



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. B-1 (1R426-256): UL/B, Sec. 1, T22S, R36E**

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 3.38 miles southwest of Eunice, New Mexico at UL/B, Sec. 1, T22S, R36E as shown on the Geographical Location Map and Area Map. NM OSE records indicate that groundwater will likely be encountered at a depth of approximately 137 feet below ground surface (bgs).

In 2009, ROC initiated work on the former B-1 junction box. The site was delineated using a backhoe to form a 30 ft x 40 ft x 12 ft deep excavation and soil samples were screened at regular intervals for both hydrocarbons and chlorides. The excavated soil was blended on site and representative samples were collected from the excavation walls and excavation bottom and sent to a commercial laboratory for analysis. Laboratory tests of the four-wall composite showed a chloride reading of 3,840 mg/kg, a diesel range organics (DRO) reading of 17.4 mg/kg, and a gasoline range organics (GRO) concentration below detectable limit. The bottom composite resulted in a chloride reading of 2,600 mg/kg, a DRO reading of 482 mg/kg, and a GRO reading of non-detect. The excavation was backfilled with the blended backfill below the clay liner to 5 ft below ground surface (bgs). A sample of the backfill was sent to a commercial laboratory for analysis, resulting in a chloride concentration of 2,240 mg/kg, a GRO reading of non-detect and a DRO reading of 617 mg/kg. 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. The remaining backfill was blended with clean, imported soil and used to backfill the excavation to ground surface and contour to the surrounding area. A sample of the blended backfill above

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the clay liner was sent to a commercial laboratory for analysis, resulting in a chloride, GRO, and DRO concentrations of non-detect. On 9/9/2009, the site was seeded with a blend of native vegetation.

To further investigate the presence of chloride, one soil bore was installed on September 28<sup>th</sup>, 2009. Soil bore 1 (SB-1) was installed at the source of the former junction box and was advanced to a depth of 115 ft bgs. Soil samples were collected at regular intervals, and each sample field titrated for chlorides. Chloride concentrations decreased with depth to concentrations. The 25 ft sample and 115 ft sample at SB-1 were sent to a commercial laboratory for analysis, resulting in a 25 ft chloride concentration of 4,640 mg/kg and a 115 ft chloride concentration of 576 mg/kg. GRO and DRO were below detectable limit throughout. The bore hole was plugged with bentonite to ground surface.

NMOCD was notified of potential groundwater impact on February 26<sup>th</sup>, 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**

As part of the Investigation and Characterization Plan (ICP) submitted to NMOCD on February 19<sup>th</sup>, 2015, and approved on February 20<sup>th</sup>, 2015, ten additional soil bores were installed at the site (Soil Bore Installation Plats 1-5 and 2-11). Soil bores 2 – 11 were installed on May 6<sup>th</sup> and 7<sup>th</sup>, 2015. As the soil bores were installed, soil samples were taken at regular intervals and field tested for chlorides and organic vapor. Representative samples from each bore were taken to a commercial laboratory for analyses.

SB-2 was installed to 115 ft bgs. The 30 ft bgs, 70 ft bgs, 100 ft bgs and 115 ft bgs samples were taken to a commercial laboratory for analyses. The 30 ft bgs sample returned a laboratory chloride reading of 752 mg/kg, a GRO reading of 58.5 mg/kg, a DRO reading of 2,010 mg/kg, and a total BTEX reading of 0.297 mg/kg. The 70 ft sample returned a laboratory chloride readings of 1,960 mg/kg, a GRO reading of non-detect and a DRO reading of 133 mg/kg. The 100 ft sample returned a laboratory chloride reading of 2,080 mg/kg and a DRO reading of 18.7 mg/kg. The GRO and BTEX readings returned values of non-detect. The 115 ft sample returned a laboratory chloride reading of 1,570 mg/kg, with GRO, DRO and BTEX readings of non-detect.

