LOST CREEK ISR, LLC
Lost Creek Project

WDEQ-LQD Permit Application

VOLUME 8c

LC East Amendment

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LOST CREEK EAST
REGIONAL HYDROLOGIC PUMP TESTS
SEPTEMBER – DECEMBER 2013

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EXECUTIVE SUMMARY

- The purposes of the regional Lost Creek East pump tests were to: 1) determine hydrologic characteristics (Transmissivity and Storativity) of the HJ and KM Horizons, 2) evaluate the degree of hydraulic communication, if any, between the HJ and KM Horizons or with the overlying and underlying Horizons, and 3) assess the presence of hydrologic boundaries, if any, within the project area.

- To evaluate the aquifer characteristics, two pump tests were conducted in the HJ Horizon and three tests in the KM Horizon. The five tests were conducted between September 4 and December 17, 2013.

- The computed aquifer characteristics (T, K and S) for the North and Central test areas are very similar to each other and comparable with values obtained from the Mine Unit 1 Regional and Permit Area pump tests. However, the computed aquifer characteristics for the South test area (Sections 20 and 21) were significantly higher (100 to 150%) than those T, K and S values for either the North, Central or MU1 test results.

- Hydrologic communication between the pumped well and at least one same-horizon observation well was demonstrated in each test.

- The pump test results demonstrated that there was no measurable hydraulic communication between the HJ and KM Horizons in any of the five pump test areas. Additionally, there was no measurable hydraulic communication with the underlying N Horizon.

- The Central and South HJ Horizon tests revealed only very minor hydrologic communication with the overlying FG Horizon. The water level drop in the FG Horizon was less than a barometrically corrected 7-inches in both tests.

- The preliminary findings indicate that the mapped faults, located in Section 21, are not sealed but act as low-flow boundaries.

- The pump test results demonstrate that the HJ and KM Horizons have sufficient transmissivity for ISR operations. Due to the higher transmissivity values observed in Sections 20 and 21, it may be possible to operate mine patterns at higher flow rates or with wider injector/producer spacing in these areas. Modeling and/or field testing will be required to confirm this hypothesis.

1.0 INTRODUCTION

Lost Creek ISR, LLC (LC ISR) is currently extracting uranium via in-situ recovery (ISR) well fields completed in the ore bearing sands of the Tertiary Battle Spring Formation at the Lost Creek (LC) Uranium Project in Sweetwater County, Wyoming. LC ISR received permits from the U.S. Nuclear Regulatory Commission (NRC) and Wyoming Department of Environmental Quality, Land Quality Division (WDEQ/LQD) to mine one ore sand, the HJ Horizon, in Mine Unit 1 (MU1). LC ISR has since found commercial grade ore in the sand horizon underlying the HJ, the KM Horizon, that LC ISR intends to mine upon amending their current permit.

In February 2012, NFU Wyoming, LLC (NFU), a subsidiary of URE, acquired the property/claims east of and contiguous to the LC property from Uranium One. The approximate 4,780 acre property, identified as Lost Creek East (LCE), contains an approximately 4-mile long southwest-northeast trending ore body. **Figure 1-1** shows the location of the Lost Creek and Lost Creek East Project areas in relationship to each other, as well as the LCE mineralized trend.

The LCE ore of interest is contained in the HJ and KM Horizons. Due to the length of the mineralized trend, NFU was granted LQD approval to perform regional pump tests at three different locations along the trend as shown on **Figure 1-2**. At each location, it was proposed to independently pump test the HJ and KM Horizons while observing monitor wells completed in the same horizon, as well as those completed in the overlying and underlying horizons.

This Report provides a summary of the pump test objectives, a description of equipment and procedures used, discusses pump test analytical methodology, presents results, and provides conclusions.

1.1 BACKGROUND AND OBJECTIVES

The Lost Creek East project is located contiguous to and east of the Lost Creek ISR Project as shown in **Figure 1-1**. The LCE project lies within all or part of Sections 1, 2, 3, 10, 11, 12, 14, 15, 20, 21, 22, 23, 27, 28, and 29 of T25N, R92W.

Figure 1-2 shows the location of wells used in the regional pump tests. The three clusters of pump/observation wells, installed over the length of the property, are denoted as the North Cluster, Central Cluster and South Cluster. In addition, four clusters of observation wells were installed adjacent to or between the pump test clusters. Pump tests were performed at three KM Horizon locations and two HJ Horizon locations. Due to insufficient saturation of the North Cluster HJ Horizon, no pumping test was performed.

The objectives of the hydrologic testing in the HJ and KM Horizons were to:

1. Determine the hydrologic characteristics of the HJ and KM production zone Horizons;

2. Demonstrate hydrologic communication between the pumped wells and the corresponding same-horizon monitor wells;
3. Evaluate the degree of hydrologic communication, if any, between the HJ and KM Horizons, as well as the overlying and underlying horizons in the test areas; and,
4. Assess the presence of hydrologic boundaries, if any, within the HJ and KM Horizons in the test areas.

These objectives are consistent with the Wyoming Department of Environmental Quality/Land Quality Division (WDEQ/LQD) Chapter 11 (and associated guidelines) and Nuclear Regulatory Commission (NRC) NUREG 1569 (Section 2.7; Hydrology). The testing procedures and results are presented and discussed in this Report.

2.0 SITE CHARACTERIZATION

2.1 STRUCTURE

In the Lost Creek and Lost Creek East Project areas, the Battle Spring Formation dips westerly at approximately three degrees. **Figure 2-1** shows the location of two geologic cross sections that illustrate the dip and structure for the Lost Creek East property (**Figures 2-2 and 2-3**). Within the LCE project site, this component of dip causes the DE Horizon to outcrop or be absent. The upper and middle portions of the FG Horizon outcrop at the extreme northeast end of the property (Sections 2, 3, 10, and 11, T25N, R92W).

In general, the stratigraphy shallows to the northeast. It is speculated that this is caused by an asymmetrical syncline plunging shallowly to the west. This plunging causes the HJ Horizon to lie at a depth of 100 feet at the far northeast edge of the LCE property (Section 2) and 250 feet at the southwest end of the property (Section 20). In contrast, at the LC property the HJ Horizon is typically about 350 feet deep, but can be as deep as 450 feet along the western project boundary.

On the LCE property, the primary geologic structures of interest are several west-southwest to east-northeast trending faults present in the southwestern portion of the property, primarily in Sections 15, 20 and 21 (**Figure 1-1**). Normal faulting has created horst and graben structures with vertical displacements across the fault ranging from approximately 14 to 70 feet (**Figures 1-2, 2-2 and 2-3**). Many of the identified faults are the logical extension of the Lost Creek fault systems.

2.2 HYDROSTRATIGRAPHY

The Lost Creek Project is underlain by the upper portions of the Eocene-age Battle Spring Formation. The total thickness of the Battle Spring Formation at Lost Creek East is approximately 6,000 feet. The Battle Spring Formation regionally interfingers to the southwest with the time equivalent Wasatch Formation.

A detailed description of regional and site geology and hydrogeology for the Lost Creek Uranium Project is provided in the Lost Creek Application for a WDEQ Permit to Mine (Lost Creek ISR, LLC, 2007). Since the Lost Creek East property is contiguous to the LC property, LC ISR expected similar hydrostratigraphic conditions to exist beneath the LCE property. However, the supplemental LCE 2012 drilling and hydrogeologic evaluation program has revealed slight differences from those encountered at the LC property. A summary of the observed geologic and hydrogeologic conditions in the LCE test area is provided below.

Figure 2-4 depicts the stratigraphic column in the LC project area that can be extrapolated to the LCE property by virtue of proximity and drill log data. The HJ production zone is situated within a package of stacked sand layers designated the HJ Horizon. The HJ Horizon consists of a 110 to 130 foot thick sequence of sands. The sands are separated by thin, locally discontinuous shale and silt layers that are not confining units. Overlying the HJ Horizon is the laterally extensive Lost Creek Shale (LCS) that ranges in thickness from 5 to 25 feet. The LCS is designated as the upper confining unit to the HJ production zone. Overlying the LCS unit is the FG Horizon sequence. The deepest sand unit within that horizon is designated the LFG Sand. This is the overlying aquifer to the HJ production zone. Below the HJ production zone aquifer lays a 5 to 25 foot thick shale layer that acts as a lower confining unit. This unit is designated the Sagebrush Shale (SBS).

Underlying the SBS confining layer is the KLM Horizon. The uppermost unit in the KLM Horizon is designated the KM Horizon. The KM Horizon is an approximately 100 foot thick sequence of sand layers containing locally discontinuous shale and silt layers that are not confining units. Underlying the KM Horizon is the L Horizon that averages about 80 feet in thickness. The KM Horizon is separated from the underlying L Horizon by the discontinuous K-Shale, which averages 12 feet in thickness. Since the K-Shale is locally discontinuous, it is not considered a confining unit. Underlying the L Horizon are the M Horizon and N Horizon which are both approximately 80 to 110 feet thick and contain locally discontinuous shale and silt layers. Separating the L and M Horizons, and the underlying M Horizon and N Horizon are the LM and MN units, respectively. The LM and MN units are low permeability shale and silt layers that are locally discontinuous.

LC ISR utilizes the following nomenclature for the hydrostratigraphic units of interest within the Battle Spring Formation in the Lost Creek East area. Isopach maps and a structural contour map are provided in the LC ISR's 2014 Permit Amendment, and are not reproduced in this document.

2.2.1 FG Horizon

Overlying the Lost Creek Shale is the FG Horizon, which is continuous throughout the Lost Creek East Project. Due to the regional dip and trend length, the top of the FG Horizon outcrops at the eastern property boundary deepening to 50 feet at the west property boundary. The total thickness is typically about 180 feet, but ranges between 170 and 200 feet. The FG Horizon transitions from confined to unconfined aquifer conditions moving southwest to northeast along Cross-Section B-B' (**Figure 2-3**).

2.2.2 HJ Horizon

The HJ Horizon is bounded above by the confining unit identified as the Lost Creek Shale and below by the Sagebrush Shale. The Lost Creek Shale is continuous throughout the Lost Creek East Project and ranges from 5 to 25 feet thick, typically being from 10 to 15 feet thick. The Sagebrush Shale is also continuous throughout the Lost Creek East Project and ranges from 5 to 20 feet thick, typically being from 7 to 15 feet thick.

The top of the HJ Horizon occurs at depths of approximately 95 feet near the eastern property boundary deepening to 260 feet at the west property boundary (Section 20).

The total thickness is typically about 115 feet, but ranges from 110 to 150 feet.

The HJ Horizon transitions from confined to unconfined aquifer conditions moving southwest to northeast along Cross-Section B-B'. The saturated thickness of the HJ Horizon at the North Cluster was insufficient to sustain a long-term pump test.

2.2.3 KM Horizon

The KM Horizon is continuous throughout the Lost Creek East Project. The top of the KM Horizon occurs at depths of approximately 210 feet near the eastern property boundary deepening to 390 feet at the west property boundary (Section 20). The total thickness is typically about 125 feet, but ranges from 90 to 130 feet. The KM Horizon is fully confined throughout the project area.

2.3 POTENTIOMETRIC SURFACES

Water level measurements collected three months post testing were used to construct preliminary potentiometric surface maps for the FG, HJ, KM and N Horizons. The water level data are considered representative of static conditions because measurements were collected after an extended period of inactivity within the test area (e.g., step-rate testing, groundwater sampling, water supply pumping, pump testing, etc.).

Due to the relative few data points from which to construct the potentiometric surfaces, the known regional direction of groundwater flow was used as a guide to constructing the maps. In addition, due to the lack of control, the potentiometric surfaces were constructed as though the faults were not present. However, based on prior Mine Unit 1 experience, the faults are known to act as low-flow barriers to groundwater movement thus the potentiometric surfaces maps are considered preliminary/conceptual. The role that the faults in Sections 20 and 21 play in influencing the movement of groundwater will be further evaluated during subsequent hydrologic investigations.

The following preliminary observations are presented:

2.3.1 FG Horizon

Based on potentiometric surface elevations, the direction of groundwater flow within the FG Horizon is predominantly to the west-southwest. Calculated hydraulic gradients range from approximately 0.008 ft/ft to 0.019 ft/ft (44 to 100 ft/mile) in the project area (**Figure 2-5**).

2.3.2 HJ Horizon

Based on potentiometric surface elevations, the direction of groundwater flow within the HJ Horizon is predominantly to the west-southwest. Calculated hydraulic gradients range from approximately 0.005 ft/ft to 0.015 ft/ft (29 to 79 ft/mile) in the project area (**Figure 2-6**).

2.3.3 KM Horizon

Based on potentiometric surface elevations, the direction of groundwater flow within the KM Horizon is predominantly to the west-southwest. Calculated hydraulic gradients range from approximately 0.009 ft/ft to 0.018 ft/ft (49 to 95 ft/mile) in the project area (**Figure 2-7**).

2.3.4 N Horizon

There are only five N Horizon monitoring wells located in LCE. During the compilation of this report, it was discovered that monitor wells M-N2 and M-N3 are completed in both the M and N Horizons (Well Completion Logs, Appendix A). Therefore, the static water elevation in these two wells is not believed to be representative. However, the MN Shale that typically separates the two Horizons is not well defined at these well locations; thus the M and N Horizons are likely in hydraulic communication (Petrotek, 2013). Nevertheless, the static water level in monitor well M-N3 does not fit the regional trend and was therefore not used in constructing the potentiometric surface map (**Figure 2-8**). Subsequent hydrologic investigations will attempt to resolve the water level anomaly and better define the N Horizon potentiometric surface.

2.4 VERTICAL HYDRAULIC GRADIENT

Vertical hydraulic gradient between the FG, HJ, KM and N Horizons were calculated at various locations across the property; the results of which are summarized in **Table 2-1**. Vertical hydraulic gradient from the FG to the HJ Horizon were evaluated at four locations where there were FG Horizon well completions. Gradients from the HJ to the KM Horizon were evaluated at eight locations. Five locations were evaluated for the KM to N Horizon calculation. The following summarizes the general head differentials observed in all LCE monitored Horizons.

- Head in the FG Horizon is approximately 10 to 32 feet higher than in the underlying HJ Horizon;
- Head in the HJ Horizon is from 5 to 33 feet higher than in the underlying KM Horizon; and,
- Head in the KM Horizon is from 6 to 135 feet higher than in the underlying N Horizon.

Results are consistent with the regional conceptual model of decreasing heads with depth indicating proximity to areas of recharge in this portion of the Battle Spring Formation.

3.0 MONITOR WELL LOCATIONS, INSTALLATION, AND COMPLETION

In preparation for conducting the LCE pump tests, LC ISR installed 24 new wells distributed between three test patterns during the 2012/2013 summer drilling programs. The new pumping and monitoring wells were drilled and completed using methods consistent with WDEQ/LQD permit requirements. The criteria for citing the three pump test patterns were: 1) sites located distant to known faults, 2) sites with limited exposure to historical exploration drill holes, and 3) sites located off the main mineralized trend. Based on prior experience, it is known that the faults act as partial groundwater flow boundaries and thus invalidate or complicate pump test analysis.

The 24 new wells included: three (3) HJ Horizon and three (3) KM Horizon pump test wells, five (5) HJ Horizon monitor wells, five (5) KM Horizon monitor wells, three (3) monitor wells in the overlying FG Horizon, and five (5) monitor wells in the underlying N Horizon. **Table 3-1** provides location and well completion information for each well by test cluster. **Figure 1-2** shows the well clustering in the North, Central and South test areas, as well as the distant observation well pairings.

3.1 WELL LOCATIONS

All wells monitored during the various tests are identified in **Table 3-1** and their location shown on **Figure 1-2**. All wells were instrumented and monitored with recording In-Situ LevelTROLL® datalogging transducers or manually e-lined.

3.2 WELL INSTALLATION AND COMPLETION

All pump and observation wells were constructed with SDR-17 PVC, 4.5-inch inside diameter casing. The wells were developed using standard water well techniques, including air lifting, pumping, swabbing, and/or surging. Specific data related to well location and elevation, completion interval, and initial water levels are provided in **Table 3-1**. Well Completion Logs are presented in **Appendix A**.

4.0 TEST DESIGN AND PROCEDURES

When originally proposed, the regional pump tests were to include one HJ Horizon and one KM Horizon pump test at each of the three test clusters (North, Central and South). However, it was subsequently determined that the North Cluster HJ Horizon test well lacked sufficient saturated thickness to perform a long-term pump test; accordingly, no test was performed.

The following pump tests were performed in LCE between September and December, 2013:

- North Test - only the KM Horizon was pump tested using well M-KM9 while monitoring the various observation wells listed on **Table 3-1**.
- Central Test – test wells M-KM7 and M-HJ4 were pumped to stress the KM and HJ Horizons, respectively, while monitoring the various observation wells listed on **Table 3-1**.
- South Test - test wells M-KM4A and M-HJ1 were pumped to stress the KM and HJ Horizons, respectively, while monitoring the various observation wells listed on **Tables 3-1**.

The following section details the test design and procedures for each pump test.

4.1 TEST DESIGN

Hydrologic tests were conducted in the HJ and KM Horizons with additional monitoring in the underlying and overlying Horizons. The general testing procedures were as follows:

1. Install In-Situ LevelTROLL® data-logging transducers (vented) in wells to record changes in water levels during tests. Verify setting depths and head readings with manual water level measurements;
2. Measure and record pre-test background water levels and barometric pressure for some period prior to testing; when feasible;
3. Pump the well at a constant rate (or as close as practical); and,
4. Record water levels and barometric pressure throughout pre-test, pumping, and recovery periods.

4.2 PUMP TEST AND MONITORING EQUIPMENT

Aquifer testing was performed utilizing a Grundfos 60S100-18 (10 hp), 460V, 3-phase electrical submersible pump powered by a portable diesel generator. The pump was set at a depth that maximizes the column of water overlying the pump (e.g. a few feet above the J-collar, see Well Completion Logs, Appendix A). Flow from the pump was controlled with a manual ball valve. Surface flow monitoring equipment included a 1.5-inch diameter turbine meter (NuFlo MC-II Flow Analyzer). The meter displays total flow (in gallons) and instantaneous flow rates (in gallons per minute [gpm]). Discharge water was land applied approximately 300 feet from the pumping well via a 2-inch diameter high-density polyethylene (HDPE) pipe.

As mentioned above, water levels in the pumped wells and selected observation wells were measured and recorded with In-Situ Level TROLL® pressure transducer dataloggers. Water levels were recorded according to a pre-determined time schedule. Manual water level readings were made in wells where pressure transducers were not utilized.

The pressure rating for the pressure transducers ranged from 15 to 100 psi, as warranted, for each monitoring location. Barometric pressure was also recorded throughout the testing periods for subsequent data correction if necessary.

5.0 BAROMETRIC PRESSURE CORRECTIONS

5.1 MONITORING EQUIPMENT

All In-Situ Level TROLLS® used for the pump tests were vented. In-Situ has stated that if vented transducers are used, the vent eliminates the impact of barometric pressure on the sensor. However, a change in water levels due to barometric changes will occur whether a vented sensor is used or not. Hence, use of vented equipment eliminates the barometric impact on the sensor, but does not correct the water level measurements for barometric effects on the aquifer. In this regard, the vented Level TROLLS® are barometrically *compensated*, but not *corrected*. If significant variations in water levels or barometric pressure are observed, the data may require correction for fluctuations in water levels associated with changes in barometric pressure. An In-Situ BaroTROLL® was installed during the pre-test setup and used to measure barometric pressure during testing and recovery periods.

5.2 BAROMETRIC CORRECTIONS

Barometric charts (pressure vs. time) are presented in **Appendix B** for the pre-test, test and recovery periods. The pre-test barometric chart clearly shows the diurnal changes in barometric pressure due to daytime heating and cooling, as well as long-term monthly trends. Because the hydrostratigraphic Horizons are confined, an increase in barometric pressure results in a water level decline (opposite responses). To facilitate the barometric effect evaluation reverse-scale barometric pressure charts, prepared on the same scale as the well data, are provided in **Appendix B**. The reader can overlay the reverse scale barographs on the well hydrographs to visually see the barometric effect on drawdown.

The need for barometric correction was evaluated as part of the hydrologic investigations. Water level data collected during the pre-test monitoring were evaluated in relation to the barometric pressure measurements. The barometric efficiency (BE) is calculated by conducting a linear regression analysis of pre-test background depth to water measurements versus barometric pressure (in an equivalent unit of feet of water). The individual BE plots are presented in **Appendix C**. Calculated BE for the wells with dataloggers in the FG Horizon averaged 0.90, in the HJ Horizon the average was 0.81, and in the KM Horizon the average BE was 0.87. These barometric efficiencies are very high for a confined aquifer and approximately 33% higher than the computed MU1 barometric efficiencies.

Where the measured water level fluctuations were greater than about 1.0 foot, the difference in the pump test water level data that was uncorrected versus the barometrically corrected data is minimal for the calculation of drawdown or aquifer properties analysis (Petrotek 2009 and 2013). However, for those observation wells where the water level change was less than 1.0 foot, the data was barometrically corrected due to the high BE.

6.0 HYDROLOGIC TEST RESULTS

The following section discusses the details and results of the five pump tests. Details regarding pre-test monitoring, pumping rate and test duration, and responses in the HJ and KM Horizons as well as the overlying and underlying aquifers are presented.

6.1 PUMPING TEST

6.1.1 Pre-Test Monitoring

Water level stability data were typically collected for some period prior to the start of each pump test at pertinent observation wells. Observation well hydrographs for the pre-test periods are presented in **Appendix D**. Prior to conducting each pump test, water levels were relatively stable in all Horizon observation wells.

6.1.2 Pump Duration and Rate

North Cluster Test

KM Horizon - A pump test was conducted on test well M-KM9 at 14:00 Hours on September 4, 2013, and was terminated at 13:55 Hours on September 11, 2013. The total duration of pumping was 10,075 minutes (7.0 days), and the time weighted average pumping rate was 44.96 gpm (**Table 6-1**).

Central Cluster Tests

KM Horizon - A pump test was conducted on test well M-KM7 at 14:30 Hours on November 5, 2013, and was terminated at 9:35 Hours on November 12, 2013. The total duration of pumping was 9,785 minutes (6.8 days), and the time weighted average pumping rate was 39.96 gpm (**Table 6-1**).

HJ Horizon - A pump test was conducted on test well M-HJ4 at 10:00 Hours on December 2, 2013, and was terminated at 13:57 Hours on December 7, 2013. The total duration of pumping was 7,437 minutes (5.16 days), and the time weighted average pumping rate was 39.82 gpm (**Table 6-1**).

South Cluster Tests

KM Horizon - A pump test was conducted on test well M-KM4A at 11:00 Hours on November 19, 2013, and was terminated at 11:00 Hours on November 22, 2013. The total duration of pumping was 4,320 minutes (3.0 days), and the time weighted average pumping rate was 61.1 gpm (**Table 6-1**).

HJ Horizon - A pump test was conducted on test well M-HJ1 at 10:00 Hours on December 13, 2013, and was terminated at 10:00 Hours on December 17, 2013. The total duration of pumping was 5,760 minutes (4.0 days), and the time weighted average pumping rate was 40.54 gpm (**Table 6-1**).

6.1.3 Aquifer Response and Drawdown Observations

Table 6-2 presents a summary of the maximum drawdown measured in the FG, HJ, KM and N Horizon observation wells during each individual test. Hydrographs of water level fluctuations observed during the pump tests are presented in **Appendix D**. A review of **Table 6-2** results and **Appendix D** hydrographs yield the following observations:

North Cluster M-KM9 Test

- Pump test well M-KM9 incurred 94.94 feet of drawdown at the end of test.
- The closest KM Horizon observation well, M-KM8, located at a distance of 3,828 feet from the pumped well, showed a maximum drawdown response of 1.67 feet.
- The more distant KM Horizon observation well, M-KM10, located at a distance of 4,551 feet from the pumped well, showed no response after seven days of pumping.
- Observation wells M-HJ6, M-N4, M-N5A, M-HJ5, M-FG2, M-HJ4, M-KM7 and LC27M did not show any response to pump test stress other than what can be attributed to the Noordbergum or barometric effects.

Central Cluster M-KM7 Test

- Pump test well M-KM7 incurred 87.80 feet of drawdown at the end of test.
- The closest KM Horizon observation well, M-KM8, located at distance of 3,851 feet from the pumped well, showed a maximum drawdown response of 2.48 feet after 6.8 days of pumping.
- The more distant KM Horizon observation well, LC27M, located at a distance of 4,206 feet from the pumped well, showed a maximum drawdown response of 6.20 feet.
- Overlying and underlying observation wells M-FG2, M-HJ4 and M-N3 did not show any response to pump test stress other than what can be attributed to the Noordbergum or barometric effects.

