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

June 14, 2018

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

RE: **Investigation and Characterization Plan (ICP)**
Rice Operating Company – BD SWD System
BD I-18 EOL (Mattern 5 EOL) (1R426-13): UL/I, Sec. 18, T21S, R37E

Mr. Billings:

RICE Operating Company (ROC) has retained Basin Environmental Service Technologies (BEST) 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.

For all such environmental projects, ROC will choose the path forward that:

- Protects public health,
- Provides the greatest net environmental benefit,
- Complies with NMOCD Rules, and
- Is supported by good science.

Each site shall generally have three submissions:

1. This Investigation and Characterization Plan (ICP) is proposed for gathering data and site characterization and assessment.

2. Upon evaluating the data and results from the ICP, a recommended remedy will be submitted in a Corrective Action Plan (CAP), if warranted.

3. Finally, after implementing the remedy, a Termination Request with final documentation will be submitted.

June 14, 2018

Background and Previous Work

The site is located approximately 3.5 miles northwest of Eunice, New Mexico at UL/I, Sec. 18, T21S, R37E as shown on the Geographical Location Map and the Area Map. NM OSE records indicate that groundwater will likely be encountered at a depth of approximately 100 feet below ground surface (bgs). A junction box disclosure report was submitted to NMOCD with all the 2003 junction box closures and disclosures.

In 2003, ROC initiated work on the former I-18 EOL junction box. The site was delineated using a backhoe to form a 12 ft x 3 ft x 12 ft deep excavation and soil samples were screened at regular intervals for hydrocarbons and chlorides. The deepest sample, 12 ft bgs, was sent to a commercial laboratory for analysis. The bottom sample returned a chloride reading of 6,740 mg/kg, a BTEX and a Gasoline Range Organics (GRO) reading non-detect and a Diesel Range Organics (DRO) reading of 1,490 mg/Kg. The excavation was backfilled and contoured to the surrounding area. A new water-tight junction box was installed 130 feet east of the site.

ROC proposes additional investigative work at the site to determine if there is potential for groundwater degradation from residual constituents at the site.

Proposed Work Elements

1. Conduct vertical and lateral delineation of residual chlorides and hydrocarbons from samples taken using a drill rig, hand augur and/or backhoe.
    a. Vertical sampling will be conducted until of the following criteria are met in the field.
        i. Three samples in which the chloride concentration decreases, and the third sample has a chloride concentration of $\leq$ 600 ppm; and,
        ii. Three samples in which PID readings decrease and the third sample has a PID reading of $\leq$ 100 ppm; or,
        iii. The sampling reaches the capillary fringe.
    b. Lateral sampling will be conducted until the following criteria are met in the field.
        i. A decrease is observed in chloride concentrations between lateral bores at similar depths; and,
        ii. A chloride concentration of $\leq$ 600 ppm is observed in a lateral surface sample; or,
        iii. Safety concerns impede further lateral delineation.
2. If warranted, install a monitor well to provide direct measurement of the potential groundwater impact at the site. (All monitor wells will be installed by EPA, NMOCD, and industry standards.)
3. Evaluate the risk of groundwater impact based on the information obtained.

June 14, 2018

If the evaluation of the site shows no threat to groundwater from residual constituents, then only a vadose zone remedy will be undertaken. However, if groundwater shows impact from residual chlorides, a CAP will be developed to address these concerns.

Please contact me at (505) 920-4965 or Katie Jones Davis at (575) 393-9174 if you have any questions or wish to discuss this site. Thank you for your time and consideration.