SB-3 was installed to 40 ft bgs, and the 10 ft bgs and 40 ft bgs samples returned laboratory chloride readings of 2,880 mg/kg and 224 mg/kg, respectively. SB-4 was installed to 60 ft bgs, and the 10 ft bgs and 60 ft bgs samples returned laboratory chloride readings of 2,640 mg/kg and 240 mg/kg, respectively. SB-5 was installed to 15 ft bgs, and the 5 ft bgs and 15 ft bgs samples returned laboratory chloride readings of 1,500 mg/kg and 176 mg/kg, respectively. SB-6 was

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installed to 115 ft bgs, and the 25 ft bgs and 115 ft bgs samples returned laboratory chloride readings of 2,000 mg/kg and 976 mg/kg, respectively. SB-7 was installed to 115 ft bgs, and the 20 ft bgs and 115 ft bgs samples returned laboratory chloride readings of 4,400 mg/kg and 2,120 mg/kg, respectively. SB-8 was installed to 115 ft bgs, and the 15 ft bgs and 115 ft bgs samples returned laboratory chloride readings of 5,360 mg/kg and 1,800 mg/kg, respectively. SB-9 was installed to 15 ft bgs, and the 5 ft bgs and 15 ft bgs samples returned laboratory chloride readings of 304 mg/kg and 112 mg/kg, respectively. SB-10 was installed to 60 ft bgs. The surface sample returned a laboratory chloride reading of 4,400 mg/kg, the 5 ft bgs sample returned a laboratory chloride reading of 1,840 mg/kg and the 60 ft bgs sample returned a laboratory chloride reading of 224 mg/kg. SB-11 was installed to 30 ft bgs, and the 5 ft bgs and 30 ft bgs samples returned laboratory chloride readings of 3,000 mg/kg and 224 mg/kg, respectively. The GRO and DRO readings for SB 3-11 returned values of non-detect at all depths.

The former junction box was located north of a non-ROC facility. Basin analyzed historical photos to determine if there was any other indication of historical oilfield activity surrounding the former junction box. The non-ROC facility appears to date back to 1949 and has since grown to the current size.

#### **CAP Report and Soil Closure Request**

A Corrective Action Plan (CAP) was submitted and approved by the NMOCD on September 7<sup>th</sup>, 2017. The CAP proposed installing a modified 62 x 109 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 approximately 62 x 109 ft, which covered the existing 30x40-ft clay liner. A total of 1,524 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 imported top soil (a total of 1,560 cubic yards of imported soils). A sample of the imported blow sand and a sample of the imported top soil were field tested for hydrocarbons using a PID, each resulting in readings of 0.2 ppm, 0.2 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.

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### **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 60 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 90 feet up-gradient of the former junction box. Also, an additional monitoring well will be installed approximately 170 feet downgradient of the former junction box (see Proposed MW Locations). 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 for chloride and BTEX readings, 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 remediation as approved by NMOCD in the CAP. The 20-mil reinforced liner will inhibit the 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  
Senior Hydrologist  
Basin Environmental Service Technologies

