



April 10, 2019

Mike Bratcher & Robert Hamlet  
New Mexico Energy, Minerals and Natural Resources Department  
Oil Conservation Division, District 2  
811 S. First Street  
Artesia, NM 88210

Incident ID	NAB1908057694
District RP	2RP-5318
Facility ID	30-015-34148
Application ID	pAB1908057424

**Re: Site Assessment Report and Proposed Remediation Plan**  
**Site Name: Aspen 32 State Com #1 Battery**  
**GPS: Latitude: 32.78743 Longitude: -104.19457**  
**Legals: UL "J", Sec. 32, T17S, R28E**  
**EddyCounty, New Mexico**  
**NMOCD Ref. No. 2RP-5318**

Lowry Environmental & Associates, LLC (LEA), on behalf of Vanguard Operating, LLC, has prepared this Site Assessment Report and Proposed Remediation Plan for the Release Site known as the Aspen 32 State Com #1 Battery. Details of the release are summarized on the table below:

Nature and Volume of Release	
Date Release Discovered	3/13/2019
Source of Release	Tank Battery
Type of Release	Crude Oil and Produced Water
Volume Released	60 bbls (Oil), 10 bbls (PW)
Volume Recovered	55 bbls (Oil), 10 bbls (PW)
<b>Cause of Release</b> The release was attributed to a breaker being turned off, causing the pumps to stop and the the alarms to fail. The tanks ran over inside of a lined containment. Extremely high winds blew a mist of oil over an area east of the battery.	
<b>Affected Area</b> Overspray from the release affected an area within the pasture measuring approximately 2.5 Acres east of the tank battery.	
Was this a major release?	If YES, for what reasons (s) is this considered a major release?
Yes	Unauthorized release of a volume of liquids exceeding 25 bbls.
<b>If Yes, was immediate notice given to the OCD? By whom? To whom? When and by what means?</b> Brent White, Mike Bratcher, 3.14.2019, Phone	

A copy of the Release Notification (NMOCD Form C-141) is provided as Attachment #8.

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### Site Assessment/Characterization

What is the shallowest depth to groundwater beneath the area affected by the release?	>100'
Did this release impact groundwater or surface water?	No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	No
Are the lateral extents of the release within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)?	No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	No
Are the lateral extents of the release within 500 horizontal feet of a spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes?	No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	No
Are the lateral extents of the release within 300 feet of a wetland?	No
Are the lateral extents of the release overlying a subsurface mine?	No
Are the lateral extents of the release overlying an unstable area such as karst geology?	No
Are the lateral extents of the release within a 100-year floodplain?	No
Did the release impact areas <b>not</b> on an exploration, development, production or storage site?	Yes

A search of groundwater databases maintained by the New Mexico Office of the State Engineer (NMOSE) and United States Geological Survey was conducted in an effort to determine the average depth to groundwater within a 1 Mile radius of the Site and identify any registered water wells within a 1/2 Mile radius of the Site. If none were identified, or the results were inconclusive, the approximate depth to groundwater was extrapolated from available data including the nearest USGS wells and/or a Depth to Groundwater Map utilized by the NMOCD.

Based on the volume and nature of the release, inferred depth to groundwater and NMOCD Siting Criteria, the NMOCD Closure Criteria for the Site is as follows:

Closure Criteria for Soil Impacted by a Release	
Benzene	10 mg/kg
Benzene, Toluene, Ethylbenzene and Total Xylenes (BTEX)	50 mg/kg
Total Petroleum Hydrocarbons	2500 mg/kg
Combined GRO and DRO	1000 mg/kg
Chloride	20000 mg/kg

NMOCD Siting Criteria data was gathered from available resources including Bureau of Land Management (BLM) shapefiles; topographic maps; NMOSE and USGS databases; and aerial imagery. The results are depicted on Figures 1 & 2. Depth to groundwater information is provided as Attachment #4. A Photographic Log is provided as Attachment #7.

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## INITIAL SITE ASSESSMENT

On **March 21, 2019**, an initial site assessment was conducted. During the initial site assessment, eight (8) soil samples (WC @ 0-3", WC @ 12", V-1 @ 0-3", V-1 @ 5-7", V-2 @ 0-3", V-2 @ 3-6", V-3 @ 0-3", and V-3 @ 3-6") were collected in an effort to determine the vertical extent of impacted soil affected above the NMOCD Closure Criteria. Sample point WC represents the "worst case" located at the northeast corner of the tank battery. Sample points V-1 through V-3 represent an area east of the tank battery affected by overspray.

