Borehole Inclination Vertical	Logged by M. McMackin	Date Completed 3/23/07	

Reviewed by / Date M. Zellman 3/26/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0										852
1	SC							RESIDUAL SOIL (RS) CLAYEY SAND with gravel medium stiff, light yellowish brown (10YR 6/4), damp		851
2			B-2056 1	4	13/18			SANDY LEAN CLAY stiff, yellow (10YR 7/6), moist, with angular limestone fragments, calcareous deposits, and some silty sand pockets		850
3	CL			5						849
4			B-2056 2	6	10/11			GRAVELLY SILT very stiff to hard, pale yellow (2.5YR 8/4), very strong HCl reaction, dry, shattered limestone fragments, (completely weathered limestone)		848
5	ML			50/5"				Top of Bedrock at 5'		847
6										846
7										845
8										844
9										843
10										842
11										841
12										840
13										839
14										838
15										

Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. B-2056</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'09.61661"N / 97°47'33.77532"W		Total Depth 50.6 feet	
Drilling Contractor and Rig Geotechnology / CME 55		Elevation and Datum 852.339 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 5 feet	
Casing Size and Depth 7 / 5 feet		Length of Core Barrel and Bit 8 feet	No. of Core Boxes 3	Date Started 3/22/07	
		Borehole Inclination Vertical	Logged by M. McMackin	Date Completed 3/23/07	

Reviewed by / Date M. Zellman 3/26/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
5		1.23	1	0.5 0.6	83	HW	R4					LIMESTONE: wackestone and saprolite; yellowish gray (5 YR. 8/1); interbedded; highly weathered (HW); very weak (R1) to strong. [Glen Rose Formation]	Refusal at 5.0'. Highly fractured sample.	847
6		1.6										SAPROLITE; yellowish gray (5 Y 8/1); highly weathered (HW); weak (R2). [Glen Rose Formation]	Rig pressure 350 psi	846
7		2.2				HW	R2		2056-3				Much wackestone in saprolite.	845
8		2.45	2	4.7 5.0	100							LIMESTONE: wackestone and saprolite; light gray (N7) and pale yellow (2.5 Y 8/4); interbedded; weak (R2) to strong (R4); strong (R4) wackestone and weak (R2) saprolite; interbeds 0.2'-0.4' thick; average 0.3'. [Glen Rose Formation]	Pale yellow return water.	844
9		2.53												843
10		2.77				MW	R4-R2							842
11		2.7												841
12		2.18									Jt, JRC2-open, FeO and MnO stain.		Yellowish gray return water.	840
13		2.63	3	5.0 5.0	90				2056-4				Light gray return water.	839
14		5.55				SW	R3					LIMESTONE: wackestone; yellowish gray (5 Y 8/1); changing to medium light gray (N6) at 14.0'; moderately weathered (MW); strong. [Glen Rose Formation]		838
15		5.83				SW	R3					SHALE. [Glen Rose Formation] SILTSTONE; medium gray (N4); massive; slightly weathered (SW); medium strong (R3). [Glen Rose Formation]		837
16		5.23												836
17		4.02				SW	R2		2056-5			SHALE: medium dark gray (N4); massive; laminated; slightly weathered (SW); weak (R2); with silt filled burrows. [Glen Rose Formation]	Light gray return water.	835
18		4.98	4	4.6 5.0	92							SILTSTONE; medium gray (N5); massive; slightly weathered (SW); medium strong (R3). [Glen Rose Formation]		834
19		3.17				SW	R3							833
20		3.43												

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-2056**


Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
20		3.43	4	4.6 5.0	92							SHALE: medium gray (N5); laminated; slightly weathered (SW); weak (R2). [Glen Rose Formation]		832
21		4.73				SW	R2							831
22		4.47							2056-6					830
23		1.65	5	5.0 5.0	100							LIMESTONE: wackestone; white (N9) with medium gray fossil fragments (N5); massive; slightly weathered (SW); strong (R4); medium to thick bedded with stylolites; with lignite and shell fragments; beds break along stylolites; sharp basal contact. [Glen Rose Formation]		829
24		1.3												828
25		2.62				SW	R4							827
26		6.47												826
27		3.98												825
28		4.43	6	5.0 5.0	100	SW	R3		2056-7			SILTSTONE with shell fragments and burrows; medium gray (N5) with white specs (N9); massive; slightly weathered (SW); medium strong (R3); gradational basal contact. [Glen Rose Formation]		824
29		3.93												823
30		3.7				SW	R3					SILTSTONE; medium dark gray (N4); massive; slightly weathered (SW); medium strong (R3); 31.5'-31.6' wackestone with vugs. [Glen Rose Formation]		822
31		4.18				SW	R3							821
32		3.63				SW	R2					SHALE: medium gray (N5); massive; laminated; slightly weathered (SW); weak (R2). [Glen Rose Formation]		820
33		6.13	7	5.0 5.0	100							LIMESTONE: PACKSTONE with SHALE: dark greenish gray (5 G 4/1); shale - irregular bed; medium to thin bedded; slightly weathered (SW); medium strong (R3) bed 0.2'; burrows; silty matrix; gradational basal contact. [Glen Rose Formation]		819
34		5.2				SW	R3							818
35		4.65					R4							

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2056</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
35		4.65	7	5.0 5.0	100	SW	R4		2056-8			LIMESTONE: PACKSTONE with shell fragments; very light gray (N8); slightly weathered (SW); strong siltstone. [Glen Rose Formation]		817
36		1.9							2056-9			LIMESTONE: WACKESTONE with silt matrix; light gray (N7); slightly weathered (SW); strong (R4); medium to thin beds; nodular irregular and planar beds; fossils and lignite; shale 37.5'-37.7'; gradational basal contact. [Glen Rose Formation]		816
37		4.22												815
38		5.47	8	4.8 5.0	96	SW	R4							814
39		3.8												813
40		4.53												812
41		4.8												811
42		2.13				SW	R4							810
43		6.2	9	4.5 5.0	90	SW	R2					SHALE: medium gray (N5); massive; laminated; slightly weathered (SW); weak (R2). [Glen Rose Formation]		809
44		4.13				SW	R4					LIMESTONE: WACKESTONE with SHALE: very light gray (N8) and medium dark gray (N4); nodular to irregular beds with shale partings; slightly weathered (SW); strong (R4); gradational basal contact. [Glen Rose Formation]		808
45		5.17							2056-10			SHALE: wackestone interbed 46.9'-47.1'. [Glen Rose Formation]		807
46		5.42				SW	R2		2056-11					806
47		4.9												805
48		3.08	10	4.9 5.0	98	SW	R4					LIMESTONE: wackestone; very light gray (N8); irregular beds with shaly partings and stylolites; slightly weathered (SW); strong (R4); fossil shell fragments. [Glen Rose Formation]		804
49		6.18												803
50		9.62												


Project Name and Job Number TXU Comanche Peak Col 1908	 <small>William Lettis &amp; Associates, Inc.</small>	<b>ROCK LOG</b> <b>Boring No. B-2056</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
50		9.62	10	4.9 5.0	98	SW	R4							802
51												BOTTOM OF THE HOLE AT 50.6'	Total depth drilled: 50.6'.	801
52														800
53														799
54														798
55														797
56														796
57														795
58														794
59														793
60														792
61														791
62														790
63														789
64														788
65														788

Project Name and Job Number TXU Comache Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-2057</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'10.36396"N / 97°47'27.57830"W		Total Depth 50 feet	
Drilling Contractor and Rig Richard Simmons Drilling / BK-81 HD		Elevation and Datum 831.705 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 4.7 feet	
Sampling Method SPT		Sample Driving Hammer/Drop R&C / 140 lbs / 30 inches	No. of Samples 2	Date Started 3/21/07	
		Borehole Inclination Vertical	Logged by S. Dee	Date Completed 3/21/07	

Reviewed by / Date M. Zellman 3/26/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0										831
1	CL	/	B-2057 1	6			[Hatched Pattern]	RESIDUAL SOIL (RS) SANDY LEAN CLAY very stiff to hard, brown (7.5YR 4/4), damp, ~ 15% angular limestone fragments up to 1/4" diameter, reacts strongly to HCl, some organic material		830
2			5	14/18	2.5	829				
3			6			828				
4		/	B-2057 2	3	15/15	3.5				827
5				50/3"				Top of Bedrock at 4.7'		826
6										825
7										824
8										823
9										822
10										821
11										820
12										819
13										818
14										817
15										816

Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. B-2057</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'10.36396"N / 97°47'27.57830"W		Total Depth 50 feet	
Drilling Contractor and Rig Richard Simmons / BK 81		Elevation and Datum 831.705 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 4.7 feet	
Casing Size and Depth 4 / 7.5 feet		Length of Core Barrel and Bit 8.6 feet	No. of Core Boxes 3	Date Started 3/21/07	
		Borehole Inclination Vertical	Logged by S. Dee	Date Completed 3/21/07	

Reviewed by / Date M. Zellman 3/26/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
8		2.25	3	2.0	80	HW	R1					LIMESTONE: wackestone; dark yellowish orange (10 YR. 6/6); bedded with abundant (<0.1') interbeds of silt; highly weathered (HW); very weak (R1); moderate reaction to HCl; fossils throughout; zones of abundant bivalves. [Glen Rose Formation]	Began HQ core 7.5', Glen rose Formation.	824
9		2.17		2.5										823
10		1.1												822
11		1.02				MW	R0					SHALE: medium gray (N5); with beds of dark yellowish orange (10 YR. 6/6); very thinly bedded; moderately weathered (MW); extremely weak (R0). [Glen Rose Formation]		821
12		1.17	4	4.0	80									820
13		1.43		5.0		HW	R0		2057-3			LIMESTONE: wackestone; dark yellowish orange (10 YR. 6/6); bedded with abundant (<0.1') interbeds of silt; highly weathered (HW); very weak (R1); moderate reaction to HCl; fossils throughout; zones of abundant bivalves. [Glen Rose Formation]		819
14		1.8				HW	R1					SILTSTONE: dark yellowish orange (10 YR. 6/6); massive; highly weathered (HW); extremely weak (R0). [Glen Rose Formation]	100% H2O return (gray).	818
15		1.68				HW	R0					LIMESTONE: wackestone; dark yellowish orange (10 YR. 6/6); bedded with abundant (<0.1') interbeds of silt; highly weathered (HW); very weak (R1); moderate reaction to HCl; fossils throughout; zones of abundant bivalves.		817
16		2.07				MW	R0					SILTSTONE: dark yellowish orange (10 YR. 6/6) massive; moderately weathered (MW); extremely weak (R0). [Glen Rose Formation]		816
17		2.17	5	4.9	98	F	R2					LIMESTONE: wackestone; very light gray (N8); massive; fresh (F); weak (R2); clasts are fine to medium grained; bluish gray fossils.		815
18		2.1		5.0		SW	R1		2057-4			LIMESTONE: wackestone; silty; medium gray (N5); thinly bedded with silt (<0.1') interbeds; slightly weathered (SW); very weak (R1); abundant rip-up clasts; reacts strongly to HCl. [Glen Rose Formation]		814
19		1.83										LIMESTONE: wackestone; light gray (N7); massive with intermittent shale/silt (<0.1') interbeds; slightly weathered; weak; reacts strongly to HCl. [Glen Rose Formation]		813
20		1.83												812
21		1.6	6	5.0	100	SW	R2					LIMESTONE: packstone; medium light gray (N8); bedded with abundant shale/silt (<0.1') interbeds; slightly weathered (SW); weak (R2); reacts strongly to HCl; gradational basal contact. [Glen Rose Formation]		811
22		1.35		5.0										810


Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-2057</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)	
23		1.35	6	5.0 5.0	100	SW	R2		2057-5					809	
24		1.75				F	R0						SHALE: dark gray (N3); very thinly bedded; fresh (F); extremely weathered. [Glen Rose Formation]		808
25		1.85				F	R2						LIMESTONE: wackestone; very light gray (N8); fresh (F); massive; weak; reacts strongly to HCl. [Glen Rose Formation]		807
26		2.25	7	5.2 5.0	100									806	
27		2.32				F	R0						SHALE; medium dark gray (N4); very thinly bedded; fresh (F); extremely weak (R0); interbeds of limestone. [Glen Rose Formation]		805
28		2.52											LIMESTONE: wackestone; very light gray (N8); massive with occasional (0.1') interbeds of shale/silt; slightly weathered; weak; reacts strongly to HCl. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	804
29		2.17						2057-6			803				
30		2.85	8	5.0 5.0	100									802	
31		2.77											LIMESTONE: wackestone; same as above; clasts are fine to medium grained; subrounded and oolitic; bluish gray and white fossils; discreet zones of bioturbation; shale interbeds ; high concentration of bivalve fossils and bioturbation from 33.5' to 34.7'. [Glen Rose Formation]		801
32		2.85				SW	R2								800
33		2.78											799		
34		2.85							2057-7				798		
35		2.98											797		
36		2.68	9	5.1 5.0	100									796	
37		2.77				F	R0				2057-8				100% H2O return (gray).
		3.17													




Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-2057</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)		
38		3.17	9	5.1 5.0	100	F	R0						Length of recovery stretched due to mechanical breaks.	794		
39		2.68				F	R2									793
40		2.43														
41		3.1	10	5.0 5.0	100	F	R0		2057-9			SHALE; medium dark gray (N4); very thinly bedded; fresh (F); extremely weak (R0); slight reaction to HCl; limestone interbedded. [Glen Rose Formation]		791		
42		4.63														790
43		3.05														789
44		2.68	11	5.2 5.0	100	SW	R2					LIMESTONE: wackestone; light gray (N7); massive with zones of abundant (<0.1') interbeds of shale/silt; slightly weathered (SW); weak (R2); reacts strongly to HCl; very bioturbated; fossil clasts. [Glen Rose Formation]		788		
45		2.15														787
46		2.85													SHALE: dark gray (N3); very thinly bedded; fresh (F); extremely weak (R0); slight reaction to HCl. [Glen Rose Formation]	
47		2.77	11	5.2 5.0	100	F	R0		2057-10					785		
48		2.68														784
49		2.5				SW	R2							LIMESTONE: wackestone; light gray (N7); bedded with (<0.1') interbeds of shale; slightly weathered; weak (R2). [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	783
50		2.7				F	R0					SHALE: dark gray (N3); very thinly bedded; fresh (F); extremely weak (R0); slight reaction to HCl. [Glen Rose Formation]		782		
51												BOTTOM OF HOLE AT 50.0'	Total depth drilled: 50.0'.	781		
52														780		

Project Name and Job Number TXU Comache Peak COL 1908		 WLA William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-2058</b>	
Type and Diameter of Boring HSA / 7"			Boring Location 32°18'08.15106"N / 97°47'33.52367"W		Total Depth 50 feet
Drilling Contractor and Rig Richard Simmons Drilling / BK-81 HD			Elevation and Datum 853.674 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 9.5 feet
Sampling Method SPT			Sample Driving Hammer/Drop R&C / 140 lbs / 30 inches	No. of Samples 4	Date Started 3/22/07
			Borehole Inclination Vertical	Logged by S. Dee	Date Completed 3/22/07

Reviewed by / Date \_\_\_\_\_ M. Zellman 3/23/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
0							<b>ARTIFICIAL FILL (Qaf)</b> SANDY SILT, medium dense to dense, stiff to very stiff, olive yellow (2.5YR 6/8), damp, about 5% angular limestone fragments, frequent calcium deposits, reacts with HCl		853
1			B-2058 1	15	16/16	1.25			852
2				6					851
3				50/4"					850
4	ML		B-2058 2	45	7/7	1.5	very dense, dry, increasing limestone fragments, color to very pale brown (7.5YR 8/4)		849
5				50/1"					848
6			B-2058 3	50/5"	5/5				847
7									846
8									845
9	CL		B-2058 4	4	11/11	4	<b>RESIDUAL SOIL (RS)</b> LEAN CLAY hard, pale yellow (2.5YR 7/4), damp, about 5% coarse shell fragments		844
10				50/5"			Top of Bedrock at 9.5'		843
11									842
12									841
13									840
14									839
15									

Project Name and Job Number TXU Comanche Peak Col 1908		 WLA William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. B-2058</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'08.15106"N / 97°47'33.52367"W		Total Depth 50 feet	
Drilling Contractor and Rig Richard Simmons / BK 81		Elevation and Datum 853.674 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 9.5 feet	
Casing Size and Depth 4 / 10 feet		Length of Core Barrel and Bit 8.6 feet	No. of Core Boxes 3	Date Started 3/22/07	
		Borehole Inclination Vertical	Logged by S. Dee	Date Completed 3/22/07	

Reviewed by / Date M. Zellman 3/23/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
10		1.23				MW	R2					LIMESTONE: wackestone; very light gray (N8); massive; moderately weathered (MW); weak (R2); fine to medium grained; biturbation; fossil clasts; slight reaction to HCl. [Glen Rose Formation]	Top of rock 9.5'. Augered through weathered bedrock to 10.0', began HQ coring, Glen Rose Formation.	843
11		1.8				MW	R0					Shale interbed from 10.5' to 10.9'		842
12		1.83	5	5.0 5.0	100	MW	R2					LIMESTONE: wackestone; very light gray (N9); moderately weathered (MW); weak (R2); massive with interbeds of siltstone. [Glen Rose Formation]		841
13		1.8				MW	R2					Shale interbed from 12.6' to 12.8'		840
14		1.5								2058-5		Shale interbed		839
15		1.77				SW	R2					LIMESTONE: wackestone; light gray (N7); massive; slightly weathered (SW); weak (R2); some (<0.1') interbeds of shale. [Glen Rose Formation]		838
16		1.77				F	R0					SHALE; dark gray (N3); very thinly bedded; fresh (F); extremely weak (R0). [Glen Rose Formation]		837
17		2.17	6	5.1 5.0	100							LIMESTONE: sparite; medium gray (N5); massive with a zone to abundant (<0.1') shale interbeds; fresh (F); weak (R2); slight reaction to HCl. [Glen Rose Formation]		836
18		1.9				F	R2			2058-6		Shale	100% water return, gray. Length of recovery stretched due to mechanical breaks.	835
19		1.28												834
20		1.77												833
21		1.85				F	R0					SHALE; dark greenish gray (5G 4/1); fresh (F); extremely weak (R0); very thinly bedded; several nodules of coal; no reaction to HCl. [Glen Rose Formation]		832
22		2	7	5.0 5.0	100									831
23		1.9				F	R2			2058-7		LIMESTONE: wackestone; very light gray (N8); fresh (F); weak (R2). [Glen Rose Formation]		830
24		1.77				F	R0					SHALE; dark greenish gray (5G 4/1); fresh (F); very thinly bedded; extremely weak (R0). [Glen Rose Formation]		829

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2058</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
25		1.7										LIMESTONE: wackestone; fossiliferous; white (N9); massive; fresh (F); weak (R2); reacts strongly to HCl; clasts are medium to coarse grained; subrounded fossils; zones of abundant (<0.1') voids. [Glen Rose Formation]		828
26		1.6				F	R2							827
27		2.02	8	5.2 5.0	100					2058-8		LIMESTONE: packstone; silty; medium gray (N5); bedded with abundant (<0.1') interbeds of shaly silt; slightly weathered (SW); weak (R2); reacts strongly to HCl; clasts are gray silt and fine grained bluish gray and white subrounded fossils. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	826
28		2.25												825
29		1.75				SW	R2							824
30		2.02												823
31		2.82										SHALE; medium dark gray (N4); very thinly bedded; fresh (F); extremely weak (R0); reacts slightly to HCl; abundant fossils from 32.8' to 33.0'. [Glen Rose Formation]		822
32		1.9	9	5.1 5.0	100	F	R0			2058-9				821
33		2.47												820
34		1.75				SW	R2					LIMESTONE: packstone; medium gray (N5); massive with occasional interbeds (<0.1') of shale and silt; slightly weathered (SW); weak (R2); clasts are tabular bluish gray fossils to 34.8"; where they change to oolitic and subrounded shapes; bluish gray and white in color; strong reaction to HCl; zone of abundant (<0.1') shale interbeds from 34.8' to 35.9' and 37.2' to 39.1'; both zones also include abundant rip-up clasts; silt clasts become abundant 40.0' to 43.3'. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	819
35		2.67												818
36		2.3												817
37		2.43	10	5.0 5.0	100	SW	R2			2058-10				816
38		2.35												815
39		2.63												814
40														


Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2058</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)	
40		1.8										LIMESTONE: packstone; medium gray (N5); massive with occasional interbeds (<0.1') of shale and silt; slightly weathered (SW); weak (R2); clasts are tabular bluish gray fossils to 34.8'; where they change to oolitic and subrounded shapes; bluish gray and white in color; strong reaction to HCl; zone of abundant (<0.1') shale interbeds from 34.8' to 35.9' and 37.2' to 39.1'; both zones also include abundant rip-up clasts; silt clasts become abundant 40.0' to 43.3'. [Glen Rose Formation]		813	
41		2				SW	R2							812	
42		1.83	11	4.6 5.0	98									811	
43		2.9				SW	R0		2058-11					810	
44		2.7											SHALE; medium dark gray (N4); fresh (F); extremely weak (R0); very thinly bedded; slight reaction to HCl. [Glen Rose Formation]		809
45		2.35				SW	R2						LIMESTONE: wackestone; medium light gray (N6) to very light gray (N9); massive with abundant (<0.1') interbeds of shale; slightly weathered. [Glen Rose Formation]		808
46		3.1				F	R0						SHALE; dark gray (N3); fresh (F); extremely weak (R0); very thinly bedded; several (<0.1') interbeds of limestone. [Glen Rose Formation]		807
47		3.3	12	5.0 5.0	100									806	
48		4.18				SW	R2						LIMESTONE: wackestone; very light gray (N8); massive with occasional (<0.1') interbeds of shale; slightly weathered (SW); weak (R2); strong reaction to HCl; clasts are fine to medium grained bluish gray oolitic and tabular fossils. [Glen Rose Formation]		805
49		2.58												804	
50													BOTTOM OF HOLE AT 50.0'.	Total depth drilled: 50.0'.	803
51														802	
52													801		
53													800		
54													799		

Project Name and Job Number TXU Comanche Peak COL 1908				<b>SOIL LOG                  Boring No. B-2059</b>		
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'08.89353"N / 97°47'27.33431"W		Total Depth 50 feet		
Drilling Contractor and Rig Geotechnology / CME 55		Elevation and Datum 831.725 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 5 feet		
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 2	Date Started 3/21/07		
		Borehole Inclination Vertical	Logged by M. McMackin	Date Completed 3/1/07		

Reviewed by / Date M. Zellman 3/26/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0								RESIDUAL SOIL (RS) CLAY, stiff, dark brown (7.5YR 4.3), damp (topsoil)		831
1				4						
2	CL		B-2059 1	5	18/18			RESIDUAL SOIL (RS) SANDY LEAN CLAY stiff, brown (2.5YR 4.3), damp, with calcareous deposits		830
3				14						829
4	CL		B-2059 2	4	18/18			LEAN CLAY hard, yellowish grey mottled (2.5YR 6/4), with angular limestone fragments (completely weathered limestone)		828
5	GP			10						827
				42				LIMESTONE FRAGMENTS with sand pale yellow (5YR 8/4), dry, shattered by SPT sampler		827
								Top of Bedrock at 5'		826
6										826
7										825
8										824
9										823
10										822
11										821
12										820
13										819
14										818
15										817

Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. B-2059</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'08.89353"N / 97°47'27.33431"W		Total Depth 50 feet	
Drilling Contractor and Rig Geotechnology / CME 55		Elevation and Datum 831.725 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 3.5 feet	
Casing Size and Depth 4" / 5 feet		Length of Core Barrel and Bit 8 feet	No. of Core Boxes 3	Date Started 3/21/07	
		Borehole Inclination Vertical	Logged by M. McMackin	Date Completed 3/21/07	

Reviewed by / Date M. Zellman 3/26/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
5		1.47				MW	R4					LIMESTONE: wackestone; very light gray (N8); massive; moderately weathered (MW); strong (R4); thick beds with clay partings. [Glen Rose Formation]	SPT resual at 5.0', began HQ coring, Glen Rose Formation.	826
6		1.28									Jf. Po. slightly rough, tight. High angle joint.		Rig pressure 350 psi.	
7		3.95	1	4.7 / 5.0	94	MW	R2					SAPROLITE: yellow (2.5Y 7/6); highly weathered (HW); weak (R2); very thin wackestone interbeds. [Glen Rose Formation]		825
8		3.97				MW	R4		2059-3			LIMESTONE: wackestone; medium light gray (N6); moderately weathered (MW); strong (R4); very thin to thin wavy beds abundant light gray fossil fragments. [Glen Rose Form	Pale yellow return water, drilling problems, stuck barrel at 5'.	824
9		8.63												823
10		0				SW	R4		2059-4			LIMESTONE: wackestone; silty; medium gray (N5); massive; some fossil fragments in F.S. matrix; lignite; vugs in lower 0.3'. [Glen Rose Formation]		822
11		2.12										SHALE: very dark gray (N4); laminated; slightly weathered (SW); weak (R2). [Glen Rose Formation]		821
12		2.22	2	4.7 / 5.0	94	SW	R2							820
13		5.57											Light gray return water.	819
14		3.4				SW	R4					LIMESTONE: wackestone; medium light gray molted (N4 to N7). [Glen Rose Formation]		818
15		6.7				SW	R2					SHALE: siltstone; medium gray (N4); massive. [Glen Rose Formation]		817
16		5.43				SW	R4					LIMESTONE: wackestone; silty; same as above with fossils of lignite. [Glen Rose Formation]	Rig pressure psi.	816
17		2.4	3	5.0 / 5.0	100	MW	R2					LIMESTONE: packstone; very light gray (N8); mottles of dark gray (N3) fossil hash in weak clay parting <0.1' at 16.0'; slightly weathered (SW); strong (R4). [Glen Rose Formation]		815
18		4.05				SW	R2				JRC 10-12, subhorizontal clay fill <0.05	SHALE: claystone; medium light gray (N6); slightly weathered (SW); weak (R2); massive; weakly laminated; discoloration above and below 17'. [Glen Rose Formation]		814
19		3.53							2059-5			LIMESTONE: wackestone; yellowish gray (5Y 8/1) to 18' then medium light gray (N6); massive with some burrows; filled with light gray (N8) dolomicrite and lignite; no reaction to HCl except when powdered. [Glen Rose Formation]		813
20														812

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2059</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
20		1.63					R2						Return water light gray.	811
21		1.7							2059-6			LIMESTONE: wackestone; with interbedded siltstone; very light gray (N8) to medium light gray (N6); slightly weathered (SW); strong (R4); mottled irregular beds; fossil fragments abundant; gives the best white speckled appearance; traces of lignite. [Glen Rose Formation]		810
22		3.7	4	5.0 5.0	94	SW	R4							809
23		3.87												808
24		3.52				SW	R2							808
25		5.37				SW	R4						Many breaks in this interval.	807
26		3.03				SW	R2					SHALE; medium dark gray (N4); laminated; gradational above and below; shale badly broken on core. [Glen Rose Formation]		807
27		6.2	5	4.7 5.0	94	SW	R4							806
28		3.33												805
29		3.22							2059-7					805
30		3.93												804
31		4.13												804
32		4.88	6	5.0 5.0	100	SW	R2-R4							803
33		5.63							2059-8					802
34		9.45				SW	R4							801
35														800
														799
														798
														797



Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2059</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
35		3.23				SW	R4					LIMESTONE: wackestone; shale; burrow fillings and irregular beds; light gray (N7) to medium gray (N5); slightly weathered (SW); weak to strong (R2-R4) shale; mottled; sharp basal contact. [Glen Rose Formation]		796
36		4.45							2059-9					795
37			7	$\frac{5.2}{5.0}$	100	SW	R2					SHALE; medium dark gray (N5); massive laminated; slightly weathered (SW); sharp contacts top and bottom; sharp basal contact. [Glen Rose Formation]		795
38		4.32												794
39		3.7											Length of recovery stretched due to mechanical breaks.	793
40		2.8				SW	R4					LIMESTONE: wackestone; light gray (N7); massive; slightly weathered (SW); strong (R4); medium beds separated by shale partings; fossil fragments to basal contact. [Glen Rose Formation]		792
41		3.82				SW	R2					LIMESTONE: wackestone; shaly; medium dark gray (N4) and light gray (N7); interbedded 0.1 0.2; 0.1 average; fossils in wackestone; sharp basal contact. [Glen Rose Formation]		791
42		7.82							2059-10			SHALE; medium dark gray (N4); massive laminated; slightly weathered (SW); weak (R2). [Glen Rose Formation]		790
43		5.47	8	$\frac{5.0}{5.0}$	100	SW	R2							789
44		4.2												788
45		4.63				SW	R4					LIMESTONE: wackestone; very light gray (N8); massive; nodular to wavy beds and shale partings; slightly weathered (SW); strong (R4); gradational basal contact. [Glen Rose Formation]		787
46		5.2												786
47		4.12										SHALE; medium dark gray (N4); massive laminated; slightly weathered (SW); weak (R2); interbeds of wackestone <0.1'; gradational basal contact. [Glen Rose Formation]		785
48		4.23	9	$\frac{4.7}{5.0}$	94	SW	R2							784
49		4.8												783
50		3.37				SW	R2		2059-11			LIMESTONE: wackestone; very light gray (N8) with shale interbeds and partings; slightly weathred (SW); strong (R4); medium beds 0.3-0.1; 1.5 average. [Glen Rose Formation]		782

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908

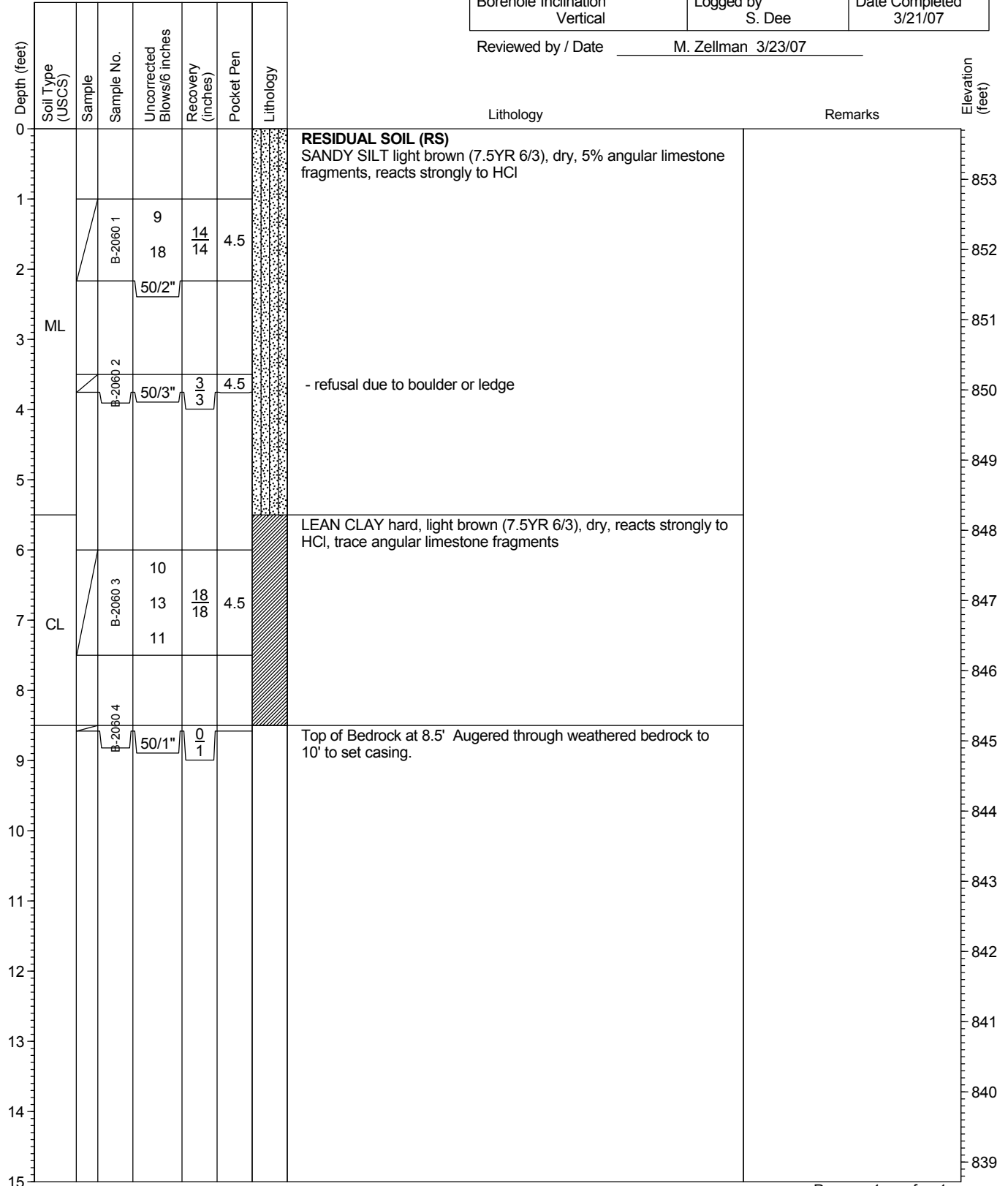



**ROCK LOG**  
**Boring No. B-2059**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
50													Total depth drilled: 50.0'.	781
51												SHALE; medium dark gray (N4); massive laminated; slightly weathered (SW); weak (R2); interbeds of wackestone <0.1'; gradational basal contact. [Glen Rose Formation]		780
52												BOTTOM OF HOLE AT 50.0'.		779
53														778
54														777
55														776
56														775
57														774
58														773
59														772
60														771
61														770
62														769
63														768
64														767
65														

Project Name and Job Number TXU Comache Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-2060</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'06.40808"N / 97°47'32.82242"W		Total Depth 50 feet	
Drilling Contractor and Rig Richard Simmons Drilling / BK-81 HD		Elevation and Datum 853.717 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 8.5 feet	
Sampling Method SPT		Sample Driving Hammer/Drop R&C / 140 lbs / 30 inches	No. of Samples 3	Date Started 3/20/07	
		Borehole Inclination Vertical	Logged by S. Dee	Date Completed 3/21/07	

Reviewed by / Date \_\_\_\_\_ M. Zellman 3/23/07



Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG Boring No. B-2060</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'06.40808"N / 97°47'32.82242"W		Total Depth 50 feet	
Drilling Contractor and Rig Richard Simmons / BK 81		Elevation and Datum 853.717 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 8.5 feet	
Casing Size and Depth 4" / 10 feet		Length of Core Barrel and Bit 8.6 feet	No. of Core Boxes 3	Date Started 3/20/07	
		Borehole Inclination Vertical	Logged by S. Dee	Date Completed 3/21/07	

Reviewed by / Date M. Zellman 3/23/07


Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
10		2.73				HW	R1					WEATHERED LIMESTONE; WACKESTONE; grayish orange (10 YR 7/4); highly weathered (HW); very weak (R1); reacts.	Top of weathered rock 8.5'. Augered to 10.0' to begin HQ core, Glen Rose Formation.	843
11		2.6				MW	R0					SHALE: siltstone; dark yellowish orange (10YR 6/6); massive; moderately weathered (MW); extremely weak (R0); reacts slightly to HCl. [Glen Rose Formation]		842
12		2.85	5	4.5 5.0	90	MW	R2					LIMESTONE: wackestone; very light gray (N8); moderately weathered (MW); weak (R2); bedded with abundant (<0.1') interbeds of siltstone; reacts moderately to HCl. [Glen Rose Formation]		841
13		2.58												
14		2.68				MW	R2		2060-4			LIMESTONE: wackestone; silty; medium light gray (N6); bedded with abundant (<0.1') interbeds of shale and silt, slightly weathered (SW); weak (R2). [Glen Rose Formation]		840
15		1.97				MW	R1					SHALE: siltstone; dark yellowish orange (10YR 6/6); massive; moderately weathered (MW); extremely weak (R0); reacts slightly to HCl. [Glen Rose Formation]		839
16		2.18				F	R0					LIMESTONE: wackestone; massive; medium gray (N5); fresh (F); weak (R2); clasts are fine grained dark gray; reacts slightly to HCl; zones of bioturbation; siltstone interbed from 16.7' to 16.9'. [Glen Rose Formation]		838
17		2.22	6	5.0 5.0	100	F	R2					SHALE: siltstone; medium dark gray (N4); fresh (F); extremely weak (R0). [Glen Rose Formation]		837
18		1.3				F	R2					LIMESTONE: micrite; medium light gray (N6); massive; fresh (F); weak (R2); reacts slightly to HCl; fossil rich and void zones. [Glen Rose Formation]	100% water return (gray).	836
19		1.6				F	R2		2060-5					835
20		2.68												834
21		2.35				F	R0					SHALE: siltstone; dark greenish gray (5GY 4/1); massive to very thinly bedded; fresh (F); extremely weak (R0); slight reaction to HCl. [Glen Rose Formation]		833
22		2.1	7	5.0 5.0	100							LIMESTONE; FOSSIL RICH WACKESTONE; very light gray (N8); massive; fresh (F); weak (R2); fossils are bluish gray and medium to coarse grained; mostly clast (fossil) supported; discreet zones of bioturbation and voids. [Glen Rose Formation]		832
23		1.8				F	R2					Shale interbed		831
24		1.63							2060-6					830
25														829

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2060</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
25		2.68				F	R2							828
26		2.22							2060-7			LIMESTONE: packstone; silty; medium gray (N5); thinly bedded with abundant (<0.1') interbeds of shale/silt; slightly weathered (SW); weak (R2); abundant rip-up clasts; strong reaction to HCl; clasts are gray silt and white fossils. [Glen Rose Reaction]		827
27		1.93	8	4.7 5.0	94	SW	R2							826
28		1.65												825
29		1.42				F	R2					LIMESTONE: wackestone; medium gray (N5); fresh (F); weak (R2); massive; clasts are tabular bluish gray; fossiliferous. [Glen Rose Formation]		824
30		2.07												823
31		2.23				F	R0					SHALE; dark gray (N3); very thinly bedded; fresh (F); extremely weak (R0); discreet fossil rich beds; reacts slightly to HCl. [Glen Rose Formation]		822
32		2.1	9	5.0 5.0	100									821
33		1.82				F	R2					LIMESTONE: packstone; medium gray (N5); massive; fresh (F); weak (R2); clasts are gray tabular and subrounded medium grained fossils. [Glen Rose Formation]		820
34		2.02							2060-8					819
35		1.6												818
36		1.82												817
37		0	10	5.0 5.0	100	SW	R2		2060-9			LIMESTONE: wackestone; very light gray (N8); massive with zones of abundant (<0.1') interbeds of shale and silt; slightly weathered (SW); weak (R2); clasts are full of bluish gray fossils; fine to medium grained rounded and subrounded and sometimes oolitic; zones of abundant shale and silt (<0.1') interbeds from 36.5' to 38.3'; abundant rip-up clasts and bioturbation are also in this zone; gradational basal contact. [Glen Rose Formation] Abundant shale interbeds	100% water return (gray).	816
38		2.58												815
39		2.25												814
40														


Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2060</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
40		1.43										LIMESTONE: packstone; medium light gray (N6); bedded with interbeds (<0.1') of shale and silt; slightly weathered (SW); weak (R2); clasts are silt and fine to medium grained white subrounded fossils; reacts strongly to HCl. [Glen Rose Formation]		813
41		1.68				SW	R2							812
42		1.6	11	5.0	100									811
43		1.98				F	R0					SHALE; dark gray (N3); very thinly bedded; fresh (F); extremely weak (R0). [Glen Rose Formation]		810
44		2.67				F	R2		2060-10			LIMESTONE: wackestone; very light gray (N8); massive with zones of abundant (<0.1') interbeds of shale and silt; slightly weathered (SW); weak (R2). [Glen Rose Formation]		809
45		2.43										SHALE; dark gray (N3); very thinly bedded; fresh (F); extremely weak (R0); interbeds of limestone from 45.6' to 45.8'. [Glen Rose Formation]		808
46		2.97				F	R0							807
47		2.6	12	5.0	100							LIMESTONE: wackestone; very light gray (N8); massive with intermittent (<0.1') interbeds of shale and silt; slightly weathered (SW); weak (R2); strong reaction to HCl; clasts are fine to medium grained subrounded bluish gray and white fossils; shale interbeds 48.9' to 49.2'.		806
48		3.02				SW	R2		2060-11			Shale interbed		805
49		2.8												804
50												BOTTOM OF HOLE AT 50.0'.	Total depth drilled 50.0'.	803
51														802
52														801
53														800
54														799
55														

Project Name and Job Number TXU Comache Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG Boring No. B-2061</b>	
Type and Diameter of Boring HSA / 7"			Boring Location 32°18'06.48996"N / 97°47'32.06266"W		Total Depth 50 feet
Drilling Contractor and Rig Richard Simmons Drilling / BK-81 HD			Elevation and Datum 851.243 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 9 feet
Sampling Method SPT			Sample Driving Hammer/Drop R&C / 140 lbs / 30 inches	No. of Samples 4	Date Started 3/21/07
			Borehole Inclination Vertical	Logged by S. Dee	Date Completed 3/21/07

Reviewed by / Date M. Zellman 3/23/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
0							<b>RESIDUAL SOIL (RS)</b> CLAYEY SILT with sand and few calcareous deposits hard, yellow (2.5 YR 8/6), damp, 5% angular limestone gravel, reacts strongly to HCl		851
1	CL/ML		B-2061 1	11	12/12				850
2				50/6"					849
3							LEAN CLAY hard, light brown (17.5YR 6/4), reacts strongly to HCl		848
4	CL		B-2061 2	10	17/18	4.5			847
5				9					846
6				10					845
7	ML		B-2061 3	11	10/10	0.75	SILT with sand and limestone fragments stiff, white (5YR 8/1), 20% fine sand, 20% angular limestone fragments, reacts strongly to HCl		844
8				50/5.5"					843
9	CL		B-2061 4		2/2	4.5	LEAN CLAY and calcareous deposits hard, yellow (10YR 7/6), damp, ~5% fine sand, reacts strongly to HCl		842
10				50/2"			Top of Bedrock at 9'		841
11									840
12									839
13									838
14									837
15									

Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG Boring No. B-2061</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'06.48996"N / 97°47'32.06266"W		Total Depth 50 feet	
Drilling Contractor and Rig Richard Simmons / BK 81		Elevation and Datum 851.243 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 9 feet	
Casing Size and Depth 4" / 9 feet		Length of Core Barrel and Bit 8.6 feet	No. of Core Boxes 3	Date Started 3/21/07	
		Borehole Inclination Vertical	Logged by S.Deer	Date Completed 3/21/07	

Reviewed by / Date M. Zellman 3/23/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
9.0		2.43	5	1.0 / 1.0	100							LIMESTONE: wackestone; very light gray (N8) to yellowish gray (5Y 8/1); massive with zones of 0.1' interbeds of siltstone; moderately weathered (MW); weak (R2); reacts slightly to HCl; fossils; siltstone interbed from 9.3' to 9.4'. [Glen Rose Formation]	Top of rock 9.0', began HQ core at 9.0', Glen Rose Formation.	842
10.0		2.77				MW	R2							841
11.0		2.17												840
12.0		2.68	6	4.2 / 5.0	84	MW	R1		2061-5			LIMESTONE: wackestone; grayish orange (10YR 7/4); moderately weathered (MW); very weak (R1); fossils; voids; reacts to HCl. [Glen Rose Formation]		839
13.0		2.38										SHALE; medium gray (N5); very thinly bedded; slightly weathered (SW); extremely weak (R0); slight reaction to HCl. [Glen Rose Formation]		838
14.0		2.1				SW	R0							837
15.0		2.35										LIMESTONE: wackestone; medium gray (N5); massive; slightly weathered (SW); weak (R2); reacts strongly to HCl; fossil clasts; voids. [Glen Rose Formation]		836
16.0		2.23				SW	R2							835
17.0		2.33	7	5.0 / 5.0	100				2061-6			Shale interbed		834
18.0		2.52				F	R0					SHALE; greenish gray (5G 6/1); very thinly bedded; fresh (F); extremely weak (R0); fossils. [Glen Rose Formation]		833
19.0		2.77				SW	R1					LIMESTONE: wackestone; greenish gray (5G 6/1); slightly weathered (SW); very weak (R1); bedded with (<0.1') interbeds of shale. [Glen Rose Formation]		832
20.0		1.68										LIMESTONE: wackestone; very light gray (N8); massive; fresh (F); weak (R2); abundant fossil clasts; reacts strongly to HCl; occasional interbeds (<0.1') of silt. [Glen Rose Formation]		831
21.0		1.68												830
22.0		1.43	8	5.0 / 5.0	100	F	R2		2061-7				100% water return (gray).	829
23.0		1.23												828




Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-2061</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
24		1.97	8	5.0	100							LIMESTONE: packstone; silty; medium dark gray (N4); thinly bedded; slightly weathered (SW); weak (R2); clasts are gray silt and medium grained white fossils; reacts strongly to HCl. [Glen Rose Formation]		827
25		2.35				SW	R2							826
26		2.6							2061-8				825	
27		2.68	9	5.0	100							SHALE; medium dark gray (N4); very thinly bedded; fresh (F); extremely weak (R0); reacts slightly to HCl; zones of white fossils. [Glen Rose Formation]		824
28		2.98				F	R0							823
29		3.1											822	
30		2.17										LIMESTONE: wackestone; white (N9); massive with some (<0.1') interbeds of silt; fresh (F); weak (R2). [Glen Rose Formation]		821
31		1.7				F	R0							820
32		2.02	10	5.0	100				2061-9			LIMESTONE: packstone; silty; bedded with (<0.1') interbeds of silt; slightly weathered (SW); weak (R2); clasts of gray silt and fine to medium grained blue and white fossils; zone of abundant rip-up clasts from 34.4' to 34.9'. [Glen Rose Formation]		819
33		1.43				SW	R2							818
34		1.77											817	
35		1.37										100% water return (gray).	816	
36		1.97												815
37		1.83	11	5.0	100	SW	R2		2061-10				814	
38		1.68											813	
39														


Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2061</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
39		1.12	11	5.0	100	SW	R2							812
40		2.78				SW	R2					Shale interbed		811
41		2.93				SW	R2					LIMESTONE: wackestone; very light gray (N8); bedded with (<0.1') interbeds of shale; slightly weathered (SW); weak (R2); fossils. [Glen Rose Formation]		810
42		3.17	12	5.0	100							SHALE; medium dark gray (N4); very thinly bedded with occasional (<0.1') interbeds of wackestone; fresh (F); extremely weak (R0); zones of abundant fossils. [Glen Rose Formation]		809
43		3.75				F	R0							808
44		3.35				SW	R2		2061-11			LIMESTONE: wackestone; very light gray (N8); massive with zones of abundant shale and silt interbeds (<0.1'); slightly weathered (SW); weak (R2); clasts are bluish gray fine grained fossils; reacts violently to HCl; zone of abundant (<0.1') interbeds of shale and silt and rip-up clasts from 47.5' to 49.4'. [Glen Rose Formation]		807
45		2.22												806
46		3.1												805
47		1.8	13	5.0	100	SW	R2							804
48		2.1							2061-12					803
49		2.17												802
50												BOTTOM OF HOLE AT 50.0'.	Total depth drilled 50.0'.	801
51														800
52														799
53														798
54														

Project Name and Job Number TXU Comache Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. B-2062</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'07.00447"N / 97°47'27.79434"W		Total Depth 51 feet	
Drilling Contractor and Rig Geotechnology / CME 55		Elevation and Datum 831.335 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 4.5 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 3	Date Started 3/20/07	
		Borehole Inclination Vertical	Logged by M. McMackin	Date Completed 3/21/07	

Reviewed by / Date M. Zellman 3/28/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
0							RESIDUAL SOIL (RS) SANDY LEAN CLAY black, (10YR 2/1), sandy clay (topsoil)		831
1			B-2062 1	2			SANDY CLAY with 10% limestone fragments, medium stiff, (10YR 5/6), damp, strong reaction to HCl		830
2				4	15/18	2.5			829
3	CL			10					828
4			B-2062 2	3	12/12		pale yellow (2.5Y 7/4), medium stiff		827
5	CL			50/6"			LEAN CLAY medium stiff, olive brown (2.5Y 5/4), with black mottling, damp, strong reaction to HCl		827
5							Top of Bedrock at 4.5' Augered to 7' to set casing.		826
6									825
7									824
8									823
9									822
10									821
11									820
12									819
13									818
14									817
15									816

Project Name and Job Number TXU Comanche Peak Col 1908		 WLA William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. B-2062</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'07.00447"N / 97°47'27.79434"W		Total Depth 51 feet	
Drilling Contractor and Rig Geotechnology / CME 55		Elevation and Datum 831.335 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 7 feet	
Casing Size and Depth 4" / 7 feet		Length of Core Barrel and Bit 8 feet	No. of Core Boxes 3	Date Started 3/20/07	
		Borehole Inclination Vertical	Logged by M. McMackin	Date Completed 3/21/07	

Reviewed by / Date M. Zellman 3/28/07


Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
7		1.9				MW	R4					LIMESTONE: wackestone; white (N9); massive; moderately weathered (MW); strong (R4); thick bed; fossiliferous black e.g sand/chert clasts <1% Sharp/trace lignite. [Glen Rose Formation]	Rig pressure 350' (should be psi?)	824
8		5.58				CW	R2					CLAY/SAPROLITE; grayish orange (10 YR 7/4); moderately weathered (MW) (MW) top to slightly weathered (SW) (SW) below 8.4'; weak (R2); highly weathered (HW); same clay as 2062-2 in soil log; thin bed. [Glen Rose Formation]	Began HQ core at 7.0'	823
9		4.08	1	4.0 / 4.0	67	HW	R2					LIMESTONE: wackestone; white (N9); massive; moderately weathered (MW); strong (R4); thick bed; fossiliferous black e.g sand/chert clasts <1%. Sharp/trace lignite. [Glen Rose Formation]		822
10		1.37				SW	R4					LIMESTONE: wackestone; white (N9); massive; moderately weathered (MW); strong (R4); thick bed; fossiliferous black e.g sand/chert clasts <1%. Sharp/trace lignite. [Glen Rose Formation]		821
11		2.93				SW	R2					SILTSTONE: medium gray (N5); weathered slightly weathered (SW); weak (R2); thick bed. [Glen Rose Formation]		820
12		2.38				SW	R2					LIMESTONE: wackestone; with silt; medium light gray (N6); slightly weathered (SW); strong (R4); fossils; vugs. [Glen Rose Formation]		819
13		2.92	2	5.2 / 5.0	100	SW	R4					SHALE: medium dark gray (N4); laminated/massive thick bed; slightly weathered (SW); very weak (R1); thick bed. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	818
14		3.42				SW	R1					LIMESTONE: wackestone; medium light gray (N6) [Glen Rose Formation]		817
15		2.93				SW	R4					SILTSTONE: medium dark gray (N4); laminated with burrows and rip-ups of wackestone; slightly weathered (SW); medium strong (R3); very thin beds; burrowed. [Glen Rose Formation]		816
16		3.58				SW	R3					LIMESTONE: wackestone; very light gray (N8) with siltstone partings; wackestone filled burrows. [Glen Rose Formation]		815
17		6.87				SW	R4					SILTSTONE: medium dark gray (N4); slightly weathered (SW); medium strong (R3).		814
18		1.37	3	4.8 / 5.0	96	SW	R4					LIMESTONE: wackestone; very light gray (N8); burrows. [Glen Rose Formation]		813
19		3.27				SW	R4					SILTSTONE: medium dark gray (N4); slightly weathered (SW); medium strong (R3). [Glen Rose Formation]		812
20		1.87				SW	R4					LIMESTONE: wackestone; very light gray (N8); laminated with silt partings to 18.1'; massive to 19'; slightly weathered (SW); strong (R4); very thin to medium thin; fossil; strong reaction to HCl. [Glen Rose Formation]		811
21		1.42	4	5.0 / 5.0	100									810

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2062</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
22		1.67										LIMESTONE: wackestone; laminated with silt partings with siltstone filled burrows and SILT/SHALE partings/laminae <1"; very light gray (N8) and very dark gray (N4); medium strong (R3); strong (R4) HCl; silt partings closely spaced 21.7' to 22.0'. [Glen Rose Formation]		809
23		3.07				SW	R4							808
24		ND	4	5.0	100									807
25										2062-7				
26		6.87				SW	R2					SHALE; dark gray (N3); laminated with interbedded wackestone in burrows?; slightly weathered (SW); weak (R2); weak HCl.	Can't read remark	806
27		3.53				SW	R4			2062-8		LIMESTONE: wackestone; interbedded siltstone in very thin beds; very light gray (N8) and medium dark gray (N4); slightly weathered (SW); strong (R4); very thin beds from 0.1' to 0.01"; average 0.05; burrows; fossils in wackestone; strong (R4) HCl. [Glen Rose Formation]		805
28		3.65										SHALE: interbedded wackestone laminated; medium dark gray (N4) and very light gray (N8); slightly weathered (SW); weak (R2); very thin to thin beds; fossils in wackestone; moderately weak; HCl. [Glen Rose Formation]		804
29		3.47	5	5.0	100	SW	R2					LIMESTONE: wackestone; shale partings; between medium to thick beds; very light gray (N8) and dark gray (N4); 50% siltstone interbeds 32.0'-32.4'. [Glen Rose Formation]		803
30		3.75												802
31		2.63				SW	R4							801
32		3.18										siltstone interbed 32' to 32.4'		800
33		5.62				SW	R3					Irregular beds 0.1' with wavy contact; fossiliferous; trace lignite at 33.0'; shale partings 50% from 33.9'-34.0'. [Glen Rose Formation]		799
34		3.45	6	5.0	100	SW	R4			2062-9				798
35		3.43				SW	R2					SHALE; laminated with dark gray (N4); slightly weathered (SW); weak (R2). [Glen Rose Formation]		797
36		3.87				SW	R4					LIMESTONE: wackestone; shale parting 35.2'-35.3'; contact sharp; irregular at 36.6'. [Glen Rose Formation]		796
37		1.93	7	5.0	100	SW	R2							795

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2062</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
37		2.1										SHALE: massive; medium dark gray (N4); laminar; slightly weathered (SW); weak (R2); very thin bed spacing; wackestone filled burrows in the upper foot; weak (R2); very thin beds with interbedded sparse wackestone in upper 1'. [Glen Rose Formation]		794
38		5.55				SW	R2							793
39			7	5.0 5.0	100									792
40		5.38								2062-10				791
41		3.52				SW	R4					LIMESTONE: wackestone; massive; very light gray (N8); slightly weathered (SW). [Glen Rose Formation]		790
42		6.15										SHALE: medium dark gray (N4); massive; slightly weathered (SW); weak (R2); laminae weak to no HCl; wackestone interbeds 42.0' to 42.2' and 43.0' to 43.1'. [Glen Rose Formation]		789
43		3.6				SW	R2							788
44			8	4.7 5.0	100									787
45		7.87								2062-11		LIMESTONE: wackestone; thin siltstone interbeds; light gray (N7) and medium gray (N5); interbedded; slightly weathered (SW); strong (R4). [Glen Rose Formation]		786
46		4.22				SW	R4							785
47		3.37										SHALE: very dark gray (N4); massive laminar with very thin interbedded wackestone; sparse; wackestone interbed 48.4'-48.5'. [Glen Rose Formation]		784
48										2062-12				783
49		4.15				SW	R2							782
50		5.67	9	5.0 5.0	10									781
51		5.02				SW	R3					LIMESTONE: wackestone; with interbedded shale in thin beds; very light gray (N8) to medium dark gray (N4); slightly weathered (SW); medium strong (R3). [Glen Rose Formation]		780
52		ND					R2					SHALE: very dark gray (N4); massive laminae. [Glen Rose Formation]	Total depth drilled 51.0'. BOTTOM OF THE HOLE AT 51'	780

Project Name and Job Number TXU Comache Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG Boring No. B-2063</b>	
Type and Diameter of Boring HSA / 7"		Boring Location 32°18'07.10306"N / 97°47'27.04391"W		Total Depth 50.1 feet	
Drilling Contractor and Rig Geotechnology / CME 55		Elevation and Datum 828.146 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 16 feet	
Sampling Method SPT		Sample Driving Hammer/Drop Auto / 140 lbs / 30 inches	No. of Samples 6	Date Started 3/19/07	
		Borehole Inclination Vertical	Logged by M. McMackin	Date Completed 3/20/07	

Reviewed by / Date M. Zellman 3/26/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0								<b>ARTIFICIAL FILL (Qaf)</b> LEAN CLAY, medium stiff, 10YR 2/1, moist		828
1			B-2063 1	6				Lean Clay with calcareous deposits, medium stiff,(2.5YR 6/2)		827
2				4	$\frac{13}{18}$					826
3				3						825
4			B-2063 2	4				stiff, (2.5YR 6/6), damp, 5% subangular limestone fragments (up to 1") with calcium deposits		824
5				7	$\frac{19}{18}$					823
6	CL			8				very stiff, (5Y 3/1), 20% angular limestone fragments		822
7			B-2063 3	24	$\frac{6}{18}$					821
8				6				- wood fragments and unidentified fibers		820
9			B-2063 4	7						819
10				5	$\frac{0}{18}$					818
11				3						817
12	GP-GM		B-2063 5	50/6"	$\frac{6}{6}$			<b>RESIDUAL SOIL (RS)</b> LIMESTONE FRAGMENTS with silt dense, 5Y 7/4, damp, shattered limestone fragments		816
13										815
14	CL		B-2063 6	11				LEAN CLAY hard, 2.5Y 7/6, damp, with calcareous deposits and few limestone fragments		814
15				27	$\frac{4.5}{15}$	4.5				813
				50/3"						812

Project Name and Job Number TXU Comache Peak COL 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">SOIL LOG</h2> <h2 style="margin: 0;">Boring No. B-2063</h2>
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Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
15	CL							LEAN CLAY hard, 2.5Y 7/6, damp, with calcareous deposits and few limestone fragments <i>(Continued from previous page)</i>		813
16								Top of Bedrock 16'		812
17										811
18										810
19										809
20										808
21										807
22										806
23										805
24										804
25										803
26										802
27										801
28										800
29										799
30										



Undisturbed sample  
 SH = Shelby; P = Pitcher; O = other




Driven (2.5 to 3.0 inch) with liners  
 MC = Modified California; O = other



Standard Penetration Test (SPT) sampler



Project Name and Job Number TXU Comanche Peak Col 1908		 WLA William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. B-2063</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'07.10306"N / 97°47'27.04391"W		Total Depth 50.1 feet	
Drilling Contractor and Rig Geotechnology / CME 55		Elevation and Datum 828.146 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 16 feet	
Casing Size and Depth 4" / 16 feet		Length of Core Barrel and Bit 8.6 feet	No. of Core Boxes 3	Date Started 3/19/07	
		Borehole Inclination Vertical	Logged by M. McMackin	Date Completed 3/20/07	

Reviewed by / Date M. Zellman 3/26/07


Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
16		ND												812
17		ND												811
18		2.17	6	4.6 4.5	100	SW	R4							810
19		1.42												809
20		1.08							2063-7					808
21		1.27											350 psi downhole pressure.	807
22		3.25				SW	R4							806
23		2.57	7	5.0 5.0	100		R0							805
24		5.82				SW	R4							804
25		6.25				SW	R0							803
26		5.25							2063-8					802
27		3.1											Missed time call - divided 2' interval time for two samples.	801
28		3.1	8	5.0 5.0	100	SW	R4							800
29		5.22												799
30									2063-9					798
31		4.83	9	4.9 5.0	98	SW	R4							798

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2063</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
31		4.83										LIMESTONE; WACKESTONE, very light gray (N8), dry, massive, slightly weathered (SW), medium beds 4", strong HCl, shale 32.8'-33.2'.		797
32		2.18												796
33		3.73	9	4.9 5.0	98	SW	R4		2063-10				Short time measurement.	795
34		2.5										SHALE; med. dark gray (N4), moist, laminated, slightly weathered (SW), very weak (R1), sharp contact, weak to no reaction to HCl, bedding laminated <0.1".		794
35		3.63												793
36		4.25												792
37		3.73				SW	R1		2063-11					791
38		3.63	10	4.6 5.0	92	SW	R4					LIMESTONE; WACKESTONE, light gray (N7), burrows, irregular bed, slightly weathered (SW), strong (R4), medium thickness, fossil fragments, burrows filled with micrite.		790
39		4.67										SHALE; with interbedded wackestone in beds to 1", medium dark gray (N4), damp, slightly weathered (SW), weak (R2).		789
40		5.5				SW	R2							788
41														787
42		2.08												786
43		4.85	11	5.0 5.0	100	SW	R2		2063-12			LIMESTONE; WACKESTONE, medium to light gray (N5 to N7), strong medium thickness, burrows filled with finer wackestone.	This core stuck in barrel - missing core from Run 10. Broken on retrieval.	785
44		3.87												784
45		4.85				SW	R4					SHALE, medium dark gray (N4), laminated, slightly weathered (SW), weak (R2)		783
46		2.27	12	4.6 4.6	100	SW	R2					SHALE, medium dark gray (N4), massive, laminated, slightly weathered (SW), weak (R2).		783

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h3 style="margin: 0;">Boring No. B-2063</h3>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
46		2.27				SW	R2					SHALE, medium dark gray (N4), massive, laminated, slightly weathered (SW), weak (R2).		782
47		8.55				SW	R4					LIMESTONE; WACKESTONE, light gray (N7), medium bed, slightly weathered (SW), strong with thin siltstone interbeds.		781
48		5.8	12	4.6 4.6	100	SW	R2					SHALE, medium dark gray (N4), slightly weathered (SW), weak (R2), massive laminated.		780
49		3.75												
50		2.75				SW	R4		2063-13			LIMESTONE; WACKESTONE with shale interbed, light gray (N7), medium thick, slightly weathered (SW), strong (R4).		779
50													Total depth drilled: 50.1'.	778
51														777
52														776
53														775
54														774
55														773
56														772
57														771
58														770
59														769
60														768
61														

Project Name and Job Number TXU Comanche Peak Col 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. B-2064</b>	
Type and Diameter of Boring NQ / 4"		Boring Location E:2187085.98/N:6793805.28		Total Depth 149 feet	
Drilling Contractor and Rig Fugro / CME 45		Elevation and Datum NAVD88	Ground Water Depth DRY	Depth to Bedrock 15 feet	
Casing Size and Depth 7" / 16.5 feet		Length of Core Barrel and Bit 8.2 feet	No. of Core Boxes 7	Date Started 8/27/07	
		Borehole Inclination Vertical	Logged by W. Huff	Date Completed 8/29/07	

Reviewed by / Date                     R. Ortiz 8/29/07                    

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
17		1.68										LIMESTONE: wackestone; medium light gray (N6); weak (R2); slightly weathered (SW). [Glen Rose Formation]	Bedrock at 15' Augered to 16.5' to set casing and start rock coring.	
18		0.97	1	2.5	100	SW	R2				Joint, very thin, slightly open		No SPT sample collected per work instruction TXUT-227	
19		1.7							B2064-1					
20		ND										SHALE: mudstone; grayish blue green (5BG 5/2); moderately weathered (MW); very weak (R1); fine grained. [Glen Rose Formation]		
21		2					R1		B2064-2					
22		2.33	2	5.0	70							LIMESTONE: wackestone; very light gray (N8); moderately weathered (MW); weak (R2); thin <.1' shale interbeds; strong reaction to HCl. [Glen Rose Formation]		
23		1.83				MW					Joint, very thin, slightly open			
24		1.58					R2				Joint, very thin, slightly open			
25		3.2									Joint, very thin, slightly open			
26		ND										SHALE: mudstone; medium gray (N5); fresh (F); very weak (R1); calcareous to 27.6' w/ strong reaction to HCl. [Glen Rose Formation]		
27		ND	3	5.0	82									
28		ND												
29		1.37				F	R1		B2064-3					
30		ND												
31		1.83	4	5.0	100									
		2.08							B2064-4					

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2064</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
32		2.08	4	5.0 5.0	100	F	R1					SHALE: mudstone; medium gray (N5); fresh (F); very weak (R1); calcareous to 27.6' w/ strong reaction to HCl. [Glen Rose Formation]		
33		2.18					R1			LIMESTONE: wackestone; very light gray (N8); slightly weathered (SW); weak (R2); fine grained; strong reaction to HCl. [Glen Rose Formation]				
34		ND					R1			SHALE: mudstone; medium gray (N5); slightly weathered (SW); very weak (R1); minor reaction to HCl. [Glen Rose Formation]				
35		2.47	5	4.9 5.0	98	SW	R2				LIMESTONE: wackestone; very light gray (N8); fresh (F); weak (R2); fine grained; strong reaction to HCl; shale interbeds; wavy irregular bedding and signs of bioturbation. [Glen Rose Formation]			
36		2.1					R1							
37		1.85					R2							
38		2.62	6	5.0 5.0	100	MW	R1				SHALE: mudstone; medium gray (N5); slightly weathered (SW); very weak (R1); fine grained; minor reaction to HCl. [Glen Rose Formation]			
39		2.67					R2			LIMESTONE: packstone; very light gray (N8); moderately weathered (MW); weak (R2). [Glen Rose Formation]				
40		1.5					R1			SHALE: mudstone; medium gray (N5); slightly weathered (SW); very weak (R1); fine grained; minor reaction to HCl. [Glen Rose Formation]				
41		1.75	7	5.0 5.0	100	MW	R2				LIMESTONE: wackestone; very light gray (N8); slightly weathered (SW); weak (R2) to very weak (R1); shaley. [Glen Rose Formation]			
42		2.17					R1			SHALE: mudstone; medium gray (N5); slightly weathered (SW); very weak (R1); fine grained; minor reaction to HCl. [Glen Rose Formation]				
43		2.83					R2							
44		1.7	7	5.0 5.0	100	MW	R1				SHALE: mudstone; medium gray (N5); slightly weathered (SW); very weak (R1); fine grained; minor reaction to HCl. [Glen Rose Formation]			
45		1.62					R2							
46		2.33					R1							
		ND												

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2064</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
47		ND										fine grained; minor reaction to HCl. [Glen Rose Formation]		
48		3.25	7	5.0 5.0	100							LIMESTONE: wackestone; very light gray (N8); moderately weathered (MW); very weak (R1); oxidation discoloration; thin shale interbeds; bioturbation evident; strong reaction to HCl. [Glen Rose Formation]		
49		ND												
50		1.83				MW	R1							
51		2.88												
52		2.7	8	4.9 5.0	98									
53		3.03												
54		1.83								B2064-8		SHALE: mudstone; medium gray (N5); fresh (F); very weak (R1); fine grained; thinly laminated; minor reaction to HCl. [Glen Rose Formation]		
55		4.25				F	R1				Joint, very thin, slightly open			
56		3.83												
57		3.33	9	5.0 5.0	100							LIMESTONE: packstone; very light gray (N8); slightly weathered (SW); weak (R2); strong reaction to HCl. [Glen Rose Formation]		
58		4.52				SW	R2					SHALE: mudstone; medium gray (N5); fresh (F); very weak (R1); fine grained. [Glen Rose Formation]		
59		4.77				F	R1			B2064-9		LIMESTONE: wackestone; light gray (N7); fresh (F); weak (R2). [Glen Rose Formation]		
60		2.88										SHALE: mudstone; medium gray (N5); slightly weathered (SW); very weak (R1); fine grained; minor reaction to HCl; thin interbed of wackestone at 59.6'. [Glen Rose Formation]		
61		3.05	10	4.9 5.0	98	SW	R1							
		3.37					R2							

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2064</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
62		3.37	10	4.9 5.0	98	SW	R2					LIMESTONE: wackestone; very light gray (N8); slightly weathered (SW); weak (R2); shale interbeds; fossiliferous; strong reaction to HCl. [Glen Rose Formation]	Good water return	
63		4.08												
64		3.33	11	5.0 5.0	80	SW-F	R1			B2064-10				
65		3.25												
66		2.38	12	5.0 5.0	100	F	R2							
67		3.33												
68		3.18	13	5.0 5.0	100	MW	R1			B2064-11				
69		2.87												
70		2.08	ND			F	R2			B2064-12				
71		2.2												
72		2.35	ND			F	R2							
73		ND												
74		3.17	13	5.0 5.0	100	MW	R1							
75		2.75												
76		ND	13	5.0 5.0	100	MW	R1							
		3.03												

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-2064**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
77		3.03	13	5.0 5.0	100	MW	R1		B2064-13			LIMESTONE: wackestone; very light gray (N8); moderately weathered (MW); very weak (R1); some bioturbation; wavy laminations of shale interbeds; shale interbeds <.1' thick; fossiliferous strong reaction to HCl. [Glen Rose Formation]		
78		2.53												
79		2.93												
80		2.67	14	5.0 5.0	100	MW	R1		B2064-14			LIMESTONE: packstone; very light gray (N8); slightly weathered (SW); weak (R2); thin <.1' shale interbeds; reaction to HCl. [Glen Rose Formation]	Good water return	
81		2.75												
82		3.85												
83		3.37	15	5.0 5.0	100	SW	R2		B2064-15			LIMESTONE: wackestone; very light gray (N8) to light gray (N7); slightly weathered (SW); weak (R2); wavy interbeds of shale <.1' thick; mostly fine to medium grained; fossiliferous; strong reaction to HCl. [Glen Rose Formation]	Drill wire tangled but fixed	
84		4.05												
85		3.17												
86		3.35	16	5.0 5.0	100	R1								
87		2.97												
88		1.5												
89		1.38												
90		3.17												
91		3.27												
		4.42												



Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-2064**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
92		4.42	16	5.0 5.0	100							LIMESTONE: wackestone; very light gray (N8) to light gray (N7); slightly weathered (SW); weak (R2); wavy interbeds of shale <.1' thick; mostly fine to medium grained; fossiliferous; strong reaction to HCl. [Glen Rose Formation]		
		3.83												
93		2.17												
94		1.83	17	5.0 5.0	100									
95		2.75												
96		2.25												
97		2.83	18	5.0 5.0	100									
98		2.03												
99		1.63												
100		2.17	19	5.0 5.0	100									
101		1.75												
102		2.4												
103		2.03	19	5.0 5.0	100							Coarse grains show up		
104		2.05												
105		1.83												
106		1.7												

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. B-2064</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)								
107		1.7	19	5.0 5.0	100		R1					LIMESTONE: wackestone; very light gray (N8) to light gray (N7); slightly weathered (SW); weak (R2); wavy interbeds of shale <.1' thick; mostly fine to medium grained; fossiliferous; strong reaction to HCl. [Glen Rose Formation]										
108		2.1																		LIMESTONE: packstone; light gray (N7); slightly weathered (SW); weak (R2); fine to coarse grained; reaction to HCl. [Glen Rose Formation]		
109		1.85																				
110		ND	20	5.0 5.0	100	SW	R2															
111		2.2																				
112		2.08																				
113		2.75	21	5.0 5.0	100		R2		B2064-20													
114		1.88																				
115		2.4																				
116		2.08	22	5.0 5.0	100		R2					SHALE: mudstone; light gray (N7); slightly weathered (SW); weak (R2); thinly laminated; fine grained. [Glen Rose Formation]										
117		1.5																				
118		1.7																			LIMESTONE: wackestone; very light gray (N8); slightly weathered (SW); weak (R2); reaction to HCl. [Glen Rose Formation]	
119		1.55	22	5.0 5.0	100		R2															
120		2.18																				
121		1.88																			LIMESTONE: packstone; light gray (N7); slightly weathered (SW); weak (R2); fine to coarse grained; strong reaction to HCl. [Glen Rose Formation]	
		2.1																				

Project Name and Job Number  
 TXU Comanche Peak Col  
 1908



**ROCK LOG**  
**Boring No. B-2064**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)									
122		2.1	22	5.0 5.0	100		R2																
123		2.32							R2		B2064-22				LIMESTONE: micrite; yellowish gray (5Y 8/1); thinly laminated; weak (R2); slightly weathered (SW); slight reaction to HCl. [Glen Rose Formation]								
124		1.68																					
125		1.85	23	5.0 5.0	100								LIMESTONE: wackestone; very light gray (N8); slightly weathered (SW); weak (R2); wavy lamination of shale; bioturbation at top and more prominent at base; some oxidation discoloration; strong reaction to HCl. [Glen Rose Formation]										
126		1.82																					
127		2.25																					
128		2.12	24	5.0 5.0	100																		
129		2.45																					
130		2.3																					
131		3.52	25	5.0 5.0	100								SHALE: mudstone; medium dark gray (N4); slightly weathered (SW); very weak (R1); fine grained. [Glen Rose Formation]										
132		4.03																					
133		4.87																					
134		4.53	25	5.0 5.0	100								LIMESTONE: wackestone; light gray (N7); slightly weathered (SW); weak (R2); reaction to HCl. [Glen Rose Formation]										
135		ND																R1					
136		2.52																					
		3.87					R2																

Project Name and Job Number TXU Comanche Peak Col 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. B-2064</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)	
137		3.87	25	5.0 5.0	100	SW	R2								
138		6.37												SHALE: mudstone; greenish gray (5G 6/1); fresh (F); very weak (R1); fine grained; slight reaction to HCl. [Glen Rose Formation]	
139		4.3							SW	R2				LIMESTONE: wackestone; light gray (N7); slightly weathered (SW); weak (R2); strong reaction to HCl. [Glen Rose Formation]	
140		3.2	26	5.0 5.0	100	SW	R2								
141		4.3									B2064-25			SHALE: mudstone; medium gray (N5); moderately weathered (SW); weak (R2); thin interbeds of wackestone; slight reaction to HCl. [Glen Rose Formation]	
142		6.17							SW	R2			B2064-26	LIMESTONE: wackestone; light gray (N7); slightly weathered (SW); weak (R2); thin interbeds of shale; wavy irregular bedding; strong reaction to HCl. [Glen Rose Formation]	
143		8.38	27	5.0 5.0	100	SW	R2								
144		6.35							SW	R2				LIMESTONE: packstone; light gray (N7) to medium light gray (N6); weak (R2); moderately weathered (MW); strong reaction to HCl. [Glen Rose Formation]	
145		4.22							MW	R2				SHALE: mudstone; medium gray (N5); slightly weathered (SW); weak (R2); slight reaction to HCl. [Glen Rose Formation]	
146		6.05										LIMESTONE: wackestone; light gray (N7); slightly weathered (SW); weak (R2); wavy irregular bedding; thin shale interbeds; reaction to HCl. [Glen Rose Formation]			
147		5.35								B2064-27					
148		10.25				SW	R2								
149		5.22					R2								
150															
151															



ENERCON SERVICES, INC.

PROJECT REPORT

TXUT-001-PR-005

Revision 0

BINDER No. 3

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**BORING LOG DATA REPORT**


**BINDER No. 3**

**BS-Series and MW-Series Boring Logs**

**Number of Logs in Binder: 32 Logs**

Binder 3 of 3 contains both the Bulk Sample (BS-Series) and the Monitoring Well (MW-Series) geotechnical boring logs for the Unit 3 and 4 footprint areas. The Bulk Sample borings are boring logs B-1000 A, B, C through B-2001 A, B, C. There are 12 total bulk sample logs. The Monitoring Well boring logs are MW-1200S through MW-1219S. All 32 logs have all been entered into the gINT software program and have undergone multiple rounds of edits. There are 32 logs total included within Binder 3 of 3.

ROCK LOG TXU\_BORINGS\_MONITORING\_WELLS.GPJ WLA9-8-06.GDT 7/16/08

Project Name and Job Number TXU Comanche Peak COL 1908				<b>ROCK LOG</b>		<b>BS-1000A</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'07.18723"N / 97°47'41.55090"W		Total Depth 40 feet			
Drilling Contractor and Rig R. Simmons / BK-81		Elevation and Datum NAVD88		Ground Water Depth DRY		Depth to Bedrock 7 feet	
Casing Size and Depth PVC 4" diameter / 7 feet		Length of Core Barrel and Bit 8 feet / 8 feet		No. of Core Boxes		Date Started 4/8/07	
		Borehole Inclination Vertical		Logged by S.Deer		Date Completed 4/9/07	

Reviewed by / Date R. Ortiz 4/10/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology		Remarks	Elevation (feet)
7		1.1				MW	R2					LIMESTONE; wackestone; moderately weathered (MW); weak (R2); massive; white (N9). [Glen Rose Formation]			
8		1.15	1	2.9 3.0	97	MW	R0					CLAYSTONE; grayish orange ( 10 YR 6/2); massive; moderately weathered (MW); extremely weak (R0); saprolite. [Glen Rose Formation]			
9		0.98										LIMESTONE: wackestone; white (N9); massive; moderately weathered (MW); weak (R2); interbeds of siltstone from 9.1' to 9.3' and 9.6' to 9.8'; clasts are tabular and subangular dark gray fossils. [Glen Rose Formation]			
10		0.77				MW	R2								
11		1.18				MW	R2					LIMESTONE: wackestone; medium gray (N5); bedded with abundant (<0.1') shale/silt interbeds; slightly weathered (SW) (SW); weak (R2). [Glen Rose Formation]			
12		1.25	2	5.0 5.0	100	SW	R2					SHALE: silt/claystone: dark gray (N3); very thinly bedded; fresh (F); R0. [Glen Rose Formation]			
13		1.68										LIMESTONE: packstone; silty; bedded with abundant (<0.1') interbeds of shale/silt; slightly weathered (SW) (SW); weak (R2); silt/claystone interbeds from 13.4' to 13.6' and 14.3' to 14.6'. [Glen Rose Formation]			
14		2.1				F	R2								
15		1.42										LIMESTONE: micrite; silty; dark greenish gray ( 5G 4/1); massive; fresh (F); weak (R2); bioturbated. [Glen Rose Formation]			
16		1.08				SW	R0								
17		1.35	3	5.0 5.0	100	F	R2					SHALE: claystone; dark greenish gray ( 5G 4/1); fresh (F); extremely weak (R0). [Glen Rose Formation]			
18		1.53				F	R0					LIMESTONE: packstone; dark greenish gray ( 5G 4/1); slightly weathered (SW) (SW); weak (R2); clasts are silt and black or greenish gray fossils. [Glen Rose Formation]			
19		1													
20		1.45				SW	R2					LIMESTONE: wackestone; very light gray (N8); slightly weathered (SW); weak (R2); massive with occasional shale/silt (<0.1') interbeds and stylolites; clasts are bluish gray and white; fine to coarse grained subrounded and tabular fossils; strong reaction to HCl. [Glen Rose Formation]			
21		1.1	4	5.0 5.0	100										
22															

Project Name and Job Number TXU Comanche Peak COL 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. BS-1000A</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
22		1.23	4	5.0 5.0	100	SW	R2					LIMESTONE: wackestone; very light gray (N8); slightly weathered (SW); weak (R2); massive with occasional shale/silt (<0.1') interbeds and stylolites; clasts are bluish gray and white; fine to coarse grained subrounded and tabular fossils; strong reaction to HCl. [Glen Rose Formation]		22
23		1.35												
24		1.48												
25		1.25	5	5.0 5.0	100	SW	R2					LIMESTONE: packstone; silty; medium gray (N5); very thinly bedded with abundant (<0.1') interbeds of shale/silt; slightly weathered; weak (R2). [Glen Rose Formation]		25
26		1.47												
27		1.47												
28		1.35	5	5.0 5.0	100	SW	R2					LIMESTONE: micrite; silty; medium dark gray (N4); fresh (F); weak (R2); massive. [Glen Rose Formation]		28
29		2.6												
30		2.25												
31		2.67	6	5.0 5.0	100	F	R0					SHALE: dark gray (N3); very thinly bedded; fresh (F); extremely weak (R0); slight reaction to HCl. [Glen Rose Formation]		30
32		2.68												
33		1.67												
34		1.83	6	5.0 5.0	100	F	R2					LIMESTONE: wackestone; very light gray (N8) to medium high gray (N6); massive with zones of abundant (<0.1') interbeds of shale/silt; slightly weathers; weak (R2); clasts are fine to coarse grained bluish gray and white subrounded to subangular fossils; zones of abundant shale silt interbeds; rip up clasts also common in these zones. [Glen Rose Formation]		31
35		2.02												
36		1.93												
37		1.97	7	5.0 5.0	100	F	R2							32
36		1.97												
37														


Project Name and Job Number  
 TXU Comanche Peak COI  
 1908



**ROCK LOG**  
**Boring No. BS-1000A**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
37	[Lithology description]	1.3	7	57.0	100	F	R2					LIMESTONE: packstone; light gray (N7); to medium gray (N5); very thinly bedded with abundant (<0.1') interbeds of shale/silt; slightly weathered (SW); weak (R2); reacts strongly to HCl; clasts are gray/black silt and white and bluish gray; subrounded to subangular fine to coarse grained fossils. [Glen Rose Formation]		
38		1.52												
39		1.47												
40												BOTTOM OF HOLE AT 40'		
41														
42														
43														
44														
45														
46														
47														
48														
49														
50														
51														
52														



Project Name and Job Number TXU Comanche Peak COL 1908		 WLA William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. BS-1000B</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'07.18723"N / 97°47'41.55090"W		Total Depth 40 feet	
Drilling Contractor and Rig R.Simmons / BK-81		Elevation and Datum NAVD88	Ground Water Depth DRY	Depth to Bedrock 7 feet	
Casing Size and Depth PVC 4" diameter / 7 feet		Length of Core Barrel and Bit 8 feet / 8 feet	No. of Core Boxes	Date Started 4/9/07	
		Borehole Inclination Vertical	Logged by S. Dee	Date Completed 4/8/07	


Reviewed by / Date \_\_\_\_\_ R. Ortiz 4/10/07


Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
7		1.35				SW	R2					LIMESTONE: wackestone; very light gray (N8); massive; weak (R2); moderately weathered (MW); claystone. [Glen Rose Formation]		
8		1.53	1	3.0 3.0	100	MW	R2					CLAYSTONE: grayish orange (10 YR 7/4); moderately weathered (MW); extremely weak (R0); massive; slight reaction to HCl; saprolite. [Glen Rose Formation]		
9		1.7												
10		2.67										LIMESTONE: wackestone; very light gray (N8); massive with zones abundant shale/silt interbeds (<0.1'); moderately weathered (MW) to 10.7'; slightly weathered (SW) below 10.7'; weak (R2); clasts are gray; silt and fine to medium grained; bluish gray fossils; shale interbed from 12.3' to 12.7' and 13.2' to 13.4'. [Glen Rose Formation]		
11		1.43				SW	R2							
12		1.33	2	5.1 5.0	100									
13		1.52												
14		1.68				SW	R2					LIMESTONE: wackestone; silty; medium dark gray (N4); slightly weathered (SW); weak (R2); massive. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	
15		1.43												
16		1.57				F	R2					LIMESTONE: micrite; silty; dark greenish gray (SG 4/1); massive; fresh (F); weak (R2); bioturbated. [Glen Rose Formation]		
17		1.7	3	5.1 5.0	100	F	R0					SHALE: claystone; dark greenish gray (5G 4/1); fresh (F); extremely weak (R0). [Glen Rose Formation]		
18		1.85				SW	R2					LIMESTONE: packstone; light gray (N7); massive with rare (<0.1') interbeds of shale/silt; slightly weathered (SW); weak (R2); shale/claystone interbeds from 18.7' to 19'. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	
19		1.43												
20		1.33				SW	R2					LIMESTONE: wackestone; very light gray (N8); massive; occasional shale/silt interbed and stylolites; slightly weathered (SW); weak (R2); clasts are bluish gray and white; fine to coarse grained sub-rounded and tabular fossils; strong reaction to HCl. [Glen Rose Formation]		
21		1.6	4	4.9 5.0	98									
22														

