APPROVED
By Olivia Yu at 9:40 am, Nov 16, 2018

NMOCD grants closure to 1RP-4687.

Environmental & Safety Solutions, Inc.

Electronic Correspondence

August 10, 2018

Ms. Olivia Yu
Environmental Specialist, District I
Oil Conservation Division, EMNRD
Olivia.yu@state.nm.us

Ms. Yolanda Jordan
Environmental Protection Specialist – Realty Compliance
Bureau of Land Management, US Dept of the Interior
yjordan@blm.gov

Re: Closure Report – 1RP-4687
Devon Billiken 7 Federal 1H
Legal: Unit M, Sec 12, T26S R34E, Lea County, NM
Latitude/Longitude: 32.050688/ -103.429337
Etech Proj. Number: 817-8169-000
Depth to Groundwater: 150-175feet - Chevron/Texaco Lea County Depth to Groundwater Map
- USGS National Water Information System: Web Interface
Release Type: Produced Water

Contaminants of Concern (COCs)	Threshold Levels
TPH	5000 mg/kg
Benzene	10 mg/kg
BTEX	50 mg/kg
Chloride	600 mg/kg

Dear Olivia and Yolanda:

Etech Environmental & Safety Solutions, Inc. (Etech) is submitting the following delineation work plan on the aforementioned site for your review and approval.

Background

On April 20, 2017, while transferring produced water from a frac pond to the location, the Booster pump #2 over pressured and the lay flat hose ruptured. A two (2) inch hole developed and released produced water on the ground on the pipeline right of way. The pump was shut down and the hose was repaired. Approximately one hundred fifty (150) barrels (bbls) of produced water were released. Approximately one hundred (100) bbls of fluid were recovered and disposed.

An assessment and initial sampling were conducted of the impacted area on April 24, 2017 by Etech. It was determined that the release was on the pipeline right of way in the pasture. The release impacted an area of approximately 8,933 square feet.

Soil samples were collected by hand auger from four (4) locations of the impacted area (See Annotated Aerial Imagery). Hand auger refusal occurred at depths of two and a half (2.5) feet to three (3) feet below ground surface (bgs) where a hard layer of competent caliche was encountered. The soil samples were submitted to Permian Basin Environmental Laboratory (PBELAB) and analyzed for chloride, TPH, benzene, and BTEX. The laboratory results determined that the chloride levels ranged from 602 mg/kg to 10,000 mg/kg. All TPH, BTEX and benzene levels indicated no analytical detection. (See Annotated Aerial Imagery and Table 1 Summary of Delineation Sampling Analytical Results below).

On May 19, 2017, Etech returned to the site to evaluate the caliche layer for further delineation purposes. The caliche was found to be hard, not easily broken, at least one (1) foot thick, and continuous across the site.

On February 14, 2018, Etech returned to the site to conduct additional delineation sampling. The excavation of a test trench utilizing a backhoe was attempted at the Auger Hole 1 location. Refusal was encountered at three (3) feet bgs. No further attempts of excavating test trenches were made.

On March 14, 2018, Etech returned to the site to conduct additional delineation sampling utilizing a drilling rig. An attempt was made to position the drilling rig over the Auger Hole 4 location. However, it was found that the soils would not support the weight of the drilling rig. No further attempts to perform borings were made.

On March 19, 2018, Panther Energy Services constructed a caliche road and backup pads to support the weight of the drilling rig.

On March 22, 2018, Etech returned to the site to conduct additional delineation sampling utilizing a drilling rig. Drilling began at the Auger Hole 4 location and finished at the Auger Hole 1 location. Indurated caliche was observed to extend to depths ranging from approximately six and a half (6.5) feet to seven and a half (7.5) feet bgs. A plug sampler was then utilized to collect intact samples from below the indurated caliche. Unindurated caliche samples were collected from depths ranging from approximately seven (7) feet bgs to eight (8) feet bgs. Samples composed of reddish tan fine grained sand were then collected at depths ranging from twelve (12) feet bgs to thirteen (13) feet bgs.

Field testing of the soil samples indicated that all chloride concentrations were below the quantitation level of the Quantab strips. All soil borings were properly abandoned upon completion of sampling and field testing.

It should be noted that although only one (1) sample was required by the work plan to be collected at the Auger Hole 1 location, this location was sampled in the same manner as the other locations. This provided the same number of data points for all the bore hole locations.

The soil samples were submitted to Cardinal Laboratories and analyzed for chloride. The laboratory results determined that the chloride levels range from no analytical detection to 48 mg/kg and are below the regulatory guideline of 600 mg/kg. (See Annotated Aerial Imagery and Table 1 Summary of Delineation Sampling Analytical Results below).

On June 25, 2018, Etech returned to the site to conduct oversight of remediation activities and conduct field testing of soil samples for chloride concentration. Remediation activities were conducted by Basin Environmental utilizing an excavator. Excavation was conducted to a depth of four (4) feet bgs in the south portion of the site. A field test for chloride concentration was then performed on the Bottom Hole 4 location as well as on the South Sidewall. The field tests indicated chloride concentrations of 2,290 mg/kg and 530 mg/kg, respectively. Remediation by excavation continued at the site to a depth of four (4) feet bgs and was completed on June 27, 2018. Disposal of excavated soils, except for

approximately twenty (20) cubic yards, was completed on June 29, 2018. It is planned that the remaining twenty (20) cubic yards will be disposed of at the time of backfilling.

On June 27, 2018, ten (10) soil samples were collected from the sidewalls of the excavation and four (4) soil samples were collected from the bottom of the excavation. Field testing for chloride concentration indicated that all sidewall samples were below the regulatory guideline of 600 mg/kg.

The soil samples were submitted to PBELAB and analyzed for chloride. The laboratory results determined that the chloride levels for the sidewall samples range from no analytical detection to 316 mg/kg and are below the regulatory guideline of 600 mg/kg. The laboratory results determined that the chloride levels for the bottom hole samples range from 1,970 mg/kg to 4,650 mg/kg and are above the regulatory guideline of 600 mg/kg (See Annotated Aerial Imagery for sample locations and Table 2 Summary of Confirmation Sampling Analytical Results below).

Table 1
Summary of Delineation Sampling Analytical Results

Sample ID	Depth	Date	C6-C12	>C12-C28	>C28-C35	Total TPH (mg/kg)	Benzene (mg/kg)	BTEX (mg/kg)	Chloride (mg/kg)
Auger Hole 1	1’	4/24/17	ND	ND	ND	ND	ND	ND	**3,700**
Auger Hole 1	2’	4/24/17	ND	ND	ND	ND	ND	ND	**5,930**
Auger Hole 1	3’	4/24/17	ND	ND	ND	ND	ND	ND	**602**
Auger Hole 2	1’	4/24/17	ND	ND	ND	ND	ND	ND	**5,050**
Auger Hole 2	2’	4/24/17	ND	ND	ND	ND	ND	ND	**2,400**
Auger Hole 2	2.5’	4/24/17	ND	ND	ND	ND	ND	ND	**1,690**
Auger Hole 3	1’	4/24/17	ND	ND	ND	ND	ND	ND	**10,000**
Auger Hole 3	2’	4/24/17	ND	ND	ND	ND	ND	ND	**8,710**
Auger Hole 3	3’	4/24/17	ND	ND	ND	ND	ND	ND	**3,770**
Auger Hole 4	1’	4/24/17	ND	ND	ND	ND	ND	ND	**8,380**
Auger Hole 4	2’	4/24/17	ND	ND	ND	ND	ND	ND	**6,380**
Auger Hole 4	2.5’	4/24/17	ND	ND	ND	ND	ND	ND	**5,000**
Soil Boring 1	7’	3/22/18	NA	NA	NA	NA	NA	NA	ND
Soil Boring 1	12’	3/22/18	NA	NA	NA	NA	NA	NA	16.0
Soil Boring 2	8’	3/22/18	NA	NA	NA	NA	NA	NA	16.0
Soil Boring 2	13’	3/22/18	NA	NA	NA	NA	NA	NA	16.0
Soil Boring 3	8’	3/22/18	NA	NA	NA	NA	NA	NA	48.0
Soil Boring 3	13’	3/22/18	NA	NA	NA	NA	NA	NA	16.0
Soil Boring 4	7.5’	3/22/18	NA	NA	NA	NA	NA	NA	16.0
Soil Boring 4	12.5’	3/22/18	NA	NA	NA	NA	NA	NA	16.0

ND denotes no analytical detection.
Bold denotes analytical results above regulatory guidelines
NA denotes not analyzed

Table 2
Summary of Confirmation Sampling Analytical Results

Sample ID	Depth	Date	C6-C12	>C12-C28	>C28-C35	Total TPH (mg/kg)	Benzene (mg/kg)	BTEX (mg/kg)	Chloride (mg/kg)
East Sidewall 1	3’	6/27/18	NA	NA	NA	NA	NA	NA	11.5
East Sidewall 2	3’	6/27/18	NA	NA	NA	NA	NA	NA	155

East Sidewall 3	3’	6/27/18	NA	NA	NA	NA	NA	NA	34.3
East Sidewall 4	3’	6/27/18	NA	NA	NA	NA	NA	NA	ND
South Sidewall	3’	6/27/18	NA	NA	NA	NA	NA	NA	95.7
West Sidewall 1	3’	6/27/18	NA	NA	NA	NA	NA	NA	316
West Sidewall 2	3’	6/27/18	NA	NA	NA	NA	NA	NA	ND
West Sidewall 3	3’	6/27/18	NA	NA	NA	NA	NA	NA	4.13
West Sidewall 4	3’	6/27/18	NA	NA	NA	NA	NA	NA	161
North Sidewall	3’	6/27/18	NA	NA	NA	NA	NA	NA	55.7
Bottom Hole 1	4’	6/27/18	NA	NA	NA	NA	NA	NA	**2,990**
Bottom Hole 2	4’	6/27/18	NA	NA	NA	NA	NA	NA	**1,970**
Bottom Hole 3	4’	6/27/18	NA	NA	NA	NA	NA	NA	**3,250**
Bottom Hole 4	4’	6/27/18	NA	NA	NA	NA	NA	NA	**4,650**

ND denotes no analytical detection.
Bold denotes analytical results above regulatory guidelines
NA denotes not analyzed

Depth to Groundwater Data

Depth to groundwater data was obtained from the Chevron/Texaco Lea County Depth to Groundwater Map, the USGS National Water Information System: Web Interface, and the Texas Water Development Board (TWDB) Groundwater Database (GWDB). The New Mexico Office of the State Engineer (OSE) Hydrology Bureau collaborates with the U. S. Geological Survey (USGS) to collect, store and make available measurements of water levels in over 2,200 wells across the state of New Mexico. Therefore, OSE groundwater data is part of the USGS National Water Information System database.

The USGS and TWDB data correlates well with the Chevron/Texaco Lea County Depth to Groundwater Map data. The Billiken 7 Fed 1H location lies between the 150 foot and 175 foot depth to groundwater contour lines as depicted on the Chevron/Texaco Lea County Depth to Groundwater Map. The distribution of water depths on the map and from the USGS and TWDB databases supports this observation.

Attachment D contains an image of the pertinent area of the Chevron/ Texaco Lea County Depth to Groundwater Map with the location of the Billiken 7 Fed 1H denoted, a map displaying the location of the Billiken 7 Fed 1H and surrounding USGS and TWDB data points, and the data files for the USGS and TWDB data points displayed on the map.

Work Performed

On July 30, 2018, Basin Environmental returned to the site and emplaced approximately six (6) inches of clean backfill sand in the bottom of the excavation to cushion the plastic liner from the underlying caliche. A twenty (20) mil plastic liner was then installed at approximately four (4) feet bgs and covered with clean backfill sand. Backfilling continued until the excavation surface was brought to grade. The site was then contoured and reseeded with BLM #2 seed mix. The seed mix was broadcasted mechanically by tractor implemented with a drag harrow. All clean backfill soil was of the same kind as that removed and was sourced from the rancher who is the lessee of the pasture. The remediation activities conducted at the impacted area were completed on August 3, 2018 (See Attachment C, Photograph Log). The originally estimated twenty (20) cubic yards of impacted soil that remained from excavation on June 27, 2018 actually equaled approximately twelve (12) to fourteen (14) cubic yards and were disposed at Sundance Services on August 10, 2018.

Conclusion

The final analytical results yielded TPH, benzene, BTEX, and chloride concentrations below regulatory guidelines at the horizontal extent of the excavated impacted area. A twenty (20) mil plastic liner was installed at approximately four (4) feet bgs to prevent further vertical migration of chloride. The excavation was then backfilled to grade with clean soil like that removed, contoured, and reseeded with BLM #2 seed mix. Based on the analytical results and the field activities conducted, Etech does not recommend any further corrective action activities regarding this release.

Thank you for your assistance on this matter. Should you have any questions, require additional information, or have any additional stipulations for this site, please contact me at (432) 563-2200 (office) or via email at geoff@etechenv.com.

Respectfully:

Geoff Leking,
Project Manager
Etech Environmental & Safety Solutions, Inc.

Attachment A
Initial C-141

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-141
Revised August 8, 2011

Submit 1 Copy to appropriate District Office in accordance with 19.15.29 NMAC.

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company: **Devon Energy Production Co LP (6137)**	Contact: **Stephen Richards, Devon Water Foreman**
Address: **PO Box 250 Artesia, NM 88211**	Telephone No. **575-252-3717**
Facility Name: **Billiken 7 Fed 1H**	Facility Type : **Oil Well**

Surface Owner: **Federal**	Mineral Owner: **Federal**	API No. **30-025-42687**

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
M	**12**	**26S**	**34E**	**30**	**South**	**443**	**East**	**Lea**

Latitude: 32.050688 N Longitude: -103.429337 W

NATURE OF RELEASE

Type of Release: **Produced Water**	Volume of Release: **150 barrels**	Volume Recovered: **100 barrels**
Source of Release: **Lay Flat Line**	Date and Hour of Occurrence **4/20/17, 2:10 PM**	Date and Hour of Discovery **4/20/17, 2:10 PM**
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? **BLM: Shelly Tucker** **OCD: Olivia Yu**	
By Whom? **Brett Fulks, EHS Professional**	Date and Hour: **BLM: 4/20/17, 7:35 PM** **OCD: 4/20/17, 7:30 PM**	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse. **N/A**	

RECEIVED
By Olivia Yu at 11:54 am, Apr 28, 2017

If a Watercourse was Impacted, Describe Fully.* **N/A**

Describe Cause of Problem and Remedial Action Taken.*
While transferring produced water from a frac pond to the location, the Booster pump #2 over pressured and the lay flat hose ruptured. A 2 inch hole developed and released produced water on the ground. The pump was shut down and the hose was repaired.

Describe Area Affected and Cleanup Action Taken.*
The spill area affected is approximately 40' x 20' running East and West beginning about 100 feet West of the Ragin Cajun 12 Fed #3H wellpad. A central location of the spill is Lat - 32.050688 N, Long - -103.429337 W and is approximately 0.85 miles Southwest from the Billiken 7 Fed #1H wellpad. An estimated 150 barrels of treated produced water was spilled, a vacuum truck was dispatched, and 100 barrels was recovered. A remediation contractor will be contacted to assist with the delineation and remediation efforts.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD 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 NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD 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.

