FINAL DATA REPORT Rev. 2
GEOTECHNICAL EXPLORATION AND TESTING

TURKEY POINT COL PROJECT
FLORIDA CITY, FLORIDA

October 6, 2008

VOLUME 1
Appendix B – Geotechnical Field Data

Prepared By:

MACTEC Engineering and Consulting, Inc.
Raleigh, North Carolina

MACTEC Project No. 6468-07-1950

Prepared For:

Bechtel Power Corporation
Subcontract No. 25409-102-HC4-CY00-00001

Contents

Geotechnical Boring Logs
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SPT Report

Geotechnical Boring Logs

KEY TO SYMBOLS AND DESCRIPTIONS-SOIL/ROCK

TURKEY POINT COL, 5-30-08, 6468-07-1950

Soils classified under the Unified Soil Classification System (USCS) and in accordance with ASTM D 2488-06

CORRELATION OF SPT RESISTANCE WITH RELATIVE DENSITY-CONSISTENCY

GRANULAR MATERIAL		SILTS AND CLAYS	
RELATIVE DENSITY	SPT N Value (blows/ft)	CONSISTENCY	SPT N Value (blows/ft)
VERY LOOSE	0 - 4	VERY SOFT	0 - 2
LOOSE	5 - 10	SOFT	3 - 4
MEDIUM DENSE	11 - 30	FIRM	5 - 8
DENSE	31 - 50	STIFF	9 - 15
VERY DENSE	> 50	VERY STIFF	16 - 30
		HARD	> 30

MOISTURE CONTENT

DRY-Absence of moisture

MOIST-Damp/no visible H2O

WET-Visible free water

HCl Reaction

NONE - No visible reaction

WEAK - Some reaction/slow

STRONG - Violent reaction

MODIFIERS

Approximate %	Modifiers
<5%	TRACE
5 to 10%	FEW
15 to 25%	LITTLE
30 to 45%	SOME
50 to 100%	MOSTLY

Modifiers provide an estimate of the percentages of gravel, sand, and fines (silt or clay size particles) or other material such as organics, shells, etc.

COLOR of Soil/Rock: Based on Munsell Soil Color Charts

Particle Size Range for Sand (Fine, Medium, Coarse) **and Gravel** (Fine or Coarse)

SPT Sample Numbering: Boring # - Sample # (602-1, 602-2, 602-3, etc.)

Undisturbed Sample Numbering: Boring # -UD-sample # (602-UD-1)

Core Sample Numbering: Boring # -CS-Sample # (602-CS-01)

GROUND WATER: Ground water level observations were recorded at every boring location at the start and end of each work day, when possible. In general, observed water levels were within +/- 2 feet of the existing ground surface. Due to the use of drilling fluid additives, these values may not represent the ground water conditions at the site. See observation wells for measured ground water levels.

Field Measurements: Horizontal measurements rounded to nearest foot. Vertical measurements, such as SPT sample recovery or penetration, sample depths, core run depth, core run length, core recovery, core RQD, etc. rounded to nearest tenth of a foot (0.1 ft).

Datum Reference Information	
	Horizontal - NAD83, Florida State Plane (Florida East) US ft
	Elevation - NAVD88, US ft

ROCK

Classification of Carbonate Rocks *(Dunham, 1962) Mud<0.06 mm*	MUDSTONE *<10% Grains*	WACKESTONE *>10% Grains, mud supported*	PACKSTONE *>5% Mud, grain supported*	GRAINSTONE *<5% Mud*	BOUNDSTONE *Original components bound together*

ROCK HARDNESS DESCRIPTIONS (1)

VERY SOFT	**Core Samples:** Rock core crumbles when handled. **SPT Samples: N<20**
SOFT	**Core Samples:** Can break core easily with hands. **SPT Samples: N=21-30**
MEDIUM HARD	**Core Samples:**Can break core with hands. **SPT Samples: N=31-45**
MODERATELY HARD	**Core Samples:** Thin edges of rock can be broken with fingers. **SPT Samples: N=46-60**
HARD	**Core Samples:** Thin edges of rock cannot be broken with fingers. **SPT Samples: N=61-100**
VERY HARD	**Core Samples:** Rock core rings when struck with a hammer (cherts). **SPT Samples: N>50/0.1'**

INDURATION

For sedimentary rocks, induration is the hardening of the material by cementing, heat, pressure, etc.

FRIABLE	Rubbing with finger frees numerous grains; gentle blow by hammer disintegrates sample.
MODERATELY INDURATED	Grains can be separated from sample with steel probe/knife; breaks easily when hit with hammer.
INDURATED	Grains are difficult to separate with steel probe/knife; difficult to break with hammer.
EXTREMELY INDURATED	Sharp hammer blows required to break sample; sample breaks across grains.

(1) Core sample hardness description based on manual methods in general accordance with Engineering Geology Field Manual (US Bureau of Reclamation, 2001), Army TM 5-818-1 (1983) and Characteristics of Geologic Materials and Formations (Hunt, 2006). SPT sample hardness description based on N-values after McMahan, Jr., "Drilled Shaft Design and Construction in Florida", University of Florida, 1988.

Core Terms-Abbreviations	EXPLANATION
DRILL RATE	Time in minutes it takes to core one foot, for each foot or partial foot of a core run. (1:32; 0:54/0.7 ft)
CORE RUN; RUN LENGTH	Cored Interval; Total distance of core run measured to nearest 0.1 ft. Core runs are not to exceed 5 feet.
CORE RECOVERY (REC.)	Total length of recovered core, measured to nearest 0.1 ft, divided by the core run length, and expressed as a percentage.
CORE RQD (RQD)	Rock Quality Designation. Sum of intact core pieces greater than 4 inches in length, measured to the nearest 0.1 ft, divided by the core run length, and expressed as a percentage.