#### **Attachments:**

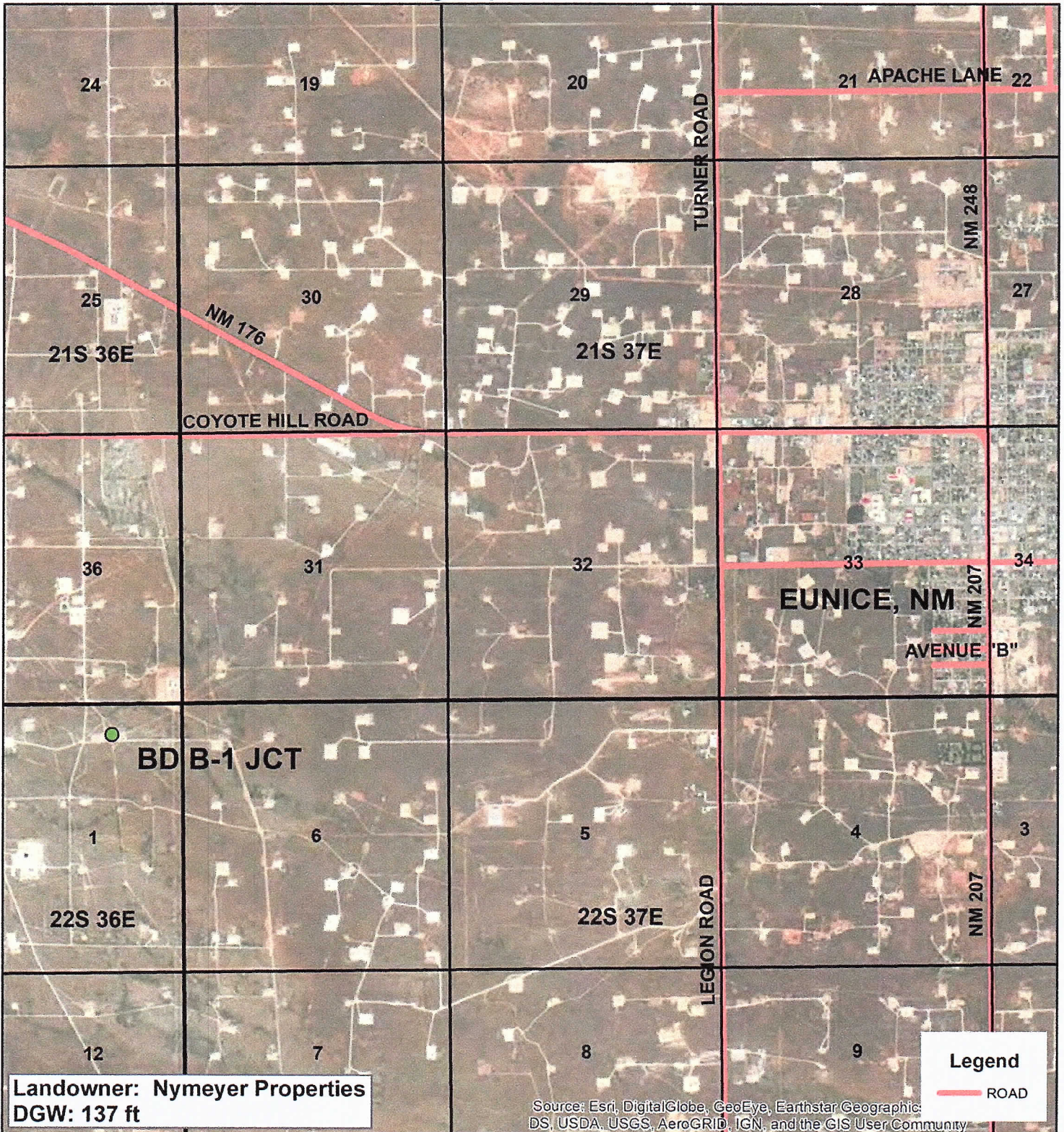
- Figure 1 – Geographical Location Map
- Figure 2 – Area Map
- Figure 3 – Installed Liner Plat
- Figure 4 – Proposed GW Monitoring Wells Plats
- Appendix – Liner Installation Documentation



# Plats

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

# Geographic Location



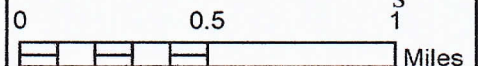
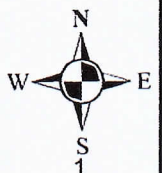
Landowner: Nymeyer Properties  
DGW: 137 ft