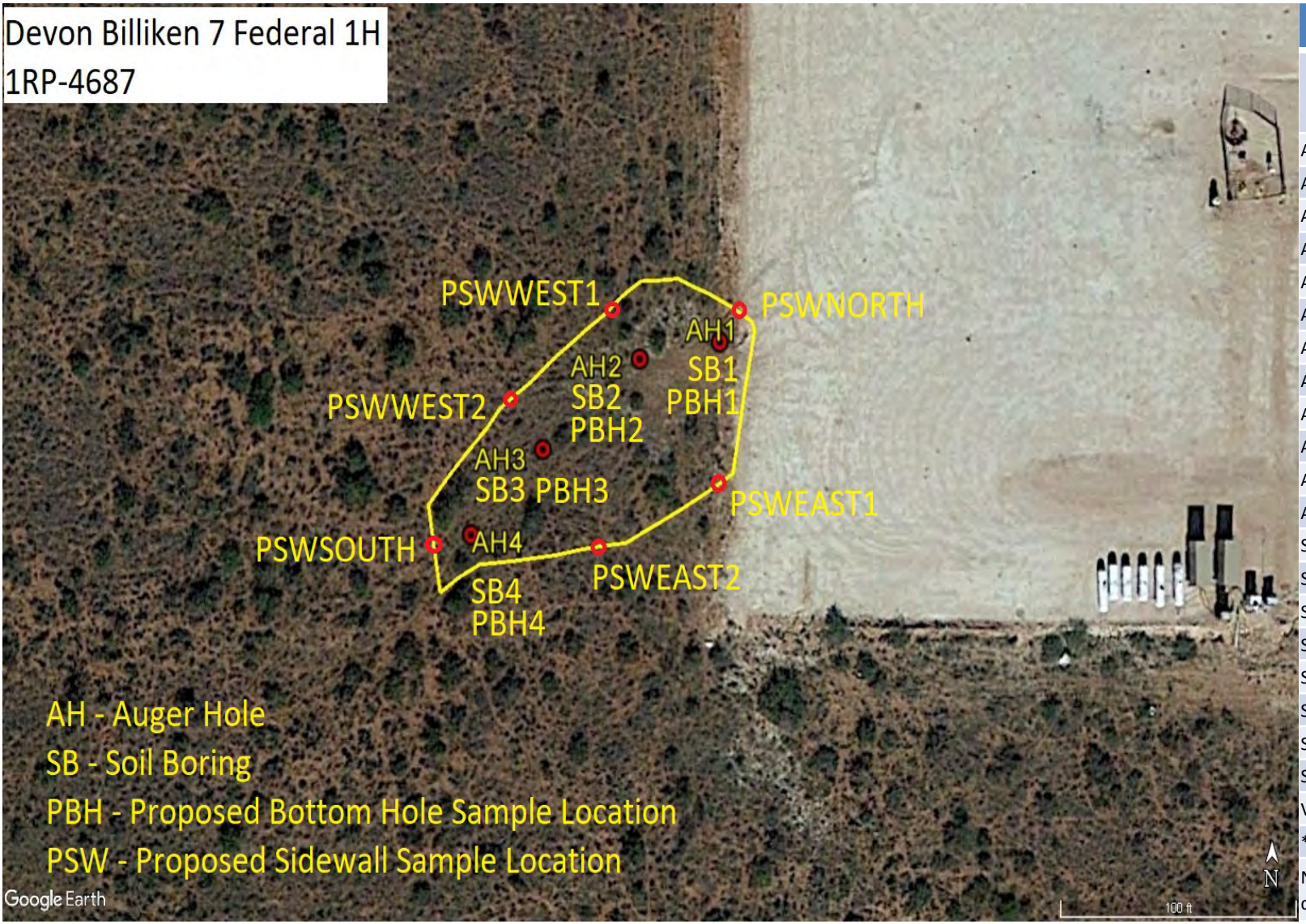
Signature: Denise R. Menoud	OIL CONSERVATION DIVISION
Printed Name: **Denise Menoud**	Approved by Environmental Specialist: DY
Title: **Field Admin Support**	Approval Date: 4/28/2017 Expiration Date:
E-mail Address: **Denise.Menoud@dvn.com**	Conditions of Approval: see attached directive Attached ☑
Date: **4/25/2017** Phone: **575-746-5544**	

* Attach Additional Sheets If Necessary

1RP-4687 nOY1711843020 pOY1711843402

Attachment B
Annotated Aerial Imagery

ETECH Environmental & Safety Solutions, Inc.	Delineation & Assessment Report ©	Lease Name:	Devon Billiken 7 Fed 1H	Case No.:	1RP-4687
		Date Assessed:	April 24, 2017 and March 22, 2018		



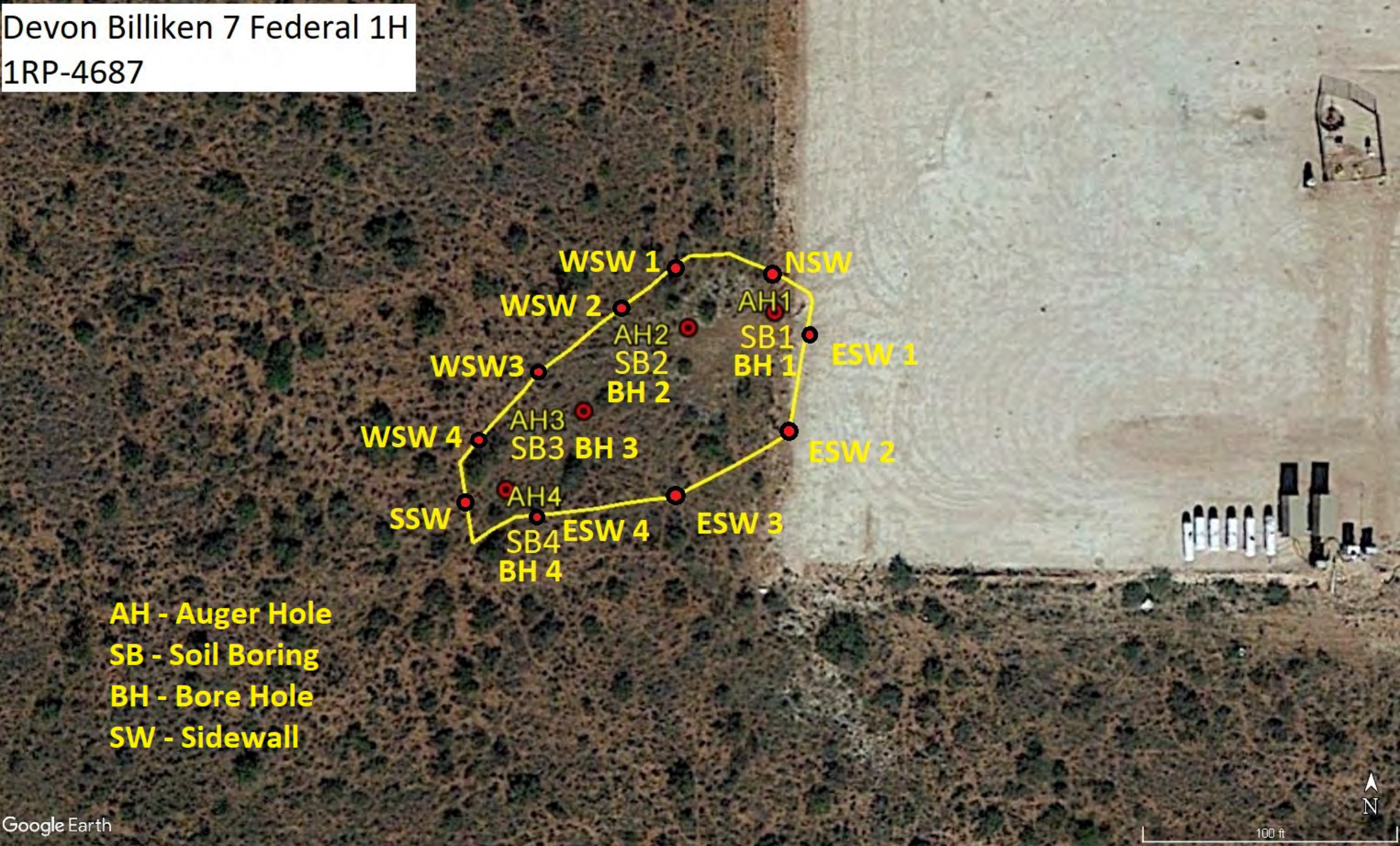
Assessment Results

Sample I.D.	Depth (ft.)	Chloride (mg/kg)
AH 1	1	3,700
AH 1	2	5,930
AH 1	3*	602
AH 2	1	5,050
AH 2	2	2,400
AH 2	2.5*	1,690
AH 3	1	10,000
AH 3	2	8,710
AH 3	3*	3,770
AH 4	1	8,380
AH 4	2	6,380
AH 4	2.5*	5,000
SB 1	7	ND
SB 1	12	16
SB 2	8	16
SB 2	13	16
SB 3	8	48
SB 3	13	16
SB 4	7.5	16
SB 4	12.5	16

Values are laboratory results

* Depth of hand auger refusal

ND denotes no analytical detection

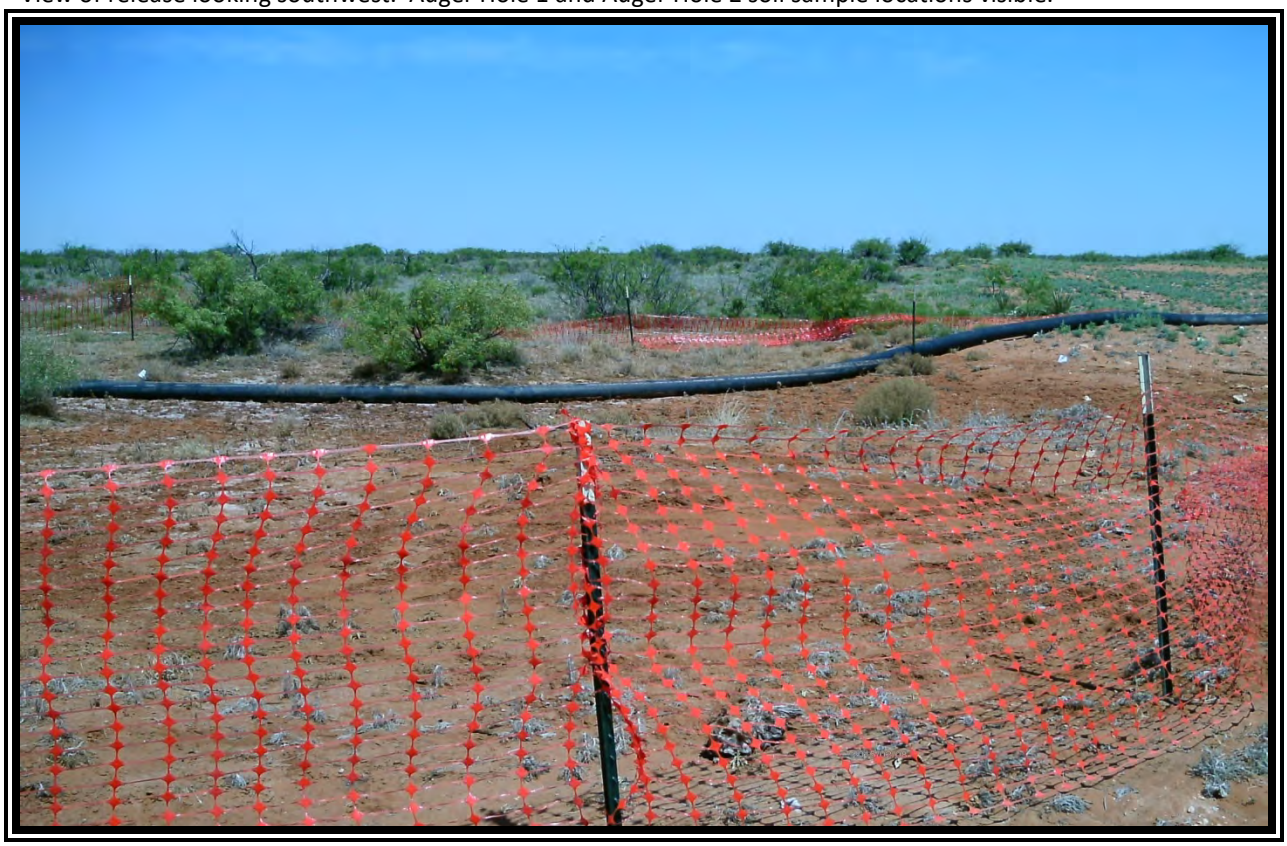

Devon Billiken 7 Federal 1H
1RP-4687
WSW 1
NSW
WSW 2
AH1
AH2
SB1
SB2
BH 1
ESW 1
WSW3
BH 2
AH3
WSW 4
SB3 BH 3
ESW 2
AH4
SSW
ESW 4
ESW 3
SB4
BH 4
AH - Auger Hole
SB - Soil Boring
BH - Bore Hole
SW - Sidewall
Google Earth
N
100 ft

Attachment C
Photograph Log

View of release looking to the southwest. Auger Hole 1 soil sample location in foreground.

View of release looking to the northeast. Auger Hole 4 soil sample location in foreground.

View of release looking southwest. Auger Hole 1 and Auger Hole 2 soil sample locations visible.



View of release looking west. Auger Hole 3 and Auger Hole 4 soil sample locations visible.

View of drilling rig set up over Soil Boring 4 location looking southwest.

View of plug sampler being attached to drill string.

View of plug sampler being lowered into soil boring.

View of unindurated caliche sample being removed from plug sampler at Soil Boring 4.

View of unindurated caliche sample after removal from plug sampler at Soil Boring 4.

View of reddish tan fine grained sand sample after removal from plug sampler at Soil Boring 4.

View of unindurated caliche sample after removal from plug sampler at Soil Boring 2.

View of reddish tan fine grained sand sample after removal from plug sampler at Soil Boring 3.

View of emplacing bentonite pellets in soil boring.

View of soil boring filled with bentonite pellets.

View of soil boring after abandonment.

View looking southwest of completed excavation.

View looking northeast of completed excavation.

View looking southwest of emplacing clean backfill sand over caliche in bottom of excavation.

View looking southwest of installing 20 mil plastic liner over emplaced clean backfill sand in excavation.

View looking southwest of 20 mil plastic liner covered with clean backfill sand in excavation.

View looking southwest of excavation backfilled nearly to grade.

View looking southwest of excavation backfilled to grade, contoured, and reseeding beginning.

View looking southwest of excavation backfilled to grade, contoured, and reseeding beginning.

View looking southwest of reseeding being completed.