Project Name and Job Number TXU Comanche Peak COL 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. BS-1000B</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
22		1.7	4	4.6 5.0	98	SW	R2					LIMESTONE: wackestone; very light gray (N8); massive; occasional shale/silt interbed and stylolites; slightly weathered (SW); weak (R2); clasts are bluish gray and white; fine to coarse grained sub-rounded and tabular fossils; strong reaction to HCl. [Glen Rose Formation]		
23														
24		1.85				SW	R2					LIMESTONE: packstone; silty; medium gray (N5); very thinly bedded with abundant (<0.1') interbeds of shale/silt; slightly weathered (SW); weak (R2); strong reaction to HCl		
25		1.8												
26		1.8				F	R2					LIMESTONE: micrite; silty; medium dark gray (N4); fresh (F); weak (R2); massive		
27		1.83	5	5.0 5.0	100									
28		1.35				F	R2					SHALE: dark gray (N3); very thinly bedded; fresh (F); extremely weak (R2); slight reaction to HCl		
29		1.32												
30		2.18										LIMESTONE: wackestone; very light gray (N8); to medium light gray (N6); massive with zones of abundant (<0.1') shale/silt interbeds; slightly weathered (SW) (SW); weak (R2); clasts are fine to coarse grained; bluish gray and white subrounded to subangular fossils		
31		1.17												
32		1.38	6	5.0 5.0	100	SW	R2					LIMESTONE: packstone; light gray (N7); to medium gray (N5); very thinly bedded with abundant (<0.1') interbeds of shale/silt; slightly weathered (SW); weak (R2); reacts strongly to HCl; clasts are gray/black silt and white bluish gray fine to coarse grained; subrounded to subangular fossils		
33		1.35												
34		1.32												
35		1.43	7	5.1 5.0	100	SW	R2							
36		1.43												
37														

Project Name and Job Number TXU Comanche Peak COI 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. BS-1000B</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
37		1.57	7	57 5.0	100	SW	R2					LIMESTONE: packstone; light gray (N7); to medium gray (N5); very thinly bedded with abundant (<0.1') interbeds of shale/silt; slightly weathered (SW); weak (R2); reacts strongly to HCl; clasts are gray/black silt and white bluish gray fine to coarse grained; subrounded to sunangular fossils	Length of recovery stretched due to mechanical breaks.	
38		1.35												
39		1.67												
40											BOTTOM OF HOLE AT 40'			
41														
42														
43														
44														
45														
46														
47														
48														
49														
50														
51														
52														

Project Name and Job Number TXU Comanche Peak COL 1908		 WLA William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. BS-1000C</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'07.18723"N / 97°47'41.55090"W		Total Depth 40 feet	
Drilling Contractor and Rig R.Simmons / BK-81		Elevation and Datum NAVD88	Ground Water Depth DRY	Depth to Bedrock 6.5 feet	
Casing Size and Depth PVC 4" diameter / 6.5 feet		Length of Core Barrel and Bit 8 feet / 8 feet	No. of Core Boxes	Date Started 4/9/07	
		Borehole Inclination Vertical	Logged by S.Deer	Date Completed 4/9/07	


Reviewed by / Date \_\_\_\_\_ R. Ortiz 4/10/07


Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
7		1.63	1	3.5 3.5	100	MW	R2					LIMESTONE: wackestone; very light gray (N8); moderately weathered (MW); weak (R2); massive. [Glen Rose Formation]		
8		1.67	1	3.5 3.5	100	MW	R0					CLAYSTONE: grayish orange (10YR 7/4); moderately weathered (MW); extremely weak (R0); massive; slight reaction to HCl. [Glen Rose Formation]		
9		1.5												
10		1.7				MW-SW	R2					LIMESTONE: wackestone; very light gray (N8); moderately weathered (MW) to 10.8'; below 10.8' slightly weathered (SW); weak (R2); massive with zones of abundant (<0.1') shale/silt interbeds; clasts are gray silt and fine to medium grained bluish gray fossils. [Glen Rose Formation]		
11		1.83												
12		1.88	2	5.1 5.0	100	F	R2					SHALE: silt/claystone; dark gray (N3); very thinly bedded; fresh (F). [Glen Rose Formation]		
13		1.97				SW	R2					LIMESTONE: packstone; silty; medium gray (N4); bedded with abundant (<0.1') interbeds of shale/silt; slightly weathered (SW); weak (R2). [Glen Rose Formation]		
14		2.17												
15		1.77				F	R2					LIMESTONE: micrite; silty; dark greenish (5G 4/1); massive; fresh; weak (R2); bioturbated. [Glen Rose Formation]		
16		1.85				F	R0					SHALE: claystone; dark greenish gray (5G 4/1); fresh (F); extremely weak (R0). [Glen Rose Formation]		
17		2.17	3	5.2 5.0	100	SW	R2			1000C-1		LIMESTONE: packstone; light gray (N7); massive with rare (<0.1') interbeds of shale/silt; slightly weathered (SW); weak (R2); shale/claystone interbed from 18.6' to 19'. [Glen Rose Formation]		
18		2												
19		1.8												
20		1	4	4.6 5.0	92	SW	R2					LIMESTONE: wackestone; very light gray (N8); massive with occasional (0.1') shale/silt interbeds with stylolites; slightly weathered (SW); weak (R2); clasts are bluish gray and white fine to coarse grained subrounded and tubular fossils; strong reaction to HCl. [Glen Rose Formation]		
21		0.9												

Project Name and Job Number TXU Comanche Peak COL 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. BS-1000C</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)	
22		0.9	4	4.6 5.0	92	SW	R2					LIMESTONE: wackestone; very light gray (N8); massive with occasional (0.1') shale/silt interbeds with stylolites; slightly weathered (SW); weak (R2); clasts are bluish gray and white fine to coarse grained subrounded and tubular fossils; strong reaction to HCl. [Glen Rose Formation]			
23		0.8													
24		0.6													
25		1.02	5	5.0 5.0	100	SW	R2					LIMESTONE: silty packstone; medium gray (N5); very thinly bedded with abundant (<0.1') shale/silt interbeds; slightly weathered (SW); weak (R2); strong reaction to HCl. [Glen Rose Formation]			
26		1.25													
27		1.17													
28		1.38	5	5.0 5.0	100	F	R2					LIMESTONE: silty micrite; medium dark gray (N4); fresh; weak (R2); massive; abundant fossils fro; 28' to 28.41'. [Glen Rose Formation]			
29		1.1													
30		2.2													
31		1.83	6	5.1 5.0	100	SW	R0					SHALE: same as above LIMESTONE: wackestone; very light gray (N8) to medium light gray (N7); massive with zones of abundant (<0.1') interbeds of shale/silt; slightly weathered (SW); weak (R2); clasts are fine to coarse grained; bluish gray and white; subrounded to subangular fossils; zones of abundant shale/silt interbeds. [Glen Rose Formation]			
32		1.82													
33		1.88													
34		1.87	7	4.7 5.0	94	SW	R2								
35		1.5													
36		1.77													
		1.72													

Project Name and Job Number TXU Comanche Peak COI 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. BS-1000C</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
37		1.72	7	4.7 5.0	94	SW	R2					LIMESTONE: packstone; light gray (N7); to medium gray (N5); very thinly bedded with abundant (<0.1') interbeds of shale/silt; slightly weathered (SW); weak (R2); clasts are gray /black silt and white and bluish gray fine to coarse grained subrounded to subangular fossils; reactgs strongly to HCl. [Glen Rose Formation]		
38		1.8												
39		1.87												
40		1.85												
41														
42														
43														
44														
45														
46														
47														
48														
49														
50														
51														

Project Name and Job Number TXU Comanche Peak COL 1908		 WLA William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. BS-1001A</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'04.92967"N / 97°47'41.09384"W		Total Depth 39.9 feet	
Drilling Contractor and Rig TEXPLOR / CME-75		Elevation and Datum NAVD88	Ground Water Depth DRY	Depth to Bedrock 15.3 feet	
Casing Size and Depth PVC 4" diameter / 15.7 feet		Length of Core Barrel and Bit 8.7 feet / 8.7 feet	No. of Core Boxes	Date Started 4/10/07	
		Borehole Inclination Vertical	Logged by M.Buga	Date Completed 4/10/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 4/12/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
16		3.27				SW	R2-R3					LIMESTONE: packstone; gray (N6); slightly weahterd; weak (R2)to medium strong; violent reaction to HCl. [Glen Rose Formation]	Bedrock at 15.3' Rock coring begins at 15.7'	
17		2							1001A-1			SHALE: dark greenish gray ( 5G 4/1); fresh (F) to slightly weathered (SW); no to slight reaction to HCl; interbed with micrite; very thinly bedded; 16.8' - 17' is micrite; 18.8' - 20.3' is washed out saprolite. [Glen Rose Formation]	water leaks out of tub through bottom, driller resets it	
18		2.28	1	3.4 5.0	68	F-SW	R1					No Recovery: washed out from 18.8 to 20.3	Shale plugged barrel	
19		3.52												
20		2.75												
21		2.45				SW	R2					LIMESTONE: wackestone; gray (N5-N6); slightly weathered (SW); weak (R2); strong to violent reaction to HCl. [Glen Rose Formation]		
22		1.48				SW	R2-R3					LIMESTONE: micrite; greenish gray (5GY 6/1); massive with very thin bedding; thinly spaced; convoluted/wavy occasionally; slightly weathered (SW); weak (R2); slight to strong reaction o HCl; fossiliferous on top 0.5'; sparse clasts below 23.2'. [Glen Rose Formation]		
23		1.43	2	4.8 5.0	96							LIMESTONE: wackestone; greenish gray (5GY 5/1); slightly weathered (SW); weak (R2); slight to strong reaction to HCl; fossileferous in top .5'; sparse clasts below 23.2. [Glen Rose Formation]		
24		2.95				SW	R2							
25		3.3												
26		2.55							1001A-2					
27		1.83				SW	R2					SHALE: greenish gray (5GY 5/1); slightly weathered (SW); very weak (R2); slight HCl reaction; shell fragments. [Glen Rose Formation]		
28		1.38	3	4.2 5.0	84	SW	R2					LIMESTONE: micrite; greenish gray (5GY 5/1); slightly weathered (SW); weak (R2); strong reaction to HCl; organic material. [Glen Rose Formation]		
29		4.9				SW	R1					SHALE: same as previous without the shell fragments. [Glen Rose Formation]		
30		3.98				SW	R1					SHALE: same as above		


Project Name and Job Number  
 TXU Comanche Peak COL  
 1908



**ROCK LOG**  
**Boring No. BS-1001A**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
31		2.17										LIMESTONE: micrite; light gray (N7); slightly weathered (SW); weak (R2) to medium strong (R3); strong to violent reaction to HCl. [Glen Rose Formation]		
32		1.1				SW	R2-R3				BJ, P1, S1, T		Poor recovery	
33		1.1	4	4.9 5.0	98								Driller says about 1' sill in hole after run 4	
34		2.2												
35		1.6										LIMESTONE: wackestone; gray (N6); slightly weathered (SW); weak (R2); violent reaction to HCl; abundant clasts; closely packed. [Glen Rose Formation]		
36		2.17				SW	R2						Driller got down 3' before barrel got plugged	
37		1.63												
38		1.97	5	4.2 4.0	100	SW	R2					LIMESTONE: micrite; greenish gray (5GY 6/1); slightly weathered (SW); weak (R2); strong HCl reaction. [Glen Rose Formation]		
39		2.1				SW	R1					SHALE: dark greenish gray (5G 4/1); slightly weathered (SW); no to slight reaction to HCl. [Glen Rose Formation]		
40												BOTTOM OF THE HOLE 39.9'		
41														
42														
43														
44														
45														




Project Name and Job Number TXU Comanche Peak COL 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. BS-1001B</b>	
Type and Diameter of Boring HQ / 4"			Boring Location 32°18'04.92967"N / 97°47'41.09384"W		Total Depth 40.3 feet
Drilling Contractor and Rig TEXPLOR / CME-75			Elevation and Datum NAVD88	Ground Water Depth DRY	Depth to Bedrock 15.2 feet
Casing Size and Depth PVC 4" diameter / 15.3 feet			Length of Core Barrel and Bit 8.7 feet / 8.7 feet	No. of Core Boxes	Date Started 4/10/07
			Borehole Inclination Vertical	Logged by M. Buga	Date Completed 4/11/07

Reviewed by / Date \_\_\_\_\_ R. Ortiz 4/12/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology		Remarks	Elevation (feet)
16.00		2				MW	R2				BJ, P1, Sm, Op RF, Wa, R0, Op RF, P1, R0, Op RF, Wa, R0, Op	LIMESTONE: micrite; light gray (N7); moderately weathered (MW); weak (R2); strong reaction to HCl; top 0.2' CW rock	Begin HQ at 3:49 pm		
17.00		1.97							1001B-1		RF, Wa, R0, Op	SHALE: greenish gray (5GY 6/1); slightly weathered (SW); very weak; slight reaction to HCl; very thinly bedded; thinly spaced micrite beds			
18.00		1.82	1	5.0 5.0	88	SW	R1				BJ, Wa, S1, Op				
19.00		1.87													
20.00		2.02				SW	R2					LIMESTONE: wackestone; gray (N6); SW; weak (R2); violent reaction to HCl; large clasts; tightly spaced			
21.00		1.63										LIMESTONE: micrite; greensih gray (5GY 6/1); massive with occasional rip up clasts and bedding; slightly weathered (SW); violent reaction to HCl			
22.00		1.82													
23.00		2.13	2	4.9 5.0	98	SW	R2					LIMESTONE: wackestone; dark gray (N4); slightly weathered (SW); weak (R2); strong reaction to HCl			
24.00		2.2													
25.00		2.02										LIMESTONE: micrite; light gray (N7); slightly weathered (SW); medium strong (R3); violent reaction to HCl; No Recovery 25.3' to 29.1"; 29.1' -30.3' is micrite	Driller stops on 4th foot, pulls out core barrel, catcher is bustedm no recovery, Back to drill last 10" recover 9" with new catcher		
26.00		5.02										No Recovery			
27.00		4.53				SW	R3								
28.00		2.83	3	0.7 5.0	14										
29.00		3.03													
30.00		1.42													

Project Name and Job Number TXU Comanche Peak COL 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. BS-1001B</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
31		3.4										LIMESTONE: micrite; light gray (N7); slightly weathered (SW); medium strong (R3); violent reaction to HCl; coal seams; voids		
32		2.08				SW	R3							
33		1.38	4	5.0 5.0	100									
34		1.48				SW	R2-R3				BJ, P1, S1, T	LIMESTONE: packstone; light gray (N7); slightly weathered (SW); weak (R2) to medium strong (R3); violent reaction to HCl; coal seams in bottom 0.3'		
35		1.55										LIMESTONE: wackestone; greenish gray (5GY 6/1); slightly weathered (SW); weak (R2); strong reaction to HCl; sparse large clasts		
36		1.25				SW	R2							
37		1.25												
38		1.4	5	5.0 5.0	100							SHALE: dark greenish gray ( 5GY 5/1); slightly weathered (SW); very weak (R1); no ro slight reaction to HCl		
39		3.62				SW	R1							
40		5.03				SW	R2					LIMESTONE: wackestone; greenish gray (5GY 6/1); slightly weathered (SW); weak (R2); strong reaction to HCl; fossiliferous		
41												BOTTOM OF HOLE AT 40.3'		
42														
43														
44														
45														


Project Name and Job Number TXU Comanche Peak COL 1908		 William Lettis & Associates, Inc.		<h1>ROCK LOG</h1> <h2>Boring No. BS-1001C</h2>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'04.92967"N / 97°47'41.09384"W		Total Depth 40.3 feet	
Drilling Contractor and Rig TEXPLOR / CME-75		Elevation and Datum NAVD88	Ground Water Depth DRY	Depth to Bedrock 15.3 feet	
Casing Size and Depth PVC 4" diameter / 15.3 feet		Length of Core Barrel and Bit 8.7 feet / 8.7 feet	No. of Core Boxes	Date Started 4/11/07	
		Borehole Inclination Vertical	Logged by M.Buga	Date Completed 4/11/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 4/12/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology		Remarks	Elevation (feet)
16		2.87				MW	R2				P1, B1, Ro, Op.	LIMESTONE: micrite; light gray (N7); moderately weathered; weak; strong HCl reaction;			
17		3.13										SHALE: greenish gray (GLEY 5/1); slightly weathered (SW); very weak (R1); slight HCl reaction; very thinly bedded; thinly spaced micrite beds. [Glen Rose Formation]			
18		2.98	1	4.9 5.0	92	SW	R1		1001C-1			LIMESTONE: wackestone; gray (N6); slightly weathered (SW); weak (R2); violent reaction to HCl; large clasts; tightly spaced. [Glen Rose Formation]			
19		1.77										LIMESTONE: micrite; greenish gray (5GY 6/1); massive with occasional rip up clasts and spacing; slightly weathered (SW); weak (R2); violent reaction to HCl. [Glen Rose Formation]			
20		1.77				SW	R2					LIMESTONE: wackestone; dark gray (N4); slightly weathered (SW); weak(R2); strong reaction to HCl. [Glen Rose Formation]			
21		2.85										LIMESTONE: micrite; light gray (N7); slightly weathered (SW); medium strong (R3); violent HCl reaction. [Glen Rose Formation]			
22		2.53				SW	R2					SHALE: dark greenish gray (5GY 6/1); slightly weathered (SW); very weak (R1); slight reaction to HCl; rip up clasts; voids. [Glen Rose Formation]			
23		2.47	2	5.0 5.0	100	SW	R2				BJ, Wa, S1, Op	LIMESTONE: wackestone; greenish gray (5GY 6/1); slightly weathered (SW); weak (R2); violent reaction to HCl; shell fragments. [Glen Rose Formation]			
24		1.97										SHALE: same as previous except no rip up clasts; lots of fossils. [Glen Rose Formation]			
25		2.32				SW	R3					LIMESTONE: micrite; light gray (N7); slightly weathered (SW); medium strong (R3); violent reaction to HCl; organic rich			
26		1.12				SW	R1								
27		1.8													
28		1.8	3	4.8 5.0	96	SW	R2								
29		3.03				SW	R1		1001C-2						
30		4.58				SW	R3								

Project Name and Job Number TXU Comanche Peak COL 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. BS-1001C</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
31		1.4									BJ, P1, S1-R0, Op	interbeds; very thinly spaced between 31.4' to 32'. [Glen Rose Formation]		
32		2				SW	R3				BJ, P1, Ur, Op			
33		1.68	4	4.7 5.0	90	SW	R2-R3				BJ, P1, Ro, Op RJ, P1, R0, Op	LIMESTONE: packstone; gray (N6); slightly weathered; weak (R2) to medium strong (R3); violent reaction to HCl. [Glen Rose Formation]		
34		1.43										LIMESTONE: wackestone; dark gray (N4); slightly weathered (SW); weak (R2); strong to violent reaction to HCl. [Glen Rose Formation]		
35		1.3												
36		1.2				SW	R2							
37		1.25												
38		2.88	5	5.0 5.0	100							SHALE: dark greensih gray (5GY 4/1); slightly weathered (SW); very weak (R1); no reaction to HCl; same shell fragments at base. [Glen Rose Formation]		
39		4.02				SW	R1		1001C-3					
40		3.7				SW	R2					LIMESTONE: wackestone; gray (N5); slightly weathered (SW); weak (R2); violent HCl reaction; fossiliferous. [Glen Rose Formation]		
41												BOTTOM OF HOLE AT 40.3'		
42														
43														
44														
45														

Project Name and Job Number TXU Comanche Peak COL 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. BS-2000A</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'08.29646"N / 97°47'31.04370"W		Total Depth 40.6 feet	
Drilling Contractor and Rig Boart Longyear / TMA-44		Elevation and Datum 834 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 14.4 feet	
Casing Size and Depth PVC 4" diameter / 14.4 feet		Length of Core Barrel and Bit 8.6 feet / 8.6 feet	No. of Core Boxes	Date Started 4/9/07	
		Borehole Inclination Vertical	Logged by Glidden	Date Completed 4/9/07	

Reviewed by / Date R. Ortiz 4/12/07


Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
15		4.37	1	2.0 2.0	100	F-SW	R1-R2					LIMESTONE; wackestone; light gray (N7); slightly weathered (SW) to fresh (F); weak to very weak (R2-R1); slight to strong reaction to HCl; fossiliferous; wavy silt and mud laminations. [Glen Rose Formation]		819
16		4.42				F-SW	R1-R2							818
17		6.32							2000A-1					817
18		6.32							2000A-2	JRC 1, He, Jo		SHALE: mudstone; greenish gray (5G 6/1); fresh to slightly weathered (F-SW); extremely weak (R0); strong reaction to HCl; thin to medium spaced wackestone interbeds up to 0.1'; fossiliferous; very fine sand present in last 0.05' of bed above basal contact. [Glen Rose Formation]		816
19		3.35	2	5.0 5.0	100	F-SW	R0		2000A-3					815
20		7.95							2000A-4					814
21		2.27							2000A-5	Jo, JRC1, He		LIMESTONE: wackestone; white (N9) to yellowish grey (5Y 8/1) within 1/2 inch of discontinuities; weak to very weak (R2-R1); fresh to slightly weathered (F-SW); slightly vuggy adjacent to joint and at upper contact; violent reaction to HCl; fossiliferous. [Glen Rose Formation]		813
22		3.28				F-SW	R1-R2		2000A-6	Jo, JRC 2				812
23		2.58										LIMESTONE; wackestone; very light gray (N8); to light gray (N7); fresh (F); weak (R2); slight to strong reaction to HCl; fossiliferous; rip up clasts; wavy laminations; abundant shell debris. [Glen Rose Formation]		811
24		3.05	3	5.0 5.0	100	F	R2							810
25		2.38												809
26		3.22												808
27		4.63												807
28		6.43	4	5.0 5.0	100	F	R0		2000A-7			SHALE: mudstone; dark gray (N3); fresh (F); extremely weak (R0); slight to no reaction to HCl; fossiliferous. [Glen Rose Formation]		806
29		4.48				F	R0		2000A-8					805

Project Name and Job Number  
 TXU Comanche Peak COI  
 1908



**ROCK LOG**  
**Boring No. BS-2000A**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
30		1.82	4	5.0 5.0	100	F	R0					LIMESTONE; packstone; light gray (N7); to medium gray (N5); fresh (F); weak (R2); strong to violent reaction to HCl; fossiliferous; bioturbated. [Glen Rose Formation]		804
31		2.1										LIMESTONE; wackestone; very light gray (N8) to medium light gray (N6); fresh (F); weak (R2); strong to violent reaction to HCl; fossiliferous; bioturbated; laminated to thinly spaced wavy beds; rip up clasts. [Glen Rose Formation]		803
32		6.57	5	5.0 5.0	100	F	R2							802
33		2.02												801
34		3.68												800
35		2.58	6	4.2 4.0	100	F	R2							799
36		2.15												798
37		2.47	6	4.2 4.0	100	F	R2							797
38		1.4												796
39		6.43												795
40														794
41												BOTTOM OF HOLE AT 40.6'.		793
42														792
43														791
44														790

Project Name and Job Number TXU Comanche Peak COL 1908		 WLA William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. BS-2000B</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'08.29646"N / 97°47'31.04370"W		Total Depth 40.4 feet	
Drilling Contractor and Rig Boart Longyear / TMA-44		Elevation and Datum 834 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 13.4 feet	
Casing Size and Depth PVC 4" diameter / 14.4 feet		Length of Core Barrel and Bit 8.6 feet / 8.6 feet	No. of Core Boxes	Date Started 4/9/07	
		Borehole Inclination Vertical	Logged by Gliddler	Date Completed 4/10/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 4/12/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
14														820
15		4.15	1	2.0 2.0	100	SW	R1-R2					LIMESTONE: wackestone; light gray (N7) to medium light gray (N6); slightly weathered (SW); vuggy; very weak to weak (R1-R2); slight to strong reaction to HCl; fossiliferous; wavy beds thinly spaced to laminated. [Glen Rose Formation]		819
16		2.33												818
17		4.65							2000B-1			SHALE: mudstone; calcareous; greenish gray (5G 6/1) to dark greenish grey (5G 4/1); slightly weathered (SW); fossiliferous; primarily massive but occasional thin bedding. [Glen Rose Formation]		817
18		5.27							2000B-2					816
19		3.97	2	5.0 5.0	100	SW	R0		2000B-3					815
20		6.4							2000B-4					814
21		2.38							2000B-5			LIMESTONE: wackestone; very light gray (N8); with yellowish gray (5Y 8/1) zone from upper contact at 20.6'; fresh to slightly weathered (F-SW); weak to very weak (R2-R1); slight to strong reaction to HCl; fossiliferous; vuggy; organic carbon surfaces on bedding breaks. [Glen Rose Formation]		813
22		3.07				F-SW	R1-R2		2000B-6					812
23		3.03												811
24		3.57	3	4.9 5.0	100	F	R2-R3					LIMESTONE: packstone; medium gray (N5); fresh (F); weak to medium strong (R2-R3); strong to violent reaction to HCl; bioturbated; rip up clasts. [Glen Rose Formation]		810
25		2.47												809
26		2.43				F	R2-R3					LIMESTONE: wackestone; medium gray (N5); fresh (F); weak (R2); slight to strong reaction to HCl; thinly bedded; fossiliferous; rip up clasts. [Glen Rose Formation]		808
27		5.77							2000B-7					807
28		5.48	4	5.0 5.0	100	F	R0		2000B-8			SHALE: mudstone; calcareous; dark green (5G 4/1); fresh (F); extremely weak (R2); slight to no reaction to HCl. [Glen Rose Formation]		806
									2000B-9					


Project Name and Job Number  
 TXU Comanche Peak COL  
 1908



**ROCK LOG**  
**Boring No. BS-2000B**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
29		3.98				F						LIMESTONE: packstone; very light gray (N8); to medium gray (N5); fresh (F); weak to very weak (R2-R1); slight to strong reaction to HCl; silty and muddy; rip up clasts. [Glen Rose Formation]		805
30		2.23	4	5.0 5.0	100	F	R1-R2							804
31		2.2										LIMESTONE; wackestone; very light gray (N8); to medium gray (N5); fresh (F); weak to medium strong (R2-R3); strong to violent reaction to HCl; densely fossiliferous; bioturbated; rip up clasts; variably silty wavy laminations with the exceptions of massive intervals. [Glen Rose Formation]		803
32		4.1												802
33		2.38												801
34			5	5.0 5.0	100									800
35		4.1												799
36		2.38				F	R2-R3							798
37		4.1												797
38		2.17											Length of recovery stretched due to mechanical breaks.	796
39		2.27	6	4.1 4.0	100									795
40		3.88												794
41												BOTTOM OF HOLE AT 40.4'.		793
42														792
43														791



Project Name and Job Number TXU Comanche Peak COL 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. BS-2000C</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'08.29646"N / 97°47'31.04370"W		Total Depth 40.3 feet	
Drilling Contractor and Rig Boart Longyear / TMA-44		Elevation and Datum 843 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 13.4 feet	
Casing Size and Depth PVC 4" diameter / 14.4 feet		Length of Core Barrel and Bit 8.6 feet / 8.6 feet	No. of Core Boxes	Date Started 4/10/07	
		Borehole Inclination Vertical	Logged by Glidden	Date Completed 4/11/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 4/12/07


Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
14														829
15		5.02	1	1.9 2.0	100	SW	R2					LIMESTONE: wackestone; light gray (N7) to medium light gray (N6); fresh to slightly weathered (F-SW); vuggy; weak (R2); strong reaction to HCl; fossiliferous; bioturbated; very fine grained. [Glen Rose Formation]		828
16		8.92												827
17		4.98												826
18		4.5				F	R0		2000C-1			SHALE: mudstone; calcareous; greenish gray (5G 6/1); fresh (F); extremely weak (R0); slight reaction to HCl. [Glen Rose Formation]		825
19		4.88	2	5.0 5.0	100	F	R1-R2					LIMESTONE: wackestone; silty; greenish gray (5G 6/1); fresh (F); weak to very weak (R2-R1); strong reaction to HCl; fossiliferous. [Glen Rose Formation]		824
20		5.98				F	R0		2000C-2 2000C-3			SHALE: mudstone; calcareous; greenish gray (5G 6/1); fresh (F); extremely weak (R0); slight reaction to HCl; shell hash. [Glen Rose Formation]		823
21		2.18										LIMESTONE: micrite; white (N9) to very light gray (N8); fresh except at bedding breaks; where stone is vuggy and slightly to highly weathered (SW-HW); violent reaction to HCl; fossiliferous. [Glen Rose Formation]		822
22		3.93				F	R2-R3							821
23		3.62												820
24		3.25	3	5.0 5.0	100	F	R2					LIMESTONE: wackestone; medium light gray (N6); to light gray (N7); fresh (F); weak (R2); strong reaction to HCl; densely fossiliferous; wavy laminations; rip up clasts. [Glen Rose Formation]		819
25		2.2												818
26		3.18				F	R2					LIMESTONE: wackestone; silty; medium light gray (N6); fresh (F); weak (R2); slight reaction to HCl; laminated; fossiliferous. [Glen Rose Formation]		817
27		6.48	4	5.0 5.0	100	F	R0		2000C-4			SHALE: mudstone; dark greenish gray (5G 4/1); fresh (F); extremely weak (R0); slight to no reaction to HCl. [Glen Rose Formation]		816
28		5.38							2000C-5					815

Project Name and Job Number  
 TXU Comanche Peak COL  
 1908



**ROCK LOG**  
**Boring No. BS-2000C**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
29		3.58	4	5.0 5.0	100	F	R2					LIMESTONE: wackestone; light gray (N7); to medium light gray (N6); fresh (F); weak (R2); strong reaction to HC; bioturbated; fossiliferous; wavy laminations; rip up clasts. [Glen Rose Formation]		814
30	1.98	F								813				
31	2.25									812				
32	3.43	5	5.0 5.0	100	F	R2					LIMESTONE; wackestone; light gray (N7); to medium light gray (N6); fresh (F); weak (R2); strong reaction to HCl; bioturbated; fossiliferous; wavy laminations; rip up clasts. [Glen Rose Formation]		811	
33	1.65											810		
34	3.2											809		
35	2.33	6	4.0 4.0	100	F	R2							808	
36	2.28										807			
37	2.4										806			
38	1.28	6	4.0 4.0	100	F	R2							805	
39	6.05										804			
40											803			
41											BOTTOM OF HOLE AT 40.3'		802	
42													801	
43													800	

Project Name and Job Number TXU Comanche Peak COI 1908		 WLA William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. BS-2001A</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'06.78874"N / 97°47'28.45203"W		Total Depth 40.2 feet	
Drilling Contractor and Rig TEXPORE / CME 75		Elevation and Datum NAVD88	Ground Water Depth DRY	Depth to Bedrock 9.5 feet	
Casing Size and Depth 7" AUGER / 9.5 feet		Length of Core Barrel and Bit 8.2 feet / 8.2 feet	No. of Core Boxes	Date Started 4/7/07	
		Borehole Inclination Vertical	Logged by Buga	Date Completed 4/8/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 4/12/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
10		1.88	1	$\frac{1.3}{1.8}$	76	SW	R2-R3					LIMESTONE: sparite; light gray (N7); slightly weathered (SW); weak to medium strong (R2-R3); slight reaction to HCl; moderatley weathered (MW) zones around breaks. [Glen Rose Formation]		
11		1										LIMESTONE: wackestone; greenish gray (5GY 5/1); slightly weathered (SW); weak (R2); slight reaction to HCl. [Glen Rose Formation]	Rods are too wet to mark, snowing	
12						SW	R2							
13		9.47												
14			2	$\frac{4.5}{5.0}$	90									
15						SW-F	R2				P1, S1, T	SHALE: siltstone; greenish gray (5GY 5/1); fresh to slightly weathered (F-SW); no HCl reaction; weak (R2). [Glen Rose Formation]		
16		9.47										SHALE: dark greenish gray (5GY 4/1); fresh (F); very weak (R1); no reaction to HCl; massive with desiccation cracks. [Glen Rose Formation]	Began 3rd run, operations were called to stop due to weathered	
17						F	R2							
18		9.62										LIMESTONE: wackestone; greenish gray (5GY 5/1); slightly weathered (SW); slight to strong reaction to HCl. [Glen Rose Formation]		
19		2.93	3	$\frac{4.1}{5.0}$	82									
20		1.1				SW	R1							
21		1.62												
22		1.17				SW	R3							
23		0.97	4	$\frac{5.0}{5.0}$	100							LIMESTONE: micrite; gray (N6); fresh to slightly weathered (F-SW); medium strong (R3); violent reaction to HCl. [Glen Rose Formation]	Cloudy light brown water return	
24		0.98				SW	R2					LIMESTONE: wackestone; gray (N6); slightly weathered (SW); strong reaction to HCl. [Glen Rose Formation]		
		1.03												

Project Name and Job Number  
 TXU Comanche Peak COL  
 1908



**ROCK LOG**  
**Boring No. BS-2001A**


Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
25		1.03	4	5.0 5.0	100							LIMESTONE: wackestone; gray (N6); slightly weathered (SW); strong reaction to HCl. [Glen Rose Formation]		
26		1.13												
27		1.15	5	5.0 5.0	100	SW	R2				BJ, P1, S1, T			
28		1.15												
29		1.63												
30		0.7	6	4.6 5.0	92						BJ, P1, S1, T BJ, Wa, R0, Op	LIMESTONE: packstone; gray (N6) to light gray (N7); slightly weathered (SW); medium strong (R3); violent reaction to HCl. [Glen Rose Formation]	100 percent water return	
31		1.02												
32		3.37												
33		3.23												
34		2.13	7	4.0 4.0	100						Wa, R0, T, Op			
35		2.35												
36		2.75												
37		6	7	4.0 4.0	100	SW	R3							
38		3.27												
39		1.5												
		1.47				SW	R2							

Project Name and Job Number  
 TXU Comanche Peak COI  
 1908



**ROCK LOG**  
**Boring No. BS-2001A**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
40		1.47	7	4.0 4.0	100	SW	R2					LIMESTONE; wackestone; gray (N5); slightly weathered (SW); weak (R2); fossiliferous. [Glen Rose Formation]		
40.2												BOTTOM OF HOLE AT 40.2'.		
41														
42														
43														
44														
45														
46														
47														
48														
49														
50														
51														
52														
53														
54														

Project Name and Job Number TXU Comanche Peak COL 1908		 WLA William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. BS-2001B</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°18'06.78874"N / 97°47'28.45203"W		Total Depth 40 feet	
Drilling Contractor and Rig TEXPLORE / CME 75		Elevation and Datum NAVD88	Ground Water Depth DRY	Depth to Bedrock 9.8 feet	
Casing Size and Depth 7" - HSA / 9.8 feet		Length of Core Barrel and Bit 8.2 feet / 8.2 feet	No. of Core Boxes	Date Started 4/8/07	
		Borehole Inclination Vertical	Logged by Bugra	Date Completed 4/8/07	

Reviewed by / Date R. Ortiz 4/12/07

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)							
10		1.47	1	1.7 2.0	85	MW	R2				P1, S1-Ko, T	LIMESTONE: saprolite; light gray (N7); moderately weathered (MW); weak (R2); no HCl reaction; vuggy. [Glen Rose Formation]									
11		1.55																			
12		0.98	2	4.3 5.0	70	HW	R2					LIMESTONE: wackestone; light yellowish brown (2.5Y 6/3); weak (R2); heavily weathered to completely weathered (HW-CW); slight HCl reaction. [Glen Rose Formation]									
13		1.37				SW	R2			LIMESTONE: wackestone; greenish gray (5GY 5/1); slightly weathered (SW); weak (R2); slight to strong reaction to HCl; very small clasts. [Glen Rose Formation]											
14						SW	R2-R3			LIMESTONE: micrite; greenish gray (5BY 5/1); slightly weathered (SW); weak to medium strong (R2-R3); slight reaction to HCl. [Glen Rose Formation]											
15		0.98	3	5.0 5.0	100	F	R1					SHALE; dark greenish gray (5GY 4/1); fresh (F); very weak (R1); no reaction to HCl; sparse very thin bed; thinly spaced. [Glen Rose Formation]	Driller drops core into mud tank								
16		0.92																			
17		4.33	4	5.0 5.0	100	F	R2					LIMESTONE: wackestone; greenish gray (5GY 5/1); fresh (F); weak (R2); strong reaction to HCl; fossiliferous in top 0.4'. [Glen Rose Formation]	Rig vibrates slightly for a few seconds								
18		3.43																			
19		1.75																			
20		1.12	4	5.0 5.0	100	SW	R3					LIMESTONE: micrite; gray (N6); slightly weathered (SW); medium strong (R3); violent reaction to HCl; massive. [Glen Rose Formation]	100 percent water return								
21		1.58																			
22		1.63	4	5.0 5.0	100	SW	R2					LIMESTONE: wackestone; gray (N5); slightly weathered (SW); weak (R2); strong to violent reaction to HCl; lots of small clasts. [Glen Rose Formation]									
23		1.17																			
24		0.92																			

Project Name and Job Number TXU Comanche Peak COL 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. BS-2001B</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
25		1.77	4	5.0 5.0	100							LIMESTONE: wackestone; gray (N5); slightly weathered (SW); weak (R2); strong to violent reaction to HCl; lots of small clasts. [Glen Rose Formation]		
26		1												
27		1.12	5	4.5 5.0	90	SW	R2							
28		1.13												
29		0.92												
30		3.25	6	4.8 5.0	96	SW	R2-R3							
31		1.67												
32		1.25	7	3.2 3.2	100	F	R1					SHALE; interbedded with micrite clasts and lenses; dark greenish gray (5GY 4/1); fresh (F); very weak (R1); slight reaction to HCl. [Glen Rose Formation]		
33		3.53												
34		2.57	7	3.2 3.2	100	SW	R2-R3					LIMESTONE: packstone; light gray (N7); slightly weathered (SW); weak to medium strong; violent reaction to HCl. [Glen Rose Formation]		
35		1.97												
36		1.9	7	3.2 3.2	100	SW	R2-R3					LIMESTONE: wackestone; medium light gray to medium gray (N5-N6); slightly weathered (SW); weak to medium strong (R2-R3); violent reaction to HCl. [Glen Rose Formation]		
37		1.52												
38		1.3	7	3.2 3.2	100	SW-F	R3					LIMESTONE: micrite; light gray (N7); fresh to slightly weathered (F-SW); medium strong (R3); violent reaction to HCl. [Glen Rose Formation]		
39		1.25												
												LIMESTONE: wackestone; gray (N6); slightly weathered (SW); weak (R2); strong HCl reaction; fossiliferous. [Glen Rose Formation]	Last run will be 3.2' to hit an even 40'	


Project Name and Job Number  
 TXU Comanche Peak COI  
 1908



**ROCK LOG**  
**Boring No. BS-2001B**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
40		3.33												
41														
42														
43														
44														
45														
46														
47														
48														
49														
50														
51														
52														
53														
54														



Project Name and Job Number TXU Comanche Peak COL 1908		 WLA William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. BS-2001C</b>	
Type and Diameter of Boring HQ / 4"		Boring Location 32°48'06.78874"N / 97°47'28.45203"W		Total Depth 40 feet	
Drilling Contractor and Rig TEXPLORE / CME-75		Elevation and Datum NAVD88	Ground Water Depth DRY	Depth to Bedrock 8 feet	
Casing Size and Depth 7"- HSA / 9.5 feet		Length of Core Barrel and Bit 8.2 feet / 8.2 feet	No. of Core Boxes	Date Started 4/8/07	
		Borehole Inclination Vertical	Logged by Bugra	Date Completed 4/8/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 4/12/07


Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
10		3.2	1	1.4 1.5	93	MW	R2				BJ, P1, R0, Op	SPARITE; light gray (10YR 7/2); moderately weathered (MW); weak (R2); no to slight reaction to HCl; some voids. [Glen Rose Formation]	Bedrock at 8.0'; Began rock coring at 9.5'	
11		1.7				HW	R2				RF, P1, R0, Op	LIMESTONE: wackestone; yellow (10YR 7/6); heavily weathered (HW); weak (R2); no to slight reaction to HCl. [Glen Rose Formation]		
12		1.47										LIMESTONE: wackestone; greenish gray (5GY 5/1); slightly weathered (SW); weak (R2); slight reaction to HCl; very small clasts. [Glen Rose Formation]		
13		1.5	2	4.5 5.0	100	SW	R2				Wa, R0, Ti	LIMESTONE: micrite; greenish gray (5GY 5/1); slightly weathered (SW); weak (R2); slight to strong reaction to HCl. [Glen Rose Formation]		
14		1.38				SW	R2					LIMESTONE: micrite; greenish gray (5GY 5/1); slightly weathered (SW); weak (R2); slight to strong reaction to HCl. [Glen Rose Formation]		
15		2.55										SHALE; greenish gray (5GY 4/1); fresh (F); very weak (R1); no reaction to HCl; sparse very thin bedding. [Glen Rose Formation]	Too many breaks for sample	
16		2.17				F	R1					LIMESTONE: wackestone; greenish gray (5GY 5/1); slightly weathered (SW); strong reaction to HCl; fossiliferous; weak (R2). [Glen Rose Formation]		
17		2.35										LIMESTONE: micrite; gray (N6); slightly weathered (SW); medium strong (R3); violent reaction to HCl. [Glen Rose Formation]		
18		3.2	3	5.0 5.0	100							LIMESTONE: wackestone; gray (N5) to dark gray (N4); slightly weathered (SW); weak (R2); strong to violent reaction to HCl. [Glen Rose Formation]		
19		2.52				SW	R2							
20		2.3												
21		1.88				SW	R3							
22		1.67	4	5.0 5.0	100									
23		1.03				SW	R2							
24		1.17												

Project Name and Job Number TXU Comanche Peak COL 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. BS-2001C</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
25		1.17	4	5.0 5.0	100							LIMESTONE: wackestone; gray (N5) to dark gray (N4); slightly weathered (SW); weak (R2); strong to violent reaction to HCl. [Glen Rose Formation]		
		1.37												
26		1.33	5	5.0 5.0	100	SW	R2					LIMESTONE: packstone; light gray (N7); slightly weathered (SW); medium strong (R3); violent reaction to HCl. [Glen Rose Formation]		
27		1.15												
28		1.67												
29		1.42	6	5.0 5.0	100						2001C-1	SHALE; dark greenish gray (5GY 4/1); slightly weathered (SW); very weak (R1); slight reaction to HCl; interbedded with micrites clasts. [Glen Rose Formation]		
30		1.87												
31		1.25	7	4.0 4.0	100	SW	R1					LIMESTONE: packstone; light gray (N7); slightly weathered (SW); medium strong (R3); violent reaction to HCl. [Glen Rose Formation]		
32		2.3												
33		3												
34		1.45	6	5.0 5.0	100	SW	R3					LIMESTONE: wackestone; gray (N5); slightly weathered (SW); weak (R2); violent reaction to HCl. [Glen Rose Formation]		
35		1.83												
36		1.72	7	4.0 4.0	100	SW	R2					LIMESTONE: wackestone; gray (N5); slightly weathered (SW); weak (R2); violent reaction to HCl. [Glen Rose Formation]		
37		2.4												
38		1.72												
39		2.97				SW	R2					LIMESTONE: wackestone; gray (N5); slightly weathered (SW); weak (R2); violent reaction to HCl; fossiliferous. [Glen Rose Formation]		