SOIL AND ROCK SYMBOLS AND DESCRIPTIONS

MAJOR DIVISIONS			SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
ROCK				LS	CARBONATE ROCKS-LIMESTONE, DOLOSTONE
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		(LITTLE OR NO FINES)		GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
	MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVELS WITH FINES		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
		(APPRECIABLE AMOUNT OF FINES)		GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	SAND AND SANDY SOILS	CLEAN SANDS		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
		(LITTLE OR NO FINES)		SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
	MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SANDS WITH FINES		SM	SILTY SANDS, SAND - SILT MIXTURES
		(APPRECIABLE AMOUNT OF FINES)		SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	MUCK, PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

MACTEC

GEOTECHNICAL BORING LOG

Prepared By [illegible] Date 8-14-08

Checked By SSC Date 8-17-08

BECHTEL PROJECT NO.: 25409	MACTEC PROJECT NO.: 6468-07-1950	COUNTY: Miami-Dade	GEOLOGIST: S. Lehman
SITE DESCRIPTION: Turkey Point COL	DRILL MACHINE: CME-75 (CLT)	DRILLER: T.Warren/J.Warren/Guy/Harvey	GROUND WATER (ft)
BORING NO.: B-601(DH)	DRILL METHOD: Mud Rotary/ Core	SAMPLE METHODS: SPT/Core	0 HR. NA
GROUND ELEV.: -1.4 ft (NAVD88)	NORTHING: 396,968 US ft (NAD83/90)	EASTING: 876,643 US ft (NAD83/90)	24 HR. NA
TOTAL DEPTH: 419.2 ft	BORING DIAMETER: 6" to 25.5', 4" to 419.2'	CASING DEPTH: 6" to 25.5', 4" to 153.3'	HAMMER (ID):140 lb. Auto (MEC-09)
DATE STARTED: 2/24/08	COMPLETED: 3/25/08	CORE SIZE: PQ3	BITS USED: 3 7/8" & 6" Roller Cone

ELEV. (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT (0 20 40 60 80 100)	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-1.4					Ground Surface				-1.4 0.0
-1.4 / -3.7	0.0 / 2.3	WOR	WOR	WOR	WOR 0	601(DH)-1			MUCK, very dark gray (10YR3/2), very soft, wet, mostly silt, some organics, trace shells, weak HCl reaction -3.9 2.5
-6.7	5.3	1	1	10	11	601(DH)-2			Field reports do not indicate that 601(DH)-2 was split into separate jars
-9.0	7.6	7	7	6	13	601(DH)-3			LIMESTONE, boundstone, light gray (2.5Y7/1), very soft, wet, friable, mostly oolitic, little shells and coral fragments, few organics, strong HCl reaction (Miami Formation - generally sampled as silt-, sand- and gravel-sized fragments broken from rock by SPT)
-11.1	9.7	3	6	10	16	601(DH)-4			
-13.9	12.5	4	7	8	15	601(DH)-5			
-16.2	14.8	25	20	31	51	601(DH)-6			5.3ft: pale yellow (2.5Y8/2), moderately indurated, fine to coarse grained sand
-22.8	21.4	50/0.2			50/0.2	601(DH)-7			9.7ft: white (2.5Y8/1) 12.5ft: moderately hard 14.8ft: dark gray (2.5Y4/1), mottled white (2.5Y8/1), hard
-27.8	26.4	5	7	10	17	601(DH)-8			21.4ft: white (2.5Y8/1), very soft, friable to moderately indurated, oolitic
-28.2	26.8	50/0.4			50/0.4	601(DH)-9 RUN-1			-26.4 26.8ft: Switch sampling method to coring 25.0 LIMESTONE, boundstone, white (2.5Y8/1), medium hard to moderately hard, moderately indurated, fossiliferous, recrystallized calcite, coralline (Upper Fort Thompson Formation)
-32.9	31.5					RUN-2			31.5ft: hard, indurated, few vugs and shell molds
-37.8	36.4					RUN-3			33.0ft: loss of circulation
-42.8	41.4					601(DH)-CS-01 RUN-4			41.4ft: white (2.5Y8/1) to light gray (2.5Y7/1) at 46.1 ft
-47.8	46.4					601(DH)-CS-02 RUN-5			-48.8 46.4ft: light gray (2.5Y7/1) to 47.4 ft 47.4
-52.8	51.4					601(DH)-CS-03 RUN-6 601(DH)-CS-04			LIMESTONE, boundstone, white (2.5Y8/1), hard, indurated, fossiliferous, few vugs, few gastropod shell molds and casts (Lower Fort Thompson Formation) 51.4ft: moderately hard, moderately indurated
-57.8	56.4					RUN-7			56.4ft: white (2.5Y8/1) and light gray (2.5Y7/1), hard, indurated
-62.8	61.4					RUN-8			61.4ft: white (2.5Y8/1), moderately hard to hard, moderately indurated to indurated
-67.8	66.4					RUN-9 601(DH)-CS-05			
-72.8	71.4					RUN-10			71.4ft: sandy, trace to few shell fragments

SEE LEGEND FOR ROCK HARDNESS CRITERIA BASED ON SPT DATA

TURKEY POINT COL BORE TURKEY POINT.GPJ TURKEY POINT COL.GDT 8/14/08

MACTEC

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BORING NO.: B-601(DH)	DRILL METHOD: Mud Rotary/ Core	SAMPLE METHODS: SPT/Core	0 HR. NA
GROUND ELEV.: -1.4 ft (NAVD88)	NORTHING: 396,968 US ft (NAD83/90)	EASTING: 876,643 US ft (NAD83/90)	24 HR. NA
TOTAL DEPTH: 419.2 ft	BORING DIAMETER: 6" to 25.5', 4" to 419.2'	CASING DEPTH: 6" to 25.5', 4" to 153.3'	HAMMER (ID):140 lb. Auto (MEC-09)
DATE STARTED: 2/24/08	COMPLETED: 3/25/08	CORE SIZE: PQ3	BITS USED: 3 7/8" & 6" Roller Cone

ELEV. (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 20 40 60 80 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-76.2					Continued from previous page				
-77.6	76.2					RUN-11			LIMESTONE, boundstone, white (2.5Y8/1), hard, indurated, fossiliferous, few vugs, few gastropod shell molds and casts (Lower Fort Thompson Formation) *(continued)*
-82.6	81.2					RUN-12			81.2ft: very soft to hard, friable to indurated, trace shell molds and casts
-87.6	86.2					RUN-13			
-92.6	91.2					RUN-14			
-97.6	96.2					601(DH)-CS-06 601(DH)-CS-07			
-102.6	101.2					RUN-15 601(DH)-CS-08			97.5ft: 0.7'-thick friable zone, little shell molds and casts, trace sand
-107.6	106.2					RUN-16			
-112.6	111.2					RUN-17			
-117.6	116.2					RUN-18			111.2ft: soft to moderately hard, friable to moderately indurated, sandy, few shell fragments
-116.4									115.0
-122.6	121.2					RUN-19			Silty SAND (SM), gray (5Y5/1), to light gray (5Y7/2), medium dense, wet, strong to weak HCl reaction, and lenses of LIMESTONE, boundstone, white (2.5Y8/1), moderately hard, moderately indurated, sandy, trace shell fragments (Tamiami Formation)
-123.4									122.0
-129.7	128.3	9	7	11	18	601(DH)-10A&B			121.2ft: Switch sampling method to SPT Silty SAND (SM), gray (5Y5/1), to light gray (5Y7/2), medium dense, wet, strong to weak HCl reaction, fine to coarse grained sand, fine gravel, little fines
-139.7	138.3	WOR	3	5	8	601(DH)-11			128.3ft: greenish gray (10Y6/1), loose, strong HCl reaction, fine to coarse grained sand, little fines
-149.8	148.4	9	10	16	26	601(DH)-12			138.3ft: medium dense, weak HCl reaction, trace shells, fine grained sand
		WOR	WOR	WOR	0 WOR	601(DH)-13			