Sincerely,

Edward J. Hansen
Senior Hydrologist
BEST

enclosures

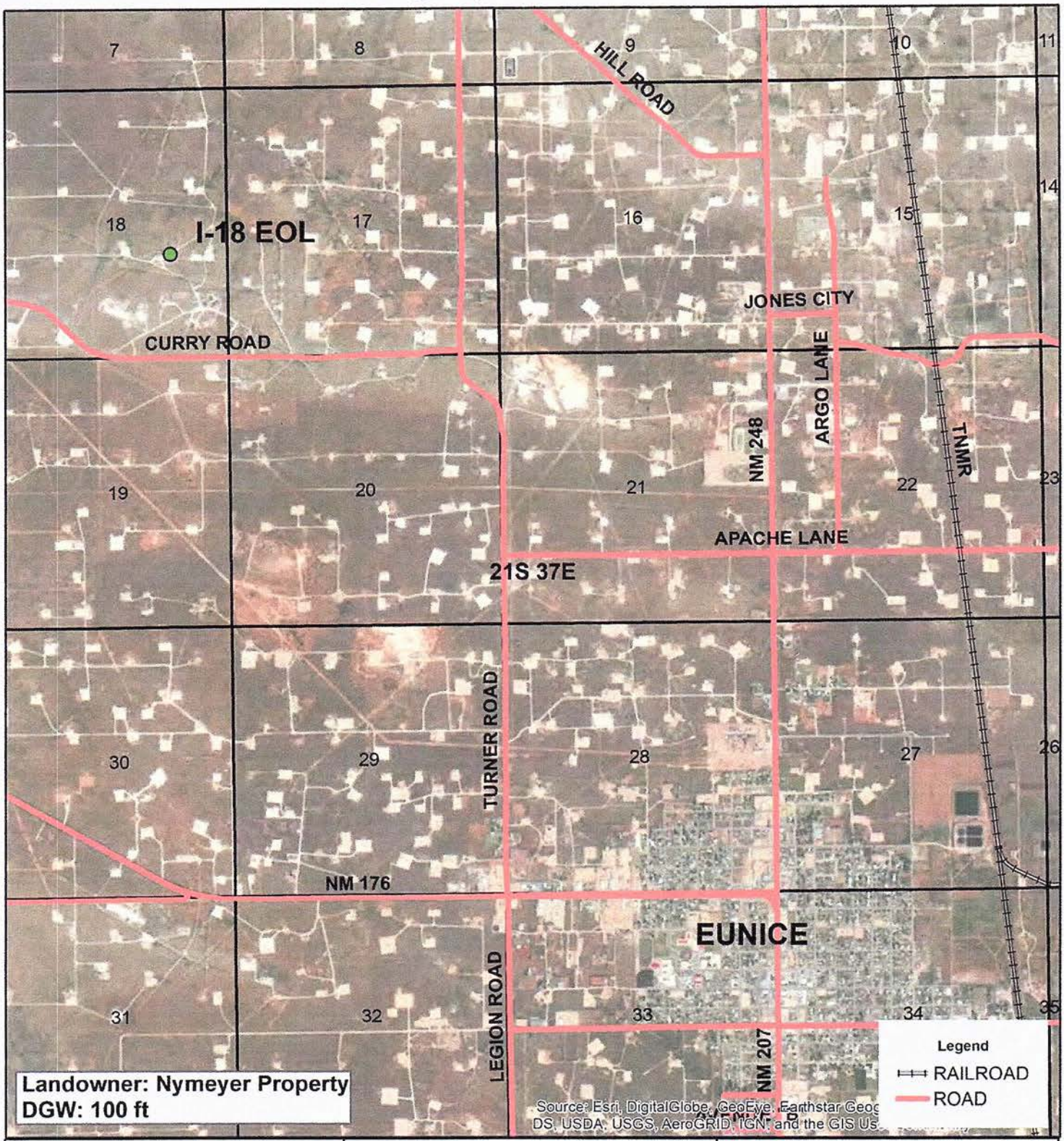
Figures

Basin Environmental Service Technologies (BEST)