Project Name and Job Number TXU Comanche Peak COI 1908	 William Lettis & Associates, Inc.	<b>ROCK LOG</b> <b>Boring No. BS-2001C</b>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
40		2.97	7	4.0 4.0	100	SW	R2							
41														
42														
43														
44														
45														
46														
47														
48														
49														
50														
51														
52														
53														
54														

Project Name and Job Number TXU Comanche Peak COL 1908		 WLA William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. MW-1200S</b>	
Type and Diameter of Boring NQ / 3"		Boring Location 32°18'18.85108"N / 97°47'49.77300"E		Total Depth 100 feet	
Drilling Contractor and Rig TEXPLOR / CME		Elevation and Datum 848.97 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 1.5 feet	
Casing Size and Depth		Length of Core Barrel and Bit 13 feet	No. of Core Boxes 5	Date Started 11/1/06	
		Borehole Inclination Vertical	Logged by R. Turner	Date Completed 11/3/06	

Reviewed by / Date J. Wesling 11/30/06

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
14		1.57	1	1.1 1.5	60	SW	R2-R1					LIMESTONE: wackestone; sandy; very light gray (N8); massive; strong reaction with HCl; 30% subangular medium to coarse sands.	pit leaking, plugged with bentonite	834
15	NM													
16		0.97											return water good, color is cloudy gray	833
17		1.08												832
18		1.62	2	4.4 5.0	88	SW	R1					SHALE: sandy; dark gray (N3); massive; weak reaction with HCl. 30-40% subangular medium to coarse sands; damp.		831
19		2.9												
20		5.17										As above, dark gray (N3); damp, thinly bedded; contains rip-up clasts and some fossils; fresh (F). [Glen Rose Formation]		829
21		3.87												828
22		5.58										LIMESTONE: wackestone with shale interbeds and rip-up clasts; very light gray (N8); wavy bedding; strong reaction with HCl; weak (R2); dry; fresh (F). [Glen Rose Formation]		827
23		1.08	3	5.0 5.0	104	F	R2				JO, OP, R4			826
24		0.83												
25		1.08												824
26		2.1	4	5.1 5.0	100	F	R2					LIMESTONE: wackestone; very light gray (N8) to olive gray (5 Y 4/1); thin wavy bedding; abundant rip-up clasts; strong reaction with HCl; weak (R2); dry; fresh (F). [Glen Rose Formation]		823
27		1.05												
28		2.1												821
29														820

Length of recovery stretched due to  
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Project Name and Job Number  
 TXU Comanche Peak COL  
 1908



**ROCK LOG**  
**Boring No. MW-1200S**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
29		2.1	4	5.1 5.0	100	SW	R2					LIMESTONE: wackestone; very light gray (N8) to olive gray (5 Y 4/1); thin wavy bedding; rip-up clasts; slightly weathered (SW); weak (R2); dry. [Glen Rose Formation]	mechanical breaks. pit leaking again	819
30						SW	R1					SHALE: thinly bedded; brownish black (5YR 2/1); damp; slightly weathered (SW); very weak (R1). [Glen Rose Formation]		818
31		3.88				SW	R2					LIMESTONE: wackestone; very light gray (N8) to olive gray (5 Y 4/1); thin wavy bedding; rip-up clasts; slightly weathered (SW); weak (R2); dry. [Glen Rose Formation]	return water good, color is cloudy gray	817
32		1.85				SW	R2							817
33			5	4.8 5.0	92							SHALE: thinly bedded; brownish black (5YR 2/1); damp; slightly weathered; very weak. [Glen Rose Formation]		816
34		3.58				SW	R1		1200S-3R					815
35		5.58												814
36												LIMESTONE: wackestone; sandy; with shale interbeds up to 4" thick; very light gray (N8) to brownish black (5YR 2/1); wavy thick bedding; some coal seams and rip-up clasts; strong reaction with HCl; slightly weathered (SW); weak (R2). [Glen Rose Formation]		813
37											OP, R8,F,JO			812
38		6.25	6	4.9 5.0	100	SW	R2		1200S-4R					811
39														810
40														809
41						SW	R2		1200S-5R			LIMESTONE: packstone; interbedded with shales; very light gray (N8) to brownish black (5YR 2/1); wavy bedding; rip-up clasts; dry; slightly weathered (SW); weak (R2). [Glen Rose Formation]		808
42														807
43		26.5	7	4.1 5.0	82	SW	R1					SHALE: brownish black (5YR 2/1); thinly bedded; very weak reaction with HCl; damp; slightly weathered (SW); very weak (R1). [Glen Rose Formation]		806
44														805

Project Name and Job Number  
 TXU Comanche Peak COI  
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**ROCK LOG**  
**Boring No. MW-1200S**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
44		26.5	7	4.1 5.0	82	SW	R1				HIGHLY FRACTURED	SHALE: brownish black (5YR 2/1); thin laminar bedding; very slight reaction to HCl; damp.	stopped for day	804
45		7.57				F	R2					LIMESTONE: wackestone; wavy bedding; bivalve fresh (F); fossils. [Glen Rose Formation]		803
46		3.27	8	3.5 4.0	78	SW	R1				BJ,OP, R3, F BJ,OP,R4,F BJ,OP, R3, F	SHALE: brownish black (5YR 2/1); thin laminar bedding with 4 thin (0.7" - 2") limestone interbeds; very slight reaction to HCl; damp. [Glen Rose Formation]	return water good, color is cloudy gray	802
47		5.53				SW	R1							801
48		4.67												800
49		4.37	9	1.0 1.0	100	SW	R1			1200S-6R		SHALE: brownish black (5YR 2/1); very thinly bedded; no reaction with HCl; damp. [Glen Rose Formation]	changing drill bit	799
50		5.4				SW	R2				HE,R3,CLAY FILLED	LIMESTONE: wackestone; very light gray (N8); slightly weathered (SW); weak (R2). [Glen Rose Formation]	sample 10 difficult to get out of rod, driller hit it a lot with hammer, lots of small pieces broke off and fell out	798
51		2.67	10	3.2 4.3	66	SW	R1					SHALE: sandy shale; thinly bedded; medium gray (N5); ~ 30% sand; no reaction with HCl; slightly weathered (SW); very weak (R1). [Glen Rose Formation]		797
52		8.45				SW	R1					LIMESTONE: wackestone.		796
53		0.3 0.3	11		100	SW	R1			1200S-7R		SHALE: brownish black (5YR 2/1); very thinly bedded; damp; strong reaction with HCl. [Glen Rose Formation]	sprocket on pump broke at ~ 9:45 am, fixed by ~ 2:15 pm	794
54	NM					SW	R1					LIMESTONE: wackestone; very light gray to medium gray (N8-N5); wavy bedding with rip-up clasts. [Glen Rose Formation]		793
55	NM		12	3.9 5.0	78	SW	R1					SHALE: brownish black (5YR 2/1); very thin beds; damp. [Glen Rose Formation]		792
56		2.42				SW	R2					LIMESTONE: wackestone; very light gray to medium gray (N8-N5); wavy bedding with rip-up clasts.		791
57		1.4												790

Project Name and Job Number TXU Comanche Peak COI 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. MW-1200S</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
59		2.77	12	<del>3.9</del> 5.0	78	SW	R2					LIMESTONE: wackestone; very light gray to medium gray (N8-N5); wavy bedding with rip-up clasts.		789
60		1.7							1200S-8R			LIMESTONE: wackestone; very light gray to medium light gray (N8-N6); wavy bedding; fresh (F); few rip-up clasts; dry; strong reaction with HCl. [Glen Rose Formation]	return water good, color is cloudy gray	789
61		1.37												788
62		1.22	13	<del>4.7</del> 5.0	94									787
63		2.12												786
64		1.33												785
65		1.18							1200S-9R					784
66														783
67						SW	R2							782
68		2.28	14	<del>5.0</del> 5.0	100									781
69														780
70														779
71									1200S-10R					778
72		7.62	15	<del>4.4</del> 5.0	87									777
73														776
74		2.7												775

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**ROCK LOG**  
**Boring No. MW-1200S**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
74														
75		NM	15	4.4 5.0	87	SW	R2		1200S-11R			LIMESTONE: wackestone; very light gray to medium light gray (N8-N6); wavy bedding with some rip-up clasts; weak (R2); dry; strong reaction with HCl.		774
76														773
77														772
78		5.22	16	5.0 5.0	100								return water good, color is cloudy gray	771
79														770
80									1200S-12R					769
81														768
82						SW	R2							767
83		5.4	17	5.0 5.0	99									766
84														765
85									1200S-13R					764
86														763
87		4.83	18	5.0 5.0	100									762
88														761
89														760




Project Name and Job Number  
 TXU Comanche Peak COL  
 1908




**ROCK LOG**  
**Boring No. MW-1200S**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
89		4.83	18	5.0 5.0	100	SW	R2							759
90		0.85							1200S-14R			LIMESTONE: wackestone; very light gray to medium light gray (N8-N6); wavy bedding with rip-up clasts; fresh (F); strong reaction with HCl; dry. [Glen Rose Formation]		758
91		0.98												757
92		0.8	19	5.1 5.0	100	F	R2					Sandy interval 92.3'-94.0'.	return water good, color is cloudy gray	756
93		0.78											Length of recovery stretched due to mechanical breaks.	755
94		1.83												754
95									1200S-15R		JO,HE,R2	LIMESTONE: wackestone; light gray N8 to N6; massive fresh (F); from 95.0' to 97.3'; rip-up clasts and sand; strong reaction with HCl; dry. [Glen Rose Formation]		753
96														752
97		5.6	20	4.7 5.0	94	F	R2							751
98									1200S-16R					750
99														749
100													Total depth drilled 100.0'.	748
101														747
102														746
103														745
104														745

Project Name and Job Number TXU Comanche Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. MW-1200S</b>	
Type and Diameter of Boring NQ / 3"		Boring Location 32°18'18.85108"N / 97°47'49.77300"E		Total Depth 100 feet	
Drilling Contractor and Rig TEXPLOR / CME		Elevation and Datum 848.97 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 1.5 feet	
Sampling Method CME Continuous Core		Sample Driving Hammer/Drop NA / NA	No. of Samples 1	Date Started 11/1/06	
		Borehole Inclination Vertical	Logged by R. Turner	Date Completed 11/3/06	

Reviewed by / Date J. Wesling 11/30/06

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0										
1	GP		MW-1200S 1		11/12			LIMESTONE CAPROCK; GP - poorly graded gravel with sand and silt. Subangular to angular limestone clasts 0.25" to 2.2"; fresh (F); fine to coarse angular sand.		848
2								GRAVEL (GP); poorly graded; angular limestone clasts 0.2" to 2.2"	At 1.5' sample refusal but no auger refusal	847
3										846
4										845
5										844
6										843
7										842
8	GP		MW-1200S 2		7/150					841
9										840
10										839
11										838
12										837
13										836
14										835
15										834

Project Name and Job Number TXU Comanche Peak COL 1908		 WLA William Lettis & Associates, Inc.		<h1>ROCK LOG</h1> <h2>Boring No. MW-1201S</h2>	
Type and Diameter of Boring NQ / 3"		Boring Location 32°18'06.56453"N / 97°47'44.74781"W		Total Depth 100 feet	
Drilling Contractor and Rig Coretest / CME 75		Elevation and Datum 863.08 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 9.5 feet	
Casing Size and Depth 8" HSA / 19 feet		Length of Core Barrel and Bit 13 feet / 13 feet	No. of Core Boxes 5	Date Started 10/24/06	
		Borehole Inclination Vertical	Logged by C.Rittel	Date Completed 10/24/06	

Reviewed by / Date \_\_\_\_\_ R. Ortiz

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
19						SW	R1					SHALE: mudstone to fine grained sandstone; greenish gray 5GY 5/1; slightly weathered (SW); very weak (R1). [Glen Rose Formation]		844
20									1201-1			LIMESTONE: wackestone; very light gray (N8). [Glen Rose Formation]		843
21														842
22		12.67	1	5.9 6.0	98	SW	R1-R2							841
23														840
24														839
25												SHALE: mudstone; slightly weathered (SW); weak (R2). [Glen Rose Formation]		838
26						SW	R2		1201-2					837
27														836
28		10.88	2	5.0 5.0	100							LIMESTONE: packstone; greenish gray (10GY 5/1); slightly weathered (SW); very weak to weak (R1-R2). [Glen Rose Formation]		835
29						SW	R1-R2							834
30														833
31						SW	R1-R2					LIMESTONE: packstone; shell fragments		832
32		14.32	3	5.0 5.0	100							LIMESTONE: micrite		831
33						SW	R2		1201-3					830
34														

Project Name and Job Number  
 TXU Comanche Peak COL  
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**ROCK LOG**  
**Boring No. MW-1201S**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
34		14.32	3	5.0 5.0	100							LIMESTONE: micrite		829
35														828
36						SW	R2							827
37														826
38		24.28	4	5.0 5.0	100								darker zone of fossil rich material 32.5'-32.65'	825
39										1201-4				824
40						SW	R1					SHALE: mudstone/claystone; dark greenish gray (5GY 4/1); slightly weathered (SW); very weak (R1); shell fragments at 41.0'. [Glen Rose Formation]		823
41														822
42						SW	R2					LIMESTONE: wackestone; greenish gray (10Y 5/1); slightly weathered (SW); very weak (R1). [Glen Rose Formation]		821
43		23.55	5	4.8 5.0	96					1201-5				820
44												LIMESTONE; packstone		819
45						SW	R2					LIMESTONE: micrite; very light gray (N8); slightly weathered (SW); weak (R2). [Glen Rose Formation]		818
46													smooth constant drilling	817
47						SW	R2			1201-6		LIMESTONE: wackestone; slightly weathered (SW); weak (R2). [Glen Rose Formation]		816
48														815
49														

Project Name and Job Number  
 TXU Comanche Peak COL  
 1908



**ROCK LOG**  
**Boring No. MW-1201S**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
49														814
50						SW	R2					LIMESTONE: wackestone; slightly weathered (SW); weak (R2) . [Glen Rose Formation]		813
51														812
52		20.25	7	45.0	98	SW	R2					SHALE: mudstone; interbedded with packstone and micrite; dominated mainly by shale; beds are 0.1-0.3' thick; slightly weathered (SW); weak (R2)		811
53													recovered rest of run from run 10	810
54						SW	R2					SHALE: mudstone layer		809
55						SW	R2					SHALE: mudstone; interbedded with packstone and micrite; dominated mainly by shale; beds are 0.1-0.3' thick; slightly weathered (SW); weak (R2) . [Glen Rose Formation]		808
56												LIMESTONE: micrite; interbedded with mudstone layers up to 0.1' in thickness; fine-grained; slightly weathered (SW); weak (R2)		807
57		27.03	8	55.0	100	SW	R2				RF,R0, Med Fracture			806
58														805
59						SW	R2					LIMESTONE: wackestone; fine to medium grained; slightly weathered (SW); weak (R2) . [Glen Rose Formation]		804
60						SW	R2					SHALE: mudstone layer	missing core recovered from RUN 9 constant drilling	803
61												LIMESTONE: micrite; interbedded with mudstone/claystone layers up to 0.3' thick; micrite layers are 0.5' thick; slightly weathered (SW); very weak (R1) to weak (R2). [Glen Rose Formation]		802
62		18.8	9	55.0	88	SW	R1-R2					Rip up clasts 62.0'-63.1'.		801
63														800
64						SW	R1							800

Project Name and Job Number  
 TXU Comanche Peak COL  
 1908



**ROCK LOG**  
**Boring No. MW-1201S**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
64		18.8	9	5.0	88							SHALE: mudstone; to fine-grained sandstone; moderate HCL reaction; dark gray (N4) slightly weathered (SW); weak (R2). [Glen Rose Formation]		799
65						SW	R1							798
66														797
67		17.47	10	5.0	100	SW	R2					LIMESTONE: micrite	constant drilling	796
68												SHALE: mudstone; interbedded with micrite beds 0.1-0.4' thick; slightly weathered; weak to very weak (R1-R2). [Glen Rose Formation]		795
69						SW	R1-R2							794
70														793
71												LIMESTONE: micrite; fine to medium grained; slightly weathered (SW); weak (R2). [Glen Rose Formation]		792
72		21.23	11	5.0	100	SW	R2							791
73														790
74												SHALE: mudstone; fossil rich to 74.0'; slightly weathered (SW); very weak (R1). [Glen Rose Formation]		789
75						SW	R1			1201-10			smooth constant drilling	788
76														787
77		26.18	12	5.0	100	SW	R2					LIMESTONE: micrite; very light gray (N8); slightly weathered (SW); weak (R2). [Glen Rose Formation]		786
78						SW	R1			1201-11		SHALE: mudstone; medium light gray (N6) to medium gray (N5); slightly weathered (SW); weak (R2). [Glen Rose Formation]		785
79														785

Project Name and Job Number  
 TXU Comanche Peak COI  
 1908



**ROCK LOG**  
**Boring No. MW-1201S**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
79		26.18	12	5.0 5.0	100									784
80						SW	R2							783
81													mudstone layer from 81.1'-81.8'	782
82						SW	R2							781
83		27.32	13	5.0 5.0	100									780
84														779
85									1201-12					778
86														777
87														776
88		26.22	14	5.0 5.0	100									775
89						SW	R2							774
90														773
91														772
92		25.52	15	5.0 5.0	100									771
93									1201-14					770
94														


Project Name and Job Number  
 TXU Comanche Peak COI  
 1908



**ROCK LOG**  
**Boring No. MW-1201S**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
94		25.52	15	51.0	100	SW	R2					WACKESTONE; slightly weathered (SW); weak (R2). [Glen Rose Formation]		769
95														768
96														767
97									1201-15					766
98		21.23	16	51.0	100	SW	R1-R2					Interbed of fossil rich mudstone below 97.1'.		765
99														764
100													Total depth drilled 100.0'.	763
101														762
102														761
103														760
104														759
105														758
106														757
107														756
108														755
109														



Project Name and Job Number TXU Comanche Peak COL 1908		 WLA William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. MW-1201S</b>	
Type and Diameter of Boring NQ / 3"		Boring Location 32°18'06.56453"N / 97°47'44.74781"W		Total Depth 100 feet	
Drilling Contractor and Rig Coretest / CME 75		Elevation and Datum 863.08 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 9.5 feet	
Sampling Method CME Continuous Core		Sample Driving Hammer/Drop NA / NA	No. of Samples 4	Date Started 10/24/06	
		Borehole Inclination Vertical	Logged by C.Rittel	Date Completed 10/24/06	

Reviewed by / Date \_\_\_\_\_ R. Ortiz

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0								SILT: sandy	top soil	863
1	ML		MW-1201S 1							862
2	ML			42 42				SILT: sandy; dark reddish gray (5YR 4/2); damp; stiff; trace medium grained subangular sand; strong HCL reaction; trace clay; low plasticity; slow to rapid dilatancy; 5-10% angular to subangular gravel, up to 0.03' in length	grass roots present, organics	861
3										860
4								SILT: sandy; light yellowish brown (2.5Y 6/4); dry to damp; very stiff to hard; calcium carbonate accumulation; 1-5% pores		859
5										858
6	ML		MW-1201S 2		24 60					857
7										856
8										855
9	ML							SILT to sandy SILT: damp; low toughness; low plasticity; fine to medium sands present; weak (R2) HCL reaction; yellowish red (5YR 4/6) on ped/bottom of gravel clasts	color change, zone of iron oxide accumulation/translocated clays	854
10								GRAVEL (GW); and LIMESTONE: micrite; (weathered bedrock); light gray (2.5Y 7/2); angular clasts averaging 0.1"-0.3' in length; dry to damp	zone of weathered bedrock	853
11			MW-1201S 3		22.8 60					852
12	GW									851
13										850
14										849
15										848

Project Name and Job Number  
 TXU Comanche Peak COL  
 1908



**SOIL LOG**  
**Boring No. MW-1201S**

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
15										848
16			MW-1201S 4		22.8 60			GRAVEL (GW); and LIMESTONE: micrite; (weathered bedrock); light gray (2.5Y 7/2); angular clasts averaging 0.1"-0.3' in length; dry to damp (Continued from previous page)		847
17	GW									846
18										845
19									top of bedrock (Glen Rose Formation) at 18.5', began NQ coring at 19.0'.	844
20										843
21										842
22										841
23										840
24										839
25										838
26										837
27										836
28										835
29										834
30										




Undisturbed sample  
 SH = Shelby; P = Pitcher; O = other



Driven (2.5 to 3.0 inch) with liners  
 MC = Modified California; O = other



Standard Penetration Test (SPT) sampler

Project Name and Job Number TXU Comanche Peak COL 1908		 WLA William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. MW-1202S</b>	
Type and Diameter of Boring NQ / 3"		Boring Location 32°18'03.79866"N / 97°47'51.54684"W		Total Depth 100.2 feet	
Drilling Contractor and Rig Coretest / CME 75		Elevation and Datum 853.86 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 2.6 feet	
Casing Size and Depth 7.5 / 15 feet		Length of Core Barrel and Bit 13 feet	No. of Core Boxes 5	Date Started 10/30/06	
		Borehole Inclination Vertical	Logged by C.Rittel	Date Completed 10/31/06	

Reviewed by / Date \_\_\_\_\_ R. Ortiz

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology		Remarks	Elevation (feet)
												SW	R1		
9.0														Began NQ coring at 9.0'	844
10.0														driller losing water-advances CME soil core from 9'-14' to plug leak	843
11.0									1202-2						842
12.0		9.08	1	4.7 6.0	78										841
13.0															840
14.0															839
15.0														Field Log skips sample 1202-3, starts at 1202-4 start 10/31/06	838
16.0									1202-4						837
17.0															836
18.0		15.43	2	4.7 5.0	92										835
19.0															834
20.0															833
21.0															832
22.0		19.38	3	5.0 5.0	100										831
23.0															830
24.0															830

Project Name and Job Number TXU Comanche Peak COL 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. MW-1202S</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
24		19.38	3	5.0 5.0	100	SW	R2					LIMESTONE: packstone; very light gray (N8) to medium light gray (N6); weak (R2); slightly weathered (SW). [Glen Rose Formation]	driller believes part of run at bottom of boring-will get during run 4	829
25												LIMESTONE: wackestone; light gray (N7); weak (R2); slightly weathered (SW). [Glen Rose Formation]		828
26						SW	R2							827
27										1202-5	RF,R0,OP			827
28		12.97	4	5.0 5.0	100	SW	R1					SHALE: mudstone; medium dark gray (N4); very weak (R1); slightly weathered (SW). [Glen Rose Formation]		826
29												LIMESTONE: wackestone; light gray (N7); weak (R2); slightly weathered (SW). [Glen Rose Formation]		825
30						SW	R2							824
31										1202-6		LIMESTONE: micrite; very light gray (N8); slightly weathered (SW); weak (R2). [Glen Rose Formation]		823
32						SW	R2							822
33		6.38	5	5.0 5.0	100							LIMESTONE: wackestone; very light gray (N8) to light gray (N7); slightly weathered (SW); weak to very weak (R1-R2). [Glen Rose Formation]		821
34														820
35														819
36						SW	R1-R2						good water return	818
37		4.2	6	4.8 5.0	96					1202-7				817
38														816
39														815

Project Name and Job Number  
 TXU Comanche Peak COL  
 1908



**ROCK LOG**  
**Boring No. MW-1202S**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
39		4.2	6	4.8 5.0	96	SW	R1-R2					LIMESTONE: wackestone; very light gray (N8) to light gray (N7); slightly weathered (SW); weak to very weak (R1-R2). [Glen Rose Formation]		814
40														813
41														812
42		ND	7	5.0 5.0	100	SW	R1		1202-8			SHALE: mudstone; interbedded with micrite beds 0.1'-0.2'. Mudstone is medium light gray (N6), very weak (R1), slightly weathered (SW). [Glen Rose Formation]		811
43														810
44												LIMESTONE: wackestone; very light gray (N8); slightly weathered (SW); weak to very weak (R1-R2). [Glen Rose Formation]		809
45		2.93												808
46		3.62				SW	R1-R2							807
47		3.87	8	4.6 5.0	92				1202-9					806
48		3.07												805
49		3.87												804
50		2.77											good water return	803
51		4												802
52			9	4.9 5.0	98	SW	R1							801
53		4							1202-10					800
54		5.25												

Project Name and Job Number TXU Comanche Peak COL 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. MW-1202S</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
54		5.12	9	4.9 5.0	98	SW	R2					LIMESTONE: wackestone; very light gray (N8); weak (R2); slightly weathered (SW); bioturbated zones - burrows. [Glen Rose Formation]		799
55		3.42										SHALE: mudstone; medium gray (N5); slightly weathered (SW); very weak (R1). [Glen Rose Formation]		798
56		3										Pyrite clasts 56.4'-56.45'.		797
57						SW	R2					Pyrite clasts 56.9'.		796
58		3.33	10	4.9 5.0	98							LIMESTONE: wackestone; very light gray (N8) to light gray (N7); slightly weathered (SW); weak (R2); violent HCl reaction. [Glen Rose Formation]		795
59		3.28				SW	R2							794
60		3.5												793
61		2										SHALE: mudstone; medium dark gray (N4); very weak (R1); slightly weathered (SW). [Glen Rose Formation]	good water return	792
62		3.62				SW	R1							791
63		3.25	11	4.8 5.0	96									790
64		3.35				SW	R2			1202-11		LIMESTONE: wackestone; light gray (N7); weak (R2); slightly weathered (SW); interbedded with mudstone. [Glen Rose Formation]		789
65		2.18										SHALE: mudstone; medium dark gray (N4); 1/8" bedding. [Glen Rose Formation]		788
66		1.5				SW	R1							787
67		1.33								1202-12		LIMESTONE: micrite; very light gray (N8); slightly weathered (SW); weak (R2); thin 1/4" to 1/8" mudstone interbeds	constant drilling	786
68		1.33	12	4.9 5.0	100	SW	R2							785
69		1.33				SW	R2					MUDSTONE		

Project Name and Job Number  
 TXU Comanche Peak COL  
 1908



**ROCK LOG**  
**Boring No. MW-1202S**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
69		1.63	12	4.9 5.0	100							LIMESTONE: wackestone; very light gray (N8) to light gray (N7); slightly weathered (SW). [Glen Rose Formation]		784
70		1.6												783
71		2.5												782
72		2	13	5.0 5.0	100	SW	R2		1202-13					781
73		1.67												780
74		1.58												779
75		1.6										LIMESTONE: wackestone; very light gray (N8) to light gray (N7); slightly weathered (SW); weak (R2). [Glen Rose Formation]		778
76		1												777
77		0.97	14	5.0 5.0	100									776
78		0.95								1202-14				775
79		1.02												774
80		1				SW	R2						good water return	773
81		0.97												772
82		0.95	15	5.0 5.0	100					1202-15			constant drilling	771
83		1.17												770

Project Name and Job Number  
 TXU Comanche Peak COL  
 1908



**ROCK LOG**  
**Boring No. MW-1202S**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
84		1.25	15	5.0	100							LIMESTONE: wackestone; very light gray (N8) to light gray (N7); slightly weathered (SW); weak (R2). [Glen Rose Formation]		769
85		1.18												768
86		1.05												767
87		1.3	16	5.0	100				1202-16					766
88		1.22												765
89		1.2												764
90		1.25				SW	R2							763
91		1.17							1202-17					762
92		1.23	17	5.0	100									761
93		1.42												760
94		1.5											hard rig response	759
95		1.5											good water return	758
96		1.55												757
97		1.67	18	5.2	100									756
98		1.52				SW	R1		1202-18			SHALE: mudstone; medium gray (N5); slightly weathered (SW); very weak (R1); violent HCl reaction; trace medium grained sands (5%). [Glen Rose Formation]		755
99						SW	R2							755




Project Name and Job Number  
 TXU Comanche Peak COI  
 1908




**ROCK LOG**  
**Boring No. MW-1202S**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
99		1.5	18	5.2	100	SW	R2					LIMESTONE: wackestone; very light gray (N8) to light gray (N7); slightly weathered (SW); weak (R2); violent HCl reaction.. [Glen Rose Formation]		754
100													total depth drilled 100.0'	754
101														753
102														752
103														751
104														750
105														749
106														748
107														747
108														746
109														745
110														744
111														743
112														742
113														741
114														740

Project Name and Job Number TXU Comanche Peak COI 1908		 WLA William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. MW-1202S</b>	
Type and Diameter of Boring NQ / 3"		Boring Location 32°18'03.79866"N / 97°47'51.54684"W		Total Depth 100.2 feet	
Drilling Contractor and Rig Coretest / CME 75		Elevation and Datum 853.86 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 2.6 feet	
Sampling Method CME Continuous Core		Sample Driving Hammer/Drop NA / NA	No. of Samples 1	Date Started 10/30/06	
		Borehole Inclination Vertical	Logged by C.Rittel	Date Completed 10/31/06	

Reviewed by / Date \_\_\_\_\_ R. Ortiz

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
0									853
1	CL-MH		MW-1202S 1	NA	38.4 / 42		CLAY; silty (CL-MH) light olive brown 2.5Y 5/3; damp to moist; very stiff to hard; slow dilatancy; medium toughness; medium plasticity; HCl reaction; trace ~10% fine to coarse sands; subangular	slight soil development in to 1'; dark olive brown (2.5Y 3/3)	852
2									
3							No Recovery: tried to sample: bedrock determined to be at 2.6'	top of bedrock (Glen Rose Formation) at 2.6'.	851
4									850
5								difficult drilling, attempting to drill through	849
6									848
7									847
8									846
9									845
10									844
11									843
12									842
13									841
14									840
15									839

Project Name and Job Number TXU Comanche Peak COL 1908		 WLA William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. MW-1203S</b>	
Type and Diameter of Boring NQ / 3"		Boring Location 32°17'53.39997"N / 97°47'47.88713"W		Total Depth 100 feet	
Drilling Contractor and Rig Coretest / CME 75		Elevation and Datum 862.42 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 19 feet	
Casing Size and Depth HSA 8" / 19 feet		Length of Core Barrel and Bit 13.8 feet	No. of Core Boxes 5	Date Started 11/4/06	
		Borehole Inclination Vertical	Logged by M. Buga	Date Completed 11/5/06	

Reviewed by / Date J. Wesling 11/30/06

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
19		3.73	1	1.0 1.0	100	SW	R2-R3					DOLomite; greenish gray (5GY 6/1); slightly weathered (SW); weak to medium strong (R2-R3)	bedrock (Glen Rose Formation) at 19.0', began NQ coring	843
20		2				SW	R2					SHALE: claystone; calcareous; medium gray (N5); strong HCl reaction; slightly weathered (SW); weak (R2); contains white intraclasts <1/10" to 1 1/2"	good water return	842
21		2.42				F-SW	R2-R3					LIMESTONE: micrite; medium gray (N5); fresh to slightly weathered (F-SW); weak to medium strong (R2-R3); slight reaction to HCl; thinly bedded shale; micrite rip up clasts at contact		841
22		3.67	2	5.0 5.0	100	F-SW	R2-R3					LIMESTONE: wackestone; medium gray (N5); fresh to slightly weathered (F-SW); weak to medium strong (R2-R3); strong HCl reaction; fossils		840
23		3.1				F-SW	R2-R3					LIMESTONE; PACKSTONE; medium gray (N5) fresh to slightly weathered (F-SW); strong to violent reaction with HCl; brachiopods and nautiloids abundant		839
24		2.92				F-SW	R2-R3				BJ, WA, S1, OP	SHALE: claystone; top 0.4' is grayish green (5G 5/2) and continues as dark greenish gray (5G 4/1); fresh to slightly weathered (F-SW); strong HCl reaction; very weak to extremely weak (R0-R1). Micrite interbed 25.75'-25.9'.		838
25		2				F-SW	R0-R1				BJ, P1, ST, TI			837
26		2				F-SW	R0-R1							836
27		2.25	3	4.9 5.0	97	F-SW	R0-R1							835
28		3.57				F-SW	R2-R3							834
29		5.67				F-SW	R2-R3							833
30		5.42				F-SW	R3							832
31		4.97				F-SW	R2-R3						good water return	831
32		5	4	4.5 5.0	95	F-SW	R2-R3							830
33		4.17				F-SW	R1							829

Project Name and Job Number  
 TXU Comanche Peak COL  
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**ROCK LOG**  
**Boring No. MW-1203S**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
34		2.87	4	4.65 5.0	95	F-SW	R1							828
35		4.23				F-SW	R1-R2					LIMESTONE: wackestone; medium gray (N5); fresh to slightly weathered (F-SW); very weak to weak (R1-R2); strong HCl reaction; bottom 0.4" convoluted bedding		827
36		5				F-SW	R1-R2							826
37		4.9	5	4.68 5.0	98	F-SW	R2					LIMESTONE: MICRITE; very light gray (N8); weak; fresh to slightly weathered (F-SW); violent reaction to HCl; thinly bedded		825
38		4												824
39		5.62										LIMESTONE: packstone; medium light gray (N6) fresh to slightly weathered (F-SW); violent reaction with HCl; weak to medium strong (R2-R3); intraclasts ranging from 0.1" to 1.5". wavy foliations/bedding below 41' intraclasts become larger and more prominent; continuing dark wavy foliations		823
40		2.72										Micrite layer, very light gray (N8); weak; fresh to slightly weathered (F-SW); violent reaction to HCl; thinly bedded		822
41		2.83				F-SW	R2-R3			1203-1				821
42		2.5	6	5.0 5.0	99						RF,RA,SL,TI			820
43		2												819
44		1.93									BJ,P1,S1,OP			818
45		2.83												817
46		5.83										SHALE: dark greenish gray (5GY 4/1); very weak (R1); fresh (F); slight HCl reaction; interbedded with micrite, forming foliations <0.1" to larger intraclasts	good water return	816
47		3.55	7	5.0 5.0	100	F	R1							815
48		4.92												814
49						F								

Project Name and Job Number  
TXU Comanche Peak COL  
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**ROCK LOG**  
**Boring No. MW-1203S**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
49		3.67	7	5.0 5.0	100	F	R2-R3					LIMESTONE: MICRITE; light gray (N7); fresh (F); weak to medium strong (R2-R3); violent HCl reaction; abrupt contact with pervious unit		813
50		2.37				F	R2-R3					LIMESTONE: wackestone; light gray (N7); fresh (F); weak to medium strong (R2-R3); violent reaction to HCl; grades into a packstone		812
51		6.67				F	R1-R2		1203-2			SHALE layer with 0.2"-0.7" intraclasts		811
52		4.33	8	5.0 5.0	100	F	R1-R2					LIMESTONE: micrite; interbedded with wackestone to packstone; light gray (N7); fresh (F); very weak to weak (R1-R2); violent reaction to HCl; clasts range from 0.5" to 1.25". 51.9' to 53.3' packstone		810
53		3.7				F	R1-R2					Wackestone at 51.4' -51.7'		809
54		6.73										Wackestone at 54.0'-54.3'		808
55		5.1				F	R2					LIMESTONE: wackestone; light gray (N7); fresh (F); weak (R2); violent reaction to HCl; abundant fossils		807
56		5.15												806
57		4.47	9	4.8 5.0	100	F	R1		1203-3		RF,P1,SM,TI	SHALE; dark greenish gray (5GY 4/1); very weak (R1); fresh (F); slight HCl reaction; fossiliferous wackestone at base		805
58		3.63				F	R1							804
59		4.17												803
60		3.75				F	R2-R3					MICRITE; light gray (N7); weak to medium strong (R2-R3); fresh (F); violent reaction to HCl; crystalline veining		802
61		3.8							1203-4			SHALE; dark greenish gray (5GY 4/1); very weak; fresh (F); strong HCl reaction; bedding 0.13"-0.25" thick;	good water return	801
62		4	10	5.0 5.0	100	F	R1				BJ,PL,S1,TI	Micrite layer 61.3'-61.5'.;		800
63												Alteration mineral at 62.0'.		800
64		3.37				F	R2					LIMESTONE: micrite; with large veins of mudstone; medium light gray (N6); fresh (F); weak (R2); violent reaction to HCl		799

Project Name and Job Number  
 TXU Comanche Peak COL  
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**ROCK LOG**  
**Boring No. MW-1203S**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
64		3	10	5.0	100							LIMESTONE: wackestone; grading to micrite; light gray (N7); fresh (F); weak (R2); strong reaction to HCl		798
65		3				F	R2					Intraclasts increase in size until micritic in bottom 0.4'.		797
66		2.75										SHALE; medium bluish gray (5B 5/1); fresh (F); very weak; strong reaction to HCl; occasional bedding <0.25"		796
67		2.37	11	5.0	100	F	R1							795
68		2.33				F	R2		1203-5			LIMESTONE: packstone; medium light gray (N6); fresh (F); weak; violent reaction to HCl		794
69		2.83										SHALE; medium bluish gray (5B 5/1); fresh (F) to slightly weathered (SW); extremely weak to very weak (R0-R1); slight reaction to HCl		793
70		3.18				F-SW	R0-R1				RF,SM,TI			792
71		3.57									BJ,S1,TI			791
72		3.62	12	5.0	100	F	R2					LIMESTONE: packstone; medium light gray (N6); fresh (F); weak (R2); violent reaction to HCl; matrix becomes finer to base		790
73		3.83				F-SW	R0-R1							789
74		3.5				F-SW	R2					SHALE; medium bluish gray (5B 5/1); fresh (F) to slightly weathered (SW); extremely weak to very weak (R0-R1); slight reaction to HCl		788
75												LIMESTONE: micrite; very light gray (N8); weak (R2); fresh to slightly weathered (F-SW); violent reaction to HCl; sparse veining		787
76									1203-6			LIMESTONE: wackestone; medium light gray (N6); fresh (F); weak (R2); primarily large intraclasts; violent reaction to HCl; clasts range <1/8"-2"		786
77		ND	13	5.0	100	F	R2							785
78														784
79														784

Project Name and Job Number  
 TXU Comanche Peak COL  
 1908



**ROCK LOG**  
**Boring No. MW-1203S**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
79			13	5.0 5.0	100	F	R2					LIMESTONE: wackestone; medium light gray (N6); fresh (F); weak (R2); primarily large intraclasts; violent reaction to HCl; clasts range <1/8"-2"		783
80												LIMESTONE: wackestone; medium gray (N5); fresh (F); weak (R2); clasts range 0.25"-1.25"		782
81						F	R2							781
82			14	5.0 5.0	100				1203-7			Grades into packstone bottom 0.4'.		780
83						F	R2					MICRITE and LIMESTONE (wackestone): interbedded medium gray to medium light gray (N5-N6); fresh (F); weak (R2); violent HCl reaction		779
84												LIMESTONE: wackestone; medium light gray (N6); weak (R2); fresh (F); violent reaction to HCl; intraclasts 0.13"-1".		778
85												Abundant micrite 85.3'-86.0'.		777
86		ND				F	R2			BJ,WA,S1-R0,TI		86.0'-87.8' very large clasts present in wackestone (up to 2"); 86.0'-87.8'.		776
87			15	4.9 5.0	100							bottom 2.2' micrite		775
88														774
89														773
90						F	R1					SHALE: dark greenish gray (5GY 4/1); very weak (R1); fresh (F); slight HCl reaction; contains clasts 0.5"-3.0"; bottom contains densely packed clasts	good water return	772
91												LIMESTONE: micrite; light gray (N7); fresh to slightly weathered (F-SW); weak to medium strong (R2-R3); strong to violent reaction to HCl; grades into wackestone		771
92			16	5.0 5.0	100	F-SW	R2-R3		1203-8					770
93														769
94						F-SW	R2			BJ,WA,S1,TI		WACKESTONE with interbedded SHALE; medium gray (N5); fresh to slightly weathered (F-SW); weak (R2); strong HCl reaction		769


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 TXU Comanche Peak COI  
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**ROCK LOG**  
**Boring No. MW-1203S**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
94			16	51.0	100	F-SW	R2					WACKESTONE with interbedded SHALE; medium gray (N5); fresh to slightly weathered (F-SW); weak (R2); strong HCl reaction		768
95												MICRITE; interbedded with wackestone; medium light gray (N6); fresh to slightly weathered (F-SW); weak to medium strong (R2-R3); violent reaction to HCl		767
96														766
97	ND		17	51.0	100	F-SW	R2-R3		1203-9					765
98														764
99														763
100													total depth drilled 100.0'	762
101														761
102														760
103														759
104														758
105														757
106														756
107														755
108														754
109														



Project Name and Job Number TXU Comanche Peak COL 1908		 WLA William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. MW-1203S</b>	
Type and Diameter of Boring NQ / 3"			Boring Location 32°17'53.39997"N / 97°47'47.88713"W		Total Depth 100 feet
Drilling Contractor and Rig Coretest / CME 75			Elevation and Datum 862.42 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 19 feet
Sampling Method CME Continuous Core			Sample Driving Hammer/Drop NA / NA	No. of Samples 9	Date Started 11/4/06
			Borehole Inclination Vertical	Logged by M. Buga	Date Completed 11/5/06

Reviewed by / Date J. Wesling 11/30/06

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0	CL-ML		MW-1203S CME-1	NA	24/24		CLAY; silty sandy; CL-ML; soft; dark brown (10YR 3/3); moist; soft; medium dry strength (organic soil)			862
1	SM						SAND; silty; light yellowish brown (10YR 6/4); moist; loose to medium dense; gravel to ~2" (weathered bedrock?)			861
2							Limestone ledge?		plug in from 2'-3' broke through hard layer	860
3			MW-1203S CME-2				SILT; ML; white (2.5Y 8/1d); very soft; violent reaction to HCl			859
4	ML			NA	24/24					858
5										857
6										856
7										855
8										854
9										853
10			MW-1203S CME-3				CLAY with SAND; brownish yellow (10YR 6/6); moist; soft; very stiff; medium plasticity; similar composition to sand at 1'-2'			852
11	CL			NA	24/24					851
12									auger from 12'-19' w/ plug, drilled through weathered limestone; hit bedrock at 19'	850
13										849
14										848
15										847