TURKEY POINT COL BORE TURKEY POINT.GPJ TURKEY POINT COL.GDT 8/14/08

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BORING NO.: B-601(DH)	DRILL METHOD: Mud Rotary/ Core	SAMPLE METHODS: SPT/Core	0 HR. NA
GROUND ELEV.: -1.4 ft (NAVD88)	NORTHING: 396,968 US ft (NAD83/90)	EASTING: 876,643 US ft (NAD83/90)	24 HR. NA
TOTAL DEPTH: 419.2 ft	BORING DIAMETER: 6" to 25.5', 4" to 419.2'	CASING DEPTH: 6" to 25.5', 4" to 153.3'	HAMMER (ID):140 lb. Auto (MEC-09)
DATE STARTED: 2/24/08	COMPLETED: 3/25/08	CORE SIZE: PQ3	BITS USED: 3 7/8" & 6" Roller Cone

ELEV. (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT (0 20 40 60 80 100)	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-151.0					Continued from previous page				
									148.4ft: greenish gray (10Y5/1), very loose Silty SAND (SM), gray (5Y5/1), to light gray (5Y7/2), medium dense, wet, strong to weak HCl reaction, fine to coarse grained sand, fine gravel, little fines *(continued)*
-159.8	158.4								-159.8 — 158.4
		3	8	10	18	601(DH)-14			Sandy SILT (ML), greenish gray (10Y5/1), very stiff, wet, medium dense, fine grained sand, strong HCl reaction
-169.8	168.4								
		5	7	12	19	601(DH)-15			
-179.8	178.4								
		3	8	17	25	601(DH)-16			178.4ft: fine to medium grained sand, weak HCl reaction
-189.8	188.4								
		WOR	7	11	18	601(DH)-17			
-199.8	198.4								194.0ft: stiff, fine grained sand
		2	5	10	15	601(DH)-18			
-209.8	208.4								-209.8 — 208.4
		2	4	6	10	601(DH)-19			SILT with sand (ML), dark greenish gray (10Y4/1), stiff, moist, fine grained sand, weak HCl reaction
									-216.4 — 215.0
-219.8	218.4								Silty SAND (SM), olive gray (5Y5/2), dense, moist, fine grained sand, strong HCl reaction (Hawthorn Group)
		4	11	23	34	601(DH)-20			

TURKEY POINT COL BORE TURKEY POINT.GPJ TURKEY POINT COL.GDT 8/14/08

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TOTAL DEPTH: 419.2 ft	BORING DIAMETER: 6" to 25.5', 4" to 419.2'	CASING DEPTH: 6" to 25.5', 4" to 153.3'	HAMMER (ID):140 lb. Auto (MEC-09)
DATE STARTED: 2/24/08	COMPLETED: 3/25/08	CORE SIZE: PQ3	BITS USED: 3 7/8" & 6" Roller Cone

ELEV. (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 20 40 60 80 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-225.8					Continued from previous page				
-229.8	228.4								Silty SAND (SM), olive gray (5Y5/2), dense, moist, fine grained sand, strong HCl reaction (Hawthorn Group) *(continued)*
-239.8	238.4	9	39	50/0.5	89/1.0	601(DH)-21			228.4ft: dark greenish gray (10Y4/1), very dense, moist, friable cemented sand fragments
-249.8	248.4	4	8	11	19	601(DH)-22			238.4ft: medium dense, wet
-259.8	258.4	2	11	18	29	601(DH)-23			248.4ft: greenish gray (10Y5/1), no HCl reaction, fine grained sand, friable cemented sand fragments
-269.8	268.4	3	8	13	21	601(DH)-24			258.4ft: dark greenish gray (10Y4/1), wet
-279.8	278.4	4	12	20	32	601(DH)-25			268.4ft: dense
-289.8	288.4	WOR	7	16	23	601(DH)-26			278.4ft: medium dense
-299.8	298.4	4	13	23	36	601(DH)-27			288.4ft: dense
						601(DH)-28			-295.4 294.0 POORLY GRADED SAND with silt (SP-SM), olive gray (5Y4/2), dense, wet, fine to medium grained sand, no HCl reaction

TURKEY POINT COL BORE TURKEY POINT.GPJ TURKEY POINT COL.GDT 8/14/08

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DATE STARTED: 2/24/08	COMPLETED: 3/25/08	CORE SIZE: PQ3	BITS USED: 3 7/8" & 6" Roller Cone

ELEV. (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT (0 20 40 60 80 100)	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-300.6					Continued from previous page				
		5	20	30	50				POORLY GRADED SAND with silt (SP-SM), olive gray (5Y4/2), dense, wet, fine to medium grained sand, no HCl reaction *(continued)*
-306.4									305.0
-309.8	308.4								Silty SAND (SM), greenish gray (10Y5/1), very dense, wet, fine to medium grained sand, no HCl reaction
		6	21	30	51	601(DH)-29			
-317.4									316.0
-319.8	318.4								POORLY GRADED SAND (SP-SM), greenish gray (10Y5/1), very dense, wet, fine to medium grained sand, weak HCl reaction
		20	50/0.4		70/0.9	601(DH)-30			
-329.8	328.4								
		50/0.3			50/0.3	601(DH)-31			
-339.8	338.4								
		43	50/0.3		93/0.8	601(DH)-32			338.4ft: no HCl reaction, organic odor
-349.8	348.4								
		50/0.4			50/0.4	601(DH)-33			348.4ft: fine grained sand
-359.8	358.4								
		50/0.5			50/0.5	601(DH)-34			
-369.8	368.4								
		50/0.4			50/0.4	601(DH)-35			