Central Cluster M-HJ4 Test

- Pump test well M-HJ4 incurred 63.90 feet of drawdown at the end of test.
- The closest HJ Horizon observation well, M-HJ5, located at a distance of 3,743 feet from the pumped well, showed a barometrically corrected response of 0.81 feet after 3.0 days of pumping.
- The more distant HJ Horizon observation well, MB-09, located at a distance of 4,355 feet from the pumped well, showed a barometrically corrected response of 0.57 feet after cessation of pumping.
- The maximum drawdown observed in overlying observation well M-FG2, located at a distance of 151 feet from the pumping well, was a barometrically corrected 0.57 feet.

- The water level rise observed in the underlying observation well M-KM7 is attributed to incomplete recovery from its November 5th pump test.
- Overlying and underlying observation wells M-N3, M-KM8, MB-08 and LC27M did not show any response to pump test stress other than what can be attributed to the Noordbergum or barometric effects.

South Cluster M-KM4A Test

- Pump test well M-KM4A incurred 26.33 feet of drawdown at the end of test.
- The closest KM Horizon observation well, M-KM5A, located at a distance of 799 feet from the pumped well, showed a maximum drawdown response of 10.28 feet.
- The more distant KM Horizon observation well, M-KM6, located at a distance of 3,037 feet from the pumped well, showed a delayed maximum drawdown response of 4.20 feet.
- Observation well M-KM11A lies on the opposite side of an east-west trending fault at a distance of 2,744 feet from the pumped well. The maximum observed drawdown in this well was 1.52 feet.
- Overlying and underlying observation wells M-FG1, M-HJ1, M-N2, M-HJ2A, M-HJ3, M-FG5, M-HJ8 and M-N6 did not show any response to pump test stress other than what can be attributed to the Noordbergum or barometric effects.

South Cluster M-HJ1 Test

- Pump test well M-HJ1 incurred 16.00 feet of drawdown at the end of test.
- The closest HJ Horizon observation well, M-HJ2A, located at a distance of 787 feet from the pumped well, showed a maximum drawdown response of 6.91 feet.
- The more distant HJ Horizon observation well, M-HJ3, located at a distance of 3,044 feet from the pumped well, showed a delayed maximum drawdown response of 2.28 feet.
- Observation well M-HJ8 lies on the opposite side of an east-west trending fault at a distance of 2,804 feet from the pumped well. The maximum observed drawdown in this well was a barometrically corrected 0.25 feet.
- Overlying observation well M-FG1, located at a distance of 125 feet from the pumped well, showed a maximum barometrically corrected drawdown response of 0.22 feet.
- Overlying and underlying observation wells M-KM4A, M-N2, M-KM5A, M-KM6, M-FG5, M-KM11A and M-N6 did not show any response to pump test stress other than what can be attributed to the Noordbergum or barometric effects.

Those hydrographs showing a water level rise in response to pumping, a reverse water-level affect, is postulated to be a manifestation of the Noordbergum effect. This behavior has been observed in the underlying and overlying aquifers during previous testing conducted in the HJ Horizon, and is discussed in more detail in the Mine Unit 1 hydrologic testing report (Petrotek, 2009). The Noordbergum effect is an aquifer deformation-induced water level response seen in adjacent confined aquifers relative to the pumped aquifer. The pumped aquifer contracts upon initiation of pumping, and vertical and horizontal strains are transferred to the adjacent aquitard (shale) and adjacent aquifer via shear, resulting in a short-term increase in pore-pressure, which is eventually cancelled out by pore-pressure diffusion and later propagation of drawdown (if observed).

7.0 HYDROLOGIC TEST ANALYSIS

7.1 ANALYTICAL METHOD

Drawdown data collected during the pump tests from observation/monitor wells completed in the HJ and KM Horizons were graphically analyzed to determine aquifer properties of transmissivity (T) and storativity (S). The test data were analyzed using the Theis analysis method, which is a standard analytical approach to evaluate aquifer characteristics. This analysis method is applicable to aquifers that are confined and have a specific uniform saturated thickness. The Theis Recovery analysis was also performed for the pumping and selected observation wells where applicable.

Assumptions inherent in this method include:

- The aquifer is confined and has apparent infinite extent;
- The aquifer is homogeneous and isotropic, and of uniform effective thickness over the area influenced by pumping;
- The potentiometric surface is horizontal prior to pumping;
- The well is pumped at a constant rate;
- The pumping well is fully penetrating;
- Water is released instantaneously from storage with decline in head;
- Aquitard beds have infinite areal extent, uniform vertical hydraulic conductivity and uniform thickness, and flow is vertical in aquitards; and,
- Well diameter is small, so well storage is negligible.

These assumptions are reasonably satisfied, with the exception of the uniform thickness of the aquifer, and the infinite extent of the aquifer due to the presence of boundary conditions (i.e., Fault). Locally, the HJ and KM Horizons are not homogeneous and isotropic; however, over the scale of the pump test, the aquifer can be treated in this manner. The fault present in the South Cluster area appears to act as a partial hydraulic barrier to groundwater flow (low-flow boundary); thus limiting the effective extent of the aquifer. This condition violates the Theis assumption; therefore, no analytical computations were performed for the wells lying north of the fault in Section 21.

The software used to graphically analyze the data was Aqtesolv PRO (Version 4.5, HydroSOLVE).

7.2 ANALYTICAL RESULTS

Drawdown data collected from monitor wells were graphically analyzed to determine aquifer properties of transmissivity (T) and storativity (S). Graphs for all analyses are presented in **Appendix D**, and water level hydrographs and data are provided in **Appendices D and E. Table 7-1** summarizes the pump test results.

Note that the initial regional pump test layout (spatial distribution) specified that the corresponding horizon observation well, for the North and Central Cluster pump tests, be located at significant distances from their respective pumped well (3,700 to 4,500 feet). Consequently, in order to generate a drawdown response adequate for analysis, the test durations had to be significantly longer than would be required if the observation well had been located within a couple hundred feet of the pumped well. In some cases, the depressurization wave caused by pumping took two or more days to arrive at the observation well, and continued passing the well for many hours after the pump was turned off.

Further complicating the analysis was the fact that some drawdown responses at these long distances were often on the same order of magnitude as the barometric fluctuations. Accordingly, due to the relative significance of barometric effects as discussed in Section 5, barometric corrections were applied to drawdown data of less than one foot.

Table 7-1 presents a compilation of the analytical results for the two HJ Horizon pump tests. HJ Horizon transmissivity values computed from the Theis analysis ranged from 74 to 384 ft^2/day. Analysis using the Theis recovery method yielded values ranging from 54 to 318 ft^2/day. The lower end of this transmissivity range is generally consistent with the results obtained from previous Lost Creek HJ Horizon pump tests. Based on site specific aquifer thicknesses, the calculated mean hydraulic conductivity (K) values ranged from 0.78 to 3.20 ft/day.

Using the Theis method, calculated S values ranged between 1.15×10^{-4} and 3.03×10^{-4}. Again, the calculated HJ Horizon storativity values are similar to previously obtained Lost Creek test results.

Table 7-1 also presents a compilation of the analytical results for the three KM Horizon pump tests. KM Horizon transmissivity values computed from the Theis analysis ranged from 86 to 251 ft^2/day. Analysis using the Theis recovery method yielded values ranging from 113 to 359 ft^2/day. The lower end of this transmissivity range is generally consistent with the results obtained from previous Lost Creek KM Horizon pump tests. Based on site specific aquifer thicknesses, the calculated mean hydraulic conductivity (K) values ranged from 1.07 to 3.26 ft/day.

Using the Theis method, calculated S values ranged between 7.35×10^{-5} and 1.97×10^{-2}. Again, the calculated KM Horizon storativity values are similar to previously obtained Lost Creek test results.

8.0 SUMMARY AND CONCLUSIONS

The following paragraphs summarize the hydrologic investigation findings:

- The pump test results demonstrated that: 1) there was hydrologic communication between the pumped well and one or more same-horizon observation well, 2) there was no apparent hydraulic communication between the HJ and KM Horizons in any of the five pump test areas, and 3) there was no obvious hydraulic communication with the underlying N Horizon.

- The Central and South HJ Horizon tests revealed only very minor hydrologic communication with the overlying FG Horizon. The water level drop in the FG Horizon was less than a barometrically corrected 7-inches in both tests.

- The computed aquifer characteristics (T, K and S) for the North and Central test areas are very similar to each other and comparable with values obtained from the Mine Unit 1 Regional and Permit pump tests. However, the computed aquifer characteristics for the South test area were significantly higher (100 to 150%) than those T, K and S values for either the North, Central or MU1 test results.

- The pump test results demonstrate that the HJ and KM Horizons have sufficient transmissivity for ISR operations. Due to the higher transmissivity values observed in Sections 20 and 21, it may be possible to operate mine patterns at higher flow rates or with wider injector/producer spacing in these areas. Modeling and/or field testing will be required to confirm this hypothesis.

- The preliminary findings indicate that the mapped faults, located in Section 21, are not sealed but act as low-flow boundaries.

- Additional monitoring wells are needed in each Horizon to refine the potentiometric surfaces and gradients.

- During future hydrologic testing, the same-horizon observation wells should be located in close proximity to the pumped well in order to induce the desired drawdown response and negate the need for barometric correction.

9.0 REFERENCES

LC ISR, LLC, 2007. Lost Creek Application for a WDEQ Permit to Mine.

LC ISR, LLC, 2014. Lost Creek Permit Amendment.

Theis, C.V., 1935. The relation between the lowering of the piezometric surface and the rate and duration of discharge of a well using groundwater storage, American Geophysical Union Trans., vol. 16, pp. 519-524.

Petrotek Engineering Corporation, 2009. Lost Creek Regional Hydrologic Testing – Mine Unit 1, North and South Tests; prepared for Lost Creek ISR, LLC October 2009.

Petrotek Engineering Corporation, 2013. Lost Creek Hydrologic Test, Composite KLM Horizon Regional Pump Test, October, 2011; prepared for LC ISR LLC April 2013.

TABLES

TABLES

Table 2-1 Vertical Hydraulic Gradients

Cluster	Well ID	Completion Horizon	Static Water Elev. (ft amsl)	Difference in Water Elev. (ft)	Ground Surface Elevation (ft amsl)	Screen Top (ft bgs)	Screen Bottom (ft bgs)	Total Screen Length (ft)	Screen Mid-Point Elev. (ft amsl)	Vertical Gradient FG to HJ (ft/ft)	Vertical Gradient HJ to KM (ft/ft)	Vertical Gradient KM to N (ft/ft)
North	M-HJ6	HJ	6,955.81	---	7,094.37	153.00	240.00	87.00	6,897.87			
	M-KM9	KM	6,950.66	-5.15	7,092.31	285.00	370.00	85.00	6,764.81		0.04	
	M-N4	N	6,839.21	-111.45	7,095.74	615.00	650.00	35.00	6,463.24			0.37
	M-KM10	KM	6,986.66	---	7,148.44	220.00	285.00	65.00	6,895.94			
	M-N5A	N	6,899.87	-86.79	7,150.57	550.00	580.00	30.00	6,585.57			0.28
Central	M-FG2	FG	6,894.62	---	7,004.00	180.00	210.00	30.00	6,809.00			
	M-HJ4	HJ	6,879.34	-15.28	7,006.34	245.00	340.00	95.00	6,713.84	0.16		
	M-KM7	KM	6,846.60	-32.74	6,998.43	380.00	460.00	80.00	6,578.43		0.24	
	M-HJ5	HJ	6,911.77	---	7,045.52	220.00	300.00	80.00	6,785.52			
	M-KM8	KM	6,888.59	-23.18	7,045.45	340.00	420.00	80.00	6,665.45		0.19	
	MB-08	FG	6,838.55	---	7,008.94	230.00	260.00	30.00	6,763.94			
	MB-09	HJ	6,827.75	-10.8	7,010.34	340.00	370.00	30.00	6,655.34	0.10		
	LC27M	KM	6,820.94	-6.81	7,009.95	433.00	456.00	23.00	6,565.45		0.08	
South	M-FG1	FG	6,777.80	---	6,899.01	150.00	190.00	40.00	6,729.01			
	M-HJ1	HJ	6,747.73	-30.07	6,895.97	220.00	340.00	120.00	6,615.97	0.27		
	M-KM4A	KM	6,736.74	-10.99	6,896.27	365.00	450.00	85.00	6,488.77		0.09	
	M-N2	M/N	6,730.33	-6.41	6,901.42	659.00	720.00	61.00	6,211.92			0.02
	M-HJ2A	HJ	6,748.63	---	6,902.03	213.00	340.00	127.00	6,625.53			
	M-KM5A	KM	6,736.54	-12.09	6,904.56	370.00	470.00	100.00	6,484.56		0.09	
	M-HJ3	HJ	6,737.81	---	6,893.52	250.00	370.00	120.00	6,583.52			
	M-KM6	KM	6,730.51	-7.3	6,891.63	400.00	500.00	100.00	6,441.63		0.05	
	M-FG5	FG	6,796.41	---	6,928.59	268.00	300.00	32.00	6,644.59			
	M-HJ8	HJ	6,763.71	-32.7	6,926.92	327.00	430.00	103.00	6,548.42	0.34		
	M-KM11A	KM	6,755.22	-8.49	6,927.20	475.00	585.00	110.00	6,397.20		0.06	
	M-N6	N	6,738.31	-16.91	6,926.19	790.00	865.00	75.00	6,098.69			0.06

Table 3-1 - Well Completion Information (Page 1 of 2)

Well ID	Well Type	Completion Horizon	NAD 83 Northing	NAD 83 Easting	Distance from Pumping Well (ft)	Ground Elevation (ft amsl)	MP Elev. (ft amsl)	Depth To SWL[1] (ft TOC)	SWL Elev. (ft amsl)	Screened Interval (ft bgs)	Total Screen Length (ft)
Northern Cluster Monitor Wells											
M-KM9	Pumping Well	KM	604,036.79	2,229,994.86	0	7092.31	7,094.98	144.32	6,950.66	285-370	85
M-HJ6	Overlying Obs. Well	HJ	604,051.04	2,230,244.38	250	7,094.37	7,097.16	141.35	6,955.81	153-240	87
M-N4	Underlying Obs. Well	N	604,174.64	2,230,126.67	191	7,095.74	7,098.83	259.62	6,839.21	615-650	35
M-KM10	Observation Well	KM	608,598.34	2,229,803.58	4,566	7,148.44	7,150.80	164.14	6,986.66	220-285	65
M-N5A	Underlying Obs. Well	N	608,449.31	2,229,938.28	4,413	7,150.57	7,153.29	253.42	6,899.87	550-580	30
M-HJ5	Overlying Obs. Well	HJ	601,893.94	2,226,868.24	3,790	7,045.52	7,047.52	135.75	6,911.77	220-300	80
M-KM8	Observation Well	KM	601,980.87	2,226,775.70	3,820	7,045.45	7,047.95	159.36	6,888.59	340-420	80
M-FG2	Overlying Obs. Well	FG	598,179.70	2,225,723.62	7,249	7,004.00	7,004.42	109.80	6,894.62	180-210	30
M-HJ4	Overlying Obs. Well	HJ	598,329.96	2,225,724.97	7,127	7,006.34	7,006.89	127.55	6,879.34	245-340	95
M-KM7	Observation Well	KM	598,334.23	2,225,536.77	7,238	6,998.43	6,999.20	152.60	6,846.60	380-460	80
M-N3	Underlying Obs. Well	M/N	598,178.32	2,225,539.26	7,360	7,001.02	7,003.33	292.00	6,711.33	660-700	40
LC27M	Observation Well	KM	599,720.80	2,221,566.14	9,469	7,009.95	7,012.32	191.38	6,820.94	433-456	23
Center Cluster Monitor Wells											
M-KM7	Pumping Well	KM	598,334.23	2,225,536.77	0	6,998.43	6,999.20	152.6	6846.60	380-460	80
M-FG2	Overlying Obs. Well	FG	598,179.70	2,225,723.62	242	7,004.00	7,004.42	109.80	6,894.62	180-210	30
M-HJ4	Overlying Obs. Well	HJ	598,329.96	2,225,724.97	188	7,006.34	7,006.89	127.55	6,879.34	245-340	95
M-N3	Underlying Obs. Well	M/N	598,178.32	2,225,539.26	156	7,001.02	7,003.33	292.00	6,711.33	660-700	40
M-HJ5	Overlying Obs. Well	HJ	601,893.94	2,226,868.24	3,801	7,045.52	7,047.52	135.75	6,911.77	220-300	80
M-KM8	Observation Well	KM	601,980.87	2,226,775.70	3,851	7,045.45	7,047.95	159.36	6,888.59	340-420	80
MB-08	Overlying Obs. Well	FG	599,682.73	2,221,637.15	4,126	7,008.94	7,010.40	171.85	6,838.55	230-260	30
MB-09	Overlying Obs. Well	HJ	599,729.08	2,221,601.97	4,175	7,010.34	7,012.19	184.44	6,827.75	340-370	30
LC27M	Observation Well	KM	599,720.80	2,221,566.14	4,206	7,009.95	7,012.32	191.38	6,820.94	433-456	23
South Cluster Monitor Wells											
M-KM4A	Pumping Well	KM	591,042.42	2,217,802.71	0	6,896.27	6,897.94	161.20	6,736.74	365-450	85
M-FG1	Overlying Obs. Well	FG	590,915.99	2,217,934.64	183	6,899.01	6,901.90	124.10	6,777.80	150-190	40
M-HJ1	Overlying Obs. Well	HJ	590,917.89	2,217,809.69	125	6,895.97	6,897.55	149.82	6,747.73	220-340	120
M-N2	Underlying Obs. Well	M/N	591,019.25	2,217,935.84	135	6,901.42	6,904.27	173.94	6,730.33	659-720	61
M-HJ2A	Overlying Obs. Well	HJ	590,894.76	2,218,596.42	807	6,902.03	6,904.25	155.62	6,748.63	213-340	127
M-KM5A	Observation Well	KM	591,006.21	2,218,600.20	798	6,904.56	6,906.91	170.37	6,736.54	370-470	100
M-HJ3	Overlying Obs. Well	HJ	590,830.74	2,214,766.97	3,043	6,893.52	6,895.47	157.66	6,737.81	250-370	120
M-KM6	Observation Well	KM	590,941.64	2,214,767.41	3,037	6,891.63	6,894.09	163.58	6,730.51	400-500	100
M-FG5	Overlying Obs. Well	FG	593,787.33	2,218,219.75	2,776	6,928.59	6,930.05	133.64	6,796.41	268-300	32
M-HJ8	Overlying Obs. Well	HJ	593,693.99	2,218,207.02	2,682	6,926.92	6,929.86	166.15	6,763.71	327-430	103
M-KM11A	Observation Well	KM	593,775.19	2,218,048.35	2,744	6,927.20	6,930.39	175.17	6,755.22	475-585	110
M-N6	Underlying Obs. Well	N	593,682.11	2,218,050.04	2,651	6,926.19	6,928.58	190.27	6,738.31	790-865	75

Table 3-1 - Well Completion Information (Page 2 of 2)

Well ID	Well Type	Completion Horizon	NAD 83 Northing	NAD 83 Easting	Distance from Pumping Well (ft)	Ground Elevation (ft amsl)	MP Elev. (ft amsl)	Depth To SWL[1] (ft TOC)	SWL Elev. (ft amsl)	Screened Interval (ft bgs)	Total Screen Length (ft)
Center Cluster Monitor Wells											
M-HJ4	Pumping Well	HJ	598,329.96	2,225,724.97	0	7,006.34	7,006.89	127.55	6,879.34	245-340	95
M-FG2	Overlying Obs. Well	FG	598,179.70	2,225,723.64	150	7,004.00	7,004.42	109.80	6,894.62	180-210	30
M-KM7	Underlying Obs. Well	KM	598,334.23	2,225,536.77	188	6,998.43	6,999.20	152.60	6,846.60	380-460	80
M-N3	Underlying Obs. Well	M/N	598,178.32	2,225,539.26	240	7,001.02	7,003.33	292.00	6,711.33	660-700	40
M-HJ5	Observation Well	HJ	601,893.94	2,226,868.24	3,743	7,045.52	7,047.52	135.75	6,911.77	220-300	80
M-KM8	Underlying Obs. Well	KM	601,980.87	2,226,775.70	3,799	7,045.45	7,047.95	159.36	6,888.59	340-420	80
MB-08	Overlying Obs. Well	FG	599,682.73	2,221,637.15	4,306	7,008.94	7,010.40	171.85	6,838.55	230-260	30
MB-09	Observation Well	HJ	599,729.08	2,221,601.97	4,354	7,010.34	7,012.19	184.44	6,827.75	340-370	30
LC27M	Underlying Obs. Well	KM	599,720.80	2,221,566.14	4,385	7,009.95	7,012.32	191.38	6,820.94	433-456	23
South Cluster Monitor Wells											
M-HJ1	Pumping Well	HJ	590,917.89	2,217,809.69	0	6,895.97	6,897.55	149.82	6,747.73	220-340	120
M-FG1	Overlying Obs. Well	FG	590,915.99	2,217,934.64	125	6,899.01	6,901.90	124.10	6,777.80	150-190	40
M-KM4A	Underlying Obs. Well	KM	591,042.42	2,217,802.71	125	6,896.27	6,897.94	161.2	6,736.74	365-450	85
M-N2	Underlying Obs. Well	M/N	591,019.25	2,217,935.84	162	6,901.42	6,904.27	173.94	6,730.33	659-720	61
M-HJ2A	Observation Well	HJ	590,894.76	2,218,596.42	787	6,902.03	6,904.25	155.62	6,748.63	213-340	127
M-KM5A	Underlying Obs. Well	KM	591,006.21	2,218,600.20	795	6,904.56	6,906.91	170.37	6,736.54	370-470	100
M-HJ3	Observation Well	HJ	590,830.74	2,214,766.97	3,044	6,893.52	6,895.47	157.66	6,737.81	250-370	120
M-KM6	Underlying Obs. Well	KM	590,941.64	2,214,767.41	3,042	6,891.63	6,894.09	163.58	6,730.51	400-500	100
M-FG5	Overlying Obs. Well	FG	593,787.33	2,218,219.75	2,899	6,928.59	6,930.05	133.64	6,796.41	268-300	32
M-HJ8	Observation Well	HJ	593,693.99	2,218,207.02	2,804	6,926.92	6,929.86	166.15	6,763.71	327-430	103
M-KM11A	Underlying Obs. Well	KM	593,775.19	2,218,048.35	2,867	6,927.20	6,930.39	175.17	6,755.22	475-585	110
M-N6	Underlying Obs. Well	N	593,682.11	2,218,050.04	2,775	6,926.19	6,928.58	190.27	6,738.31	790-865	75

Notes:
amsl = above mean sea level
bgs = below ground surface
ft = feet
NAD = North American Datum
MP = Measurement Point
[1] = Measurements 3/10/2014

Table 6-1 - Pumping Rate Data (Page 1 of 5)

M-KM9 Test

Date / Time	Total Elapse Time (minutes)	Interval Time (minutes)	Instantaneous Flow Rate (gpm)	Volume Pumped / Period (gal)	Notes
9/4/2013 14:00	0	0	0.00	0	Begin Test
9/4/2013 14:05	5	5	46.55	233	
9/4/2013 14:06	6	1	46.55	47	
9/4/2013 14:09	9	3	46.55	140	
9/4/2013 14:10	10	1	46.55	47	
9/4/2013 14:20	20	10	46.55	466	
9/4/2013 14:40	40	20	46.37	927	
9/4/2013 14:45	45	5	46.09	230	
9/4/2013 14:55	55	10	46.46	465	
9/4/2013 15:00	60	5	46.41	232	
9/4/2013 15:30	90	30	46.23	1,387	
9/4/2013 16:24	144	54	46.14	2,492	
9/4/2013 17:55	235	91	46.27	4,211	
9/4/2013 19:45	345	110	46.09	5,070	
9/5/2013 6:13	973	628	46.14	28,976	
9/5/2013 7:44	1,064	91	46.05	4,191	
9/5/2013 11:08	1,268	204	46.00	9,384	
9/5/2013 15:56	1,556	288	45.68	13,156	
9/6/2013 9:02	2,582	1,026	45.23	46,406	
9/7/2013 12:40	4,240	1,658	44.69	74,096	
9/8/2013 12:41	5,681	1,441	45.09	64,975	
9/10/2013 9:45	8,385	2,704	44.60	120,598	
9/10/2013 14:50	8,660	275	44.70	12,293	
9/11/2013 8:55	9,775	1,115	44.46	49,573	
9/11/2013 13:55	10,075	300	44.55	13,365	End Test
Time Weighted Average (gpm)				**44.96**	

Note: Totalizer is a 1.5" turbine flow meter (NuFlo MC-II Flow Analyzer)

Table 6-1 - Pumping Rate Data (Page 2 of 5)