Attachment D
Depth to Groundwater Data

25S33E

25S34E

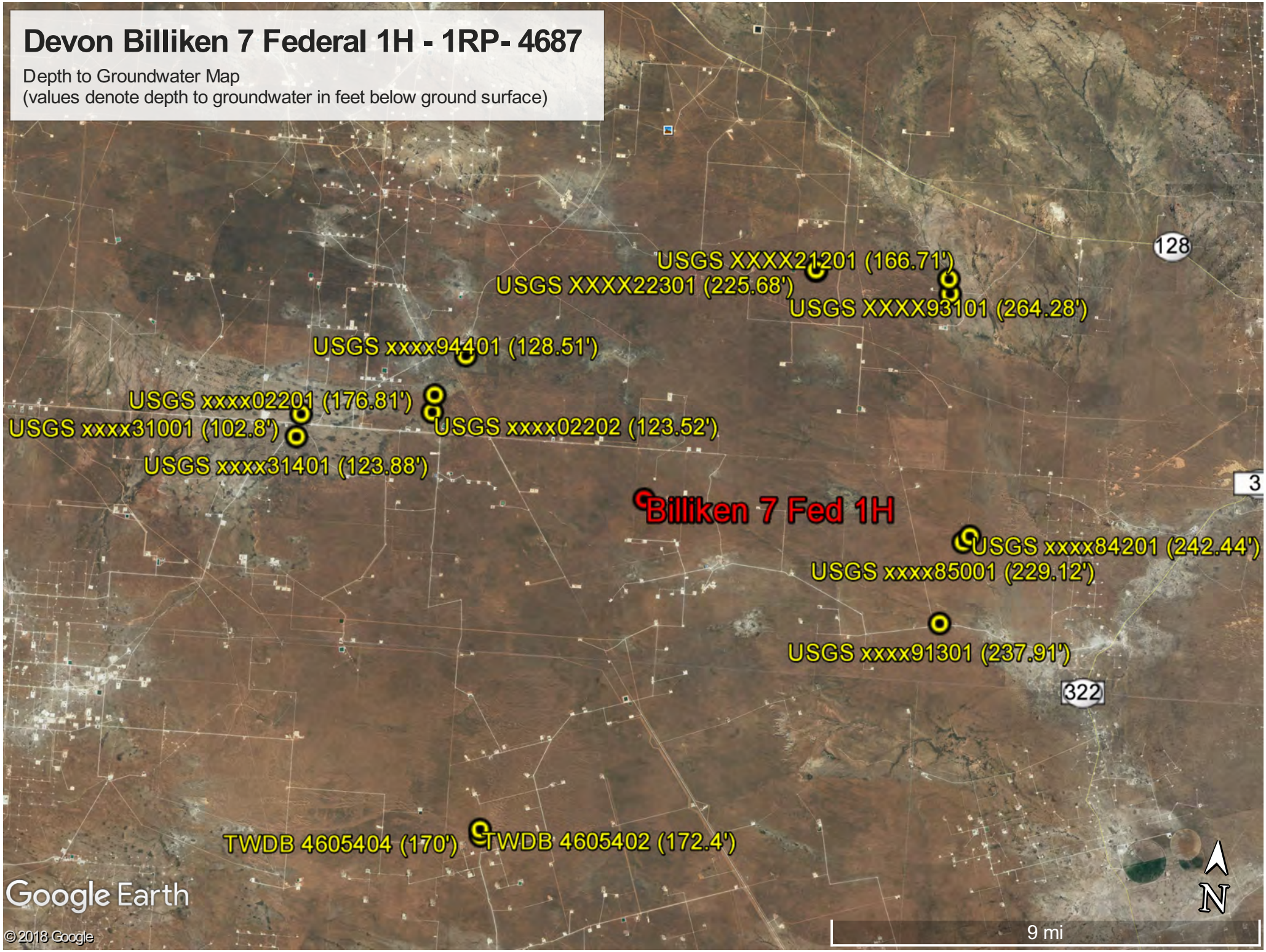
25S35E

26S33E

26S34E

26S35E

Devon
Billiken 7
Federal 1H


Devon Billiken 7 Federal 1H - 1RP- 4687
Depth to Groundwater Map
(values denote depth to groundwater in feet below ground surface)
USGS XXXX21201 (166.71')
USGS XXXX22301 (225.68')
USGS XXXX93101 (264.28')
USGS xxxx94401 (128.51')
USGS xxxx02201 (176.81')
USGS xxxx31001 (102.8')
USGS xxxx02202 (123.52')
USGS xxxx31401 (123.88')
Billiken 7 Fed 1H
USGS xxxx84201 (242.44')
USGS xxxx85001 (229.12')
USGS xxxx91301 (237.91')
TWDB 4605404 (170')
TWDB 4605402 (172.4')
128
3
322
Google Earth
© 2018 Google
9 mi
N

National Water Information System: Web Interface

USGS Water Resources

Data Category: Groundwater | Geographic Area: New Mexico | GO

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Groundwater levels for New Mexico

Search Results -- 1 sites found

Agency code = usgs
site_no list =
- 320523103294401

Minimum number of levels = 1
Save file of selected sites to local disk for future upload

USGS 320523103294401 25S.34E.29.343322

Lea County, New Mexico
Latitude 32°05'23", Longitude 103°29'44" NAD27
Land-surface elevation 3,321 feet above NAVD88
The depth of the well is 165 feet below land surface.
This well is completed in the Ogallala Formation (121OGLL) local aquifer.

Output formats

Table of data
Tab-separated data
Graph of data
Reselect period

Date	Time	? Water-level date-time accuracy	Water level, feet below land surface	Water level, feet above specific vertical datum	Referenced vertical datum	? Water-level accuracy	? Status	? Method of measurement	? Measuring agency	? Source of measurem
1970-12-08		D	127.15			2		U		
1976-01-08		D	127.49			2		U		
1981-03-25		D	132.10			2		U		
1986-03-12		D	130.23			2		U		
1991-06-06		D	128.51			2		U		

Explanation

Section	Code	Description
Water-level date-time accuracy	D	Date is accurate to the Day
Water-level accuracy	2	Water level accuracy to nearest hundredth of a foot
Status		The reported water-level measurement represents a static level
Method of measurement	U	Unknown
Measuring agency		Not determined
Source of measurement	U	Source is unknown.
Water-level approval status	A	Approved for publication -- Processing and review completed.

Questions about sites/data?
Feedback on this web site

National Water Information System: Web Interface

USGS Water Resources

Data Category: Groundwater | Geographic Area: New Mexico | GO

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Groundwater levels for New Mexico

Search Results -- 1 sites found

Agency code = usgs
site_no list =
- 320419103302201

Minimum number of levels = 1
Save file of selected sites to local disk for future upload

USGS 320419103302201 26S.34E.06.21414

Lea County, New Mexico
Latitude 32°04'37.9", Longitude 103°30'20.5" NAD83
Land-surface elevation 3,319.00 feet above NGVD29
The depth of the well is 360 feet below land surface.
This well is completed in the Chinle Formation (231CHNL) local aquifer.

Output formats

Table of data
Tab-separated data
Graph of data
Reselect period

Date	Time	? Water-level date-time accuracy	Water level, feet below land surface	Water level, feet above specific vertical datum	Referenced vertical datum	? Water-level accuracy	? Status	? Method of measurement	? Measuring agency	? Source of measurem
1954-07-23		D	141.95			2		U		
1971-10-20		D	128.43			2		U		
1981-03-25		D	129.43			2		U		
1986-03-04		D	125.88			2		U		
1991-06-12		D	126.82			2		U		
2013-01-16	14:00 MST	m	176.81			2		S	USGS	

Explanation

Section	Code	Description
Water-level date-time accuracy	D	Date is accurate to the Day
Water-level date-time accuracy	m	Date is accurate to the Minute
Water-level accuracy	2	Water level accuracy to nearest hundredth of a foot
Status		The reported water-level measurement represents a static level
Method of measurement	S	Steel-tape measurement.
Method of measurement	U	Unknown
Measuring agency		Not determined
Measuring agency	USGS	U.S. Geological Survey
Source of measurement	R	Reported by person other than the owner, driller, or another government agency.
Source of measurement	U	Source is unknown.

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Groundwater levels for New Mexico

Search Results -- 1 sites found

Agency code = usgs
site_no list =
- 320419103302202

Minimum number of levels = 1
Save file of selected sites to local disk for future upload

USGS 320419103302202 26S.34E.06.21414A

Lea County, New Mexico
Latitude 32°04'19", Longitude 103°30'22" NAD27
Land-surface elevation 3,329 feet above NAVD88
This well is completed in the Chinle Formation (231CHNL) local aquifer.

Output formats

Table of data
Tab-separated data
Graph of data
Reselect period

Date	Time	? Water-level date-time accuracy	Water level, feet below land surface	Water level, feet above specific vertical datum	Referenced vertical datum	? Water-level accuracy	? Status	? Method of measurement	? Measuring agency	? Source of measurem
1976-01-08		D	123.52			2		U		

Explanation

Section	Code	Description
Water-level date-time accuracy	D	Date is accurate to the Day
Water-level accuracy	2	Water level accuracy to nearest hundredth of a foot
Status		The reported water-level measurement represents a static level
Method of measurement	U	Unknown
Measuring agency		Not determined
Source of measurement	U	Source is unknown.
Water-level approval status	A	Approved for publication -- Processing and review completed.

National Water Information System: Web Interface

USGS Water Resources

Data Category: Groundwater | Geographic Area: New Mexico | GO

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- Full News

Groundwater levels for New Mexico

Search Results -- 1 sites found

Agency code = usgs
site_no list =
- 320407103331001

Minimum number of levels = 1
Save file of selected sites to local disk for future upload

USGS 320407103331001 26S.33E.03.444110

Lea County, New Mexico
Latitude 32°04'07", Longitude 103°33'10" NAD27
Land-surface elevation 3,311 feet above NAVD88
The depth of the well is 180 feet below land surface.
This well is completed in the Alluvium, Bolson Deposits and Other Surface Deposits (110AVMB) local aquifer.

Output formats

Table of data
Tab-separated data
Graph of data
Reselect period

Date	Time	? Water-level date-time accuracy	Water level, feet below land surface	Water level, feet above specific vertical datum	Referenced vertical datum	? Water-level accuracy	? Status	? Method of measurement	? Measuring agency	? Source of measuren
1954-07-23		D	102.80			2		U		
2013-02-14	09:25 MST	m					P	S	USGS	

Explanation

Section	Code	Description
Water-level date-time accuracy	D	Date is accurate to the Day
Water-level date-time accuracy	m	Date is accurate to the Minute
Water-level accuracy		Not determined
Water-level accuracy	2	Water level accuracy to nearest hundredth of a foot
Status		The reported water-level measurement represents a static level
Status	P	Site was being pumped.
Method of measurement	S	Steel-tape measurement.
Method of measurement	U	Unknown
Measuring agency		Not determined
Measuring agency	USGS	U.S. Geological Survey
Source of measurement	R	Reported by person other than the owner, driller, or another government agency.
Source of measurement	U	Source is unknown.
Water-level approval status	A	Approved for publication -- Processing and review completed.

National Water Information System: Web Interface

USGS Water Resources

Data Category: Groundwater | Geographic Area: New Mexico | GO

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Groundwater levels for New Mexico

Search Results -- 1 sites found

Agency code = usgs
site_no list =
- 320342103331401

Minimum number of levels = 1

Save file of selected sites to local disk for future upload

USGS 320342103331401 26S.33E.03.444113

Lea County, New Mexico
Latitude 32°03'42", Longitude 103°33'14" NAD27
Land-surface elevation 3,334 feet above NAVD88
This well is completed in the Alluvium, Bolson Deposits and Other Surface Deposits (110AVMB) local aquifer.

Output formats

Table of data
Tab-separated data
Graph of data
Reselect period

Date	Time	? Water-level date-time accuracy	Water level, feet below land surface	Water level, feet above specific vertical datum	Referenced vertical datum	? Water-level accuracy	? Status	? Method of measurement	? Measuring agency	? Source of measurem
1970-12-07		D	111.33			2	P	U		
1976-01-08		D	110.80			2		U		
1981-03-24		D	110.22			2	S	U		
1986-03-04		D	113.00			2		U		
1991-06-12		D	113.00			2		U		
1996-03-06		D	112.44			2		S		
2001-02-27		D	112.40			2		S		
2006-02-07	10:47 MST	m	123.88			2		S	USGS	

Explanation

Section	Code	Description
Water-level date-time accuracy	D	Date is accurate to the Day
Water-level date-time accuracy	m	Date is accurate to the Minute
Water-level accuracy	2	Water level accuracy to nearest hundredth of a foot
Status		The reported water-level measurement represents a static level
Status	P	Site was being pumped.
Status	S	Nearby site that taps the same aquifer was being pumped.
Method of measurement	S	Steel-tape measurement.
Method of measurement	U	Unknown
Measuring agency		Not determined

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- Please see news on new formats
- Full News

Groundwater levels for New Mexico

Search Results -- 1 sites found

Agency code = usgs
site_no list =
- 320245103184201

Minimum number of levels = 1
Save file of selected sites to local disk for future upload

USGS 320245103184201 26S.35E.13.22222

Lea County, New Mexico
Latitude 32°02'45", Longitude 103°18'42" NAD27
Land-surface elevation 2,983 feet above NAVD88
The depth of the well is 601 feet below land surface.
This well is completed in the Alluvium, Bolson Deposits and Other Surface Deposits (110AVMB) local aquifer.

Output formats

Table of data
Tab-separated data
Graph of data
Reselect period

Date	Time	? Water-level date-time accuracy	Water level, feet below land surface	Water level, feet above specific vertical datum	Referenced vertical datum	? Water-level accuracy	? Status	? Method of measurement	? Measuring agency	? Source of measurem
1970-12-02		D	228.63			2		U		
1976-01-13		D	244.40			2		U		
1981-03-19		D	242.31			2		U		
1986-03-07		D	242.44			2		U		

Explanation

Section	Code	Description
Water-level date-time accuracy	D	Date is accurate to the Day
Water-level accuracy	2	Water level accuracy to nearest hundredth of a foot
Status		The reported water-level measurement represents a static level
Method of measurement	U	Unknown
Measuring agency		Not determined
Source of measurement	U	Source is unknown.
Water-level approval status	A	Approved for publication -- Processing and review completed.

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- Full News

Groundwater levels for New Mexico

Search Results -- 1 sites found

Agency code = usgs
site_no list =
- 320238103185001

Minimum number of levels = 1
Save file of selected sites to local disk for future upload

USGS 320238103185001 26S.35E.13.22322

Lea County, New Mexico
Latitude 32°02'38", Longitude 103°18'50" NAD27
Land-surface elevation 2,982 feet above NAVD88
This well is completed in the Alluvium, Bolson Deposits and Other Surface Deposits (110AVMB) local aquifer.

Output formats

Table of data
Tab-separated data
Graph of data
Reselect period

Date	Time	? Water-level date-time accuracy	Water level, feet below land surface	Water level, feet above specific vertical datum	Referenced vertical datum	? Water-level accuracy	? Status	? Method of measurement	? Measuring agency	? Source of measurem
1958-12-12		D	229.12			2	R	U		

Explanation

Section	Code	Description
Water-level date-time accuracy	D	Date is accurate to the Day
Water-level accuracy	2	Water level accuracy to nearest hundredth of a foot
Status	R	Site had been pumped recently.
Method of measurement	U	Unknown
Measuring agency		Not determined
Source of measurement	U	Source is unknown.
Water-level approval status	A	Approved for publication -- Processing and review completed.

National Water Information System: Web Interface

USGS Water Resources

Data Category: Groundwater | Geographic Area: New Mexico | GO

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- Please see news on new formats
- Full News

Groundwater levels for New Mexico

Search Results -- 1 sites found

Agency code = usgs
site_no list =
- 320108103191301

Minimum number of levels = 1
Save file of selected sites to local disk for future upload

USGS 320108103191301 26S.35E.24.342444

Lea County, New Mexico
Latitude 32°01'08", Longitude 103°19'13" NAD27
Land-surface elevation 2,965 feet above NAVD88
This well is completed in the Alluvium, Bolson Deposits and Other Surface Deposits (110AVMB) local aquifer.

Output formats

Table of data
Tab-separated data
Graph of data
Reselect period

Date	Time	? Water-level date-time accuracy	Water level, feet below land surface	Water level, feet above specific vertical datum	Referenced vertical datum	? Water-level accuracy	? Status	? Method of measurement	? Measuring agency	? Source of measuren
1970-12-01		D	206.63			2		U		
1976-01-14		D	209.53			2		U		
1981-03-18		D	220.40			2		U		
1986-03-06		D	215.90			2		U		
1990-11-15		D	218.55			2		U		
1996-02-28		D	220.01			2		S		
2001-03-07		D	222.12			2		S		
2013-08-08	15:20 MDT	m	232.74			2	S	S	USGS	
2013-12-10	11:15 MST	m	236.02			2	R	S	USGS	
2014-12-16	12:15 MST	m	237.91			2	R	S	USGS	

Explanation

Section	Code	Description
Water-level date-time accuracy	D	Date is accurate to the Day
Water-level date-time accuracy	m	Date is accurate to the Minute
Water-level accuracy	2	Water level accuracy to nearest hundredth of a foot
Status		The reported water-level measurement represents a static level
Status	R	Site had been pumped recently.
Status	S	Nearby site that taps the same aquifer was being pumped.
Method of measurement	S	Steel-tape measurement.

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Groundwater levels for New Mexico

Click to hide state-specific text
The New Mexico Water Science Center has transitioned to a new data management software package. While you may not have noticed this transition, some sites may have problems or delays in being updated. We are actively monitoring these conditions and are resolving them as quickly as possible. See the Dec 8 news entry for more information at: https://help.waterdata.usgs.gov/news

Search Results -- 1 sites found

Agency code = usgs
site_no list =
- 320715103193101

Minimum number of levels = 1
Save file of selected sites to local disk for future upload

USGS 320715103193101 25S.35E.13.332133

Lea County, New Mexico
Latitude 32°07'22.9", Longitude 103°19'31.8" NAD83
Land-surface elevation 3,108.20 feet above NGVD29
The depth of the well is 249 feet below land surface.
This well is completed in the Chinle Formation (231CHNL) local aquifer.