P.O. Box 2948, Hobbs, NM 88241

Phone: 575-393-2967

Geographic Location



Basin Environmental Service Technologies
Effective Solutions

BD
I-18 EOL
1R426-13

UL I SECTION 18
T-21-S R-37-E
LEA COUNTY, NM

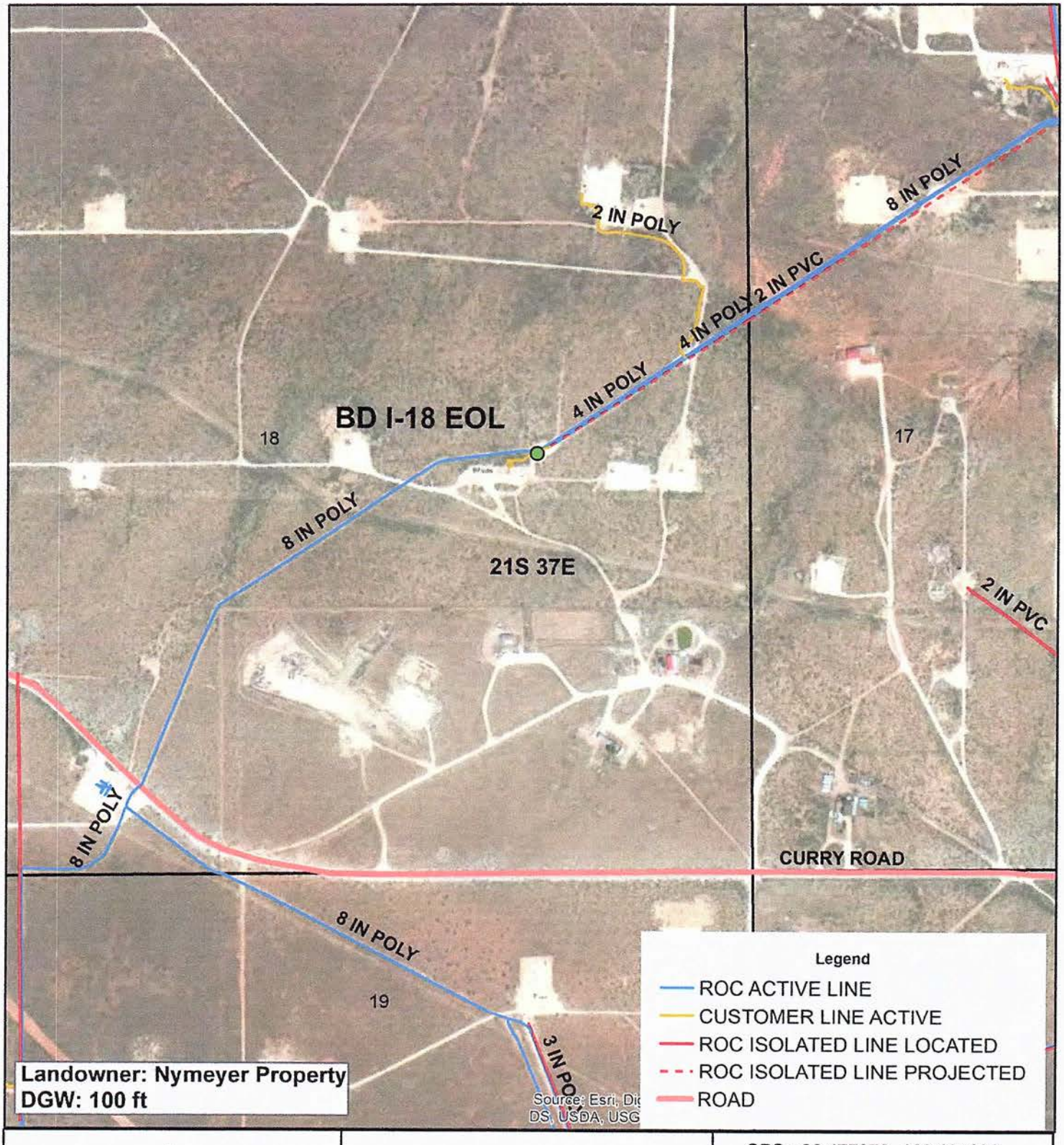
GPS: 32.477379 -103.197098

N
W E
S

0 0.5 1 Miles

Drawing date: 5/3/18
Drafted by: T. Grieco

Area Map



Basin Environmental Service Technologies
Effective Solutions

BD
I-18 EOL
1R426-13

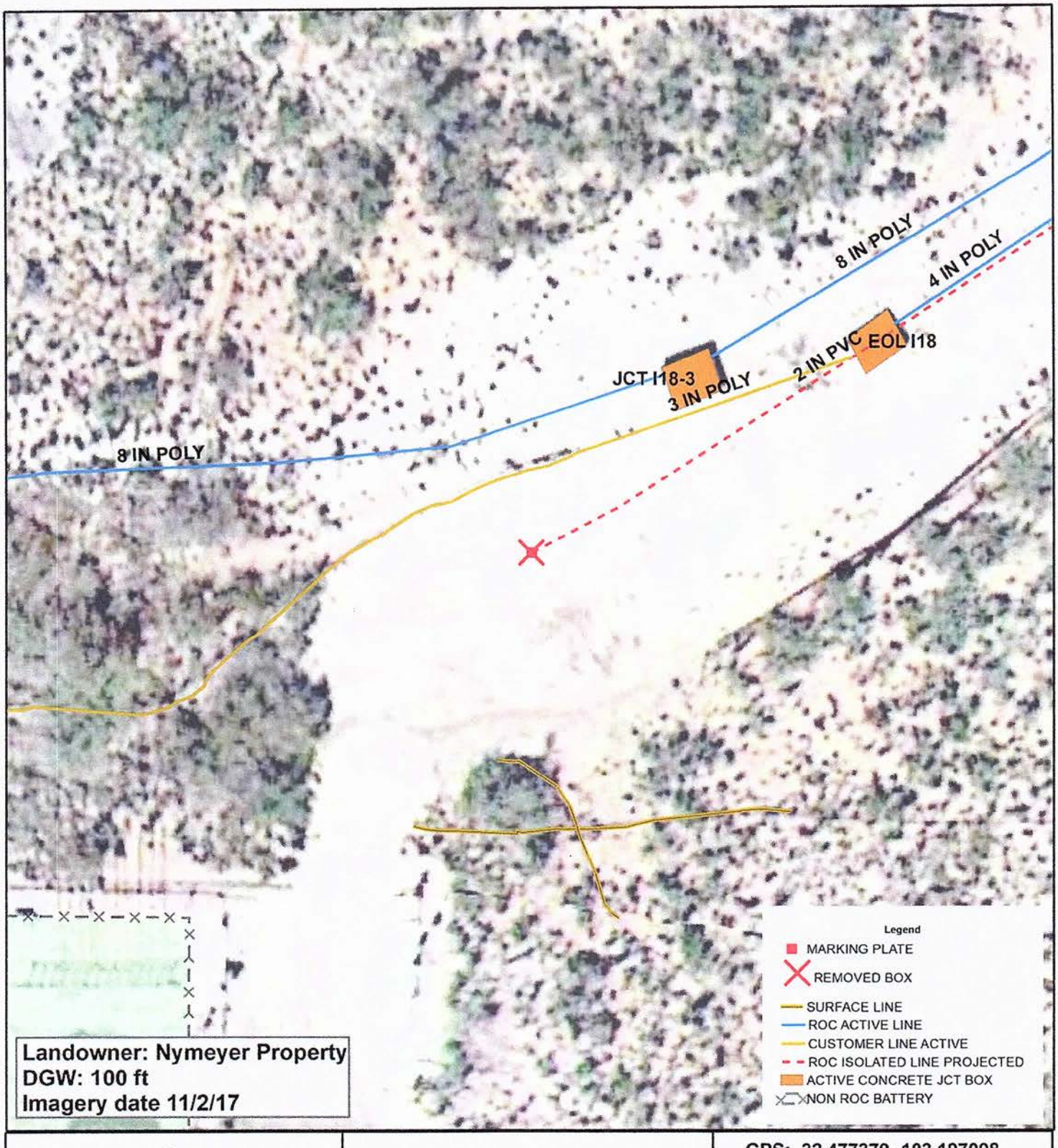
UL I SECTION 18
T-21-S R-37-E
LEA COUNTY, NM

GPS: 32.477379 -103.197098

N
W E
S

0 500 1,000
Feet

Drawing date: 5/3/18
Drafted by: T. Grieco



Basin Environmental Service Technologies
Effective Solutions

BD
I-18 EOL
1R426-13

UL I SECTION 18
T-21-S R-37-E
LEA COUNTY, NM

GPS: 32.477379 -103.197098

0 10 20
Feet

GPS date: 5/7/18
Drawing date: 5/8/18
Drafted by: T. Grieco

N
W E
S

Disclosure Report

Basin Environmental Service Technologies (BEST)

P.O. Box 2948, Hobbs, NM 88241

Phone: 575-393-2967

RICE OPERATING COMPANY
JUNCTION BOX DISCLOSURE* REPORT

BOX LOCATION

SWD SYSTEM	JUNCTION	UNIT	SECTION	TOWNSHIP	RANGE	COUNTY	BOX DIMENSIONS - FEET		
							Length	Width	Depth
BD	Mattern 5 EOL	I	18	21 S	37 E	Lea	Moved 130 ft east		