M-KM7 Test

Date / Time	Total Elapse Time (minutes)	Interval Time (minutes)	Totalizer Reading (gallons)	Instantaneous Flow Rate (gpm)	Volume Pumped / Period (gal)	Notes
11/5/2013 14:30	0	0	0	0.00	0	Begin Test
11/5/2013 14:31	1	1	44	42.40	42	
11/5/2013 14:32	2	1	85	42.20	42	
11/5/2013 14:35	5	3	211	40.00	120	
11/5/2013 14:37	7	2	309	41.80	84	
11/5/2013 14:40	10	3	410	41.30	124	
11/5/2013 14:45	15	5	615	41.10	206	
11/5/2013 14:50	20	5	818	40.90	205	
11/5/2013 15:00	30	10	1,230	40.70	407	
11/5/2013 15:30	60	30	2,440	40.20	1,206	
11/5/2013 16:30	120	60	4,832	40.10	2,406	
11/5/2013 17:50	200	80	8,048	39.70	3,176	
11/5/2013 20:00	330	130	13,248	40.90	5,317	
11/6/2013 6:15	945	615	38,030	39.70	24,416	
11/6/2013 7:40	1,030	85	41,430	40.20	3,417	
11/6/2013 9:10	1,120	90	45,050	40.10	3,609	
11/6/2013 11:45	1,275	155	51,260	40.00	6,200	
11/6/2013 13:45	1,395	120	56,015	39.70	4,764	
11/6/2013 15:50	1,520	125	61,070	40.20	5,025	
11/6/2013 19:10	1,720	200	69,090	40.20	8,040	
11/7/2013 6:07	2,377	657	95,300	39.70	26,083	
11/7/2013 13:15	2,805	428	112,350	39.70	16,992	
11/8/2013 7:30	3,900	1,095	156,090	39.60	43,362	
11/8/2013 13:35	4,265	365	170,818	40.10	14,637	
11/9/2013 10:15	5,505	1,240	220,600	39.90	49,476	
11/12/2013 9:35	9,785	4,280	393,070	40.10	171,628	End Test
				Time Weighted Average Pumping Rate (gpm)	**39.96**	

Note: Totalizer is a 1.5" turbine flow meter (NuFlo MC-II Flow Analyzer)

Table 6-1 - Pumping Rate Data (Page 3 of 5)

M-KM4A Test

Date / Time	Total Elapse Time (minutes)	Interval Time (minutes)	Totalizer Reading (gallons)	Instantaneous Flow Rate (gpm)	Volume Pumped / Period (gal)	Notes
11/19/2013 11:00	0	0	0	0.00	0	Begin Test
11/19/2013 11:03	3	3	145	50.10	150	
11/19/2013 11:04	4	1	194	51.50	52	
11/19/2013 11:05	5	1	243	51.67	52	
11/19/2013 11:10	10	5	501	51.70	259	
11/19/2013 11:15	15	5	760	51.70	259	
11/19/2013 11:30	30	15	1,537	51.90	779	
11/19/2013 11:40	40	10	2,056	51.95	520	
11/19/2013 11:45	45	5	2,355	60.07	300	
11/19/2013 12:00	60	15	3,255	59.97	900	
11/19/2013 12:20	80	20	4,451	59.71	1,194	
11/19/2013 12:30	90	10	5,052	60.02	600	
11/19/2013 12:40	100	10	5,653	61.75	618	
11/19/2013 12:30	110	10	6,262	61.66	617	
11/19/2013 13:00	120	10	6,880	61.70	617	
11/19/2013 13:50	170	50	9,990	61.79	3,090	
11/19/2013 15:30	270	100	16,218	61.52	6,152	
11/19/2013 17:30	390	120	23,535	61.25	7,350	
11/20/2013 6:25	1,165	775	71,110	61.25	47,469	
11/20/2013 10:00	1,380	215	84,250	61.25	13,169	
11/20/2013 12:05	1,505	125	91,950	61.25	7,656	
11/21/2013 9:18	2,778	1,273	169,887	61.16	77,857	
11/21/2013 14:48	3,108	330	189,999	61.16	20,183	
11/22/2013 9:05	4,205	1,097	256,905	61.16	67,093	
11/22/2013 11:00	4,320	115	264,039	61.16	7,033	End Test
Time Weighted Average Pumping Rate (gpm)					**61.10**	

Note: Totalizer is a 1.5" turbine flow meter (NuFlo MC-II Flow Analyzer)

Table 6-1 - Pumping Rate Data (Page 4 of 5)

M-HJ4 Test

Date / Time	Total Elapse Time (minutes)	Interval Time (minutes)	Totalizer Reading (gallons)	Instantaneous Flow Rate (gpm)	Volume Pumped / Period (gal)	Notes
12/2/2013 10:00	0	0	0	0.00	0	Begin Test
12/2/2013 10:05	5	5	193	39.50	198	
12/2/2013 10:10	10	5	393	40.10	201	
12/2/2013 10:15	15	5	600	39.90	200	
12/2/2013 10:20	20	5	791	39.80	199	
12/2/2013 10:30	30	10	1,192	39.70	397	
12/2/2013 10:40	40	10	1,595	40.80	408	
12/2/2013 11:00	60	20	2,415	41.00	820	
12/2/2013 12:30	150	90	6,060	40.80	3,672	
12/2/2013 13:50	230	80	9,365	40.40	3,232	
12/2/2013 14:50	290	60	11,765	40.40	2,424	
12/3/2013 13:00	1,620	1,330	64,970	39.40	52,402	
12/4/2013 8:30	2,790	1,170	109,855	38.90	45,513	
12/4/2013 9:50	2,870	80	113,160	38.90	3,112	
12/4/2013 14:20	3,140	270	124,059	40.30	10,881	
12/5/2013 9:03	4,263	1,123	170,000	39.70	44,583	
12/5/2013 13:35	4,535	272	181,145	41.20	11,206	
12/7/2013 13:57	7,437	2,902	304,015	40.20	116,660	End Test
Time Weighted Average Pumping Rate (gpm)					**39.82**	

Note: Totalizer is a 1.5" turbine flow meter (NuFlo MC-II Flow Analyzer)

Table 6-1 - Pumping Rate Data (Page 5 of 5)

M-HJ1 Test

Date / Time	Total Elapse Time (minutes)	Interval Time (minutes)	Totalizer Reading (gallons)	Instantaneous Flow Rate (gpm)	Volume Pumped / Period (gal)	Notes
12/13/2013 10:00	0	0	0	0.00	0	Begin Test
12/13/2013 10:06	6	6	183	40.97	246	
12/13/2013 10:10	10	4	346	40.97	164	
12/13/2013 10:15	15	5	568	40.97	205	
12/13/2013 10:20	20	5	756	41.00	205	
12/13/2013 10:30	30	10	1,166	40.97	410	
12/13/2013 11:00	60	30	2,396	40.97	1,229	
12/13/2013 12:39	159	99	6,495	40.83	4,042	
12/13/2013 14:30	270	111	10,982	40.78	4,527	
12/14/2013 12:00	1,560	1,290	63,524	40.78	52,606	
12/16/2013 8:50	4,050	2,490	172,880	40.47	100,770	
12/17/2013 8:30	5,670	1,620	230,350	40.42	65,480	
12/17/2013 10:00	5,760	90	233,970	40.42	3,638	End Test
Time Weighted Average Pumping Rate (gpm)					**40.54**	

Note: Totalizer is a 1.5" turbine flow meter (NuFlo MC-II Flow Analyzer)

Table 6-2 - Observed Drawdown (Page 1 of 3)

KM Horizon Test

Well ID	Well Type	Completion Horizon	Distance from Pumping Well (ft)	Drawdown (ft)
M-KM9	Pumping Well	KM	0	94.94
Northern Cluster Monitor Wells				
M-HJ6	Overlying Obs. Well	HJ	249	0.04
M-N4	Underlying Obs. Well	N	180	-0.35
M-KM10	Observation Well	KM	4,551	0
M-N5A	Underlying Obs. Well	N	4,451	0
M-HJ5	Overlying Obs. Well	HJ	3,799	0
M-KM8	Observation Well	KM	3,828	1.67
M-FG2	Overlying Obs. Well	FG	7,261	0
M-HJ4	Overlying Obs. Well	HJ	7,139	0
M-KM7	Observation Well	KM	7,250	0
LC27M	Observation Well	KM	9,474	0

KM Horizon Test

Well ID	Well Type	Completion Horizon	Distance from Pumping Well (ft)	Drawdown (ft)
M-KM7	Pumping Well	KM	0	87.80
Center Cluster Monitor Wells				
M-FG2	Overlying Obs. Well	FG	243	0*
M-HJ4	Overlying Obs. Well	HJ	188	0*
M-N3	Underlying Obs. Well	M/N	156	0*
M-KM8	Observation Well	KM	3,851	2.48
LC27M	Observation Well	KM	4,206	6.20

Note:
* = Barometric Corrected Value
Negative sign = water level rise
ft = feet

Table 6-2 - Observed Drawdown (Page 2 of 3)

KM Horizon Test

Well ID	Well Type	Completion Horizon	Distance from Pumping Well (ft)	Drawdown (ft)
M-KM4A	Pumping Well	KM	0	26.33
South Cluster Monitor Wells				
M-FG1	Overlying Obs. Well	FG	183	0*
M-HJ1	Overlying Obs. Well	HJ	125	0*
M-N2	Underlying Obs. Well	M/N	135	0*
M-HJ2A	Overlying Obs. Well	HJ	807	0*
M-KM5A	Observation Well	KM	799	10.28
M-HJ3	Overlying Obs. Well	HJ	3,043	0*
M-KM6	Observation Well	KM	3,037	4.20
M-FG5	Overlying Obs. Well	FG	2,776	0*
M-HJ8	Overlying Obs. Well	HJ	2,682	0*
M-KM11A	Observation Well	KM	2,744	1.52
M-N6	Underlying Obs. Well	N	2,651	0*

Note:
* = Barometric Corrected Value
ft = feet

Table 6-2 - Observed Drawdown (Page 3 of 3)

HJ Horizon Test

Well ID	Well Type	Completion Horizon	Distance from Pumping Well (ft)	Drawdown (ft)
M-HJ4	Pumping Well	HJ	0	63.90
Center Cluster Monitor Wells				
M-FG2	Overlying Obs. Well	FG	151	0.57[1]
M-KM7	Underlying Obs. Well	KM	188	-0.72
M-N3	Underlying Obs. Well	M/N	240	0*
M-HJ5	Observation Well	HJ	3,743	0.81*
M-KM8	Underlying Obs. Well	KM	3,799	0*
MB-08	Overlying Obs. Well	FG	4,307	0*
MB-09	Observation Well	HJ	4,355	0.57*[1]
LC27M	Underlying Obs. Well	KM	4,389	0*

HJ Horizon Test

Well ID	Well Type	Completion Horizon	Distance from Pumping Well (ft)	Drawdown (ft)
M-HJ1	Pumping Well	HJ	0	16.00
South Cluster Monitor Wells				
M-FG1	Overlying Obs. Well	FG	125	0.22*
M-KM4A	Underlying Obs. Well	KM	125	0*
M-N2	Underlying Obs. Well	M/N	162	0*
M-HJ2A	Observation Well	HJ	787	6.91
M-KM5A	Underlying Obs. Well	KM	795	0*
M-HJ3	Observation Well	HJ	3,044	2.28
M-KM6	Underlying Obs. Well	KM	3,042	0*
M-FG5	Overlying Obs. Well	FG	2,899	0*
M-HJ8	Observation Well	HJ	2,804	0.25*
M-KM11A	Underlying Obs. Well	KM	2,867	0*
M-N6	Underlying Obs. Well	N	2,775	0*

Note:
* = Barometric Corrected Value
Negative sign = water level rise
ft = feet
[1] Drawdown recorded 114 hours post pump shut-in.

Table 7-1 - Pump Test Analytical Results

HJ Horizon

South Cluster		Theis Drawdown			Theis Recovery	
Well	Well Type	Transmissivity (ft^2/day)	Storativity	Hydraulic Conductivity (ft/day)	Transmissivity (ft^2/day)	Hydraulic Conductivity (ft/day)
M-HJ1	Pumped Well	---	---	---	318	---
M-HJ2A	Observation Well	222	2.89×10^{-4}	1.85	286	2.38
M-HJ3	Observation Well	384	1.15×10^{-4}	3.20	286	2.38

Central Cluster		Theis Drawdown			Theis Recovery	
Well	Well Type	Transmissivity (ft^2/day)	Storativity	Hydraulic Conductivity (ft/day)	Transmissivity (ft^2/day)	Hydraulic Conductivity (ft/day)
M-HJ4	Pumped Well	---	---	---	54	---
M-HJ5	Observation Well	171	3.03×10^{-4}	1.80	---	---
MB-09	Observation Well	74	2.11×10^{-4}	0.78	---	---

KM Horizon

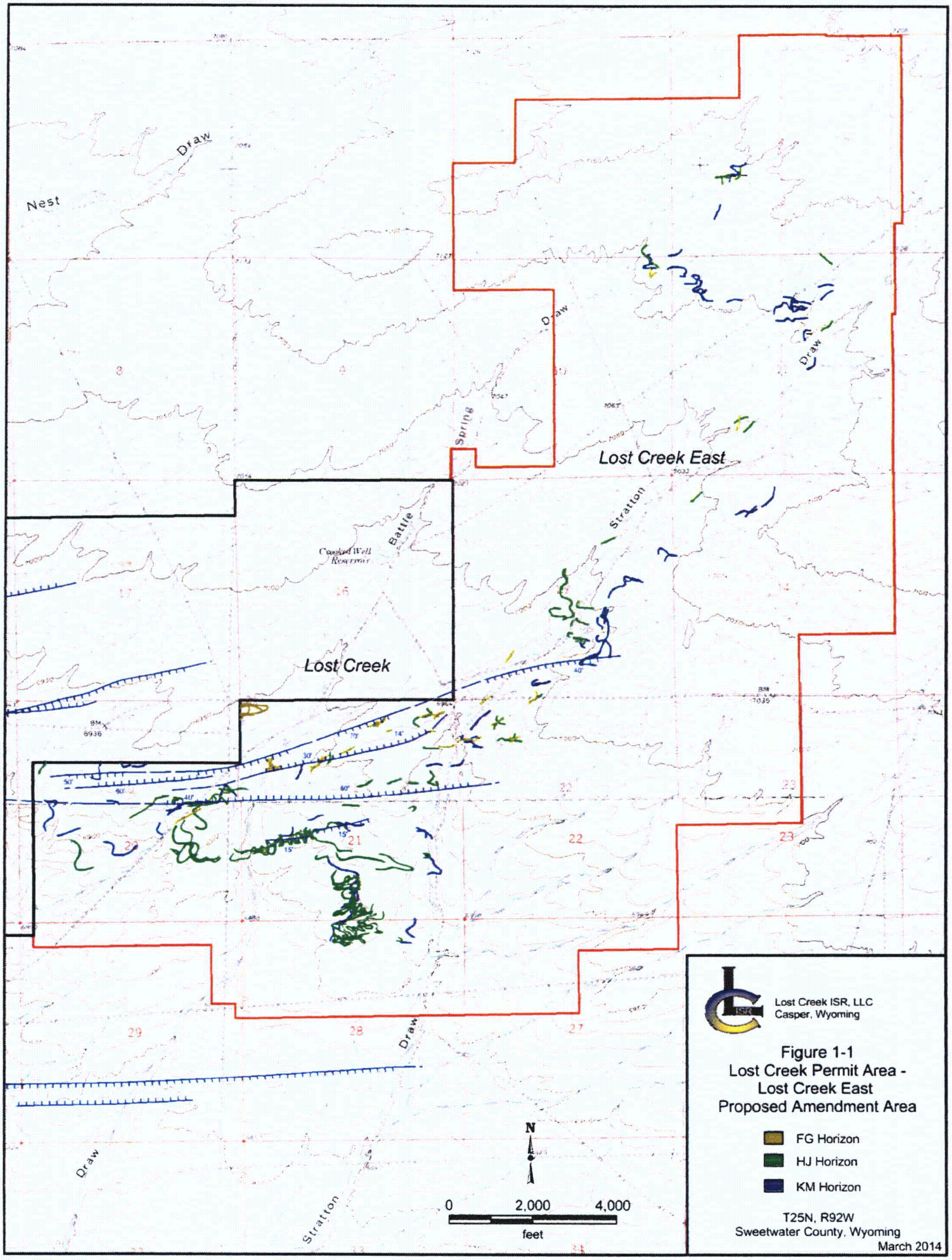
Central Cluster		Theis Drawdown			Theis Recovery	
Well	Well Type	Transmissivity (ft^2/day)	Storativity	Hydraulic Conductivity (ft/day)	Transmissivity (ft^2/day)	Hydraulic Conductivity (ft/day)
M-KM7	Pumped Well	---	---	---	118	---
LC27M	Observation Well	86	4.53×10^{-5}	1.07	---	---

North Cluster		Theis Drawdown			Theis Recovery	
Well	Well Type	Transmissivity (ft^2/day)	Storativity	Hydraulic Conductivity (ft/day)	Transmissivity (ft^2/day)	Hydraulic Conductivity (ft/day)
M-KM9	Pumped Well	---	---	---	113	---
M-KM8	Observation Well	150	1.97×10^{-2}	1.76	---	---

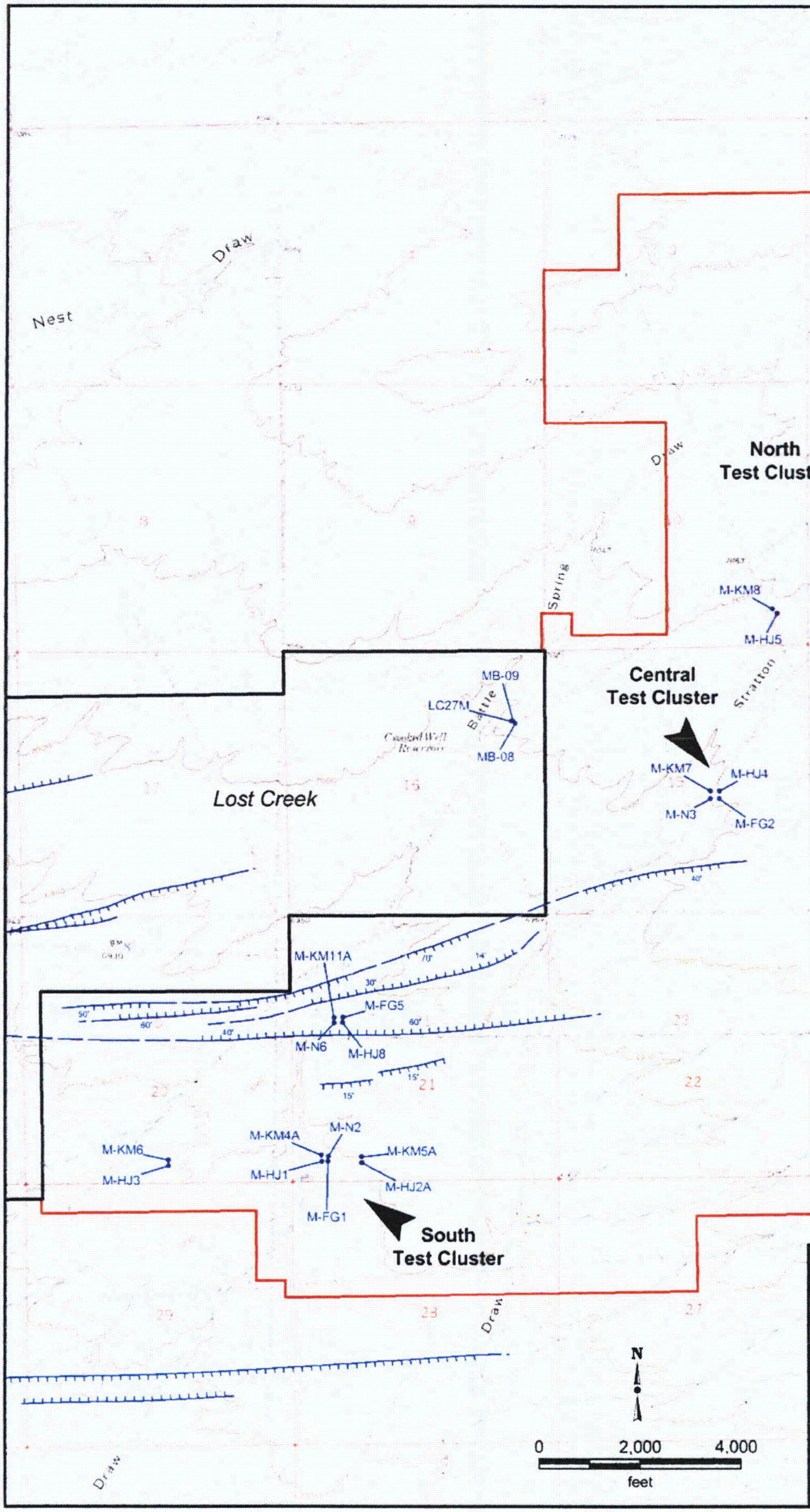
South Cluster		Theis Drawdown			Theis Recovery	
Well	Well Type	Transmissivity (ft^2/day)	Storativity	Hydraulic Conductivity (ft/day)	Transmissivity (ft^2/day)	Hydraulic Conductivity (ft/day)
M-KM4A	Pumped Well*	---	---	---	---	---
M-KM5A	Observation Well	251	1.86×10^{-4}	2.28	157	1.43
M-KM6	Observation Well	249	7.35×10^{-5}	2.27	359	3.26

* = Pumping Rate Increased During Test

FIGURES



Nest
Draw
Draw
Spring
Draw
Lost Creek East
Stratton
Battle
Crooked Well Reservoir
Lost Creek
Draw
Draw
Stratton
8
9
17
16
14
20
21
22
23
29
28
27
N
0
2,000
4,000
feet
Lost Creek ISR, LLC
Casper, Wyoming
Figure 1-1
Lost Creek Permit Area -
Lost Creek East
Proposed Amendment Area
FG Horizon
HJ Horizon
KM Horizon
T25N, R92W
Sweetwater County, Wyoming
March 2014

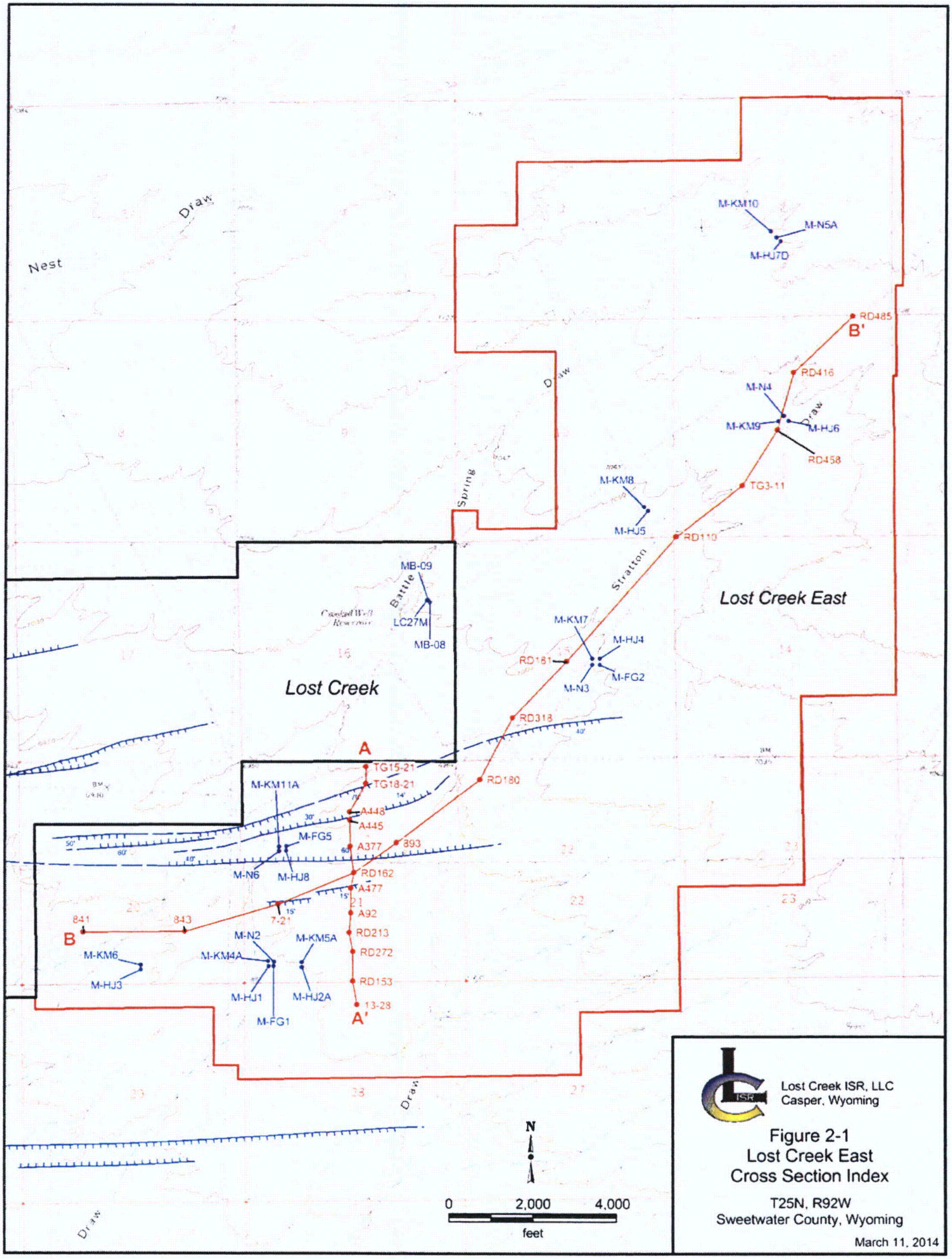


Lost Creek ISR, LLC
Casper, Wyoming

Figure 1-2
Lost Creek East
Pump Test Clusters

T25N, R92W
Sweetwater County, Wyoming

March 11, 2014



Nest
Draw
Draw
Spring
Battle
Stratton
Draw
Draw
Draw
Crooked Well Reservoir
Lost Creek
Lost Creek East
A
A'
B
B'
TG15-21
TG18-21
A448
A445
A377
893
RD162
A477
7-21
A92
RD213
RD272
RD153
13-28
841
843
RD180
RD318
RD161
RD110
TG3-11
RD458
RD416
RD485
M-KM10
M-N5A
M-HJ7D
M-N4
M-KM9
M-HJ6
M-KM8
M-HJ5
MB-09
LC27M
MB-08
M-KM7
M-HJ4
M-N3
M-FG2
M-KM11A
M-FG5
M-N6
M-HJ8
M-N2
M-KM4A
M-HJ1
M-FG1
M-KM5A
M-HJ2A
M-KM6
M-HJ3
16
17
15
14
21
22
23
28
27
29
N
0
2,000
4,000
feet
Lost Creek ISR, LLC
Casper, Wyoming
Figure 2-1
Lost Creek East
Cross Section Index
T25N, R92W
Sweetwater County, Wyoming
March 11, 2014