Output formats

Table of data
Tab-separated data
Graph of data
Reselect period

Date	Time	? Water-level date-time accuracy	Water level, feet below land surface	Water level, feet above specific vertical datum	Referenced vertical datum	? Water-level accuracy	? Status	? Method of measurement	? Measuring agency	? Source of measurem
1965-11-17		D	108.61			2		U		
1968-04-04		D	112.31			2		U		
1971-01-14		D	130.00			2		U		
2013-01-16	09:30 MST	m	264.28			2	P	S	USGS	

Explanation

Section	Code	Description
Water-level date-time accuracy	D	Date is accurate to the Day
Water-level date-time accuracy	m	Date is accurate to the Minute
Water-level accuracy	2	Water level accuracy to nearest hundredth of a foot
Status		The reported water-level measurement represents a static level
Status	P	Site was being pumped.
Method of measurement	S	Steel-tape measurement.
Method of measurement	U	Unknown method.
Measuring agency		Not determined

Section	Code	Description
Measuring agency	USGS	U.S. Geological Survey
Source of measurement	R	Reported by person other than the owner, driller, or another government agency.
Source of measurement	U	Source is unknown.
Water-level approval status	A	Approved for publication -- Processing and review completed.

Questions about sites/data?
Feedback on this web site
Automated retrievals
Help
Data Tips
Explanation of terms
Subscribe for system changes
News

Accessibility Plug-Ins FOIA Privacy Policies and Notices
U.S. Department of the Interior | U.S. Geological Survey

Title: Groundwater for New Mexico: Water Levels
URL: https://nwis.waterdata.usgs.gov/nm/nwis/gwlevels?

Page Contact Information: New Mexico Water Data Maintainer

Page Last Modified: 2017-06-28 11:43:47 EDT

0.45 0.4 nadww02

National Water Information System: Web Interface

USGS Water Resources

Data Category: Groundwater | Geographic Area: New Mexico | GO

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- Full News

Groundwater levels for New Mexico

Click to hide state-specific text
The New Mexico Water Science Center has transitioned to a new data management software package. While you may not have noticed this transition, some sites may have problems or delays in being updated. We are actively monitoring these conditions and are resolving them as quickly as possible. See the Dec 8 news entry for more information at: https://help.waterdata.usgs.gov/news

Search Results -- 1 sites found

Agency code = usgs
site_no list =
- 320704103222301

Minimum number of levels = 1
Save file of selected sites to local disk for future upload

USGS 320704103222301 25S.35E.21.122224

Lea County, New Mexico
Latitude 32°07'21.8", Longitude 103°22'22.7" NAD83
Land-surface elevation 3,240.00 feet above NGVD29
The depth of the well is 180 feet below land surface.
This well is completed in the Santa Rosa Sandstone (231SNRS) local aquifer.

Output formats

Table of data
Tab-separated data
Graph of data
Reselect period

Date	Time	? Water-level date-time accuracy	Water level, feet below land surface	Water level, feet above specific vertical datum	Referenced vertical datum	? Water-level accuracy	? Status	? Method of measurement	? Measuring agency	? Source of measurem
1953-04-02		D	173.26			2		U		
1970-12-09		D	166.38			2		U		
1976-01-09		D	164.54			2		U		
2013-01-16	10:15 MST	m	225.68			2		S	USGS	

Explanation

Section	Code	Description
Water-level date-time accuracy	D	Date is accurate to the Day
Water-level date-time accuracy	m	Date is accurate to the Minute
Water-level accuracy	2	Water level accuracy to nearest hundredth of a foot
Status		The reported water-level measurement represents a static level
Method of measurement	S	Steel-tape measurement.
Method of measurement	U	Unknown method.
Measuring agency		Not determined
Measuring agency	USGS	U.S. Geological Survey

Section	Code	Description
Source of measurement	R	Reported by person other than the owner, driller, or another government agency.
Source of measurement	U	Source is unknown.
Water-level approval status	A	Approved for publication -- Processing and review completed.

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 46-05-402

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	4605402
County	Loving
River Basin	Rio Grande
Groundwater Management Area	3
Regional Water Planning Area	F - Region F
Groundwater Conservation District	
Latitude (decimal degrees)	31.945
Latitude (degrees minutes seconds)	31° 56' 42" N
Longitude (decimal degrees)	-103.478055
Longitude (degrees minutes seconds)	103° 28' 41" W
Coordinate Source	+/- 1 Second
Aquifer Code	231DCKM - Dockum Formation
Aquifer	Dockum
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	3203
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	240
Well Depth Source	Memory of Owner
Drilling Start Date	
Drilling End Date	
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Unused
Water Level Observation	Miscellaneous Measurements
Water Quality Available	Yes
Pump	None
Pump Depth (feet below land surface)	
Power Type	
Annular Seal Method	
Surface Completion	
Owner	Brunson Ranch
Driller	
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	Texas Water Development Board
Created Date	3/29/1990
Last Update Date	

Remarks	Abandoned.

Casing

Diameter (in.)	Casing Type	Casing Material	Schedule	Gauge	Top Depth (ft.)	Bottom Depth (ft.)
12	Blank	Steel				

Well Tests - No Data

Lithology - No Data

Annular Seal Range - No Data

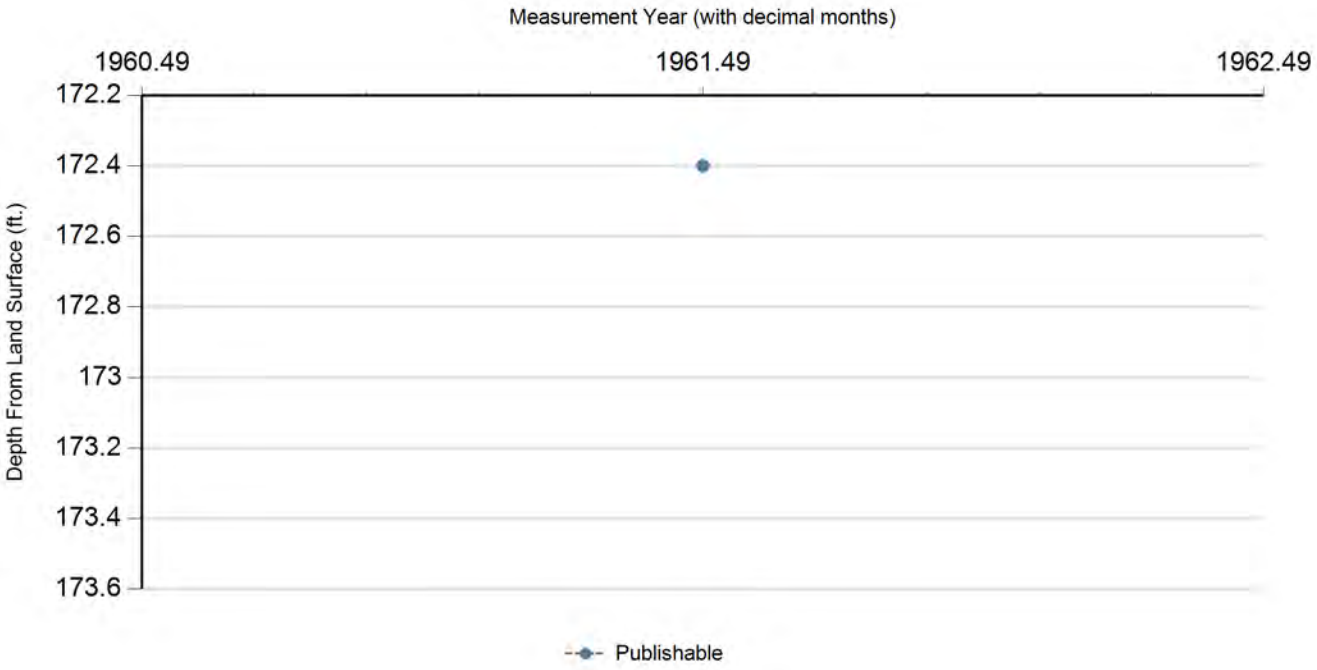
Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data

Water Level Measurements



Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	6/29/1961		172.4		3030.6	1	Texas Water Development Board	Steel Tape		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis

Sample Date: 10/21/1974 **Sample Time:** 0000 **Sample Number:** 1 **Collection Entity:** Texas Water Development Board

Sampled Aquifer: Dockum Formation

Analyzed Lab: Texas Department of Health **Reliability:** Collected from pumped well, but not filtered or preserved

Collection Remarks: Disch. @ tank, continuously

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		327	mg/L	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		399.05	mg/L	
00910	CALCIUM (MG/L)		123	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		88	mg/L	
00950	FLUORIDE, DISSOLVED (MG/L AS F)		1.8	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		553	mg/L	
00920	MAGNESIUM (MG/L)		60	mg/L	
71851	NITRATE NITROGEN, DISSOLVED, CALCULATED (MG/L AS NO3)		12	mg/L	
00400	PH (STANDARD UNITS), FIELD		7.7	SU	
71860	RESIDUAL SODIUM CARBONATE, CALCULATED		0		
00955	SILICA, DISSOLVED (MG/L AS SI02)		18	mg/L	
00931	SODIUM ADSORPTION RATIO, CALCULATED (SAR)		2.09		
00932	SODIUM, CALCULATED, PERCENT		30	PCT	
00929	SODIUM, TOTAL (MG/L AS NA)		113	mg/L	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		1760	MICR	
00945	SULFATE, TOTAL (MG/L AS SO4)		344	mg/L	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		956	mg/L	

** Value may not display all significant digits for parameter in results, check Scanned Documents for laboratory paperwork..*

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 46-05-404

GWDB Reports and Downloads

Well Basic Details

Scanned Documents

State Well Number	4605404
County	Loving
River Basin	Rio Grande
Groundwater Management Area	3
Regional Water Planning Area	F - Region F
Groundwater Conservation District	
Latitude (decimal degrees)	31.946945
Latitude (degrees minutes seconds)	31° 56' 49" N
Longitude (decimal degrees)	-103.478611
Longitude (degrees minutes seconds)	103° 28' 43" W
Coordinate Source	+/- 1 Second
Aquifer Code	231DCKM - Dockum Formation
Aquifer	Dockum
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	3202
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	320
Well Depth Source	Driller's Log
Drilling Start Date	
Drilling End Date	1/9/1979
Drilling Method	Air Rotary
Borehole Completion	Perforated or Slotted

Well Type	Withdrawal of Water
Well Use	Unused
Water Level Observation	Miscellaneous Measurements
Water Quality Available	Yes
Pump	None
Pump Depth (feet below land surface)	
Power Type	
Annular Seal Method	
Surface Completion	
Owner	Brunson Ranch
Driller	Spruill Brothers Drilling Co.
Other Data Available	Drillers Log
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	4B
Other Well Number	
Previous State Well Number	
Reporting Agency	Texas Water Development Board
Created Date	10/4/1995
Last Update Date	10/4/1995

Remarks	

Casing

Diameter (in.)	Casing Type	Casing Material	Schedule	Gauge	Top Depth (ft.)	Bottom Depth (ft.)
5	Blank	Steel			0	170
5	Screen	Steel			170	200
5	Blank	Steel			200	320

Well Tests - No Data

Lithology

Top Depth (ft.)	Bottom Depth (ft.)	Description
0	5	soil
5	35	caliche and gravel
35	70	caliche and sand
70	85	lime
85	185	sand and sand rock
185	200	sand (little water)
200	320	red and blue shale

Annular Seal Range - No Data

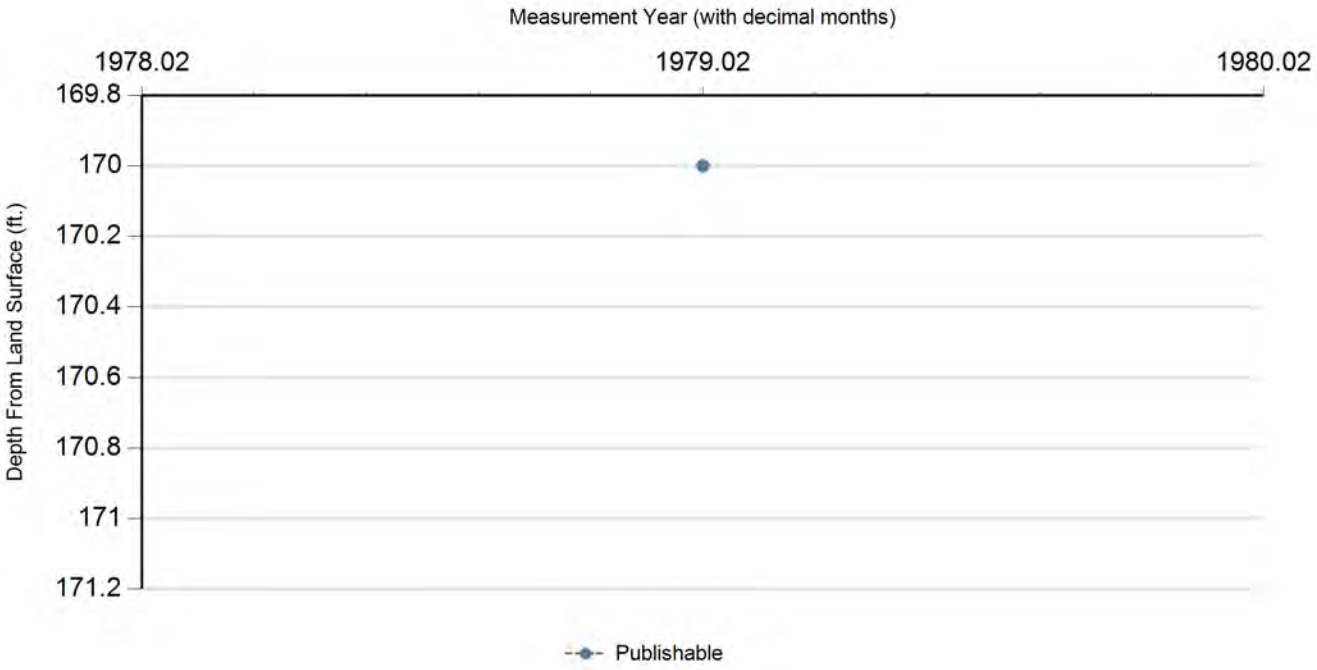
Borehole - No Data

Plugged Back - No Data

Filter Pack - No Data

Packers - No Data

Water Level Measurements



Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	1/9/1979		170		3032	1	Registered Water Well Driller	Unknown		

Code Descriptions

Status Code	Status Description
P	Publishable

Water Quality Analysis

Sample Date: 3/12/1990 **Sample Time:** 1415 **Sample Number:** 1 **Collection Entity:** Texas Water Development Board

Sampled Aquifer: Dockum Formation

Analyzed Lab: Texas Department of Health **Reliability:** Sampled using TWDB protocols

Collection Remarks: Disch. @ tank, pumped 1 week.