TURKEY POINT COL BORE TURKEY POINT.GPJ TURKEY POINT COL.GDT 8/14/08

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ELEV. (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 20 40 60 80 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-375.4					Continued from previous page				
									-376.4 / 375.0 Silty SAND (SM), greenish gray (10Y5/1), very dense, wet, no HCl reaction, and interlaminated clayey SAND (SC), very dark greenish gray (10Y3/1), wet, weak HCl reaction, fine to medium grained sand
-379.8	378.4								
		48	50/0.2		98/0.7	601(DH)-36			
-389.8	388.4								
		37	50/0.5		87/1.0	601(DH)-37			
-399.8	398.4								
		48	50/0.3		98/0.8	601(DH)-38			398.4ft: fine grained sand
									-406.4 / 405.0 POORLY GRADED SAND with silt (SP-SM), greenish gray (10Y5/1), very dense, wet, fine grained sand, weak HCl reaction
-419.8	418.4								
		28	50/0.3		78/0.8	601(DH)-39			-420.6 / 419.2 Boring Terminated at Elevation -420.6 ft

TURKEY POINT COL BORE TURKEY POINT.GPJ TURKEY POINT COL.GDT 8/14/08

MACTEC

BECHTEL PROJECT NO.: 25409	MACTEC PROJECT NO.: 6468-07-1950	COUNTY: Miami-Dade	GEOLOGIST: S. Lehman
SITE DESCRIPTION: Turkey Point COL	DRILL MACHINE: CME-75 (CLT)	DRILLER: T.Warren/J.Warren/Guy/Harvey	GROUND WATER (ft)
BORING NO.: B-601(DH)	DRILL METHOD: Mud Rotary/ Core	SAMPLE METHODS: SPT/Core	0 HR. NA
GROUND ELEV.: -1.4 ft (NAVD88)	NORTHING: 396,968 US ft (NAD83/90)	EASTING: 876,643 US ft (NAD83/90)	24 HR. NA
TOTAL DEPTH: 419.2 ft	CASING DEPTH: 6" to 25.5', 4" to 153.3'		HAMMER (ID): 140 lb. Auto (MEC-09)
DATE STARTED: 2/24/08	COMPLETED: 3/25/08	CORE SIZE: PQ3	CORE BARREL TYPE: Triple Tube Wireline (Split inner liners)

ELEV. (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC (ft) %	RUN RQD (ft) %	SAMP. NO.	STRATA REC (ft) %	STRATA RQD (ft) %	LOG	DESCRIPTION AND REMARKS
										Begin Coring @ 26.8 ft
-28.2	26.8	4.7	1:01/0.7 1:43 2:40 3:11 3:44	(4.2) 89%	(3.2) 68%	RUN-1	(20.1) 98%	(18.0) 87%		LIMESTONE, boundstone, white (2.5Y8/1), medium hard to moderately hard, moderately indurated, fossiliferous, recrystallized calcite, coralline (Upper Fort Thompson Formation) *(continued)*
-32.9	31.5	4.9	2:12 2:42 1:23 1:17 1:24/0.9	(4.9) 100%	(4.0) 82%	RUN-2				31.5ft: hard, indurated, few vugs and shell molds 33.0ft: loss of circulation
-37.8	36.4	5.0	1:34 1:36 1:27 2:02 3:01	(5.0) 100%	(4.8) 96%	RUN-3 *601(DH)-CS-01*				
-42.8	41.4	5.0	4:18 2:46 2:09 2:13 2:14	(5.0) 100%	(5.0) 100%	RUN-4 *601(DH)-CS-02*				41.4ft: white (2.5Y8/1) to light gray (2.5Y7/1) at 46.1 ft
-47.8	46.4	5.0	2:08 2:28 1:49 1:51 1:28	(4.9) 98%	(4.9) 98%	RUN-5 *601(DH)-CS-03*	(59.0) 87%	(47.8) 71%		-48.8 46.4ft: light gray (2.5Y7/1) to 47.4 ft 47.4 LIMESTONE, boundstone, white (2.5Y8/1), hard, indurated, fossiliferous, few vugs, few gastropod shell molds and casts (Lower Fort Thompson Formation)
-52.8	51.4	5.0	1:55 0:31 0:29 0:32 0:35	(5.0) 100%	(5.0) 100%	RUN-6 *601(DH)-CS-04*				51.4ft: moderately hard, moderately indurated
-57.8	56.4	5.0	0:20 0:13 0:22 0:59 0:52	(4.0) 80%	(4.0) 80%	RUN-7				56.4ft: white (2.5Y8/1) and light gray (2.5Y7/1), hard, indurated
-62.8	61.4	5.0	1:01 0:45 0:41 0:35 0:34	(4.2) 84%	(3.2) 64%	RUN-8				61.4ft: white (2.5Y8/1), moderately hard to hard, moderately indurated to indurated
-67.8	66.4	5.0	1:32 0:28 0:27 0:30 0:53	(3.7) 74%	(2.9) 58%	RUN-9 *601(DH)-CS-05*				
-72.8	71.4	4.8	0:49 0:30 1:26 0:23 1:23/0.8	(2.4) 50%	(0.9) 19%	RUN-10				71.4ft: sandy, trace to few shell fragments
-77.6	76.2	5.0	1:47 1:24 1:03 1:06 0:52	(4.6) 92%	(2.7) 54%	RUN-11				
-82.6	81.2	5.0	0:34 1:22 0:11 0:09 0:33	(3.6) 72%	(2.0) 40%	RUN-12				81.2ft: very soft to hard, friable to indurated, trace shell molds and casts
-87.6	86.2	5.0	1:23 1:11 1:09 1:36 2:01	(5.0) 100%	(4.5) 90%	RUN-13				
-92.6	91.2	5.0	1:17 1:10 0:38 0:41 0:51	(4.9) 98%	(4.9) 98%	RUN-14 *601(DH)-CS-06* *601(DH)-CS-07*				
-97.6	96.2	5.0	0:34 0:18 0:26 1:03 0:58	(4.9) 98%	(4.4) 88%	RUN-15 *601(DH)-CS-08*				97.5ft: 0.7'-thick friable zone, little shell molds and casts, trace sand
-102.6	101.2									