**BD**  
**JCT B-1**  
1R426-256

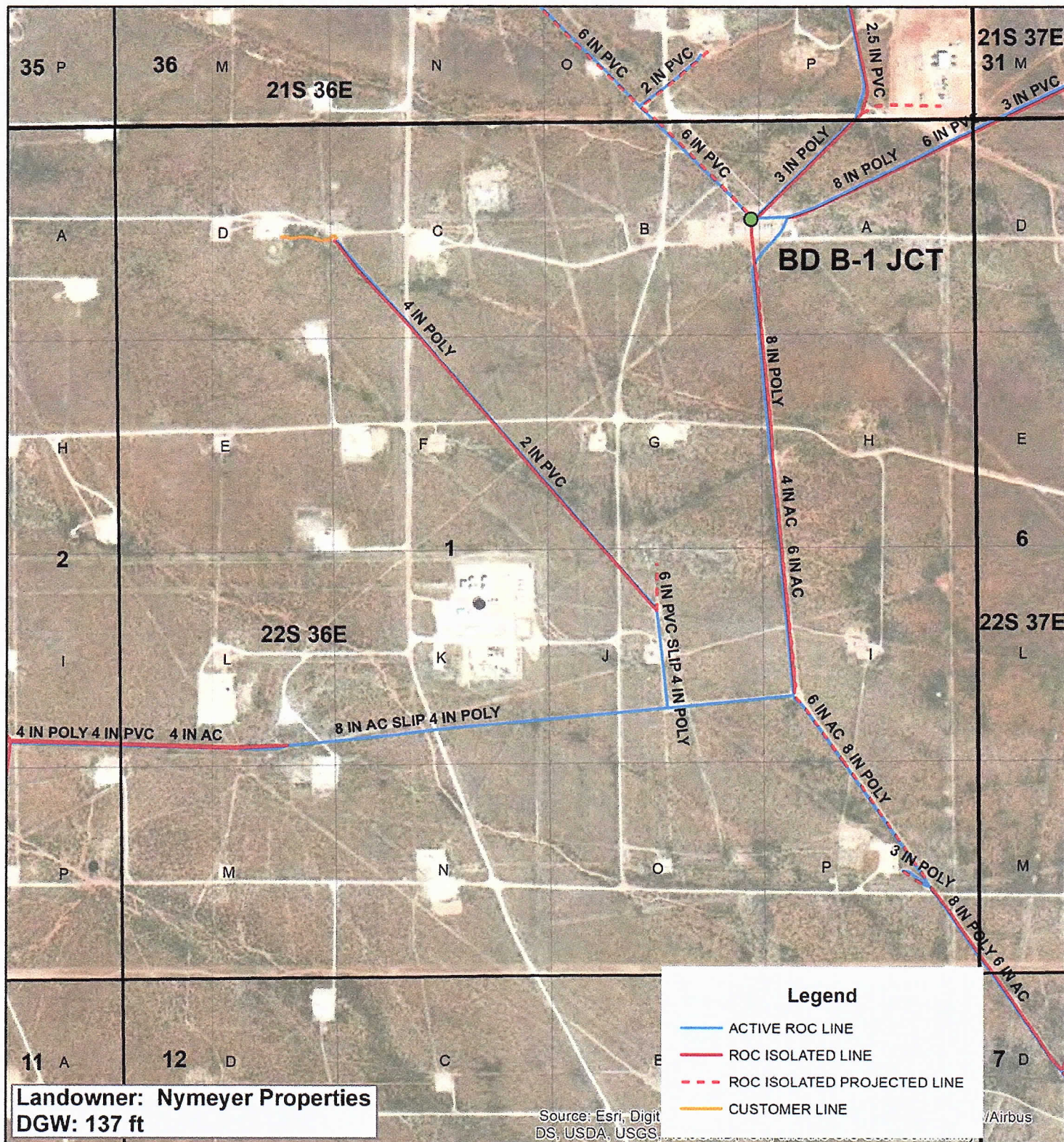
UL B SECTION 1  
T-22S R-36-E  
LEA COUNTY, NM