Project Name and Job Number  
 TXU Comanche Peak COL  
 1908



**SOIL LOG**  
**Boring No. MW-1203S**

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
15									847
16									846
17									845
18									844
19							Top of Bedrock at 19'		843
20									842
21									841
22									840
23									839
24									838
25									837
26									836
27									835
28									834
29									833
30									833




Undisturbed sample  
 SH = Shelby; P = Pitcher; O = other



Driven (2.5 to 3.0 inch) with liners  
 MC = Modified California; O = other




Standard Penetration Test (SPT) sampler

Project Name and Job Number TXU Comanche Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. MW-1204S</b>	
Type and Diameter of Boring CME SOIL CORE			Boring Location 32°17'48.72420"N/ □ 97°47'30.98482"W		Total Depth 11.4 feet
Drilling Contractor and Rig Coretest / CME 75			Elevation and Datum NAVD88	Ground Water Depth DRY	Depth to Bedrock
Sampling Method CME Continuous soil core			Sample Driving Hammer/Drop NA / NA	No. of Samples	Date Started 11/1/06
			Borehole Inclination Vertical	Logged by M.Zellman	Date Completed 11/1/06

Reviewed by / Date \_\_\_\_\_ R. Ortiz \_\_\_\_\_

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0								TOPSOIL, dark olive gray (5Y 3/2), damp		
1								SILT with SAND and GRAVEL, light greenish gray (gley 1 7/1), dry stiff to very stiff, low dry strength, non plastic, mostly silt with angular to sub angular sand, coarse sand, and gravels, (limestone clasts up to 1.5")		
2	CL		MW-1204S 1		48 48					
3										
4								SILT with SAND (coarse), very dark gray (7.5YR 3/1), damp, very soft, no dry strength, coarse sand is angular to subangular		
5	ML		MW-1204S 2		31 60					
6										
7										
8								CLAY with SAND and GRAVEL, dark grayish brown (10YR 4/2), hard, very high dry strength, sand is medium to coarse and angular to subangular, gravel is subangular to subrounded up to 1", clay content increases with depth		
9	CL		MW-1204S 3		30 29					
10										
11										
12								Borehole MW-1204S encountered concrete at ~11.4'; the borehole was redrilled ~50 feet to the south and designated MW-1204S-A. MW-1204S-A was included under the MW-1204S work instructions.	Hard drilling-drilling on concrete with rebar	
13										
14										
15										

Project Name and Job Number TXU Comanche Peak COL 1908		 WLA William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. MW-1204S-A</b>	
Type and Diameter of Boring NQ / 3"		Boring Location 32°17.48.78667"N / 97°47'31.04428"W		Total Depth 100 feet	
Drilling Contractor and Rig Coretest / CME 75		Elevation and Datum 842.18 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 21 feet	
Casing Size and Depth HSA 3.75" / 24 feet		Length of Core Barrel and Bit 13 feet	No. of Core Boxes 4	Date Started 11/2/06	
		Borehole Inclination Vertical	Logged by M.Zellman	Date Completed 11/3/06	

Reviewed by / Date J.Wesling 11/30/06

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
25		NM				SW	R2					LIMESTONE: micrite; very light gray (N8); slightly weathered (SW); weak (R2); strong reaction to HCl. [Glen Rose Formation]		817
26		3.35				SW	R2					LIMESTONE: micrite; white (N9); slightly weathered (SW); weak (R2); slight reaction to HCl 77.1' to 77.3' more shale beds and weathering. [Glen Rose Formation].	very fine grained	816
27		0.78	1	5.8 5.8	100				MW-1204S-A-1			LIMESTONE: wackestone; very light gray (N8); fine grained; weak (R2); slightly to moderately weathered (SW-MW); fine wavy shale beds (1/8" thick); violent reaction to HCl; fine to medium grains with some fossils 77.1' to 77.3' more shale beds and weathering. 77.1' to 77.3' more shale beds and weathering. [Glen Rose Formation]	losing water. Adding 5' of HSA bentonite	815
28		0.92												814
29		0.7				SW-MW	R2							813
30		1.12												812
31		0.88											core stuck in barrel, using water to force out sample. Adding augers advance from 24' to 29'	811
32		1.38												810
33		1.08	2	3.4 5.0	68							SHALE: mudstone; medium gray (N5); extremely weak (R0); highly weathered (HW); few limestone/wackestone interbeds up to 0.3". [Glen Rose Formation]		809
34		1.95				HW	R0		MW-1204S-A-2					808
35		4										Bottom contact is planar with rip up clasts present. 77.1' to 77.3' more shale beds and weathering. [Glen Rose Formation]		807
36		1.6												806
37		1.33										LIMESTONE: wackestone; very light gray (N8); fine to medium grains; weak (R2); slightly weathered (SW); interbeds of mudstone (up to 1/4"); violently reactive to HCl. [Glen Rose Formation]		805
38		1.32	3	4.6 5.0	98	SW	R2							804
39		2.05												803
		1.33				HW	R0		MW-1204S-A-3			SHALE: mudstone; medium gray (N5); extremely weak (R0); highly weathered (HW); highly broken. [Glen Rose]		803

Project Name and Job Number  
 TXU Comanche Peak COL  
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**ROCK LOG**  
**Boring No. MW-1204S-A**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
40		1.33	3	4.9 5.0	98									802
41		0.9				SW	R2				PL,SM,TI			801
42		1.63												800
43		2.08	4	5.0 5.0	100									799
44		NM												798
45		NM				SW	R1							797
46		2												796
47		2.72				SW	R2							795
48		3.5	5	4.7 5.0	94									794
49		2.5				SW	R1							793
50		3.02												792
51		2.38												791
52		2.78	6	4.8 5.0	96	SW	R2							790
53		3.52												789
54		3.33				SW	R1							788
		4												

Project Name and Job Number TXU Comanche Peak COL 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. MW-1204S-A</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
55		4	6	$\frac{4.8}{5.0}$	96							SHALE: mudstone; medium dark gray (N4); very weak (R1); slightly weathered (SW); interbedded with thin limestone (beds are 1/8") in upper (0.4" thick limestone bed exists at 56.3'. Contacts and beds are wavy. Lower contact is wavy with rip-up clasts		787
56	NM					SW	R1							786
57	NM													785
58		3.38	7	$\frac{4.8}{5.0}$	96									784
59		3										LIMESTONE: micrite; very light gray (N8) to medium light gray (N6) in bioturbated zones; slightly weathered (SW); weak (R2); some (rare) lignite present; beds are wavy; violently reacts to HCl throughout. [Glen Rose Formation]  Heavily interbedded with shale from 60.0' to 60.8' .		783
60		3												782
61		3				SW	R2							781
62		1.78								MW-1204S-A-7				780
63		1.58	8	$\frac{5.0}{5.0}$	100							Increased bedding and larger grains with depth.		779
64		1.72										Wackestone		778
65		1.08												777
66		1.38												776
67		1.52				SW	R2							775
68		1.5	9	$\frac{5.0}{5.0}$	100									774
69		3								MW-1204S-A-8				773
		2.75												

Project Name and Job Number  
 TXU Comanche Peak COL  
 1908



**ROCK LOG**  
**Boring No. MW-1204S-A**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
70		2.75	9	5.0 5.0	100							LIMESTONE: wackestone; very light gray (N8) to medium light gray (N6) (along wavy bedding); slightly granular (fine to medium grain size); slightly weathered (SW); weak (R2); wavy bedding is common; sparse fossils; reacts violently to HCl. mostly medium light gray (N8). [Glen Rose Formation]	good water return	772
71		1.5												771
72		2.6												770
73		2.68	10	5.0 5.0	100				MW-1204S-A-9		Moderately weathered zone from 72.3' to 72.7'.		769	
74		2.52												768
75		3												767
76		2.97											Many wavy beds ~ 75'.	766
77		3.02				SW-MW								765
78		2.9	11	5.0 5.0	100	R2			MW-1204S-A-10		Increased shale beds and weathering 77.1'-77.3'.		764	
79		3.13											Wavy 1/4' thick shale bed and fossils at 78'.	763
80		3.1												762
81		2											Color change from 80.3' to 82.8';	761
82		1.6												760
83		5	12	5.0 5.0	100				MW-1204S-A-11					759
84		2.75											Thicker wavy shale beds (up to 1/4") at 83.0'.	758
		3												

Project Name and Job Number  
 TXU Comanche Peak COL  
 1908



**ROCK LOG**  
**Boring No. MW-1204S-A**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
85		3	12	5.0 5.0	100		R2							757
86		1.43										LIMESTONE: PACKSTONE; very light gray (N8) to light gray (N7); grain supported by subrounded to rounded medium to coarse clasts; beds are planar to wavy with shale interbedding (1/8" to 1/4"). [Glen Rose Formation]	good water return	756
87		1.83												755
88		1.85	13	5.0 5.0	100	SW	R2			MW-1204S-A-12				754
89		2.33												753
90		2.65												752
91		1.5								MW-1204S-A-13		Grades to WACKESTONE		751
92		2.8				MW-SW	R2							750
93		2.68	14	5.0 5.0	100							grades to PACKSTONE		749
94		2.62												748
95		2.75												747
96		2.13				SW	R2							746
97		2.15								MW-1204S-A-14				745
98		2.05	15	5.0 5.0	100	SW	R2					MICRITE		744
99		1.9				SW	R2					SHALE and MICRITE; laminated 1/8" to 1/4".		744
99		2.63												743




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**ROCK LOG**  
**Boring No. MW-1204S-A**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
100		2.63	15	5.0 5.0	100	SW	R2					LIMESTONE: packstone; very light gray (N7) to medium gray (N5) (medium gray zones along bedding); supported by rounded to subrounded clasts; medium to coarse. Planar to wavy bedding. [Glen Rose Formation]	Bottom of boring at 100'	742
101														741
102														740
103														739
104														738
105														737
106														736
107														735
108														734
109														733
110														732
111														731
112														730
113														729
114														728

Project Name and Job Number TXU Comanche Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. MW-1204S-A</b>	
Type and Diameter of Boring NQ / 3"		Boring Location 32°17.48.78667"N / 97°47'31.04428"W		Total Depth 100 feet	
Drilling Contractor and Rig Coretest / CME 75		Elevation and Datum 842.18 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 21 feet	
Sampling Method HSA Continuous soil core		Sample Driving Hammer/Drop NA / NA	No. of Samples 5	Date Started 11/2/06	
		Borehole Inclination Vertical	Logged by M.Zellman	Date Completed 11/3/06	

Reviewed by / Date J.Wesling 11/30/06

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0										842
1	ML		MW-1204S-A 1	NA	21 48			SILT with SAND; dark gray (10YR 4/1); damp; soft to medium stiff; medium dry strength; has organic content (roots)		841
2										840
3										839
4								SILT with CLAY and SAND; gray (10YR 6/1); dry to damp; very soft; no to low dry strength; sand is med to coarse and sub angular to angular. Gravel is rare and subangular up to 1' in size		838
5	ML		MW-1204S-A 2	NA	13 60					837
6										836
7										835
8								SILT with SAND and GRAVEL; light gray (10YR 7/1); dry soft; no dry strength. Sand is fine to coarse and sub angular. Gravel is rare and sub angular.		834
9	ML								no return 9-12'. Center plug added due to boulder	833
10										832
11										831
12			MW-1204S-A 3	NA	0 60			CLAY with SAND and GRAVEL; greenish gray (5GY 6/1); dry; soft to stiff; medium to high plasticity		830
13	CL									829
14										828
15										

Project Name and Job Number  
 TXU Comanche Peak COI  
 1908



**SOIL LOG**  
**Boring No. MW-1204S-A**

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
15	CL		MW-1204S-A 4	NA	14 60		CLAY with SAND and GRAVEL; greenish gray (5GY 6/1); dry; soft to stiff; medium to high plasticity (Continued from previous page)		827
16									
17	CL						SILTY SAND with GRAVEL; light greenish gray (5GY 8/1); dry; soft; non plastic. Sand is fine to coarse and subangular; gravel is subangular and ranges from 1" to 2.5"		825
18									824
19	CL		MW-1204S-A 5	NA	12 24		CLAY with SAND and GRAVEL; light greenish gray (gley 1 7/1); and Yellow (2.5Y 7/6); mottled; damp to moist; soft to stiff; medium plastic. Sand is fine and angular to subangular. Gravel is angular and size is from 1" to 2.5"		823
20	CL								CLAY; light yellowish brown (7.5Y 6/4); moist; mottled; medium stiff; low to medium plastic
21							Bedrock (Glen Rose Formation) at 21'. Began NQ coring at 24.2'.	Top of Bedrock at 21'	821
22									820
23									819
24									818
25									817
26									816
27									815
28									814
29									813
30									




Undisturbed sample  
 SH = Shelby; P = Pitcher; O = other



Driven (2.5 to 3.0 inch) with liners  
 MC = Modified California; O = other



Standard Penetration Test (SPT) sampler

Project Name and Job Number TXU Comanche Peak COL 1908		 WLA William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. MW-1205S</b>	
Type and Diameter of Boring CME Continuous Core / 3"		Boring Location 32°18'04.59247"N / 97°47'39.42955"W		Total Depth 100.5 feet	
Drilling Contractor and Rig TEXPLOR / CME 75		Elevation and Datum 857.45 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 11 feet	
Casing Size and Depth 4" / 10 feet		Length of Core Barrel and Bit 13 feet	No. of Core Boxes 5	Date Started 10/19/06	
		Borehole Inclination Vertical	Logged by R.ORTIZ	Date Completed 10/20/06	

Reviewed by / Date \_\_\_\_\_ J. Wesling

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
11		1.63				MW	R1					LIMESTONE: micrite; white to moderate yellow (5Y 7/6); very fine grained; many dissolution features; moderately weathered (MW). [Glen Rose Formation]	top of bedrock (Glen Rose Formation) at 11.0'; began NQ coring	846
12		1.18	1	4.0 3.5	73							SHALE: mudstone; light bluish gray (5B 7/1); interbedded with micrite; bluish gray (5B 5/1); fissile; weak to moderately strong (R2-R3); interbeds are closely spaced and between 0.01' to 0.4' thick. [Glen Rose Formation]	Hard drilling	845
13		1.28				SW	R2-R3				PL, SM, Ti-Si Op			844
14		1.15									PL, SM, Ti-Si Op			843
15		0.9									PL Ti WA, Si RO, Op		No analytical samples collected this borehole.	842
16		0.93									PL, SM, Ti			841
17		1.02	2	5.0 6.0	96						PL, SM Ti SL R0, Ti-Si Op			840
18		0.87				SW	R1-R2							839
19		0.85												838
20		1.17									WA-ST, Sm to Ro, Si Op			837
21		1.75										SHALE: mudstone; greenish gray (5GY 6/1); very fine grained; slightly weathered (SW); weak (R2).	top of bedrock (Glen Rose Formation) at 11.0'; began NQ coring	836
22		2.75				SW	R1-R2				PL, SM, Ti			835
23		2.52	3	4.8 5.0	86						PL-WA, SM-Si, R0, Ti-Op			834
24		2.05									SHARP, Si RO, Ti, PL-ST	Minor thin bed of limestone at 23.5'.		833
25		2.23				SW	R1-R2					LIMESTONE: micrite; white (N9) to moderate yellow (5Y 7/6); very fine grained; many fossilization features; moderately weathered (MW) [Glen Rose Formation]		832
26		1.05	4	4.9 5.0	95	SW								832

Project Name and Job Number  
 TXU Comanche Peak COL  
 1908



**ROCK LOG** **MW-1205S**  
**Boring No.**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
26		1.05				SW	R2-R3					LIMESTONE: micrite; white (N9); interbedded with thin (0.05') beds of LIMESTONE: packstone; light gray (N7) to medium gray (N5); medium grained; slightly weathered (SW); weak to moderately strong (R2-R3); thick to medium bedded (0.5' to 1.5') thick; very fossiliferous (fossil fragments); strong effervescence. [Glen Rose Formation]		831
27		0.53									PL-ST,SI TI R0, TI			830
28		0.67	4	4.9 5.0	95	SW	R2-R3							829
29		0.58												828
30		0.68									PL-ST,SI TI R0, TI			827
31		0.85										LIMESTONE: packstone; medium gray (N5); fine to medium grained; slightly weathered (SW); weak to moderately strong (R2-R3); massive; fossiliferous (fragments); moderate to strong effervescence; trace bioturbation. [Glen Rose Formation] Grades into micrite 30.7'-33.0'.		826
32		0.78	5	2.9 3.6	80	SW	R2-R3							825
33		2.17												824
34		3.4									ST,SM-SI, R0			823
35		13.38	6	1.4 1.4	25	SW	R2-R3				Highly fractured, closely spaced,RJ,PL-ST,SI R0 to Sm,T-SL Op	SHALE: mudstone; greenish gray (5GY 6/1); very fine grained; slightly weathered (SW); weak (R2); fissil; highly fractured; mild effervescence. [Glen Rose Formation]		822
36		1.48										LIMESTONE; micrite to wackestone; white (N9) to medium gray (N5); fine to medium grained; fossiliferous; slightly weathered (SW); weak to moderately strong (R2-R3)	stopped drilling 10/19/06, started 10/20/06. Water level 10.5' before drilling started.	821
37		1.4									PL-ST,SI TI R0, TI ST,SM-SI, R0			820
38		1.27	7	5.2 5.0	100	SW	R2-R3							819
39		1									SM-SI R0,PL TI			818
40		1.13												817
41		2.03	8	5.0 5.0	100	SW	R2							816

Project Name and Job Number  
 TXU Comanche Peak COL  
 1908



**ROCK LOG**  
**Boring No. MW-1205S**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
41		2.03									SM-SI R0, PL TI	LIMESTONE: wackestone/micrite; medium gray (N5); fine to medium grained; slightly weathered (SW); weak (R2); fossiliferous (many fragments); strong effervescence; moderately bioturbated. [Glen Rose Formation]		816
42		0.88									ST, SI-R0, TI SIop			815
43		0.92	8	5.0 5.0	100	SW	R2				ST, SI-R0, TI SIop			814
44		1.03												813
45		1.13												812
46		2.93										SHALE: mudstone; interbedded with micrite; medium bluish gray (5B 5/1) to white (N9); very fine grained to fine grained; slightly weathered (SW); weak (R2); slight effervescence in shale; strong effervescence in micrite; minor fossils in limestone. [Glen Rose Formation]		811
47		1.08												810
48		2.73	9	4.8 5.0	60	SW	R2							809
49		3.63												808
50		2.2												807
51		1.77										LIMESTONE: micrite; interbedded with thin to medium (0.1' to 0.4') beds of mudstone; white to medium gray (N9-N5); very fine to fine grained fossiliferous; strong effervescence. [Glen Rose Formation]		806
52		1.63									PL-ST, SI TI R0, TI			805
53		1.3	10	4.8 5.0	85	SW	R2							804
54		1.35												803
55		1.58												802
56		1.75	11	4.5 5.0	70	SW								

Project Name and Job Number  
 TXU Comanche Peak COL  
 1908



**ROCK LOG**  
**Boring No. MW-1205S**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
56		1.75									FL,SM,Op-TI	SHALE: mudstone; interbedded with micrite (55.5'-57'); bluish gray (5B 5/1); very fine grained to fine grained; weak effervescence on shale, strong effervescence on interbedded limestone; none to trace fossils. [Glen Rose Formation]	2000 psi downhole pressure	801
57		1.03									FL,SM,Op-TI		light gray return water	800
58		3.73	11	4.5 5.0	70						Highly fractured, closely spaced, PL,SM,TI-SL Op			799
59		7.3											drilling rate has slowed during Run 11	798
60		5.7												797
61		2.23				SW	R1-R2				Highly fractured, close Ti medium spaced, bj,sm-SI r0			796
62		5.22												795
63		3.9	12	4.9 5.0	68									794
64		6.58												793
65		2.32												792
66		2				SW	R1-R2					LIMESTONE: MICRITE; white to light gray (N7-N9); fine grained; fossiliferous; strong effervescence. [Glen Rose Formation]		791
67		3.47									PL, SM-SI R0			790
68		5.62	13	4.7 5.0	67	SW	R1-R2				CLOSELY SPACED, SM, PL, TI	SHALE: mudstone; very fine grained; thick to thin bedded; trace fossils; minor thin interbeds of limestone. [Glen Rose Formation]	light gray return water	789
69		4.35												788
70		3.53				SW	R1-R2				PL-ST,SI TI R0, TI-SI Op			787
71		5.68	14	4.8 5.0	63						R0, WA, Op,PL-WA,SHARP CLOSELY SPACED	LIMESTONE. MICRITE; white to light gray (N7-N9); fine grained; fossiliferous; strong effervescence	2000 psi downhole pressure	787

Project Name and Job Number  
 TXU Comanche Peak COL  
 1908



**ROCK LOG**  
**Boring No. MW-1205S**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
71		5.68				SW	R1-R2					SHALE: mudstone; medium bluish gray (5B 5/1); very fine grained; thinly bedded; slight effervescence. [Glen Rose Formation]		786
72		5.23								PL-WA, SHARP		LIMESTONE: micrite; white (N9); fine to medium grained; thin to thick bedded; fossiliferous; strong effervescence. [Glen Rose Formation]	light gray return water	785
73		1.5	14	4.8 5.0	63	SW	R1-R2			CLOSELY SPACED PL-WA, SM-SI R0, TI-SI Op				784
74		1.95												783
75		4.37												782
76		0.9										LIMESTONE: micrite; white to light gray (N7-N9); fine grained; massive; strong effervescence; fossiliferous; may be bioturbated. [Glen Rose Formation]	1900-2000 psi downhole pressure	781
77		0.97								PL-WA, Op, SI R0				780
78		1	15	4.8 5.0	100									779
79		1.18												778
80		1.48				SW	R2							777
81		0.85												776
82		1.93								PL,SIR0,TI,SL Op				775
83		1.83	16	5.2 5.0	91									774
84		2.3								SI-RO,PL,TI-SL Op				773
85		3.07								SI-RO,PL,TI-SL Op				772
86		1.22	17	4.9 5.0	93	SW	R2							771




Project Name and Job Number  
 TXU Comanche Peak COL  
 1908






**ROCK LOG**  
**Boring No. MW-1205S**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
86		1.22	17	4.9 5.0	93						PL,R0	LIMESTONE: micrite; white to medium gray (N5-N9); fine grained; massive; strong effervescence; fossiliferous; may be bioturbated. [Glen Rose Formation]		771
87		1.1												770
88		1.33												769
89		1.17												768
90		2.33												767
91		1.52	18	5.1 5.0	100	SW	R2			PL-RO, TI-SI Op	LIMESTONE: micrite; white to light gray (N7-N9); fine grained; massive; strong effervescence; fossiliferous; may be bioturbated. [Glen Rose Formation]		766	
92		1.28											765	
93		1.17											764	
94		1.15											763	
95		1.28											762	
96		1.27	19	5.0 5.0	100	SW	R2						761	
97		1.2											760	
98		1.17											759	
99		0.98											758	
100		1.57											757	
101													total depth drilled 100.5'	

Project Name and Job Number TXU Comanche Peak COL 1908		 WLA William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. MW-1205S</b>	
Type and Diameter of Boring CME Continuous Core / 3"			Boring Location 32°18'04.59247"N / 97°47'39.42955"W		Total Depth 100.5 feet
Drilling Contractor and Rig TEXPLOR / CME 75			Elevation and Datum 857.45 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 11 feet
Sampling Method Continuous soil core			Sample Driving Hammer/Drop NA / NA	No. of Samples 1	Date Started 10/19/06
			Borehole Inclination Vertical	Logged by R.ORTIZ	Date Completed 10/20/06

Reviewed by / Date \_\_\_\_\_ J. Wesling \_\_\_\_\_

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
0	ML		MW-1205S 1	NA	24 24			SILT with SAND (ML): dark greenish brown (10YR 4/2); damp; medium stiff to stiff; with gravel and many roots	857
1	GP-GM							ROCK; GRAVEL with SAND; SILT; dry to damp (GP-GM); 2.5Y 5/4; light olive brown; many roots; partially weathered	856
2								NO SAMPLE RECOVERED/NO SAMPLE TAKEN: too hard; inserted center plug; drilled to 4.5' will attempt sample collection again. PARTIALLY WEATHERED ROCK; no recovery - cuttings have same texture as partially weathered rock above	855
3									854
4									853
5									852
6									851
7			MW-1205S	NA	0 60				850
8									849
9									848
10			MW-1205S	NA	9.6 18			LIMESTONE: micrite; white to light gray (2.5Y 8/1 to 2.5Y 7/1); some silt present on clasts; moderately thick calcium carbonate rind on outer surface of clasts; ; refusal on bedrock at 11 ft below ground surface	847
11								Top of Bedrock at 11'	846
12									845
13									844
14									843
15									842

Project Name and Job Number TXU Comanche Peak COL 1908		 WLA William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. MW-1206S</b>	
Type and Diameter of Boring NQ / 3"		Boring Location 32°18'14.35354"N / 97°47'33.20609"W		Total Depth 100.4 feet	
Drilling Contractor and Rig TEXPLOR / CME 75		Elevation and Datum 833.08 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 24 feet	
Casing Size and Depth		Length of Core Barrel and Bit 13 feet	No. of Core Boxes 5	Date Started 11/3/06	
		Borehole Inclination Vertical	Logged by R. Turner	Date Completed 11/4/06	

Reviewed by / Date J. Wesling 11/30/06

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
24		3.57	1	0.8 1.4	61	SW	R2					LIMESTONE: wackestone; light to dark gray (N7-N3); wavy bedding; dry; fossiliferous; slightly weathered (SW); weak (R2); strong reaction to HCl. [Glen Rose Formation]	Top of bedrock (Glen Rose Formation) at 24.0', began NQ coring at 24.0'.	809
25														808
26											BJ,OP,R4	LIMESTONE: wackestone; dark gray to light gray (N7-N3); wavy bedding with thin (0.5-3.5) interbeds of shale and some coal seams and rip-up clasts; slightly weathered (SW); weak (R2); strong reaction to HCl. [Glen Rose Formation]		807
27														806
28		8.57	2	4.0 5.0	98	SW	R2							805
29									1206S-2R					804
30														803
31		2.12										LIMESTONE: wackestone; dark gray to light gray (N3-N7); wavy bedding; rip-up clasts; fossiliferous; dry; thin interbedded shale (1/4"-1.5" thick)		802
32		1.57												801
33		2.07	3	4.0 5.0	98	SW	R1					SHALE: dark gray (N3); very thinly bedded; weak to strong reaction to HCl; slightly weathered (SW); very weak (R1); sparse fossils. [Glen Rose Formation]		800
34		5.88												799
35		7.12												798
36		5.05				SW	R2							797
37		11.4	4	3.4 5.0	67	SW	R1-R2					LIMESTONE: wackestone; dark gray to light gray (N3-N7); wavy bedding with thin (0.5-3.5) interbeds of shale and some coal seams and rip-up clasts; slightly weathered (SW); weak (R2); strong reaction to HCl. [Glen Rose Formation]	Good Water return, Cloudy Gray	796
38												SHALE: dark gray (N3); very thinly bedded; weak to strong reaction to HCl		795
39		8.67										Limestone interbed at 37.5'-37.7'.		

Project Name and Job Number  
 TXU Comanche Peak COL  
 1908



**ROCK LOG**  
**Boring No. MW-1206S**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
39		8.67	4	3.4 5.0	67	SW	R1-R2							794
40		8.63												793
41			5	4.7 5.0	94	SW	R1		1206S-5R			LIMESTONE: wackestone; very light gray to medium light gray (N6-N7); wavy bedding; rip-up clasts; fossiliferous; slightly weathered (SW); weak (R2); reacts strongly to HCl	Good Water return, Cloudy Gray	792
42		5.97										791		
43												790		
44		2.17												789
45		5.97												788
46			6	4.4 5.0	88	SW	R1					LIMESTONE: wackestone; very light gray to medium light gray (N6-N7); wavy bedding; rip-up clasts; fossiliferous; slightly weathered (SW); weak (R2); reacts strongly to HCl. [Glen Rose Formation]		787
47						SW	R2		SHALE: dark gray (N3); very thinly bedded; slightly weathered (SW); very weak (R1); weak to strong reaction to HCl; dry. [Glen Rose Formation]	786				
48		19.43								LIMESTONE: wackestone; light gray (N7); wavy bedding; rip-up clasts; fossiliferous; slightly weathered (SW); weak (R2); reacts strongly to HCl. [Glen Rose Formation]	785			
49														784
50									1206S-6R					783
51												LIMESTONE: wackestone; massive; very light gray to medium light gray (N6-N8); few fossils; slightly weathered (SW); weak (R2); strong reaction to HCl		782
52		5.27	7	4.9 5.0	98	SW-F	R2					LIMESTONE: wackestone; very light gray to medium light gray (N6-N7); wavy bedding; many rip-up clasts; slightly weathered (SW); weak (R2); strong reaction to HCl; dry. [Glen Rose Formation]		781
53														780
54														

Project Name and Job Number  
 TXU Comanche Peak COI  
 1908



**ROCK LOG**  
**Boring No. MW-1206S**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
54		5.27	7	4.9 5.0	98				1206S-7R			LIMESTONE: wackestone; very light gray to medium light gray (N6-N7); wavy bedding; many rip-up clasts; slightly weathered (SW); weak (R2); strong reaction to HCl; dry. [Glen Rose Formation]		779
55														778
56														777
57														776
58		4.33	8	4.9 5.0	98								Good Water return, Cloudy Gray	775
59														774
60									1206S-8R					773
61						SW-F								772
62						R2								771
63		4.67	9	5.0 5.0	99									770
64														769
65									1206S-9R					768
66														767
67		4.3	10	5.0 5.0	100									766
68														765
69														

Project Name and Job Number  
 TXU Comanche Peak COI  
 1908



**ROCK LOG**  
**Boring No. MW-1206S**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
69		4.3	10	5.0 5.0	100							LIMESTONE: wackestone; very light gray to medium light gray (N6-N7); wavy bedding; many rip-up clasts; slightly weathered (SW); weak (R2); strong reaction to HCl; dry. [Glen Rose Formation]		764
70									1206S-10R					763
71														762
72													Good Water return, Cloudy Gray	761
73		5.1	11	5.1 5.0	100									760
74														759
75									1206S-11R					758
76						SW-F								757
77							R2							756
78		5.3	12	4.9 5.0	98									755
79														754
80									1206S-12R					753
81														752
82		5.87	13	5.0 5.0	100									751
83						F								750
84							R2					LIMESTONE: packstone; very light gray to medium dark gray (N4-N8); massive to convoluted thin beds; dry; strong reaction to HCl. [Glen Rose Formation]		750

Project Name and Job Number  
 TXU Comanche Peak COI  
 1908




**ROCK LOG**  
**Boring No. MW-1206S**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
84	[Lithology Column]	5.87	13	5.0 5.0	100	F	R2				JO, HE, R3, 85.6°	LIMESTONE: packstone; very light gray to medium dark gray (N4-N8); massive to convoluted thin beds; dry; strong reaction to HCl. [Glen Rose Formation]	Good Water return, Cloudy Gray	749
85							R1					LIMESTONE: wackestone; micritic; medium light gray (N6); massive; dry; strong reaction to HCl; fresh (F); very weak (R1). [Glen Rose Formation]		748
86						F								747
87														746
88		7.23	14	5.0 5.0	99							LIMESTONE: packstone; medium light gray to medium dark gray (N4-N6) convoluted bedding; rip-up clasts; strong reaction to HCl; fresh (F); weak (R2); few fossils. [Glen Rose Formation]		745
89														744
90														743
91														742
92														741
93		8.5	15	5.0 5.0	100	F	R2							740
94														739
95														738
96														737
97		10.3	16	5.0 4.8	100								Length of recovery stretched due to mechanical breaks.	736
98														735
99														

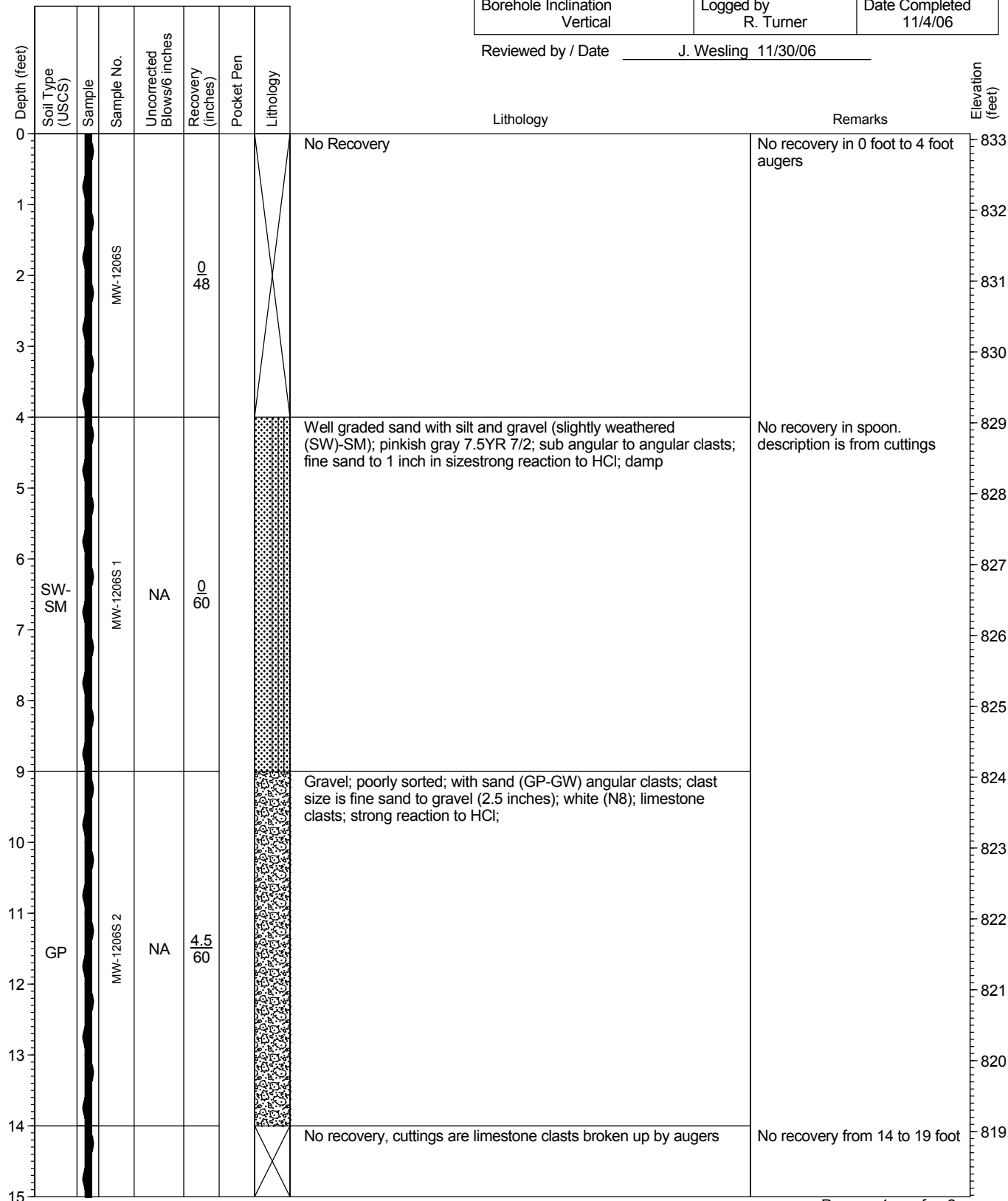
Project Name and Job Number TXU Comanche Peak COI 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. MW-1206S</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
99		10.3	16	5.0 4.8	100	F	R2					LIMESTONE: packstone; medium light gray to medium dark gray (N4-N6) convoluted bedding; rip-up clasts; strong reaction to HCl; fresh (F); weak (R2); few fossils. [Glen Rose Formation]	Good Water return, Cloudy Gray  Total depth drilled 100.2'.	734
100														733
101														732
102														731
103														730
104														729
105														728
106														727
107														726
108														725
109														724
110														723
111														722
112														721
113														720
114														719



Project Name and Job Number TXU Comanche Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. MW-1206S</b>	
Type and Diameter of Boring NQ / 3"			Boring Location 32°18'14.35354"N / 97°47'33.20609"W		Total Depth 100.4 feet
Drilling Contractor and Rig TEXPLOR / CME 75			Elevation and Datum 833.08 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 24 feet
Sampling Method CME Continuous core			Sample Driving Hammer/Drop NA / NA	No. of Samples 16	Date Started 11/3/06
			Borehole Inclination Vertical	Logged by R. Turner	Date Completed 11/4/06

Reviewed by / Date J. Wesling 11/30/06



Project Name and Job Number  
 TXU Comanche Peak COI  
 1908



**SOIL LOG**  
**Boring No. MW-1206S**

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
15										818
16			MW-1206S 3	NA	0 60				No recovery, cuttings are limestone clasts broken up by augers (Continued from previous page)	817
17										816
18										815
19										814
20										813
21	GW-GM		MW-1206S 4	NA	18 60				Well graded gravel with silt and sand (GW-GM); White (N8) to pale yellow 2.5Y 7/4; sub-angular to angular clasts; fine sand to 2.5 inches in size; slightly damp; strong reaction to HCl	812
22										811
23										810
24									Top of Bedrock at 24'	809
25										808
26										807
27										806
28										805
29										804
30										




Undisturbed sample  
 SH = Shelby; P = Pitcher; O = other



Driven (2.5 to 3.0 inch) with liners  
 MC = Modified California; O = other



Standard Penetration Test (SPT) sampler

Project Name and Job Number TXU Comanche Peak COL 1908		 WLA William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. MW-1207S</b>	
Type and Diameter of Boring NQ / 3"		Boring Location 32°18'10.55139"N / 97°47'34.23116"W		Total Depth 99.7 feet	
Drilling Contractor and Rig Core Test / CME 75		Elevation and Datum 848.57 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 14 feet	
Casing Size and Depth		Length of Core Barrel and Bit 13.8 feet	No. of Core Boxes 5	Date Started 11/6/06	
		Borehole Inclination Vertical	Logged by M. Buga	Date Completed 11/7/06	

Reviewed by / Date J. Wesling 11/30/06

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
14		1.17	1	0.9 1.0	90							SHALE; greenish gray (5G 6/1); slightly weathered (SW); very weak (R1); strong reaction to HCl; faint bedding planes. [Glen Rose Formation]	Top of bedrock (Glen Rose Formation) at 14.0', began NQ coring at 14.0'.	834
15		2.75				SW	R1				RF			833
16		4							1207S-1		No Info, Missing Core	SHALE; dark greenish gray (5GY 4/1); fresh (F) slightly weathered (SW); weak (R2); slight reaction to HCl. [Glen Rose Formation]	Blocked off with clay	832
17		5	2	3.7 5.0	74									831
18		3.2				F-SW	R1							830
19		3.75										Contains fossils at 18.65' to 19.15'		829
20		2.92												828
21		1.5				SW	R2-R3				BJ,R0,TI	LIMESTONE: wackestone; very light gray (N8); slightly weathered (SW); weak to medium strong (R2-R3); strong reaction to HCl; stylolites. [Glen Rose Formation]	Good water return	827
22		1.62	3	5.0 5.0	98						BJ,R0,TI	Grades into micrite at 22.3'.		826
23		2.22				SW	R2					LIMESTONE: wackestone; dusky yellow green (5GY 5/2); slightly weathered (SW); weak (R2); large percentage of grains; sparse clasts; violent reaction to HCl. [Glen Rose Formation]		825
24		3.25												824
25		3.2				SW	R2-R3					LIMESTONE: micrite; grayish blue green (5BG 5/2) slightly weathered (SW); weak to medium strong (R2-R3); strong reaction to HCl. [Glen Rose Formation]		823
26		2									RF, SI, TI			822
27		2.92	4	4.9 5.0	98							SHALE; dark greenish gray (5GY 4/1); fresh (F) slightly weathered (SW); weak (R2); slight reaction to HCl. [Glen Rose Formation]		821
28		2.83				F-SW	R1				1207S-3			820

Project Name and Job Number TXU Comanche Peak COL 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. MW-1207S</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
29		3.82	4	45.0	98	F-SW	R2					LIMESTONE: wackestone; interbedded with claystone; very light gray (N8); claystone is a dark greenish gray (5G 4/1); fresh to slightly weathered (F-SW); weak (R2); occasional fossils; violent reaction to HCl. [Glen Rose Formation]	Good water return	819
30		2.78										Gradational layer of rip-up clasts into limestone from 28.9'-30.0'		818
31		2.05				F-SW	R2							817
32		2	5	50.0	100									816
33		3.02								1207S-4		LIMESTONE: wackestone; with rip-up clasts; greenish gray (5G 6/1) with a layer of light gray (N7) wackestone; fresh to slightly weathered (F-SW); weak (R2); violent reaction to HCl; clay veining; interbedded layers of claystone and wackestone near base. [Glen Rose Formation]	815	
34		2.62												814
35		2.73												813
36		3.2				F-SW	R2							812
37		3.27	6	50.0	100									811
38		2.27												810
39		2.17								1207S-5				809
40		3.25									BJ, SI, Op			808
41		2.62				F-SW	R2				BJ, Wa, SI, Op	LIMESTONE: wackestone; very light gray (N8); fresh to slightly weathered (F-SW); weak (R2); reacts violently to HCl; occasional interclasts; clay interbedded with a claystone containing rip-up clasts. [Glen Rose Formation]	807	
42		3.58	7	50.0	98						1207S-6	SHALE: dark greenish gray (5G 4/1); interbedded with micrite/wackestone; light gray (N7); fresh to slightly weathered (F-SW); very weak (R1); very slight to slight reaction to HCl; shale contains occasional interclasts 0.5 to 2.0 inches. [Glen Rose Formation]	806	
43		2.37				F-SW	R2				BJ, PL, SI, TI			805
44														