LAND TYPE: BLM _____ STATE _____ FEE LANDOWNER Nymeyer Property OTHER _____

Depth to Groundwater 72 feet NMOCD SITE ASSESSMENT RANKING SCORE: 10

Date Started 7/14/2003 Date Completed 8/6/2003 OCD Witness No

Soil Excavated 16 cubic yards Excavation Length 12 Width 3 Depth 12 feet

Soil Disposed 0 cubic yards Offsite Facility n/a Location n/a

FINAL ANALYTICAL RESULTS: **Sample Date** 8/6/2003 **Sample Depth** 12 ft bgs

Procure 5-point composite sample of bottom and 4-point composite sample of sidewalls. TPH, BTEX and Chloride laboratory test results completed by using an approved lab and testing procedures pursuant to NMOCD guidelines.

Sample Location	Benzene mg/kg	Toluene mg/kg	Ethyl Benzene mg/kg	Total Xylenes mg/kg	GRO mg/kg	DRO mg/kg	Chloride mg/kg
vertical @ 12 ft	<0.025	<0.025	<0.025	<0.025	<10.0	1490	6740

General Description of Remedial Action: During vertical delineation, it was apparent that neither chloride nor TPH concentrations declined sufficiently with depth. Although there was no evidence of surface impact, NMOCD TPH guidelines were not met. The hole was backfilled and the location identified for further consideration at a later date. A new watertight junction box has been built 130 ft east of this site.

ADDITIONAL EVALUATION IS *MEDIUM* PRIORITY.

cc: lab results, chloride graph, photos

CHLORIDE FIELD TESTS

LOCATION	DEPTH (ft)	ppm
vertical	4	2950
	6	2300
	8	3500
	10	2800
	12	2750

I HEREBY CERTIFY THAT THE INFORMATION ABOVE IS TRUE AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF.

DATE 8/14/2003 PRINTED NAME Kristin Farris

SIGNATURE Kristin Farris TITLE Project Scientist

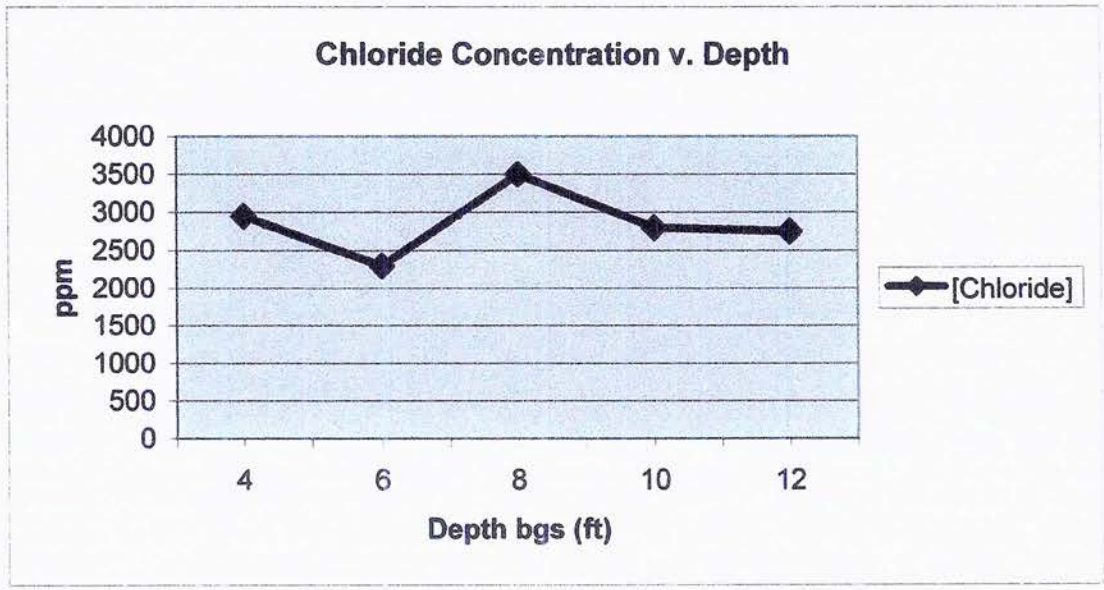
**** This site is a "DISCLOSURE." It will be placed on a prioritized list of similar sites for further consideration.***