GPS: 32.426470 -103.214876



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

# Area Map



Landowner: Nymeyer Properties  
DGW: 137 ft

Source: Esri, Digit  
DS, USDA, USGS

/Airbus



**BD**  
**JCT B-1**  
1R426-256

UL B SECTION 1  
T-22S R-36-E  
LEA COUNTY, NM

GPS: 32.426470 -103.214876

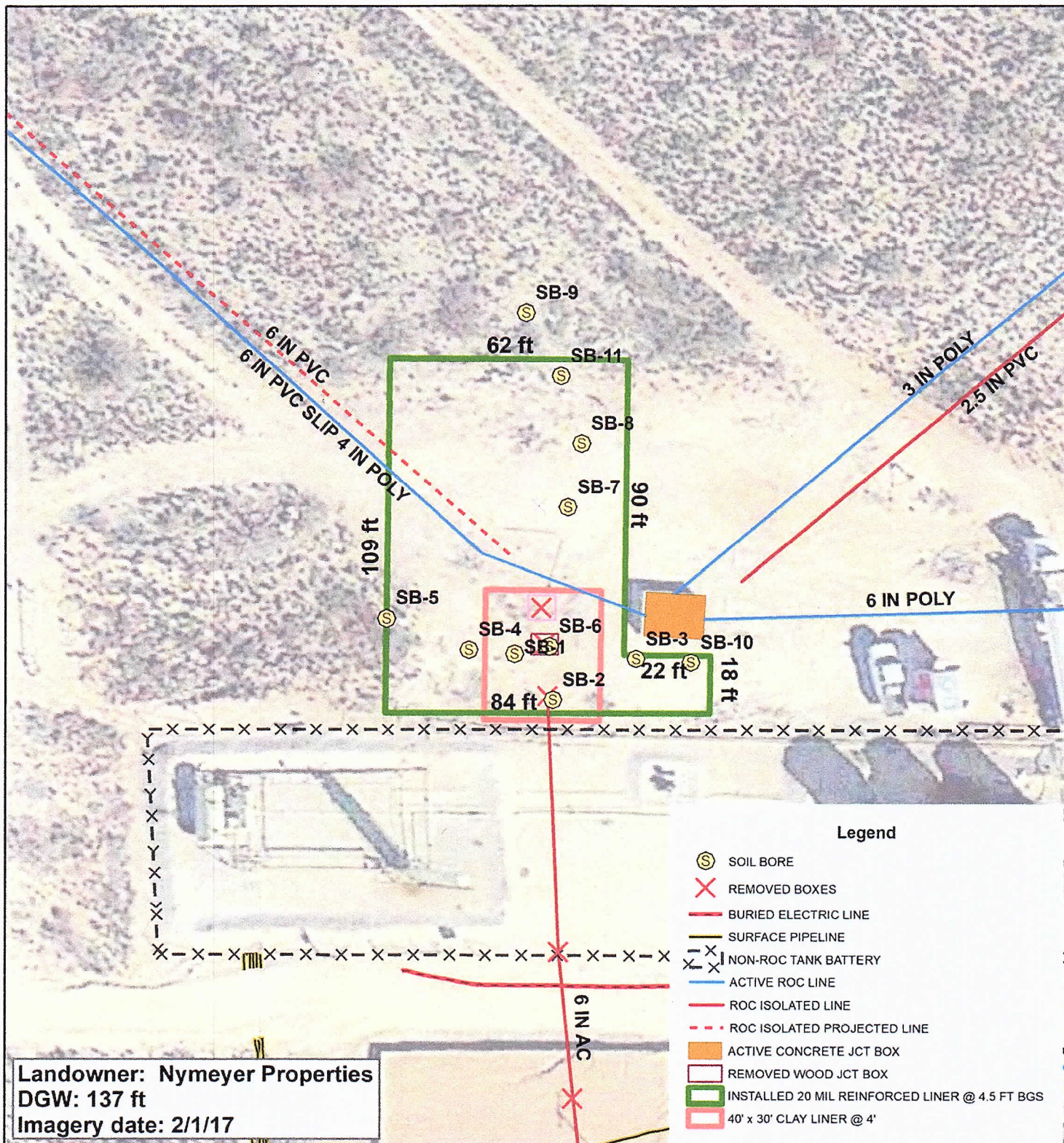
0 500 1,000 Feet

Drawing date: 4/17/18

Drafted by: T. Grieco



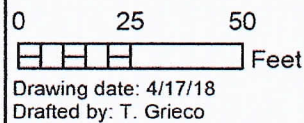
# Installed Liner



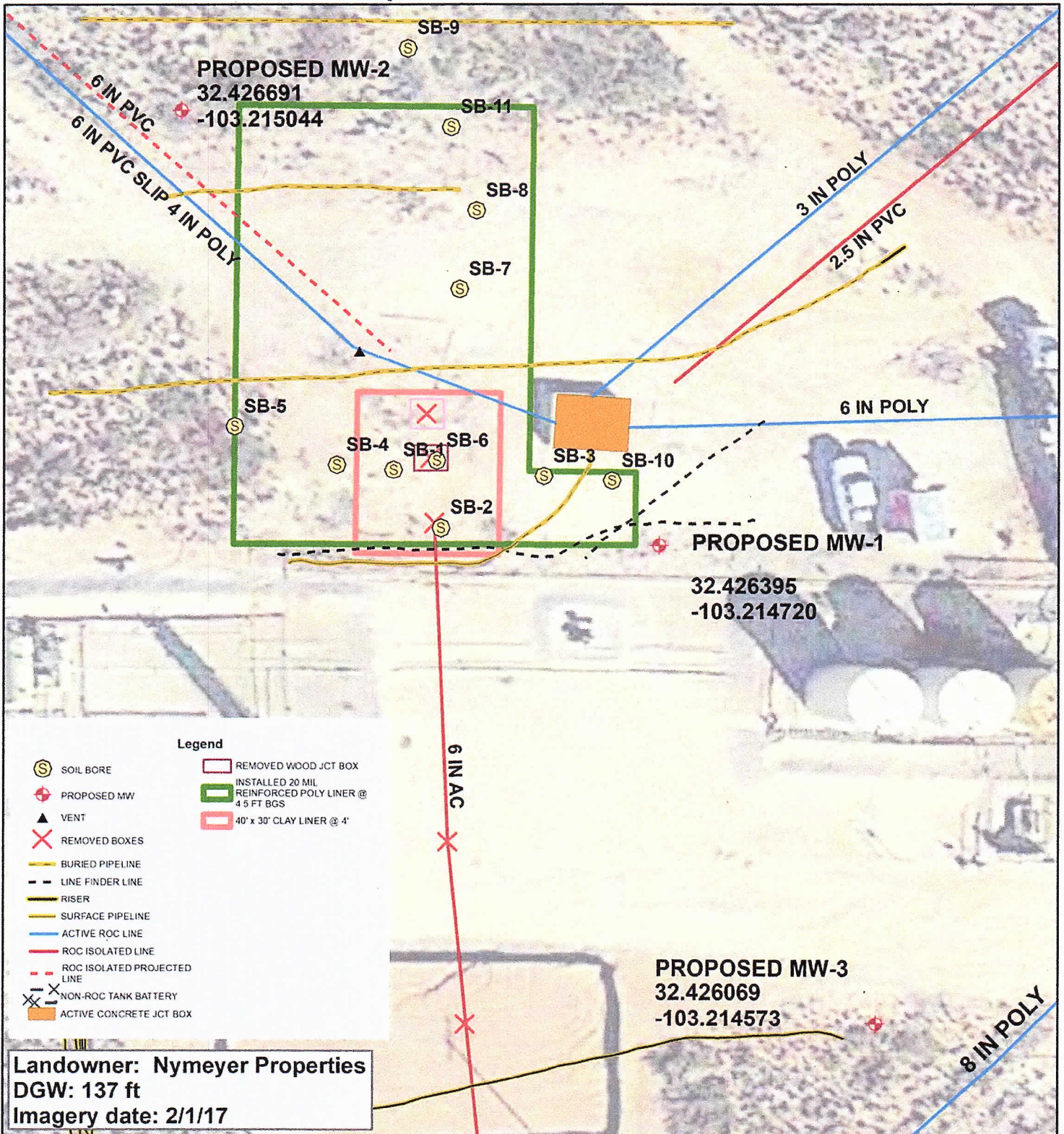
**BD**  
**JCT B-1**  
 1R426-256

UL B SECTION 1  
 T-22S R-36-E  
 LEA COUNTY, NM

GPS: 32.426470 -103.214876



# Proposed Monitor Wells



**BD**  
**JCT B-1**  
1R426-256

UL B SECTION 1  
T-22S R-36-E  
LEA COUNTY, NM

Underground facilities are  
spatially projected  
and need to be field verified.

GPS: 32.426470 -103.214876

0 25 50  
Feet

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

A solid blue vertical bar runs along the left edge of the page.

# Appendix

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

# BD Jct. B-1

Unit B, Section 1, T22S, R36E



Spotting lines with hydrovac,  
facing east

11/6/2017



Excavating the site to 5 ft bgs,  
facing west

11/14/2017



Exporting excavated soil,  
facing northwest

11/14/2017



Excavating the site, facing east

11/22/2017



Importing blow sand, facing northwest

11/27/2017



Padding excavation with imported blow sand,  
facing north

11/27/2017



Padding the 20-mil, reinforced liner with imported  
blow sand, facing east 11/29/2017



Completing backfill, facing east 12/4/2017



Backfilling the excavation with imported soil,  
facing southwest 12/6/2017



Site seeded, and silt net fence installed,  
facing south 12/18/2017

December 04, 2017

KATIE JONES

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: BD JCT B-1

Enclosed are the results of analyses for samples received by the laboratory on 11/28/17 16:10.

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/ga/lab\\_accred\\_certif.html](http://www.tceq.texas.gov/field/ga/lab_accred_certif.html).