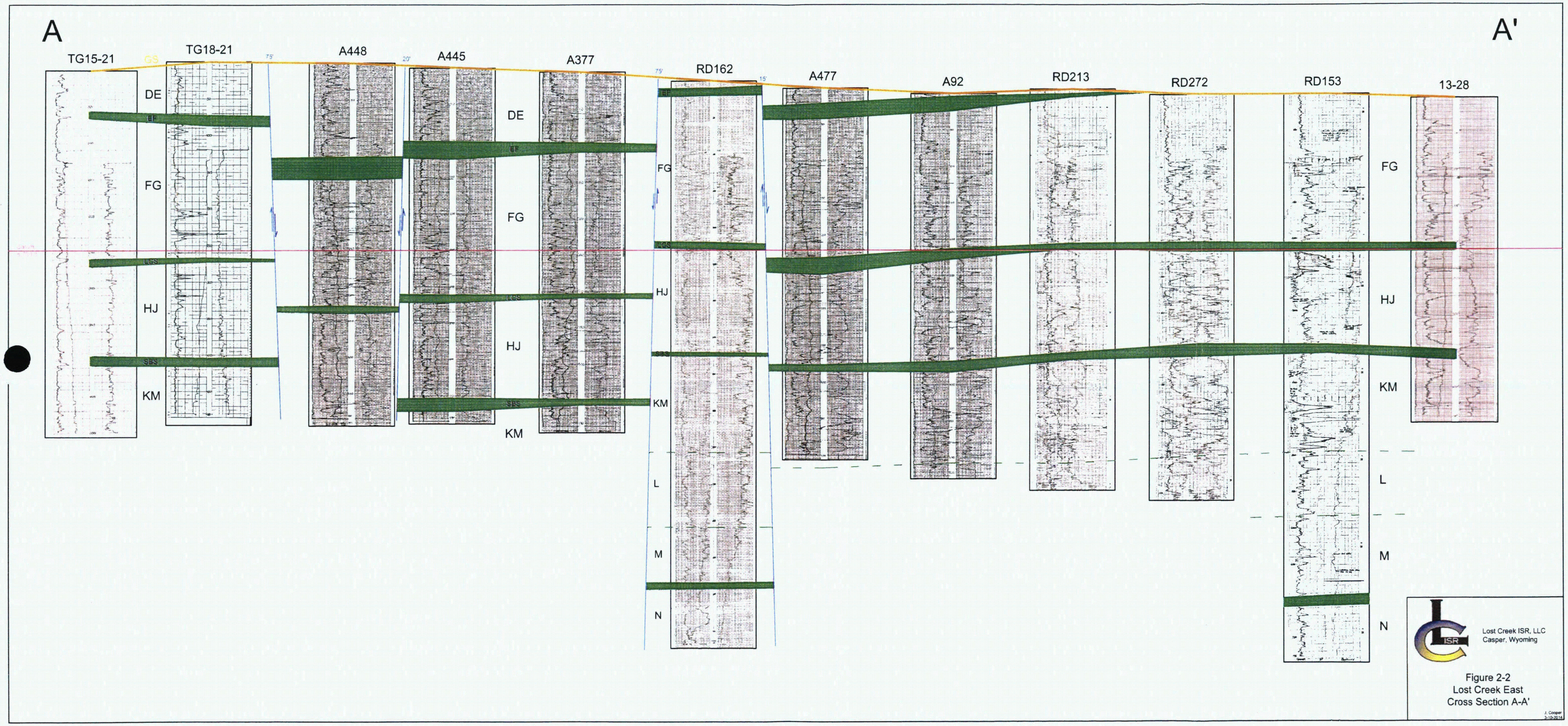


Figure 2-2
Lost Creek East
Cross Section A-A'

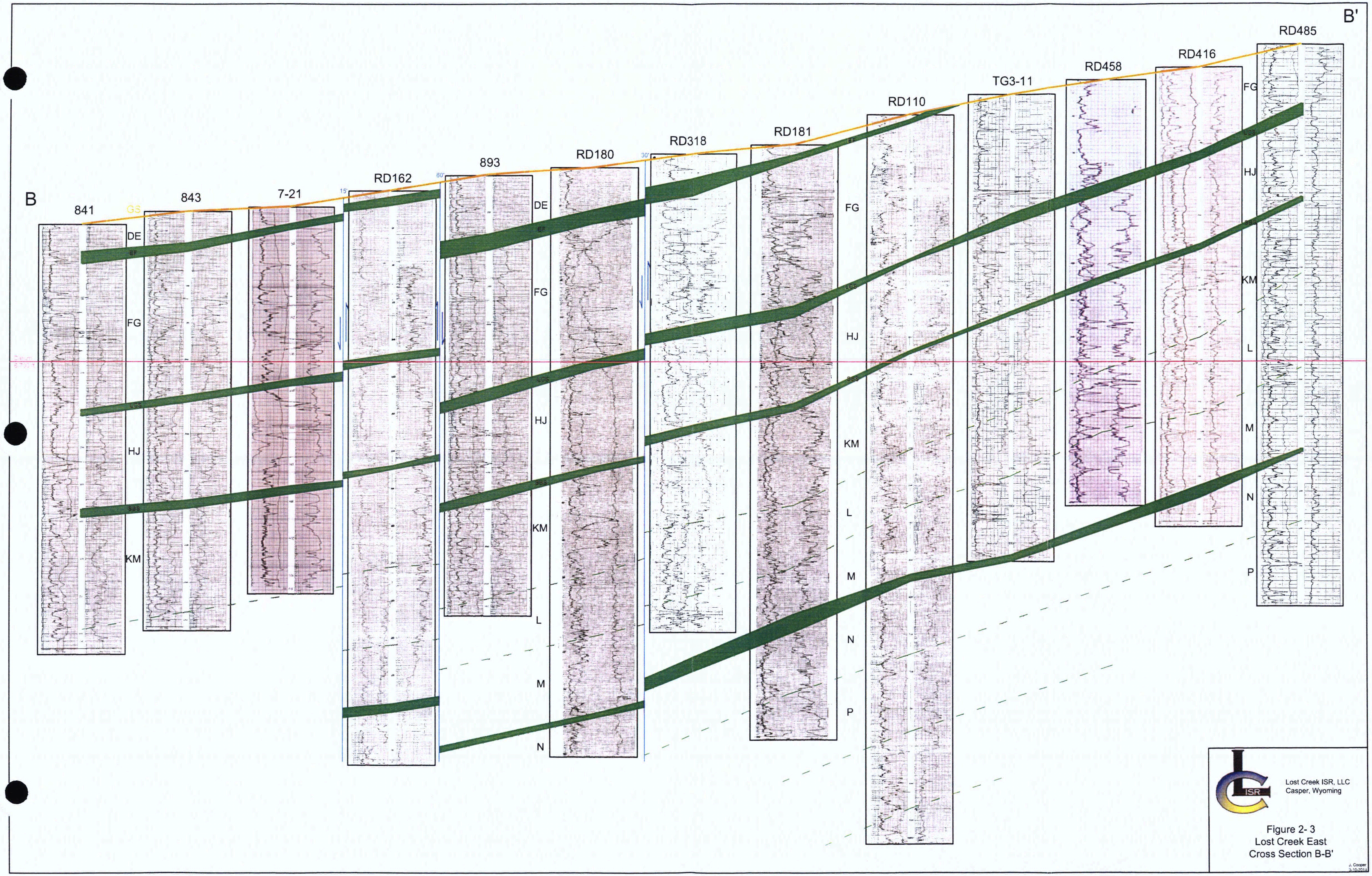
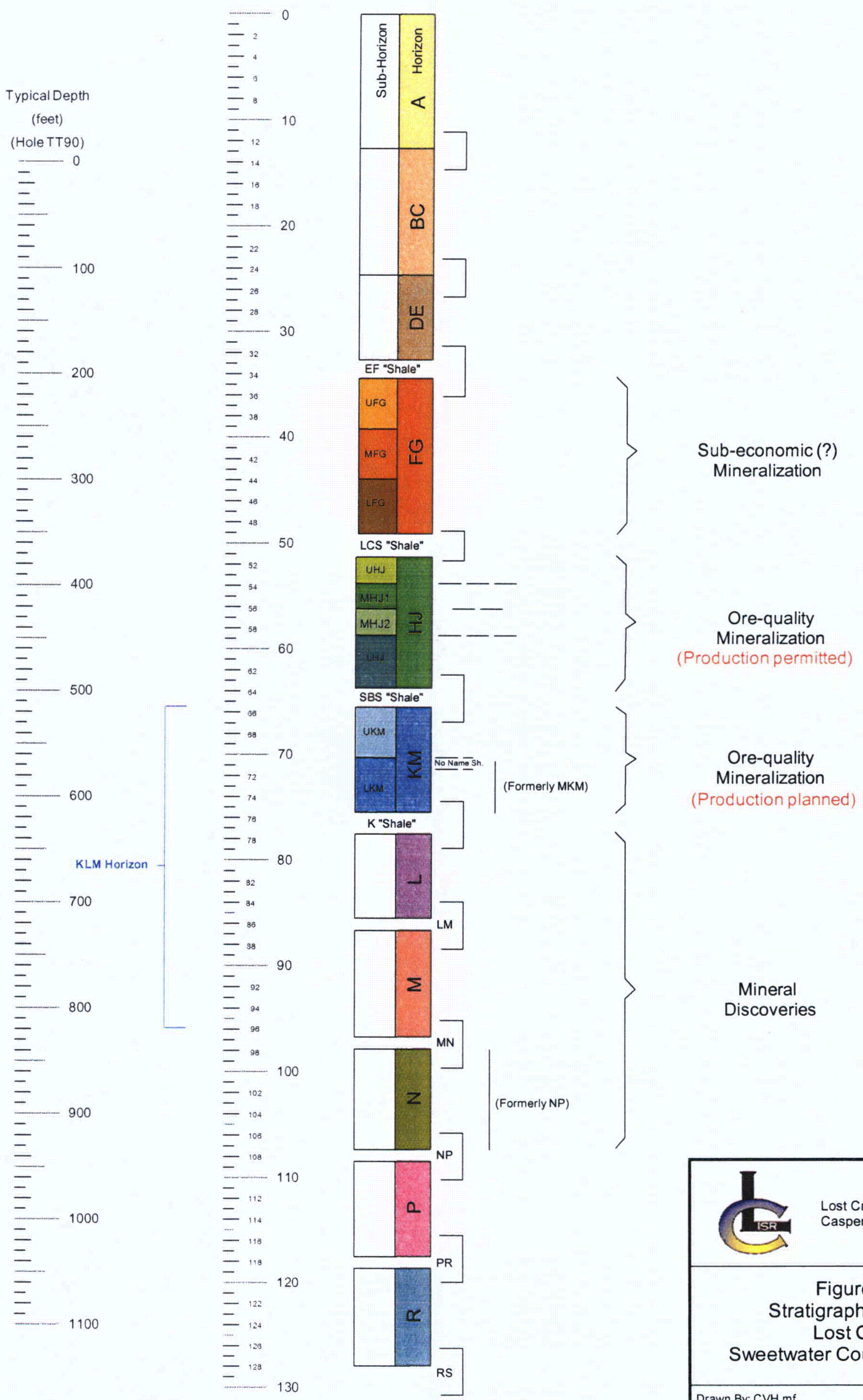


Figure 2- 3
Lost Creek East
Cross Section B-B'

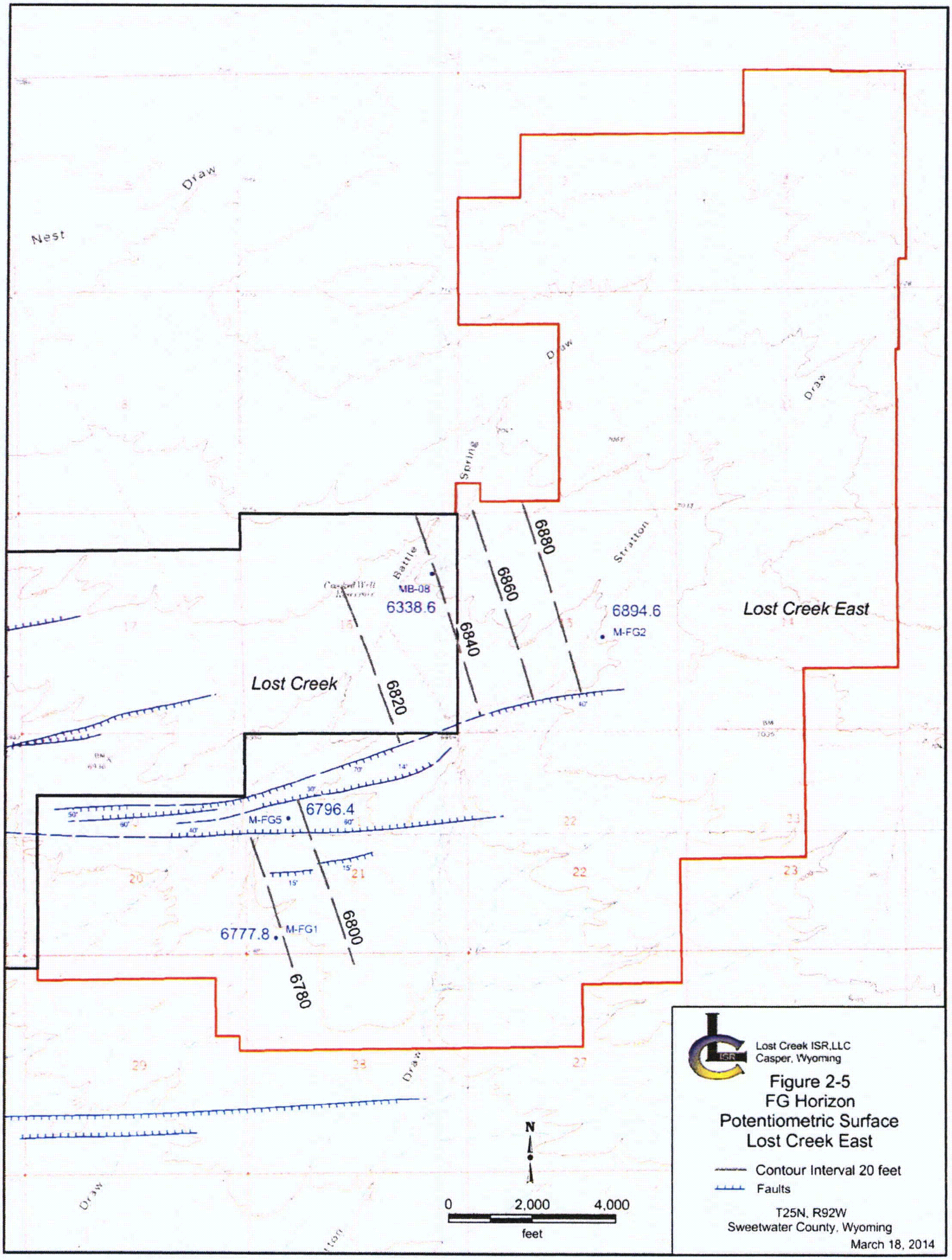


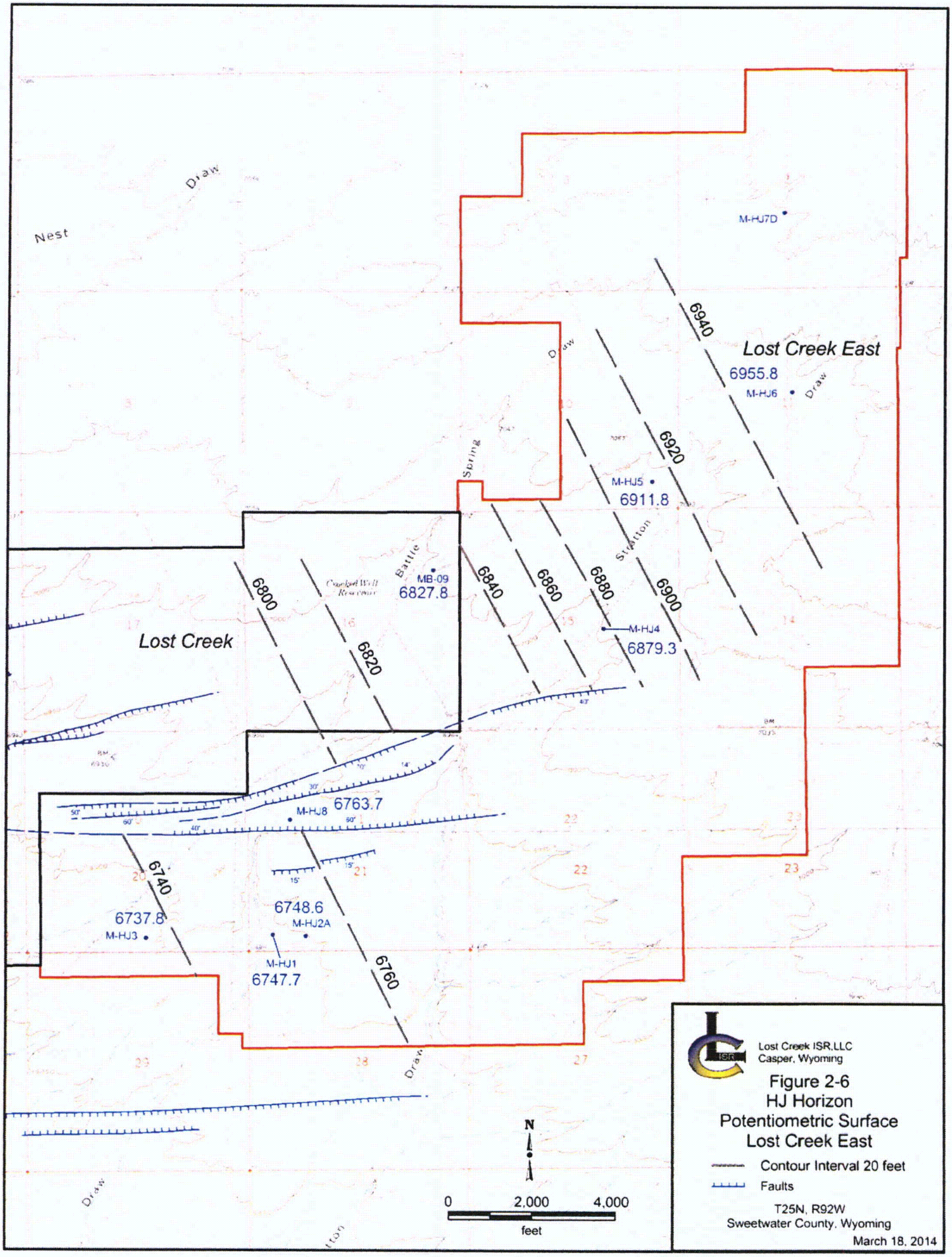
Lost Creek ISR, LLC
Casper, Wyoming

Figure 2-4
Stratigraphic Column
Lost Creek
Sweetwater County, Wyoming

Drawn By: CVH.mf

March 2014


Nest
Draw
Draw
Draw
Spring
Battle
Stratton
MB-08
6338.6
6894.6
M-FG2
Lost Creek East
Lost Creek
6880
6860
6840
6820
6796.4
M-FG5
6800
6777.8
M-FG1
6780
17
16
20
21
22
23
29
28
27
Lost Creek ISR, LLC
Casper, Wyoming
Figure 2-5
FG Horizon
Potentiometric Surface
Lost Creek East
Contour Interval 20 feet
Faults
N
0
2,000
4,000
feet
T25N, R92W
Sweetwater County, Wyoming
March 18, 2014



Lost Creek East
Lost Creek
6955.8
M-HJ6
M-HJ7D
M-HJ5
6911.8
MB-09
6827.8
M-HJ4
6879.3
M-HJ8
6763.7
6737.8
M-HJ3
6748.6
M-HJ2A
M-HJ1
6747.7
6940
6920
6900
6880
6860
6840
6820
6800
6760
6740
Nest
Draw
Spring
Battle
Stratton
Lost Creek ISR, LLC
Casper, Wyoming
Figure 2-6
HJ Horizon
Potentiometric Surface
Lost Creek East
Contour Interval 20 feet
Faults
N
0
2,000
4,000
feet
T25N, R92W
Sweetwater County, Wyoming
March 18, 2014

