RICE Operating Company
112 West Taylor • Hobbs, New Mexico 88240
Phone: (575) 393-9174 • Fax: (575) 397-1471

February 20, 2020

Bradford Billings
New Mexico Energy, Minerals, & Natural Resources
Oil Conservation Division, Environmental Bureau
1220 S. St. Francis Drive
Santa Fe, New Mexico 87505

RE: **Termination Request**
Rice Operating Company – BD SWD System
BD Jct. F-15 (1R426-255): UL/F, Sec. 15, T21S, R37E

Mr. Billings:

RICE Operating Company (ROC) submits the following to address potential environmental concerns at the above referenced site in the BD Salt Water Disposal (SWD) system. ROC is the service provider (agent) for the BD SWD System and has no ownership of any portion of the pipeline, well, or facility. The system is owned by a consortium of oil producers, System Parties, who provide all operating capital on a percentage ownership/usage basis.

Background and Previous Work
The site is located approximately 2.6 miles north of Eunice, New Mexico at UL/F, Sec. 15, T21S, R37E as shown on the Geographical Location Map and Area Map. Monitoring wells installed at the site confirmed groundwater is located at a depth of 40 feet below ground surface (bgs).

In 2009, ROC initiated work on the former F-15 junction box. The site was delineated using a backhoe to form a 30 ft x 30 ft x 12 ft deep excavation and soil samples were screened at regular intervals for both hydrocarbon and chloride. Representative composite samples were sent to a commercial laboratory for analysis of chloride and TPH. From the excavation, a 4-wall composite sample and a bottom composite sample were sent to a commercial laboratory for analysis. The 4-wall composite returned a chloride reading of 4,800 mg/kg, a Gasoline Range Organics (GRO) reading non-detect, and a Diesel Range Organics (DRO) reading of 377 mg/kg. The bottom composite sample returned a chloride reading of 4,040 mg/kg, a GRO reading of 166 mg/kg, and a DRO reading of 1,590 mg/kg. The sample was also analyzed for BTEX, resulting in benzene reading of non-detect, a toluene reading of 0.418 mg/kg, an ethylbenzene reading of 1.24 mg/kg and a total xylene reading of 4.67 mg/kg. The excavated soil was blended on site and a representative sample was sent to a commercial laboratory for analysis. The sample returned a chloride reading of 3,840 mg/kg, a GRO reading of 42.9 mg/kg, and a DRO reading of 1,140 mg/kg. The sample was also analyzed for BTEX, resulting in a benzene and toluene reading of non-detect, an ethylbenzene reading of 0.056 mg/kg and a total xylenes reading of 0.434 mg/kg. The blended backfill was returned to the excavation up to 5 ft below ground

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surface. At 5 – 4 ft bgs, a 1 ft thick clay barrier was installed. The clay layer will provide a barrier that will inhibit the downward migration of chlorides to groundwater. Clean, imported soil was used to backfill the excavation to the ground surface and to contour to the surrounding area. An identification plate was placed on the surface above the former junction box to mark the presence of the clay below.

To further investigate the depth of chloride presence, a soil bore was installed on November 4th, 2009. The soil bore was installed at the former junction box site and was advanced to a depth of 36 ft bgs. Soil samples were collected every 3 ft and field titrated for chlorides and field screened for PIDs, resulting in concentrations that did not decrease with depth. The 24 ft, 33 ft, and 36 ft samples were sent to a commercial laboratory for analysis, resulting in a 24 ft chloride concentration of 736 mg/Kg, a GRO concentration of 1,720 mg/Kg, a DRO concentration of 7,340 mg/Kg, a benzene concentration of 0.541 mg/Kg, a toluene concentration of 1.45 mg/Kg, an ethylbenzene concentration of 2.81 mg/Kg and a total xylenes concentration of 11.2 mg/Kg. The 33 ft sample resulted in a chloride concentration of 1,760 mg/Kg, a GRO concentration of non-detect, a DRO concentration of 3,040 mg/Kg, a benzene concentration of 0.076 mg/Kg, a toluene concentration of 0.207 mg/Kg, an ethylbenzene concentration of 0.467 mg/Kg and a total xylenes concentration of 2.54 mg/Kg. The 36 ft sample resulted in a chloride concentration of 1,820 mg/Kg, a GRO concentration of 176 mg/Kg, a DRO concentration of 4,380 mg/Kg, a benzene concentration of non-detect, a toluene concentration of 0.113 mg/Kg, an ethylbenzene concentration of 0.538 mg/Kg and a total xylenes concentration of 2.51 mg/Kg. The entire borehole was plugged with bentonite to the ground surface. On November 24th, 2009, the site was seeded with a blend of native vegetation.

NMOCD was notified of potential groundwater impact on March 8th, 2010. A junction box disclosure report was submitted to NMOCD with all the 2009 junction box closures and disclosures

Investigation and Characterization Plan (ICP) Report

An ICP was submitted on February 16th, 2015 and approved on February 20th, 2015. On May 19th, 2015, an additional 4 soil bores were installed at the site. As the bores were advanced, soil samples were taken at regular intervals and field tested for chloride and hydrocarbon. Representative samples from each bore were taken to a commercial laboratory for confirmatory analysis. SB-2 returned a laboratory chloride reading of 1,010 mg/Kg at 22 ft bgs, which decreased to 208 mg/Kg at 31 ft bgs. SB-3 returned a laboratory chloride reading of 1,920 mg/kg at 16 ft bgs, which decreased to 784 mg/Kg at 40 ft bgs. SB-4 returned laboratory chloride readings of 1,300 mg/Kg at 19 ft bgs and decreased to 832 mg/Kg at 40 ft bgs. SB-5 returned a laboratory chloride reading of 992 mg/Kg at 19 ft bgs, which decreased to 448 mg/Kg at 40 ft bgs. On July 10th, 2015, an additional two soil bores were installed at the site SB-6 returned a laboratory chloride reading of 1,060 mg/Kg at 6 ft bgs, which decreased to 352 mg/Kg at 36 ft bgs. SB-7 returned a laboratory chloride reading of <16 mg/kg at the surface and 352

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mg/Kg at 9 ft bgs. On June 15th, 2016, an additional soil bore (SB-8) was installed at the site. SB-8 returned a laboratory chloride reading of 752 mg/Kg at 3 ft bgs and 192 mg/Kg at 24 ft bgs. GRO and DRO readings at all depth in all bores were non-detect. The bore holes were plugged with bentonite to ground surface.

CAP Report and Soil Closure Request

A Corrective Action Plan (CAP) was submitted on the August 31st, 2017 and was approved by the NMOCD on the September 7th, 2017. The CAP proposed installing a 35x50 ft, 20-mil reinforced liner at 5-4 ft bgs.

In order to inhibit the downward migration of residual constituents through the vadose zone, ROC installed a 20-mil reinforced poly liner across the site with the dimensions of 35x50 ft, which covered the previously installed 30x30 ft clay liner. A total of 396 cubic yards of excavated soil were taken to a NMOCD approved facility for disposal. The bottom of the excavation was padded with 6 inches of imported blow sand and a 20-mil reinforced liner was installed and properly seated at 4.5 ft bgs. The top of the liner was padded with 6 inches of imported blow sand, and the excavation was backfilled to ground surface with blended backfill soil and imported topsoil. A sample of the blended backfill and a sample of the imported topsoil were field tested for hydrocarbons using a PID, resulting in readings of 0.5 and 1.1 ppm, respectively. Each sample was sent to a commercial laboratory for analysis of chloride and returned a result of 16 mg/kg and <16 mg/kg, respectively. The backfilled site was then seeded with a blend of native vegetation. Vegetation above the liner will also provide a natural infiltration barrier for the site, since plants capture water through their roots thereby reducing the volume of water moving through the vadose zone.

A CAP Report and Soil Closure Request summarizing the liner installation work was submitted to the NMOCD on May 17th, 2018. NMOCD approved the report and granted soil closure on June 20th, 2018.

Groundwater Monitoring Results

In order to determine what affect the residual chlorides may have had on the groundwater quality below the site, ROC installed a near-source monitor well (MW-1) located approximately 25 feet down-gradient of the former junction box. To determine if there is an up-gradient source of contaminates coming onto the site, MW-2 was installed approximately 75 feet up-gradient of the former junction box. Also, an additional monitoring well (MW-3) was installed approximately 100 feet down-gradient of the former junction box (see the Installed Monitoring Wells plat attached). The monitor wells were installed on June 26th and 27th, 2019 to NMOCD and EPA standards and then sampled quarterly.

Quarterly sampling of the near-source well (MW-1) resulted in a chloride concentration of 16,400 mg/L on August 6th, 2019 and 15,600 mg/L on November 4th, 2019. The up-gradient

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well (MW-2) resulted in higher chloride concentrations of 29,000 mg/L and 27,300 mg/L, respectively. The lowest chloride concentrations were observed in the down-gradient well (MW-3), which resulted in concentrations of 14,000 mg/L and 13,200 mg/L. BTEX was observed in MW-1 on August 6th, 2019 with a benzene concentration of 0.021 mg/L and ethyl benzene concentration of 0.008 mg/L, while toluene and total xylenes were below detectable limits. BTEX was also observed in the up-gradient well (MW-2) on August 6th, 2019 with a benzene concentration of 0.02 mg/L, ethyl benzene concentration of 0.008, while toluene and total xylenes were below detectable limits. All other sampling events resulted in BTEX concentrations below detectable limits.

A review of historical photos show oilfield activity directly upgradient of this site, initially showing up in the 1955 historical photo. Groundwater chloride concentrations were substantially higher in the up-gradient well (MW-2), suggesting the non-ROC oilfield activity visible in the historical photos contributed to the degradation of groundwater quality. Groundwater chloride concentrations were lower in the near-source well (MW-1), and lower in the down-gradient well (MW-3), suggesting the former junction did not contribute to the degradation of groundwater quality. Historical aerial photos are attached.

Recommendations

ROC has completed the vadose zone remediation as approved by OCD in the CAP, and Soil Closure was approved by OCD on June 20th, 2018. The 20-mil reinforced liner will inhibit the further migration of chloride through the vadose zone into groundwater. The groundwater monitoring results indicate there is a non-ROC source up-gradient of the site. As such, ROC respectfully requests termination of the regulatory file. ROC acknowledges they have met the requirements of 19.15.29 NMAC and a final C-141 is attached. Upon NMOCD approval of this Termination Request, the monitoring wells (MW-1, MW-2, and MW-3) will be plugged using a cement grout with 1 to 3% bentonite and a 3-ft cap of cement at the surface.

ROC appreciates the opportunity to work with you on this project. Please call me at (575) 393-9174 or Edward Hansen at (505) 920-4965 if you have any questions or wish to discuss the site.

Sincerely,

Katie Davis

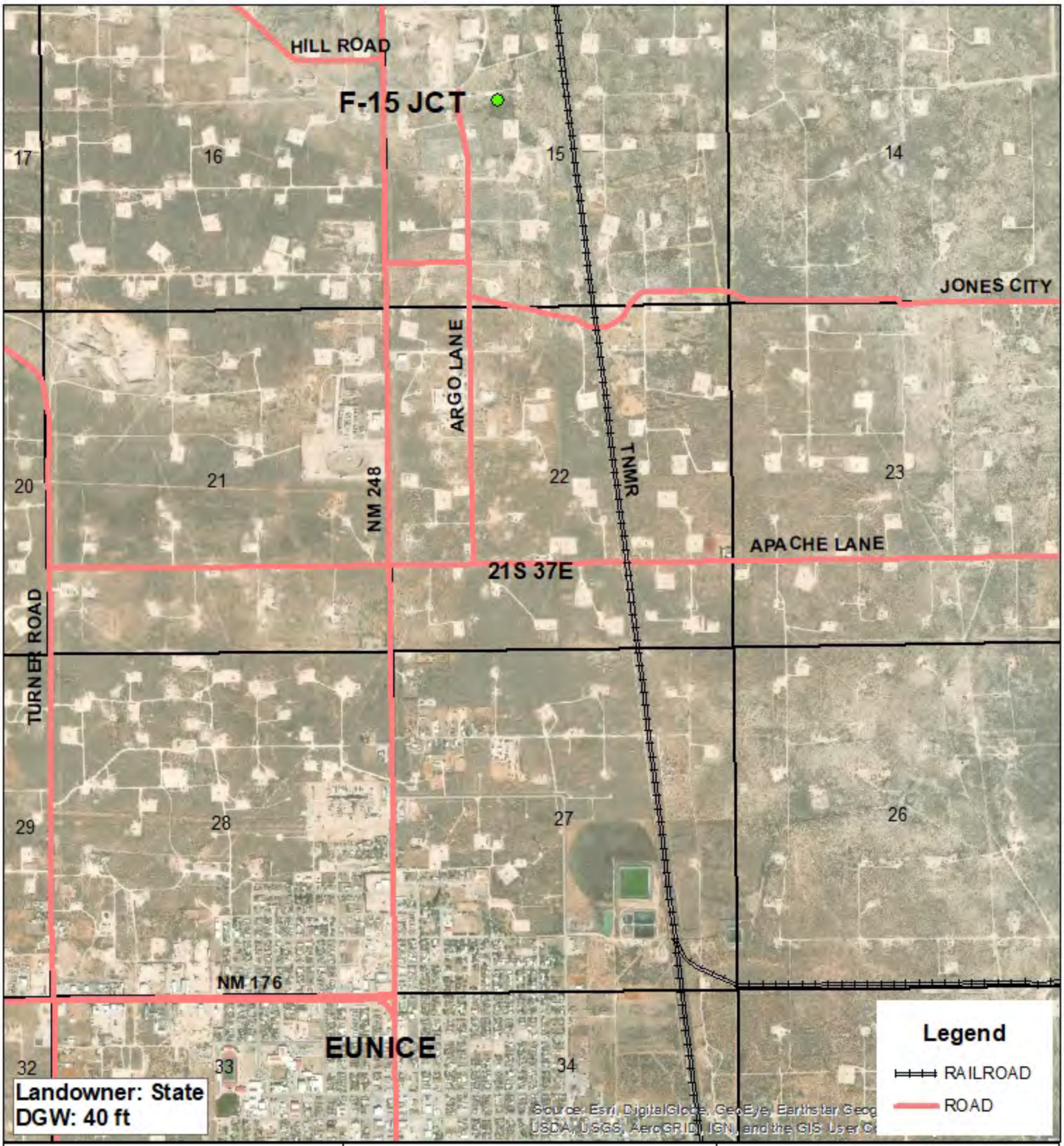
Katie Davis
Environmental Manager
RICE Operating Company