Cardinal Laboratories is accredited 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

Lab Director/Quality Manager

**Analytical Results For:**

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

Received: 11/28/2017  
Reported: 12/04/2017  
Project Name: BD JCT B-1  
Project Number: NONE GIVEN  
Project Location: NOT GIVEN

Sampling Date: 11/28/2017  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Tamara Oldaker


**Sample ID: IMPORTED BLOW SAND (H703269-01)**

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	11/29/2017	ND	416	104	400	0.00		

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**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

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Cardinal Laboratories

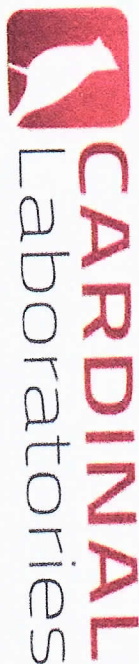
\* = Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

BILL TO				ANALYSIS REQUEST																													
Company Name: <u>Rice Operating</u>				P.O. #:																													
Project Manager:				Company:																													
Address:				Attn:																													
City:				Address:																													
Phone #:				City:																													
Project #:				State:																													
Project Name:				Phone #:																													
Project Location: <u>B-D jet. B-1</u>				Fax #:																													
Sample Name: <u>Karanga Lewis</u>				PRESERV. SAMPLING																													
FOR LAB USE ONLY																																	
Lab I.D. <u>HT03269</u>		Sample I.D. <u>Imported Egg Blow Sand</u>		(G)RAB OR (C)OMP		# CONTAINERS		MATRIX		PRESERV.		SAMPLING																					
				GROUNDWATER		WASTEWATER		SOIL		OIL		SLUDGE		OTHER		ACID/BASE		ICE / COOL		OTHER		DATE		TIME									
																						<u>11-28-17</u>		<u>12:00</u>		<u>Chlorides</u>							
Reinquished By: <u>[Signature]</u>		Date: <u>11-28-17</u>		Received By: <u>[Signature]</u>		Time: <u>4:10</u>		Received By: <u>[Signature]</u>		Time: <u>4:10</u>		Sample Condition		CHECKED BY: <u>[Signature]</u>		Phone Result: <input type="checkbox"/> Yes <input type="checkbox"/> No		Add'l Phone #:		Fax Result: <input type="checkbox"/> Yes <input type="checkbox"/> No		Add'l Fax #:		REMARKS: <u>+griceo@basinenv.com</u> <u>klewis@tasmanaged.com</u> <u>kuorman@tasman-geod.com</u> <u>kwones@rice-swd.com</u>									
Delivered By: (Circle One) <u>3.02</u>		Time: <u>3:02</u>		Time: <u>3:02</u>		Time: <u>3:02</u>		Time: <u>3:02</u>		Time: <u>3:02</u>		Time: <u>3:02</u>		Time: <u>3:02</u>		Time: <u>3:02</u>		Time: <u>3:02</u>		Time: <u>3:02</u>		Time: <u>3:02</u>		Time: <u>3:02</u>									
Sampler - UPS - Bus - Other: <u>3.02</u>		Time: <u>3:02</u>		Time: <u>3:02</u>		Time: <u>3:02</u>		Time: <u>3:02</u>		Time: <u>3:02</u>		Time: <u>3:02</u>		Time: <u>3:02</u>		Time: <u>3:02</u>		Time: <u>3:02</u>		Time: <u>3:02</u>		Time: <u>3:02</u>		Time: <u>3:02</u>									

# Tasman Geosciences, Inc.

2620 W Marland Hobbs, NM 88240

PHONE: (575) 318-5017

## PID METER CALIBRATION & FIELD REPORT FORM

CK.  
MODEL  
NO.

X

MODEL: PGM 7300	SERIAL NO: 590-000508
MODEL: PGM 7300	SERIAL NO: 590-000504
MODEL: PGM 7300	SERIAL NO: 590-905146
MODEL: PGM 7300	SERIAL NO: 590-000183

GAS COMPOSITION: ISOBUTYLENE 100 PPM / AIR: BALANCE

LOT NO: 544188	EXPIRATION DATE: 8/16/2019
METER READING ACCURACY: 100 ppm	

ACCURACY : +/- 2%

<b>COMPANY</b>
RICE Operating Company

SYSTEM	JUNCTION	UNIT	SECTION	TOWN SHIP	RANGE
BD	Jct. B-1	B	1	22S	36E

SAMPLE ID	PID	SAMPLE ID	PID
Imported Blow Sand	0.2		

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

SIGNATURE: \_\_\_\_\_

*Karanja Lewis*

DATE: 11/28/2017

December 07, 2017

KATIE JONES

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: BD JCT B-1

Enclosed are the results of analyses for samples received by the laboratory on 12/01/17 15:50.