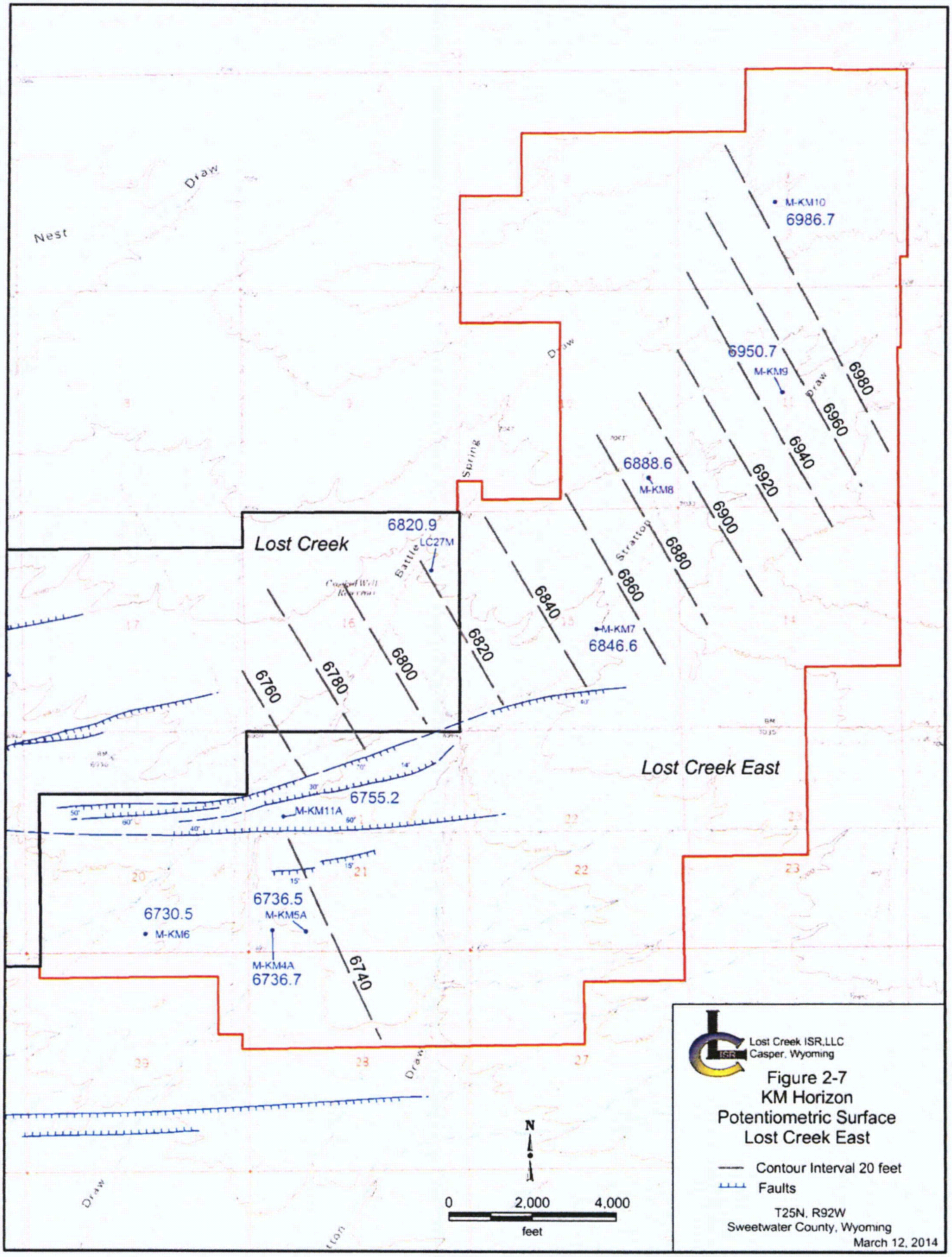
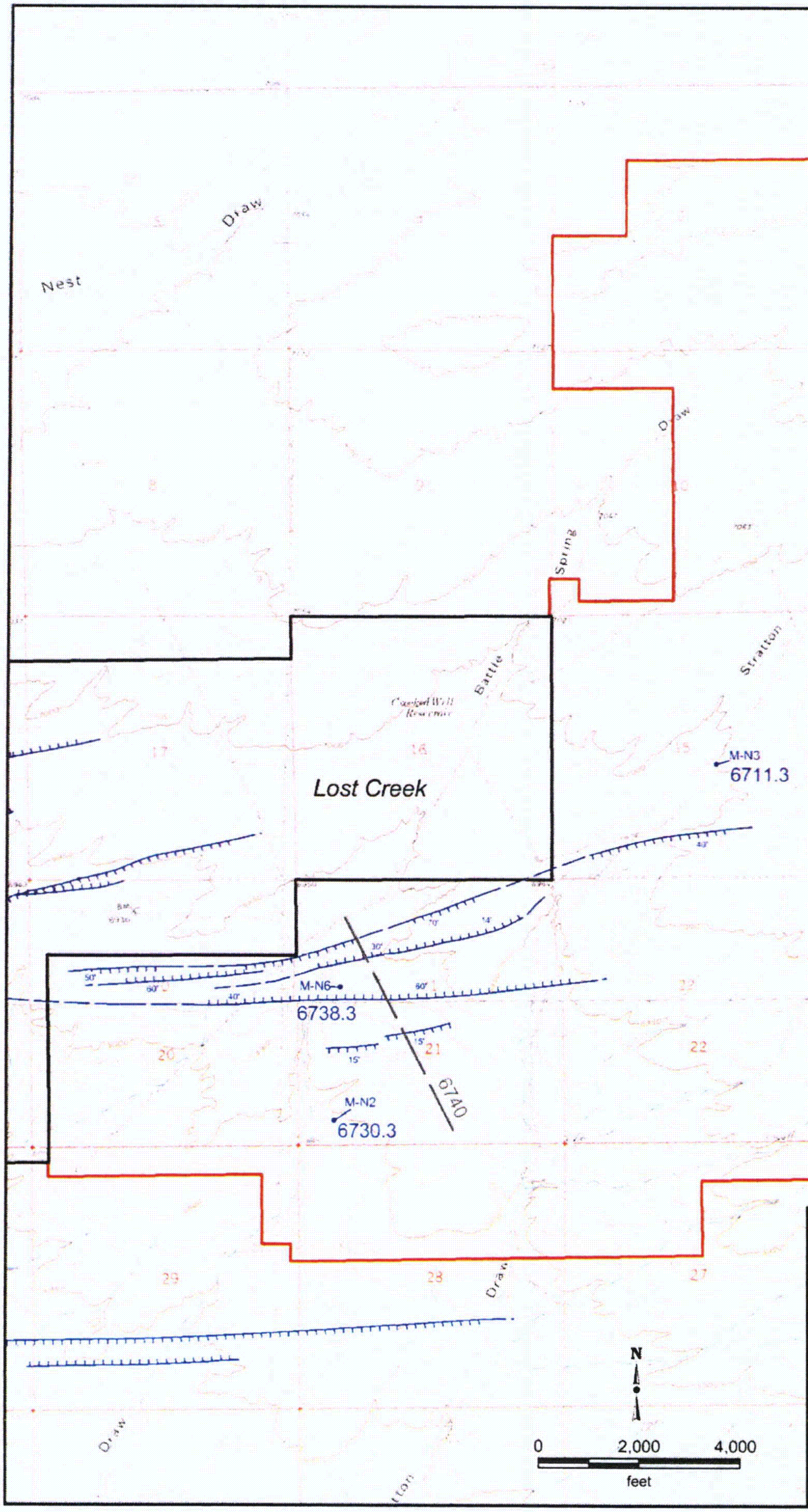


Figure 2-7
KM Horizon
Potentiometric Surface
Lost Creek East



Lost Creek ISR, LLC
Casper, Wyoming

Figure 2-8
N Horizon
Potentiometric Surface
Lost Creek East

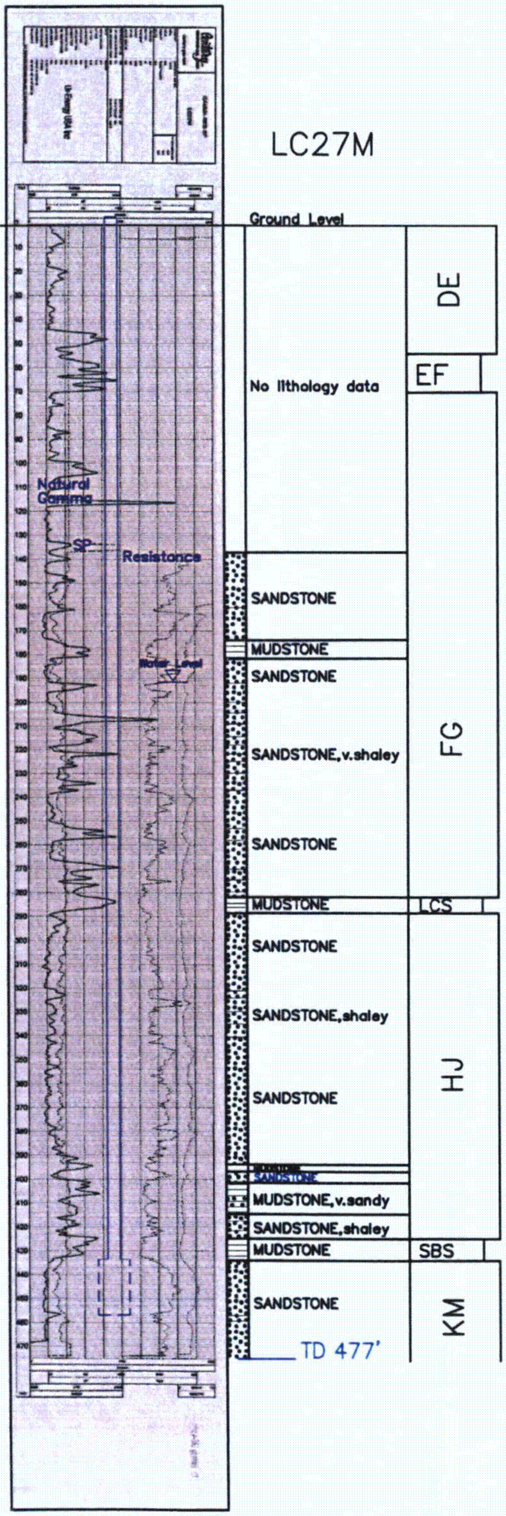
Contour Interval 20 feet
Faults

T25N, R92W
Sweetwater County, Wyoming
March 2014

APPENDIX A
Well Completion Logs

LC27M

Vertical Scale: 1"=50'



Lost Creek ISR, LLC

WELL COMPLETION REPORT

WELL # LC27M SEO # 175266 Date Drilled: 8-30-06

Location: E 2,221,567 / N 599,721 (NAD 83)

Ground Elev: 7010 Measure Point Elev: 7012.3

TD: 477 ft. Hole Dia.: 7-7/8"

CASED to: 433' Casing: PVC SDR17 ID: 4.5" OD: 5" (nominal)

GROUT: Portland Cement – Type I/II
Pumped thru casing, displaced to surface with water

COMPLETION Aquifer: UKM Sand

Static Water Level: Depth 191.4' Elev: 6820.9'
03/10/14

UNDERREAM: Blade Dia: 10-1/2"
Intervals: from 433' to 456' /length 23'
from ____ to ____ /length ____

OPEN-HOLE COMPLETION

Description	Depth From	Depth To	Elev. From	Elev. To	Length
K-packer	N/A				
Open-hole	433'	456'	6577'	6554'	23'

SCREEN SPECIFICATIONS:
Slot: ____ Composition N/A

FILTER PACKING:
Volume: ____ (bags)(ft^3) Sand Specs. ____
Method: N/A

WELL STIMULATION: Method Not Measured
Yield: Good / Moderate / Poor

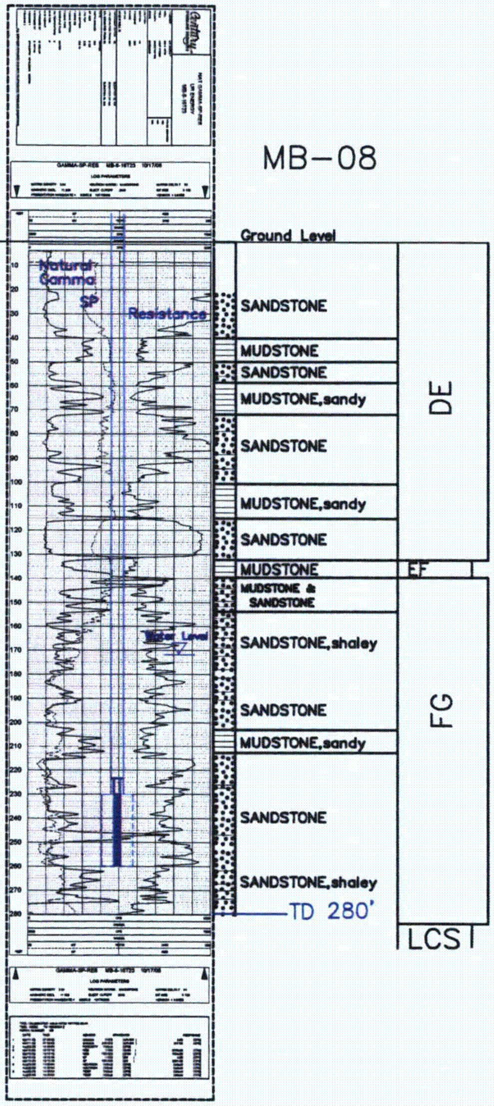
PROFESSIONAL GEOLOGIST
MYRON N. BENDA
PG 806
WYOMING

Myron N. Benda
March 2014

LC27M

Vertical Scale: 1"=50'

MB-08



Lost Creek ISR, LLC

WELL COMPLETION REPORT

WELL # MB-08 SEO # 188859 Date Drilled: 10-17-08

Location: E 2,221,637 / N 599,683 (NAD 83)

Ground Elev: 7008.9' Measure Point Elev: 7010.4'

TD: 280' Hole Dia.: 7-7/8"

CASED to: 230' Casing: PVC SDR17 ID: 4.5" OD: 5" (nominal)

GROUT: Portland Cement - Type I/II
Pumped thru casing, displaced to surface with water

COMPLETION Aquifer: LFG Sand

Static Water Level: Depth 171.9' Elev: 6838.5'
03/10/14

UNDERREAM: Blade Dia: 10.5"
Intervals: from 230' to 260' /length 30'
from ____ to ____ /length ____

SCREEN LINER ASSEMBLY

Description	Depth From	Depth To	Elev. From	Elev. To	Length
K-packer	223'	230'			
Screen	230'	260'	6779'	6749'	30'

SCREEN SPECIFICATIONS:
Slot: 0.020" Composition 3" PVC

FILTER PACKING:
Volume: ____ (bags)(ft^3) Sand Specs. ____
Method: N/A

WELL STIMULATION: Method Airlift
Yield: Good / Moderate / Poor

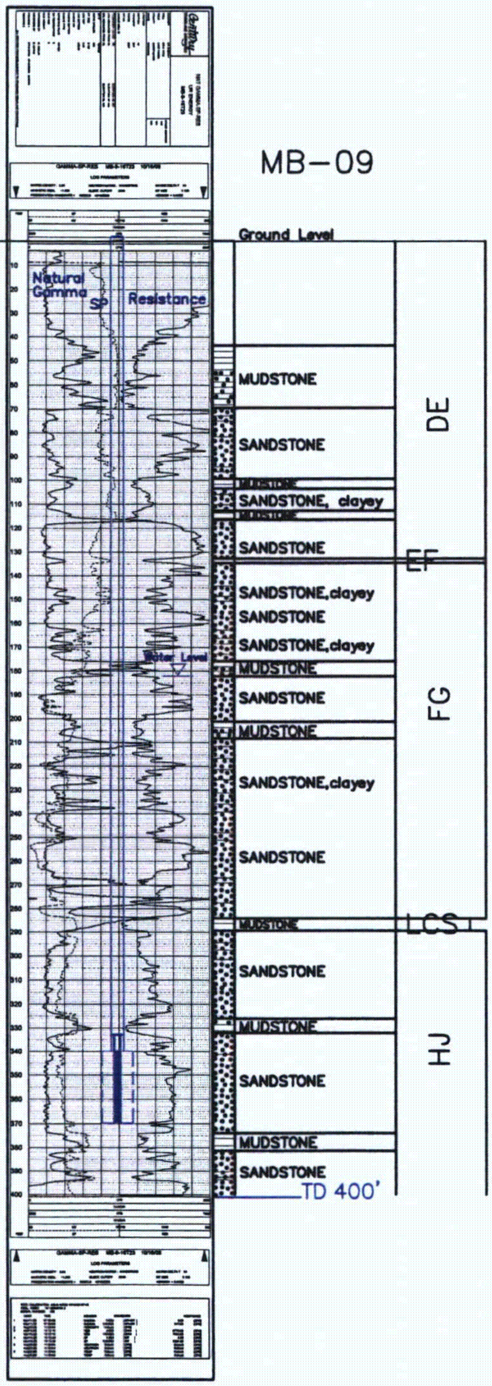
Not Measured

PROFESSIONAL GEOLOGIST
MYRON N. BENDA
PG-3806
WYOMING

Myron N. Benda
March 2014

Vertical Scale: 1"=50'

MB-09



Lost Creek ISR, LLC

WELL COMPLETION REPORT

WELL # MB-09 SEO # 188860 Date Drilled: 10-16-08

Location: E 2,221,602 / N 599,729 (NAD 83)

Ground Elev: 7010.3 Measure Point Elev: 7012.2

TD: 400 ft. Hole Dia.: 7-7/8"

CASED to: 340' Casing: PVC SDR17 ID: 4.5" OD: 5" (nominal)

GROUT: Portland Cement – Type I/II
Pumped thru casing, displaced to surface with water

COMPLETION Aquifer: HJ Sand

Static Water Level: Depth 188.4' Elev: 6823.8'
03/10/14

UNDERREAM: Blade Dia: 10-1/2"
Intervals: from 340' to 370' /length 30'
from ____ to ____ /length ____

SCREEN LINER ASSEMBLY

Description	Depth From	Depth To	Elev. From	Elev. To	Length
K-packer	333'	340'			
Screen	340'	370'	6670'	6640'	30'

SCREEN SPECIFICATIONS:
Slot: 0.020" Composition 3" PVC

FILTER PACKING:
Volume: ____ (bags)(ft^3) Sand Specs. ____
Method: N/A

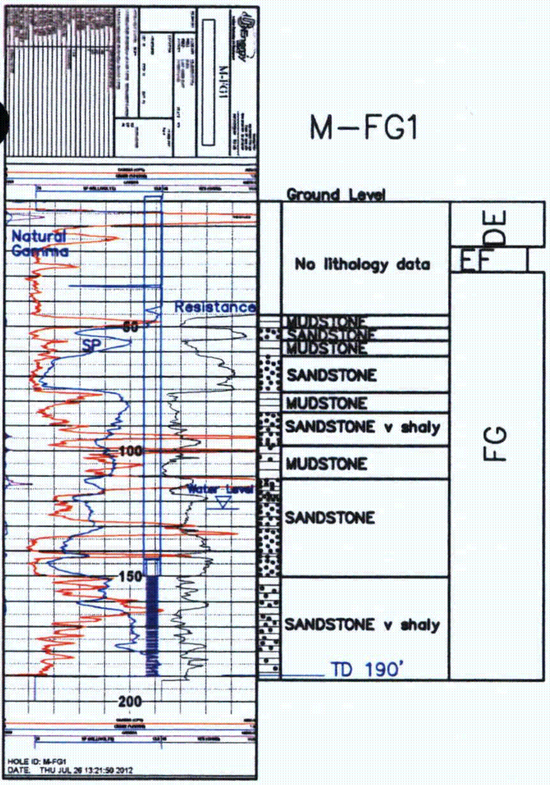
WELL STIMULATION: Method Airlift
Yield: Good / Moderate / Poor

Not Measured

PROFESSIONAL GEOLOGIST
MYRON N. BENDA
PG-3806
WYOMING

Myron N. Benda
March 2014

Vertical Scale: 1"=50'



M-FG1

Lost Creek ISR, LLC

WELL COMPLETION REPORT

WELL # M-FG1 SEO # 198440 Date Drilled: 7/26/12

Location: E 2,217,934 / N 590,916 (NAD 83)

Ground Elev: 6899' Measure Point Elev: 6901.9'

TD: 190 Hole Dia.: 8 3/4"

CASED to: 150 Casing: PVC SDR17 ID: 4.81" OD: 5.56"

GROUT: 50-50 Portland/Pozzolan
Pumped thru casing, displaced to surface w/fresh water

Completion AQUIFER: FG Horizon

Static Water Level: Depth 123.4' Elev: 6778.5'
09/18/13

UNDERREAM: Blade Dia: N/A

Intervals: from ____ to ____ /length ____

from ____ to ____ /length ____

SCREEN LINER ASSEMBLY

Description	Depth From	Depth To	Elev. From	Elev. To	Length
K-packer string	142'	149'			7'
Screen	149'	190'	6750'	6709'	41'

SCREEN SPECIFICATIONS:

Slot: 0.020" Composition 3" PVC

FILTER PACKING: N/A

Volume: ____ (bags)(ft^3) Sand Specs. ____

Method: ____

WELL STIMULATION: Method Swabbed

Yield: Good / Moderate / Poor

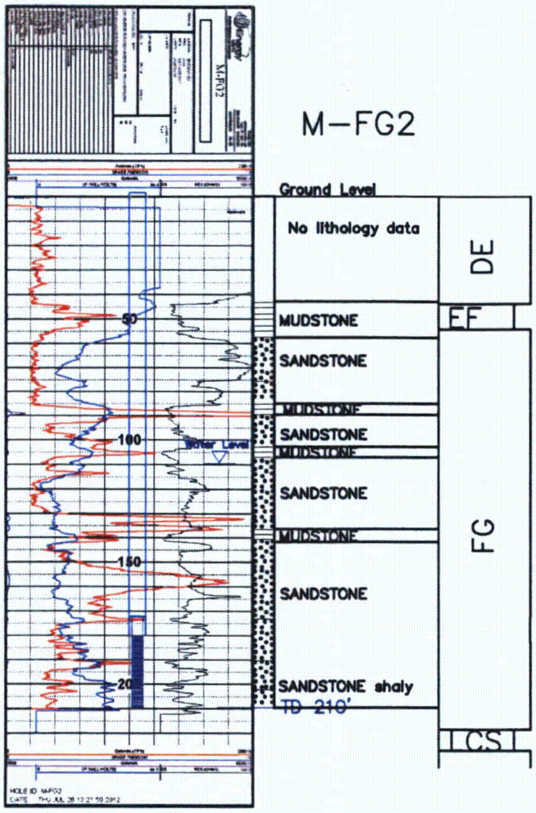
Not Measured

PROFESSIONAL GEOLOGIST
MYRON N. BENDA
PG-3806
WYOMING

Myron N. Benda
March 2014

M-FG1

Vertical Scale: 1"=50'



M–FG2

M–FG2

Lost Creek ISR, LLC

WELL COMPLETION REPORT

WELL # M-FG2 SEO # 198449 Date Drilled: 8/2/12

Location: E 2,225,724 / N 598,180 (NAD 83)

Ground Elev: 7004' Measure Point Elev: 7004.4'

TD: 210 ft Hole Dia.: 8 3/4"

CASED to: 179' Casing: PVC SDR17 ID: 4.81" OD: 5.56"

GROUT: 50–50 Portland/Pozzolan Cement
Pumped thru casing, displaced to surface w/fresh water

Completion AQUIFER: FG Horizon

Static Water Level: Depth 110.0' Elev: 6894.4'
05/16/13

UNDERREAM: Blade Dia: N/A

Intervals: from ____ to ____ /length ____

from ____ to ____ /length ____

SCREEN LINER ASSEMBLY

Description	Depth From	Depth To	Elev. From	Elev. To	Length
K-packer string	172'	179'			7'
Screen	179'	210'	6825'	6794'	31'

SCREEN SPECIFICATIONS:

Slot: 0.020" Composition 3" PVC

FILTER PACKING: N/A

Volume: ____ (bags)(ft^3) Sand Specs. ____

Method: ____

WELL STIMULATION: Method Swabbed

Yield: Good / Moderate / Poor

Not Measured

PROFESSIONAL GEOLOGIST
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PG-3806
WYOMING

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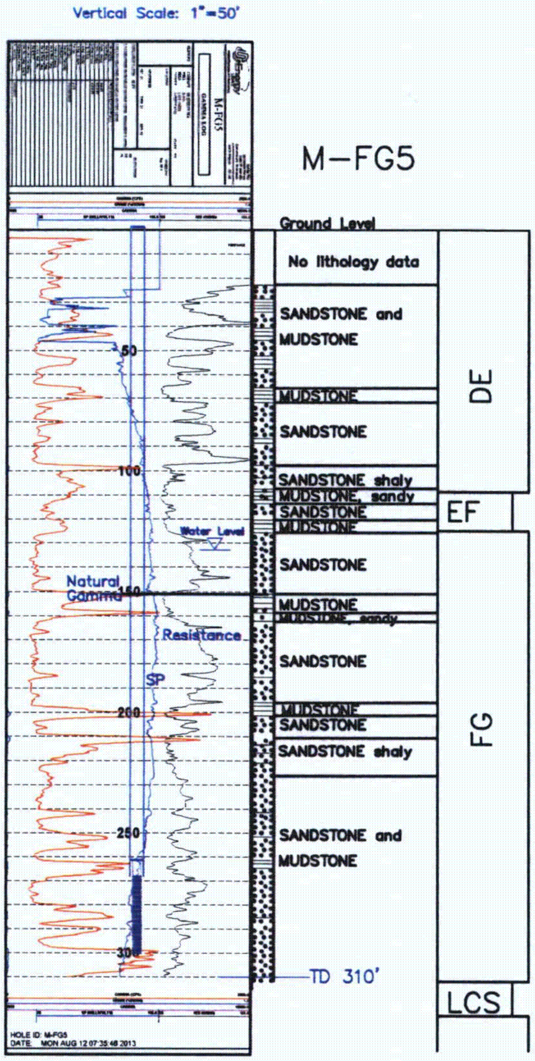
March 20 14



M–FG5

Lost Creek ISR, LLC

WELL COMPLETION REPORT

WELL # M–FG5 SEO # N/A Date Drilled: 08/12/13

Location: E 2,218,220 / N 593,787 (NAD 83)

Ground Elev: 6929' Measure Point Elev: 6930.1'

TD: 310 ft. Hole Dia.: 7 7/8"

CASED to: 268' Casing: PVC SDR17 ID: 4.5" OD: 4.95"

GROUT: 50–50 Portland/Pozzolan
Pumped thru casing, displaced to surface w/fresh water

Completion AQUIFER: FG Horizon

Static Water Level: Depth 133.1' Elev: 6797'
10/09/13

UNDERREAM: Blade Dia: N/A

Intervals: from ____ to ____ /length ____
from ____ to ____ /length ____

SCREEN LINER ASSEMBLY

Description	Depth From	Depth To	Elev. From	Elev. To	Length
K–packer string	261'	268'			7'
Screen	268'	300'	6661'	6629'	32'