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
39086	ALKALINITY FIELD DISSOLVED AS CACO3		444	mg/L	
82244	ALKALINITY PHENOLPHTHALEIN FIELD DATA (MG/L)		0	mg/L	
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CACO3)		451	mg/L	
01106	ALUMINUM, DISSOLVED (UG/L AS AL)	<	50	ug/L	
01000	ARSENIC, DISSOLVED (UG/L AS AS)	<	10	ug/L	
01005	BARIUM, DISSOLVED (UG/L AS BA)	<	20	ug/L	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		550.38	mg/L	
00453	BICARBONATE, DISSOLVED AS HCO3, FIELD (MG/L)		541.68	mg/L	
71870	BROMIDE, DISSOLVED, (MG/L AS BR)		0.1	mg/L	
01025	CADMIUM, DISSOLVED (UG/L AS CD)	<	10	ug/L	
00915	CALCIUM, DISSOLVED (MG/L AS CA)		208	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00452	CARBONATE, INCR TITRATION, DISSOLVED, FIELD (MG/L)		0	mg/L	
00941	CHLORIDE, DISSOLVED (MG/L AS CL)		70	mg/L	
01030	CHROMIUM, DISSOLVED (UG/L AS CR)	<	20	ug/L	
01040	COPPER, DISSOLVED (UG/L AS CU)	<	20	ug/L	
00950	FLUORIDE, DISSOLVED (MG/L AS F)		0.97	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CACO3)		975	mg/L	
01046	IRON, DISSOLVED (UG/L AS FE)		701	ug/L	
01049	LEAD, DISSOLVED (UG/L AS PB)	<	50	ug/L	
00925	MAGNESIUM, DISSOLVED (MG/L AS MG)		111	mg/L	
01056	MANGANESE, DISSOLVED (UG/L AS MN)		50	ug/L	
71890	MERCURY, DISSOLVED (UG/L AS HG)	<	0.2	ug/L	
71851	NITRATE NITROGEN, DISSOLVED, CALCULATED (MG/L AS NO3)		0.12	mg/L	
00613	NITRITE NITROGEN, DISSOLVED (MG/L AS N)		0.01	mg/L	
00608	NITROGEN, AMMONIA, DISSOLVED (MG/L AS N)		0.02	mg/L	
00623	NITROGEN, KJELDAHL, DISSOLVED (MG/L AS N)		0.2	mg/L	
00400	PH (STANDARD UNITS), FIELD		6.87	SU	
00671	PHOSPHORUS, DISSOLVED ORTHOPHOSPHATE (MG/L AS P)		0.01	mg/L	
00935	POTASSIUM, DISSOLVED (MG/L AS K)		12	mg/L	
71860	RESIDUAL SODIUM CARBONATE, CALCULATED		0		
01145	SELENIUM, DISSOLVED (UG/L AS SE)	<	4	ug/L	
00955	SILICA, DISSOLVED (MG/L AS SI02)		11	mg/L	
01075	SILVER, DISSOLVED (UG/L AS AG)	<	10	ug/L	

Texas Water Development Board

Texas Water Development Board (TWDB)
Groundwater Database (GWDB)
Well Information Report for State Well Number 46-05-404

groundwater division

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00931	SODIUM ADSORPTION RATIO, CALCULATED (SAR)		2.34		
00932	SODIUM, CALCULATED, PERCENT		27	PCT	
00930	SODIUM, DISSOLVED (MG/L AS NA)		168	mg/L	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		1924	MICR	
00946	SULFATE, DISSOLVED (MG/L AS SO4)		744	mg/L	
00010	TEMPERATURE, WATER (CELSIUS)		25.6	C	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		1595	mg/L	
01090	ZINC, DISSOLVED (UG/L AS ZN)	<	20	ug/L	

** Value may not display all significant digits for parameter in results, check Scanned Documents for laboratory paperwork..*

Attachment E
Analytical Results

PERMIAN BASIN
ENVIRONMENTAL LAB, LP
1400 Rankin Hwy
Midland, TX 79701

PBELAB

Analytical Report

Prepared for:

Geoff Leking
E Tech Environmental & Safety Solutions, Inc.
13000 West County Road 100
Odessa, TX 79765

Project: Select Energy Biliken 7 Fed 1H,2H
Project Number: 817-8169-000
Location: Bennett NM

Lab Order Number: 7D25006

NELAP/TCEQ # T104704156-13-3

Report Date: 05/03/17

E Tech Environmental & Safety Solutions, Inc.
13000 West County Road 100
Odessa TX, 79765

Project: Select Energy Biliken 7 Fed 1H,2H
Project Number: 817-8169-000
Project Manager: Geoff Leking

Fax: (432) 563-2213

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Auger Hole 1 1'	7D25006-01	Soil	04/24/17 12:50	04-25-2017 11:00
Auger Hole 1 2'	7D25006-02	Soil	04/24/17 12:55	04-25-2017 11:00
Auger Hole 1 3'	7D25006-03	Soil	04/24/17 12:57	04-25-2017 11:00
Auger Hole 2 1'	7D25006-04	Soil	04/24/17 13:00	04-25-2017 11:00
Auger Hole 2 2'	7D25006-05	Soil	04/24/17 13:03	04-25-2017 11:00
Auger Hole 2 2.5'	7D25006-06	Soil	04/24/17 13:05	04-25-2017 11:00
Auger Hole 3 1'	7D25006-07	Soil	04/24/17 13:12	04-25-2017 11:00
Auger Hole 3 2'	7D25006-08	Soil	04/24/17 13:15	04-25-2017 11:00
Auger Hole 3 3'	7D25006-09	Soil	04/24/17 13:17	04-25-2017 11:00
Auger Hole 4 1'	7D25006-10	Soil	04/24/17 13:19	04-25-2017 11:00
Auger Hole 4 2'	7D25006-11	Soil	04/24/17 13:23	04-25-2017 11:00
Auger Hole 4 2.5'	7D25006-12	Soil	04/24/17 13:28	04-25-2017 11:00

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Auger Hole 1 1'

7D25006-01 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Organics by GC									
Benzene	ND	0.00112	mg/kg dry	1	P7E0108	04/28/17	04/29/17	EPA 8021B	
Toluene	ND	0.00225	mg/kg dry	1	P7E0108	04/28/17	04/29/17	EPA 8021B	
Ethylbenzene	ND	0.00112	mg/kg dry	1	P7E0108	04/28/17	04/29/17	EPA 8021B	
Xylene (p/m)	ND	0.00225	mg/kg dry	1	P7E0108	04/28/17	04/29/17	EPA 8021B	
Xylene (o)	ND	0.00112	mg/kg dry	1	P7E0108	04/28/17	04/29/17	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		*70.3 %*	*75-125*		*P7E0108*	*04/28/17*	*04/29/17*	*EPA 8021B*	*S-GC*
Surrogate: 1,4-Difluorobenzene		*88.6 %*	*75-125*		*P7E0108*	*04/28/17*	*04/29/17*	*EPA 8021B*	
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**3700**	28.1	mg/kg dry	25	P7D2606	04/26/17	04/27/17	EPA 300.0	
% Moisture	**11.0**	0.1	%	1	P7D2711	04/27/17	04/27/17	% calculation	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	28.1	mg/kg dry	1	P7D2705	04/26/17	04/26/17	TPH 8015M	
>C12-C28	ND	28.1	mg/kg dry	1	P7D2705	04/26/17	04/26/17	TPH 8015M	
>C28-C35	ND	28.1	mg/kg dry	1	P7D2705	04/26/17	04/26/17	TPH 8015M	
Surrogate: 1-Chlorooctane		*78.7 %*	*70-130*		*P7D2705*	*04/26/17*	*04/26/17*	*TPH 8015M*	
Surrogate: o-Terphenyl		*84.2 %*	*70-130*		*P7D2705*	*04/26/17*	*04/26/17*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	28.1	mg/kg dry	1	[CALC]	04/26/17	04/26/17	calc	

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Auger Hole 1 2'

7D25006-02 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
Organics by GC									
Benzene	ND	0.00116	mg/kg dry	1	P7E0108	04/28/17	04/29/17	EPA 8021B	
Toluene	ND	0.00233	mg/kg dry	1	P7E0108	04/28/17	04/29/17	EPA 8021B	
Ethylbenzene	ND	0.00116	mg/kg dry	1	P7E0108	04/28/17	04/29/17	EPA 8021B	
Xylene (p/m)	ND	0.00233	mg/kg dry	1	P7E0108	04/28/17	04/29/17	EPA 8021B	
Xylene (o)	ND	0.00116	mg/kg dry	1	P7E0108	04/28/17	04/29/17	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		*82.6 %*	*75-125*		*P7E0108*	*04/28/17*	*04/29/17*	*EPA 8021B*	
Surrogate: 4-Bromofluorobenzene		*69.0 %*	*75-125*		*P7E0108*	*04/28/17*	*04/29/17*	*EPA 8021B*	*S-GC*
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**5930**	29.1	mg/kg dry	25	P7D2606	04/26/17	04/27/17	EPA 300.0	
% Moisture	**14.0**	0.1	%	1	P7D2711	04/27/17	04/27/17	% calculation	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	29.1	mg/kg dry	1	P7D2705	04/26/17	04/27/17	TPH 8015M	
>C12-C28	ND	29.1	mg/kg dry	1	P7D2705	04/26/17	04/27/17	TPH 8015M	
>C28-C35	ND	29.1	mg/kg dry	1	P7D2705	04/26/17	04/27/17	TPH 8015M	
Surrogate: 1-Chlorooctane		*94.6 %*	*70-130*		*P7D2705*	*04/26/17*	*04/27/17*	*TPH 8015M*	
Surrogate: o-Terphenyl		*99.3 %*	*70-130*		*P7D2705*	*04/26/17*	*04/27/17*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	29.1	mg/kg dry	1	[CALC]	04/26/17	04/27/17	calc	

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Auger Hole 1 3'

7D25006-03 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
Organics by GC									
Benzene	ND	0.00119	mg/kg dry	1	P7E0108	04/28/17	04/29/17	EPA 8021B	
Toluene	ND	0.00238	mg/kg dry	1	P7E0108	04/28/17	04/29/17	EPA 8021B	
Ethylbenzene	ND	0.00119	mg/kg dry	1	P7E0108	04/28/17	04/29/17	EPA 8021B	
Xylene (p/m)	ND	0.00238	mg/kg dry	1	P7E0108	04/28/17	04/29/17	EPA 8021B	
Xylene (o)	ND	0.00119	mg/kg dry	1	P7E0108	04/28/17	04/29/17	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		*60.2 %*	*75-125*		*P7E0108*	*04/28/17*	*04/29/17*	*EPA 8021B*	*S-GC*
Surrogate: 1,4-Difluorobenzene		*76.4 %*	*75-125*		*P7E0108*	*04/28/17*	*04/29/17*	*EPA 8021B*	
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**602**	1.19	mg/kg dry	1	P7D2606	04/26/17	04/27/17	EPA 300.0	
% Moisture	**16.0**	0.1	%	1	P7D2711	04/27/17	04/27/17	% calculation	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	29.8	mg/kg dry	1	P7D2705	04/26/17	04/27/17	TPH 8015M	
>C12-C28	ND	29.8	mg/kg dry	1	P7D2705	04/26/17	04/27/17	TPH 8015M	
>C28-C35	ND	29.8	mg/kg dry	1	P7D2705	04/26/17	04/27/17	TPH 8015M	
Surrogate: 1-Chlorooctane		*87.7 %*	*70-130*		*P7D2705*	*04/26/17*	*04/27/17*	*TPH 8015M*	
Surrogate: o-Terphenyl		*95.4 %*	*70-130*		*P7D2705*	*04/26/17*	*04/27/17*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	29.8	mg/kg dry	1	[CALC]	04/26/17	04/27/17	calc	

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Auger Hole 2 1'

7D25006-04 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Organics by GC									
Benzene	ND	0.00110	mg/kg dry	1	P7E0108	04/28/17	04/29/17	EPA 8021B	
Toluene	ND	0.00220	mg/kg dry	1	P7E0108	04/28/17	04/29/17	EPA 8021B	
Ethylbenzene	ND	0.00110	mg/kg dry	1	P7E0108	04/28/17	04/29/17	EPA 8021B	
Xylene (p/m)	ND	0.00220	mg/kg dry	1	P7E0108	04/28/17	04/29/17	EPA 8021B	
Xylene (o)	ND	0.00110	mg/kg dry	1	P7E0108	04/28/17	04/29/17	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		*89.2 %*	*75-125*		*P7E0108*	*04/28/17*	*04/29/17*	*EPA 8021B*	
Surrogate: 4-Bromofluorobenzene		*75.7 %*	*75-125*		*P7E0108*	*04/28/17*	*04/29/17*	*EPA 8021B*	
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**5050**	27.5	mg/kg dry	25	P7D2606	04/26/17	04/27/17	EPA 300.0	
% Moisture	**9.0**	0.1	%	1	P7D2711	04/27/17	04/27/17	% calculation	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	27.5	mg/kg dry	1	P7D2705	04/26/17	04/27/17	TPH 8015M	
>C12-C28	ND	27.5	mg/kg dry	1	P7D2705	04/26/17	04/27/17	TPH 8015M	
>C28-C35	ND	27.5	mg/kg dry	1	P7D2705	04/26/17	04/27/17	TPH 8015M	
Surrogate: 1-Chlorooctane		*79.9 %*	*70-130*		*P7D2705*	*04/26/17*	*04/27/17*	*TPH 8015M*	
Surrogate: o-Terphenyl		*85.3 %*	*70-130*		*P7D2705*	*04/26/17*	*04/27/17*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	27.5	mg/kg dry	1	[CALC]	04/26/17	04/27/17	calc	

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Auger Hole 2 2'

7D25006-05 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
Organics by GC									
Benzene	ND	0.00118	mg/kg dry	1	P7E0108	04/28/17	04/29/17	EPA 8021B	
Toluene	ND	0.00235	mg/kg dry	1	P7E0108	04/28/17	04/29/17	EPA 8021B	
Ethylbenzene	ND	0.00118	mg/kg dry	1	P7E0108	04/28/17	04/29/17	EPA 8021B	
Xylene (p/m)	ND	0.00235	mg/kg dry	1	P7E0108	04/28/17	04/29/17	EPA 8021B	
Xylene (o)	ND	0.00118	mg/kg dry	1	P7E0108	04/28/17	04/29/17	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		*94.5 %*	*75-125*		*P7E0108*	*04/28/17*	*04/29/17*	*EPA 8021B*	
Surrogate: 4-Bromofluorobenzene		*66.1 %*	*75-125*		*P7E0108*	*04/28/17*	*04/29/17*	*EPA 8021B*	*S-GC*
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**2400**	5.88	mg/kg dry	5	P7D2606	04/26/17	04/27/17	EPA 300.0	
% Moisture	**15.0**	0.1	%	1	P7D2711	04/27/17	04/27/17	% calculation	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	29.4	mg/kg dry	1	P7D2706	04/26/17	04/26/17	TPH 8015M	
>C12-C28	ND	29.4	mg/kg dry	1	P7D2706	04/26/17	04/26/17	TPH 8015M	
>C28-C35	ND	29.4	mg/kg dry	1	P7D2706	04/26/17	04/26/17	TPH 8015M	
Surrogate: 1-Chlorooctane		*86.7 %*	*70-130*		*P7D2706*	*04/26/17*	*04/26/17*	*TPH 8015M*	
Surrogate: o-Terphenyl		*85.0 %*	*70-130*		*P7D2706*	*04/26/17*	*04/26/17*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	29.4	mg/kg dry	1	[CALC]	04/26/17	04/26/17	calc	

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Auger Hole 2 2.5'

7D25006-06 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
Organics by GC									
Benzene	ND	0.00122	mg/kg dry	1	P7E0108	04/28/17	04/29/17	EPA 8021B	
Toluene	ND	0.00244	mg/kg dry	1	P7E0108	04/28/17	04/29/17	EPA 8021B	
Ethylbenzene	ND	0.00122	mg/kg dry	1	P7E0108	04/28/17	04/29/17	EPA 8021B	
Xylene (p/m)	ND	0.00244	mg/kg dry	1	P7E0108	04/28/17	04/29/17	EPA 8021B	
Xylene (o)	ND	0.00122	mg/kg dry	1	P7E0108	04/28/17	04/29/17	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		*58.2 %*	*75-125*		*P7E0108*	*04/28/17*	*04/29/17*	*EPA 8021B*	*S-GC*
Surrogate: 1,4-Difluorobenzene		*83.7 %*	*75-125*		*P7E0108*	*04/28/17*	*04/29/17*	*EPA 8021B*	
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**1690**	6.10	mg/kg dry	5	P7D2606	04/26/17	04/27/17	EPA 300.0	
% Moisture	**18.0**	0.1	%	1	P7D2711	04/27/17	04/27/17	% calculation	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	30.5	mg/kg dry	1	P7D2706	04/26/17	04/26/17	TPH 8015M	
>C12-C28	ND	30.5	mg/kg dry	1	P7D2706	04/26/17	04/26/17	TPH 8015M	
>C28-C35	ND	30.5	mg/kg dry	1	P7D2706	04/26/17	04/26/17	TPH 8015M	
Surrogate: 1-Chlorooctane		*87.0 %*	*70-130*		*P7D2706*	*04/26/17*	*04/26/17*	*TPH 8015M*	
Surrogate: o-Terphenyl		*85.4 %*	*70-130*		*P7D2706*	*04/26/17*	*04/26/17*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	30.5	mg/kg dry	1	[CALC]	04/26/17	04/26/17	calc	