Appendix

Figures

RICE Operating Company
112 West Taylor, Hobbs, NM 88240
Phone 575.393.9174

Geographic Location



RICE OPERATING COMPANY
ROC
SINCE 1955

BD

JCT F-15

1R426-255

UL F SECTION 15
T-21-S R-37-E
LEA COUNTY, NM

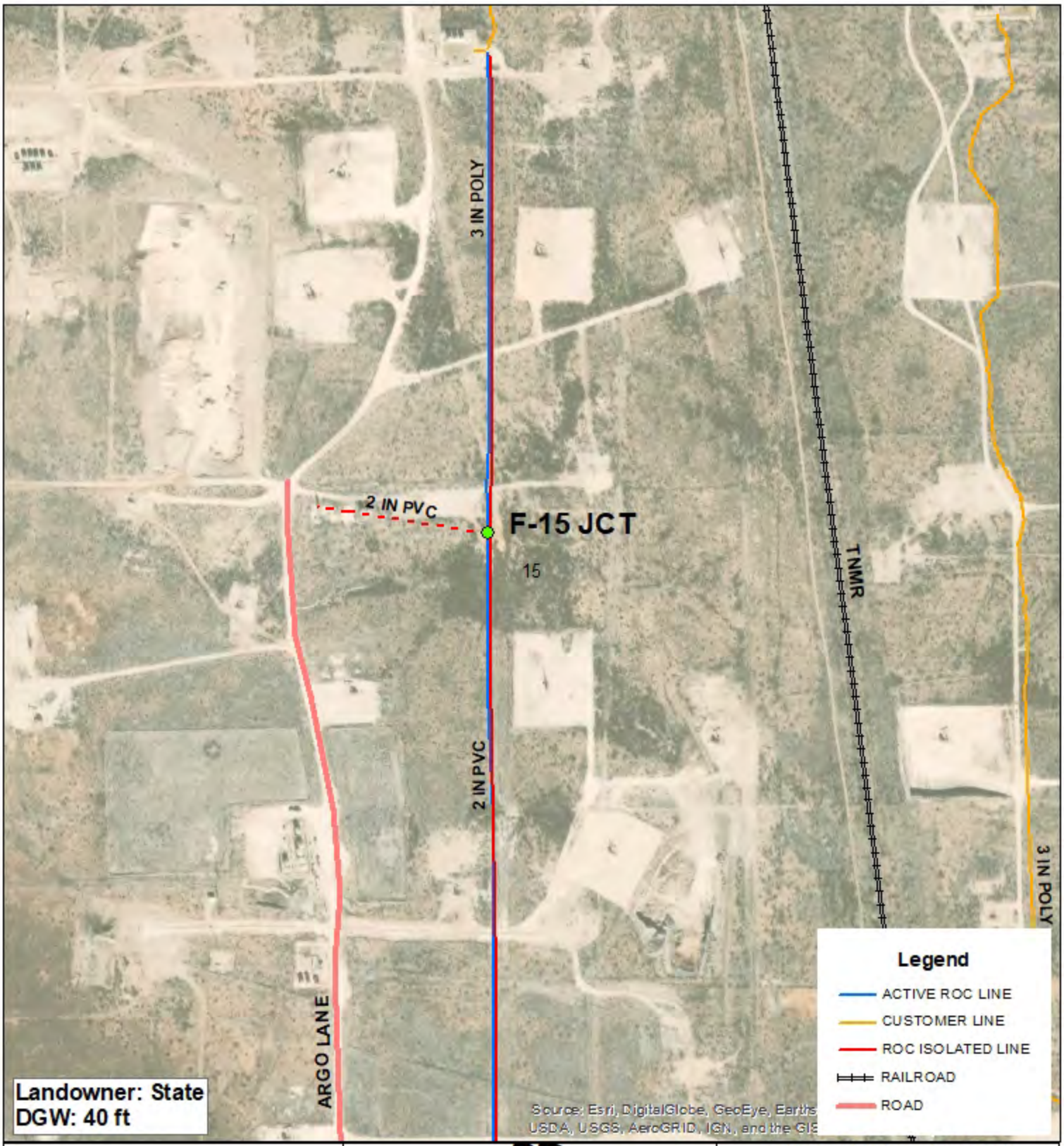
GPS: 32.480397 -103.153770
NAD 83 STATE PLANE PROJECTION
NM EAST ZONE

N
W E
S

0 1,000 2,000
Feet

Drawing date:10/7/19
Drafted by: T. Grieco

Area Map



RICE OPERATING COMPANY
ROC
SINCE 1955

BD

JCT F-15

1R426-255

UL F SECTION 15
T-21-S R-37-E
LEA COUNTY, NM

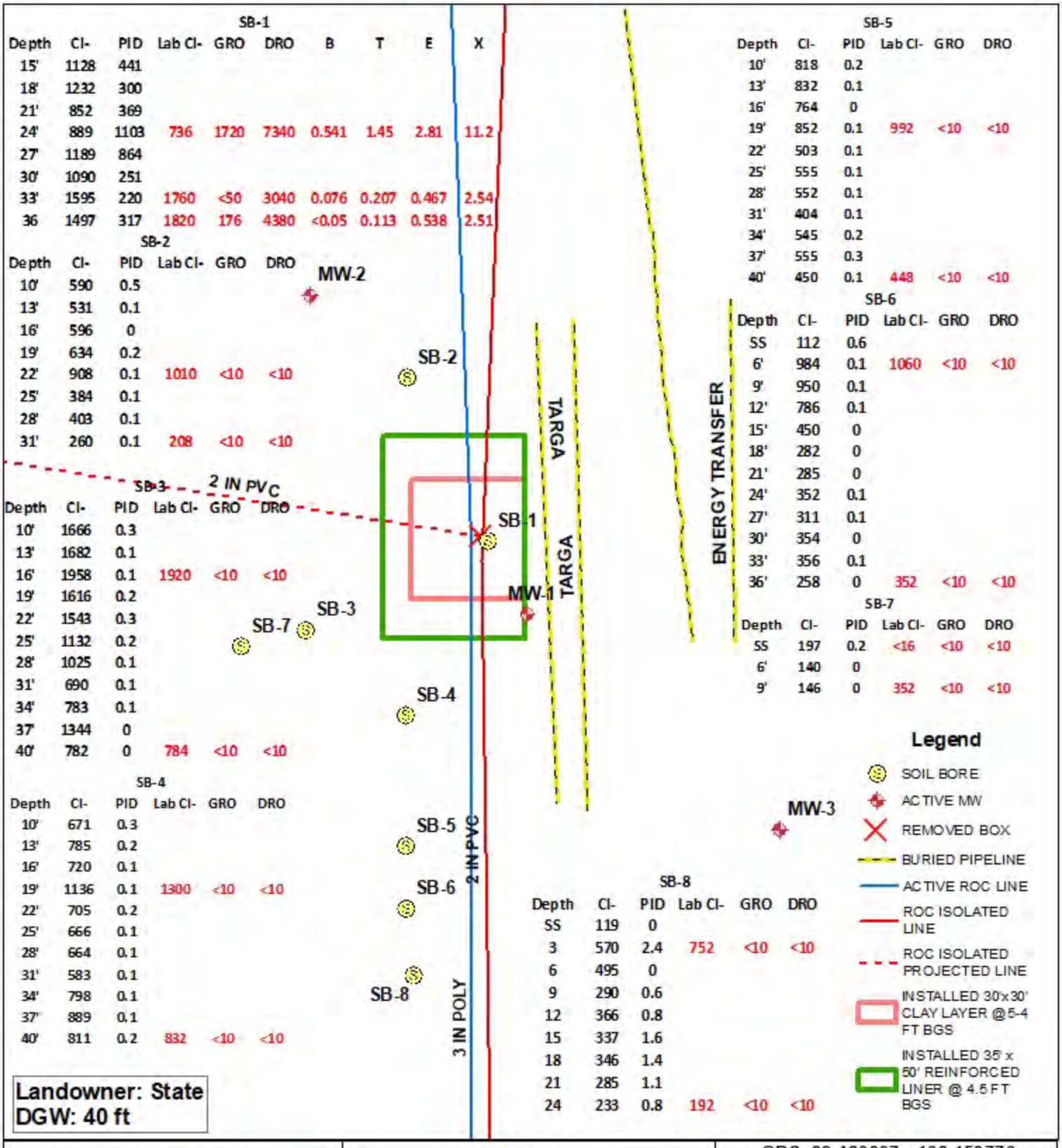
GPS: 32.480397 -103.153770
NAD 83 STATE PLANE PROJECTION
NM EAST ZONE

0 250 500 Feet

N
W E
S

Drawing date:10/7/19
Drafted by: T. Grieco

Soil Bore Installation



SB-1

Depth	Cl-	PID	Lab Cl-	GRO	DRO	B	T	E	X
15'	1128	441							
18'	1232	300							
21'	852	369							
24'	889	1103	736	1720	7340	0.541	1.45	2.81	11.2
27'	1189	864							
30'	1090	251							
33'	1595	220	1760	<50	3040	0.076	0.207	0.467	2.54
36	1497	317	1820	176	4380	<0.05	0.113	0.538	2.51

SB-2

Depth	Cl-	PID	Lab Cl-	GRO	DRO
10'	590	0.5			
13'	531	0.1			
16'	596	0			
19'	634	0.2			
22'	908	0.1	1010	<10	<10
25'	384	0.1			
28'	403	0.1			
31'	260	0.1	208	<10	<10

SB-3

Depth	Cl-	PID	Lab Cl-	GRO	DRO
10'	1666	0.3			
13'	1682	0.1			
16'	1958	0.1	1920	<10	<10
19'	1616	0.2			
22'	1543	0.3			
25'	1132	0.2			
28'	1025	0.1			
31'	690	0.1			
34'	783	0.1			
37'	1344	0			
40'	782	0	784	<10	<10

SB-4

Depth	Cl-	PID	Lab Cl-	GRO	DRO
10'	671	0.3			
13'	785	0.2			
16'	720	0.1			
19'	1136	0.1	1300	<10	<10
22'	705	0.2			
25'	666	0.1			
28'	664	0.1			
31'	583	0.1			
34'	798	0.1			
37'	889	0.1			
40'	811	0.2	832	<10	<10

SB-5

Depth	Cl-	PID	Lab Cl-	GRO	DRO
10'	818	0.2			
13'	832	0.1			
16'	764	0			
19'	852	0.1	992	<10	<10
22'	503	0.1			
25'	555	0.1			
28'	552	0.1			
31'	404	0.1			
34'	545	0.2			
37'	555	0.3			
40'	450	0.1	448	<10	<10

SB-6

Depth	Cl-	PID	Lab Cl-	GRO	DRO
SS	112	0.6			
6'	984	0.1	1060	<10	<10
9'	950	0.1			
12'	786	0.1			
15'	450	0			
18'	282	0			
21'	285	0			
24'	352	0.1			
27'	311	0.1			
30'	354	0			
33'	356	0.1			
36'	258	0	352	<10	<10

SB-7

Depth	Cl-	PID	Lab Cl-	GRO	DRO
SS	197	0.2	<16	<10	<10
6'	140	0			
9'	146	0	352	<10	<10

SB-8

Depth	Cl-	PID	Lab Cl-	GRO	DRO
SS	119	0			
3	570	2.4	752	<10	<10
6	495	0			
9	290	0.6			
12	366	0.8			
15	337	1.6			
18	346	1.4			
21	285	1.1			
24	233	0.8	192	<10	<10

Legend

- SOIL BORE
- ACTIVE MW
- REMOVED BOX
- BURIED PIPELINE
- ACTIVE ROC LINE
- ROC ISOLATED LINE
- ROC ISOLATED PROJECTED LINE
- INSTALLED 30'x30' CLAY LAYER @5-4 FT BGS
- INSTALLED 35' x 50' REINFORCED LINER @ 4.5 FT BGS