BD Mattern 5 EOL

T21S, R37E

Depth bgs (ft)	[Cl-] ppm
4	2950
6	2300
8	3500
10	2800
12	2750

Groundwater = 72 ft



ANALYTICAL REPORT

Prepared for:

Kristin Farris
Rice Operating Mattern 5 EOL
122 W. Taylor
Hobbs, NM 88240

Project:	BD
PO#:	505
Order#:	G0307182
Report Date:	08/13/2003

Certificates
US EPA Laboratory Code TX00158

ENVIRONMENTAL LAB OF TEXAS

SAMPLE WORK LIST

Rice Operating
122 W. Taylor
Hobbs, NM 88240
505-397-1471

Order#: G0307182
Project:
Project Name: BD
Location: Chevron Mattern L-5

The samples listed below were submitted to Environmental Lab of Texas and were received under chain of custody. Environmental Lab of Texas makes no representation or certification as to the method of sample collection, sample identification, or transportation/handling procedures used prior to the receipt of samples by Environmental Lab of Texas, unless otherwise noted.

Lab ID:	Sample :	Matrix:	Date / Time Collected	Date / Time Received	Container	Preservative
0307182-01	12' bgs	SOIL	8/6/03 13:30	8/8/03 16:30	4 oz glass	ice

Lab Testing:

Rejected: No Temp: 1.0 C

8015M
8021B/5030 BTEX
Chloride

ENVIRONMENTAL LAB OF TEXAS

ANALYTICAL REPORT

Kristin Farris
Rice Operating
122 W. Taylor
Hobbs, NM 88240

Order#: G0307182
Project:
Project Name: BD
Location: Chevron Mattern L-5

Lab ID: 0307182-01
Sample ID: 12' bgs

8015M

Method Blank	Date Prepared	Date Analyzed	Sample Amount	Dilution Factor	Analyst	Method
		8/8/03	1	1	CK	8015M

Parameter	Result mg/kg	RL
GRO, C6-C12	<10.0	10.0
DRO, >C12-C35	1,490	10.0
TOTAL, C6-C35	1,490	10.0

Surrogates	% Recovered	QC Limits (%)	
1-Chlorooctane	123%	70	130
1-Chlorooctadecane	126%	70	130

8021B/5030 BTEX

Method Blank	Date Prepared	Date Analyzed	Sample Amount	Dilution Factor	Analyst	Method
0006466-02		8/11/03 14:55	1	25	CK	8021B

Parameter	Result mg/kg	RL
Benzene	<0.025	0.025
Toluene	<0.025	0.025
Ethylbenzene	<0.025	0.025
p/m-Xylene	<0.025	0.025
o-Xylene	<0.025	0.025

Surrogates	% Recovered	QC Limits (%)	
aaa-Toluene	88%	80	120
Bromofluorobenzene	90%	80	120

Approval: Celey D. Keene 08/13/03
Date

Raland K. Tuttle, Lab Director, QA Officer
Celey D. Keene, Org. Tech. Director
Jeanne McMurrey, Inorg. Tech. Director
Sandra Biezugbe, Lab Tech.
Sara Molina, Lab Tech.

DL = Diluted out N/A = Not Applicable RL = Reporting Limit

ENVIRONMENTAL LAB OF TEXAS

ANALYTICAL REPORT

Kristin Farris		**Order#:**	**G0307182**
Rice Operating		**Project:**	
122 W. Taylor		**Project Name:**	**BD**
Hobbs, NM 88240		**Location:**	**Chevron Mattern L-5**

Lab ID: 0307182-01
Sample ID: 12' bgs

Test Parameters

Parameter	Result	Units	Dilution Factor	RL	Method	Date Analyzed	Analyst
Chloride	6740	mg/kg	1	20	9253	8/11/03	SB

Approval: Celey D. Keene 08/13/03
Date

Raland K. Tuttle, Lab Director, QA Officer
Celey D. Keene, Org. Tech. Director
Jeanne McMurrey, Inorg. Tech. Director
Sandra Biezugbe, Lab Tech.
Sara Molina, Lab Tech.