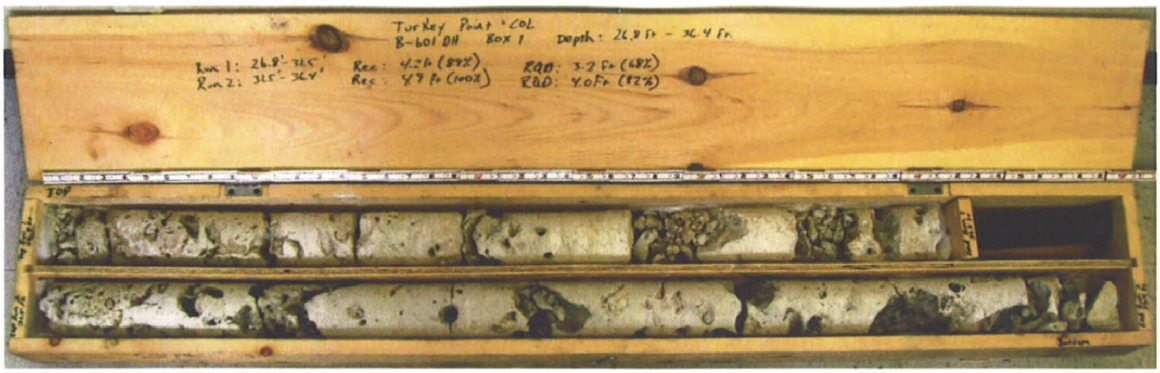
TURKEY POINT COL CORE TURKEY POINT.GPJ TURKEY POINT COL.GDT 8/14/08

MACTEC

BECHTEL PROJECT NO.: 25409	MACTEC PROJECT NO.: 6468-07-1950	COUNTY: Miami-Dade	GEOLOGIST: S. Lehman
SITE DESCRIPTION: Turkey Point COL	DRILL MACHINE: CME-75 (CLT)	DRILLER: T.Warren/J.Warren/Guy/Harvey	GROUND WATER (ft)
BORING NO.: B-601(DH)	DRILL METHOD: Mud Rotary/ Core	SAMPLE METHODS: SPT/Core	0 HR. NA
GROUND ELEV.: -1.4 ft (NAVD88)	NORTHING: 396,968 US ft (NAD83/90)	EASTING: 876,643 US ft (NAD83/90)	24 HR. NA
TOTAL DEPTH: 419.2 ft	CASING DEPTH: 6" to 25.5', 4" to 153.3'		HAMMER (ID): 140 lb. Auto (MEC-09)
DATE STARTED: 2/24/08	COMPLETED: 3/25/08	CORE SIZE: PQ3	CORE BARREL TYPE: Triple Tube Wireline (Split inner liners)

ELEV. (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC (ft) %	RUN RQD (ft) %	SAMP. NO.	STRATA REC (ft) %	STRATA RQD (ft) %	LOG	DESCRIPTION AND REMARKS
										Continued from previous page
		5.0	0:59 0:41 0:30 0:31 0:34	(5.0) 100%	(5.0) 100%	RUN-16				LIMESTONE, boundstone, white (2.5Y8/1), hard, indurated, fossiliferous, few vugs, few gastropod shell molds and casts (Lower Fort Thompson Formation) *(continued)*
-107.6	106.2									
		5.0	0:34 0:48 0:40 1:22 1:08	(4.8) 96%	(4.4) 88%	RUN-17				
-112.6	111.2									
		5.0	0:41 0:10 0:33 0:31 0:18	(3.0) 60%	(0.0) 0%	RUN-18				111.2ft: soft to moderately hard, friable to moderately indurated, sandy, few shell fragments
-117.6	116.2									-116.4 — 115.0
		5.0	0:07 0:21 0:07 0:15 0:10	(0.6) 12%	(0.0) 0%	RUN-19	(0.6) 10%	(NA)		Silty SAND (SM), gray (5Y5/1), to light gray (5Y7/2), medium dense, wet, strong to weak HCl reaction, and lenses of LIMESTONE, boundstone, white (2.5Y8/1), moderately hard, moderately indurated, sandy, trace shell fragments (Tamiami Formation)
-122.6	121.2									-122.6 — 121.2
										Coring Terminated at Elevation -122.6

TURKEY POINT COL CORE TURKEY POINT.GPJ TURKEY POINT COL.GDT 8/14/08



B-601 (DH) – Box 1

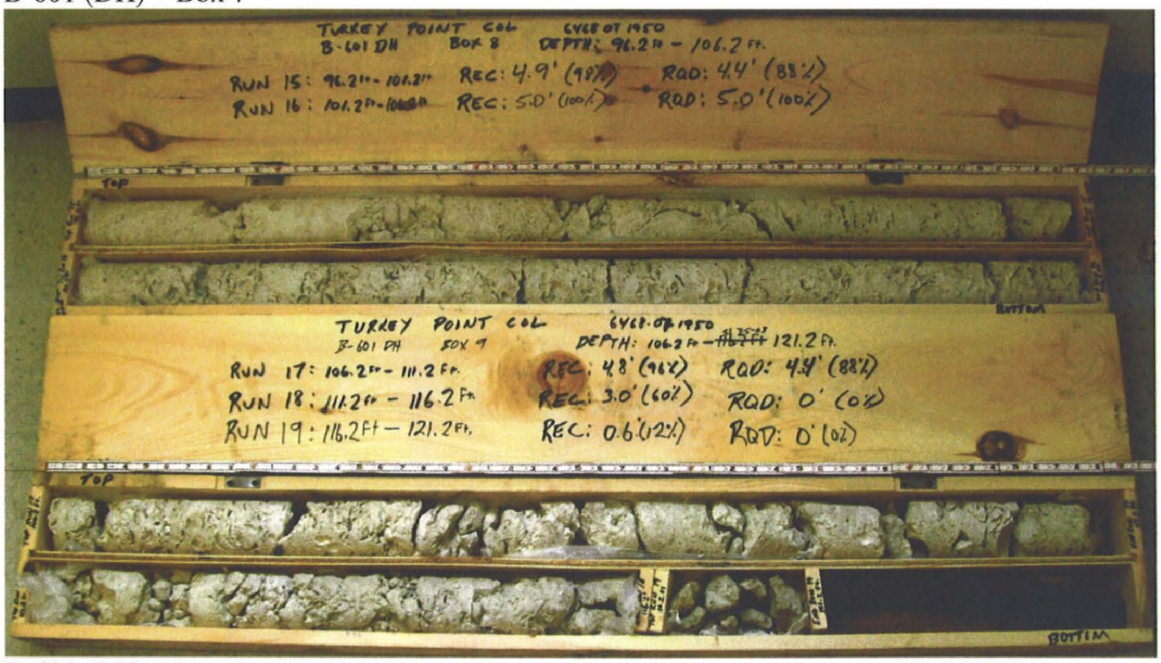
B-601 (DH) – Box 2

B-601 (DH) – Box 3

B-601 (DH) – Box 4

B-601 (DH) – Box 5

B-601 (DH) – Box 6
B-601 (DH) – Box 7



B-601 (DH) – Box 8
B-601 (DH) – Box 9

MACTEC

GEOTECHNICAL BORING LOG

Prepared By [illegible] Date 7-10-08
Checked By [illegible] Date 7-10-08

BECHTEL PROJECT NO.: 25409	MACTEC PROJECT NO.: 6468-07-1950	COUNTY: Miami-Dade	GEOLOGIST: O. Rodriguez
SITE DESCRIPTION: Turkey Point COL	DRILL MACHINE: CME-45C (RAL)	DRILLER: D. Rhodes/ K. Guy	GROUND WATER (ft)
BORING NO.: B-602	DRILL METHOD: Mud Rotary/ Core	SAMPLE METHODS: SPT/Core	0 HR. NA
GROUND ELEV.: -1.4 ft (NAVD88)	NORTHING: 397,020 US ft (NAD83/90)	EASTING: 876,594 US ft (NAD83/90)	24 HR. NA
TOTAL DEPTH: 204.1 ft	BORING DIAMETER: 4" to 14.0', 3" to 204.1'	CASING DEPTH: 4" to 14.0', 3" to 119.0'	HAMMER (ID):140 lb. Auto (MEC-12)
DATE STARTED: 3/10/08	COMPLETED: 3/18/08	CORE SIZE: HQ3	BITS USED: 2 15/16" Roller Cone