SCREEN SPECIFICATIONS:
Slot: Perforated Composition 3" PVC

FILTER PACKING: N/A
Volume: ____ (bags)(ft^3) Sand Specs. ____
Method: ____

WELL STIMULATION: Method Airlift
Yield: Good / Moderate / Poor
20 gpm

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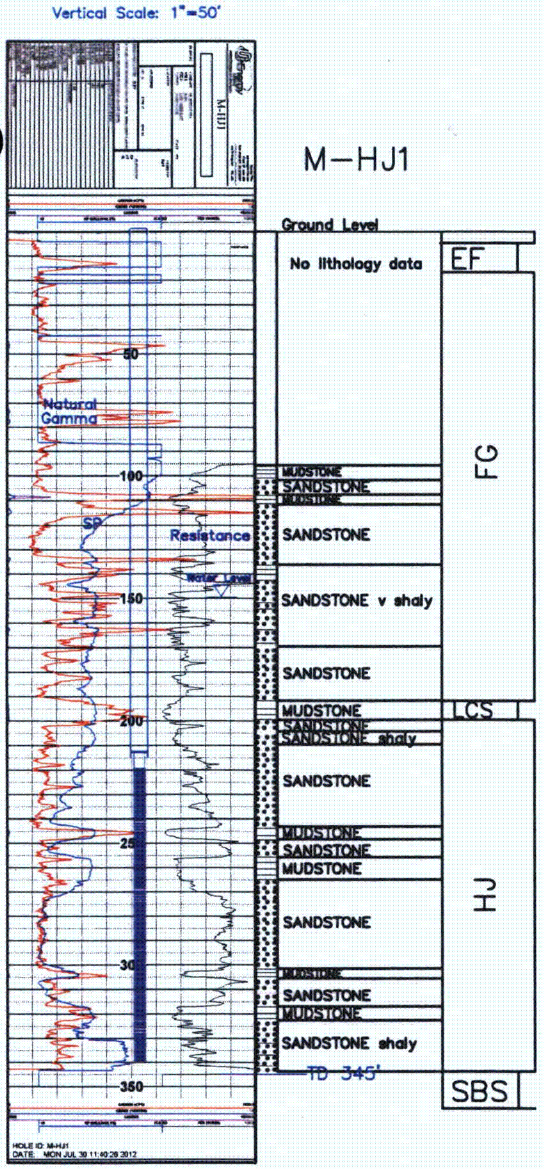

Lost Creek ISR, LLC

WELL COMPLETION REPORT

WELL # M–HJ1 SEO # 198441 Date Drilled: 7/30/12

Location: E 2,217,810 / N 590,918 (NAD 83)

Ground Elev: 6896' Measure Point Elev: 6897.6'

TD: 345 ft. Hole Dia.: 8 3/4"

CASED to: 215' Casing: PVC SDR17 ID: 4.81" OD: 5.56"

GROUT: 50–50 Portland/Pozzolan I/II w/pozzolan
Pumped thru casing, displaced to surface w/fresh water

Completion AQUIFER: HJ Horizon

Static Water Level: Depth 149.7' Elev: 6747.9'
09/18/13

UNDERREAM: Blade Dia: N/A
Intervals: from ____ to ____ /length ____
from ____ to ____ /length ____

SCREEN LINER ASSEMBLY

Description	Depth From	Depth To	Elev. From	Elev. To	Length
K–packer string	213'	220'			7'
Screen	220'	340'	6676'	6556'	120'

SCREEN SPECIFICATIONS:
Slot: 0.020" Composition 3" PVC

FILTER PACKING: N/A
Volume: ____ (bags)(ft^3) Sand Specs. ____
Method: ____

WELL STIMULATION: Method Swabbed
Yield: Good / Moderate / Poor
Not Measured

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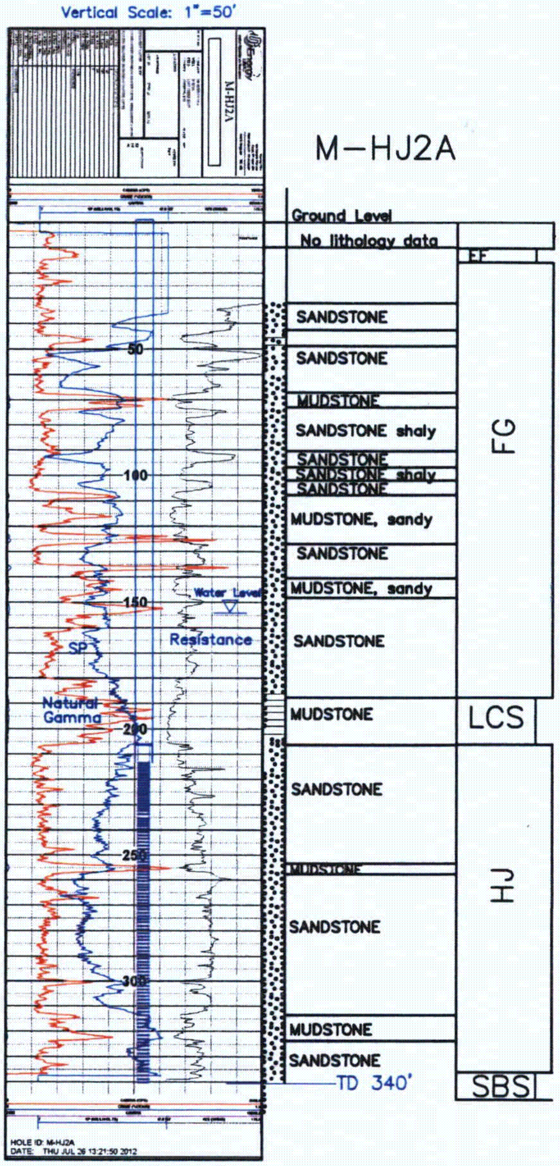
Myron N. Benda
March 2014



M-HJ2A

Lost Creek ISR, LLC

WELL COMPLETION REPORT

WELL # M-HJ2A SEO # 198444 Date Drilled: 7/26/12

Location: E 2,218,596 / N 590,895 (NAD 83)

Ground Elev: 6902' Measure Point Elev: 6904.3'

TD: 340 ft. Hole Dia.: 8 3/4"

CASED to: 215' Casing: PVC SDR17 ID: 4.81" OD: 5.56"

GROUT: 50-50 Portland/Pozzolan
Pumped thru casing, displaced to surface w/fresh water

Completion AQUIFER: HJ Horizon

Static Water Level: Depth 153.8' Elev: 6750.5'
09/18/13

UNDERREAM: Blade Dia: N/A
Intervals: from ____ to ____ /length ____
from ____ to ____ /length ____

SCREEN LINER ASSEMBLY

Description	Depth From	Depth To	Elev. From	Elev. To	Length
K-packer string	206'	213'			7'
Screen	213'	340'	6689'	6562'	127'

SCREEN SPECIFICATIONS:
Slot: 0.020" Composition 3" PVC

FILTER PACKING: N/A
Volume: ____ (bags)(ft^3) Sand Specs. ____
Method: ____

WELL STIMULATION: Method Swabbed
Yield: Good / Moderate / Poor
Not Measured

PROFESSIONAL GEOLOGIST
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PG-3306
WYOMING

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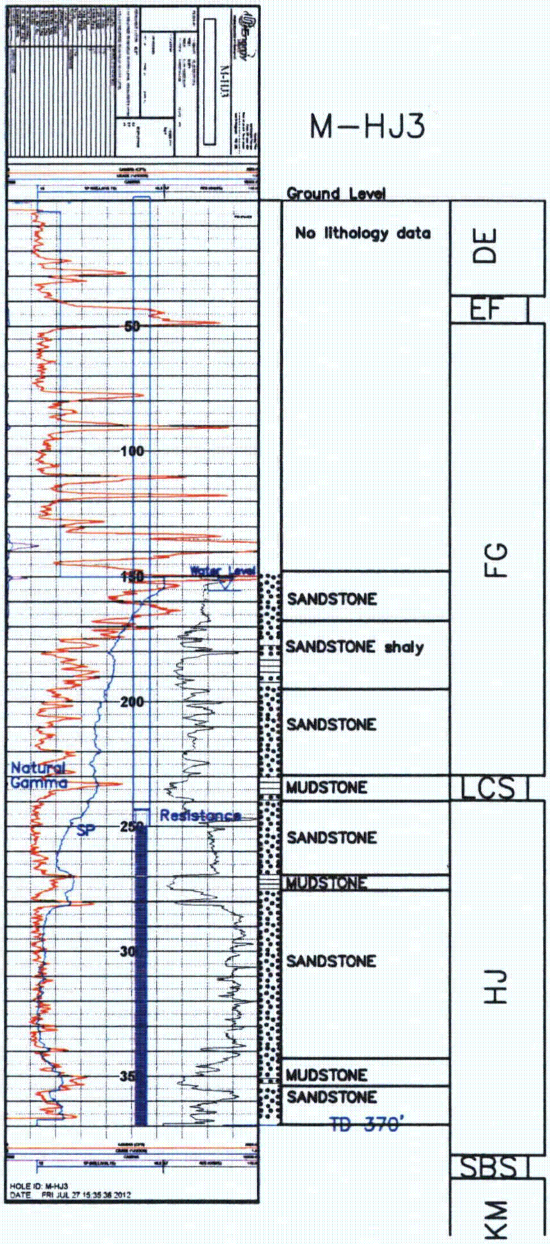
March 2014

M-HJ2A

Vertical Scale: 1"=50'



M-HJ3

Lost Creek ISR, LLC

WELL COMPLETION REPORT

WELL # M-HJ3 SEO # 198446 Date Drilled: 7/27/12

Location: E 2,214,767 / N 590,831 (NAD 83)

Ground Elev: 6894' Measure Point Elev: 6895.5'

TD: 370 ft. Hole Dia.: 8 3/4"

CASED to: 250' Casing: PVC SDR17 ID: 4.81" OD: 5.56"

GROUT: 50-50 Portland/Pozzolan
Pumped thru casing, displaced to surface w/fresh water

Completion AQUIFER: HJ Horizon

Static Water Level: Depth 155.9' Elev: 6739.6'
09/19/13

UNDERREAM: Blade Dia: N/A
Intervals: from ____ to ____ /length ____
from ____ to ____ /length ____

SCREEN LINER ASSEMBLY

Description	Depth From	Depth To	Elev. From	Elev. To	Length
K-packer string	243'	250'			7'
Screen	250'	370'	6644'	6524'	120'

SCREEN SPECIFICATIONS:
Slot: 0.020" Composition 3" PVC

FILTER PACKING: N/A
Volume: ____ (bags)(ft^3) Sand Specs. ____
Method: ____

WELL STIMULATION: Method Swabbed
Yield: Good / Moderate / Poor
Not Measured

PROFESSIONAL GEOLOGIST
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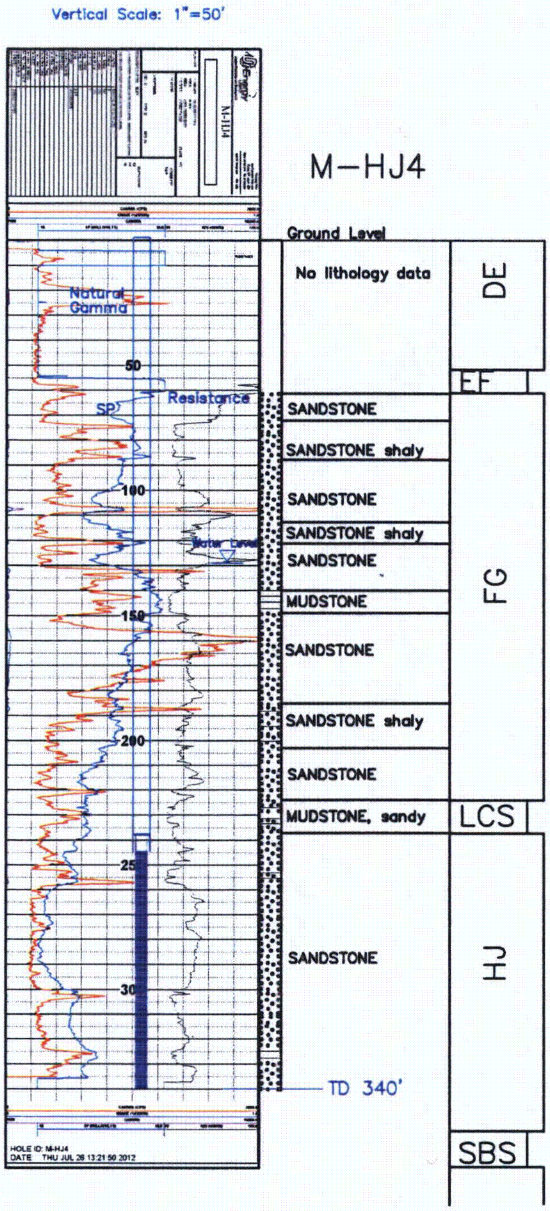
March 2014



M–HJ4

Lost Creek ISR, LLC

WELL COMPLETION REPORT

WELL # M–HJ4 SEO # 198450 Date Drilled: 7/26/12

Location: E 2,225,725 / N 598,330 (NAD 83)

Ground Elev: 7006' Measure Point Elev: 7006.9'

TD: 340 ft. Hole Dia.: 8 3/4"

CASED to: 245' Casing: PVC SDR17 ID: 4.81" OD: 5.56"

GROUT: 50–50 Portland/Pozzolan
Pumped thru casing, displaced to surface w/fresh water

Completion AQUIFER: HJ Horizon

Static Water Level: Depth 129.3' Elev: 6877.6' (avg.)
09/18/13

UNDERREAM: Blade Dia: N/A
Intervals: from ____ to ____ /length ____
from ____ to ____ /length ____

SCREEN LINER ASSEMBLY

Description	Depth From	Depth To	Elev. From	Elev. To	Length
K–packer string	238'	245'			7'
Screen	245'	340'	6761'	6666'	95'

SCREEN SPECIFICATIONS:
Slot: 0.020" Composition 3" PVC

FILTER PACKING: N/A
Volume: ____ (bags)(ft^3) Sand Specs. ____
Method: ____

WELL STIMULATION: Method Swabbed
Yield: Good / Moderate / Poor
Not Measured

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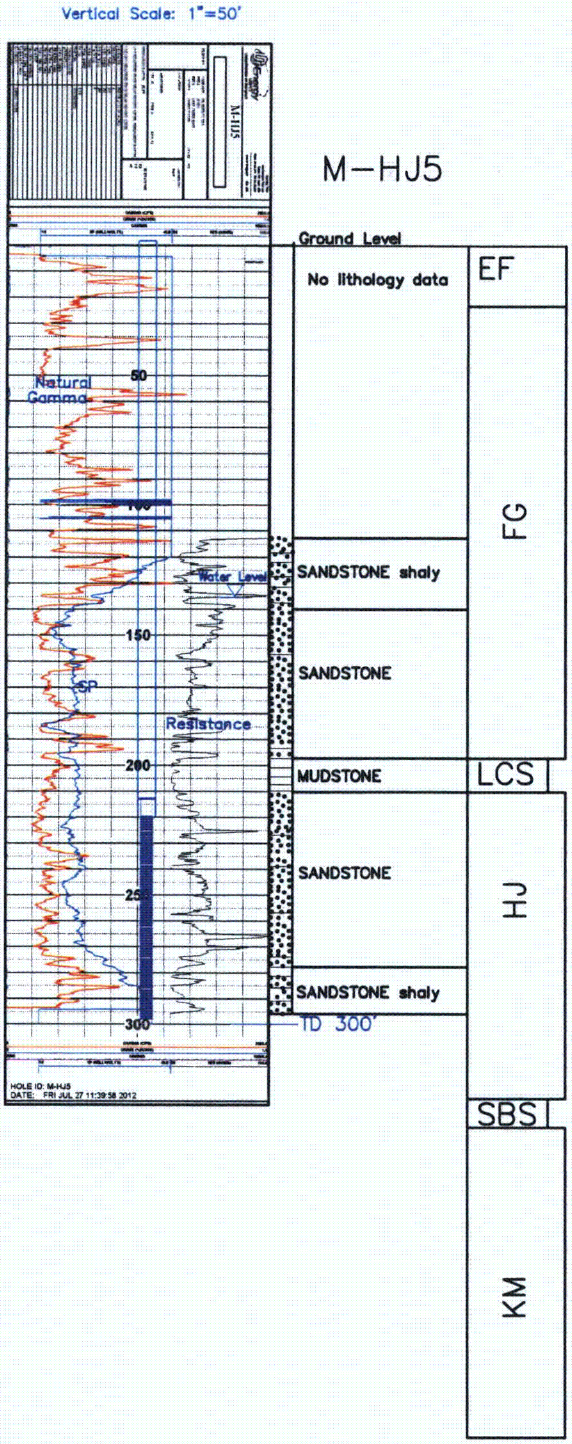
March 2014



M-HJ5

Lost Creek ISR, LLC

WELL COMPLETION REPORT

WELL # M-HJ5 SEO # 198453 Date Drilled: 7/27/12

Location: E 2,226,868 / N 601,894 (NAD 83)

Ground Elev: 7046' Measure Point Elev: 7047.5'

TD: 300' Hole Dia.: 8 3/4"

CASED to: 219 Casing: PVC SDR17 ID: 4.81" OD: 5.56"

GROUT: 50-50 Portland/Pozzolan
Pumped thru casing, displaced to surface w/fresh water

Completion AQUIFER: HJ Horizon

Static Water Level: Depth 135.5' Elev: 6912'
9/19/13

UNDERREAM: Blade Dia: N/A
Intervals: from ____ to ____ /length ____
from ____ to ____ /length ____

SCREEN LINER ASSEMBLY

Description	Depth From	Depth To	Elev. From	Elev. To	Length
K-packer string	212'	219'			7'
Screen	219'	299'	6827'	6747'	80'

SCREEN SPECIFICATIONS:
Slot: 0.020" Composition 3" PVC

FILTER PACKING: N/A
Volume: ____ (bags)(ft^3) Sand Specs. ____
Method: ____

WELL STIMULATION: Method Swabbed
Yield: Good / Moderate / Poor
Not Measured

PROFESSIONAL GEOLOGIST
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WYOMING

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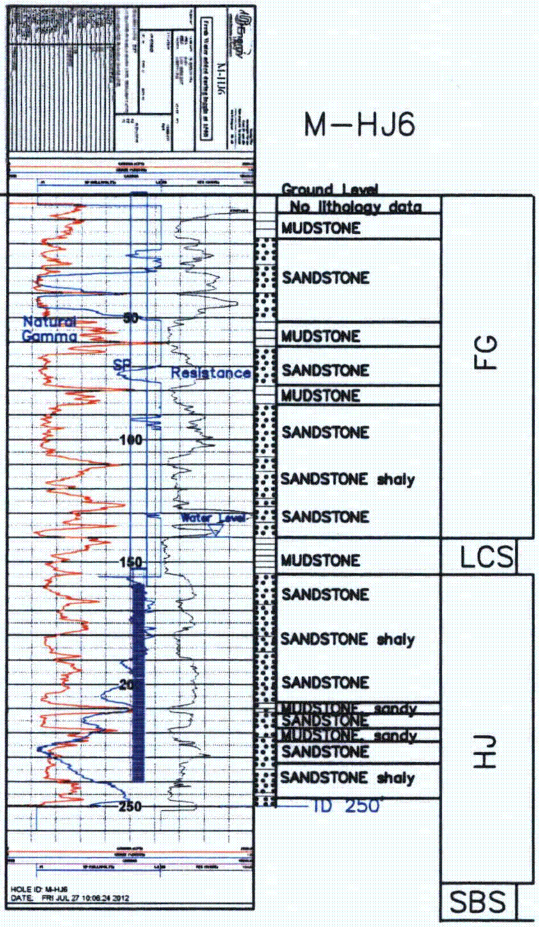
March 2014

M-HJ5

Vertical Scale: 1"=50'



M–HJ6

M–HJ6

Lost Creek ISR, LLC

WELL COMPLETION REPORT

WELL # M–HJ6 SEO # 198456 Date Drilled: 7/27/12

Location: E 2,230,244 / N 604,051 (NAD 83)

Ground Elev: 7094.4' Measure Point Elev: 7097.2'

TD: 250 Hole Dia.: 8 3/4"

CASED to: 158' Casing: PVC SDR17 ID: 4.81" OD: 5.56"

GROUT: 50–50 Portland/Pozzolan
Pumped thru casing, displaced to surface w/fresh water

Completion AQUIFER: HJ Horizon

Static Water Level: Depth 139.7' Elev: 6957.5'
10/23/13

UNDERREAM: Blade Dia: N/A
Intervals: from ____ to ____ /length ____
from ____ to ____ /length ____

SCREEN LINER ASSEMBLY

Description	Depth From	Depth To	Elev. From	Elev. To	Length
K–packer string	153'	160'			7'
Screen	160'	240'	6934'	6854'	80'

SCREEN SPECIFICATIONS:
Slot: 0.020" Composition 3" PVC

FILTER PACKING: N/A
Volume: ____ (bags)(ft^3) Sand Specs. ____
Method: ____

WELL STIMULATION: Method Swabbed
Yield: Good / Moderate / Poor
Not Measured

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WYOMING

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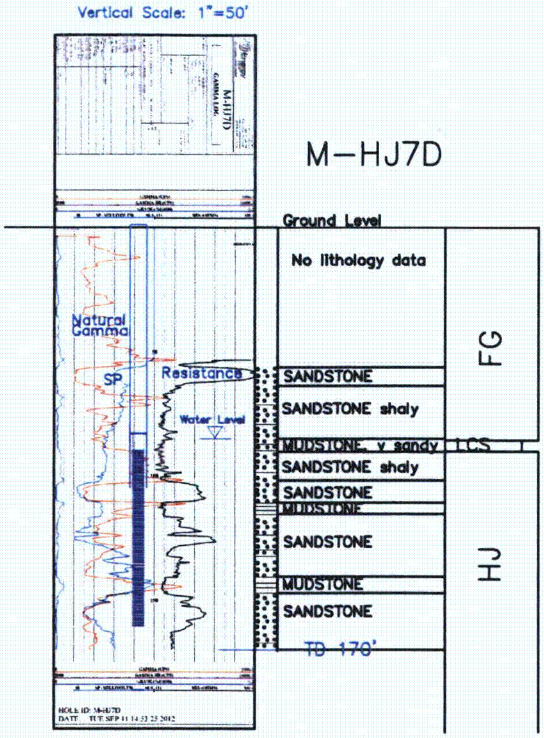
March 2014



M–HJ7D

Lost Creek ISR, LLC

WELL COMPLETION REPORT

WELL # M–HJ7D SEO # 198501 Date Drilled: 9/11/12

Location: E 2,223,040 / N 608,361 (NAD 83)

Ground Elev: 7150' Measure Point Elev: 7152.3'

TD: 170 ft. Hole Dia.: 8 3/4"

CASED to: 105' Casing: PVC SDR17 ID: 4.81" OD: 5.56"

GROUT: 50–50 Portland/Pozzolan
Pumped thru casing, displaced to surface w/fresh water

Completion AQUIFER: HJ Horizon

Static Water Level: Depth 85.7' Elev: 7066.6'
03/10/14

UNDERREAM: Blade Dia: N/A
Intervals: from ____ to ____ /length ____
from ____ to ____ /length ____

SCREEN LINER ASSEMBLY

Description	Depth From	Depth To	Elev. From	Elev. To	Length
K–packer string	83'	90'			7'
Screen	90'	160'	7060'	6990'	70'

SCREEN SPECIFICATIONS:
Slot: 0.020" Composition 3" PVC

FILTER PACKING: N/A
Volume: ____ (bags)(ft^3) Sand Specs. ____
Method: ____

WELL STIMULATION: Method Swabbed
Yield: Good / Moderate / Poor
Not Measured

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PG-3806
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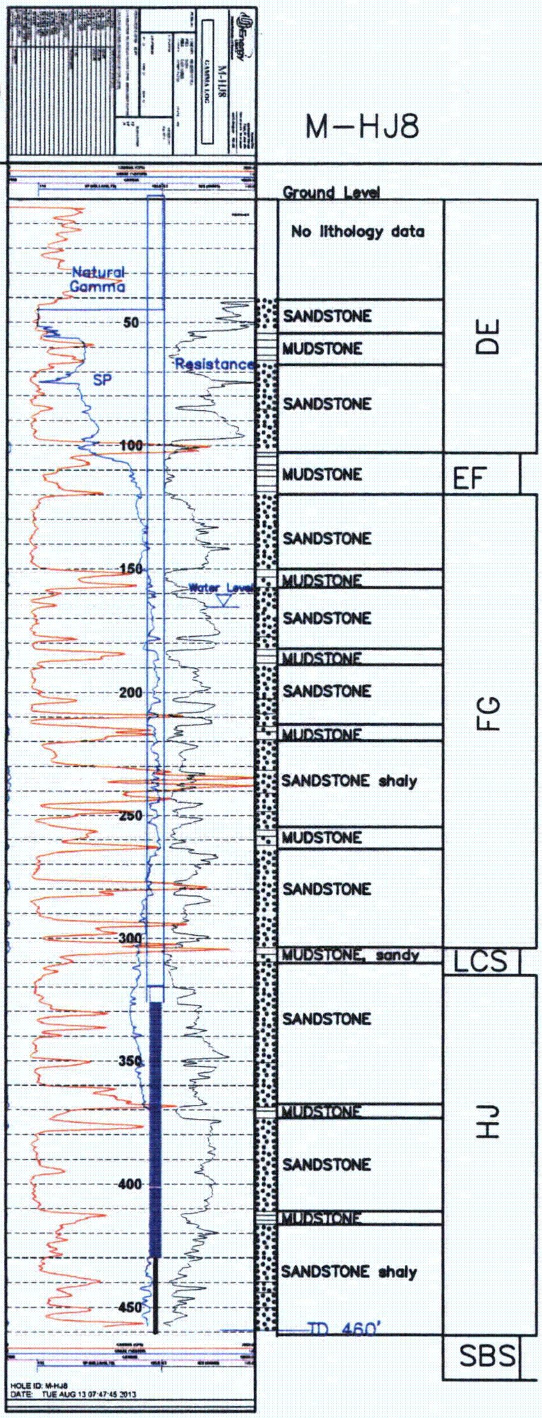
March 2014