RL = Reporting Limit **N/A = Not Applicable**

ENVIRONMENTAL LAB OF TEXAS I, LTD. **12600 West I-20 East, Odessa, TX 79765 Ph: 915-563-1800**

ENVIRONMENTAL LAB OF TEXAS

QUALITY CONTROL REPORT

8015M

Order#: G0307182

BLANK SOIL	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
TOTAL, C6-C35-mg/kg	0006486-02			<10.0		
CONTROL SOIL	**LAB-ID #**	**Sample Concentr.**	**Spike Concentr.**	**QC Test Result**	**Pct (%) Recovery**	**RPD**
TOTAL, C6-C35-mg/kg	0006486-03		952	807	84.8%	
CONTROL DUP SOIL	**LAB-ID #**	**Sample Concentr.**	**Spike Concentr.**	**QC Test Result**	**Pct (%) Recovery**	**RPD**
TOTAL, C6-C35-mg/kg	0006486-04		952	760	79.8%	6.%
SRM SOIL	**LAB-ID #**	**Sample Concentr.**	**Spike Concentr.**	**QC Test Result**	**Pct (%) Recovery**	**RPD**
TOTAL, C6-C35-mg/kg	0006486-05		1000	858	85.8%	

ENVIRONMENTAL LAB OF TEXAS

QUALITY CONTROL REPORT

8021B/5030 BTEX

Order#: G0307182

BLANK SOIL	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
Benzene-mg/kg	0006466-02			<0.025		
Toluene-mg/kg	0006466-02			<0.025		
Ethylbenzene-mg/kg	0006466-02			<0.025		
p/m-Xylene-mg/kg	0006466-02			<0.025		
o-Xylene-mg/kg	0006466-02			<0.025		
MS SOIL	**LAB-ID #**	**Sample Concentr.**	**Spike Concentr.**	**QC Test Result**	**Pct (%) Recovery**	**RPD**
Benzene-mg/kg	0307188-03	0	0.1	0.080	80.%	
Toluene-mg/kg	0307188-03	0	0.1	0.080	80.%	
Ethylbenzene-mg/kg	0307188-03	0	0.1	0.084	84.%	
p/m-Xylene-mg/kg	0307188-03	0	0.2	0.170	85.%	
o-Xylene-mg/kg	0307188-03	0	0.1	0.085	85.%	
MSD SOIL	**LAB-ID #**	**Sample Concentr.**	**Spike Concentr.**	**QC Test Result**	**Pct (%) Recovery**	**RPD**
Benzene-mg/kg	0307188-03	0	0.1	0.087	87.%	8.4%
Toluene-mg/kg	0307188-03	0	0.1	0.086	86.%	7.2%
Ethylbenzene-mg/kg	0307188-03	0	0.1	0.090	90.%	6.9%
p/m-Xylene-mg/kg	0307188-03	0	0.2	0.183	91.5%	7.4%
o-Xylene-mg/kg	0307188-03	0	0.1	0.092	92.%	7.9%
SRM SOIL	**LAB-ID #**	**Sample Concentr.**	**Spike Concentr.**	**QC Test Result**	**Pct (%) Recovery**	**RPD**
Benzene-mg/kg	0006466-05		0.1	0.085	85.%	
Toluene-mg/kg	0006466-05		0.1	0.084	84.%	
Ethylbenzene-mg/kg	0006466-05		0.1	0.087	87.%	
p/m-Xylene-mg/kg	0006466-05		0.2	0.176	88.%	
o-Xylene-mg/kg	0006466-05		0.1	0.088	88.%	

ENVIRONMENTAL LAB OF TEXAS

QUALITY CONTROL REPORT

Test Parameters

Order#: G0307182

BLANK SOIL	LAB-ID #	Sample Concentr.	Spike Concentr.	QC Test Result	Pct (%) Recovery	RPD
Chloride-mg/kg	0006460-01			<20.0		
MS SOIL	**LAB-ID #**	**Sample Concentr.**	**Spike Concentr.**	**QC Test Result**	**Pct (%) Recovery**	**RPD**
Chloride-mg/kg	0307180-01	2660	500	3120	92.%	
MSD SOIL	**LAB-ID #**	**Sample Concentr.**	**Spike Concentr.**	**QC Test Result**	**Pct (%) Recovery**	**RPD**
Chloride-mg/kg	0307180-01	2660	500	3140	96.%	0.6%
SRM SOIL	**LAB-ID #**	**Sample Concentr.**	**Spike Concentr.**	**QC Test Result**	**Pct (%) Recovery**	**RPD**
Chloride-mg/kg	0006460-04		5000	4960	99.2%	

Environmental Lab of Texas, Inc.