Project Name and Job Number  
TXU Comanche Peak COL  
1908



**ROCK LOG** **MW-1207S**  
**Boring No.**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
44		2.33	7	5.0	98							LIMESTONE: wackestone; interbedded with a claystone; contains rip-up clasts; light gray (N7); fresh to slightly weathered (F-SW); weak (R2); violent reaction to HCl; occasional claystone veining in wackestone. [Glen Rose Formation]	Good water return	804
45		4.5												803
46		3.95							1207S-7		BJ, Wa, Sl, Dp			802
47		4.33	8	5.0	100	F-SW	R2							801
48		4.37											Length of recovery stretched due to mechanical breaks.	800
49		4												799
50		3.42										Fossiliferous 49.6'-50.8'.		798
51		3.35				F-SW	R2		1207S-8			LIMESTONE: wackestone; medium bluish gray (5B 5/1); fresh to slightly weathered (F-SW); weak (R2); violent reaction to HCl. [Glen Rose Formation]		797
52		3.17	9	5.0	98							SHALE; with interbedded micrite; dark greenish gray (5GY 4/1) fresh to slightly weathered (F-SW); very weak (R1); slight reaction to HCl; micrite is a light gray (N7), weak (R2), violent reaction to HCl. [Glen Rose Formation]		796
53		3.25									BJ, Pl, Si, Ti			795
54		5.25												794
55		3.3				F-SW	R1							793
56		3.25							1207S-9					792
57		3.5	10	5.0	100						BJ, Pl, Si, Ti			791
58		3.5												790
59						R2								

Project Name and Job Number TXU Comanche Peak COL 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. MW-1207S</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
59		3.5	10	5.0 5.0	100	F-SW	R2					LIMESTONE: wackestone; with claystone veining; violent reaction to HCl; fresh to slightly weathered (F-SW); weak (R2). [Glen Rose Formation]	Good water return	789
60		3.25				F-SW	R2							788
61		3.5									RF, Wo, Sl, Op			787
62		3.67	11	5.1 5.0	100	F-SW	R1-R2		1207S-10		RJ, St, R0, Gp, Hc	SHALE; dark greenish gray (5G 4/1); fresh to slightly weathered (F-SW); very weak (R1); strong reaction to HCl; interbedded with wackestone containing clay veining; light gray (N7); fresh to slightly weathered (F-SW); weak (R2); violent reaction to HCl. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	786
63		3.25				F-SW	R1-R2							785
64		3.17												784
65		3.25												783
66		3.33												782
67		3.37	12	4.9 5.0	97				1207S-11			LIMESTONE: wackestone; interbedded with claystone containing rip-up clasts; light gray (N7); fresh to slightly weathered (F-SW); weak (R2); violent reaction to HCl. [Glen Rose Formation]		781
68		3.17												780
69		3.42										Clay layer at 68.75'-69.1' is very weak (R1); dark greenish gray (5G 4/1); strong reaction to HCl. [Glen Rose Formation]		779
70		3.57				F-SW	R2				BJ, Wa, R0, Op			778
71		3.38												777
72		3.67	13	5.0 5.0	100									776
73		3.5												775

Project Name and Job Number  
 TXU Comanche Peak COL  
 1908



**ROCK LOG**  
**Boring No. MW-1207S**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
74		4	13	5.0 5.0	100				1207S-12					774
75		2.4											Good water return	773
76		3												772
77			14	5.2 5.0	100				1207S-13					771
78		3.9											Length of recovery stretched due to mechanical breaks.	770
79		4.08												769
80														768
81		3.33				F-SW	R2		1207S-14					767
82		3.67									Increased rip-up clast percentage from 81.4-84.9.			766
83		4	15	5.2 5.0	100								Length of recovery stretched due to mechanical breaks.	765
84		3.25												764
85		4									RF, Wa, Sl, Op			763
86											RF, Wa, Sl, Op	Rip-up clasts sparse to absent 85.0'-87.4'.		762
87		3.25												761
88		3.75	16	5.0 5.0	100				1207S-15					760
89		3.83									BJ, Wa, Sl, Ti	Rip-up clasts increase in abundance 87.4'-89.4'.		760
		3.33												760


Project Name and Job Number  
TXU Comanche Peak COL  
1908



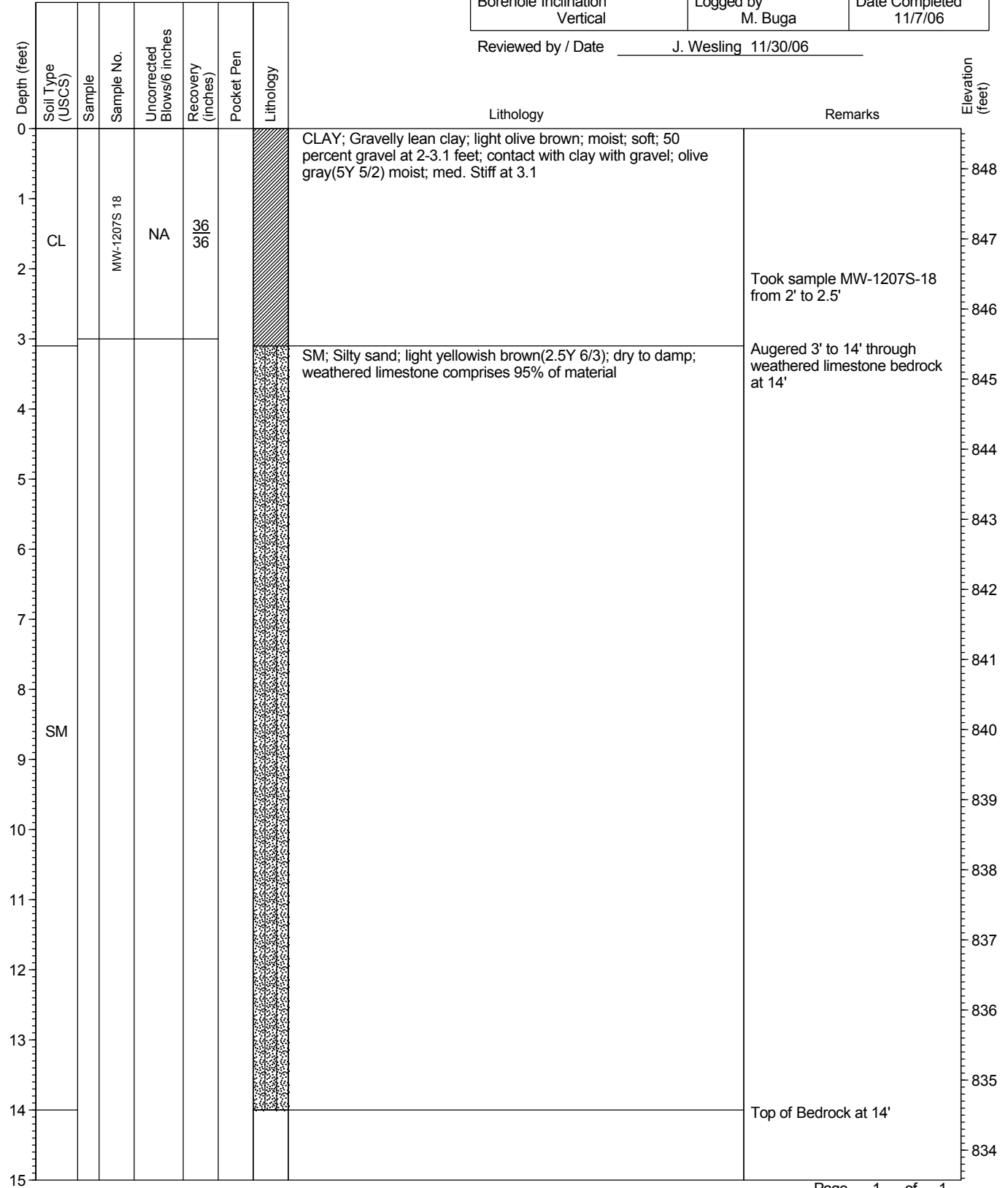
**ROCK LOG** **MW-1207S**  
**Boring No.**


Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
89		7	16	5.0	100		R2							759
90		4.83				F-SW	R2					LIMESTONE: wackestone; greenish gray (5G6/1); fresh to slightly weathered (F-SW); weak (R2); violent reaction to HCl; moderate abundance of rip-up clasts. [Glen Rose Formation]	Good water return	758
91		5										LIMESTONE: wackestone; light gray (N7); fresh to slightly weathered (F-SW); weak (R2); violent reaction to HCl. [Glen Rose Formation]		757
92		4.92	17	5.1	100	F-SW	R2					Contains clay veining with rip-up clasts 91.7'-92.2'		756
93		5.25							1207S-16		BJ, St, R0, T1		Length of recovery stretched due to mechanical breaks.	755
94		4.7										LIMESTONE: wackestone; interbedded with wackestone and rip-up clasts; light gray (N7); fresh to slightly weathered (F-SW); weak (R2); violent reaction to HCl. [Glen Rose Formation]		754
95		4.43												753
96		4				F-SW	R2						Rig broke down in the last 3-4 feet, water pump	752
97		4.25	18	5.1	100									751
98		5		4.7					1207S-17				Length of recovery stretched due to mechanical breaks.	750
99		4.5				F-SW	R2					LIMESTONE: micrite; interbedded with a wackestone veining; light gray (N7); fresh to slightly weathered (F-SW); weak (R2); violent reaction to HCl. [Glen Rose Formation]		749
100													Total depth drilled 99.7'.	748
101														747
102														746
103														745
104														745



Project Name and Job Number TXU Comanche Peak COI 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. MW-1207S</b>	
Type and Diameter of Boring NQ / 3"		Boring Location 32°18'10.55139"N / 97°47'34.23116"W		Total Depth 99.7 feet	
Drilling Contractor and Rig Core Test / CME 75		Elevation and Datum 848.57 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 14 feet	
Sampling Method CME Continuous core		Sample Driving Hammer/Drop NA / NA	No. of Samples 1	Date Started 11/6/06	
		Borehole Inclination Vertical	Logged by M. Buga	Date Completed 11/7/06	

Reviewed by / Date J. Wesling 11/30/06



Project Name and Job Number TXU Comanche Peak COL 1908		 WLA William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. MW-1208S</b>	
Type and Diameter of Boring NQ / 3"		Boring Location 32° 18' 09.60935"N / 97° 47' 24.06571"W		Total Depth 100.2 feet	
Drilling Contractor and Rig Texplor / CME 75		Elevation and Datum 817.43 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 45 feet	
Casing Size and Depth 8 / 45 feet		Length of Core Barrel and Bit 13 feet	No. of Core Boxes 3	Date Started 10/25/06	
		Borehole Inclination Vertical	Logged by R. Ortiz	Date Completed 10/30/06	

Reviewed by / Date \_\_\_\_\_ J. Wesling \_\_\_\_\_

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
45		1.4	1	1.2 / 1.2	95	SW	R2						Top of rock 45'. Began NQ coring, Glen Rose Formation.	772
46		0.58												771
47		0.77												770
48		0.73												769
49		0.57	2	5.0 / 5.0	100	SW	R2						Losing 40% of water.	768
50		0.83											Light grayish brown water return.	767
51		1.17												766
52		1.43												765
53		1.15												764
54		1.32	3	4.9 / 5.0	98	SW	R2						Losing 50% of water.	763
55		0.95												762
56		0.88												761
57		1.07												760
58		0.88	4	5.0 / 5.0	100	SW	R2							759
59		1												758
60		0.85												

Project Name and Job Number  
 TXU Comanche Peak COL  
 1908



**ROCK LOG**  
**Boring No. MW-1208S**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
60		0.98	4	5.0 5.0	100	SW	R2							757
61		1.05										LIMESTONE: micrite; light gray to light greenish gray (N7 to 5GY 8/1); fine grained; fossiliferous; some small (up to 0.3") dark (black) fragments (coal?); bioturbated; some rip-up clasts; some minor dissolution features; interbedded with thin; wavy beds of fissile mudstone.	~50% water loss to formation.	756
62		0.83												755
63		0.8	5	5.0 5.0	100	SW	R2							754
64		0.93												753
65		1.32												752
66		0.93												751
67		0.88									Below 67'; coal fragments absent.		~20% water loss, light brownish gray return water.	750
68		0.93												749
69		1.42	6	5.2 5.0	100	SW	R2							748
70		1.2												747
71		0.88												746
72		1.12										LIMESTONE: micrite; light gray to light greenish gray (N7 to 5GY 8/1); fine to medium grained; fossiliferous; strong reaction to HCl; rip-up clasts; bioturbated; minor thin (0-0.6") mudstone interbeds.	745	
73		0.75	7	5.0 5.0	100	SW	R2							744
74		0.75												743
75														

Project Name and Job Number  
 TXU Comanche Peak COL  
 1908



**ROCK LOG**  
**Boring No. MW-1208S**


Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
75		1.45	7	5.0 5.0	100	SW	R2							742
76		1.05										LIMESTONE: micrite; light gray to light greenish gray (N7 to 5GY 8/1); fine grained; fossiliferous; strong reaction to HCl; bioturbated; interbedded with thin (up to 0.3") very fine grained mudstone.		741
77		1.03												740
78		0.77	8	5.0 5.0	100	SW	R2							739
79		0.83												738
80		1.2												737
81		0.92											Losing ~50% water.	736
82		1.38									BJ, Ro, Pl, Op			735
83		1.43	9	4.8 5.0	96	SW	R2					LIMESTONE: wackestone; medium grained; very dark bluish gray (5 PB 3/1); fossiliferous; moderate to strong reaction to HCl; bioturbated rip-up clasts.	Losing ~50% water.	734
84		1.8												733
85		1.58												732
86		1.55										LIMESTONE: micrite; light gray to very dark bluish gray (N7 to 5 PB 3/1); fine grained; fossiliferous; bioturbated (worm burrows at 86.2'); moderate to strong reaction to HCl; some rip-up clasts.		731
87		1.03												730
88		0.42	10	5.0 5.0	100	SW	R2							729
89		0.73											Chattering rig.	728
90														

Project Name and Job Number  
 TXU Comanche Peak COL  
 1908



**ROCK LOG**  
**Boring No. MW-1208S**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
90														727
91		1.12	10	5.0 5.0	100	SW	R2							726
92		0.88										LIMESTONE: micrite; light gray to dark greenish gray (N7 to 10 G 4/1); fine grained; fossiliferous; moderate to strong reaction to HCL; highly bioturbated with rip-up clasts and worm burrows (especially between 91.2' and 92.8').	Stopped drilling 10/25/06, began 10/30/06. Morning water level is 32 ft.	725
93		0.82									BJ, SI Ro, PI, Op			724
94		1.07	11	5.0 5.0	99	SW	R2							723
95		1.23												722
96		1.13											75% water return.	721
97		0.78										LIMESTONE: micrite; light gray (N7); fossiliferous; strong reaction to HCl; a black to dark brown discontinuous coal seam (0.3" wide) is present within core.		720
98		0.8												719
99		0.78	12	4.1 4.0	100	SW	R2						50% water return.	718
100		1.23											Moderate to heavily bioturbated at 99.2'.	717
101														716
102														715
103														714
104														713
105													Total depth drilled: 100.2'.	

Project Name and Job Number TXU Comanche Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. MW-1208S</b>	
Type and Diameter of Boring NQ / 3"		Boring Location 32° 18'09.60935"N / 97° 47'24.06571"W		Total Depth 100.2 feet	
Drilling Contractor and Rig Texplor / CME 75		Elevation and Datum 817.43 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 45 feet	
Sampling Method CME Continuous core		Sample Driving Hammer/Drop NA / NA	No. of Samples 8	Date Started 10/25/06	
		Borehole Inclination Vertical	Logged by R. Ortiz	Date Completed 10/30/06	

Reviewed by / Date \_\_\_\_\_ J. Wesling \_\_\_\_\_

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0	ML							FILL - SILT with sand; moist to damp; very dark grayish brown (2.5 Y 3/2); fill.		817
1	GP-GM							ROCK - GRAVEL with silt; dry to damp; limestone clasts; loose; boulder at 1.3'.		816
2			MW-1208S 1208-1	NA	16/60			HSA plug in place to attempt to drill through boulder. No sample. Gravel with silt at base of unsampled zone.		815
3										814
4										813
5									Fill 0.0'~29.0'.	812
6										811
7			MW-1208S 1208-2	NA	0/60					810
8										809
9								GRAVEL; sandy; yellow (5 Y 7/6); dry; loose; ~40% sand; fine to very coarse; limestone gravel (FILL).		808
10										807
11										806
12	GP		MW-1208S 1208-3	NA	0/60					805
13										804
14										803
15										802

Project Name and Job Number  
 TXU Comanche Peak COI  
 1908



**SOIL LOG**  
**Boring No. MW-1208S**

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
15									802
16									801
17	GP		MW-1208S 1208-4	NA	60			GRAVEL; sandy; yellow (5 Y 7/6); dry; loose; ~40% sand; fine to very coarse; limestone gravel (FILL). (Continued from previous page)	800
18									799
19									798
20	MH							SILT with sand; yellow (5 Y 2/6); dry to damp; fine grained; medium stiff (FILL).	797
21									796
22								GRAVEL with sand; 80% to 90% gravel (~1.5"-2") (core barrel width); loose; dry.	795
23			MW-1208S 1208-5	NA	20 60				794
24									793
25									792
26	GP								791
27									790
28			MW-1208S 1208-6	NA	11 60				789
29									788
30								Residual soil 29.0'-45.0'	788



Undisturbed sample  
 SH = Shelby; P = Pitcher; O = other



Driven (2.5 to 3.0 inch) with liners  
 MC = Modified California; O = other



Standard Penetration Test (SPT) sampler

Project Name and Job Number TXU Comanche Peak COI 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">SOIL LOG</h2> <h2 style="margin: 0;">Boring No. MW-1208S</h2>
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Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
30							GRAVEL with sand; light gray (2.5 Y 7/1); loose; limestone gravels as wide as core barrel (FILL).		787
31	GP								786
32			MW-1208S 1208-7	NA	15 60				785
33							SILT with gravel (MH); olive yellow (5 Y 6/6); moist to wet; stiff to very stiff; ~15%-20% gravel; at ~36.5'; thin (~3") perched zone of water; very wet and muddy;		784
34									783
35									782
36	MH							Sample barrel is not wet. Maybe due to friction from drilling.	781
37			MW-1208S 1208-8	NA	27 60				780
38									779
39									778
40							single limestone clast; auger packed off at 40'; dry. Weathered bedrock/residual soil and 42'.		777
41								Driller states "We went through 3 ft of gray. Gray = limestone cuttings...top of rock?"	776
42	MH		MW-1208S 1209-9	NA	3 60				775
43									774
44								Water level after lunch is 34.5'.	773
45									



Undisturbed sample  
SH = Shelby; P = Pitcher; O = other




Driven (2.5 to 3.0 inch) with liners  
MC = Modified California; O = other



Standard Penetration Test (SPT) sampler



Project Name and Job Number TXU Comanche Peak COL 1908		 WLA William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. MW-1209S</b>	
Type and Diameter of Boring NQ / 3"		Boring Location 32°18'11.69119"N / 97°47'23.33107"W		Total Depth 100.1 feet	
Drilling Contractor and Rig Texplor / CME 75		Elevation and Datum 808.45 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 38.7 feet	
Casing Size and Depth 4 / 39 feet		Length of Core Barrel and Bit 13 feet	No. of Core Boxes 4	Date Started 11/4/06	
		Borehole Inclination Vertical	Logged by R. Turner	Date Completed 11/5/06	

Reviewed by / Date J. Wesling 11/30/06

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
39		ND	1R	1.1 1.1	100	SW	R2					LIMESTONE: wackestone very light gray to medium gray (N8-N5); wavy bedding; rip-up clasts; slightly weathered; weak; dry; strong reaction with HCl. [Glen Rose Formation]	Started NQ rock coring at 39' Good water return, gray.	769
40		1.03												768
41		0.93												767
42		0.92	2R	5.0 5.0	100	SW	R2		1209S-2R					766
43		0.98												765
44		0.97												764
45		0.9												763
46		0.97												762
47		0.87	3R	5.0 5.0	100	SW	R2		1209S-3R					761
48		0.83												760
49		0.93												759
50		0.92												758
51		0.97										LIMESTONE: wackestone very light gray to medium gray (N8-N5); thin convoluted bedding; some thin shaley beds up to 1.5" thick; slightly weathered; weak; dry; strong reaction with HCl. [Glen Rose Formation]		757
52		0.95	4R	5.0 5.0	100	SW	R2							756
53		0.92												755
54														

Project Name and Job Number  
 TXU Comanche Peak COL  
 1908



**ROCK LOG**  
**Boring No. MW-1209S**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
54		1.02	4R	5.0 5.0	100	SW	R2		1209S-4R				Good water return, gray.	754
55		0.88										LIMESTONE: wackestone very light gray to medium gray (N8-N5); thin wavy bedding with rip-up clasts; fresh; weak; dry; strong reaction with HCl. [Glen Rose Formation]		753
56		0.92												752
57		0.97	5R	5.1 5.0	100	F	R2							751
58		0.87											Length of recovery stretched due to mechanical breaks.	750
59		0.95												749
60		1.02							1209S-5R					748
61		1.3												747
62		1.72	6R	4.9 5.0	98	F	R2							746
63		1.02												745
64		0.97							1209S-6R					744
65													Drill rate of 4:51 ft for entire run (65.1'-70.1').	743
66												LIMESTONE: wackestone very light gray to medium light gray (N8-N6); convoluted bedding; rip-up clasts; fresh; weak; dry; strong reaction with HCl.		742
67		4.85	7R	5.0 5.0	100	F	R2							741
68									1209S-7R					740
69														

Project Name and Job Number  
 TXU Comanche Peak COL  
 1908



**ROCK LOG**  
**Boring No. MW-1209S**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
69		4.85	7R	5.0 5.0	100	F	R2					LIMESTONE: wackestone very light gray to light gray (N8-N7); thin wavy bedding; fresh; weak; strong reaction with HCl; dry. [Glen Rose Formation]	Good water return, gray.	739
70														738
71												LIMESTONE: wackestone; micritic; light gray (N7); thinly bedded; fresh; weak; strong reaction to HCl; dry. [Glen Rose Formation]		737
72		5.68	8R	5.0 5.0	100	F	R2					LIMESTONE: packstone; very light gray to medium gray (N8-N5); thin bedding; rip-up clasts; fresh; weak; strong reaction to HCl; dry. [Glen Rose Formation]	Drill rate of 5:41 ft for entire run (70.1'-75.1').	736
73									1209S-8R					735
74														734
75		1												733
76		1.23												732
77		1.2	9R	5.0 5.0	100	F	R2							731
78		1.25												730
79		1.13												729
80		1.33								1209S-9R				728
81		1.42												727
82		1.47	10R	4.9 5.0	100	F	R2							726
83		1.52												725
84														

Project Name and Job Number  
 TXU Comanche Peak COL  
 1908




**ROCK LOG**  
**Boring No. MW-1209S**

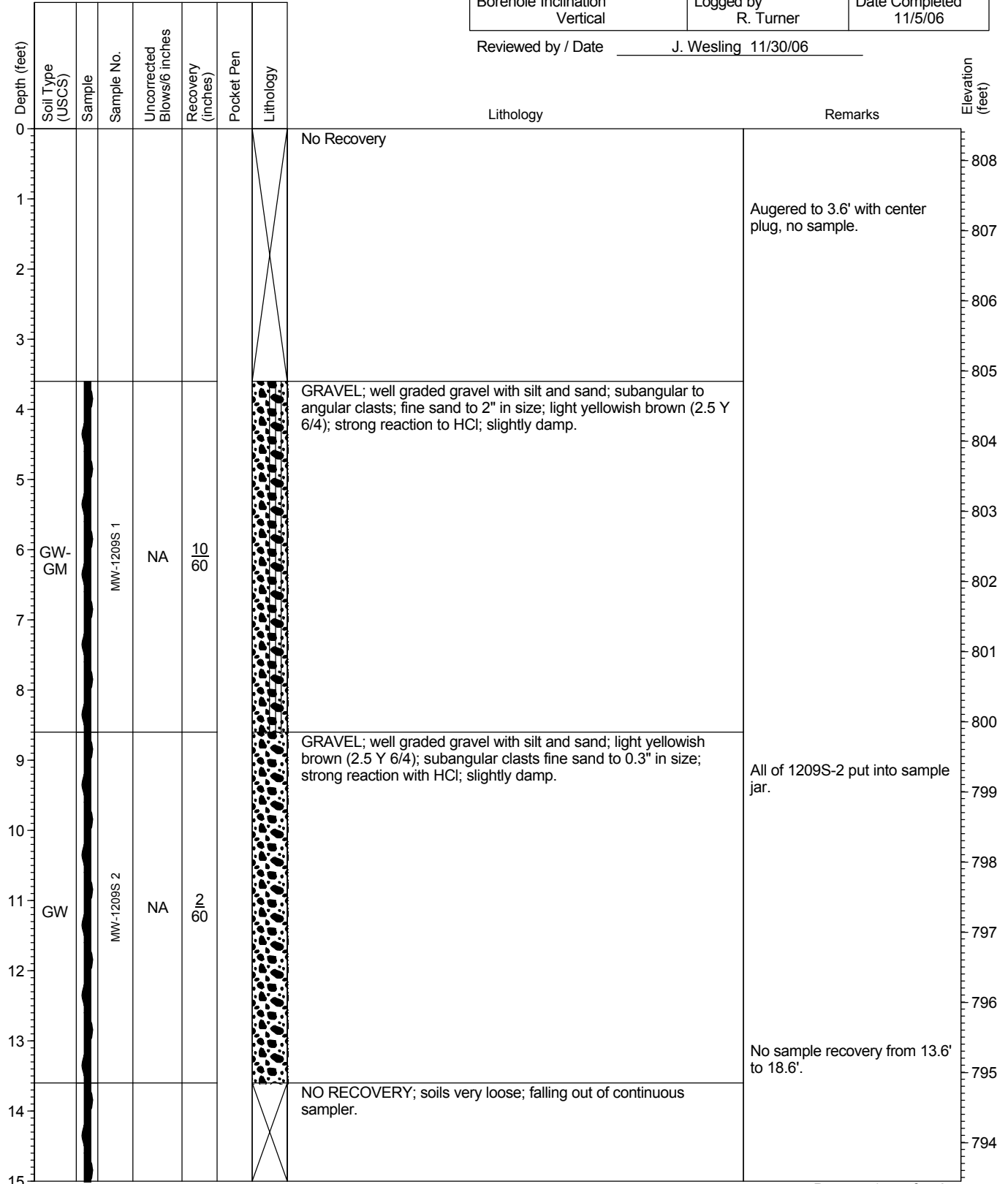
Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
84		1.42	10R	4.9 5.0	100	F	R2		1209S-10R			LIMESTONE: packstone; very light gray to medium dark gray; massive to thinly bedded; rip-up clasts; fresh; weak; dry. [Glen Rose Formation]	Good water return, gray.	724
85		1.25										LIMESTONE: packstone; light gray to medium light gray (N7-N6); massive to thinly bedded; rip-up clasts; vertical stylolites; fresh; weak; dry; strong reaction to HCl. [Glen Rose Formation]		723
86		1.17												722
87		1.13	11R	5.0 5.0	100	F	R2					LIMESTONE: packstone; very light gray to medium gray (N8-N5); massive; rip-up clasts; fresh; weak; dry; strong reaction to HCl. [Glen Rose Formation]		721
88		1.37												720
89		1.23							1209S-11R					719
90		1.33												718
91		1.57												717
92		1.75	12R	5.1 5.0	100	F	R2							716
93		1.7												715
94		1.88							1209S-12R					714
95		2.08												713
96		3.03	13R	2.5 2.5	98	F	R2							712
97		2.2												711
98		5.97	14R	0.8 1.0	75	F	R1		1209S-13R			SHALE; medium dark gray (N4); very thinly bedded; fresh; very weak; strong reaction to HCl. [Glen Rose Formation]		710
99		ND	15R	1.5	100									

Project Name and Job Number TXU Comanche Peak COI 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. MW-1209S</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
99	HHHHHHHHHH	ND	15R	1.5	100	F	R1						Good water return, gray.	709
100		6.03		1.5		F	R2					LIMESTONE: wackestone thin convoluted beds; very light gray to medium dark gray (N8-N4); rip-up clasts; fresh; weak; dry; strong reaction to HCl. [Glen Rose Formation]	Total depth drilled = 100.1'.	708
101														707
102														706
103														705
104														704
105														703
106														702
107														701
108														700
109														699
110														698
111														697
112														696
113														695
114														695




Project Name and Job Number TXU Comanche Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. MW-1209S</b>	
Type and Diameter of Boring NQ / 3"		Boring Location 32°18'11.69119"N / 97°47'23.33107"W		Total Depth 100.1 feet	
Drilling Contractor and Rig Texplor / CME 75		Elevation and Datum 808.45 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 38.7 feet	
Sampling Method CME Continuous core		Sample Driving Hammer/Drop NA / NA	No. of Samples 2	Date Started 11/4/06	
		Borehole Inclination Vertical	Logged by R. Turner	Date Completed 11/5/06	

Reviewed by / Date J. Wesling 11/30/06



Project Name and Job Number TXU Comanche Peak COL 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">SOIL LOG</h2> <h2 style="margin: 0;">Boring No. MW-1209S</h2>
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Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
15								NO RECOVERY; soils very loose; falling out of continuous sampler. (Continued from previous page)	793
16			MW-1209S	NA	0/60				792
17								Soils are very loose 15'-30', falling out of continuous sampler.	791
18									790
19									789
20									788
21									787
22									786
23									785
24									784
25									783
26									782
27									781
28							SILT with sand; firm; slow dilatency; moderate plasticity; yellowish brown (10 YR 5/6); slight reaction with HCl; damp.		780
29	ML								779
30									

 Undisturbed sample SH = Shelby; P = Pitcher; O = other	 Driven (2.5 to 3.0 inch) with liners MC = Modified California; O = other	 Standard Penetration Test (SPT) sampler
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Project Name and Job Number  
TXU Comanche Peak COI  
1908



**SOIL LOG**  
**Boring No. MW-1209S**

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
30									778
31									777
32	ML		MW-1209S 3	NA	11/60			SILT with sand; firm; slow dilatency; moderate plasticity; yellowish brown (10 YR 5/6); slight reaction with HCl; damp. (Continued from previous page)	776
33									775
34									774
35									773
36	GP		MW-1209S 4	NA	11/60			GRAVEL; poorly sorted gravel; subangular to angular clasts 1.5" to 2.5" in size; white (N9); strong reaction with HCl.	772
37									771
38									770
39								Top of Bedrock at 38.7'	769
40									768
41									767
42									766
43									765
44									764
45									



Undisturbed sample  
SH = Shelby; P = Pitcher; O = other




Driven (2.5 to 3.0 inch) with liners  
MC = Modified California; O = other



Standard Penetration Test (SPT) sampler



Project Name and Job Number TXU Comanche Peak COL 1908		 WLA William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. MW-1210S</b>	
Type and Diameter of Boring NQ / 3"			Boring Location 32°18'02.34306"N / 97°47'22.19926"W		Total Depth 100.1 feet
Drilling Contractor and Rig Coretest / CME 75			Elevation and Datum 827.92 feet NAVD88	Ground Water Depth 9.3	Depth to Bedrock 1.6 feet
Casing Size and Depth 4 / 9 feet			Length of Core Barrel and Bit 13.1 feet	No. of Core Boxes 7	Date Started 10/18/06
			Borehole Inclination Vertical	Logged by C. Rittel	Date Completed 10/19/06

Reviewed by / Date \_\_\_\_\_ R. Ortiz

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
2												LIMESTONE: micrite, pale yellow (2.5 Y 8/2).	Augered to 9' before switching to Rock Core. Jar sample taken of cuttings of bedrock from 1.6' to 9.0'	826
3														825
4														824
5			ND	7.4										823
6														822
7														821
8														820
9														819
10		3.13	1	1.0 1.1	91	SW	R2					LIMESTONE: micrite, light greenish gray (GLEY 7/10Y).	Glen Rose Formation 9.0' to total depth of boring.	818
11		2.17				SW	R0					CLAYSTONE: shale; medium light gray (N6); fine grained; slightly weathered; weak; very close bed spacing; fissile. [Glen Rose Formation]	Augered to 9.0', began NQ coring at 9.0'.	817
12		1.75												816
13		1.93	2	4.5 5.0	66							LIMESTONE: micritic. [Glen Rose Formation]		815
14		2.23				SW	R2							814
15		1.47												813
16		1.08	3	5.0 5.0	76	SW	R2					LIMESTONE: micrite; more coarse grained starting at 16.6'. [Glen Rose Formation]		812
		0.95												

Project Name and Job Number  
 TXU Comanche Peak COL  
 1908



**ROCK LOG**  
**Boring No. MW-1210S**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
17		0.95										LIMESTONE: micrite; more coarse grained starting at 16.6'. [Glen Rose Formation]		811
18		0.77												810
19		1.13	3	5.0 5.0	76	SW	R2					LIMESTONE: packstone. [Glen Rose Formation]		809
20		1.05												808
21		1.08				SW	R2							807
22		1.45												806
23		2.67	4	4.2 5.0	50	SW	R0					MUDSTONE: shale. [Glen Rose Formation]		805
24		1.63								1210-3		LIMESTONE: packstone. [Glen Rose Formation]		804
25		4.17				SW	R2							803
26		1.62				SW	R0-R1					CLAYSTONE: shale with limestone interbeds up to 0.3' thick. [Glen Rose Formation]		802
27		2.03										LIMESTONE: micrite.		801
28		1.8	5	5.0 5.0	50									800
29		2.3												799
30		1.85								1210-4				798
31	NM		6	5.3 5.0	56	SW	R2					LIMESTONE: micrite with mudstone interbeds (up to 0.2' thick); darker LIMESTONE: micrite, light gray (N7) below 34'.0. [Glen Rose Formation]		797
	NM													

Project Name and Job Number  
 TXU Comanche Peak COL  
 1908



**ROCK LOG**  
**Boring No. MW-1210S**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)		
32	NM	2.17	6	5.3 5.0	56	SW	R2					LIMESTONE: micrite with mudstone interbeds (up to 0.2' thick); darker LIMESTONE: micrite, light gray (N7) below 34'.0. [Glen Rose Formation]		796		
33	1.72															795
34	NM								SW	R1						
35														793		
36		3.03				SW	R1			1210-5		MUDSTONE: shale, color change to medium gray (N5). [Glen Rose Formation]		792		
37		3.42												791		
38		2.6	7	4.5 5.0	66	SW	R2					LIMESTONE: micrite. [Glen Rose Formation]		790		
39		2												MUDSTONE: shale. [Glen Rose Formation]		789
40		2.55				SW								788		
41		2.07												787		
42		2.33				SW	R1							786		
43		1.77	8	5.0 5.0	66							NO DESCRIPTION		785		
44		2.7							SW	R2						784
45	NM													783		
46		1.67	9	5.0 5.0	84	SW	R1-R2					MUDSTONE: shale. [Glen Rose Formation] MUDSTONE: lime mudstone. [Glen Rose Formation]		782		
		2.17														782

Project Name and Job Number  
 TXU Comanche Peak COL  
 1908



**ROCK LOG**  
**Boring No. MW-1210S**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)								
47		2.17	9	5.0 5.0	84	SW	R1-R2		1210-8			MUDSTONE: lime mudstone. [Glen Rose Formation]		781								
48		2.5																			780	
49		2.82																				779
50		3.4																				778
51		1.75	10	5.0 5.0	60	SW	R1-R3		1210-9			LIMESTONE: micrite with mudstone interbeds up to 0.4' thick. [Glen Rose Formation]		777								
52		1.48																			776	
53		2.17																				775
54		2.67																				774
55		2.13	11	5.0 5.0	100	SW	R2-R3		1210-10			very light gray (N8) at 55.4';		773								
56		1.5																			772	
57		1.37																				771
58		1.8																				770
59		2.68	12	5.0 5.0	100	SW	R2					slight increase in grain size at 58.5'.		769								
60		1.63																			768	
61		3.15																				767
		2.2																				

Project Name and Job Number  
 TXU Comanche Peak COL  
 1908



**ROCK LOG**  
**Boring No. MW-1210S**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)	
62		2.2										LIMESTONE: micrite with mudstone interbeds up to 0.4' thick. [Glen Rose Formation]		766	
63		1.57												765	
64		1.45	12	5.0 5.0	100	SW	R2							764	
65		2.02							1210-11					763	
66		2.78				SW	R1							762	
67		1.47											LIMESTONE: micrite; wavy interbeds of slightly darker material, spaced 0.1' apart. [Glen Rose Formation]	761	
68		1.8	13	5.0 5.0	96										760
69		1.93				SW	R2								759
70		2.17							1210-12						758
71		3.23							1210-13						757
72		2.5				SW	R1								756
73		3.13	14	5.0 5.0	98										755
74		2.52										bioturbated, rip-up clasts 74'-75';		754	
75		1.88				SW	R2								753
76		1.25	15	4.6 5.0	68	SW	R1-R2								752
		1.17							1210-14						

Project Name and Job Number  
 TXU Comanche Peak COL  
 1908



**ROCK LOG**  
**Boring No. MW-1210S**


Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
77		1.17							1210-14			LIMESTONE: micrite; wavy interbeds of slightly darker material, spaced 0.1' apart. [Glen Rose Formation]		751
78		1.85												750
79		2	15	4.6 5.0	68	SW	R1-R2							749
80		2.18												748
81		1.68							1210-15					747
82		2.13												746
83		2.15	16	5.0 5.0	94	SW	R2							745
84		2.18												744
85		1.52												743
86		1.33							1210-16					742
87		1.23												741
88		2.78	17	5.0 5.0	100	SW	R2							740
89		2.5												739
90		1.52							1210-17					738
91		1.17	18	5.0 5.0	100	SW	R2							737
		2.52												

Project Name and Job Number  
TXU Comanche Peak COI  
1908



**ROCK LOG**  
**Boring No. MW-1210S**


Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
92		2.52	18	5.0 5.0	100	SW	R2					LIMESTONE: micrite; wavy interbeds of slightly darker material, spaced 0.1' apart. [Glen Rose Formation] Slight increase in sand percent below 92'.		736
		3.03												735
93		1.7												734
		1.83												733
94			19	5.0 5.0	96	SW	R2							732
		2.93												731
95		2.18												730
		1.52												729
96			19	5.0 5.0	96	SW	R2							728
		2.12												727
97		1.3												726
														725
98														724
99														723
100													Total depth drilled: 100.1'.	722
101														
102														
103														
104														
105														
106														

Project Name and Job Number TXU Comanche Peak COI 1908		 WLA William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. MW-1210S</b>	
Type and Diameter of Boring NQ / 3"		Boring Location 32°18'02.34306"N / 97°47'22.19926"W		Total Depth 100.1 feet	
Drilling Contractor and Rig Coretest / CME 75		Elevation and Datum 827.92 feet NAVD88	Ground Water Depth 9.3	Depth to Bedrock 1.6 feet	
Sampling Method CME Continuous Core		Sample Driving Hammer/Drop NA / NA	No. of Samples 1	Date Started 10/18/06	
		Borehole Inclination Vertical	Logged by C. Rittel	Date Completed 10/19/06	

Reviewed by / Date \_\_\_\_\_ R. Ortiz

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0										827
1	MH									827
2									Top of Bedrock at 1.6'	826
3										825
4										824
5										823
6										822
7										821
8										820
9										819
10										818
11										817
12										816
13										815
14										814
15										813



Project Name and Job Number TXU Comanche Peak COL 1908		 WLA William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. MW-1211S</b>	
Type and Diameter of Boring NQ / 3"		Boring Location 32°18'08.22628"N, 97°47'20.88260"W		Total Depth 100 feet	
Drilling Contractor and Rig Coretest / CME 75		Elevation and Datum 810.57 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 76 feet	
Casing Size and Depth HSA 8" / 79 feet		Length of Core Barrel and Bit 13 feet / 34 feet	No. of Core Boxes 2	Date Started 10/19/06	
		Borehole Inclination Vertical	Logged by C. Rittel	Date Completed 10/23/06	

Reviewed by / Date \_\_\_\_\_ R. Ortiz


Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
80		ND	1	0.5 0.4	74	SW	R2				BJ, Pl, Sl	LIMESTONE: micrite; very light gray; fine grained. LIMESTONE: packstone.		731
81												LIMESTONE: micrite.	Water loss 500 gallons/run, consistent drilling rate.	730
82		12.15	2	5.0 5.3	99	SW	R2					LIMESTONE: packstone.		729
83														728
84									1211-1					727
85														726
86												LIME MUDSTONE, FINE GRAINED SANDSTONE: zone of rip-up clasts/bioturbation infilling; zone of pyrite crystals at 86.7'.	Core is only slightly HCl reactive from 85.5'-87'.	725
87														724
88		12.65	3	5.0 5.0	100	SW	R2					Slight change to coarser grained, zone of rip-up clasts, up to 0.05' long at 88.5'; change back to slightly more fine grained at 88.8'.	Water loss 500 gallons/run, consistent drilling rate.	723
89														722
90									1211-2					721
91		2.83										LIMESTONE: packstone/wackestone.		720
92		2.28												719
93			4	5.0 5.0	100	SW	R2					LIMESTONE; micrite.	Water loss 500 gallons/run, consistent drilling rate.	718
94		2.82												717
		3.55												716
		3.5							1211-3					715