M–HJ7D

Vertical Scale: 1"=50'



M–HJ8

Lost Creek ISR, LLC

WELL COMPLETION REPORT

WELL # M-HJ8 SEO # N/A Date Drilled: 8/13/13

Location: E 2,218,207 / N 593,694 (NAD 83)

Ground Elev: 6927 Measure Point Elev: 6929.9'

TD: 460 ft. Hole Dia.: 7 7/8"

CASED to: 327' Casing: PVC SDR17 ID: 4.5" OD: 4.95"

GROUT: 50–50 Portland/Pozzolan
Pumped thru casing, displaced to surface w/freshwater

Completion AQUIFER: HJ Horizon

Static Water Level: Depth 166' Elev: 6763.9'
10/23/13

UNDERREAM: Blade Dia: N/A

Intervals: from ___ to ___ /length ___
from ___ to ___ /length ___

SCREEN LINER ASSEMBLY

Description	Depth From	Depth To	Elev. From	Elev. To	Length
K–packer string	320'	327'			7'
Screen	327'	430'	6600'	6497'	103'

SCREEN SPECIFICATIONS:

Slot: Perforated Composition 3" PVC

FILTER PACKING: N/A

Volume: ___ (bags)(ft^3) Sand Specs. ___

Method: ___

WELL STIMULATION: Method Airlift

Yield: Good / Moderate / Poor

30 gpm

Pilot Hole BACKPLUGGED w/Neat Cement: 430'–461'

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WYOMING

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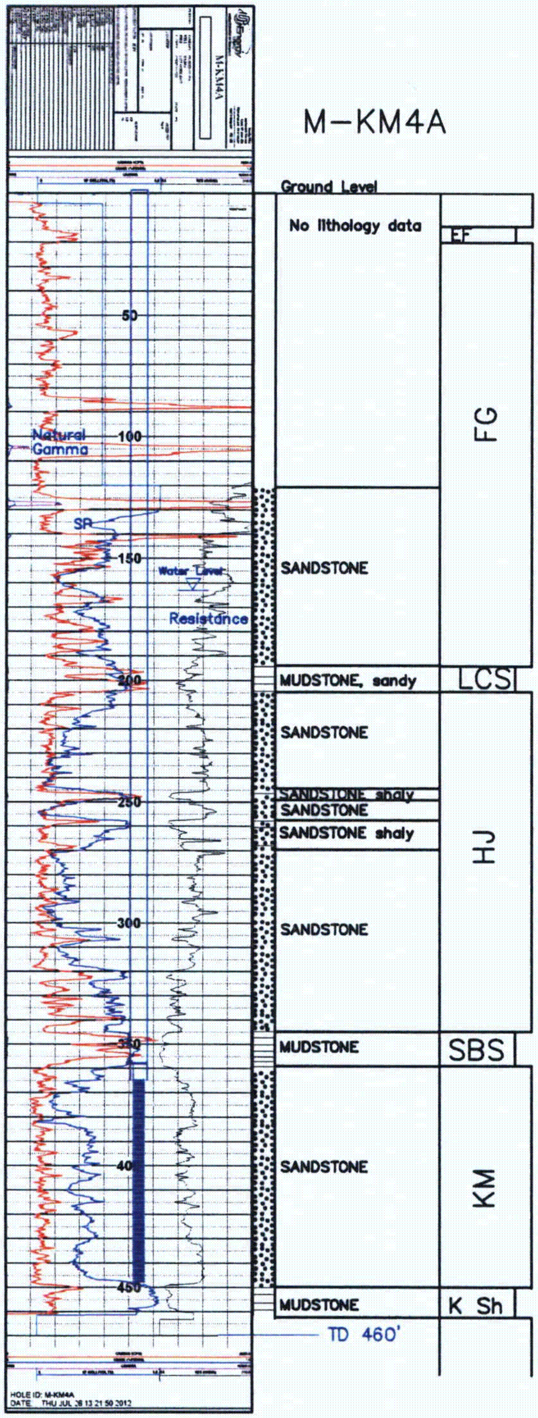
March 2014

M-KM4A

Lost Creek ISR, LLC

WELL COMPLETION REPORT

Vertical Scale: 1"=50'



WELL # M-KM4A SEO # 198442 Date Drilled: 7/26/12

Location: E 2,217,803 / N 591,043 (NAD 83)

Ground Elev: 6896' Measure Point Elev: 6898'

TD: 460 Hole Dia.: 8 3/4"

CASED to: 365' Casing: PVC SDR17 ID: 4.81" OD: 5.56"

GROUT: 50-50 Portland/Pozzolan
Pumped thru casing, displaced to surface w/fresh water

Completion AQUIFER: KM Horizon

Static Water Level: Depth 162.7' Elev: 6735.3'
10/03/13

UNDERREAM: Blade Dia: N/A

Intervals: from ____ to ____ /length ____
from ____ to ____ /length ____

SCREEN LINER ASSEMBLY

Description	Depth From	Depth To	Elev. From	Elev. To	Length
K-packer string	358'	365'			7'
Screen	365'	450'	6531'	6446'	85'

SCREEN SPECIFICATIONS:

Slot: 0.020" Composition 3" PVC

FILTER PACKING: N/A

Volume: ____ (bags)(ft^3) Sand Specs. ____

Method: ____

WELL STIMULATION: Method Swabbed

Yield: Good / Moderate / Poor

Not Measured

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WYOMING

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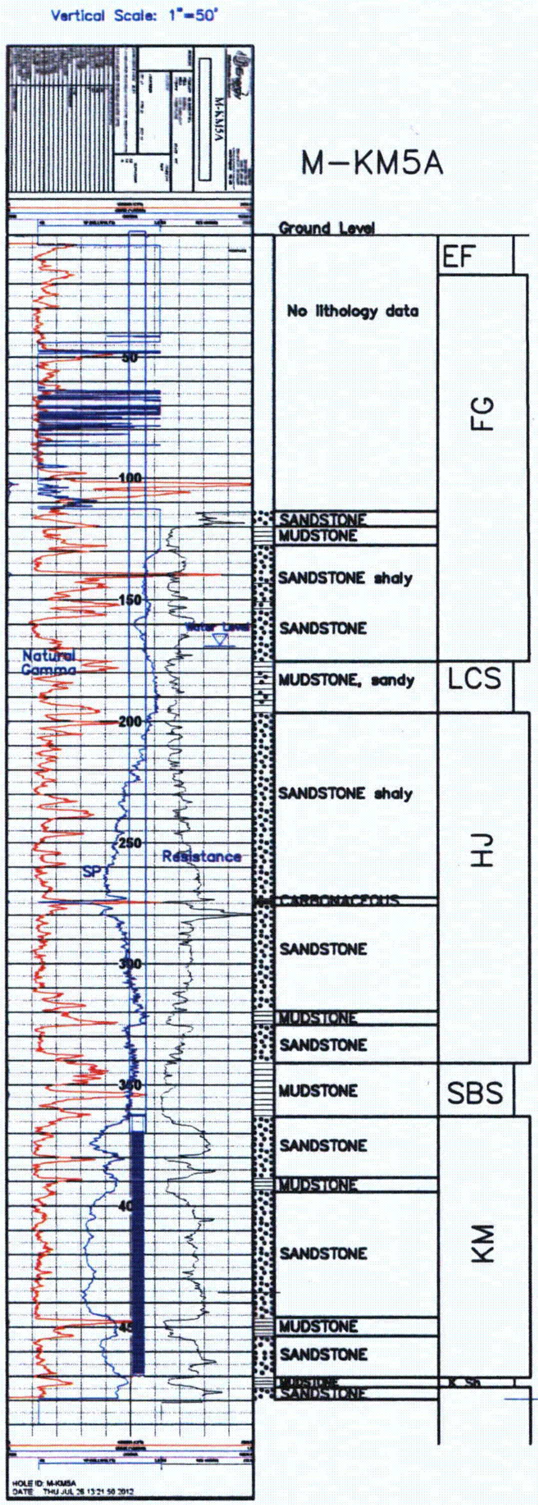
March 2016

M-KM4A



M–KM5A

Lost Creek ISR, LLC

WELL COMPLETION REPORT

WELL # M-KM5A SEO # 198445 Date Drilled: 7/26/12

Location: E 2,218,600 / N 591,007 (NAD 83)

Ground Elev: 6905' Measure Point Elev: 6906.9'

TD: 480 Hole Dia.: 8 3/4"

CASED to: 370' Casing: PVC SDR17 ID: 4.81" OD: 5.56"

GROUT: 50–50 Portland/Pozzolan
Pumped thru casing, displaced to surface w/fresh water

Completion AQUIFER: KM Horizon

Static Water Level: Depth 169.6 Elev: 6737.3'
09/18/13

UNDERREAM: Blade Dia: N/A
Intervals: from ____ to ____ /length ____
from ____ to ____ /length ____

SCREEN LINER ASSEMBLY

Description	Depth From	Depth To	Elev. From	Elev. To	Length
K-packer string	363'	370'			7'
Screen	370'	470'	6535'	6435'	100'

SCREEN SPECIFICATIONS:
Slot: 0.020" Composition 3" PVC

FILTER PACKING: N/A
Volume: ____ (bags)(ft^3) Sand Specs. ____
Method: ____

WELL STIMULATION: Method Swabbed
Yield: Good / Moderate / Poor
Not Measured

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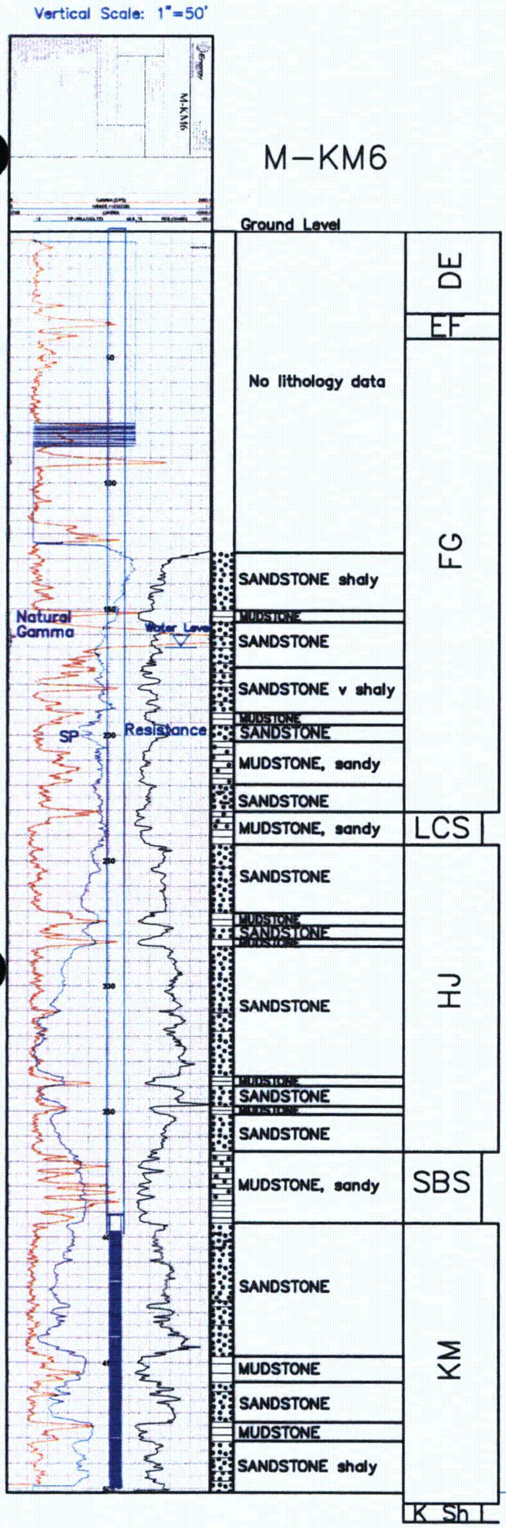
March 2014

M–KM5A



M-KM6

Lost Creek ISR, LLC

WELL COMPLETION REPORT

WELL # M-KM6 SEO # 198447 Date Drilled: 7/27/13

Location: E 2,214,768 / N 590,942 (NAD 83)

Ground Elev: 6891.6' Measure Point Elev: 6894.1'

TD: 500 ft. Hole Dia.: 8 3/4"

CASED to: 399' Casing: PVC SDR17 ID: 4.81" OD: 5.56"

GROUT: 50-50 Portland/Pozzolan
Pumped thru casing, displaced to surface w/fresh water

Completion AQUIFER: KM Horizon

Static Water Level: Depth 161.9' Elev: 6732.2
09/19/13

UNDERREAM: Blade Dia: N/A
Intervals: from ____ to ____ /length ____
from ____ to ____ /length ____

SCREEN LINER ASSEMBLY

Description	Depth From	Depth To	Elev. From	Elev. To	Length
K-packer string	393'	400'			7'
Screen	400'	500'	6491'	6391'	100'

SCREEN SPECIFICATIONS:
Slot: 0.020" Composition 3" PVC

FILTER PACKING: N/A
Volume: ____ (bags)(ft^3) Sand Specs. ____
Method: ____

WELL STIMULATION: Method Swabbed
Yield: Good / Moderate / Poor
Not Measured

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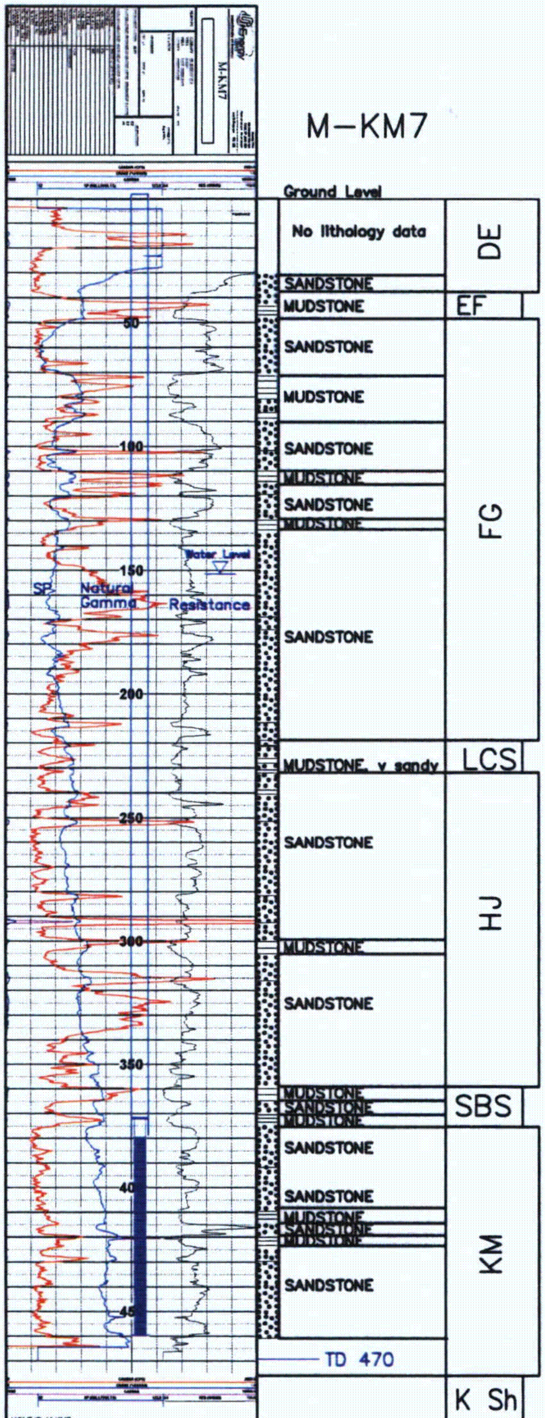
March 2014

M-KM6

Vertical Scale: 1"=50'



M-KM7

Lost Creek ISR, LLC

WELL COMPLETION REPORT

WELL # M-KM7 SEO # 198451 Date Drilled: 7/27/12

Location: E 2,225,537 / N 598,334 (NAD 83)

Ground Elev: 6998.4 Measure Point Elev: 6999.2

TD: 470 ft. Hole Dia.: 8 3/4"

CASED to: 379' Casing: PVC SDR17 ID: 4.81" OD: 5.56"

GROUT: Portland Neat Cement – Type I/II
Pumped thru casing, displaced to surface w/freshwater

Completion AQUIFER: KM Horizon

Static Water Level: Depth 152.6' Elev: 6846.6'
03/10/14

UNDERREAM: Blade Dia: N/A
Intervals: from ____ to ____ /length ____
from ____ to ____ /length ____

SCREEN LINER ASSEMBLY

Description	Depth From	Depth To	Elev. From	Elev. To	Length
K-packer string	373'	380'			7'
Screen	380'	460'	6618'	6538'	80'

SCREEN SPECIFICATIONS:
Slot: 0.020" Composition 3" PVC

FILTER PACKING: N/A
Volume: ____ (bags)(ft^3) Sand Specs. ____
Method: ____

WELL STIMULATION: Method Swabbed
Yield: Good / Moderate / Poor
Not Measured

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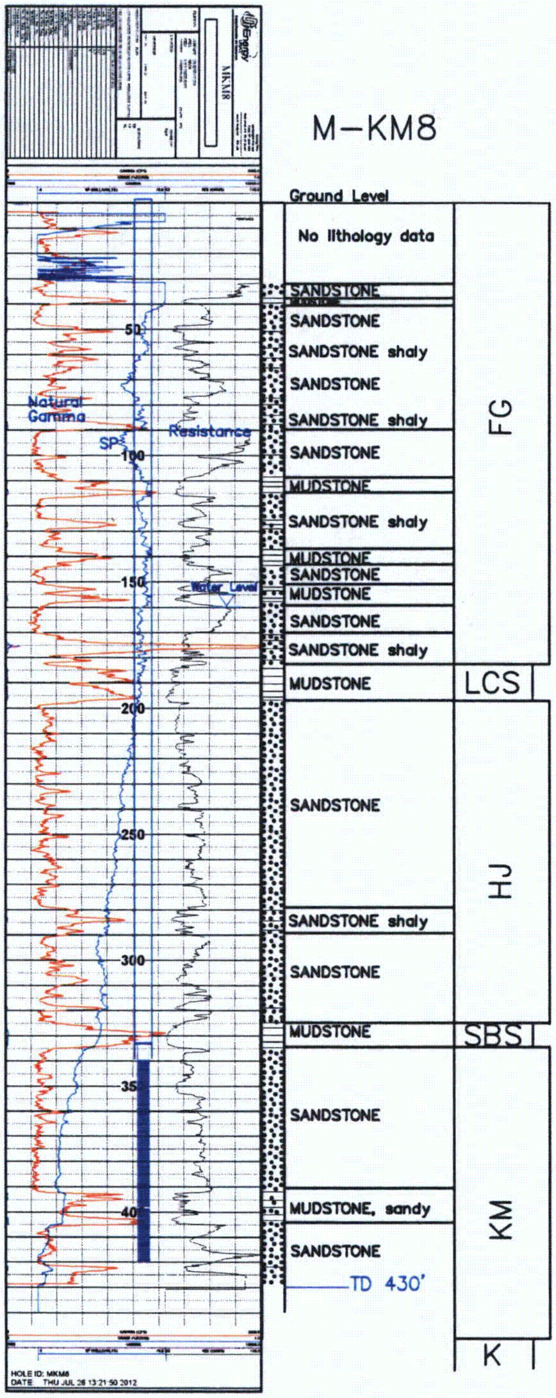
WYOMING

Myron N. Benda
March 2014

M-KM7

Vertical Scale: 1"=50'



M-KM8

Lost Creek ISR, LLC

WELL COMPLETION REPORT

WELL # M-KM8 SEO # 198454 Date Drilled: 7/26/12

Location: E 2,226,776 / N 601,981 (NAD 83)

Ground Elev: 7045' Measure Point Elev: 7047.9

TD: 430 ft. Hole Dia.: 8 ¾"

CASED to: 339' Casing: PVC SDR17 ID: 4.81" OD: 5.56"

GROUT: 50-50 Portland/Pozzolan
Pumped thru casing, displaced to surface w/fresh water

Completion AQUIFER: KM Horizon

Static Water Level: Depth 159.7' Elev: 6888.2
10/10/13

UNDERREAM: Blade Dia: N/A

Intervals: from ____ to ____ /length ____

from ____ to ____ /length ____

SCREEN LINER ASSEMBLY

Description	Depth From	Depth To	Elev. From	Elev. To	Length
K-packer string	333'	340'			7'
Screen	340'	420'	6705'	6625'	80'

SCREEN SPECIFICATIONS:

Slot: 0.020" Composition 3" PVC

FILTER PACKING: N/A

Volume: ____ (bags)(ft^3) Sand Specs. ____

Method: ____

WELL STIMULATION: Method Swabbed

Yield: Good / Moderate / Poor

Not Measured

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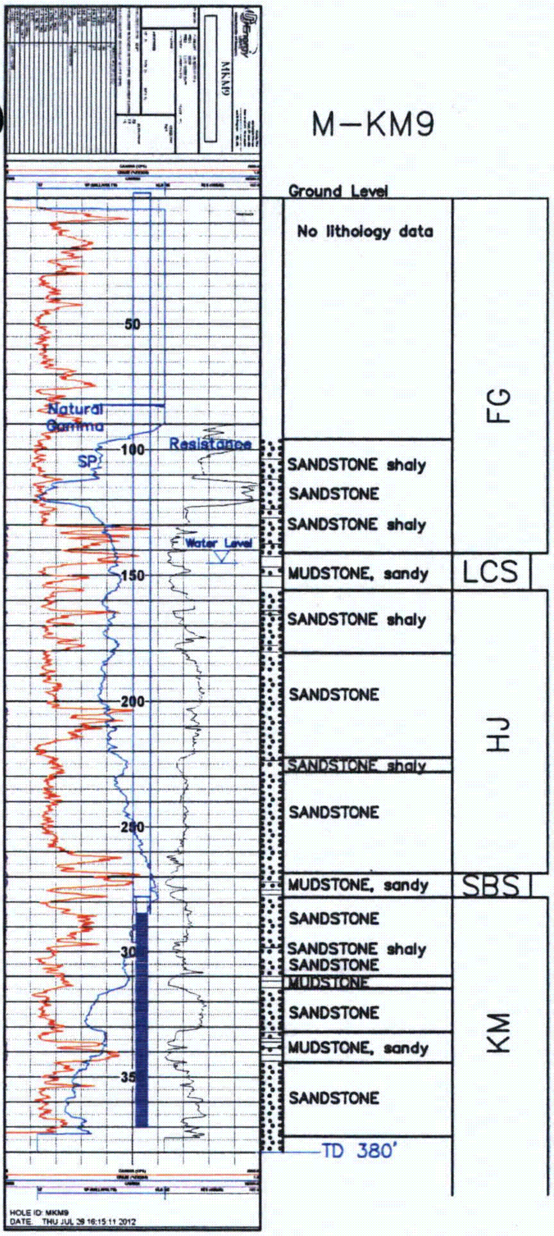
M-KM8

M–KM9

Lost Creek ISR, LLC

WELL COMPLETION REPORT

M–KM9



WELL # M–KM9 SEO # 198457 Date Drilled: 7/26/12

Location: E 2,229,995 / N 604,037 (NAD 83)

Ground Elev: 7092' Measure Point Elev: 7095'

TD: 380 ft. Hole Dia.: 8 3/4"

CASED to: 285' Casing: PVC SDR17 ID: 4.81" OD: 5.56"

GROUT: 50–50 Portland/Pozzolan
Pumped thru casing, displaced to surface w/fresh water

Completion AQUIFER: KM Horizon

Static Water Level: Depth 145.6' Elev: 6949.4
10/10/13

UNDERREAM: Blade Dia: N/A

Intervals: from____ to____ /length ____

from____ to____ /length ____

SCREEN LINER ASSEMBLY

Description	Depth From	Depth To	Elev. From	Elev. To	Length
K–packer string	278'	285'			7'
Screen	285'	370'	6807'	6722'	85'

SCREEN SPECIFICATIONS:

Slot: 0.020" Composition 3" PVC

FILTER PACKING: N/A

Volume: ____ (bags)(ft^3) Sand Specs. ____

Method: ____

WELL STIMULATION: Method Swabbed

Yield: Good / Moderate / Poor

Not Measured

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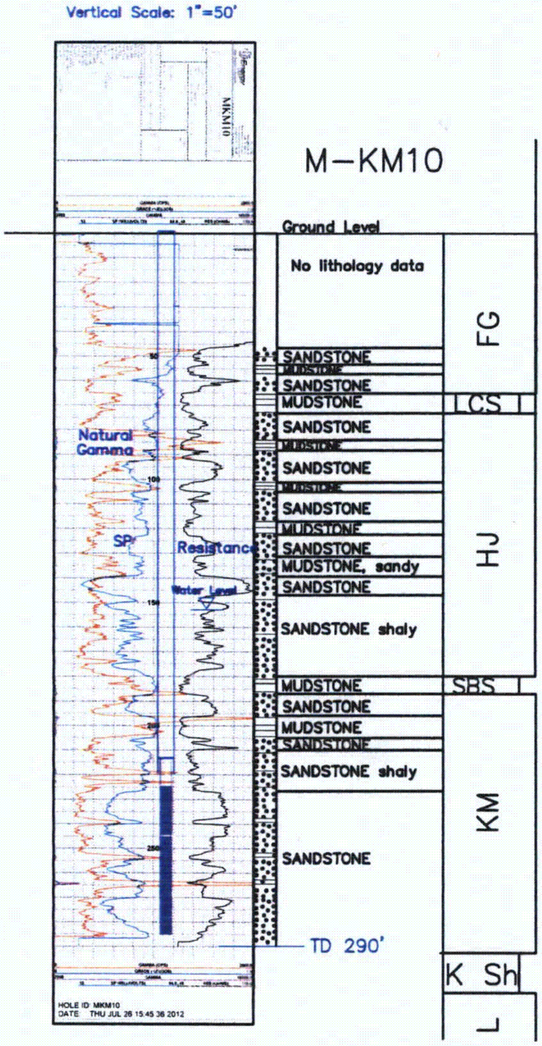
M–KM9



M-KM10

Lost Creek ISR, LLC

WELL COMPLETION REPORT

WELL # M-KM10 SEO # 198502 Date Drilled: 7/26/12

Location: E 2,229,804 / N 608,598 (NAD 83)

Ground Elev: 7148' Measure Point Elev: 7150.8'

TD: 290 ft. Hole Dia.: 8 3/4"

CASED to: 219' Casing: PVC SDR17 ID: 4.81" OD: 5.56"

GROUT: 50-50 Portland/Pozzolan
Pumped thru casing, displaced to surface w/fresh water

Completion AQUIFER: KM Horizon

Static Water Level: Depth 152.9' Elev: 6997.9'
09/19/13

UNDERREAM: Blade Dia: N/A

Intervals: from ____ to ____ /length ____

from ____ to ____ /length ____

SCREEN LINER ASSEMBLY

Description	Depth From	Depth To	Elev. From	Elev. To	Length
K-packer string	213'	220'			7'
Screen	220'	285'	6928'	6863'	65'

SCREEN SPECIFICATIONS:

Slot: 0.020" Composition 3" PVC

FILTER PACKING: N/A

Volume: ____ (bags)(ft^3) Sand Specs. ____

Method: ____

WELL STIMULATION: Method Swabbed

Yield: Good / Moderate / Poor

Not Measured

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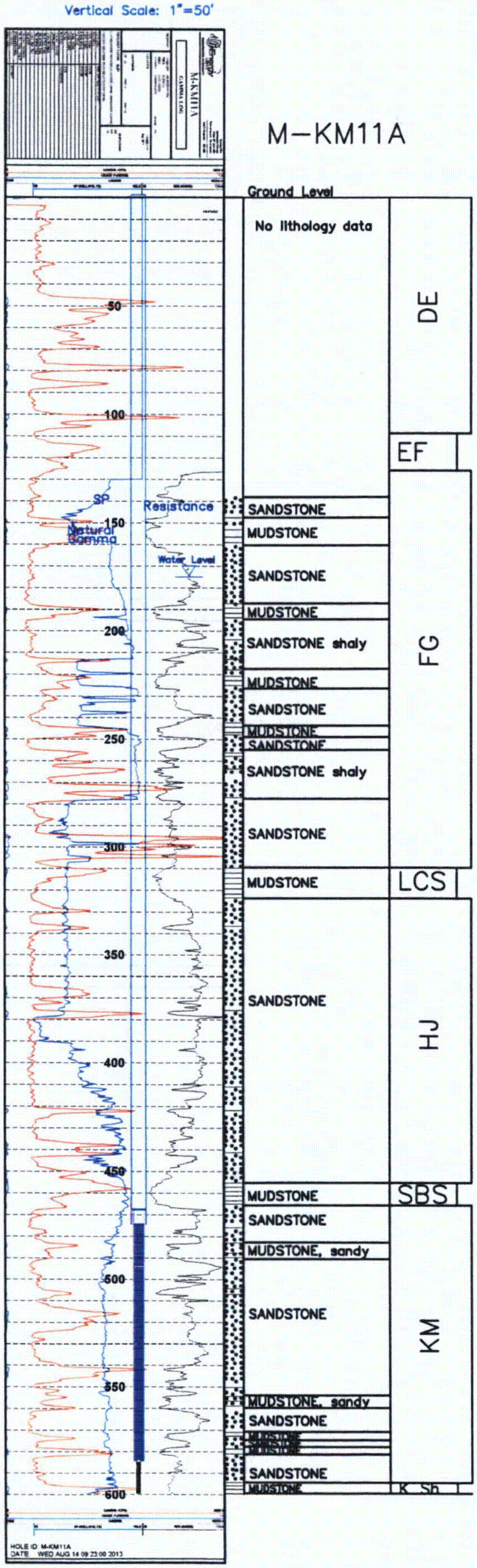
M-KM10

M-KM11A



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WELL COMPLETION REPORT

WELL # M-KM11A SEO # N/A Date Drilled: 8/14/13

Location: E 2,218,048 / N 593,775 (NAD 83)

Ground Elev: 6927' Measure Point Elev: 6930.4'

TD: 600 ft. Hole Dia.: 7 7/8"

CASED to: 475' Casing: PVC SDR17 ID: 4.5" OD: 4.95"

GROUT: 50-50 Portland/Pozzolan
Pumped thru casing, displaced to surface w/fresh water

Completion AQUIFER: KM Horizon

Static Water Level: Depth 175.1' Elev: 6755.3
10/23/13

UNDERREAM: Blade Dia: N/A

Intervals: from ____ to ____ /length ____
from ____ to ____ /length ____

SCREEN LINER ASSEMBLY

Description	Depth From	Depth To	Elev. From	Elev. To	Length
K-packer string	468'	475'			7'
Screen	475'	585'	6452'	6342'	110'

SCREEN SPECIFICATIONS:

Slot: 0.020" Composition 3" PVC

FILTER PACKING: N/A

Volume: ____ (bags)(ft³) Sand Specs. ____

Method: ____

WELL STIMULATION: Method Airlift

Yield: Good / Moderate / Poor

30 gpm

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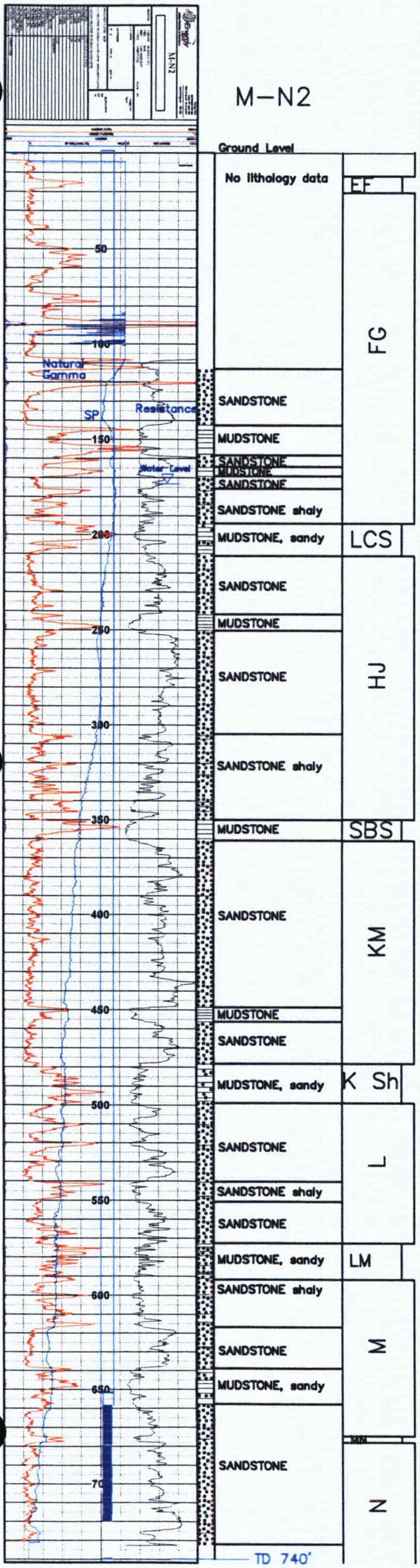
Pilot Hole BACKPLUGGED w/Neat Cement 585'-600'

HM-KM11A

Vertical Scale: 1"=50'



M-N2

Lost Creek ISR, LLC

WELL COMPLETION REPORT

WELL # M-N2 SEO # 198443 Date Drilled: 7/26/12

Location: E 2,217,936 / N 591,020 (NAD 83)

Ground Elev: 6901' Measure Point Elev: 6904.3'

TD: 740 ft. Hole Dia.: 8 3/4"

CASED to: 659' Casing: PVC SDR17 ID: 4.81" OD: 5.56"

GROUT: 50-50 Portland/Pozzolan
Pumped thru casing, displaced to surface w/fresh water

Completion AQUIFER: N Horizon

Static Water Level: Depth 173' Elev: 6731.3
09/18/13

UNDERREAM: Blade Dia: N/A
Intervals: from____ to____ /length ____
from____ to____ /length ____

SCREEN LINER ASSEMBLY

Description	Depth From	Depth To	Elev. From	Elev. To	Length
K-packer string	652'	659'			7'
Screen	659'	720'	6242'	6181'	61'

SCREEN SPECIFICATIONS:
Slot: 0.020" Composition 3" PVC

FILTER PACKING: N/A
Volume: ____ (bags)(ft^3) Sand Specs. ____
Method: ____

WELL STIMULATION: Method Swabbed
Yield: Good / Moderate / Poor
Not Measured

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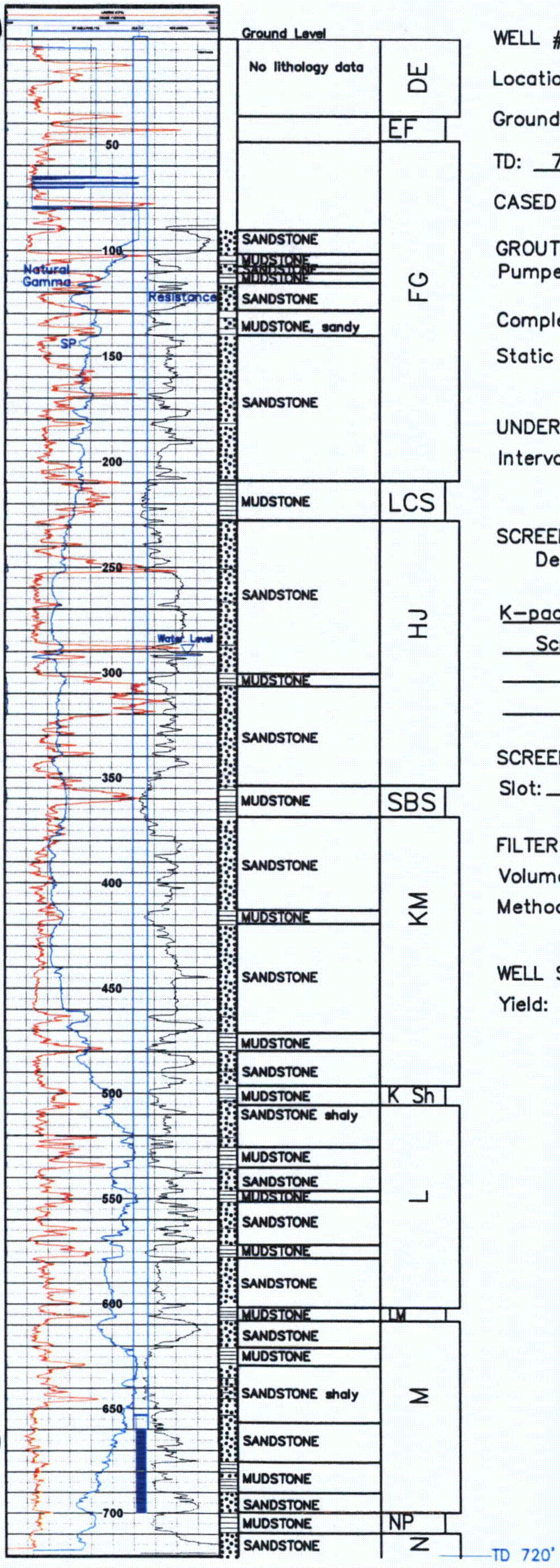
M-N2

Lost Creek ISR, LLC

WELL COMPLETION REPORT

Vertical Scale: 1"=50'

M–N3



WELL # M–N3 SEO # 198452 Date Drilled: 7/30/12

Location: E 2,225,539 / N 598,179 (NAD 83)

Ground Elev: 7001' Measure Point Elev: 7003.3'

TD: 720 ft. Hole Dia.: 8 3/4"

CASED to: 659' Casing: PVC SDR17 ID: 4.81" OD: 5.56"

GROUT: 50–50 Portland/Pozzolan
Pumped thru casing, displaced to surface w/fresh water

Completion AQUIFER: M Horizon

Static Water Level: Depth 292 Elev: 6711.3'
03/10/14

UNDERREAM: Blade Dia: N/A
Intervals: from ____ to ____ /length ____
from ____ to ____ /length ____

SCREEN LINER ASSEMBLY

Description	Depth From	Depth To	Elev. From	Elev. To	Length
K-packer string	653'	660'			7'
Screen	660'	700'	6341'	6301'	40'

SCREEN SPECIFICATIONS:
Slot: 0.020" Composition 3" PVC

FILTER PACKING: N/A
Volume: ____ (bags)(ft^3) Sand Specs. ____
Method: ____

WELL STIMULATION: Method Swabbed
Yield: Good / Moderate / Poor
Not Measured

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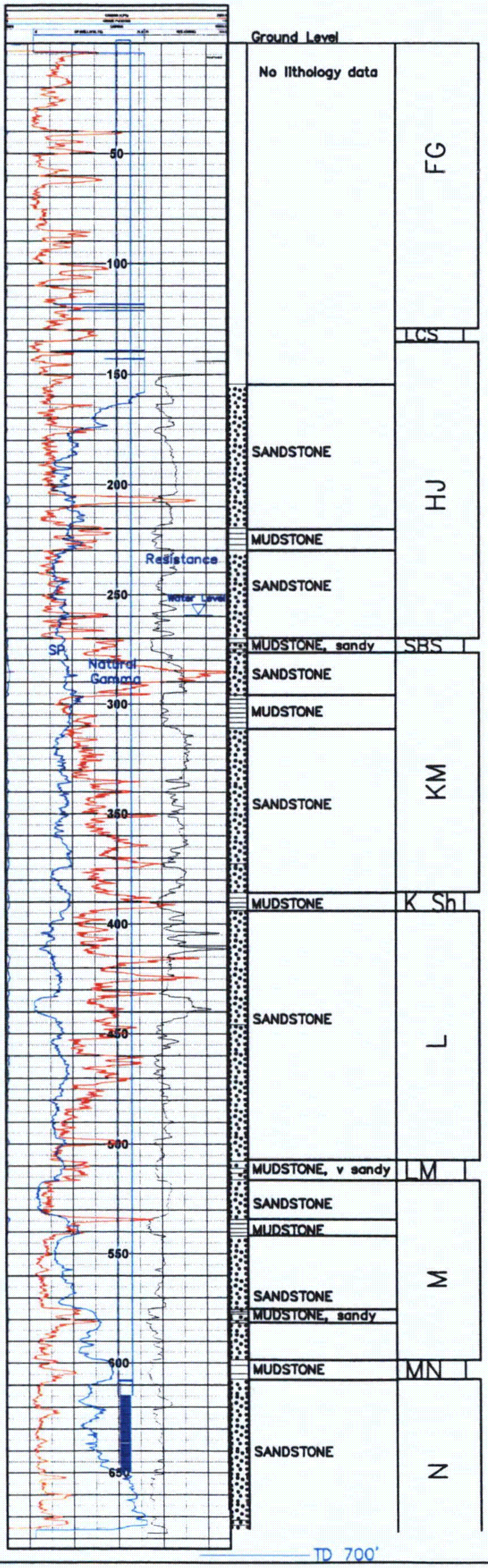
M–N4

Vertical Scale: 1"=50'

M–N4



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WELL COMPLETION REPORT

WELL # M–N4 SEO # 198458 Date Drilled: 7/26/12

Location: E 2,230,127 / N 604,175 (NAD 83)

Ground Elev: 7096' Measure Point Elev: 7098.8'

TD: 700 ft. Hole Dia.: 8 3/4"

CASED to: 615' Casing: PVC SDR17 ID: 4.81" OD: 5.56"

GROUT: 50–50 Portland/Pozzolan
Pumped thru casing, displaced to surface w/fresh water

Completion AQUIFER: N Horizon

Static Water Level: Depth 259.4 Elev: 6839.4'
09/19/13

UNDERREAM: Blade Dia: N/A
Intervals: from ____ to ____ /length ____
from ____ to ____ /length ____

SCREEN LINER ASSEMBLY

Description	Depth From	Depth To	Elev. From	Elev. To	Length
K–packer string	608'	615'			7'
Screen	615'	650'	6481'	6446'	35'

SCREEN SPECIFICATIONS:
Slot: 0.020" Composition 3" PVC

FILTER PACKING: N/A
Volume: ____ (bags)(ft^3) Sand Specs. ____
Method: ____

WELL STIMULATION: Method Swabbed
Yield: Good / Moderate / Poor
Not Measured

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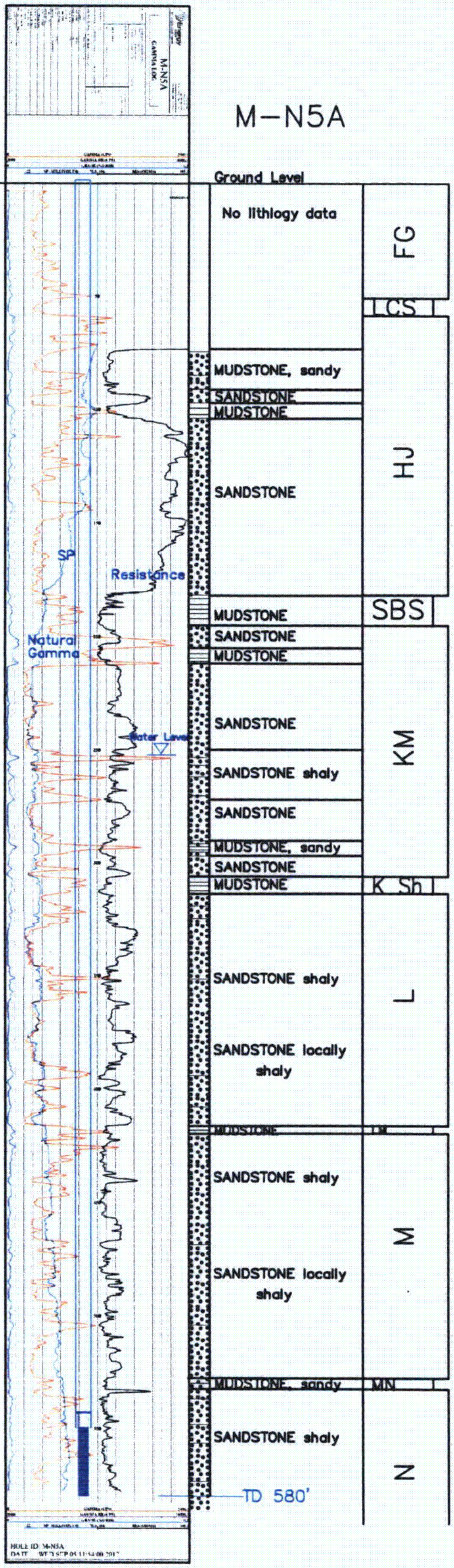
M–N4

Vertical Scale: 1"=50'



M–N5A

Lost Creek ISR, LLC

WELL COMPLETION REPORT

WELL # M-N5A SEO # 198503 Date Drilled: 7/26/12

Location: E 2,229,939 / N 608,450 (NAD 83)

Ground Elev: 7151' Measure Point Elev: 7153.3'

TD: 580 ft. Hole Dia.: 8 3/4"

CASED to: 550 ft Casing: PVC SDR17 ID: 4.81" OD: 5.56"

GROUT: 50-50 Portland/Pozzolan
Pumped thru casing, displaced to surface w/fresh water

Completion AQUIFER: N Horizon

Static Water Level: Depth 252.2 Elev: 6901.1
09/19/13

UNDERREAM: Blade Dia: N/A

Intervals: from ____ to ____ /length ____
from ____ to ____ /length ____

SCREEN LINER ASSEMBLY

Description	Depth From	Depth To	Elev. From	Elev. To	Length
K-packer string	543	550			7'
Screen	550	580	6601'	6571'	30'

SCREEN SPECIFICATIONS:

Slot: 0.020" Composition 3" PVC

FILTER PACKING: N/A

Volume: ____ (bags)(ft^3) Sand Specs. ____

Method: ____

WELL STIMULATION: Method Swabbed

Yield: Good / Moderate / Poor

Not Measured

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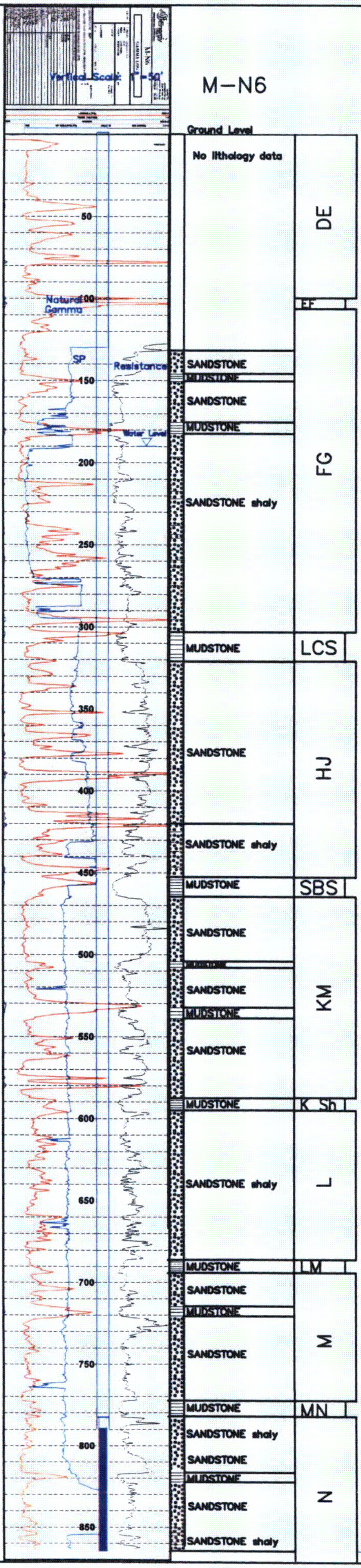
M–N5A



M–N6

Lost Creek ISR, LLC

WELL COMPLETION REPORT

WELL # M–N6 SEO # N/A Date Drilled: 8/15/13

Location: E 2,218,050 / N 593,683 (NAD 83)

Ground Elev: 6926' Measure Point Elev: 6928.6'

TD: 865 ft. Hole Dia.: 7 7/8"

CASED to: 790' Casing: PVC SDR17 ID: 4.5" OD: 4.95"

GROUT: 50–50 Portland/Pozzolan
Pumped thru casing, displaced to surface w/fresh water

Completion AQUIFER: N Horizon

Static Water Level: Depth 189.6' Elev: 6739
10/9/13

UNDERREAM: Blade Dia: N/A

Intervals: from ____ to ____ /length ____

from ____ to ____ /length ____

SCREEN LINER ASSEMBLY

Description	Depth From	Depth To	Elev. From	Elev. To	Length
K–packer string	783'	790'			7'
Screen	790'	865'	6136'	6061'	75'

SCREEN SPECIFICATIONS:

Slot: 0.020" Composition 3" PVC

FILTER PACKING: N/A

Volume: ____ (bags)(ft^3) Sand Specs. ____

Method: ____

WELL STIMULATION: Method Airlift

Yield: Good

30 gpm

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WYOMING

Myron N. Benda
March 2014

M–N6