Landowner: State
DGW: 40 ft

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BD
JCT F-15
1R426-255

UL F SECTION 15
T-21-S R-37-E
LEA COUNTY, NM

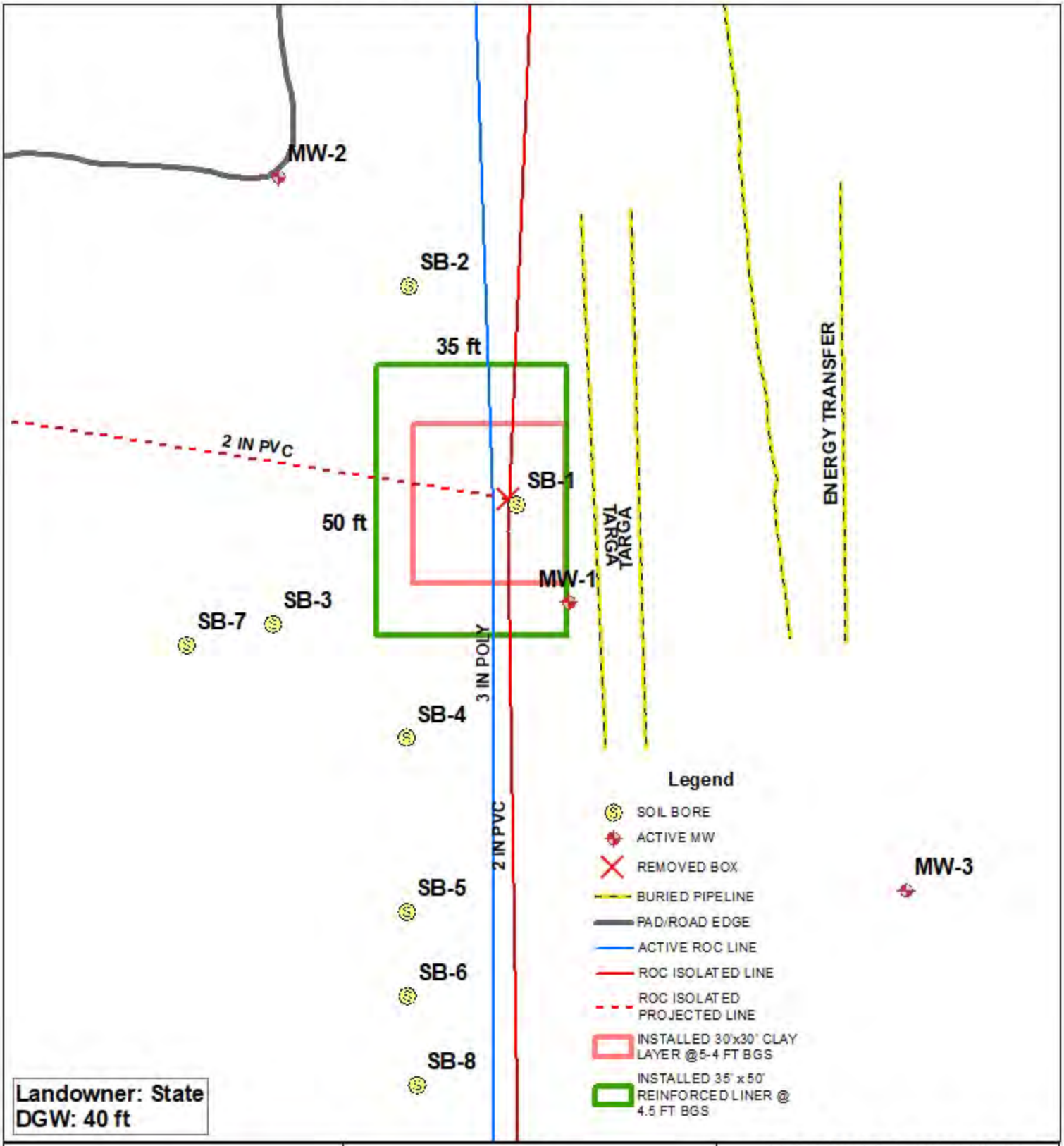
GPS: 32.480397 -103.153770
NAD 83 STATE PLANE PROJECTION
NM EAST ZONE

0 25 50 Feet

GPS Date: 7/10/15 CF,7/1/19 TG
Drawing date:2/5/20
Drafted by: T. Grieco

N E S W

Installed Monitor Wells



RICE OPERATING COMPANY
ROC
SINCE 1955

BD

JCT F-15

1R426-255

UL F SECTION 15
T-21-S R-37-E
LEA COUNTY, NM

GPS: 32.480397 -103.153770
NAD 83 STATE PLANE PROJECTION
NM EAST ZONE

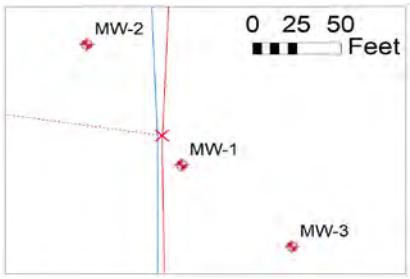
0 10 20
Feet

GPS Date: 7/10/15 CF,7/1/19 TG
Drawing date:2/5/20
Drafted by: T. Grieco

N
W E
S

Monitoring Well Installation

RICE Operating Company
112 West Taylor, Hobbs, NM 88240
Phone 575.393.9174

Logger:	Nick Kopiasz		TASMAN GEOSCIENCES
Driller:	HCI Drilling		**Project Name:** BD Jct. F-15 **Well ID:** MW-1
Drilling Method:	6" Air Rotary		**Project Consultant:** Tasman
Start Date:	6/26/2019		
End Date:	6/26/2019		

Comments: Soil samples were collected from drill cuttings at specified intervals. Located approximately 30 ft southeast of the former junction box.

DRAFTED BY: N.Kopiasz

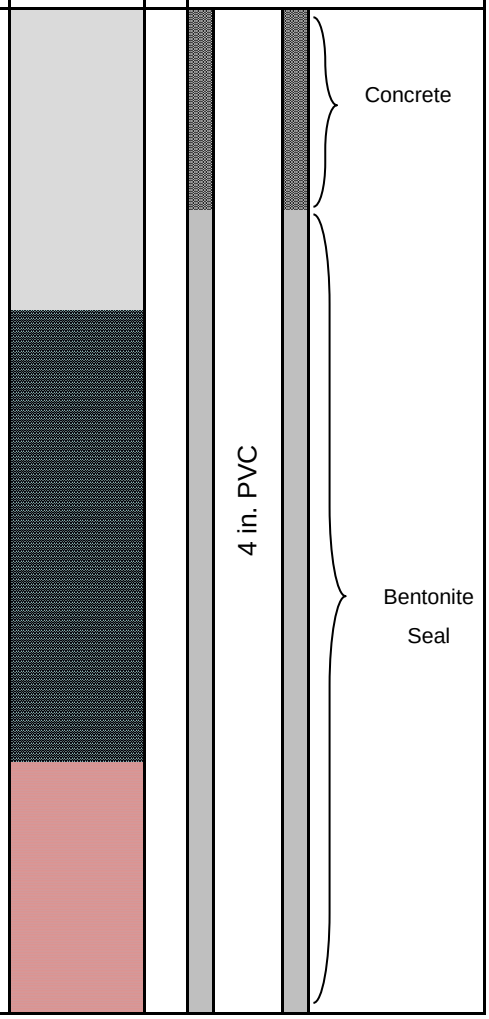
TD = 84 ft (bgs) GW = 37 ft (bgs)

Location: Unit F, Section 15, T21S, R37E

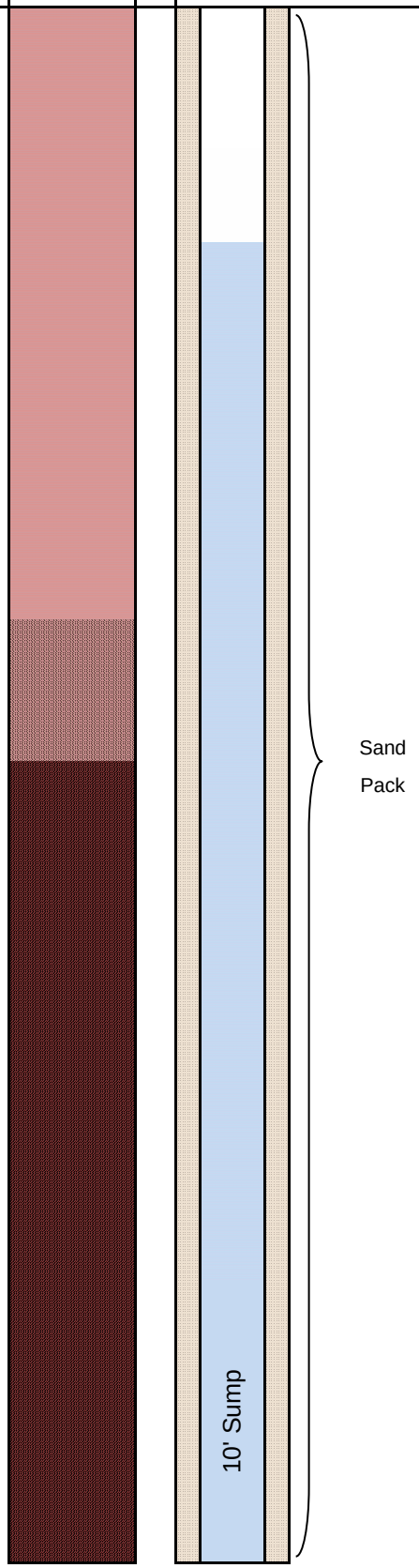
Lat: 32.480344 (NAD83) **County:** Lea

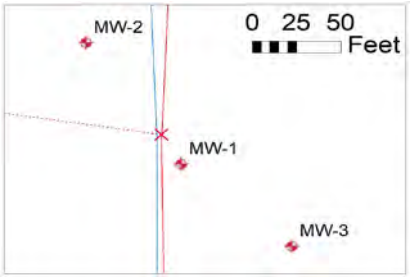
Long: -103.153735 **State:** NM

Depth (feet)	Chloride field tests	LAB	PID	Description
				No Recovery (Hydrovac)
SS				
				No Recovery (Hydrovac)
5 ft				
				GM-tan, gravelly silt, weathered caliche and sandstone
10 ft				
				GM-light tan, gravelly silt, weathered caliche and sandstone
15 ft				
				GM-Same As Above (SAA)
20 ft				
				SM-reddish tan, silty sand
25 ft				
				SM-SAA



Depth (feet)	Chloride field tests	LAB	PID	Description	Lithology	Well Construction
30 ft						
				SM-tan, silty sand		
35 ft						
				SM-tan, silty sand, moist		
40 ft						
				SM-reddish brown, silty sand, wet		
45 ft						
				SM-SAA		
50 ft						
				SC-brownish red, silty clay, wet		
55 ft						
				CL-brownish red, clay with silt, wet		
60 ft						
				CL-brownish red, clay with silt, moist		
65 ft						
				CL-brownish red, clay with silt		
70 ft						
				CL-SAA		
75 ft						
				CL-SAA		
80 ft						
				CL-SAA		
85 ft						



Logger:	Nick Kopiasz		TASMAN GEOSCIENCES
Driller:	HCI Drilling		**Project Name:** BD Jct. F-15 **Well ID:** MW-2
Drilling Method:	6" Air rotary		**Project Consultant:** Tasman
Start Date:	6/26/2019		
End Date:	6/26/2019		

Comments: Soil samples were collected from drill cuttings at specified intervals. Located approximately 75 ft northwest of the former junction box.

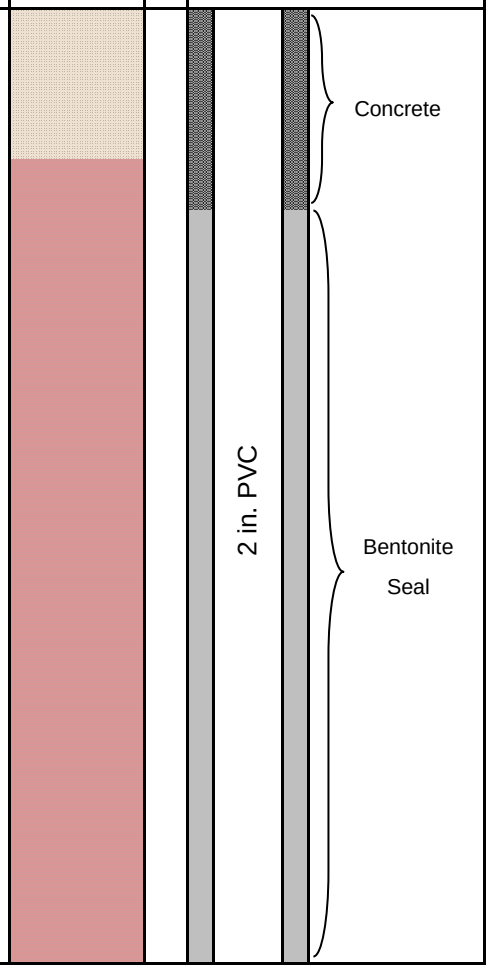
DRAFTED BY: N.Kopiasz

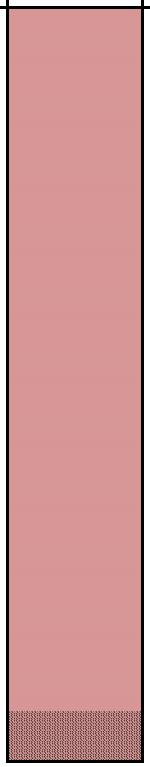
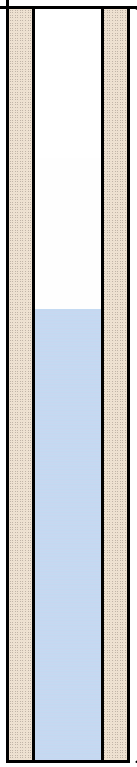
TD = 52 ft (bgs) GW = 37 ft (bgs)

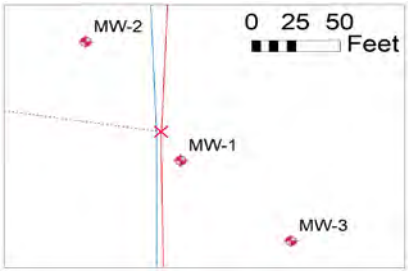
Location: Unit F, Section 15, T21S, R37E

Lat: 32.480561 (NAD83) **County:** Lea
Long: -103.153906 **State:** NM

Depth (feet)	Chloride field tests	LAB	PID	Description
				SW-brown, well graded sand, pebbles of caliche
SS				
				SM-greenish tan, silty sand, some pebbles of mechanically weathered caliche
5 ft				
				SM-tan, silty sand, some pebbles of caliche and sandstone
10 ft				
				SM-tan, silty sand, some sandstone
15 ft				
				SM-Same As Above (SAA)
20 ft				
				SM-SAA
25 ft				



Depth (feet)	Chloride field tests	LAB	PID	Description	Lithology	Well Construction
				SM-reddish tan, silty sand		
30 ft						
				SM-reddish tan, silty sand, moist		
35 ft						
				SM-SAA		
40 ft						
				SM-mottled reddish tan/light brown, silty sand, moist		
45 ft						
				SM-light brown, silty sand, wet		
50 ft						
				SC-reddish brown, clayey silt, wet		
55 ft						

Logger:	Nick Kopiasz		TASMAN GEOSCIENCES
Driller:	HCI Drilling		**Project Name:** BD Jct. F-15 **Well ID:** MW-3
Drilling Method:	6" Air Rotary		**Project Consultant:** Tasman
Start Date:	6/27/2019		
End Date:	6/27/2019		

Comments: Soil samples were collected from drill cuttings at specified intervals. Located approximately 110 ft southeast of the former junction box.