12600 West I-20 East
Odessa, Texas 79763
Phone: 915-563-1800
Fax: 915-563-1713

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: Kristin Farris
Company Name: RICE Operating Co.
Company Address: 122 W. Taylor
City/State/Zip: Hobbs, NM 88240
Telephone No: (505) 393-9174
Fax No: (505) 397-1471
Sampler Signature: Kristin Farris

Project Name: BD
Project #:
Project Loc: Chevron Mattern C-5
PO #: 505

LAB # (lab use only) 030782	FIELD CODE	Date Sampled	Time Sampled	No. of Containers	Preservative: Ice	Preservative: HNO_3	Preservative: HCl	Preservative: NaOH	Preservative: H_2SO_4	Preservative: None	Preservative: Other (Specify)	Matrix: Water	Matrix: Sludge	Matrix: Soil	Matrix: Other (specify)	Analyze For: TCLP / TOTAL: TDS / Cl / SAR / EC	TPH 418.1	TPH TX 1005/1006	TPH 8015M GRO/DRO	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEX 8021B/5030	RUSH TAT (Pre-Scheduled)	Standard TAT
C1	12' bgs	8-6-03	1:30pm	1	X									X		X			X				X		

Special Instructions:
C

Relinquished by:	Date	Time	Received by:	Date	Time
J. Hatt	8-6-03 4:30	4:30			
Relinquished by:	Date	Time	Received by ELOT:	Date	Time
[signature]	8/8/03	4:30pm	Lynn Anderson	8/8/03	1630

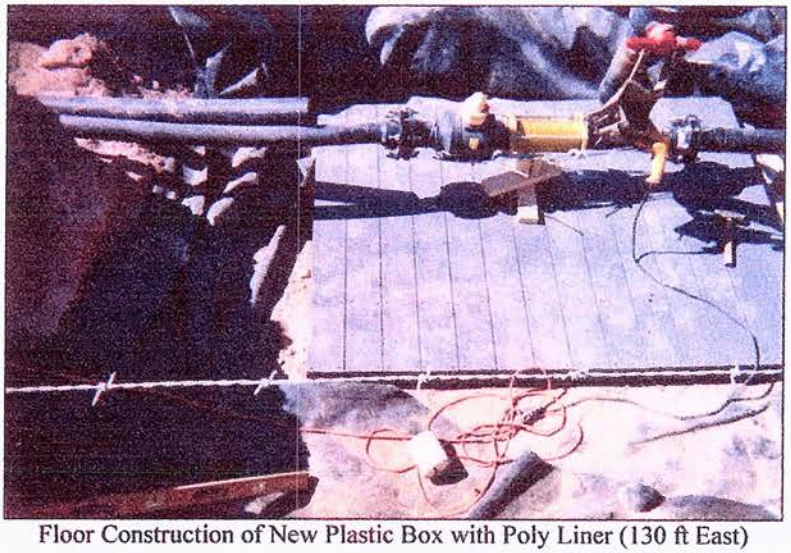
Sample Containers Intact? (Y) N
Temperature Upon Receipt:
Laboratory Comments:
1.6°C
4 oz glass

BD Mattern 5 EOL

6/6/2003 Old Jct. Box Before NORM Removal

After NORM Removal; Before Impact Delineation & Excavation

7/14/2003 Vertical Delineation at Old Jct.



Floor Construction of New Plastic Box with Poly Liner (130 ft East)

Old Jct. Site: Backfilled with ID Plate

Current Photodocumentation

Basin Environmental Service Technologies (BEST)

P.O. Box 2948, Hobbs, NM 88241

Phone: 575-393-2967

BD I-18 EOL (1R426-13): UL/I, Sec. 18, T21S, R37E

Facing north 5-7-18

Facing west 5-7-18