Project Name and Job Number  
 TXU Comanche Peak COL  
 1908

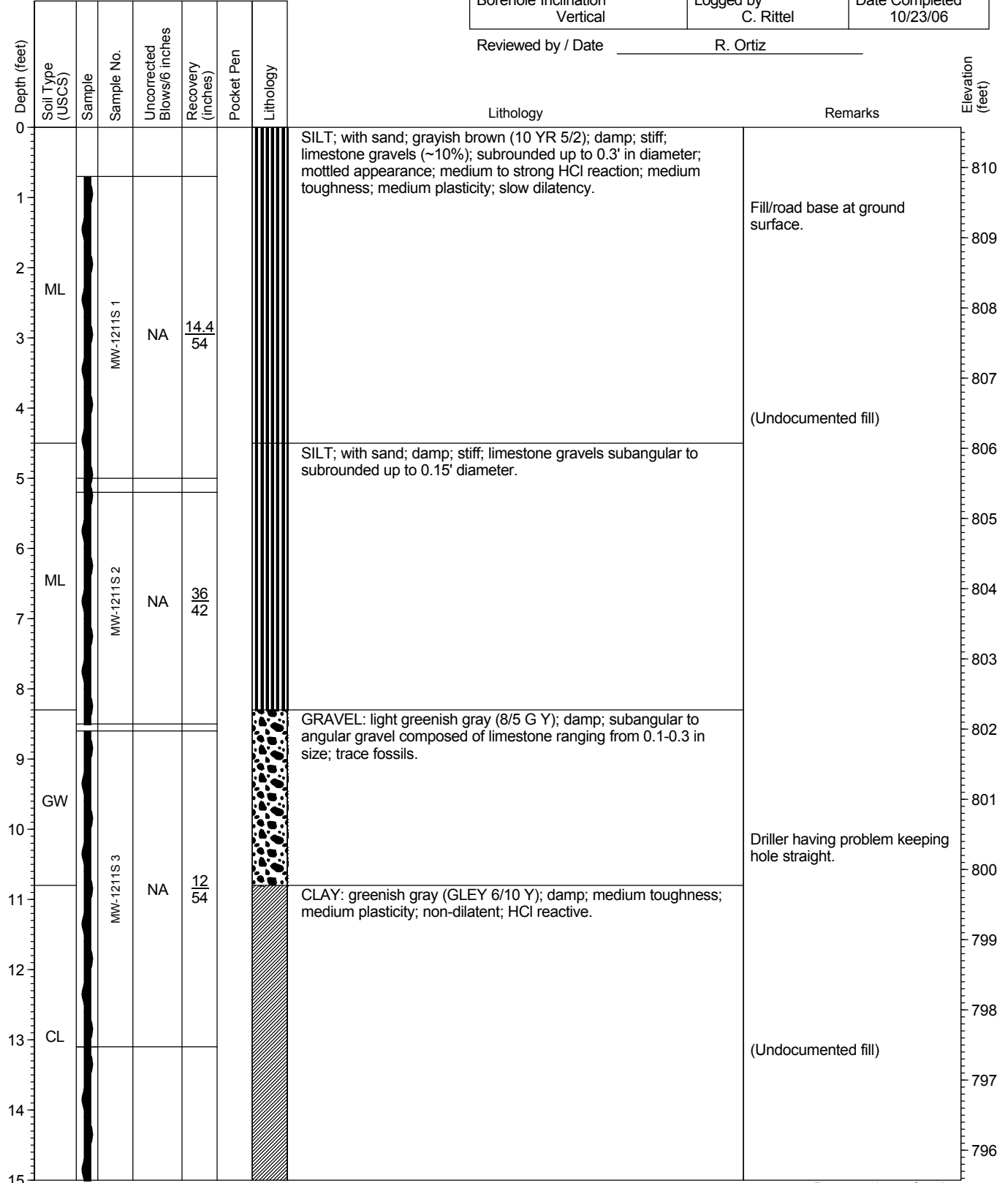


**ROCK LOG**  
**Boring No. MW-1211S**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
95		3.5	4	5.0	100	SW	R2					LIMESTONE, wackestone/packstone		716
96		2.17				SW	R2						Water loss continues.	715
97		3							1211-4				200 gallons water loss after 15' drilled, consistent drilling rate.	714
98		3	5	5.0	100	SW	R2					SHALE: claystone; shell fragments in break at 99.1'.	350 gallon loss after 3' drilled.	713
99		3.33				SW	R2							712
100		2.4				SW SW	R2R0-R1					LIMESTONE; micrite.	500 gallon total water loss.	711
101												SHALE: claystone; light greenish gray (10 GY 7/1), moderate to high plasticity.		710
102														709
103														708
104														707
105														706
106														705
107														704
108														703
109														702

Project Name and Job Number TXU Comanche Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. MW-1211S</b>	
Type and Diameter of Boring NQ / 3"		Boring Location 32°18'08.22628"N, 97°47'20.88260"W		Total Depth 100 feet	
Drilling Contractor and Rig Coretest / CME 75		Elevation and Datum 810.57 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 76 feet	
Sampling Method CME		Sample Driving Hammer/Drop NA / NA	No. of Samples 16	Date Started 10/19/06	
		Borehole Inclination Vertical	Logged by C. Rittel	Date Completed 10/23/06	

Reviewed by / Date \_\_\_\_\_ R. Ortiz



Project Name and Job Number  
TXU Comanche Peak COI  
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**SOIL LOG**  
**Boring No. MW-1211S**

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
15	CL		MW-1211S 4	NA	12/72			CLAY: greenish gray (GLE Y 6/10); damp; medium toughness; medium plasticity; non-dilatant; HCl reactive. (Continued from previous page)		795
16									Change in texture between 13.1' and 19.1'.	794
17										793
18										792
19										791
20	CL		MW-1211S 5	NA	36/58.8				(Undocumented fill)	790
21										789
22										788
23										787
24								NO RECOVERY		786
25										785
26			MW-1211S 6	NA	0/60					784
27										783
28										782
29										781
30	CL							CLAY: as above; mottled appearance; very stiff, some subangular limestone gravels up to 0.05' in diameter.		781



Undisturbed sample  
SH = Shelby; P = Pitcher; O = other










Driven (2.5 to 3.0 inch) with liners  
MC = Modified California; O = other



Standard Penetration Test (SPT) sampler

Project Name and Job Number TXU Comanche Peak COI 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">SOIL LOG</h2> <h2 style="margin: 0;">Boring No. MW-1211S</h2>
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Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
30								CLAY: as above; mottled appearance; very stiff, some subangular limestone gravels up to 0.05' in diameter. <i>(Continued from previous page)</i>	Undocumented fill
31									
32	CL		MW-1211S 7	NA	0/60				
33								CLAY: with sand and gravels; light greenish gray (Gley 6/10Y); wet; medium stiff to stiff; sand is fine to medium grained; subangular; gravels are subangular; composed of poorly graded limestone clasts up to 0.15' in diameter; weak HCl reaction.	Stopped drilling 10/19/06, started 10/20/06.
34									
35	CL		MW-1211S 8	NA	33.6/60				
36								CLAY: with sand and gravels as above; wet; more coarse; subangular sand than above.	Sampler was wet when removed from boring.
37									
38	CL		MW-1211S 9	NA	12/60				
39								GRAVEL: greenish gray (GLEYS 5/1 10 Y); wet; subangular to angular limestone fragments up to 0.25' in length, 0.15' in diameter.	Hard, difficult drilling - no cuttings returned.
40									
41	GL								
42									
43									
44									
45									

 Undisturbed sample SH = Shelby; P = Pitcher; O = other	 Driven (2.5 to 3.0 inch) with liners MC = Modified California; O = other	 Standard Penetration Test (SPT) sampler
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Project Name and Job Number  
TXU Comanche Peak COI  
1908



**SOIL LOG**  
**Boring No. MW-1211S**

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
45								GRAVEL: greenish gray (GLEYS 5/1 10 Y); wet; subangular to angular limestone fragments up to 0.25' in length, 0.15' in diameter. (Continued from previous page)		765
46			MW-1211S 10	NA	8.2 60					764
47	GL									763
48										762
49								GRAVEL: as above with smaller gravels average 0.05' in size.		761
50										760
51			MW-1211S 11	NA	14.4 60					759
52	GW									758
53										757
54								NO RECOVERY		756
55										755
56			MW-1211S 12	NA	0 60					754
57										753
58										752
59										751
60	SC									



Undisturbed sample  
SH = Shelby; P = Pitcher; O = other



Driven (2.5 to 3.0 inch) with liners  
MC = Modified California; O = other



Standard Penetration Test (SPT) sampler

Project Name and Job Number TXU Comanche Peak COI 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">SOIL LOG</h2> <h2 style="margin: 0;">Boring No. MW-1211S</h2>
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Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
60									750
61			MW-1211S 13	NA	$\frac{30}{60}$			CLAY; gravelly to SAND, clayey; greenish gray (10 Y 6/1); wet; medium stiff to stiff; clay is highly plastic; high toughness, non-dilatent; sands are angular to subangular grains, fine to coarse grained (SW), slow to rapid dilatency, strong HCl reaction; gravels are limestone; subangular; up to 0.2' diameter. <i>(Continued from previous page)</i>	749
62									748
63									747
64	SC								746
65									745
66			MW-1211S 14	NA	$\frac{28.8}{60}$				744
67									743
68								GRAVEL: with clay and sand; light greenish gray (10 Y 7/1), wet, sands are fine to coarse, subangular; gravels are composed of limestone; uniformly graded, average diameter 0.05', subangular.	742
69									741
70									740
71	GP		MW-1211S 15	NA	$\frac{32.4}{60}$				739
72									738
73									737
74									736
75									



Undisturbed sample  
SH = Shelby; P = Pitcher; O = other



Driven (2.5 to 3.0 inch) with liners  
MC = Modified California; O = other



Standard Penetration Test (SPT) sampler

Project Name and Job Number TXU Comanche Peak COL 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">SOIL LOG</h2> <h2 style="margin: 0;">Boring No. MW-1211S</h2>
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Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
75	GP	MW-1211S 16	NA	19.2	60		GRAVEL: same as above but very dark greenish gray (10 Y 3/1), organic rich.	Top of bedrock (Glen Rose Formation) at 76.0'.	735
76	CL						CLAY: with sand; light greenish brown (10 YR 6/4); damp to moist; low to medium toughness; low plasticity; slow to rapid dilatency; strong HCl reaction; sands are subangular; fine to medium grained. NO SAMPLE TAKEN.		734
77									733
78									732
79								Begin rock coring at 79.3, Glen Rose Formation.	731
80									730
81									729
82									728
83									727
84									726
85									725
86									724
87									723
88									722
89									721
90									



Undisturbed sample  
SH = Shelby; P = Pitcher; O = other




Driven (2.5 to 3.0 inch) with liners  
MC = Modified California; O = other



Standard Penetration Test (SPT) sampler



Project Name and Job Number TXU Comanche Peak COL 1908		 WLA William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. MW-1212S</b>	
Type and Diameter of Boring NQ / 3"		Boring Location 32°18'04.91836"N / 97°47'19.34452"W		Total Depth 100.5 feet	
Drilling Contractor and Rig Texplor / CME 75		Elevation and Datum 819.93 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 34 feet	
Casing Size and Depth		Length of Core Barrel and Bit 11.6 feet / 11.6 feet	No. of Core Boxes	Date Started 10/31/06	
		Borehole Inclination Vertical	Logged by R. Turner	Date Completed 11/1/06	

Reviewed by / Date R. Ortiz 11/15/06

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
34												LIMESTONE: wackestone.	Top of rock 34.0', began NQ coring, Glen Rose Formation.	785
35		NM	1	$\frac{0.7}{1.5}$		SW	R2						Water leaking from pit, driller added bentonite mud.	785
36						SW	R1					SHALE; medium dark to dark gray (N4-N3); damp; no reaction with HCl. Highly fractured between 35.5' and 38.5'.	Gray return water, pump pressure 250.	784
37												LIMESTONE: wackestone; fossiliferous (bivalves); dry; strong reaction with HCl.		783
38		5.4	2	$\frac{2.7}{5.0}$	54	SW	R2							782
39														781
40		2.4												780
41		0.53										SHALE; medium dark to dark gray (N4-N3), weak reaction with HCl.	Driller changed bits.	779
42		1.63				SW	R1						Good water return.	778
43		2.57												777
44		2.07	3	$\frac{5.0}{5.0}$	100	SW	R2							776
45		3.83												775
46		4.67												774
47		1.43												773
48		1.3	4	$\frac{5.0}{5.0}$	100	SW	R2							772
49		0.97												771
		0.82												771

BJ, Op, R6

Project Name and Job Number  
TXU Comanche Peak COL  
1908



**ROCK LOG**  
**Boring No. MW-1212S**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
49		0.82	4	5.0 5.0	100	SW	R2					LIMESTONE: wackestone; fossiliferous (bivalves); dry; strong reaction with HCl.		770
50		0.53												
51		1.37	5	5.2 5.0	100	SW	R2					LIMESTONE: wackestone; very light gray (N8) dark olive gray (5Y 3/1); fresh.	Length of recovery stretched due to mechanical breaks.	769
52		1.63												
53		0.65												
54		1.88	6	5.0 5.0	100	F	R2				JO, Op, R2		768	
55		1.37												
56		1.47	7	5.0 5.0	100	F	R2						767	
57		1.08												
58		0.88	7	5.0 5.0	100	F	R2					LIMESTONE: wackestone; very light gray (N8) to dark olive gray (5Y 3/1); strong reaction with HCl; thin (<1") beds with some rip-up clasts.		766
59		0.87												
60		1.4												
61	NM		7	5.0 5.0	100	F	R2						765	
62	NM													
63		1.57											764	
64														763

Project Name and Job Number  
TXU Comanche Peak COL  
1908



**ROCK LOG**  
**Boring No. MW-1212S**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)	
64		1.57	7	5.0 5.0	100	F	R2					LIMESTONE: wackestone; very light gray (N8) to dark olive gray (5Y 3/1); strong reaction with HCl; thin (<1") beds with some rip-up clasts.		755	
65		1.58													
66		1.38													
67		1.02	8	5.0 5.0	100	F	R2					LIMESTONE: wackestone; very light gray (N8) to dark olive gray (5Y 3/1); thin wavy bedding; strong reaction with HCl; rip-up clasts between 0.5" and 1.5"; some bivalve fossils.		754	
68		0.87													
69		3.2													
70		1.03	9	5.1 5.0	100	SW	R2					Length of recovery stretched due to mechanical breaks.		751	
71		1.02													
72		0.95													
73		1.57	10	5.0 5.0	100	SW	R2							747	
74		2.18													
75		1.72													
76		0.97	10	5.0 5.0	100	SW	R2							746	
77		0.85													
78		1.07													
79														745	
															744
															743
															742
															741

Project Name and Job Number  
 TXU Comanche Peak COL  
 1908



**ROCK LOG**  
**Boring No. MW-1212S**


Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
79		1.07	10	5.0 5.0	100	SW	R2					LIMESTONE: wackestone; very light gray (N8) to dark olive gray (5Y 3/1); thin wavy bedding; strong reaction with HCl; rip-up clasts between 0.5" and 1.5"; some bivalve fossils.		740
80		1.05												
81		1.1												
82		0.8	11	5.1 5.0	100	SW	R2					Length of recovery stretched due to mechanical breaks.	739	
83		1.78												
84		1.13												
85		1.27	12	5.0 5.0	100	SW	R2					Sandy interval 88.7'-89.9'.	738	
86		1.03												
87		1.08												
88		0.88	13	5.0 5.0	100	SW	R2						737	
89		0.93												
90		1.23												
91		1.08	13	5.0 5.0	100	SW	R2						736	
92		0.92												
93		0.92												
94		0.93											735	
														734
														733
														732
														731
														730
														729
														728
														727
														726

Project Name and Job Number  
 TXU Comanche Peak COI  
 1908



**ROCK LOG**  
**Boring No. MW-1212S**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)						
94		0.93	13	5.0 5.0	100	SW	R2					LIMESTONE: wackestone; wavy bedding; rip-up clasts.								
95		2.18																	725	
96		1.13																		724
97		0.7																		723
98		0.82	14	5.0 5.0	100	SW	R2													
99		1.03																722		
100		1.4															Total depth drilled: 100.5'	721		
101														720						
102														719						
103														718						
104														717						
105														716						
106														715						
107														714						
108														713						
109														712						
														711						

Project Name and Job Number TXU Comanche Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. MW-1212S</b>	
Type and Diameter of Boring NQ / 3"		Boring Location 32°18'04.91836"N / 97°47'19.34452"W		Total Depth 100.5 feet	
Drilling Contractor and Rig Texplor / CME 75		Elevation and Datum 819.93 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 34 feet	
Sampling Method CME Continuous Core		Sample Driving Hammer/Drop NA / NA	No. of Samples 7	Date Started 10/31/06	
		Borehole Inclination Vertical	Logged by R. Turner	Date Completed 11/1/06	

Reviewed by / Date                      R. Ortiz 11/15/06

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0										819
1	SP-SM							SAND; silty with GRAVEL: brown (7.5 YR 5/3); poorly graded, subangular to angular clasts; clast size range from fine sand to 0.6" gravel; damp; slight reaction to HCl; medium strength; high toughness.	1212-1: PPT = 1.5 tsf (1.0'-1.5').	818
2			MW-1212S 1	NA	24 54					817
3								NOT SAMPLED	Centerplug run 2.5'-4.5'. No sample.	816
4										815
5								GRAVEL: with silt and sand; well graded; light gray (10 YR 7/1); angular clasts; clast size range from fine sand to 2.5' gravel; dry; hard; slight to strong reaction to HCl.	Sample 1212-2 = 4.5'-5.1'.	814
6										813
7			MW-1212S 2	NA	10 60					812
8										811
9										810
10	GW-GM								Sample 1212-3 = 10.1'-110.5'.	809
11										808
12			MW-1212S 3	NA	3.5 60					807
13										806
14										805
15	GP-GW									805

Project Name and Job Number TXU Comanche Peak COI 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">SOIL LOG</h2> <h2 style="margin: 0;">Boring No. MW-1212S</h2>
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Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
15								GRAVEL: with silt and sand; well graded; light gray (10 YR 7/1); angular clasts; medium sand to 2.5' in size; strong reaction to HCl; dry. <i>(Continued from previous page)</i>		804
16									Sample 1212-4 = 15.4'-15.9'	
17	GP-GW		MW-1212S 4	NA	$\frac{22.8}{60}$					803
18										802
19										801
20	CL							CLAY; lean with sand and GRAVEL: light yellowish brown (10 YR 6/4); stiff; moderate plasticity; slight reaction to HCl; damp.	Sample 1212-5 = 20.0'-20.6'	800
21										799
22	GP-GM		MW-1212S 5	NA	$\frac{20}{60}$			GRAVEL: with silt and sand; poorly graded; angular clasts; clast size range from coarse sand to 2.5' gravel; strong reaction to HCl; dry.		798
23										797
24										796
25								GRAVEL: with silt and sand; poorly graded; light gray (10 YR 7/2); angular clasts; clast size range from medium sand to 2.5" gravel; damp.	Sample 1212-6 = 25.2'-25.5'	795
26										794
27	GP-GM		MW-1212S 6	NA	$\frac{23}{60}$					793
28										792
29										791
30										790



Undisturbed sample  
SH = Shelby; P = Pitcher; O = other



Driven (2.5 to 3.0 inch) with liners  
MC = Modified California; O = other



Standard Penetration Test (SPT) sampler

Project Name and Job Number TXU Comanche Peak COL 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">SOIL LOG</h2> <h2 style="margin: 0;">Boring No. MW-1212S</h2>
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Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
30									789
31									788
32	CL		MW-1212S 7	NA	$\frac{25.2}{60}$		CLAY; lean; dark bluish gray (GLEYS 3/5 BG); stiff; medium toughness; low dry strength; slight reaction with HCl.	Sample 1212-7 = 31.0'-31.4'	787
33									786
34								Top of Bedrock at 34'	785
35									784
36									783
37									782
38									781
39									780
40									779
41									778
42									777
43									776
44									775
45									775



Undisturbed sample  
SH = Shelby; P = Pitcher; O = other




Driven (2.5 to 3.0 inch) with liners  
MC = Modified California; O = other



Standard Penetration Test (SPT) sampler



Project Name and Job Number TXU Comanche Peak COL 1908		 William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. MW-1213S</b>	
Type and Diameter of Boring NQ / 3"		Boring Location 32°18'03.33999"N / 97°47'31.58713"W		Total Depth 101.62 feet	
Drilling Contractor and Rig Texplor / CME 75		Elevation and Datum 845.55 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 8 feet	
Casing Size and Depth 4 / 15 feet		Length of Core Barrel and Bit 13 feet	No. of Core Boxes 20	Date Started 10/17/06	
		Borehole Inclination Vertical	Logged by R. Ortiz	Date Completed 10/18/06	

Reviewed by / Date \_\_\_\_\_ J. Wesling

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
15		2.25	4	1.2 1.5	83	SW-MW	R2					SHALE: claystone; greenish gray (5 G 6/1), damp to moist; friable; minor HCl reaction. [Glen Rose Formation]	Bedrock at 8.0' Continuous cored to 15' to begin rock coring. 1850-2000 psi downhole pressure.	830
16		0.85												829
17		1.5	5	5.0 5.0	33	SW-MW	R2-R3					LIMESTONE: micrite and SHALE: claystone; shale unit and limestone unit same as above, 0.2' shale; 2'-5' thin to medium interbedded limestone-claystone; fossiliferous limestone. [Glen Rose Formation]		828
18		1.38												827
19		1.53												826
20		1.1												825
21		1.4	6	4.7 5.0	77	SW-MW	R2-R3					Very fossiliferous below 26.5'.		824
22		1.12												823
23		1.05												822
24		1.37	7	5.0 5.0	65	SW-MW	R2-R3							821
25		1.2												820
26		2.22	7	5.0 5.0	65	SW-MW	R2-R3							819
27		3.08												818
28		1.1												817
29		1.08	7	5.0 5.0	65	SW-MW	R2-R3							816
30		1.73												815

Project Name and Job Number  
 TXU Comanche Peak COL  
 1908



**ROCK LOG**  
**Boring No. MW-1213S**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)				
30		1.73	7	5.0 5.0	65	SW-MW	R2-R3							815				
31		1.62																814
32		1.9															2000 psi downhole pressure.	813
33		0.82	8	5.0 5.0	76	SW-MW	R2-R3							812				
34		0.53															811	
35		0.93															810	
36		1.83															809	
37		1.18	9	4.7 5.0	17	MW	R2							808				
38		3.18															807	
39		2.08															806	
40		1.12	10	5.0 5.0	60	MW	R2							805				
41		1.88															804	
42		1.63															803	
43		1.55											802					
44		2.12											801					
45		2.43																

SHALE: claystone and LIMESTONE, interbedded; grayish green (5G 5/1) to white (N9); fossiliferous; thin to medium bedded; slightly weathered to moderately weathered (SW-MW); HCL reactive; some dissolution features; friable to hard. [Glen Rose Formation]

Below 37', clay seams are between 0.5" and 4"; limestone is HCL reactive moderately weathered (MW).

Fo, Slightly rough to rough, zone 41'-44.5' highly fractured.

IF, rough

Project Name and Job Number  
TXU Comanche Peak COL  
1908



**ROCK LOG**  
**Boring No. MW-1213S**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
45		2.43												800
46		1.43	10	5.0 5.0	60	MW	R2							799
47		2.12											Stopped drilling 10/17/06, start 10/18/06. 10/18/06, morning water level = 12.5'	798
48		2.13												797
49		2.78	11	4.0 5.0	36	SW	R2							796
50		3.17												795
51		3.98												794
52		5.48												793
53		3.3												792
54		3.78	12	4.8 5.0	32	SW	R2							791
55		2.65												790
56		4.3												789
57		1.57												788
58		2.37	13	5.0 5.0	19	SW	R2							787
59		2.02												786
60		4.73												

Project Name and Job Number TXU Comanche Peak COL 1908	 WLA William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. MW-1213S</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
60		4.73										SHALE: mudstone; as above with thin interbedded limestone, as above		785
61		3.67	13	5.0 5.0	19	SW	R2							784
62		2.92										SHALE: mudstone; medium gray (N5); very fine grained; slightly weathered (SW); weak (R2); medium to thick bedded; some organics; slight reaction to HCl, sharp basal contact. [Glen Rose Formation]		783
63		1.58										LIMESTONE: micrite; fine to medium grained; some coarse fossil fragments; strong reaction to HCl. [Glen Rose Formation]		782
64		1.4	14	4.4 5.0	37	SW	R2					SHALE: mudstone; medium gray (N5); very fine grained; slightly weathered (SW); weak (R2); medium to thick bedded; some organics; slight reaction to HCl, grading into thinly interbedded limestone with shale. [Glen Rose Formation]		781
65		2.48												780
66		1.48										LIMESTONE: micrite; very light gray (N8); fine to medium grained; some fossils; strong reaction to HCl; massive to thick bedded; heavily fractured; minor very thin interbeds of mudstone/shale		779
67		2.08												778
68		0.83												777
69		0.57	15	4.8 5.0	47	SW	R2							776
70		0.8												775
71		0.88												774
72		1.23												773
73		0.97	16	5.0 5.0	85	SW	R2							772
74		0.67												771
75		1.2												

Project Name and Job Number TXU Comanche Peak COL 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. MW-1213S</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)					
75		1.2	16	5.0 5.0	85	SW	R2					LIMESTONE: micrite; very light gray (N8); fine to medium grained; some fossils; strong reaction to HCl; massive to thick bedded; heavily fractured; minor very thin interbeds of mudstone/shale		770					
76		0.73																	769
77		0.87	17	5.0 5.0	94	SW	R2					LIMESTONE: micrite; white to very light gray (N7-N9); very fine to medium grained; slightly weathered (SW); weak (R2); massive, minor to moderate fossils (bivalves and gastropods); some very thin to thin interbeds of probably mudstone (CaCO3-rich; strong HCl reaction). [Glen Rose Formation]		768					
78		0.58																767	
79		0.8																	766
80		0.57																	765
81		0.73	18	4.8 5.0	37	SW	R2					LIMESTONE: micrite; very light gray (N8); very fine to medium grained; slightly weathered (SW); weak (R2); thin to thick bedded; interbedded with mudstone/shale; medium gray (N5); slightly weathered (SW); weak (R2); sharp wavy contacts; some minor dissolution features in limestone. [Glen Rose Formation] Some possible rip-up clasts at ~82.7'	2000 psi downhole pressure.	764					
82		0.8																	763
83		0.97																	
84		1.9	19	5.0 5.0	83	SW	R2					LIMESTONE: micrite; very light gray (N8); fine to medium grained; slightly weathered (SW); weak (R2); thin to thick bedded; interbedded with mudstone/shale; very thin to thinly bedded shale interbeds; minor to moderate medium grained sand (10%-20%) within mudstone; rip-up clasts within unit; numerous closely spaced fractures (bedding joints). [Glen Rose Formation]		761					
85		2.38																	760
86		3.07																	759
87		1.87	19	5.0 5.0	83	SW	R2					LIMESTONE: micrite; very light gray (N8); fine to medium grained; slightly weathered (SW); weak (R2); thin to thick bedded; interbedded with mudstone/shale; very thin to thinly bedded shale interbeds; minor to moderate medium grained sand (10%-20%) within mudstone; rip-up clasts within unit; numerous closely spaced fractures (bedding joints). [Glen Rose Formation]		758					
88		2.02																	757
89		2.13																	756
90		2.8																	

Project Name and Job Number  
 TXU Comanche Peak COL  
 1908




**ROCK LOG**  
**Boring No. MW-1213S**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
90		2.8	19	5.0 5.0	83	SW	R2							755
91		3.58												
92		1.22										LIMESTONE: micrite; white to light gray (N7-N9); fine to medium grained; slightly weathered (SW); weak (R2); massive to thinly bedded; minor thin interbeds of mudstone/shale; limestone is fossiliferous and reacts strongly to HCl. [Glen Rose Formation]		753
93		0.82												752
94		0.95	20	5.0 5.0	85	SW	R2							751
95		0.78												
96		0.88												749
97		0.87										LIMESTONE: micrite; white to light gray (N7-N9); fine to medium grained; slightly weathered (SW); weak (R2); thin to medium bedded; minor thin interbeds of mudstone/shale (0.2' thick); limestone reacts strongly to HCl and contains some fossils (Bivalve shell fragments ?).		748
98		0.9												747
99		0.82	21	5.1 5.0	52	SW	R2							746
100		2.12												
101		2.58											Total depth drilled: 101.62'	744
102														743
103														742
104														741
105														

Project Name and Job Number TXU Comanche Peak COL 1908		 WLA William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. MW-1213S</b>	
Type and Diameter of Boring NQ / 3"		Boring Location 32°18'03.33999"N / 97°47'31.58713"W		Total Depth 101.62 feet	
Drilling Contractor and Rig Texplor / CME 75		Elevation and Datum 845.55 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 8 feet	
Sampling Method CME Continuous Core		Sample Driving Hammer/Drop NA / NA	No. of Samples 3	Date Started 10/17/06	
		Borehole Inclination Vertical	Logged by R. Ortiz	Date Completed 10/18/06	

Reviewed by / Date \_\_\_\_\_ J. Wesling

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0	CL		MW-1213S 1213-1	NA	$\frac{19.2}{26.4}$			CLAY: silty; black, damp; 1.0 tsf; medium stiff to stiff; 80% to 70% fines; heavy root mass; HCl reaction (FILL-TOPSOIL).		845
1									FILL 0-8.0'.	844
2	SW									843
3										842
4								NOT SAMPLED		841
5										840
6								LIMESTONE: very light gray (N8); small cobbles; packed off core barrel - no further recovery. Fill - may be fill material from construction.	120-150 psi downhole pressure.	839
7			MW-1213S 1213-2	NA	$\frac{4.8}{60}$					838
8								LIMESTONE: highly fractured, "crushed", gray (N 7/0); slightly to moderately weathered; strong reaction to HCl; some fossils, BEDROCK - GLEN ROSE FORMATION.	Top of Bedrock at 8.0' [Glen Rose Formation]	837
9										836
10										835
11										834
12			MW-1213S 1213-3	NA	$\frac{12}{60}$					833
13										832
14										831
15										830

Project Name and Job Number TXU Comanche Peak COL 1908		 WLA William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. MW-1214S</b>	
Type and Diameter of Boring CME / 8"		Boring Location 32°18'03.17066"N / 97°47'31.09686"W		Total Depth 101 feet	
Drilling Contractor and Rig Texplor / CME 75		Elevation and Datum 821.36 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 45 feet	
Casing Size and Depth 8 / 46.5 feet		Length of Core Barrel and Bit 13 feet	No. of Core Boxes 3	Date Started 10/22/06	
		Borehole Inclination Vertical	Logged by R. Ortiz	Date Completed 10/23/06	

Reviewed by / Date \_\_\_\_\_ J. Wesling

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)				
47		1.8	1	1.9 2.0	59	MW-SW	R2					LIMESTONE: micrite; yellowish gray (5Y 8/1), grading to light gray (N7) below 49'; fine grained, moderately weathered to slightly weathered (MW-SW) (transition at 48'); weak (R2), fossiliferous; strong reaction to HCl; minor very thin interbeds of more fissile limestone. [Glen Rose Formation]	Top of rock 45.0'. Augered to 46.5, began NQ coring in Glen Rose Formation.	774				
48		1.45															Losing water at fill/rock interface. Attempt to seal with bentonite chips and then drill through expanded bentonite. 100% water loss.	773
49		1.03	2	2.2 2.5	88	SW	R2					LIMESTONE: micrite; light gray (N7); fine grained; slightly weathered (SW); weak (R2); fossiliferous; strong reaction to HCl; many wavy very thin interbeds of fissile limestone/mudstone; mechanical breaks occur along these interbeds during drilling; some apparent dissolution along these interbeds. [Glen Rose Formation]	400 lbs of bentonite have been added to this borehole.	772				
50		0.75																771
51		0.47																770
52		1.1	3	4.8 5.0	98	SW	R2					LIMESTONE: micrite; light gray (N7); fine grained; slightly weathered (SW); weak (R2); fossiliferous; strong reaction to HCl; many wavy very thin interbeds of fissile limestone/mudstone; mechanical breaks occur along these interbeds during drilling; some apparent dissolution along these interbeds. [Glen Rose Formation]	180 gallons water used per 5' run.	769				
53		0.55																768
54		0.68																767
55		0.82																766
56		0.85	4	5.2 5.0	100	SW	R2					LIMESTONE: micrite; light gray (N7); fine grained; slightly weathered (SW); weak (R2); fossiliferous; strong reaction to HCl; many wavy very thin interbeds of fissile limestone/mudstone; mechanical breaks occur along these interbeds during drilling; some apparent dissolution along these interbeds. [Glen Rose Formation]		765				
57		0.88																764
58		0.83																763
59		0.67																762
60		1.33																761
61		1.02	5	3.5 3.5	100	SW	R2						100% water loss.	760				



Project Name and Job Number TXU Comanche Peak COL 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. MW-1214S</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
62		1.02	5	3.3 3.5	100	SW	R2					LIMESTONE: micrite; light gray (N7); fine grained; slightly weathered (SW); weak (R2); strong reaction to HCl; fossiliferous; minor very thin to thin interbeds of mudstone/shale (0.1"-2" wide); bioturbated; some dissolution features. [Glen Rose Formation]	Out of water.	759
63		0.63						758						
64		0.5						757						
65		0.92	6	1.4 1.5	95						LIMESTONE: micrite; light gray (N7) to medium bluish gray (5B 5/1); fine grained; slightly weathered (SW); fossiliferous (fragments); strong reaction to HCl; bioturbated; some minor dissolution features; interbedded with very thin to thin wavy beds of mudstone/shale; some rip-up clasts. [Glen Rose Formation]	300 gallons water used for 8.5'. Stopped drilling 10/22/06 at 64.5', began 10/23/06.	756	
66		1.3				755								
67		1.1	7	5.0 5.0	91	SW	R2				Below 72', includes thin (0.1") discontinuous lenses of dark brown to black shale; No Reaction to HCl; probable coal seam; rip-up clasts. [Glen Rose Formation]	Morning water level 34.7'.	754	
68		1.03						753						
69		0.78						752						
70		0.97						751						
71		0.55	8	5.1 5.0	100	SW	R2				0.1" thick black/brown bed is lignite, according to driller.	750		
72		1.02						749						
73		0.57						748						
74		0.82						747						
75		0.85						746						
76		1.02	9	5.1 5.0	100	SW	R2				Out of water. 300 gallons used to drill 6.5' drilling.	745		
		0.58												

Project Name and Job Number TXU Comanche Peak COL 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. MW-1214S</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)						
77		0.58										LIMESTONE: micrite; light gray (N7) to medium bluish gray (5B 5/1); fine grained; slightly weathered (SW); weak (R2); fossiliferous (fragments) interbedded with thin (0.3"-2") beds of wavy mudstone/shale; bioturbated.	1500 psi downhole pressure.	744						
		0.47													743					
78		0.62	9	5.1 5.0	100	SW	R2									742				
79		0.52																		741
80		0.63																		740
81		0.95												LIMESTONE: micrite; light gray (N7) to medium bluish gray (5B 5/1); fine grained; slightly weathered (SW); weak (R2) to very weak (R1); fossiliferous (fragments); strong reaction to HCl; bioturbated; interbedded with very thin (0.1" - 1") beds of mudstone/shale. [Glen Rose Formation]	Out of water. 300 gallons used for 10' drilling.	739				
82		1.15											738							
83		0.98	10	4.4 5.0	74	SW	R1-R2									737				
84		0.95																		736
85		1.17																		735
86		0.72										LIMESTONE: wackestone; dark bluish gray (10 B 4/1); fine to medium grained; weak (R2); slightly weathered (SW); strong reaction to HCl; fossiliferous; fissile. [Glen Rose Formation]	Out of water. 300 gallons used for 10' drilling.	734						
87		0.7													733					
88		0.38	11	4.8 5.0	96	SW	R2									732				
89		0.57																		731
90		1.23												730						
91		0.65	12	3.6 5.0	50	SW														

Project Name and Job Number TXU Comanche Peak COL 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. MW-1214S</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)					
92		0.65	12	3.6 5.0	50	SW	R1-R2					LIMESTONE: micrite; light gray (N7) to medium bluish gray (5B 5/1); fine grained; slightly weathered (SW); weak (R2); strong reaction to HCl; fossiliferous; some weaker (R1) beds are more fossiliferous through main body of rock core; bioturbated; rip-up clasts. [Glen Rose Formation]		729					
93		0.5																728	
94		0.52																	727
95		1.13																	726
96		0.73																	725
97	HHH	0.92	13	5.0 5.0	100	SW	R2					LIMESTONE: wackestone; fine to medium grained; medium bluish gray (5B 5/1); slightly weathered (SW); weak (R2); fossiliferous; bioturbated; strong reaction to HCl. [Glen Rose Formation]		724					
98		0.73														LIMESTONE: micrite; fine grained; light gray (N7); slightly weathered (SW); weak (R2); strong reaction to HCl; fossiliferous; bioturbated; with some dissolution features; some rip-up clasts. [Glen Rose Formation] Burrows 96.6'-98.0' moderately weathered zone 98.0-98.2'.		723	
99		0.5																722	
100		0.48																721	
101		0.88																720	
102												Total depth drilled: 101'.	719						
103													718						
104													717						
105													716						
106													715						

Project Name and Job Number TXU Comanche Peak COL 1908		 WLA William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. MW-1214S</b>	
Type and Diameter of Boring CME / 8"		Boring Location 32°18'03.17066"N / 97°47'31.09686"W		Total Depth 101 feet	
Drilling Contractor and Rig Texplor / CME 75		Elevation and Datum 821.36 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 45 feet	
Sampling Method CME		Sample Driving Hammer/Drop NA / NA	No. of Samples 10	Date Started 10/22/06	
		Borehole Inclination Vertical	Logged by R. Ortiz	Date Completed 10/23/06	

Reviewed by / Date \_\_\_\_\_ J. Wesling

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
0	MH						TOPSOIL: fill; SILT; sandy with clay; black (7.5 YR 2.5/1; very stiff, damp to dry, root fragments.	Continuous CME sampling 0.0'-46.5'.	821
1							GRAVEL with sand and silt; dry, light gray (5 YR 7/2), hard, mostly mudstone clasts (highly fractured, sharp edges); below 5.0', includes minor sand and silt; sharp basal contact; FILL.	FILL from 0.0'-46.5'.	820
2	GP		MW-1214S 1214S-1	NA	$\frac{38.4}{51}$				819
3									818
4									817
5									816
6							SILT AND SAND: dark yellowish brown (10 YR 3/4); FILL.		815
7	MH		MW-1214S 1214S-2	NA	$\frac{12}{60}$				814
8									813
9									812
10							GRAVEL: with sand and silt; dry; poorly graded; pale olive (5 Y 6/3), large clasts of crushed limestone; FILL.		811
11									810
12	GP		MW-1214S 1214S-3	NA	$\frac{14.4}{60}$				809
13									808
14									807
15									

Project Name and Job Number TXU Comanche Peak COI 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">SOIL LOG</h2> <h2 style="margin: 0;">Boring No. MW-1214S</h2>
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Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
15								GRAVEL: with sand and silt; dry; poorly graded; pale olive (5 Y 6/3), large clasts of crushed limestone; FILL. (Continued from previous page)	806
16						805			
17			MW-1214S 1214S-4	NA	<u>13.2</u> 60	804			
18						803			
19						802			
20						801			
21								800	
22			MW-1214S 1214S-5	NA	<u>14.4</u> 60	799			
23	GP						798		
24							797		
25							796		
26							795		
27			MW-1214S 1214S-6	NA	<u>16.8</u> 60	794			
28							793		
29							792		
30									



Undisturbed sample  
SH = Shelby; P = Pitcher; O = other








Driven (2.5 to 3.0 inch) with liners  
MC = Modified California; O = other



Standard Penetration Test (SPT) sampler

Project Name and Job Number TXU Comanche Peak COI 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">SOIL LOG</h2> <h2 style="margin: 0;">Boring No. MW-1214S</h2>
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Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
30									791
31						790			
32	GP		MW-1214S 1214S-7	NA	$\frac{14.4}{60}$	789			
33									788
34						787			
35						786			
36									785
37	GP		MW-1214S 1214S-8	NA	$\frac{24}{60}$	784			
38						783			
39									782
40						781			
41						780			
42									779
43	GP		MW-1214S 1214S-9	NA	$\frac{22.8}{60}$	778			
44						777			
45									



Undisturbed sample  
SH = Shelby; P = Pitcher; O = other



Driven (2.5 to 3.0 inch) with liners  
MC = Modified California; O = other



Standard Penetration Test (SPT) sampler

Project Name and Job Number TXU Comanche Peak COI 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">SOIL LOG</h2> <h2 style="margin: 0;">Boring No. MW-1214S</h2>
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Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
45			MW-1214S 1214S-10	NA	9.6 18		LIMESTONE: crushed clasts. [Glen Rose Formation]	Top of rock 45.0'. Augered to 46.5, began NQ coring in Glen Rose Formation.  HSA used as temporary casing to 46.5'.	776
46							LIMESTONE: crushed clasts. [Glen Rose Formation]		775
47									774
48									773
49									772
50									771
51									770
52									769
53									768
54									767
55									766
56									765
57									764
58									763
59									762
60									




Undisturbed sample  
SH = Shelby; P = Pitcher; O = other



Driven (2.5 to 3.0 inch) with liners  
MC = Modified California; O = other



Standard Penetration Test (SPT) sampler

Project Name and Job Number TXU Comanche Peak COL 1908		 WLA William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. MW-1215S</b>	
Type and Diameter of Boring HSA / 8"		Boring Location 32°18'08.03859"N / 97°47'41.71230"W		Total Depth 99.8 feet	
Drilling Contractor and Rig Core Test / CME 75		Elevation and Datum 847.77 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 14 feet	
Casing Size and Depth 4 / 14 feet		Length of Core Barrel and Bit 13.8 feet	No. of Core Boxes 5	Date Started 11/13/06	
		Borehole Inclination Vertical	Logged by M. Buga	Date Completed 11/14/06	

Reviewed by / Date J. Wesling 11/30/06

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
14		1.6	1	0.4 1.0	40	F-SW	R0-R2						Top of bedrock (Glen Rose Formation) 14.0' bls; began NQ coring at 14.0' bls. GLEN ROSE FORMATION 14.0' - total depth of 99.8' bls. Good water return, gray.	833
15		1.87							1215-3					832
16		2												831
17		2.22	2	5.0 5.0	100	F-SW	R2							830
18		1.95												829
19		2.73												828
20		3												827
21		4.18				F	R2							826
22		4.67	3	4.8 5.0	96				1215-4					825
23		3.13												824
24		5				F	R2							823
25		3.42												822
26		2.83				F	R1-R2							821
27		4.48	4	5.0 5.0	100									820
28		4.27				F	R1-R2		1215-5					819