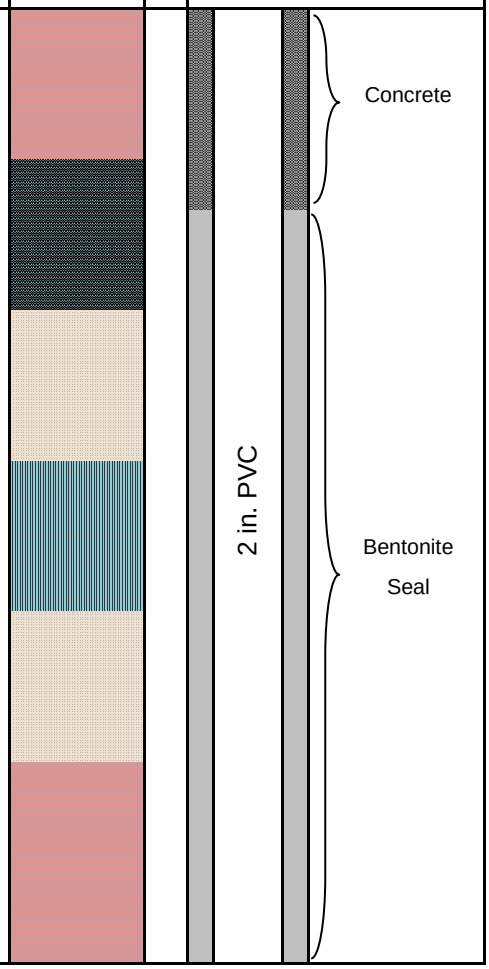
DRAFTED BY: N.Kopiasz

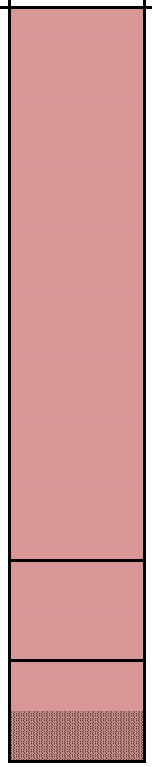
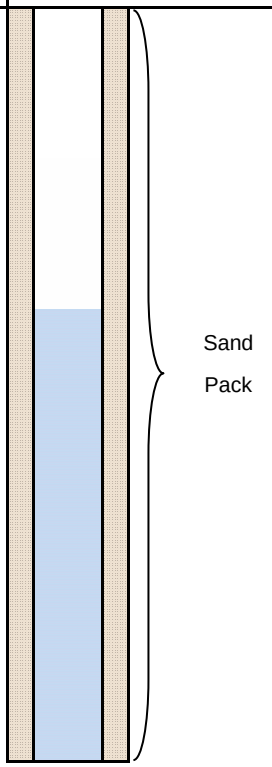
TD = 52 ft (bgs) GW = 37 ft (bgs)

Location: Unit F, Section 15, T21S, R37E

Lat: 32.480195 (NAD83) **County:** Lea
Long: -103.153535 **State:** NM

Depth (feet)	Chloride field tests	LAB	PID	Description
				SM-reddish brown, silty sand
SS				
				GM-light brown, grevelly/silty sand, cobbles of mechanically weathered caliche
5 ft				
				SW-tan, well graded sand with silt, caliche pebbles
10 ft				
				GW-tan, well graded gravels with caliche and sandstone pebbles
15 ft				
				SW-tan, well graded sand, some caliche and sandstone pebbles
20 ft				
				SM-tan, silty sand
25 ft				



Depth (feet)	Chloride field tests	LAB	PID	Description	Lithology	Well Construction
				SM-reddish tan, silty sand		
30 ft						
				SM-tan, silty sand		
35 ft						
				SM-reddish tan, silty sand, moist		
40 ft						
				SM-reddish tan, silty sand and fine sand, wet		
45 ft						
				SM-Same As Above (SAA)		
50 ft						
				SC-reddish tan, clayey silt, wet		
55 ft						

Rice Operating Company
BD Jct. F-15
Monitoring Well Drilling
6/26-27/2019

MW-2 Overview

MW-1

Rice Operating Company
BD Jct. F-15
Monitoring Well Drilling
6/26-27/2019

MW-2 Drilling

MW-2 Sampling

Rice Operating Company
BD Jct. F-15
Monitoring Well Drilling
6/26-27/2019

MW-2 Completion

MW-3 Overview

Rice Operating Company
BD Jct. F-15
Monitoring Well Drilling
6/26-27/2019

MW-3 Drilling

MW-3 Sampling

Rice Operating Company
BD Jct. F-15
Monitoring Well Drilling
6/26-27/2019

MW-1 Location

MW-3 Location

Rice Operating Company
BD Jct. F-15
Monitoring Well Drilling
6/26-27/2019

MW-2 Location

Monitoring Well Sampling

RICE Operating Company
112 West Taylor, Hobbs, NM 88240
Phone 575.393.9174

ROC - BD Jct. F-15 (1R426-255)
Unit Letter F, Section 15, T21S, R37E

MW	Depth to Water	Total Depth	Well Volume	Volume Purged	Sample Date	Cl	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate	Comments
1	40.05	86.7	30	100	8/6/2019	16,400	28,500	0.021	<0.001	0.008	<0.003	321	Clear Slight Odor
1	40.14	86.7	30	100	11/4/2019	15,600	26,600	<0.001	<0.001	<0.001	<0.003	391	Clear No Odor

MW	Depth to Water	Total Depth	Well Volume	Volume Purged	Sample Date	Cl	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate	Comments
2	41.38	55.55	2.3	8	8/6/2019	29,000	47,800	0.02	<0.001	0.008	<0.003	344	Clear Slight Odor
2	41.45	55.55	2.3	8	11/4/2019	27,300	43,300	<0.001	<0.001	<0.001	<0.003	394	Clear Slight Odor

MW	Depth to Water	Total Depth	Well Volume	Volume Purged	Sample Date	Cl	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate	Comments
3	40.21	55.25	2.4	8	8/6/2019	14,000	24,600	<0.001	<0.001	<0.001	<0.003	412	Clear No Odor
3	40.23	55.25	2.4	8	11/4/2019	13,200	23,800	<0.001	<0.001	<0.001	<0.003	503	Clear No Odor

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

November 13, 2019

KATIE JONES

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: BD JUNCTION F-15

Enclosed are the results of analyses for samples received by the laboratory on 11/06/19 13:10.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-19-12. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab_accred_certif.html.

Cardinal Laboratories is accreditated through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Celey D. Keene

Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

Rice Operating Company
KATIE JONES
112 W. Taylor
Hobbs NM, 88240
Fax To: (575) 397-1471

Received:	11/06/2019	Sampling Date:	11/04/2019
Reported:	11/13/2019	Sampling Type:	Water
Project Name:	BD JUNCTION F-15	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	T21S R37E SEC15 F ~ LEA CO, NM		

Sample ID: MONITOR WELL #1 (H903789-01)

BTEX 8021B mg/L Analyzed By: CK

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.001	0.001	11/07/2019	ND	0.020	99.2	0.0200	0.551	
Toluene*	<0.001	0.001	11/07/2019	ND	0.018	89.6	0.0200	0.479	
Ethylbenzene*	<0.001	0.001	11/07/2019	ND	0.020	98.6	0.0200	0.310	
Total Xylenes*	<0.003	0.003	11/07/2019	ND	0.058	96.9	0.0600	0.843	
Total BTEX	<0.006	0.006	11/07/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID *93.1 %* *74-98*

Chloride, SM4500Cl-B mg/L Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	**15600**	4.00	11/08/2019	ND	104	104	100	0.00	

Sulfate 375.4 mg/L Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate*	**391**	50.0	11/08/2019	ND	18.3	91.6	20.0	16.9	

TDS 160.1 mg/L Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS*	**26600**	5.00	11/08/2019	ND	515	97.7	527	6.02	

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

Rice Operating Company
KATIE JONES
112 W. Taylor
Hobbs NM, 88240
Fax To: (575) 397-1471

Received:	11/06/2019	Sampling Date:	11/04/2019
Reported:	11/13/2019	Sampling Type:	Water
Project Name:	BD JUNCTION F-15	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	T21S R37E SEC15 F ~ LEA CO, NM		

Sample ID: MONITOR WELL #2 (H903789-02)

BTEX 8021B mg/L Analyzed By: CK

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.001	0.001	11/07/2019	ND	0.020	99.2	0.0200	0.551	
Toluene*	<0.001	0.001	11/07/2019	ND	0.018	89.6	0.0200	0.479	
Ethylbenzene*	<0.001	0.001	11/07/2019	ND	0.020	98.6	0.0200	0.310	
Total Xylenes*	<0.003	0.003	11/07/2019	ND	0.058	96.9	0.0600	0.843	
Total BTEX	<0.006	0.006	11/07/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID *108 %* *74-98*

Chloride, SM4500Cl-B mg/L Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	**27300**	4.00	11/08/2019	ND	104	104	100	0.00	

Sulfate 375.4 mg/L Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate*	**394**	50.0	11/08/2019	ND	18.3	91.6	20.0	16.9	

TDS 160.1 mg/L Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS*	**43300**	5.00	11/08/2019	ND	515	97.7	527	6.02	

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

Rice Operating Company
KATIE JONES
112 W. Taylor
Hobbs NM, 88240
Fax To: (575) 397-1471

Received:	11/06/2019	Sampling Date:	11/04/2019
Reported:	11/13/2019	Sampling Type:	Water
Project Name:	BD JUNCTION F-15	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	T21S R37E SEC15 F ~ LEA CO, NM		

Sample ID: MONITOR WELL #3 (H903789-03)

BTEX 8021B mg/L Analyzed By: CK

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.001	0.001	11/07/2019	ND	0.020	99.2	0.0200	0.551	
Toluene*	<0.001	0.001	11/07/2019	ND	0.018	89.6	0.0200	0.479	
Ethylbenzene*	<0.001	0.001	11/07/2019	ND	0.020	98.6	0.0200	0.310	
Total Xylenes*	<0.003	0.003	11/07/2019	ND	0.058	96.9	0.0600	0.843	
Total BTEX	<0.006	0.006	11/07/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID *106 %* *74-98*

Chloride, SM4500Cl-B mg/L Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	**13200**	4.00	11/08/2019	ND	104	104	100	0.00	

Sulfate 375.4 mg/L Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate*	**503**	83.3	11/08/2019	ND	18.3	91.6	20.0	16.9	

TDS 160.1 mg/L Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS*	**23800**	5.00	11/08/2019	ND	515	97.7	527	6.02	

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Notes and Definitions

ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C
	Samples reported on an as received basis (wet) unless otherwise noted on report

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

101 East Marland - Hobbs, NM 88240
Tel (575) 393-2326
Fax (575) 393-2476

Cardinal Laboratories, Inc.

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

LAB Order ID # _____

Company Name: RICE Operating Company	BILL TO Company: RICE Operating Company PO#
Project Manager: Katie Jones	Address: (Street, City, Zip) 122 W Taylor Street ~ Hobbs, New Mexico 88240
Address: (Street, City, Zip) 122 W Taylor Street ~ Hobbs, New Mexico 88240	Phone#: (575) 393-9174 Fax#: (575)397-1471
Phone #: (575) 393-9174 Fax #: (575) 397-1471	
Project #: Project Name: BD Junction F-15	
Project Location: T21S R37E Sec15 F ~ Lea County New Mexico	Sampler Signature: Rozanne Johnson (575)631-9310

LAB # H903789 (LAB USE ONLY)

LAB #	FIELD CODE	(G)rab or (C)omp	# CONTAINERS	MATRIX: WATER	SOIL	AIR	SLUDGE	PRESERVATIVE METHOD: HCL (2 40ml VOA)	HNO_3	$NaHSO_4$	H_2SO_4	ICE (1-1Liter HDPE)	NONE	SAMPLING: DATE (2019)	TIME
1	Monitor Well #1	G	3	X				2				1		11/4	14:05
2	Monitor Well #2	G	3	X				2				1		11/4	10:10
3	Monitor Well #3	G	3	X				2				1		11/4	11:45

ANALYSIS REQUEST
(Circle or Specify Method No.)