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Sincerely,



Celey D. Keene

Lab Director/Quality Manager

**Analytical Results For:**

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

Received: 12/01/2017  
Reported: 12/07/2017  
Project Name: BD JCT B-1  
Project Number: NONE GIVEN  
Project Location: NOT GIVEN

Sampling Date: 12/01/2017  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Tamara Oldaker

**Sample ID: IMPORTED TOP SOIL (H703318-01)**

Chloride, SM4500CI-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	12/04/2017	ND	432	108	400	0.00	

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

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Cardinal Laboratories

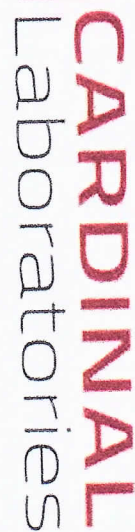
\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



## Page 4 of 4

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

Company Name: **Rice Operating**  
 Project Manager: **Katie Jones**  
 Address:  
 City:  
 State:  
 Zip:  
 Phone #:  
 Fax #:  
 Project #:  
 Project Name:  
 Project Location: **BD jct. B-1**  
 Sample Name: **Karanga Lewis**

P.O. #:  
 Company:  
 Attn:  
 Address:  
 City:  
 State:  
 Zip:  
 Phone #:  
 Fax #:

Relinquished By: *[Signature]*  
 Relinquished By: *[Signature]*  
 Date: **12-1-17**  
 Time: **3:50**  
 Received By: *[Signature]*  
 Received By: *[Signature]*  
 Date: **12-1-17**  
 Time: **1:40**

Delivered By: (Circle One) **4.88**  
 Sampler - UPS - Bus - Other: **Assisted 5.05**  
 Sample Condition:  
 Cool ☒ Intact ☐  
 Yes ☐ No ☐  
 Checked By: **TD #75**

REMARKS:  
**Chlorides**

# Tasman Geosciences, Inc.

2620 W Marland Hobbs, NM 88240

PHONE: (575) 318-5017

## PID METER CALIBRATION & FIELD REPORT FORM

CK.		MODEL: PGM 7300	SERIAL NO: 590-000508
MODEL		MODEL: PGM 7300	SERIAL NO: 590-000504
NO.	X	MODEL: PGM 7300	SERIAL NO: 590-905146
		MODEL: PGM 7300	SERIAL NO: 590-000183

GAS COMPOSITION: ISOBUTYLENE 100 PPM / AIR: BALANCE

LOT NO: 544188	EXPIRATION DATE: 8/16/2019
METER READING ACCURACY: 100 ppm	

ACCURACY : +/- 2%

COMPANY
RICE Operating Company

SYSTEM	JUNCTION	UNIT	SECTION	TOWN SHIP	RANGE
BD	Jct. B-1	B	1	22S	36E

SAMPLE ID	PID	SAMPLE ID	PID
Imported Top Soil	0.2		

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

SIGNATURE:

*Karanja Lewis*

DATE:

12/1/2017



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

## VEGETATION FORM

### 1. General Information

Site name: BD Jct. B-1						
U/L B	Section I	Township 22S	Range 37E	County Lea	Latitude 32.42647	Longitude -103.214876
Contact Name: Katie Jones Davis						
Email: kjones@riceswd.com						
Site size: 19,015 square feet						

### 2. Soils

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

Salvaged from site	<input type="checkbox"/>	Bioremediated	<input type="checkbox"/>	Imported	<input checked="" type="checkbox"/>	Blended	<input type="checkbox"/>	Depth (in)	<input type="text"/>
Texture: sandy		Describe soil & subsoil: top soil and blow sand							
Soil prep methods:		Rip	<input type="checkbox"/>	Depth (in)	<input type="text"/>	Disc	<input checked="" type="checkbox"/>	Depth (in)	3
Date completed: 12/7/2017									

### 3. Bioremediation

Fertilizer	<input type="checkbox"/>	Hay	<input type="checkbox"/>	Other	<input type="checkbox"/>
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	<input checked="" type="checkbox"/>	Prescribed Mix	<input type="checkbox"/>	Seed Mix Name: 10 lbs Lea County Mix & 50 lbs Beardless Wheat Seed Mix	Date: 12/8/2017
Method: broadcast with seeder					
Soil conditions during seed:		Dry	<input checked="" type="checkbox"/>	Damp	<input type="checkbox"/>
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: 12/8/2017
Signature:		