ELEV. (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT (0 20 40 60 80 100)	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-1.4					Ground Surface				-1.4 / 0.0
-1.4 / -3.9	0.0 / 2.5	WOH	WOH	WOH	WOH 0	602-1			MUCK, dark gray (5YR4/1), very soft, wet, roots, mostly organic
-6.2	4.8	3	3	11	14	602-2A&B			-4.5 / 3.1 2.5ft: firm
-8.7	7.3	7	5	6	11 (SEE LEGEND FOR ROCK HARDNESS CRITERIA BASED ON SPT DATA)	602-3			LIMESTONE, boundstone, white (2.5Y8/1), very soft, wet, trace to few fine grained sand, oolitic (Miami Formation)
-11.3	9.9	50/0.2			50/0.2	602-4			7.3ft: no recovery, hard
-13.7	12.3	3	4	8	12	602-5			9.9ft: white (2.5Y8/1), to light gray (10Y6/1), very soft
-16.2	14.8	9	10	13	23	602-6			14.8ft: hard
-17.7	16.3	13	17	50/0.4	67/0.9	602-7			16.3ft: Switch sampling method to coring
-22.5	21.1					RUN-1			16.3ft: medium hard, moderately indurated, fossiliferous, few fine grained sand and clay, oolitic, locally interconnected vugs
-27.5	26.1					RUN-2			-25.4 / 24.0 LIMESTONE, boundstone, white (2.5Y8/1), medium hard, moderately indurated to indurated, fossiliferous, coralline, few to little vugs (Upper Fort Thompson Formation)
-32.5	31.1					RUN-3			26.1ft: medium hard to hard, indurated 27.0ft: loss of circulation
-37.5	36.1					RUN-4			
-39.8	38.4					RUN-5			36.1ft: indurated to extremely indurated
-42.5	41.1					RUN-6			38.4ft: indurated
-47.5	46.1					RUN-7			
-49.5	48.1					RUN-8			46.1ft: light greenish gray (10Y7/1) to light gray (7/N)
-52.5	51.1					RUN-9			-49.5 / 48.1 LIMESTONE, boundstone, white (2.5Y8/1) hard, indurated, fossiliferous, trace vugs (Lower Fort Thompson Formation)
-57.5	56.1					RUN-10 602-CS-01 602-CS-02			
-62.5	61.1					RUN-11			
-67.5	66.1					RUN-12			61.1ft: few vugs
-72.5	71.1					RUN-13			66.1ft: little vugs
						RUN-14			71.1ft: few vugs

TURKEY POINT COL BORE TURKEY POINT.GPJ TURKEY POINT COL.GDT 7/10/08

MACTEC

BECHTEL PROJECT NO.: 25409	MACTEC PROJECT NO.: 6468-07-1950	COUNTY: Miami-Dade	GEOLOGIST: O. Rodriguez
SITE DESCRIPTION: Turkey Point COL	DRILL MACHINE: CME-45C (RAL)	DRILLER: D. Rhodes/ K. Guy	GROUND WATER (ft)
BORING NO.: B-602	DRILL METHOD: Mud Rotary/ Core	SAMPLE METHODS: SPT/Core	0 HR. NA
GROUND ELEV.: -1.4 ft (NAVD88)	NORTHING: 397,020 US ft (NAD83/90)	EASTING: 876,594 US ft (NAD83/90)	24 HR. NA
TOTAL DEPTH: 204.1 ft	BORING DIAMETER: 4" to 14.0', 3" to 204.1'	CASING DEPTH: 4" to 14.0', 3" to 119.0'	HAMMER (ID):140 lb. Auto (MEC-12)
DATE STARTED: 3/10/08	COMPLETED: 3/18/08	CORE SIZE: HQ3	BITS USED: 2 15/16" Roller Cone

ELEV. (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 20 40 60 80 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-76.2					Continued from previous page				
-77.5	76.1					RUN-15			LIMESTONE, boundstone, white (2.5Y8/1) hard, indurated, fossiliferous, trace vugs (Lower Fort Thompson Formation) *(continued)*
-80.8	79.4								
-82.5	81.1					RUN-16 602-CS-03			79.4ft: trace vugs
						RUN-17			81.1ft: few vugs
-87.5	86.1								
						RUN-18			
-92.5	91.1								
						RUN-19			91.1ft: moderately indurated, little vugs
-97.5	96.1								
						RUN-20			96.1: few vugs
-102.5	101.1								
						RUN-21			
-107.5	106.1								
						RUN-22			
-112.5	111.1								
						RUN-23			111.1ft: moderately hard, little vugs, few cemented sand fragments
-114.4									113.0
-117.5	116.1								POORLY GRADED SAND (SP), white (2.5Y8/1), wet, dense, trace coarse grained sand (Tamiami Formation) 116.1ft: Switch sampling method to SPT
		11	13	25	38	602-8			
-124.0	122.6								-124.0 122.6
		8	4	2	6	602-9			Silty SAND (SM), white (5Y8/1), loose, wet, fine to coarse grained sand, fine gravel, strong HCl reaction, trace fine grained friable cemented sand olive gray (5Y5/2), loose
-134.0	132.6								
		6	3	5	8	602-10			
-143.9	142.5								
		6	5	5	10	602-11			