MTBE 8021B/602	BTEX 8021B/602	TPH 418.1/TX1005 / TX1005 Extended (C35)	PAH 8270C	Total Metals Ag As Ba Cd Cr Pb Se Hg 6010B/200.7	TCLP Metals Ag As Ba Cd Cr Pb Se Hg	TCLP Volatiles	TCLP Semi Volatiles	TCLP Pesticides	RCI	GC/MS Vol. 8260B/624	GC/MS Semi. Vol. 8270C/625	PCB's 8082/608	Pesticides 8081A/608	BOD, TSS, pH	Moisture Content	Anions (Cl, SO4, CO3, HCO3)	Cations (Ca, Mg, Na, K)	Sulfates (SO4)	Total Dissolved Solids	Chlorides	Turn Around Time ~ 24 Hours
	X																	X	X	X	
	X																	X	X	X	
	X																	X	X	X	

Relinquished by: Rozanne Johnson Date: 11/6/2019 Time: 13:10
Received by: Date: 11-6-19 Time: 13:10

Relinquished by: Date: Time:
Received By: (Laboratory Staff) Date: Time:

Delivered By: (Circle One)
Sampler - UPS - Bus - Other:

Sample Condition: Cool: Yes ✓ No ; Intact: Yes ✓ No
CHECKED BY: (Initials) T.O.

Phone Results: ☐ Yes ☐ No
Fax Results: ☐ Yes ☐ No Additional Fax Number:

REMARKS:

Email Results: kjones@riceswd.com
rozanne11@windstream.net

Initial CAP Report and Soil Closure Request and NMOCD Approval

RICE Operating Company
112 West Taylor, Hobbs, NM 88240
Phone 575.393.9174

Basin Environmental Service Technologies
Effective Solutions
PO Box 2948 | Hobbs, NM 88241 | Phone 575.393.2967

May 17, 2018

Bradford Billings
New Mexico Energy, Minerals, & Natural Resources
Oil Conservation Division, Environmental Bureau
1220 S. St. Francis Drive
Santa Fe, New Mexico 87505

RE: **Corrective Action Plan (CAP) Report and Soil Closure Request**
Rice Operating Company – BD SWD System
BD Jct. F-15 (1R426-255): UL/F, Sec. 15, T21S, R37E

Mr. Billings:

RICE Operating Company (ROC) has retained Basin Environmental Service Technologies (Basin) to address potential environmental concerns at the above-referenced site in the BD Salt Water Disposal (SWD) system.

ROC is the service provider (agent) for the BD SWD System and has no ownership of any portion of the pipeline, well, or facility. The system is owned by a consortium of oil producers, System Parties, who provide all operating capital on a percentage ownership/usage basis.

Background and Previous Work
The site is located approximately 2.6 miles north of Eunice, New Mexico at UL/F, Sec. 15, T21S, R37E as shown on the Geographical Location Map and Area Map. An updated study of NM OSE records indicate that groundwater will likely be encountered at a depth of approximately 47 feet below ground surface (bgs).

In 2009, ROC initiated work on the former F-15 junction box. The site was delineated using a backhoe to form a 30 ft x 30 ft x 12 ft deep excavation and soil samples were screened at regular intervals for both hydrocarbons and chlorides. Representative composite samples were sent to a commercial laboratory for analysis of chloride and TPH. From the excavation, a 4-wall composite sample and a bottom composite sample were sent to a commercial laboratory for analysis. The 4-wall composite returned a chloride reading of 4,800 mg/kg, a Gasoline Range Organics (GRO) reading non-detect and a Diesel Range Organics (DRO) reading of 377 mg/kg. The bottom composite sample returned a chloride reading of 4,040 mg/kg, a GRO reading of 166 mg/kg and a DRO reading of 1,590 mg/kg. The sample was also analyzed for BTEX, resulting in benzene reading of non-detect, a toluene reading of 0.418 mg/kg, an ethylbenzene reading of 1.24 mg/kg and a total xylene reading of 4.67 mg/kg. The excavated soil was blended on site and a representative sample was sent to a commercial laboratory for analysis. The sample

May 17, 2018

returned a chloride reading of 3,840 mg/kg, a GRO reading of 42.9 mg/kg and a DRO reading of 1,140 mg/kg. The sample was also analyzed for BTEX, resulting in a benzene and toluene reading of non-detect, an ethylbenzene reading of 0.056 mg/kg and a total xylenes reading of 0.434 mg/kg. The blended backfill was returned to the excavation up to 5 ft below ground surface. At 5 – 4 ft bgs, a 1 ft thick clay barrier was installed. The clay layer will provide a barrier that will inhibit the downward migration of chlorides to groundwater. Clean, imported soil was used to backfill the excavation to the ground surface and to contour to the surrounding area. An identification plate was placed on the surface above the former junction box to mark the presence of the clay below.

To further investigate the depth of chloride presence, a soil bore was installed on November 4th, 2009. The soil bore was installed at the former junction box site and was advanced to a depth of 36 ft bgs. Soil samples were collected every 3 ft and field titrated for chlorides and field screened for PIDs, resulting in concentrations that did not decrease with depth. The 24 ft, 33 ft, and 36 ft samples were sent to a commercial laboratory for analysis, resulting in a 24 ft chloride concentration of 736 mg/Kg, a GRO concentration of 1,720 mg/Kg, a DRO concentration of 7,340 mg/Kg, a benzene concentration of 0.541 mg/Kg, a toluene concentration of 1.45 mg/Kg, an ethylbenzene concentration of 2.81 mg/Kg and a total xylenes concentration of 11.2 mg/Kg. The 33 ft sample resulted in a chloride concentration of 1,760 mg/Kg, a GRO concentration of non-detect, a DRO concentration of 3,040 mg/Kg, a benzene concentration of 0.076 mg/Kg, a toluene concentration of 0.207 mg/Kg, an ethylbenzene concentration of 0.467 mg/Kg and a total xylenes concentration of 2.54 mg/Kg. The 36 ft sample resulted in a chloride concentration of 1,820 mg/Kg, a GRO concentration of 176 mg/Kg, a DRO concentration of 4,380 mg/Kg, a benzene concentration of non-detect, a toluene concentration of 0.113 mg/Kg, an ethylbenzene concentration of 0.538 mg/Kg and a total xylenes concentration of 2.51 mg/Kg. The entire borehole was plugged with bentonite to the ground surface. On November 24th, 2009, the site was seeded with a blend of native vegetation.

NMOCD was notified of potential groundwater impact on March 8th, 2010. A junction box disclosure report was submitted to NMOCD with all the 2009 junction box closures and disclosures

Investigation and Characterization Plan (ICP) Report

An ICP was submitted on February 16th, 2015 and approved on February 20th, 2015. On May 19th, 2015, an additional 4 soil bores were installed at the site. As the bores were advanced, soil samples were taken at regular intervals and field tested for chlorides and hydrocarbons. Representative samples from each bore were taken to a commercial laboratory for confirmatory analysis. SB-2 returned a laboratory chloride reading of 1,010 mg/Kg at 22 ft bgs, which decreased to 208 mg/Kg at 31 ft bgs. SB-3 returned a laboratory chloride reading of 1,920 mg/kg at 16 ft bgs, which decreased to 784 mg/Kg at 40 ft bgs. SB-4 returned laboratory

May 17, 2018

chloride readings of 1,300 mg/Kg at 19 ft bgs and decreased to 832 mg/Kg at 40 ft bgs. SB-5 returned a laboratory chloride reading of 992 mg/Kg at 19 ft bgs, which decreased to 448 mg/Kg at 40 ft bgs. On July 10th, 2015, an additional 2 soil bores were installed at the site SB-6 returned a laboratory chloride reading of 1,060 mg/Kg at 6 ft bgs, which decreased to 352 mg/Kg at 36 ft bgs. SB-7 returned a laboratory chloride reading of <16 mg/kg at the surface and 352 mg/Kg at 9 ft bgs. On June 15th, 2016, an additional soil bore was installed at the site. SB-8 returned a laboratory chloride reading of 752 mg/Kg at 3 ft bgs and 192 mg/Kg at 24 ft bgs. GRO and DRO readings at all depth in all bores were non-detect. The bore holes were plugged with bentonite to ground surface.

Basin analyzed historical photos to determine if there was any other indication of historical oilfield activity. Historical oilfield activity is clearly visible beginning in the 1955 historical photo, which appears to have caused a large disturbed area directly upgradient of our site.

CAP Report and Soil Closure Request

A Corrective Action Plan (CAP) was submitted on the August 31st, 2017 and the soil CAP approved by the NMOCD on the September 7th, 2017. The CAP proposed installing a 35 x 50 ft, 20-mil reinforced liner at 5-4 ft bgs.

In order to inhibit the downward migration of residual constituents through the vadose zone, ROC installed a 20-mil reinforced poly liner across the site with the dimensions of 35 x 50 ft, which covered the previously installed 30 x 30 ft clay liner. A total of 396 cubic yards of excavated soil were taken to a NMOCD approved facility for disposal. The bottom of the excavation was padded with 6 inches imported blow sand and a 20-mil reinforced liner was installed and properly seated at 4.5 ft bgs. The top of the liner was padded with 6 inches of imported blow sand, and the excavation was backfilled to ground surface with blended backfill soil and imported top soil. A sample of the blended backfill and a sample of the imported top soil were field tested for hydrocarbons using a PID, resulting in readings of 0.5 and 1.1 ppm, respectively. Each sample was sent to a commercial laboratory for analysis of chloride and returned a result of 16 mg/kg and <16 mg/kg, respectively. The backfilled site was then seeded with a blend of native vegetation. Vegetation above the liner will also provide a natural infiltration barrier for the site, since plants capture water through their roots thereby reducing the volume of water moving through the vadose zone. Documentation of this work is included in the Appendix.

Groundwater Monitoring Plan

In order to determine what affect the residual chlorides may have had on the groundwater quality below the site, BEST recommends that ROC install a near-source monitor well (MW-1) located approximately 25 feet down-gradient of the former junction box. To determine if there is an up-gradient source of contaminates coming onto the site, MW-2 will be installed approximately 70

May 17, 2018

feet up-gradient of the former junction box. Also, an additional monitoring well (MW-3) will be installed approximately 100 feet down-gradient of the former junction box (see Proposed Monitoring Wells). Additional monitoring wells may be required to fully delineate groundwater quality. The monitor wells will be installed to NMOCD and EPA standards and then sampled quarterly. Once the monitor wells at the site have been analyzed to determine groundwater quality, ROC will either submit a groundwater remedy to NMOCD to address groundwater quality at the site or submit a termination request for site closure.

ROC has completed the vadose zone remediation as approved by NMOCD in the CAP. The 20-mil reinforced liner will inhibit the further migration of chlorides through the vadose zone in to groundwater. Therefore, ROC requests "Soil Closure" or similar closure status.

Basin appreciates the opportunity to work with you on this project. Please call Katie Jones Davis at (575) 393-9174 or me if you have any questions or wish to discuss the site.

Sincerely,

Edward J. Hansen

Edward J. Hansen
Senior Hydrologist
Basin Environmental Service Technologies

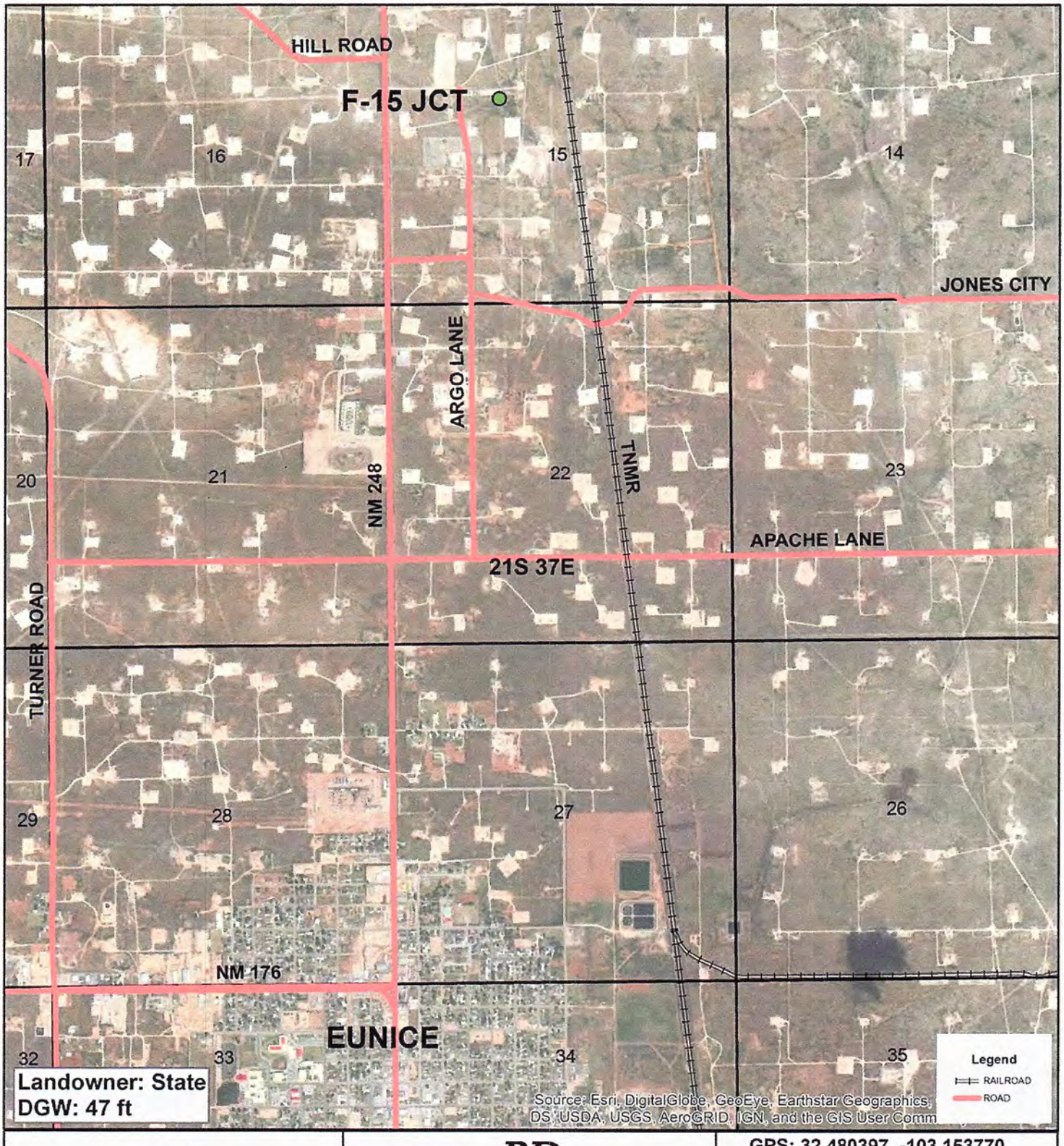
Attachments:

- Geographical Location Map
- Area Map
- Installed Liner Plat
- Proposed Monitoring Wells Plat
- Appendix – Liner Installation Documentation

Plats

Basin Environmental Service Technologies
P.O. Box 2948, Hobbs, NM 88241
Phone 575.393.2967

Geographic Location



Basin Environmental Service Technologies
Effective Solutions

BD

JCT F-15

1R426-255

UL F SECTION 15
T-21-S R-37-E
LEA COUNTY, NM

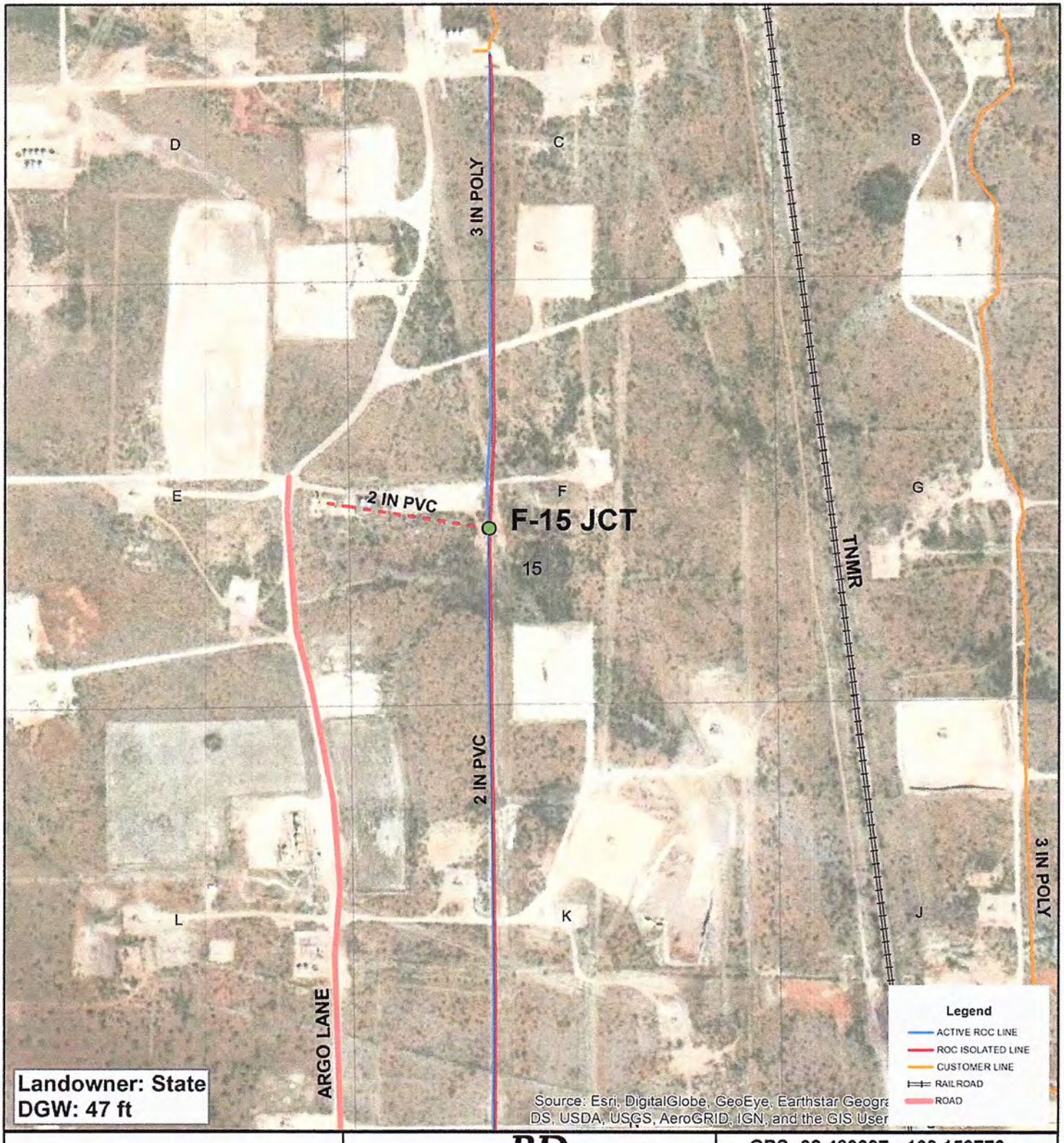
GPS: 32.480397 -103.153770

N
W E
S

0 0.25 0.5
Miles

Drawing date:4/17/18
Drafted by: T. Grieco

Area Map



Basin Environmental Service Technologies
Effective Solutions

BD
JCT F-15
1R426-255

UL F SECTION 15
T-21-S R-37-E
LEA COUNTY, NM

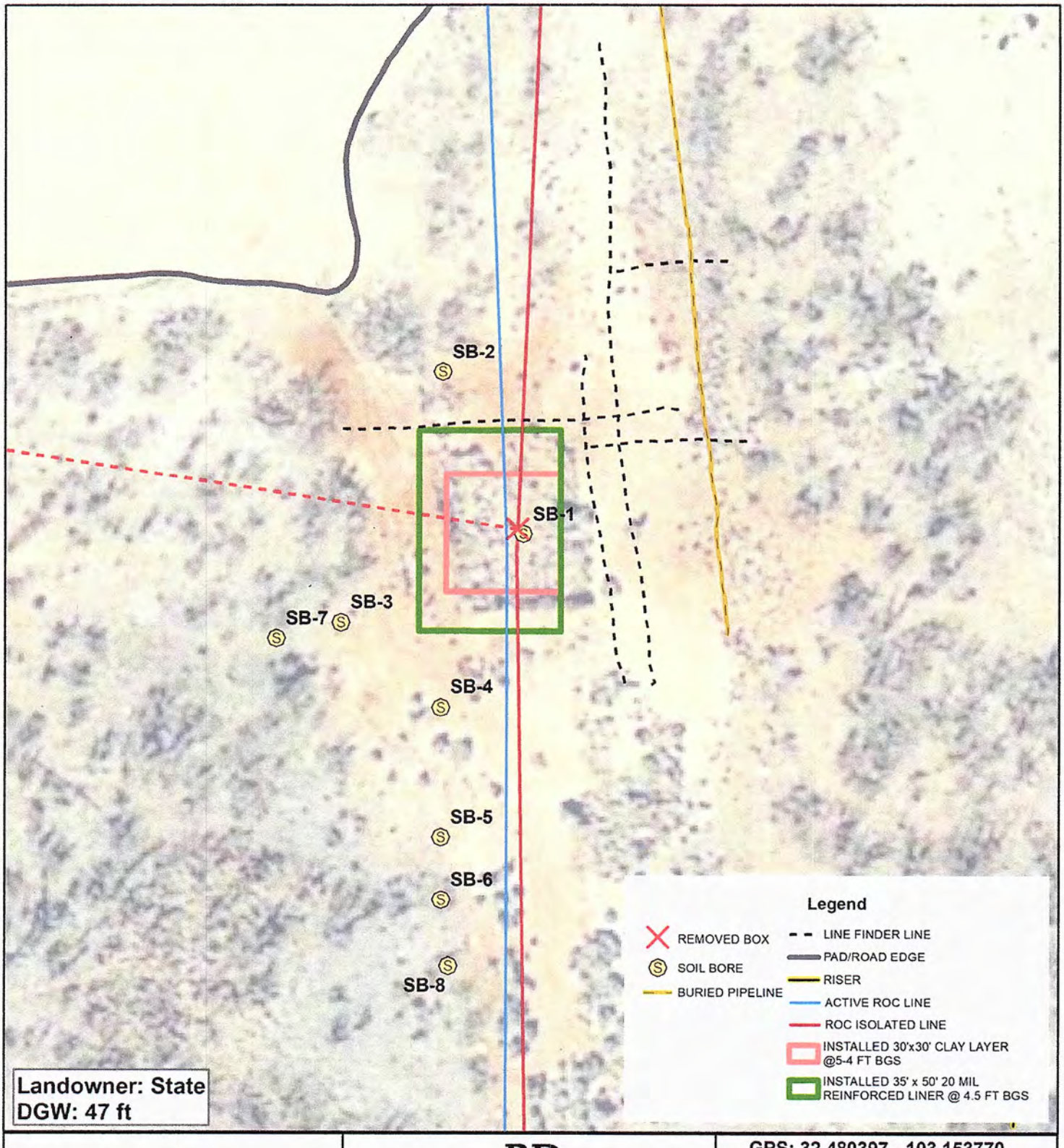
GPS: 32.480397 -103.153770

N W E S

0 250 500
Feet

Drawing date:4/17/18
Drafted by: T. Grieco

Installed Liner



Basin Environmental Service Technologies
Effective Solutions

BD
JCT F-15
1R426-255

UL F SECTION 15
T-21-S R-37-E
LEA COUNTY, NM

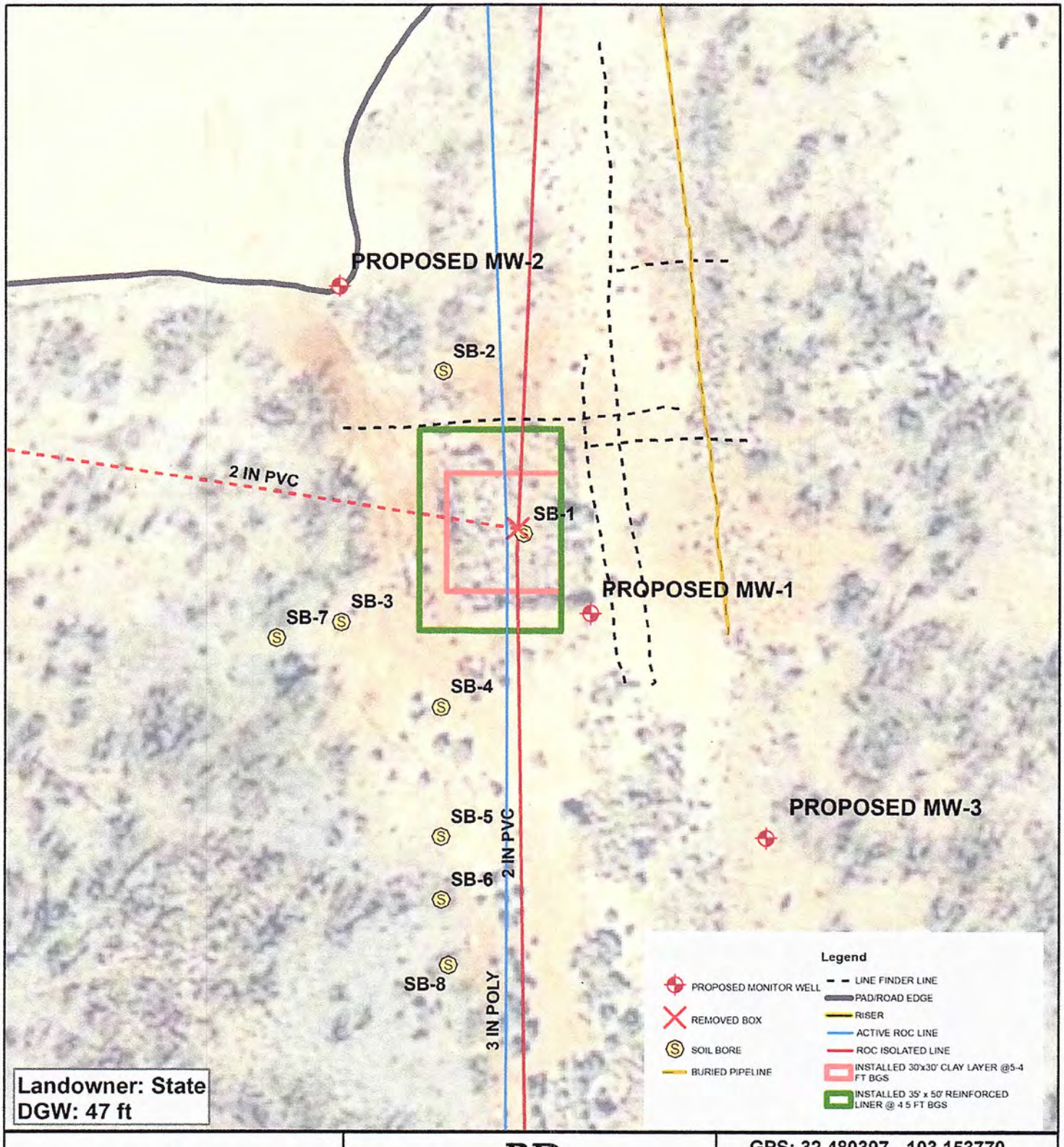
GPS: 32.480397 -103.153770

0 25 50 Feet

N W E S

GPS Date: 7/10/15 CF
Drawing date:4/17/18
Drafted by: T. Grieco

Proposed Monitor Wells



Basin Environmental Service Technologies
Effective Solutions

BD

JCT F-15

1R426-255

UL F SECTION 15
T-21-S R-37-E
LEA COUNTY, NM

GPS: 32.480397 -103.153770

0 25 50 Feet

GPS Date: 7/10/15 CF
Drawing date:4/17/18
Drafted by: T. Grieco

N W E S

Appendix

Basin Environmental Service Technologies
P.O. Box 2948, Hobbs, NM 88241
Phone 575.393.2967