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Auger Hole 3 1'

7D25006-07 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Organics by GC									
Benzene	ND	0.00114	mg/kg dry	1	P7E0108	04/28/17	04/29/17	EPA 8021B	
Toluene	ND	0.00227	mg/kg dry	1	P7E0108	04/28/17	04/29/17	EPA 8021B	
Ethylbenzene	ND	0.00114	mg/kg dry	1	P7E0108	04/28/17	04/29/17	EPA 8021B	
Xylene (p/m)	ND	0.00227	mg/kg dry	1	P7E0108	04/28/17	04/29/17	EPA 8021B	
Xylene (o)	ND	0.00114	mg/kg dry	1	P7E0108	04/28/17	04/29/17	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		*75.7 %*	*75-125*		*P7E0108*	*04/28/17*	*04/29/17*	*EPA 8021B*	
Surrogate: 4-Bromofluorobenzene		*50.0 %*	*75-125*		*P7E0108*	*04/28/17*	*04/29/17*	*EPA 8021B*	*S-GC*
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**10000**	56.8	mg/kg dry	50	P7D2606	04/26/17	04/27/17	EPA 300.0	
% Moisture	**12.0**	0.1	%	1	P7D2711	04/27/17	04/27/17	% calculation	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	28.4	mg/kg dry	1	P7D2706	04/26/17	04/26/17	TPH 8015M	
>C12-C28	ND	28.4	mg/kg dry	1	P7D2706	04/26/17	04/26/17	TPH 8015M	
>C28-C35	ND	28.4	mg/kg dry	1	P7D2706	04/26/17	04/26/17	TPH 8015M	
Surrogate: 1-Chlorooctane		*84.9 %*	*70-130*		*P7D2706*	*04/26/17*	*04/26/17*	*TPH 8015M*	
Surrogate: o-Terphenyl		*83.8 %*	*70-130*		*P7D2706*	*04/26/17*	*04/26/17*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	28.4	mg/kg dry	1	[CALC]	04/26/17	04/26/17	calc	

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Auger Hole 3 2'

7D25006-08 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
Organics by GC									
Benzene	ND	0.00114	mg/kg dry	1	P7E0108	04/28/17	05/01/17	EPA 8021B	
Toluene	ND	0.00227	mg/kg dry	1	P7E0108	04/28/17	05/01/17	EPA 8021B	
Ethylbenzene	ND	0.00114	mg/kg dry	1	P7E0108	04/28/17	05/01/17	EPA 8021B	
Xylene (p/m)	ND	0.00227	mg/kg dry	1	P7E0108	04/28/17	05/01/17	EPA 8021B	
Xylene (o)	ND	0.00114	mg/kg dry	1	P7E0108	04/28/17	05/01/17	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		*72.0 %*	*75-125*		*P7E0108*	*04/28/17*	*05/01/17*	*EPA 8021B*	*S-GC*
Surrogate: 1,4-Difluorobenzene		*82.2 %*	*75-125*		*P7E0108*	*04/28/17*	*05/01/17*	*EPA 8021B*	
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**8710**	28.4	mg/kg dry	25	P7D2607	04/26/17	04/28/17	EPA 300.0	
% Moisture	**12.0**	0.1	%	1	P7D2711	04/27/17	04/27/17	% calculation	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	28.4	mg/kg dry	1	P7D2706	04/26/17	04/26/17	TPH 8015M	
>C12-C28	ND	28.4	mg/kg dry	1	P7D2706	04/26/17	04/26/17	TPH 8015M	
>C28-C35	ND	28.4	mg/kg dry	1	P7D2706	04/26/17	04/26/17	TPH 8015M	
Surrogate: 1-Chlorooctane		*84.5 %*	*70-130*		*P7D2706*	*04/26/17*	*04/26/17*	*TPH 8015M*	
Surrogate: o-Terphenyl		*82.7 %*	*70-130*		*P7D2706*	*04/26/17*	*04/26/17*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	28.4	mg/kg dry	1	[CALC]	04/26/17	04/26/17	calc	

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Auger Hole 3 3'

7D25006-09 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
Organics by GC									
Benzene	ND	0.00112	mg/kg dry	1	P7E0108	04/28/17	04/29/17	EPA 8021B	
Toluene	ND	0.00225	mg/kg dry	1	P7E0108	04/28/17	04/29/17	EPA 8021B	
Ethylbenzene	ND	0.00112	mg/kg dry	1	P7E0108	04/28/17	04/29/17	EPA 8021B	
Xylene (p/m)	ND	0.00225	mg/kg dry	1	P7E0108	04/28/17	04/29/17	EPA 8021B	
Xylene (o)	ND	0.00112	mg/kg dry	1	P7E0108	04/28/17	04/29/17	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		*59.9 %*	*75-125*		*P7E0108*	*04/28/17*	*04/29/17*	*EPA 8021B*	*S-GC*
Surrogate: 1,4-Difluorobenzene		*84.0 %*	*75-125*		*P7E0108*	*04/28/17*	*04/29/17*	*EPA 8021B*	
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**3770**	28.1	mg/kg dry	25	P7D2607	04/26/17	04/28/17	EPA 300.0	
% Moisture	**11.0**	0.1	%	1	P7D2711	04/27/17	04/27/17	% calculation	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	28.1	mg/kg dry	1	P7D2706	04/26/17	04/26/17	TPH 8015M	
>C12-C28	ND	28.1	mg/kg dry	1	P7D2706	04/26/17	04/26/17	TPH 8015M	
>C28-C35	ND	28.1	mg/kg dry	1	P7D2706	04/26/17	04/26/17	TPH 8015M	
Surrogate: 1-Chlorooctane		*86.7 %*	*70-130*		*P7D2706*	*04/26/17*	*04/26/17*	*TPH 8015M*	
Surrogate: o-Terphenyl		*85.1 %*	*70-130*		*P7D2706*	*04/26/17*	*04/26/17*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	28.1	mg/kg dry	1	[CALC]	04/26/17	04/26/17	calc	

E Tech Environmental & Safety Solutions, Inc.
13000 West County Road 100
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Project Manager: Geoff Leking

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Auger Hole 4 1'

7D25006-10 (Soil)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Organics by GC									
Benzene	ND	0.00112	mg/kg dry	1	P7E0108	04/28/17	05/01/17	EPA 8021B	
Toluene	ND	0.00225	mg/kg dry	1	P7E0108	04/28/17	05/01/17	EPA 8021B	
Ethylbenzene	ND	0.00112	mg/kg dry	1	P7E0108	04/28/17	05/01/17	EPA 8021B	
Xylene (p/m)	ND	0.00225	mg/kg dry	1	P7E0108	04/28/17	05/01/17	EPA 8021B	
Xylene (o)	ND	0.00112	mg/kg dry	1	P7E0108	04/28/17	05/01/17	EPA 8021B	
Surrogate: 1,4-Difluorobenzene		*77.9 %*	*75-125*		*P7E0108*	*04/28/17*	*05/01/17*	*EPA 8021B*	
Surrogate: 4-Bromofluorobenzene		*69.0 %*	*75-125*		*P7E0108*	*04/28/17*	*05/01/17*	*EPA 8021B*	*S-GC*
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**8380**	28.1	mg/kg dry	25	P7D2607	04/26/17	04/28/17	EPA 300.0	
% Moisture	**11.0**	0.1	%	1	P7D2711	04/27/17	04/27/17	% calculation	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	28.1	mg/kg dry	1	P7D2706	04/26/17	04/26/17	TPH 8015M	
>C12-C28	ND	28.1	mg/kg dry	1	P7D2706	04/26/17	04/26/17	TPH 8015M	
>C28-C35	ND	28.1	mg/kg dry	1	P7D2706	04/26/17	04/26/17	TPH 8015M	
Surrogate: 1-Chlorooctane		*87.7 %*	*70-130*		*P7D2706*	*04/26/17*	*04/26/17*	*TPH 8015M*	
Surrogate: o-Terphenyl		*85.6 %*	*70-130*		*P7D2706*	*04/26/17*	*04/26/17*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	28.1	mg/kg dry	1	[CALC]	04/26/17	04/26/17	calc	

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Auger Hole 4 2'

7D25006-11 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
Organics by GC									
Benzene	ND	0.00114	mg/kg dry	1	P7E0108	04/28/17	04/29/17	EPA 8021B	
Toluene	ND	0.00227	mg/kg dry	1	P7E0108	04/28/17	04/29/17	EPA 8021B	
Ethylbenzene	ND	0.00114	mg/kg dry	1	P7E0108	04/28/17	04/29/17	EPA 8021B	
Xylene (p/m)	ND	0.00227	mg/kg dry	1	P7E0108	04/28/17	04/29/17	EPA 8021B	
Xylene (o)	ND	0.00114	mg/kg dry	1	P7E0108	04/28/17	04/29/17	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		*61.6 %*	*75-125*		*P7E0108*	*04/28/17*	*04/29/17*	*EPA 8021B*	*S-GC*
Surrogate: 1,4-Difluorobenzene		*79.2 %*	*75-125*		*P7E0108*	*04/28/17*	*04/29/17*	*EPA 8021B*	
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**6380**	28.4	mg/kg dry	25	P7D2607	04/26/17	04/28/17	EPA 300.0	
% Moisture	**12.0**	0.1	%	1	P7D2711	04/27/17	04/27/17	% calculation	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	28.4	mg/kg dry	1	P7D2706	04/26/17	04/26/17	TPH 8015M	
>C12-C28	ND	28.4	mg/kg dry	1	P7D2706	04/26/17	04/26/17	TPH 8015M	
>C28-C35	ND	28.4	mg/kg dry	1	P7D2706	04/26/17	04/26/17	TPH 8015M	
Surrogate: 1-Chlorooctane		*87.4 %*	*70-130*		*P7D2706*	*04/26/17*	*04/26/17*	*TPH 8015M*	
Surrogate: o-Terphenyl		*86.2 %*	*70-130*		*P7D2706*	*04/26/17*	*04/26/17*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	28.4	mg/kg dry	1	[CALC]	04/26/17	04/26/17	calc	

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Auger Hole 4 2.5'

7D25006-12 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
Organics by GC									
Benzene	ND	0.00116	mg/kg dry	1	P7E0108	04/28/17	04/29/17	EPA 8021B	
Toluene	ND	0.00233	mg/kg dry	1	P7E0108	04/28/17	04/29/17	EPA 8021B	
Ethylbenzene	ND	0.00116	mg/kg dry	1	P7E0108	04/28/17	04/29/17	EPA 8021B	
Xylene (p/m)	ND	0.00233	mg/kg dry	1	P7E0108	04/28/17	04/29/17	EPA 8021B	
Xylene (o)	ND	0.00116	mg/kg dry	1	P7E0108	04/28/17	04/29/17	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		*63.3 %*	*75-125*		*P7E0108*	*04/28/17*	*04/29/17*	*EPA 8021B*	*S-GC*
Surrogate: 1,4-Difluorobenzene		*78.2 %*	*75-125*		*P7E0108*	*04/28/17*	*04/29/17*	*EPA 8021B*	
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**5000**	29.1	mg/kg dry	25	P7D2607	04/26/17	04/28/17	EPA 300.0	
% Moisture	**14.0**	0.1	%	1	P7D2711	04/27/17	04/27/17	% calculation	
Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M									
C6-C12	ND	29.1	mg/kg dry	1	P7D2706	04/26/17	04/26/17	TPH 8015M	
>C12-C28	ND	29.1	mg/kg dry	1	P7D2706	04/26/17	04/26/17	TPH 8015M	
>C28-C35	ND	29.1	mg/kg dry	1	P7D2706	04/26/17	04/26/17	TPH 8015M	
Surrogate: 1-Chlorooctane		*82.4 %*	*70-130*		*P7D2706*	*04/26/17*	*04/26/17*	*TPH 8015M*	
Surrogate: o-Terphenyl		*81.7 %*	*70-130*		*P7D2706*	*04/26/17*	*04/26/17*	*TPH 8015M*	
Total Petroleum Hydrocarbon C6-C35	ND	29.1	mg/kg dry	1	[CALC]	04/26/17	04/26/17	calc	

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Organics by GC - Quality Control

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P7E0108 - General Preparation (GC)										
Blank (P7E0108-BLK1)				Prepared: 04/28/17 Analyzed: 04/29/17						
Benzene	ND	0.00100	mg/kg wet							
Toluene	ND	0.00200	"							
Ethylbenzene	ND	0.00100	"							
Xylene (p/m)	ND	0.00200	"							
Xylene (o)	ND	0.00100	"							
Surrogate: 1,4-Difluorobenzene	*0.0479*		*"*	*0.0600*		*79.8*	*75-125*			
Surrogate: 4-Bromofluorobenzene	*0.0523*		*"*	*0.0600*		*87.2*	*75-125*			
LCS (P7E0108-BS1)				Prepared: 04/28/17 Analyzed: 04/29/17						
Benzene	0.0869	0.00100	mg/kg wet	0.100		86.9	70-130			
Toluene	0.0918	0.00200	"	0.100		91.8	70-130			
Ethylbenzene	0.100	0.00100	"	0.100		100	70-130			
Xylene (p/m)	0.194	0.00200	"				70-130			
Xylene (o)	0.0935	0.00100	"				70-130			
Surrogate: 1,4-Difluorobenzene	*0.0639*		*"*	*0.0600*		*107*	*75-125*			
Surrogate: 4-Bromofluorobenzene	*0.0600*		*"*	*0.0600*		*100*	*75-125*			
LCS Dup (P7E0108-BSD1)				Prepared: 04/28/17 Analyzed: 04/29/17						
Benzene	0.0892	0.00100	mg/kg wet	0.100		89.2	70-130	2.61	20	
Toluene	0.0889	0.00200	"	0.100		88.9	70-130	3.15	20	
Ethylbenzene	0.101	0.00100	"	0.100		101	70-130	0.882	20	
Xylene (p/m)	0.203	0.00200	"				70-130		20	
Xylene (o)	0.109	0.00100	"				70-130		20	
Surrogate: 4-Bromofluorobenzene	*0.0606*		*"*	*0.0600*		*101*	*75-125*			
Surrogate: 1,4-Difluorobenzene	*0.0732*		*"*	*0.0600*		*122*	*75-125*			

General Chemistry Parameters by EPA / Standard Methods - Quality Control

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P7D2606 - * DEFAULT PREP *** **										
Blank (P7D2606-BLK1)				Prepared: 04/26/17 Analyzed: 04/27/17						
Chloride	ND	1.00	mg/kg wet							
LCS (P7D2606-BS1)				Prepared: 04/26/17 Analyzed: 04/27/17						
Chloride	414	1.00	mg/kg wet	400		103	80-120			
LCS Dup (P7D2606-BSD1)				Prepared: 04/26/17 Analyzed: 04/27/17						
Chloride	415	1.00	mg/kg wet	400		104	80-120	0.345	20	
Duplicate (P7D2606-DUP1)		**Source: 7D24022-05**		Prepared: 04/26/17 Analyzed: 04/27/17						
Chloride	4270	11.8	mg/kg dry		4250			0.431	20	
Duplicate (P7D2606-DUP2)		**Source: 7D25005-14**		Prepared: 04/26/17 Analyzed: 04/27/17						
Chloride	4720	28.4	mg/kg dry		4740			0.270	20	
Matrix Spike (P7D2606-MS1)		**Source: 7D24022-05**		Prepared: 04/26/17 Analyzed: 04/27/17						
Chloride	5270	11.8	mg/kg dry	1180	4250	86.4	80-120			
Batch P7D2607 - * DEFAULT PREP *** **										
Blank (P7D2607-BLK1)				Prepared: 04/26/17 Analyzed: 04/28/17						
Chloride	ND	1.00	mg/kg wet							
LCS (P7D2607-BS1)				Prepared: 04/26/17 Analyzed: 04/28/17						
Chloride	419	1.00	mg/kg wet	400		105	80-120			
LCS Dup (P7D2607-BSD1)				Prepared: 04/26/17 Analyzed: 04/28/17						
Chloride	412	1.00	mg/kg wet	400		103	80-120	1.68	20	