TURKEY POINT COL BORE TURKEY POINT.GPJ TURKEY POINT COL.GDT 7/10/08

MACTEC

BECHTEL PROJECT NO.: 25409	MACTEC PROJECT NO.: 6468-07-1950	COUNTY: Miami-Dade	GEOLOGIST: O. Rodriguez
SITE DESCRIPTION: Turkey Point COL	DRILL MACHINE: CME-45C (RAL)	DRILLER: D. Rhodes/ K. Guy	GROUND WATER (ft)
BORING NO.: B-602	DRILL METHOD: Mud Rotary/ Core	SAMPLE METHODS: SPT/Core	0 HR. NA
GROUND ELEV.: -1.4 ft (NAVD88)	NORTHING: 397,020 US ft (NAD83/90)	EASTING: 876,594 US ft (NAD83/90)	24 HR. NA
TOTAL DEPTH: 204.1 ft	BORING DIAMETER: 4" to 14.0', 3" to 204.1'	CASING DEPTH: 4" to 14.0', 3" to 119.0'	HAMMER (ID):140 lb. Auto (MEC-12)
DATE STARTED: 3/10/08	COMPLETED: 3/18/08	CORE SIZE: HQ3	BITS USED: 2 15/16" Roller Cone

ELEV. (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT (0 20 40 60 80 100)	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
-151.0					Continued from previous page				
-154.0	152.6								Silty SAND (SM), white (5Y8/1), loose, wet, fine to coarse grained sand, fine gravel, strong HCl reaction, trace fine grained friable cemented sand *(continued)* 152.6ft: medium dense, trace limestone fragments
		11	11	19	30	602-12			
-164.0	162.6								-164.0 — 162.6
		3	4	11	15	602-13			Sandy SILT (ML), olive gray (5Y5/2), stiff, moist, trace shell fragments, fine to medium grained sand, strong HCl reaction
-174.0	172.6								
		2	3	10	13	602-14			
-184.0	182.6								
		2	3	6	9	602-15			182.6ft: firm
-194.0	192.6								
		2	2	17	19	602-16			very stiff, wet, fine grained sand
-204.0	202.6								
		2	4	10	14	602-17			-205.5 — 204.1
									Boring Terminated at Elevation -205.5 ft

TURKEY POINT COL BORE TURKEY POINT.GPJ TURKEY POINT COL.GDT 7/10/08

MACTEC

BECHTEL PROJECT NO.: 25409	MACTEC PROJECT NO.: 6468-07-1950	COUNTY: Miami-Dade	GEOLOGIST: O. Rodriguez
SITE DESCRIPTION: Turkey Point COL	DRILL MACHINE: CME-45C (RAL)	DRILLER: D. Rhodes/ K. Guy	GROUND WATER (ft)
BORING NO.: B-602	DRILL METHOD: Mud Rotary/ Core	SAMPLE METHODS: SPT/Core	0 HR. NA
GROUND ELEV.: -1.4 ft (NAVD88)	NORTHING: 397,020 US ft (NAD83/90)	EASTING: 876,594 US ft (NAD83/90)	24 HR. NA
TOTAL DEPTH: 204.1 ft	CASING DEPTH: 4" to 14.0', 3" to 119.0'		HAMMER (ID): 140 lb. Auto (MEC-12)
DATE STARTED: 3/10/08	COMPLETED: 3/18/08	CORE SIZE: HQ3	CORE BARREL TYPE: Triple Tube Wireline (Split inner liners)

ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC (ft) %	RUN RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	STRATA RQD (ft) %	LOG	DESCRIPTION AND REMARKS
										Begin Coring @ 16.3 ft
-17.7	16.3	4.8	5:35 1:23 0:43 0:23 0:15/0.8	(1.6) 33%	(0.5) 10%	RUN-1	(1.6) 21%	(0.5) 6%		LIMESTONE, boundstone, white (2.5Y8/1), very soft, wet, trace to few fine grained sand, oolitic (Miami Formation) *(continued)* 16.3ft: medium hard, moderately indurated, fossiliferous, few fine grained sand and clay, oolitic, locally interconnected vugs
-22.5	21.1	5.0	1:06 0:35 0:45 1:22 2:34	(1.2) 24%	(0.6) 12%	RUN-2				-25.4 24.0
-27.5	26.1	5.0	2:20 1:32 1:12 0:57 0:57	(3.1) 62%	(1.3) 26%	RUN-3	(17.4) 75%	(10.0) 43%		LIMESTONE, boundstone, white (2.5Y8/1), medium hard, moderately indurated to indurated, fossiliferous, coralline, few to little vugs (Upper Fort Thompson Formation) 26.1ft: medium hard to hard, indurated 27.0ft: loss of circulation
-32.5	31.1	5.0	1:21 1:14 0:55 1:22 1:27	(3.3) 66%	(2.0) 40%	RUN-4				
-37.5	36.1	2.3	1:16 6:04 6:43/0.3	(1.4) 61%	(0.0) 0%	RUN-5				36.1ft: indurated to extremely indurated
-39.8	38.4	2.7	0:33/0.7 2:10 2:08	(2.1) 78%	(1.2) 44%	RUN-6				38.4ft: indurated
-42.5	41.1	5.0	2:04 2:03 0:39 1:44 2:10	(4.2) 84%	(4.0) 80%	RUN-7				
-47.5	46.1	2.0	1:53 5:10	(2.0) 100%	(0.9) 45%	RUN-8				46.1ft: light greenish gray (10Y7/1) to light gray (7/N) -49.5 48.1
-49.5	48.1	3.0	1:25 1:36 1:40	(3.0) 100%	(3.0) 100%	RUN-9	(37.0) 57%	(20.9) 32%		LIMESTONE. boundstone, white (2.5Y8/1) hard, indurated, fossiliferous, trace vugs (Lower Fort Thompson Formation)
-52.5	51.1	5.0	4:41 1:42 1:27 0:43 0:37	(4.9) 98%	(3.9) 78%	RUN-10 *602-CS-01* *602-CS-02*				
-57.5	56.1	5.0	2:03 4:08 0:45 0:42 0:53	(3.4) 68%	(1.0) 20%	RUN-11				
-62.5	61.1	5.0	1:10 0:55 0:27 0:33 0:26	(1.3) 26%	(0.0) 0%	RUN-12				61.1ft: few vugs
-67.5	66.1	5.0	0:40 0:17 0:34 1:08 0:41	(1.0) 20%	(0.0) 0%	RUN-13				66.1ft: little vugs
-72.5	71.1	5.0	1:24 1:26 0:53 0:45 2:08	(1.5) 30%	(0.8) 16%	RUN-14				71.1ft: few vugs
-77.5	76.1	3.3	2:03 1:19 1:24 3:02/0.3	(3.1) 94%	(2.4) 73%	RUN-15				
-80.8	79.4	1.7	1:28/0.7 1:29	(1.7) 100%	(1.7) 100%	RUN-16 *602-CS-03*				79.4ft: trace vugs
-82.5	81.1	5.0	2:02 0:50 0:20 0:17 0:06	(1.7) 34%	(0.5) 10%	RUN-17				81.1ft: few vugs
-87.5	86.1	5.0	1:06 1:19 0:42 0:40	(1.6) 32%	(0.4) 8%	RUN-18				
-92.5	91.1									