BD Jct. F-15

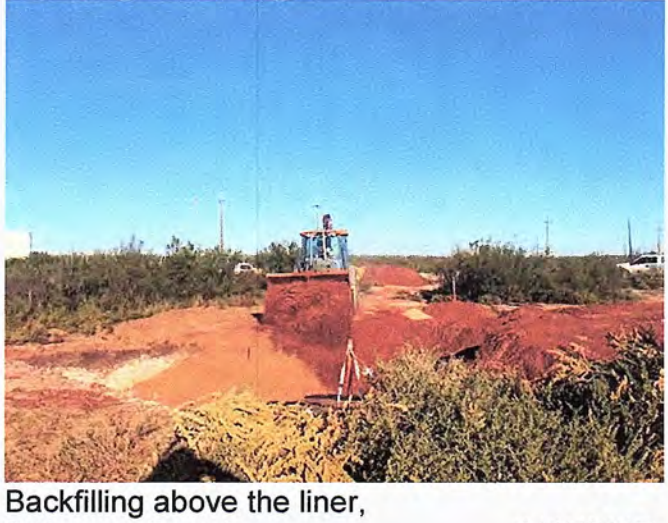
Unit F, Sec. 15, T21S, R37E

Site prior, facing north 3/7/2017

Excavating the site to 5 ft bgs, facing north 10/23/2017

Excavation complete to a depth of 5-ft bgs and importing soil, facing northwest 10/30/2017

20-mil reinforced liner installed at 4.5 ft bgs, facing north 10/31/2017



Backfilling above the liner, facing southeast 11/1/2017

Site complete, facing north 2/8/2018

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

October 27, 2017

KATIE JONES

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: BD JCT F-15

Enclosed are the results of analyses for samples received by the laboratory on 10/23/17 16:36.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-16-8. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab_accred_certif.html.

Cardinal Laboratories is accreditated through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Celey D. Keene

Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

Rice Operating Company
KATIE JONES
112 W. Taylor
Hobbs NM, 88240
Fax To: (575) 397-1471

Received:	10/23/2017	Sampling Date:	10/23/2017
Reported:	10/27/2017	Sampling Type:	Soil
Project Name:	BD JCT F-15	Sampling Condition:	** (See Notes)
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	21-37		

Sample ID: 8 PT. BLENDED BACKFILL COMP. (H702903-01)

Chloride, SM4500Cl-B mg/kg **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**16.0**	16.0	10/26/2017	ND	432	108	400	0.00	

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Notes and Definitions

ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C
	Samples reported on an as received basis (wet) unless otherwise noted on report

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

101 East Marland, Hobbs, NM 88240
(575) 393-2326 FAX (575) 393-2476

Company Name:	Rice Operating	**BILL TO**	
Project Manager:	Katie Jones	P.O. #:	
Address:		Company:	
City:	Hobbs	State: NM Zip:	
Phone #:		Fax #:	
Project #:		Project Owner:	
Project Name:			
Project Location:	BD Jct. F-15		
Sampler Name:	Karanja Lewis		

FOR LAB USE ONLY

Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP	# CONTAINERS	MATRIX: GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER	PRESERV: ACID/BASE	ICE / COOL	OTHER	SAMPLING: DATE	TIME	ANALYSIS REQUEST: Chlorides
H702903-1	8 pt. Blended Backfill Comp.	C	1			/					/		10-23-17	9:30	/

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising whether based in contract or tort, shall be limited to the amount paid by the client for the analyses. All claims including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.

Relinquished By:	Date: 10-23-17	Received By:	Phone Result: ☐ Yes ☐ No Add'l Phone #:
Relinquished By:	Time: 4:36	Received By: Jodi Henson	Fax Result: ☐ Yes ☐ No Add'l Fax #:
	Date:		REMARKS: knorman@tasman-geo.com
	Time:		tgreico@basinenv.com
Delivered By: (Circle One)	Sample Condition: Cool ☐ Yes ☐ No, Intact ☐ Yes ☐ No	CHECKED BY: (Initials)	kjones@riceswd.com
Sampler - UPS - Bus - Other: #75 12.85°/12.6°			klewis@tasman-geo.com

† Cardinal cannot accept verbal changes. Please fax written changes to (575) 393-2326

Correction +2.5°

Tasman Geosciences, Inc.

2620 W Marland Hobbs, NM 88240
PHONE: (575) 318-5017

PID METER CALIBRATION & FIELD REPORT FORM

CK. MODEL NO.			
		MODEL: PGM 7300	SERIAL NO: 590-000508
	X	MODEL: PGM 7300	SERIAL NO: 590-000504
		MODEL: PGM 7300	SERIAL NO: 590-902690
		MODEL: PGM 7300	SERIAL NO: 590-000183

GAS COMPOSITION: ISOBUTYLENE 100 PPM / AIR: BALANCE

LOT NO: 544188 Cyl:167	EXPIRATION DATE: 9/2019
METER READING ACCURACY: 100 ppm	

ACCURACY : +/- 2%

COMPANY
RICE Operating Company

SYSTEM	JUNCTION	UNIT	SECTION	TOWN SHIP	RANGE
BD	Jct. F-15	F	15	21S	37E

SAMPLE ID	PID	SAMPLE ID	PID
8pt Blended Backfield Comp.	0.5		

I verify that I have calibrated the above instrument in accordance to the manufacture operation manual.

SIGNATURE: KL DATE: 10/23/2017

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

November 06, 2017

KATIE JONES

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: BD F-15

Enclosed are the results of analyses for samples received by the laboratory on 11/01/17 16:00.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-16-8. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab_accred_certif.html.

Cardinal Laboratories is accreditated through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Celey D. Keene

Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

Rice Operating Company
KATIE JONES
112 W. Taylor
Hobbs NM, 88240
Fax To: (575) 397-1471

Received:	11/01/2017	Sampling Date:	11/01/2017
Reported:	11/06/2017	Sampling Type:	Soil
Project Name:	BD F-15	Sampling Condition:	** (See Notes)
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	NOT GIVEN		

Sample ID: IMPORTED TOP SOIL (H703011-01)

Chloride, SM4500Cl-B **mg/kg** **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0	16.0	11/03/2017	ND	432	108	400	0.00	

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Notes and Definitions

ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C
	Samples reported on an as received basis (wet) unless otherwise noted on report

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

101 East Marland, Hobbs, NM 88240
(575) 393-2326 FAX (575) 393-2476

Company Name:	Rice Operating	**BILL TO**	
Project Manager:	Katie Jones	P.O. #:	
Address:		Company:	
City:	State: Zip:	Attn:	
Phone #:	Fax #:	Address:	
Project #:	Project Owner:	City:	
Project Name:		State: Zip:	
Project Location:	BD F-15	Phone #:	
Sampler Name:	Karanja Lewis	Fax #:	

FOR LAB USE ONLY				MATRIX							PRESERV.		SAMPLING		ANALYSIS REQUEST
Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP	# CONTAINERS	GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER		ACID/BASE	ICE / COOL	OTHER	DATE	TIME	Chlorides
H703011-1	Imported Top Soil	G	1			✓						✓		11-1-17	1:30	✓

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising whether based in contract or tort, shall be limited to the amount paid by the client for the analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.

Relinquished By:	Date: 11-1-17	Received By:	
Relinquished By:	Time: 4:00	Received By:	
	Date:		
	Time:		

Delivered By: (Circle One)
Sampler - UPS - Bus - Other: 27.7°C Corrected 27.9°C

Sample Condition: Cool: ☑ Yes ☐ No; Intact: ☑ Yes ☐ No

CHECKED BY: (Initials) TO #75

Phone Result: ☐ Yes ☐ No Add'l Phone #:
Fax Result: ☐ Yes ☐ No Add'l Fax #:
REMARKS:
kjones@ricesud.com
knorman@tasman-geo.com
klewis@tasman-geo.com
tgrieco@basinenv.com

† Cardinal cannot accept verbal changes. Please fax written changes to (575) 393-2326

Tasman Geosciences, Inc.

2620 W Marland Hobbs, NM 88240
PHONE: (575) 318-5017

PID METER CALIBRATION & FIELD REPORT FORM

CK. MODEL NO.			
		MODEL: PGM 7300	SERIAL NO: 590-905146
	X	MODEL: PGM 7300	SERIAL NO: 590-000504
		MODEL: PGM 7300	SERIAL NO: 590-902690
		MODEL: PGM 7300	SERIAL NO: 590-000183

GAS COMPOSITION: ISOBUTYLENE 100 PPM / AIR: BALANCE

LOT NO: 544188 Cyl:167	EXPIRATION DATE: 9/2019
METER READING ACCURACY: 100 ppm	

ACCURACY : +/- 2%

COMPANY
RICE Operating Company

SYSTEM	JUNCTION	UNIT	SECTION	TOWN SHIP	RANGE
BD	Jct. F-15	F	15	21S	37E

SAMPLE ID	PID	SAMPLE ID	PID
Imported Top Soil	1.1		

I verify that I have calibrated the above instrument in accordance to the manufacture operation manual.

SIGNATURE: _____ DATE: 11/1/2017

RICE OPERATING COMPANY
ROC
SINCE 1955

112 West Taylor
Hobbs, NM 88240
Phone: (575) 393-9174
Fax: (575) 397-1471

VEGETATION FORM

1. General Information

Site name: BD Jct. F-15						
U/L	Section	Township	Range	County	Latitude	Longitude
F	15	21S	37E	Lea	32.480397	-103.15377
Contact Name: Katie Jones Davis						
Email: kjones@riceswd.com						
Site size: 5,886 square feet						

2. Soils **Do not rip caliche subsoils; caliche rocks brought to the surface by ripping shall be removed.*

Salvaged from site		Bioremediated		Imported	X	Blended		Depth (in)				
Texture: sandy				Describe soil & subsoil: top soil and blow sand								
Soil prep methods:	Rip		Depth (in)		Disc	X	Depth (in)	3	Rollerpack			
Date completed: 11/2/2017												

3. Bioremediation

Fertilizer		Hay		Other	
Type:		Describe:		Describe:	
Lbs/acre:					

4. Seeding **Attach seed bag tags to this form. Seed bag tags shall contain the site name and S-T-R.*

Custom Seed Mix	X	Prescribed Mix		Seed Mix Name: 5 lbs Lea County Mix & 25 lbs Beardless Wheat Seed Mix	Date: 12/11/2017
Method: broadcast with seeder					
Soil conditions during seed:	Dry	X	Damp	Wet	
Observations: Seed was tilled into the soil					

5. Certification I hereby certify that the information in this form and attachments is true and complete to the best of my knowledge and belief.

Name: Katie Jones Davis	Title: Environmental Manager	Date: 12/11/2017
Signature: Katie Jones Davis		

From: Billings, Bradford, EMNRD
To: Katie Jones; Edward Hansen; Yu, Olivia, EMNRD; Hernandez, Christina, EMNRD
Subject: CAP and Soil Closure Request for ROC-BD Jct. F-15 (1R 426-255)
Date: Wednesday, June 20, 2018 11:24:32 AM

June 20, 2018

Katie Jones – Rice Operating
Ed Hansen – Basin

Re: Corrective Action Plan (CAP) and Soil Closure Request for ROC-BD Jct. F-15 (1R 426-255)

Following review of submitted report, plan, data review and discussions, the following:

As mentioned in previous communication with this grouping of reports, this is not exactly a corrective action plan, more so a groundwater delineation. Nonetheless:

1. The Oil Conservation Division (OCD) agrees that ROC/Basin has met the soil remediation needs as previously approved and as such approves the soil closure request. No additional soils work proper is required. This does not mean the location is closed.
2. OCD approves, in general with the submitted ground water assessment plan with the following conditions. Monitor wells should be placed with at least ten (10) feet of screen in the water table and five (5) feet of screen above the air/water interface. Wells should be arranged and placed as per State Engineer protocol. If Basin/ROC wishes to discuss monitor well design, please contact this office. OCD would appreciate at least two days' notice before drilling commences. Work days. OCD requests that ground water be sampled, at least initially, for BTEX, benzene, TPH and chloride as per acceptable laboratory methods. Wells top of casing's will be surveyed to the nearest 100^{th} of a foot for depth to water measurements. OCD is requesting that the monitor well identified as MW-1 be placed as near as is practicable to area next to location identified as SB-1.