General Chemistry Parameters by EPA / Standard Methods - Quality Control

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P7D2607 - * DEFAULT PREP *** **										
Duplicate (P7D2607-DUP1)		**Source: 7D25006-08**		Prepared: 04/26/17 Analyzed: 04/28/17						
Chloride	8740	28.4	mg/kg dry		8710			0.365	20	
Duplicate (P7D2607-DUP2)		**Source: 7D25006-12**		Prepared: 04/26/17 Analyzed: 04/28/17						
Chloride	5000	29.1	mg/kg dry		5000			0.145	20	
Matrix Spike (P7D2607-MS1)		**Source: 7D25006-08**		Prepared: 04/26/17 Analyzed: 04/28/17						
Chloride	11200	28.4	mg/kg dry	2270	8710	108	80-120			
Batch P7D2711 - * DEFAULT PREP *** **										
Blank (P7D2711-BLK1)				Prepared & Analyzed: 04/27/17						
% Moisture	ND	0.1	%							
Blank (P7D2711-BLK2)				Prepared & Analyzed: 04/27/17						
% Moisture	ND	0.1	%							
Duplicate (P7D2711-DUP1)		**Source: 7D25007-15**		Prepared & Analyzed: 04/27/17						
% Moisture	23.0	0.1	%		23.0			0.00	20	
Duplicate (P7D2711-DUP2)		**Source: 7D25009-02**		Prepared & Analyzed: 04/27/17						
% Moisture	4.0	0.1	%		4.0			0.00	20	
Duplicate (P7D2711-DUP3)		**Source: 7D26001-05**		Prepared & Analyzed: 04/27/17						
% Moisture	14.0	0.1	%		13.0			7.41	20	
Duplicate (P7D2711-DUP4)		**Source: 7D27001-05**		Prepared & Analyzed: 04/27/17						
% Moisture	8.0	0.1	%		8.0			0.00	20	

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M - Quality Control

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P7D2705 - TX 1005										
Blank (P7D2705-BLK1)				Prepared & Analyzed: 04/26/17						
C6-C12	ND	25.0	mg/kg wet							
>C12-C28	ND	25.0	"							
>C28-C35	ND	25.0	"							
Surrogate: 1-Chlorooctane	*102*		*"*	*100*		*102*	*70-130*			
Surrogate: o-Terphenyl	*54.4*		*"*	*50.0*		*109*	*70-130*			
LCS (P7D2705-BS1)				Prepared & Analyzed: 04/26/17						
C6-C12	891	25.0	mg/kg wet	1000		89.1	75-125			
>C12-C28	1130	25.0	"	1000		113	75-125			
Surrogate: 1-Chlorooctane	*122*		*"*	*100*		*122*	*70-130*			
Surrogate: o-Terphenyl	*50.7*		*"*	*50.0*		*101*	*70-130*			
LCS Dup (P7D2705-BSD1)				Prepared & Analyzed: 04/26/17						
C6-C12	856	25.0	mg/kg wet	1000		85.6	75-125	4.03	20	
>C12-C28	1030	25.0	"	1000		103	75-125	9.15	20	
Surrogate: 1-Chlorooctane	*118*		*"*	*100*		*118*	*70-130*			
Surrogate: o-Terphenyl	*46.2*		*"*	*50.0*		*92.4*	*70-130*			
Matrix Spike (P7D2705-MS1)	**Source: 7D25004-08**			Prepared: 04/26/17 Analyzed: 04/27/17						
C6-C12	787	26.9	mg/kg dry	1080	ND	73.2	75-125			QM-05
>C12-C28	1000	26.9	"	1080	15.5	91.7	75-125			
Surrogate: 1-Chlorooctane	*103*		*"*	*108*		*95.9*	*70-130*			
Surrogate: o-Terphenyl	*46.2*		*"*	*53.8*		*85.9*	*70-130*			
Matrix Spike Dup (P7D2705-MSD1)	**Source: 7D25004-08**			Prepared: 04/26/17 Analyzed: 04/27/17						
C6-C12	831	26.9	mg/kg dry	1080	ND	77.3	75-125	5.43	20	
>C12-C28	1040	26.9	"	1080	15.5	95.5	75-125	4.08	20	
Surrogate: 1-Chlorooctane	*108*		*"*	*108*		*100*	*70-130*			
Surrogate: o-Terphenyl	*50.5*		*"*	*53.8*		*93.9*	*70-130*			

Total Petroleum Hydrocarbons C6-C35 by EPA Method 8015M - Quality Control

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P7D2706 - TX 1005										
Blank (P7D2706-BLK1)				Prepared & Analyzed: 04/26/17						
C6-C12	ND	25.0	mg/kg wet							
>C12-C28	ND	25.0	"							
>C28-C35	ND	25.0	"							
Surrogate: 1-Chlorooctane	*88.4*		*"*	*100*		*88.4*	*70-130*			
Surrogate: o-Terphenyl	*43.0*		*"*	*50.0*		*86.0*	*70-130*			
LCS (P7D2706-BS1)				Prepared & Analyzed: 04/26/17						
C6-C12	791	25.0	mg/kg wet	1000		79.1	75-125			
>C12-C28	773	25.0	"	1000		77.3	75-125			
Surrogate: 1-Chlorooctane	*91.6*		*"*	*100*		*91.6*	*70-130*			
Surrogate: o-Terphenyl	*40.3*		*"*	*50.0*		*80.7*	*70-130*			
LCS Dup (P7D2706-BSD1)				Prepared & Analyzed: 04/26/17						
C6-C12	760	25.0	mg/kg wet	1000		76.0	75-125	3.98	20	
>C12-C28	841	25.0	"	1000		84.1	75-125	8.52	20	
Surrogate: 1-Chlorooctane	*88.5*		*"*	*100*		*88.5*	*70-130*			
Surrogate: o-Terphenyl	*39.0*		*"*	*50.0*		*78.1*	*70-130*			
Matrix Spike (P7D2706-MS1)	**Source: 7D25007-14**			Prepared: 04/26/17 Analyzed: 04/27/17						
C6-C12	956	28.7	mg/kg dry	1150	27.1	80.8	75-125			
>C12-C28	947	28.7	"	1150	64.6	76.7	75-125			
Surrogate: 1-Chlorooctane	*107*		*"*	*115*		*93.0*	*70-130*			
Surrogate: o-Terphenyl	*47.7*		*"*	*57.5*		*83.0*	*70-130*			
Matrix Spike Dup (P7D2706-MSD1)	**Source: 7D25007-14**			Prepared: 04/26/17 Analyzed: 04/27/17						
C6-C12	927	28.7	mg/kg dry	1150	27.1	78.3	75-125	3.15	20	
>C12-C28	928	28.7	"	1150	64.6	75.1	75-125	2.16	20	
Surrogate: 1-Chlorooctane	*106*		*"*	*115*		*91.9*	*70-130*			
Surrogate: o-Terphenyl	*46.6*		*"*	*57.5*		*81.1*	*70-130*			

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Notes and Definitions

S-GC	Surrogate recovery outside of control limits. The data was accepted based on valid recovery of the remaining surrogate.
QM-05	The spike recovery was outside acceptance limits for the MS and/or MSD due to matrix interference. The LCS and/or LCSD were within acceptance limits showing that the laboratory is in control and the data is acceptable.
BULK	Samples received in Bulk soil containers
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
LCS	Laboratory Control Spike
MS	Matrix Spike
Dup	Duplicate

Report Approved By: Brent Barron Date: 5/3/2017

Brent Barron, Laboratory Director/Technical Director

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CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

Phone: 432-563-2200
Fax: 432-563-2213

Project Manager: Geoff Leking
Company Name: Etech Environmental & Safety Solutions, Inc.
Company Address: PO Box 8469
City/State/Zip: Midland, Texas 79708
Telephone No: 432-563-2200 Fax No: 432-563-2213
Sampler Signature: Geoff Leking e-mail: geoff@etechenv.com

Project Name: Select Energy Bilken 7 Fed 1H,
Project #: 817-8169-000
Project Loc: Bennett, NM
PO #:
Report Format: ☒ Standard ☐ TRRP ☐ NPDES

(lab use only) ORDER #: 1D1250060

LAB # (lab use only)	FIELD CODE			Date Sampled	Time Sampled	No. of Containers	Preservation & # of Containers: Ice	HNO_3	HCl	H_2SO_4	NaOH	$Na_2S_2O_3$	None	Other (Specify)	Matrix: DW=Drinking Water SL=Sludge GW=Groundwater S=Soil/Solid NP=Non-Potable Specify Other	Analyze For (TCLP / TOTAL): TPH: 418.1 (8015M) 1005 1006	Cations (Ca, Mg, Na, K)	Anions (Cl, SO4, CO3, HCO3)	SAR / ESP / CEC	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEX 8021B/5030 or BTEX 8260	RCI	N.O.R.M.	Chlorides				RUSH TAT (Pre-Schedule) 24, 48, 72 hrs	Standard TAT
1	Auger Hole	1	1'	4.24.17	1250		☒									☒						☒			☒					☒
2	Auger Hole	1	2'		1255		☒									☒						☒			☒					☒
3	Auger Hole	1	3'		1257		☒									☒						☒			☒					☒
4	Auger Hole	2	1'		1300		☒									☒						☒			☒					☒
5	Auger Hole	2	2'		1303		☒									☒						☒			☒					☒
6	Auger Hole	2	2.5'		1305		☒									☒						☒			☒					☒
7	Auger Hole	3	1'		1312		☒									☒						☒			☒					☒
8	Auger Hole	3	2'		1315		☒									☒						☒			☒					☒
9	Auger Hole	3	3'		1317		☒									☒						☒			☒					☒
10	Auger Hole	4	1'	↓	1319		☒									☒						☒			☒					☒

Special Instructions:

Relinquished by:	Date	Time	Received by:	Date	Time
Geoff Leking	4/25/17	1100			
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by ELOT:	4/25/17	1100

Laboratory Comments:

Sample Containers Intact?	Y	N
VOCs Free of Headspace?	Y	N
Custody seals on container(s)	Y	N
Custody seals on cooler(s)	Y	N
Sample Hand Delivered	Y	N

by Sampler/Client Rep. ? by Courier? UPS DHL FedEx Lone Star

Temperature Upon Receipt: 2.0 °C

Etech Environmental & Safety Solutions, Inc.

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

12800 W. Hwy 80 E
Odessa, Texas 79765

Phone: 432-563-2200
Fax: 432-563-2213

Project Manager: Geoff Leking
Company Name: Etech Environmental & Safety Solutions, Inc.
Company Address: PO Box 8469
City/State/Zip: Midland, Texas 79708
Telephone No: 432-563-2200 Fax No: 432-563-2213
Sampler Signature: Geoff Leking e-mail: geoff@etechenv.com

Project Name: Select Energy Billiken 7 Fed 1H, 2H
Project #: 817-8169-000
Project Loc: Bennett, NM
PO #:
Report Format: ☒ Standard ☐ TRRP ☐ NPDES

(lab use only) ORDER #: 7025006

LAB # (lab use only)	FIELD CODE			Date Sampled	Time Sampled	No. of Containers	Preservation & # of Containers: Ice	HNO3	HCl	H2SO4	NaOH	Na2S2O3	None	Other (Specify)	Matrix: DW=Drinking Water SL=Sludge	GW = Groundwater S=Soil/Solid	NP=Non-Potable Specify Other	Analyze For: TCLP: TPH: 418.1 (8015M) 1005 1006	TOTAL: Cations (Ca, Mg, Na, K)	Anions (Cl, SO4, CO3, HCO3)	SAR / ESP / CEC	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEX (8021B/5030 or BTEX 8260)	RCI	N.O.R.M.	Chlorides				RUSH TAT (Pre-Schedule) 24, 48, 72 hrs	Standard TAT
1	Auger Hole 4		2'	4.24.17	1323		☒											☒							☒			☒					☒
2	Auger Hole 4		2.5'	4.24.17	1328		☒											☒							☒			☒					☒

Special Instructions:

Laboratory Comments:

Sample Containers Intact? Y N
VOCs Free of Headspace? Y N
Custody seals on container(s) Y N
Custody seals on cooler(s) Y N
Sample Hand Delivered by Sampler/Client Rep. ? Y N
by Courier? UPS DHL FedEx Lone Star

Temperature Upon Receipt: 2.0 °C

Relinquished by:	Date	Time	Received by:	Date	Time
Geoff Leking	4/25/17				
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by ELOT:	4/25/17	1100

CARDINAL Laboratories

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

March 28, 2018

SHANE ESTEP

ETECH Environmental & Safety Solutions, Inc.

P. O. BOX 8469

MIDLAND, TX 79708

RE: DEVON BILLIKEN 7 FEDERAL 1H

Enclosed are the results of analyses for samples received by the laboratory on 03/22/18 16:50.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-17-10. 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:

ETECH Environmental & Safety Solutions, Inc.
SHANE ESTEP
P. O. BOX 8469
MIDLAND TX, 79708
Fax To: (432) 563-2213

Received:	03/22/2018	Sampling Date:	03/22/2018
Reported:	03/28/2018	Sampling Type:	Soil
Project Name:	DEVON BILLIKEN 7 FEDERAL 1H	Sampling Condition:	Cool & Intact
Project Number:	817-8169-000	Sample Received By:	Tamara Oldaker
Project Location:	SELECT ENERGY - LEA CO NM		

Sample ID: BORE HOLE 1 7' (H800838-01)

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	03/26/2018	ND	432	108	400	3.77	

Sample ID: BORE HOLE 1 12' (H800838-02)

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	03/26/2018	ND	432	108	400	3.77	

Sample ID: BORE HOLE 2 8' (H800838-03)

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	03/26/2018	ND	432	108	400	3.77	

Sample ID: BORE HOLE 2 13' (H800838-04)

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	03/26/2018	ND	432	108	400	3.77	

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

ETECH Environmental & Safety Solutions, Inc.
SHANE ESTEP
P. O. BOX 8469
MIDLAND TX, 79708
Fax To: (432) 563-2213

Received:	03/22/2018	Sampling Date:	03/22/2018
Reported:	03/28/2018	Sampling Type:	Soil
Project Name:	DEVON BILLIKEN 7 FEDERAL 1H	Sampling Condition:	Cool & Intact
Project Number:	817-8169-000	Sample Received By:	Tamara Oldaker
Project Location:	SELECT ENERGY - LEA CO NM		

Sample ID: BORE HOLE 3 8' (H800838-05)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**48.0**	16.0	03/26/2018	ND	432	108	400	3.77	

Sample ID: BORE HOLE 3 13' (H800838-06)

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	03/26/2018	ND	432	108	400	3.77	

Sample ID: BORE HOLE 4 7.5' (H800838-07)

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	03/26/2018	ND	432	108	400	3.77	

Sample ID: BORE HOLE 4 12.5' (H800838-08)

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	03/26/2018	ND	432	108	400	3.77	

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

CARDINAL Laboratories

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

Company Name: ETECH	**BILL TO**
Project Manager: SHANE ESTEP	P.O. #:
Address: 13000 W CR 100	Company: ETECH
City: ODESSA State: TX Zip: 79765	Attn: SHANE ESTEP
Phone #: 432-325-7160 Fax #:	Address: 13000 W CR 100
Project #: 817-8169-000 Project Owner: SELECT ENERGY	City: ODESSA
Project Name: DEVON BILLIKEN 7 FEDERAL 1H	State: TX Zip: 79765
Project Location: LEA CO., NM	Phone #: 432-325-7160
Sampler Name: GEOFF LEKING	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	CHLORIDE
H800838															
1	BORE HOLE 1 7'	G	1			X							3.22.18	1410	X
2	" " 1 12'													1430	
3	" " 2 8'													1315	
4	" " 2 13'													1335	
5	" " 3 8'													1230	
6	" " 3 13'													1245	
7	" " 4 7.5'													1125	
8	" " 4 12.5'													1145	