TURKEY POINT COL CORE TURKEY POINT.GPJ TURKEY POINT COL.GDT 7/10/08

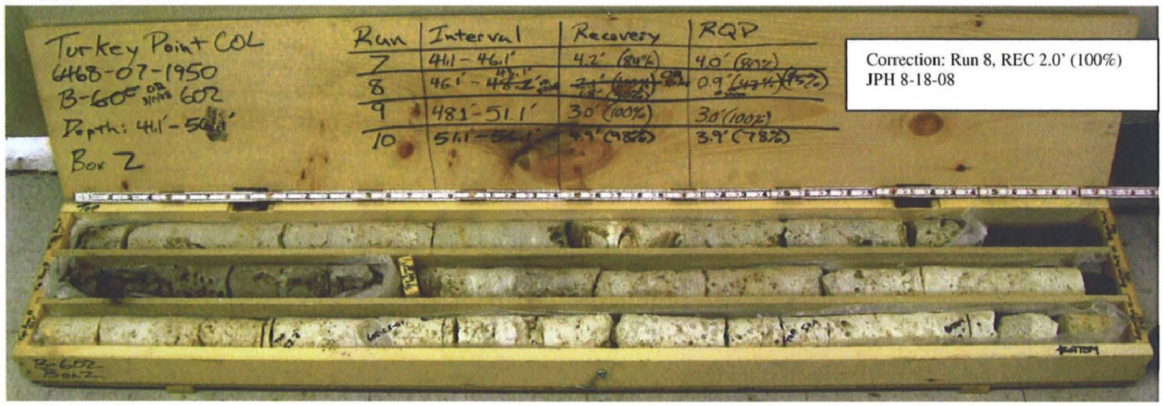
MACTEC

BECHTEL PROJECT NO.: 25409	MACTEC PROJECT NO.: 6468-07-1950	COUNTY: Miami-Dade	GEOLOGIST: O. Rodriguez
SITE DESCRIPTION: Turkey Point COL	DRILL MACHINE: CME-45C (RAL)	DRILLER: D. Rhodes/ K. Guy	GROUND WATER (ft)
BORING NO.: B-602	DRILL METHOD: Mud Rotary/ Core	SAMPLE METHODS: SPT/Core	0 HR. NA
GROUND ELEV.: -1.4 ft (NAVD88)	NORTHING: 397,020 US ft (NAD83/90)	EASTING: 876,594 US ft (NAD83/90)	24 HR. NA
TOTAL DEPTH: 204.1 ft	CASING DEPTH: 4" to 14.0', 3" to 119.0'		HAMMER (ID): 140 lb. Auto (MEC-12)
DATE STARTED: 3/10/08	COMPLETED: 3/18/08	CORE SIZE: HQ3	CORE BARREL TYPE: Triple Tube Wireline (Split inner liners)

ELEV. (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %	RUN RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	STRATA RQD (ft) %	LOG	DESCRIPTION AND REMARKS
										Continued from previous page
		5.0	0:34 0:59 1:17 1:38 1:42 1:08	(1.2) 24%	(0.0) 0%	RUN-19				91.1ft: moderately indurated, little vugs LIMESTONE, boundstone, white (2.5Y8/1) hard, indurated, fossiliferous, trace vugs (Lower Fort Thompson Formation) *(continued)*
-97.5	96.1									
		5.0	0:32 0:34 0:34 0:54 0:54	(4.2) 84%	(1.7) 34%	RUN-20				96.1: few vugs
-102.5	101.1									
		5.0	0:44 0:34 0:41 0:40 0:43	(4.9) 98%	(4.7) 94%	RUN-21				
-107.5	106.1									
		5.0	0:45 0:35 0:56 0:24 0:46	(2.6) 52%	(0.4) 8%	RUN-22				
-112.5	111.1									
		5.0	0:21 0:38 1:13 0:50 0:36	(0.9) 18%	(0.4) 8%	RUN-23	(0.0) 0%	(NA)		111.1ft: moderately hard, little vugs, few cemented sand fragments -114.4 113.0 POORLY GRADED SAND (SP), white (2.5Y8/1), wet, dense, trace coarse grained sand (Tamiami Formation) -117.5 116.1
-117.5	116.1									
										Coring Terminated at Elevation -117.5

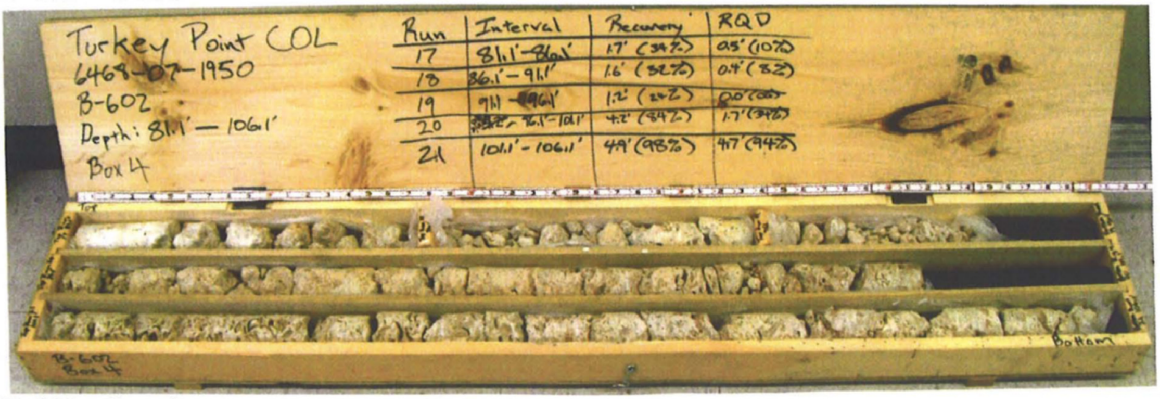
TURKEY POINT COL CORE TURKEY POINT GPJ TURKEY POINT COL.GDT 7/10/08

B-602 – Box 1



B-602 – Box 2

B-602 – Box 3



B-602 – Box 4

Turkey Point COL
6468-07-1950
B-602
Depth: 106.1'- 116.1'
Box 5
Run
Interval
Recovery
RQD
22
106.1'-116.1'
2.6' (52%)
0.4' (8%)
23
0.9' (18%)
0.4' (8%)
Top

B-602 – Box 5