Project Name and Job Number TXU Comanche Peak COL 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. MW-1215S</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
29		3.95	4	5.0	100	F								818
30		4.22				F	R1-R2					LIMESTONE: boundstone; white light to light gray (N9-N8); fresh (F); weak (R2); massive with fine lamination; no bioturbation; violent HCl reaction; gradational basal contact. [Glen Rose Formation]	Good water return.	817
31		4.42				F	R1-R2				LIMESTONE: wackestone; very light gray to light gray (N7-N8); fresh (F); weak (R2) to very weak (R1); well bedded; sandy texture; bioturbation throughout; gradational basal contact. [Glen Rose Formation]			816
32		4.5	5	5.1	100							LIMESTONE: boundstone; very light to light gray (N8-N7); fresh (F); weak (R2); finely laminated in places; well bedded; bioturbated; violent HCl reaction. [Glen Rose Formation]	Length of recovery stretched due to mechanical breaks.	815
33		3.47												814
34		3.58											813	
35		3.07				F	R2						812	
36										RF, Wa, Ro, Ti			812	
37		3									Rf, Pl, Ro, Ti		811	
38		3.2	6	5.0	99	F	R1					SHALE: mudstone; medium dark gray (N5); fresh (F), very weak (R1); massive with desiccation cracks; sharp lower contact. [Glen Rose Formation]	810	
39		6.02				F	R2					LIMESTONE: wackestone/packstone; very light to light gray (N8-N7); fresh (F); weak (R2); well bedded with interbedded light gray (N7) mudstone; some bioturbation; sharp basal contact. [Glen Rose Formation]	809	
40		5.12										SHALE: mudstone with minor micrite; light gray (N7); fresh (F); very weak to weak (R1-R2); thin limestone beds throughout (up to 0.3' thick); minor bioturbation; sharp basal contact. [Glen Rose Formation]	808	
41		4.03				F	R1-R2					Mudstone at lower contact, 40.6'-40.9'.	807	
42		4.25	7	5.0	100							LIMESTONE: wackestone; white to very light gray (N9-N8); fresh (F); weak (R2); massive with small mudstone interbeds; rip-up clasts; breaks along mudstone beds; lower contact sharp. [Glen Rose Formation]	806	
43		4.35				F	R2				Rf, Wa, Sl, Op		805	
44		3.92											804	

Project Name and Job Number  
 TXU Comanche Peak COL  
 1908



**ROCK LOG**  
**Boring No. MW-1215S**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
44														
45		4	7	5.0	100	F	R2				Rf, Pl, Ro, Op	LIMESTONE: micrite; with interbedded shale; very light gray to light gray (N8-N7); fresh (F); weak (R2); thin shale laminations; with rip-up clasts; strong HCl reaction; sharp basal contact. [Glen Rose Formation]	Good water return, gray.	803
46		3.33									Rf, Wa, Sl, Ti			802
47		3.9									Rf, Wa, Sl, Ti			801
48		3.25	8	5.0	100	F	R2				Rf, Wa, Sl, Ti			800
49		3.17										SHALE: light gray to medium light gray (N6-N7); fresh (F); very weak (R1); massive with minor fine interbeds; 0.05' thick; desiccation cracks; slight HCl reaction, gradational basal contact. [Glen Rose Formation]	799	
50		3.5											798	
51		4.33				F	R1						797	
52		3.97											796	
53		4.75	9	5.0	99	F	R2					LIMESTONE: micrite; white to light gray (N9-N8); fresh (F); weak (R2); massive micrite with minor dark interbeds <0.01'; strong HCl reaction; sharp lower contact. [Glen Rose Formation]	795	
54		4.25										SHALE: dark greenish gray (5 G 4/1); fresh (F); very weak to weak (R1-R2); desiccation cracks; slight HCl reaction; sharp lower contact. [Glen Rose Formation]	794	
55		4.42				F	R1-R2					Minor micrite interbed at 53.1', 0.1'-0.15' thick; Micrite interbed at 54.35'-54.6'.	793	
56		4.67									RF, Pl, Sl, Ti		792	
57		5.08										LIMESTONE: micrite; medium light gray (N6); fresh (F); weak (R2); violent reaction to HCl; grades into wackestone. [Glen Rose Formation]	791	
58		5	10	5.0	100	F	R2					LIMESTONE: wackestone; medium light gray (N6); fresh (F); weak (R2); violent reaction to HCl. [Glen Rose Formation]	790	
59		4.83									RF, Wa, Sl, Op	grades into packstone at 57.9' with same characteristics.	789	

Project Name and Job Number  
TXU Comanche Peak COL  
1908



**ROCK LOG** **MW-1215S**  
**Boring No.**


Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
59		5.17	10	5.0 5.0	100	F	R1					SHALE: dark greenish gray (5 G 4/1); fresh (F); very weak (R1); slight reaction to HCl; desiccation cracks. [Glen Rose Formation]	Good water return.	788
60		3.5										LIMESTONE; wackestone with clay veining; light gray (N7); fresh (F); weak (R2); violent reaction to HCl; gradational basal contact. [Glen Rose Formation]		787
61		3.1				F	R2							786
62		4.97	11	4.7 5.0	94	F	R1		1215-12			SHALE: dark greenish gray (5 G 4/1); fresh (F); very weak (R1); slight reaction to HCl; sparse desiccation cracks. [Glen Rose Formation]		785
63		3												784
64		4.42				F-SW	R2					LIMESTONE: packstone; very light gray (N8); fresh to slightly weathered (F-SW); weak (R2); strong to violent reaction to HCl; clay veining. [Glen Rose Formation]		783
65		4.33												782
66		3.63				F-SW	R1					Clay layer 65.75'-66.1'.		781
67		2.47	12	5.0 5.0	100	F	R2		1215-13			LIMESTONE: micrite; light gray (N7); fresh (F); weathered; violent reaction to HCl. [Glen Rose Formation]		780
68		3.52										LIMESTONE; wackestone; medium light gray (N6); fresh (F); weak (R2); violent reaction to HCl; clay/shale matrix with sand; grades into packstone at 68.5'. [Glen Rose Formation]		779
69		3.83										LIMESTONE: packstone; medium light gray (N6); fresh (F); weak (R2); violent reaction to HCl. [Glen Rose Formation]		778
70		3												777
71		3.33												776
72		3.25	13	5.0 5.0	100	F	R2		1215-14			Wackestone interbed 72.1' to 73.5'.		775
73		3.5												774

Project Name and Job Number TXU Comanche Peak COL 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. MW-1215S</h2>
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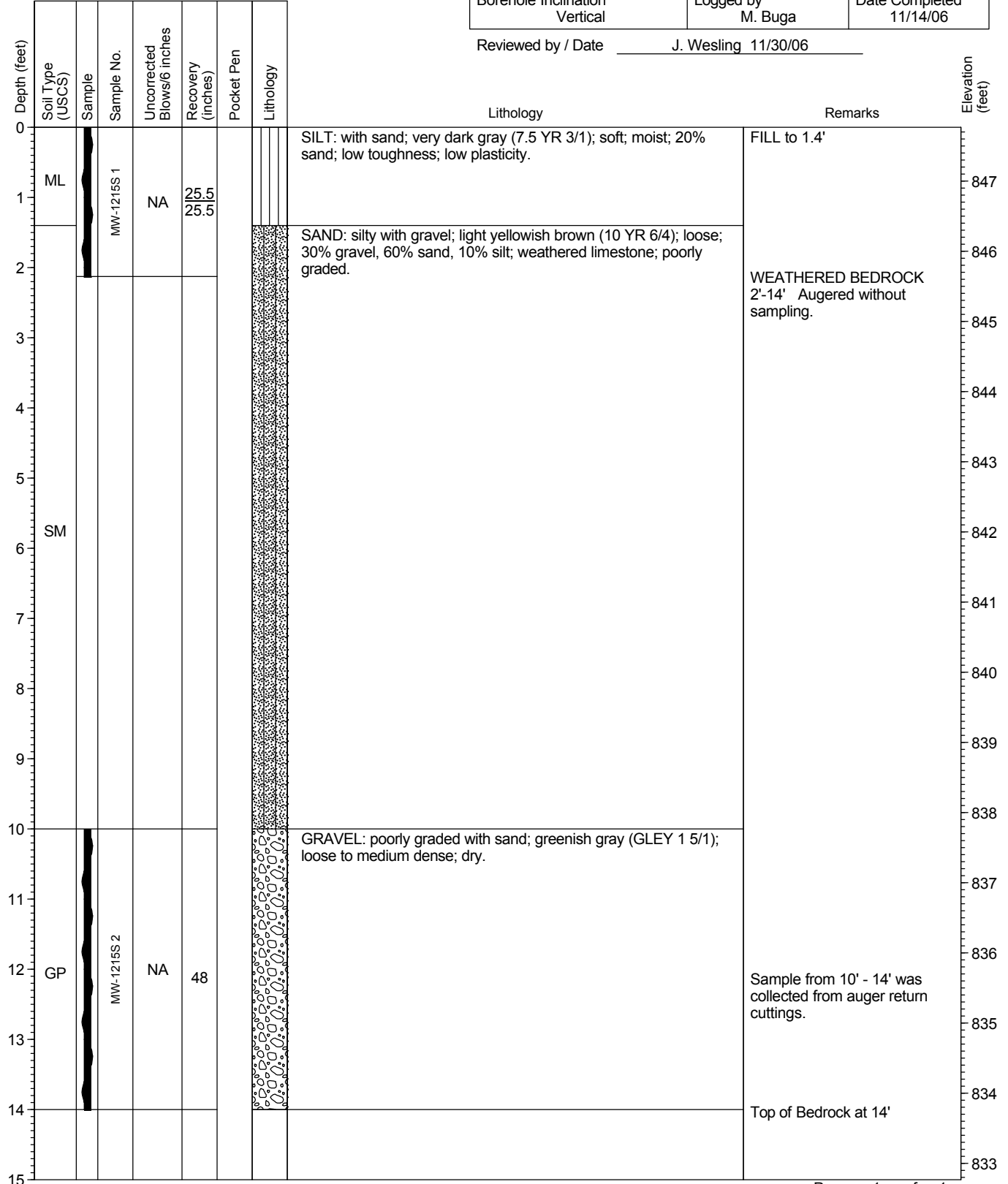
Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
74		3.57	13	51.0	100	F	R2				RF, St, Ro, Op	Wackestone interbed 74.4' - 75.6'	Good water return.	773
75		2.92							1215-15			Micrite interbed 75.6' - 75.9'		772
76		3										LIMESTONE: wackestone; medium light gray (N6); fresh (F); weak (R2); violent reaction to HCl. [Glen Rose Formation]		771
77		3.33	14	51.0	100	F	R2					LIMESTONE: packstone; light gray (N7); fresh (F); weak (R2); violent reaction to HCL; gradational basal contact. [Glen Rose Formation]		770
78		3.5										LIMESTONE: wackestone; light gray (N7); fresh (F); weak (R2); violent reaction to HCl. [Glen Rose Formation]		769
79		3.67							1215-16			Packstone interbed 81.0' - 81.85';		768
80		4.45										Wackestone with sparse interclasts 81.85' - 82.4'		767
81		4.17										LIMESTONE: packstone; light gray (N7); fresh (F); weak (R2); violent reaction to HCl. [Glen Rose Formation]		766
82		4.67	15	51.0	100	F	R2					LIMESTONE: wackestone; medium light gray (N6) to medium gray (N5); fresh to slightly weathered (F-SW); weak (R2); strong to violent reaction to HCl. [Glen Rose Formation]		765
83		4.23										Sparse interclasts 85.5' - 88.3';		764
84		5.8												763
85		5.38							1215-17					762
86		5.08												761
87		5.33	16	51.0	100	F-SW	R2							760
88		5.87												759


Project Name and Job Number TXU Comanche Peak COL 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. MW-1215S</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
89	LITHOLOGY	5.27	16	5.0	100	F-SW	R2					LIMESTONE: packstone; medium light gray (N7); fresh to slightly weathered (F-SW); weak (R2); violent reaction to HCl. [Glen Rose Formation] Wackestone interbed 89.6' - 90.1'.		758
90		3.8		5.0										757
91		3.58										Wackestone interbed 90.9' - 91.3'.		756
92		3.7	17	4.9	96	F	R2					LIMESTONE: wackestone to micrite; light gray (N7); fresh (F); weak (R2); violent reaction to HCl; grades into packstone. [Glen Rose Formation] LIMESTONE: packstone; medium light gray (N6); fresh (F); weak (R2); convoluted bedding; strong to violent reaction to HCl. [Glen Rose Formation]	Good water return, gray.	755
93	4.68	5.0		754										
94		7.63										Small micritic section 94.8' - 95.0'.		753
95		4.53	18	5.0	100	F	R2					LIMESTONE: packstone; medium light gray (N6); massive bedding with wackestone rip-up clasts; fresh (F); weak (R2); dry; violent reaction to HCl. [Glen Rose Formation] LIMESTONE: wackestone; very light gray to medium light gray (N8-N6); convoluted beds with thin (<0.2") interbeds of packstone; fresh (F), weak (R2); dry; violent reaction to HCl. [Glen Rose Formation]		752
96	5.28	4.8		751										
97		5.08		5.0								LIMESTONE: wackestone; very light gray to medium light gray (N8-N6); thin convoluted beds with interbeds of packstone 0.5" to 5" thick; fresh (F), weak (R2); dry; strong to violent reaction to HCl. [Glen Rose Formation]		750
98		5.2		4.8										749
99		5.7												748
100													Total depth drilled: 99.8' bls.	747
101														746
102														745
103														744
104														

Project Name and Job Number TXU Comanche Peak COI 1908		 WLA William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. MW-1215S</b>	
Type and Diameter of Boring HSA / 8"		Boring Location 32°18'08.03859"N / 97°47'41.71230"W		Total Depth 99.8 feet	
Drilling Contractor and Rig Core Test / CME 75		Elevation and Datum 847.77 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 14 feet	
Sampling Method CME Continuous Core		Sample Driving Hammer/Drop NA / NA	No. of Samples 19	Date Started 11/13/06	
		Borehole Inclination Vertical	Logged by M. Buga	Date Completed 11/14/06	

Reviewed by / Date J. Wesling 11/30/06



Project Name and Job Number TXU Comanche Peak COL 1908		 WLA William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. MW-1216S</b>	
Type and Diameter of Boring NQ / 3"		Boring Location 32°18'06.35503"N / 97°47'30.32786"W		Total Depth 101.5 feet	
Drilling Contractor and Rig Texplor / CME 75		Elevation and Datum 844.04 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 15 feet	
Casing Size and Depth None used		Length of Core Barrel and Bit 13 feet	No. of Core Boxes 5	Date Started 11/6/06	
		Borehole Inclination Vertical	Logged by R. Turner	Date Completed 11/7/06	

Reviewed by / Date J. Wesling 12/6/06

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology		Remarks	Elevation (feet)
15		2.4	1	1.5 5.0	100	SW	R1							Top of rock 15.0'; began NQ coring at 15.0', Glen Rose Formation.	829
16						SW	R2								828
17		3.35				SW	R1							Good water return, gray.	827
18		7.47													826
19		2.43	2	4.4 5.0	88	SW	R2								825
20		1.6													824
21		1.72													823
22		1.37				SW	R2								822
23		1.58													821
24		1.72	3	3.6 5.0	72	F	R2								820
25		1.37													819
26		3.95													818
27		1.58													817
28		1.63	4	5.0 5.0	100	F	R2								816
29		1.55													815
30		0.85													

Project Name and Job Number  
 TXU Comanche Peak COL  
 1908



**ROCK LOG**  
**Boring No. MW-1216S**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
30		0.85	4	5.0 5.0	100	F	R2					LIMESTONE: packstone; very light gray to medium dark gray (N8-N4); thin wavy beds; rip-up clasts; fresh (F), weak (R2), dry; strong reaction to HCl.	Good water return, gray.	814
31		0.83						813						
32		0.72						812						
33		0.78						811						
34		0.58	5	5.0 5.0	100	F	R2						810	
35		0.7						809						
36		0.85						808						
37		1.42	6	5.1 5.0	100	F	R1				SHALE: medium dark gray (N4); very thin beds; fresh (F); very weak (R1); damp; strong reaction to HCl.  LIMESTONE; wackestone; very light gray to medium gray (N8-N4); thin wavy beds; shale interbeds to 2" thick; fresh (F); weak (R2); dry; strong reaction to HCl.	Stopped drilling at 36.5', 11/6/06, started 11/7/06.	807	
38		1.33				F	R2	806						
39		1.3				F	R1	805						
40		3.53	7	4.8 5.0	100	F	R2				SHALE: medium dark gray (N4); very thin beds with limestone interbeds up to 1.9" thick; fresh (F); very weak (R1); damp; slight to strong reaction to HCl.  LIMESTONE: wackestone; very light gray to medium dark gray (N8-N4); thin wavy beds; rip-up clasts; fresh (F); weak (R2); dry; strong reaction to HCl.	Length of recovery stretched due to mechanical breaks.	804	
41		5.68						F	R2	803				
42		1.5								802				
43		1.4	7	4.8 5.0	100	F	R2				LIMESTONE: packstone; light gray to medium dark gray (N8-N4); thin convoluted beds; rip-up clasts; fresh (F); weak (R2); dry; strong reaction to HCl.		801	
44		1.7						800						
45		1.85												



Project Name and Job Number TXU Comanche Peak COL 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. MW-1216S</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)	
45		1.85										LIMESTONE: packstone; light gray to medium dark gray (N8-N4); thin convoluted beds; rip-up clasts; fresh (F); weak (R2); dry; strong reaction to HCl.	Good water return, gray.	799	
46		3.27	7	4.8 5.0	100	F	R2								798
47		2.08													797
48		3.67				F	R2								796
49		4.08	8	4.5 5.0	90									SHALE: medium dark gray (N4); very thin beds; fresh (F), very weak (R1); damp; slight reaction to HCl.	795
50		4.25				F	R1								
51		8.95													793
52		4.78				F	R2							LIMESTONE: wackestone; very light gray to medium dark gray (N8-N6); thin wavy beds; fresh (F); weak (R2); dry; strong reaction to HCl.	792
53		5.05													SHALE: medium dark gray (N4); very thin beds with limestone interbeds up to 1.5" thick; fresh (F), very weak (R1); damp; slight to strong reaction to HCl.
54		5.17	9	4.9 5.0	98	F	R1								
55		4.87											789		
56		6.03										LIMESTONE: packstone; very light gray to medium dark gray (N8-N4); thin convoluted beds; rip-up clasts; fresh (F); weak (R2); strong reaction to HCl.	788		
57		3.67				F	R2							787	
58		4.03	10	4.8 5.0	96							SHALE: medium dark gray (N4); very thin beds; fresh (F); very weak (R1); damp; strong reaction to HCl.	786		
59		4.03				F	R1							785	
60		4.17													

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**ROCK LOG**  
**Boring No. MW-1216S**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)	
60		4.17	10	4.8 5.0	96	F	R1						Good water return, gray.	784	
61		3.63				F	R2						LIMESTONE: wackestone; very light gray to medium gray (N8-N6); wavy beds; fresh (F); very weak (R1); damp; slight reaction to HCl.		783
62		5.35				F	R1						SHALE: medium dark gray (N4); very thin beds; fresh (F); very weak (R1); damp; slight reaction to HCl.		782
63		4.53	11	4.8 5.0	96									781	
64		3.63				F	R2						LIMESTONE: wackestone; very light gray to medium gray (N8-N6); wavy beds; fresh (F); very weak (R1); damp; slight reaction to HCl.		780
65		4.35													
66		3.78												778	
67	NM		12	5.2 5.0	100									777	
68	NM					F	R2								776
69	NM														
70	NM													774	
71	NM													773	
72														772	
73		4.55	13	5.0 5.0	100	F	R2				Jo, He, R6			771	
74														770	
75															

Length of recovery stretched due to mechanical breaks.

Project Name and Job Number  
 TXU Comanche Peak COI  
 1908



**ROCK LOG**  
**Boring No. MW-1216S**


Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
75		4.55	13	5.0 5.0	100	F	R2					LIMESTONE: wackestone; very light gray to medium gray (N8-N6); thin wavy beds; few rip-up clasts; fresh (F); weak (R2); dry; strong reaction to HCl.	Good water return, gray.	769
76														768
77		1.2												767
78		1.03												766
79		0.98	14	5.0 5.0	100	F	R2							765
80		1.07												764
81		1.13												763
82		1.7												762
83		1.95												761
84		2.03	15	5.0 5.0	100	F	R2							760
85		1.97												759
86		2.12												758
87												LIMESTONE: packstone; very light gray to medium dark gray (N8-N4); convoluted and wavy thin beds; many rip-up clasts; fresh (F); weak (R2); dry; strong reaction to HCl.		757
88		4.13	16	5.1 5.0	100	F	R2							756
89														755
90													Length of recovery stretched due to mechanical breaks.	

Project Name and Job Number  
 TXU Comanche Peak COI  
 1908




**ROCK LOG**  
**Boring No. MW-1216S**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)		
90	[Lithology Column]	4.13	16	5.1 5.0	100	F	R2					LIMESTONE: packstone; very light gray to medium gray (N8-N6); thin wavy and convoluted beds; rip-up clasts; fresh (F); weak (R2); dry; strong reaction to HCl.	Good water return, gray.	754		
91															753	
92																752
93																751
94			6.88	17	5.0 5.0	100	F	R2								750
95																749
96														748		
97		2.02												747		
98		1.95												746		
99		2.2	18	5.0 5.0	100	F	R2							745		
100		2.23												744		
101		1.95												743		
102													Total depth drilled 101.5'.	742		
103														741		
104														740		
105																

Project Name and Job Number TXU Comanche Peak COL 1908		 William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. MW-1216S</b>	
Type and Diameter of Boring NQ / 3"		Boring Location 32°18'06.35503"N / 97°47'30.32786"W		Total Depth 101.5 feet	
Drilling Contractor and Rig Texplor / CME 75		Elevation and Datum 844.04 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 15 feet	
Sampling Method CME Continuous Core / SPT		Sample Driving Hammer/Drop NA / NA	No. of Samples 4	Date Started 11/6/06	
		Borehole Inclination Vertical	Logged by R. Turner	Date Completed 11/7/06	

Reviewed by / Date J. Wesling 12/6/06

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0										844
1	SP-SM		MW-1216S 1216-1	NA	18/18			SAND: poorly graded sand with silt; very dark grayish brown (2.5 Y 3/2); fine to medium grained; subangular; strong reaction to HCl; damp.		843
2										842
3	SP-SM		MW-1216S 1216-2	NA	10/42			SAND: poorly graded sand with silt and gravel; pale yellow (2.5 Y 8/3); grades from fine sand to clasts up to 0.9"; subangular; damp; strong reaction to HCl.		841
4										840
5										839
6								GRAVEL: well graded; white (N9); angular clasts 0.25" to 2.4' in diameter; strong reaction to HCl.	Very poor recovery. Tube may be blocking off, and samples may not accurately reflect soil profile.	838
7										837
8	GW		MW-1216S 1216-3	NA	1.5/60					836
9										835
10										834
11								GRAVEL: well graded gravel with sand; gray (N6); subangular to angular clasts; grades from fine sand to gravel 2.5" in diameter; dry; strong reaction to HCl.		833
12										832
13	GW		MW-1216S 1216-4	NA	14.5/60					831
14										830
15										

Project Name and Job Number TXU Comanche Peak COL 1908		 WLA William Lettis & Associates, Inc.		<b>ROCK LOG</b> <b>Boring No. MW-1217S</b>	
Type and Diameter of Boring NQ / 3"			Boring Location 32°18'09.82078"N / 97°47'30.49836"W		Total Depth 101.4 feet
Drilling Contractor and Rig Texplor / CME 75			Elevation and Datum 844.3 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 15 feet
Casing Size and Depth 4 / 15 feet			Length of Core Barrel and Bit 13 feet	No. of Core Boxes 5	Date Started 11/5/06
			Borehole Inclination Vertical	Logged by R. Turner	Date Completed 11/6/06

Reviewed by / Date J. Wesling 11/30/06

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
15			1	1.2 1.4	86	SW	R2					LIMESTONE: packstone; very light gray to medium gray (N8-N5); thin bedded; interbedded shales 0.5" to 2" thick; slightly weathered (SW); weak (R2); dry; strong reaction to HCl. [Glen Rose Formation]	Top of bedrock (Glen Rose Formation) 15.0'. Began NQ coring at 15.0'.	829
16														828
17		1.4											Good water return, gray.	827
18		1.2												826
19		1.17	2	5.0 5.0	98	SW	R2				JO, OP, R5			825
20		1.05							1217-2					824
21		1.18												823
22		1.07										LIMESTONE: packstone; medium light gray to medium dark gray (N6-N4); massive; rip-up clasts; fossils; fresh (F); weak (R2); dry; strong reaction to HCl. [Glen Rose Formation]		822
23		1.17				F	R2							821
24		1.27	3	5.0 5.0	100							LIMESTONE: wackestone; medium gray to medium dark gray (N5-N4); thin wavy beds; rip-up clasts; fresh (F); dry. [Glen Rose Formation]		820
25		3.35												819
26		5.17				F	R1		1217-3			SHALE: medium dark gray (N4); very thin beds; slightly weathered (SW); very weak (R1); damp; slight reaction to HCl. [Glen Rose Formation]		818
27		3.38												817
28		1.37	4	5.0 5.0	100	F	R2					LIMESTONE: wackestone; alternates between medium dark gray layers (N4) and light gray layers (N8-N6); wavy thin bedding; rip-up clasts; fresh (F); weak (R2); dry; strong reaction to HCl. [Glen Rose Formation]		816
29		1.12							1217-4					815
30		1.33												

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 TXU Comanche Peak COL  
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**ROCK LOG**  
**Boring No. MW-1217S**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)	
30		1.63	4	5.0	100	F	R2						Good water return, gray.	814	
31		1.33										LIMESTONE: wackestone; very light gray to medium gray (N8-N5); wavy convoluted beds; rip-up clasts; shaly seams up to 0.5" thick; fresh (F); weak (R2); dry; strong reaction to HCl. [Glen Rose Formation]		813	
32		1.23												812	
33		1.17	5	5.0	100	F	R2		1217-5					811	
34		1.3												810	
35		1.28												809	
36		1.5												808	
37		2.17				F	R2							807	
38		2.67	6	5.0	100									806	
39		2.58								1217-6		SHALE: medium dark gray (N4); very thin beds; slightly weathered (SW); very weak (R1); damp; slight reaction to HCl. [Glen Rose Formation]		805	
40		2.87				SW	R1								804
41		2.07										LIMESTONE: packstone; very light gray to medium dark gray; convoluted thin bedding; rip-up clasts; shaly interbeds 0.25" to 1.8" thick; fresh (F); weak (R2); dry; strong reaction to HCl. [Glen Rose Formation]		803	
42		1.75	7	5.1	100	F	R2								802
43		1.67								1217-7					801
44		1.53											Length of recovery stretched due to mechanical breaks.	800	
45															

Project Name and Job Number TXU Comanche Peak COL 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">ROCK LOG</h2> <h2 style="margin: 0;">Boring No. MW-1217S</h2>
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Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)								
45		1.53	7	5.1 5.0	100	F	R2					LIMESTONE: packstone; very light gray to medium dark gray; convoluted thin bedding; rip-up clasts; shaly interbeds 0.25" to 1.8" thick; fresh (F); weak (R2); dry; strong reaction to HCl. [Glen Rose Formation]	Good water return, gray.	799								
46		1.45																		LIMESTONE: wackestone; very light gray to medium dark gray (N8-N4); convoluted thin beds; rip-up clasts; fresh (F); weak (R2); dry; strong reaction to HCl. [Glen Rose Formation]		798
47		1.75																				797
48		2.37	8	4.6 5.0	92	F	R2							796								
49		3.7																				795
50		4.55																		SHALE: medium dark gray (N4); very thin beds; rip-up clasts; fresh (F); very weak (R1); damp; slight to strong reaction to HCl. [Glen Rose Formation]		794
51		5.25	9	1.6 2.5	64	F	R2						Shale stuck in rods.	793								
52																				SAND		792
53		20.8																		LIMESTONE: wackestone; very light gray to medium dark gray (N8-N4); convoluted thin beds; rip-up clasts; fresh (F); weak (R2); dry; strong reaction to HCl. [Glen Rose Formation]		791
54			10	2.0 2.5	80	F	R1							790								
55		6.62																		SHALE: medium dark gray (N4); very thin beds; fresh (F); very weak (R1); damp; slight to very slight reaction to HCl. [Glen Rose Formation]		789
56																						788
57			11	4.6 5.0	92	F	R2							787								
58		12.8																		LIMESTONE: wackestone; very light gray to medium dark gray (N8-N4); thin wavy beds; rip-up clasts; coal seams; fresh (F); weak (R2); dry; strong reaction to HCl. [Glen Rose Formation]		786
59																				SHALE: medium dark gray (N4); very thin beds; fresh (F); very weak (R1); damp; slight reaction to HCl. [Glen Rose Formation]		785
60																						



Project Name and Job Number  
 TXU Comanche Peak COL  
 1908



**ROCK LOG** **MW-1217S**  
**Boring No.**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
60		12.8	11	4.6 5.0	92	F	R1		1217-11			SHALE: medium dark gray (N4); very thin beds; fresh (F); very weak (R1); damp; slight reaction to HCl. [Glen Rose Formation]	Good water return, gray.	784
61														783
62		4.7										SHALE: medium dark gray (N4); very thin beds with some limestone rip-up clasts; fresh (F); very weak (R1); damp; slight to strong reaction to HCl.		782
63		5.17												781
64		5.35	12	5.0 5.0	100	F	R1		1217-12					780
65		4.8												779
66		1.5										LIMESTONE: wackestone; very light gray to medium dark gray (N8-N4); thin wavy beds; thin shaley interbeds 0.3" to 1.2" thick; fresh (F); weak (R2); dry; strong reaction to HCl.		778
67		2.17				F	R1					SHALE: medium dark gray (N4); very thin beds with some limestone rip-up clasts; fresh (F); very weak (R1); damp; slight to strong reaction to HCl.		777
68		1.08				F	R2					LIMESTONE: wackestone; very light gray (N8); massive; some stylolites; fresh (F); weak (R2); dry; strong reaction to HCl.		776
69		1.03	13	5.1 5.0	100				1217-13			LIMESTONE: packstone; very light gray to medium dark gray (N8-N4); thin, wavy beds; rip-up clasts; sandy; fresh (F); weak (R2); dry; strong reaction to HCl.	Length of recovery stretched due to mechanical breaks.	775
70		0.97				F	R2							774
71		1.02												773
72		0.83												772
73		0.7	14	5.0 5.0	100	F	R2							771
74		0.63												770
75		0.68							1217-14					

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 1908



**ROCK LOG**  
**Boring No. MW-1217S**


Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)
75		0.68	14	5.0 5.0	100	F	R2					LIMESTONE: packstone; very light gray to medium dark gray (N8-N4); thin, wavy beds; rip-up clasts; sandy; fresh (F); weak (R2); dry; strong reaction to HCl.	Good water return, gray.	769
76	0.75	768												
77	0.92	767												
78	1.03	15	4.7 5.0	94	F	R2						LIMESTONE: wackestone; very light gray to medium gray (N8-N5); thin wavy beds; rip-up clasts; fresh (F); weak (R2); strong reaction to HCl; dry.		766
79	0.98													765
80	1.07													764
81	1.02	16	0.6 1.0	60								LIMESTONE: packstone; very light gray to medium gray (N8-N5); thin wavy to convoluted beds; rip-up clasts; sandy; fresh (F); weak (R2); dry; strong reaction to HCl.		763
82	6.97													762
83														761
84	5.52	17	3.8 4.0	95	F	R2								760
85														759
86														758
87		18	5.0 5.0	100	F	R2								757
88	6.52													756
89														755
90														

Project Name and Job Number  
 TXU Comanche Peak COL  
 1908




**ROCK LOG**  
**Boring No. MW-1217S**

Depth (feet)	Lithology	Drill Rate (min/ft)	Run No.	Recovery (feet)	% RQD	Weathering	Strength	In-Situ Testing	Rock Samples	Discontinuity Log	Discontinuity Description	Lithology	Remarks	Elevation (feet)	
90	[Lithology Column]	6.52	18	5.0	100	F	R2		1217-18			LIMESTONE: packstone; very light gray to medium gray (N8-N5); thin wavy to convoluted beds; rip-up clasts; sandy; fresh (F); weak (R2); dry; strong reaction to HCl.	Good water return, gray.	754	
91														753	
92		1.05												752	
93		1.02												751	
94		0.97	19	5.0	100	F	R2		1217-19					750	
95		0.92												749	
96		1.1												748	
97		1.2											Shale bed: medium dark gray (N4); very thin beds; fresh (F); very weak (R1); damp; strong reaction to HCl. LIMESTONE: wackestone; very light gray to medium dark gray (N8-N4); convoluted thin beds; rip-up clasts; fresh (F); weak (R2); dry; strong reaction to HCl.		747
98		1.27													746
99		1.33	20	5.0	100	F	R2						LIMESTONE: packstone; very light gray to medium dark gray (N8-N4); thin wavy beds; rip-up clasts; sandy; fresh (F); weak (R2); dry; strong reaction to HCl.		745
100		1.23													744
101		1.13												Total depth drilled: 101.4'	743
102														742	
103														741	
104														740	
105															

Project Name and Job Number TXU Comanche Peak COL 1908		 WLA William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. MW-1217S</b>	
Type and Diameter of Boring NQ / 3"		Boring Location 32°18'09.82078"N / 97°47'30.49836"W		Total Depth 101.4 feet	
Drilling Contractor and Rig Texplor / CME 75		Elevation and Datum 844.3 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 15 feet	
Sampling Method CME Continuous Core		Sample Driving Hammer/Drop NA / NA	No. of Samples 2	Date Started 11/5/06	
		Borehole Inclination Vertical	Logged by R. Turner	Date Completed 11/6/06	


Reviewed by / Date J. Wesling 11/30/06

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
0	SM		MW-1217S		$\frac{24}{18}$		SAND: silty; dark brown (7.5 YR 3/3); subangular to angular; fine to medium grained; slight reaction to HCl.		844
1									843
2							GRAVEL: with silt and sand; well graded; white to light gray (N9-N7); angular clasts; fine sand to 2.1" diameter; strong reaction to HCl; clasts are limestone.	Augered without sampling 2.0' - 5.0'.	842
3									841
4									840
5								No recovery 5' - 10'.	839
6	GW-GM								838
7									837
8									836
9									835
10									834
11							SAND: well graded with silt and gravel; pale yellow (2.5 Y 7/4); subangular to angular clasts; grades from fine sand to 3" diameter gravel; gravel clasts are limestone; strong reaction to HCl.		833
12									832
13	SW-SM		MW-1217S		$\frac{12}{60}$				831
14									830
15									830

Project Name and Job Number TXU Comanche Peak COL 1908		 SOIL LOG Boring No. <b>MW-1218S</b>	
Type and Diameter of Boring HSA / 7.5"		Boring Location 32°17'45.56710"N / 97°47'41.14517"W	
Drilling Contractor and Rig Richard Simmons / BK-HD81		Elevation and Datum 835.48 feet NAVD88	Ground Water Depth DRY
Sampling Method CME Continuous Core		Sample Driving Hammer/Drop NA / NA	No. of Samples 5
		Borehole Inclination Vertical	Logged by M. Buga
		Date Started 11/14/06	
		Date Completed 11/14/06	

Reviewed by / Date J. Wesling 11/30/06

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
0										835
1	CL		MW-1218S 1218-1	NA	41/48			CLAY: gravelly with sand; dark yellowish brown (10 YR 4/6); damp to moist; stiff; 30% gravel, 30% sand, 40% clay; low to medium dry strength; medium tough and medium plasticity.		834
2										833
3	GW-GM							GRAVEL: with sand and poorly graded gravel; very dark gray (7.5 Y 2/1) to dark brown (7.5 YR 3/2); damp; stiff to very stiff; contains cobbles; 45% gravel, 35% sand; 20% silt; fill material.		832
4	SP							SAND: with cobbles; grayish brown (10 YR 5/2); dry to damp; dense; very high dry strength; fill.	FILL 0.0' to 5.0'.	831
5	GW-GM		MW-1218S 1218-2	NA	11/12			Fill material similar to 2.1' to 2.9'.		830
6								Rock layer/boulder	Auger without sampling 7.0' - 9.0'.	829
7										828
8	SC		MW-1218S 1218-3	NA	18/24			SAND: clayey with gravel; brownish yellow (10 YR 6/8); moist; medium dense to dense; native soil; some cobbles.		827
9								Rock layer/boulders.		826
10										825
11									Switched to auger at 9', augered to 12' and sampled. Only able to sample 6" due to refusal.	824
12	SC		MW-1218S 1218-4	NA	4/6			SAND: clayey with gravel; brownish yellow (10 YR 6/8); moist; medium dense to dense; native soil; increased cobble content.		823
13								Rock layer/boulders.	Auger without sampling 12.5' - 14.0'.	822
14										821
15	SC		MW-1218S 1218-5	NA	4/6			SAND: clayey with gravel; brownish yellow (10 YR 6/8); moist; medium dense to dense; native soil; with cobbles.	Augered to refusal (top of rock) at 15.0'. Total depth drilled 15.0'.	821

Project Name and Job Number TXU Comanche Peak COI 1908		 WLA William Lettis & Associates, Inc.		<b>SOIL LOG</b> <b>Boring No. MW-1219S</b>	
Type and Diameter of Boring HSA / 8"		Boring Location 32°18'12.86174"N / 97°47'38.36713"W		Total Depth 54.2 feet	
Drilling Contractor and Rig Texplor / CME 75		Elevation and Datum 836.35 feet NAVD88	Ground Water Depth DRY	Depth to Bedrock 51 feet	
Sampling Method CME		Sample Driving Hammer/Drop	No. of Samples 7	Date Started 1/6/07	
		Borehole Inclination Vertical	Logged by J. Cox	Date Completed 1/9/07	

Reviewed by / Date \_\_\_\_\_ R. Ortiz 1/10/07

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
0									836
1									835
2			MW-1219S 1219-1	NA	$\frac{25.2}{50.4}$				834
3									833
4									832
5	ML-MH								831
6			MW-1219S 1219-2	NA	$\frac{10.8}{60}$				830
7									829
8									828
9									827
10							NO RECOVERY		826
11									825
12	NA		MW-1219S	NA	$\frac{0}{60}$				824
13									823
14									822
15	NA						NO RECOVERY		822

Lithology  
 SILT: with clay and gravel; yellowish brown (10 YR 5/4); dry to damp; hard; 40% silt; 30% clay, 30% gravel; large angular limestone gravel; fill; becomes wetter and gravels become smaller with depth.

Remarks  
 Fill 0.0' to approximately 35.2'.

Project Name and Job Number TXU Comanche Peak COI 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">SOIL LOG</h2> <h2 style="margin: 0;">Boring No. MW-1219S</h2>
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Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
15								NO RECOVERY (Continued from previous page)	821
16								Carpet found in sample shoe. Probably responsible for poor recovery.	820
17	NA		MW-1219S	NA	$\frac{0}{60}$				819
18									818
19								SILT: with clay and gravel; yellowish brown (10 YR 5/4); damp; 40% silt; 35% clay, 25% gravel; large angular limestone clasts; stiff; becoming damp to moist with depth.	817
20									816
21								Becomes damp to moist, stiff.	815
22	ML-MH		MW-1219S 1219-3	NA	$\frac{22.8}{60}$				814
23									813
24									812
25									811
26									810
27									809
28									808
29									807
30									



Undisturbed sample  
SH = Shelby; P = Pitcher; O = other



Driven (2.5 to 3.0 inch) with liners  
MC = Modified California; O = other



Standard Penetration Test (SPT) sampler

Project Name and Job Number  
TXU Comanche Peak COI  
1908



**SOIL LOG**  
**Boring No. MW-1219S**

Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Remarks	Elevation (feet)
30									806
31			MW-1219S 1219-5	NA	26.4 / 60				805
32									804
33									803
34									802
35	ML-MH								801
36			MW-1219S	NA	1.9 / 60			Limestone gravel clogged tube - poor recovery.	800
37									799
38									798
39									797
40							CLAY: with silt and gravel; yellowish brown (10 YR 5/4); moist; 45% clay, 20% gravel, 35% silt.		796
41								Residual soil in Run 9, approximately 39.2'.	795
42	CL-ML		MW-1219S	NA	0 / 60				794
43									793
44									792
45									



Undisturbed sample  
SH = Shelby; P = Pitcher; O = other



Driven (2.5 to 3.0 inch) with liners  
MC = Modified California; O = other



Standard Penetration Test (SPT) sampler



Project Name and Job Number TXU Comanche Peak COI 1908	 William Lettis & Associates, Inc.	<h2 style="margin: 0;">SOIL LOG</h2> <h2 style="margin: 0;">Boring No. MW-1219S</h2>
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Depth (feet)	Soil Type (USCS)	Sample	Sample No.	Uncorrected Blows/6 inches	Recovery (inches)	Pocket Pen	Lithology	Lithology	Remarks	Elevation (feet)
45										791
46										790
47	ML-MH		MW-1219S 1219-6	NA	22.8 / 60			SILT: with clay and sand; pale yellow (2.5 Y 8/3); dry to damp; 60% silt, 30% clay, 10% sand, hard.		789
48										788
49										787
50	CL-ML							CLAY: with silt and gravel; yellowish brown (10 Y 5/4); moist; 45% clay, 35% silt, 20% gravel; hard.		786
51										785
52			MW-1219S 1219-7	NA	24 / 60			LIMESTONE: micrite; sparitic; fossiliferous.	Top of Bedrock at 51'	784
53										783
54										782
55									Top of bedrock (Glen Rose Formation) at 51'. Total depth drilled = 54.2'.	781
56										780
57										779
58										778
59										777
60										



Undisturbed sample  
SH = Shelby; P = Pitcher; O = other



Driven (2.5 to 3.0 inch) with liners  
MC = Modified California; O = other



Standard Penetration Test (SPT) sampler