Relinquished By: Geoff Leking	Date: 3.22.18 Time: 1650	Received By: Tamara Oldaker	Phone Result: ☐ Yes ☐ No Add'l Phone #:
Relinquished By:	Date: Time:	Received By:	Fax Result: ☐ Yes ☐ No Add'l Fax #:
Delivered By: (Circle One) Sampler - UPS - Bus - Other: 5.5° Corrected 5.4°	Sample Condition Cool: ☑ Yes ☐ No Intact: ☑ Yes ☐ No	CHECKED BY: (Initials) TO #25	REMARKS: EMAIL SHANE shane@etechenv.com geoff@etechenv.com

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

PERMIAN BASIN
ENVIRONMENTAL LAB, LP
1400 Rankin Hwy
Midland, TX 79701

PBELAB

Analytical Report

Prepared for:

Shane Estep
E Tech Environmental & Safety Solutions, Inc.
13000 West County Road 100
Odessa, TX 79765

Project: Select Energy Billiken 7 Federal 1H
Project Number: 817-8169-000
Location: Lea Co., NM

Lab Order Number: 8F28008

NELAP ACCREDITED TNI LABORATORY

NELAP/TCEQ # T104704516-17-8

Report Date: 07/03/18

E Tech Environmental & Safety Solutions, Inc.
13000 West County Road 100
Odessa TX, 79765

Project: Select Energy Billiken 7 Federal 1H
Project Number: 817-8169-000
Project Manager: Shane Estep

Fax: (432) 563-2213

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
East Sidewall 1	8F28008-01	Soil	06/27/18 15:50	06-28-2018 10:00
East Sidewall 2	8F28008-02	Soil	06/27/18 10:05	06-28-2018 10:00
East Sidewall 3	8F28008-03	Soil	06/27/18 10:10	06-28-2018 10:00
East Sidewall 4	8F28008-04	Soil	06/27/18 10:15	06-28-2018 10:00
South Sidewall	8F28008-05	Soil	06/27/18 10:25	06-28-2018 10:00
West Sidewall 1	8F28008-06	Soil	06/27/18 10:45	06-28-2018 10:00
West Sidewall 2	8F28008-07	Soil	06/27/18 10:40	06-28-2018 10:00
West Sidewall 3	8F28008-08	Soil	06/27/18 10:35	06-28-2018 10:00
West Sidewall 4	8F28008-09	Soil	06/27/18 10:30	06-28-2018 10:00
North Sidewall	8F28008-10	Soil	06/27/18 15:55	06-28-2018 10:00
Bottom Hole 1	8F28008-11	Soil	06/27/18 16:30	06-28-2018 10:00
Bottom Hole 2	8F28008-12	Soil	06/27/18 16:35	06-28-2018 10:00
Bottom Hole 3	8F28008-13	Soil	06/27/18 16:40	06-28-2018 10:00
Bottom Hole 4	8F28008-14	Soil	06/27/18 16:45	06-28-2018 10:00

E Tech Environmental & Safety Solutions, Inc.
13000 West County Road 100
Odessa TX, 79765

Project: Select Energy Billiken 7 Federal 1H
Project Number: 817-8169-000
Project Manager: Shane Estep

Fax: (432) 563-2213

East Sidewall 1

8F28008-01 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**11.5**	1.03	mg/kg dry	1	P8G0205	07/02/18	07/02/18	EPA 300.0	
% Moisture	**3.0**	0.1	%	1	P8F2901	06/29/18	06/29/18	ASTM D2216	

E Tech Environmental & Safety Solutions, Inc.	Project: Select Energy Billiken 7 Federal 1H	Fax: (432) 563-2213
13000 West County Road 100	Project Number: 817-8169-000	
Odessa TX, 79765	Project Manager: Shane Estep	

East Sidewall 2

8F28008-02 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**155**	1.03	mg/kg dry	1	P8G0205	07/02/18	07/02/18	EPA 300.0	
% Moisture	**3.0**	0.1	%	1	P8F2901	06/29/18	06/29/18	ASTM D2216	

E Tech Environmental & Safety Solutions, Inc.	Project: Select Energy Billiken 7 Federal 1H	Fax: (432) 563-2213
13000 West County Road 100	Project Number: 817-8169-000	
Odessa TX, 79765	Project Manager: Shane Estep	

East Sidewall 3

8F28008-03 (Soil)

Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chloride	**34.3**	1.09	mg/kg dry	1	P8G0205	07/02/18	07/02/18	EPA 300.0	
% Moisture	**8.0**	0.1	%	1	P8F2901	06/29/18	06/29/18	ASTM D2216	

E Tech Environmental & Safety Solutions, Inc.
13000 West County Road 100
Odessa TX, 79765

Project: Select Energy Billiken 7 Federal 1H
Project Number: 817-8169-000
Project Manager: Shane Estep

Fax: (432) 563-2213

East Sidewall 4

8F28008-04 (Soil)

Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chloride	ND	1.05	mg/kg dry	1	P8G0205	07/02/18	07/02/18	EPA 300.0	
% Moisture	**5.0**	0.1	%	1	P8F2901	06/29/18	06/29/18	ASTM D2216	

E Tech Environmental & Safety Solutions, Inc.	Project: Select Energy Billiken 7 Federal 1H	Fax: (432) 563-2213
13000 West County Road 100	Project Number: 817-8169-000	
Odessa TX, 79765	Project Manager: Shane Estep	

South Sidewall

8F28008-05 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**95.7**	1.06	mg/kg dry	1	P8G0205	07/02/18	07/02/18	EPA 300.0	
% Moisture	**6.0**	0.1	%	1	P8F2901	06/29/18	06/29/18	ASTM D2216	

E Tech Environmental & Safety Solutions, Inc.
13000 West County Road 100
Odessa TX, 79765

Project: Select Energy Billiken 7 Federal 1H
Project Number: 817-8169-000
Project Manager: Shane Estep

Fax: (432) 563-2213

West Sidewall 1

8F28008-06 (Soil)

Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chloride	**316**	1.04	mg/kg dry	1	P8G0205	07/02/18	07/02/18	EPA 300.0	
% Moisture	**4.0**	0.1	%	1	P8F2901	06/29/18	06/29/18	ASTM D2216	

E Tech Environmental & Safety Solutions, Inc.
13000 West County Road 100
Odessa TX, 79765

Project: Select Energy Billiken 7 Federal 1H
Project Number: 817-8169-000
Project Manager: Shane Estep

Fax: (432) 563-2213

West Sidewall 2

8F28008-07 (Soil)

Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chloride	ND	1.03	mg/kg dry	1	P8G0205	07/02/18	07/02/18	EPA 300.0	
% Moisture	**3.0**	0.1	%	1	P8F2901	06/29/18	06/29/18	ASTM D2216	

E Tech Environmental & Safety Solutions, Inc.
13000 West County Road 100
Odessa TX, 79765

Project: Select Energy Billiken 7 Federal 1H
Project Number: 817-8169-000
Project Manager: Shane Estep

Fax: (432) 563-2213

West Sidewall 3

8F28008-08 (Soil)

Permian Basin Environmental Lab, L.P.

General Chemistry Parameters by EPA / Standard Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chloride	**4.13**	1.02	mg/kg dry	1	P8G0206	07/02/18	07/03/18	EPA 300.0	
% Moisture	**2.0**	0.1	%	1	P8F2901	06/29/18	06/29/18	ASTM D2216	

E Tech Environmental & Safety Solutions, Inc.	Project: Select Energy Billiken 7 Federal 1H	Fax: (432) 563-2213
13000 West County Road 100	Project Number: 817-8169-000	
Odessa TX, 79765	Project Manager: Shane Estep	

West Sidewall 4

8F28008-09 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**161**	1.04	mg/kg dry	1	P8G0206	07/02/18	07/03/18	EPA 300.0	
% Moisture	**4.0**	0.1	%	1	P8F2901	06/29/18	06/29/18	ASTM D2216	

E Tech Environmental & Safety Solutions, Inc.	Project: Select Energy Billiken 7 Federal 1H	Fax: (432) 563-2213
13000 West County Road 100	Project Number: 817-8169-000	
Odessa TX, 79765	Project Manager: Shane Estep	

North Sidewall

8F28008-10 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**55.7**	1.05	mg/kg dry	1	P8G0206	07/02/18	07/03/18	EPA 300.0	
% Moisture	**5.0**	0.1	%	1	P8F2901	06/29/18	06/29/18	ASTM D2216	

E Tech Environmental & Safety Solutions, Inc.	Project: Select Energy Billiken 7 Federal 1H	Fax: (432) 563-2213
13000 West County Road 100	Project Number: 817-8169-000	
Odessa TX, 79765	Project Manager: Shane Estep	

Bottom Hole 1

8F28008-11 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**2990**	10.4	mg/kg dry	10	P8G0206	07/02/18	07/03/18	EPA 300.0	
% Moisture	**4.0**	0.1	%	1	P8F2901	06/29/18	06/29/18	ASTM D2216	

E Tech Environmental & Safety Solutions, Inc.
13000 West County Road 100
Odessa TX, 79765

Project: Select Energy Billiken 7 Federal 1H
Project Number: 817-8169-000
Project Manager: Shane Estep

Fax: (432) 563-2213

Bottom Hole 2

8F28008-12 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**1970**	10.3	mg/kg dry	10	P8G0206	07/02/18	07/03/18	EPA 300.0	
% Moisture	**3.0**	0.1	%	1	P8F2901	06/29/18	06/29/18	ASTM D2216	

E Tech Environmental & Safety Solutions, Inc.
13000 West County Road 100
Odessa TX, 79765

Project: Select Energy Billiken 7 Federal 1H
Project Number: 817-8169-000
Project Manager: Shane Estep

Fax: (432) 563-2213

Bottom Hole 3

8F28008-13 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**3250**	10.2	mg/kg dry	10	P8G0206	07/02/18	07/03/18	EPA 300.0	
% Moisture	**2.0**	0.1	%	1	P8F2901	06/29/18	06/29/18	ASTM D2216	

E Tech Environmental & Safety Solutions, Inc.
13000 West County Road 100
Odessa TX, 79765

Project: Select Energy Billiken 7 Federal 1H
Project Number: 817-8169-000
Project Manager: Shane Estep

Fax: (432) 563-2213

Bottom Hole 4

8F28008-14 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**4650**	26.0	mg/kg dry	25	P8G0206	07/02/18	07/03/18	EPA 300.0	
% Moisture	**4.0**	0.1	%	1	P8F2901	06/29/18	06/29/18	ASTM D2216	

General Chemistry Parameters by EPA / Standard Methods - Quality Control

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P8F2901 - * DEFAULT PREP *** **										
Blank (P8F2901-BLK1)				Prepared & Analyzed: 06/29/18						
% Moisture	ND	0.1	%							
Duplicate (P8F2901-DUP1)	**Source: 8F28004-02**			Prepared & Analyzed: 06/29/18						
% Moisture	6.0	0.1	%		6.0			0.00	20	
Duplicate (P8F2901-DUP2)	**Source: 8F28010-02**			Prepared & Analyzed: 06/29/18						
% Moisture	1.0	0.1	%		ND			200	20	
Batch P8G0205 - * DEFAULT PREP *** **										
Blank (P8G0205-BLK1)				Prepared & Analyzed: 07/02/18						
Chloride	ND	1.00	mg/kg wet							
LCS (P8G0205-BS1)				Prepared & Analyzed: 07/02/18						
Chloride	400	1.00	mg/kg wet	400		100	80-120			
LCS Dup (P8G0205-BSD1)				Prepared & Analyzed: 07/02/18						
Chloride	403	1.00	mg/kg wet	400		101	80-120	0.705	20	
Duplicate (P8G0205-DUP1)	**Source: 8F27008-15**			Prepared & Analyzed: 07/02/18						
Chloride	4970	29.1	mg/kg dry		4910			1.24	20	
Duplicate (P8G0205-DUP2)	**Source: 8F27009-13**			Prepared & Analyzed: 07/02/18						
Chloride	31.7	1.09	mg/kg dry		33.9			6.70	20	
Matrix Spike (P8G0205-MS1)	**Source: 8F27008-15**			Prepared & Analyzed: 07/02/18						
Chloride	7330	29.1	mg/kg dry	2330	4910	104	80-120			

General Chemistry Parameters by EPA / Standard Methods - Quality Control

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P8G0206 - * DEFAULT PREP *** **										
Blank (P8G0206-BLK1)				Prepared: 07/02/18 Analyzed: 07/03/18						
Chloride	ND	1.00	mg/kg wet							
LCS (P8G0206-BS1)				Prepared: 07/02/18 Analyzed: 07/03/18						
Chloride	421	1.00	mg/kg wet	400		105	80-120			
LCS Dup (P8G0206-BSD1)				Prepared: 07/02/18 Analyzed: 07/03/18						
Chloride	420	1.00	mg/kg wet	400		105	80-120	0.0476	20	
Duplicate (P8G0206-DUP1)		**Source: 8F28008-08**		Prepared: 07/02/18 Analyzed: 07/03/18						
Chloride	3.00	1.02	mg/kg dry		4.13			31.8	20	
Duplicate (P8G0206-DUP2)		**Source: 8F29004-02**		Prepared: 07/02/18 Analyzed: 07/03/18						
Chloride	51000	104	mg/kg dry		51400			0.932	20	
Matrix Spike (P8G0206-MS1)		**Source: 8F28008-08**		Prepared: 07/02/18 Analyzed: 07/03/18						
Chloride	970	1.02	mg/kg dry	1020	4.13	94.7	80-120			

Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
LCS	Laboratory Control Spike
MS	Matrix Spike
Dup	Duplicate

Report Approved By:  Date: 7/3/2018

Brent Barron, Laboratory Director/Technical Director

PBELAB Permian Basin Environmental Lab. LP

1400 Rankin Hwy Midland Texas 79701 Phone: 432-686-7235

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: Shane Estep
Company Name: Etech Environmental & Safety Solutions, Inc.
Company Address: P.O. Box 8469
City/State/Zip: Midland, Texas 79708
Sampler Signature: [signature] email: Shane @etechenv.com
geoff " "

Project Name: Select Energy Billiken 7 Federal 1H
Project #: 817-8169 Project Loc: Lea Co., NM
Area: PO#:

Report Format: STANDARD: ☒ TRRP: ☐ NPDES: ☐

(lab use only) ORDER #: 8F28008

LAB # (lab use only)	FIELD CODE	Start Depth	End Depth	Date Sampled	Time Sampled	No. of Containers	Preservation & # of Containers: Ice	HNO_3	HCl	H_2SO_4	NaOH	$Na_2S_2O_3$	None	Other (Specify)	Matrix: OW=Orinking Water SL=Sludge / GW = Groundwater S=Soil/Solid / NP=Non-Potable Specify Other	Analyze For: TPH: 418.1 8D15M 1005 1006	Cations (Ca, Mg, Na, K)	Anions (Cl, SO4, CO3, HCO3)	SAR / ESP / CEC	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semi volatiles	BTEX 8021B/5030 or BTEX 8260	RCI	N.O.R.M.	Chlorides	RUSH TAT(Pre-Schedule) 24, 48, 72 hrs	STANDARD TAT
01	East Sidewall 1			6.27.18	1550	1	☒								S											☒		☒
02	2				1005																							
03	3				1010																							
04	4				1015																							
05	South Sidewall				1025																							
06	West Sidewall 1				1045																							
07	2				1040																							
08	3				1035																							
09	4				1030																							
10	North Sidewall				1555																							
11	Bottom Hole 1				1630																							
12	2				1635																							
13	3				1640																							
14	4				1645																							

Special Instructions:

Relinquished by:	Date	Time	Received by:	Date	Time
[signature]	6.28.18		[signature]	6/28/18	932
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by: [signature]	Date 6/28	Time 932	Received by: Alyssa Haddock	Date 6/28/18	Time 10:00

Laboratory Comments:
Sample Containers Intact? Y N
VOCs Free of Headspace? Y N
Custody seals on container(s) Y N
Custody seals on cooler(s) Y N
Sample Hand Delivered Y N
Sar by Sampler/Client Rep. ? Y N
Sar by Courier? UPS DHL FedEx Lone Star

Temperature Upon Receipt: 3.6 °C