If there are any questions, please contact this office.

Please keep this electronic communication, as NO paper copy will follow.

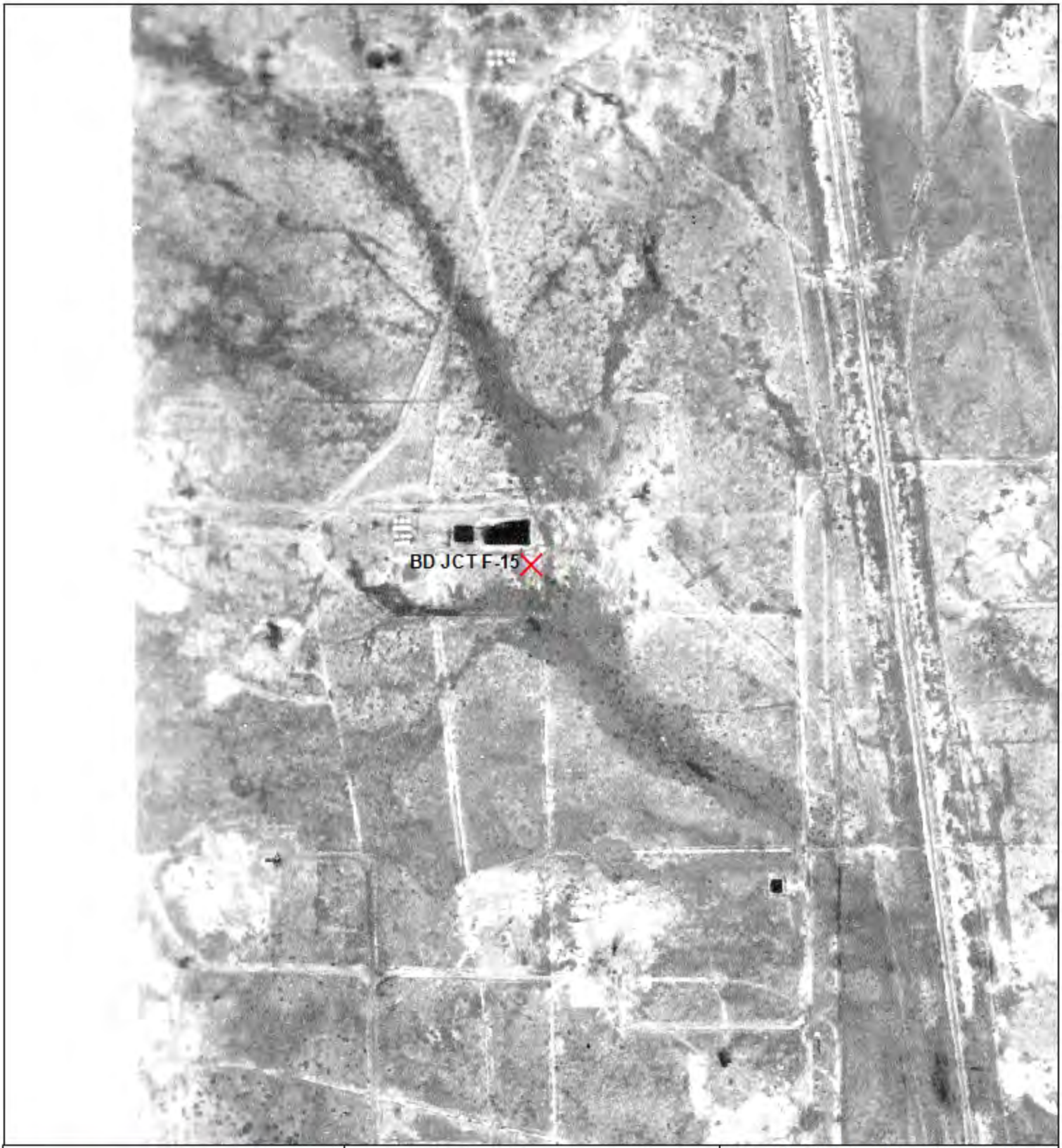
OCD appreciates your efforts on behalf of this issue.

OCD approval does not relieve the operator of liability should their operations fail to adequately investigate and remediate contamination that may pose a threat to ground water, surface water, human health or the environment. In addition, OCD approval does not relieve the operator of responsibility for compliance with any other federal, state, local laws and/or regulations.

Historical Photos

RICE Operating Company
112 West Taylor, Hobbs, NM 88240
Phone 575.393.9174

1955



RICE OPERATING COMPANY
ROC
SINCE 1955

BD
JCT F-15
1R426-255

UL F SECTION 15
T-21-S R-37-E
LEA COUNTY, NM

GPS: 32.480397 -103.153770
NAD 83 STATE PLANE PROJECTION
NM EAST ZONE

0 250 500
Feet

N
W E
S

Drawing date: 2/6/20
Drafted by: T. Grieco

1964

RICE OPERATING COMPANY
ROC
SINCE 1955

BD JCT F-15

1R426-255

UL F SECTION 15
T-21-S R-37-E
LEA COUNTY, NM

GPS: 32.480397 -103.153770
NAD 83 STATE PLANE PROJECTION
NM EAST ZONE

0 250 500
Feet

N
W E
S

Drawing date: 2/6/20
Drafted by: T. Grieco

1977

RICE OPERATING COMPANY
ROC
SINCE 1955

BD
JCT F-15
1R426-255

UL F SECTION 15
T-21-S R-37-E
LEA COUNTY, NM

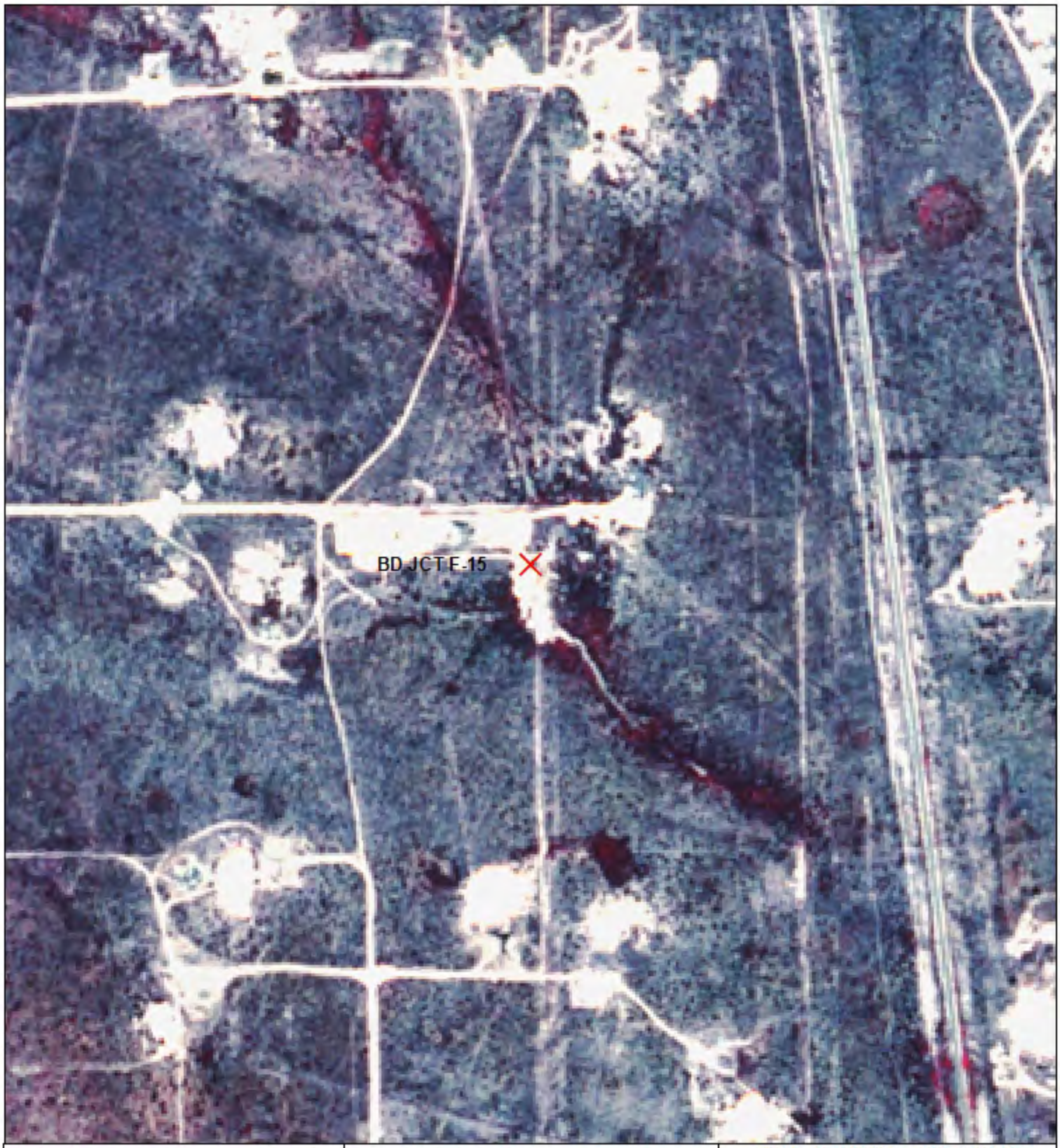
GPS: 32.480397 -103.153770
NAD 83 STATE PLANE PROJECTION
NM EAST ZONE

0 250 500
Feet

N
W E
S

Drawing date: 2/6/20
Drafted by: T. Grieco

1986



RICE OPERATING COMPANY
ROC
SINCE 1955

BD
JCT F-15
1R426-255

UL F SECTION 15
T-21-S R-37-E
LEA COUNTY, NM

GPS: 32.480397 -103.153770
NAD 83 STATE PLANE PROJECTION
NM EAST ZONE

0 250 500
Feet

N
W E
S

Drawing date: 2/6/20
Drafted by: T. Grieco

1996

RICE OPERATING COMPANY
ROC
SINCE 1955

BD
JCT F-15
1R426-255

UL F SECTION 15
T-21-S R-37-E
LEA COUNTY, NM

GPS: 32.480397 -103.153770
NAD 83 STATE PLANE PROJECTION
NM EAST ZONE

0 250 500
Feet

N
W E
S

Drawing date: 2/6/20
Drafted by: T. Grieco

2004

RICE OPERATING COMPANY
ROC
SINCE 1955

BD
JCT F-15
1R426-255

UL F SECTION 15
T-21-S R-37-E
LEA COUNTY, NM

GPS: 32.480397 -103.153770
NAD 83 STATE PLANE PROJECTION
NM EAST ZONE

0 250 500
Feet

N
W E
S

Drawing date: 2/6/20
Drafted by: T. Grieco

2009

RICE OPERATING COMPANY
ROC
SINCE 1955

BD
JCT F-15
1R426-255

UL F SECTION 15
T-21-S R-37-E
LEA COUNTY, NM

GPS: 32.480397 -103.153770
NAD 83 STATE PLANE PROJECTION
NM EAST ZONE

0 250 500
Feet

N
W E
S

Drawing date: 2/6/20
Drafted by: T. Grieco

Final C-141 and Current Photo

RICE Operating Company
112 West Taylor, Hobbs, NM 88240
Phone 575.393.9174

Form C-141
Page 6

State of New Mexico
Oil Conservation Division

Incident ID	nRM2005844490
District RP	1R426-255
Facility ID	
Application ID	pEJH1016063560

Closure

The responsible party must attach information demonstrating they have complied with all applicable closure requirements and any conditions or directives of the OCD. This demonstration should be in the form of a comprehensive report (electronic submittals in .pdf format are preferred) including a scaled site map, sampling diagrams, relevant field notes, photographs of any excavation prior to backfilling, laboratory data including chain of custody documents of final sampling, and a narrative of the remedial activities. Refer to 19.15.29.12 NMAC.

Closure Report Attachment Checklist: ***Each of the following items must be included in the closure report.***

☒ A scaled site and sampling diagram as described in 19.15.29.11 NMAC

☒ Photographs of the remediated site prior to backfill or photos of the liner integrity if applicable (Note: appropriate OCD District office must be notified 2 days prior to liner inspection)

☒ Laboratory analyses of final sampling (Note: appropriate ODC District office must be notified 2 days prior to final sampling)

☒ Description of remediation activities

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations. The responsible party acknowledges they must substantially restore, reclaim, and re-vegetate the impacted surface area to the conditions that existed prior to the release or their final land use in accordance with 19.15.29.13 NMAC including notification to the OCD when reclamation and re-vegetation are complete.

Printed Name: Katie Davis Title: Env. Manager

Signature: Katie D Date: 2/13/2020

email: kjones@riceswd.com Telephone: 575-393-9174

OCD Only

Received by: _____ Date: _____

Closure approval by the OCD does not relieve the responsible party of liability should their operations have failed to adequately investigate and remediate contamination that poses a threat to groundwater, surface water, human health, or the environment nor does not relieve the responsible party of compliance with any other federal, state, or local laws and/or regulations.

Closure Approved by: Bradford Billings Date: 08/06/2021

Printed Name: Bradford Billings Title: Envi. Spec.A

BD Jct. F-15 (1R426-255)
Unit F, Section 15, T21S, R37E

Facing North 10/7/2019

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Operator:	OGRID:
RICE OPERATING COMPANY 122 W Taylor Hobbs, NM 88240	19174
	Action Number: 4016
	Action Type: [C-141] Release Corrective Action (C-141)

CONDITIONS

Created By	Condition	Condition Date
bbillings	None	8/6/2021