In addition, sixteen (16) soil samples (WH @ 0-3", WH @ 3-6", SH1 @ 0-3", SH1 @ 3-6", NH1 @ 0-3", NH1 @ 3-6", NH2 @ 0-3", NH2 @ 3-6", SH2 @ 0-3", SH2 @ 3-6", SH3 @ 0-3", SH3 @ 3-6", NH3 @ 0-3", NH3 @ 3-6", EH @ 0-3", EH @ 3-6") were collected from the edges of the affected area inferred to be more heavily impacted. The collected soil samples were submitted to an NMOCD-approved laboratory for analysis of BTEX, TPH and chloride. Laboratory analytical results indicated BTEX, TPH and chloride concentrations were below the NMOCD Closure Criteria in each of the submitted soil samples, with the exception of soil samples WC @ 0-3" and V1 @ 0-3", which exhibited TPH concentrations of 5,234 mg/kg and 5,840

Laboratory analytical results indicated BTEX, TPH and chloride concentrations were below the NMOCD Reclamation Standards for soil not on an active production pad in each of the submitted soil samples with the exception of soil samples V1 @ 0-3", which exhibited a TPH concentration of 5,840 mg/kg; V-1 @ 5-7", which exhibited a TPH concentration of 740 mg/kg;; V2 @ 0-3", which exhibited a TPH concentration of 674 mg/lg and SH3 @ 0-3", which exhibited a TPH concentration of 139.9 mg/kg.

A table summarizing laboratory analytical results from soil samples collected during the initial site assessment is provided on the following page:

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Concentrations of BTEX, TPH and/or Chloride in Soil - Initial Assessment(s)											
Sample ID	Date	Depth	Soil Status	SW 846 8021B		SW 846 8015M Ext.					E300/4500CI
				Benzene (mg/kg)	BTEX (mg/kg)	GRO C <sub>6</sub> -C <sub>10</sub> (mg/kg)	DRO C <sub>10</sub> -C <sub>28</sub> (mg/kg)	GRO + DRO C <sub>6</sub> -C <sub>28</sub> (mg/kg)	ORO C <sub>28</sub> -C <sub>36</sub> (mg/kg)	TPH C <sub>6</sub> -C <sub>36</sub> (mg/kg)	Chloride (mg/kg)
WC @ 0-3"	3/21/19	0-3"	In-Situ	<0.050	15.9	204	4,250	4,454	780	5,234	15,200
WC @ 12"	3/21/19	4-12"	In-Situ	<0.050	1.41	16.8	473	489.8	90.3	580.1	12,700
WH @ 0-3"	3/21/19	0-3"	In-Situ	<0.050	<0.300	<10.0	30.0	30.0	<10.0	30.0	64.0
WH @ 3-6"	3/21/19	3-6"	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	48.0
SH1 @ 0-3"	3/21/19	0-3"	In-Situ	<0.050	<0.300	<10.0	22.4	22.4	<10.0	22.4	48.0
SH1 @ 3-6"	3/21/19	3-6"	In-Situ	<0.050	<0.300	<10.0	19.8	19.8	<10.0	19.8	32.0
V1 @ 0-3"	3/21/19	0-3"	In-Situ	<0.050	<0.300	<50.0	4,640	4,640	1,200	5,840	160
V1 @ 5-7"	3/21/19	5-7"	In-Situ	<0.050	<0.300	<10.0	610	610	130	740	48.0
NH1 @ 0-3"	3/21/19	0-3"	In-Situ	<0.050	<0.300	<10.0	12.7	12.7	<10.0	12.7	32.0
NH1 @ 3-6"	3/21/19	3-6"	In-Situ	<0.050	<0.300	<10.0	14.7	14.7	<10.0	14.7	32.0
NH2 @ 0-3"	3/21/19	0-3"	In-Situ	<0.050	<0.300	<10.0	12.1	12.1	<10.0	12.1	128
NH2 @ 3-6"	3/21/19	3-6"	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	32.0
V2 @ 0-3"	3/21/19	0-3"	In-Situ	<0.050	<0.300	<10.0	528	528	146	674.0	112
V2 @ 3-6"	3/21/19	3-6"	In-Situ	<0.050	<0.300	<10.0	78.2	78.2	18.8	97.0	48.0
SH2 @ 0-3"	3/21/19	0-3"	In-Situ	<0.050	<0.300	<10.0	13.7	13.7	<10.0	13.7	160
SH2 @ 3-6"	3/21/19	3-6"	In-Situ	<0.050	<0.300	<10.0	19.2	19.2	<10.0	19.2	80.0
V3 @ 0-3"	3/21/19	0-3"	In-Situ	<0.050	<0.300	<10.0	44.3	44.3	10.8	55.1	64.0
V3 @ 3-6"	3/21/19	3-6"	In-Situ	<0.050	<0.300	<10.0	52.5	52.5	10.3	62.8	48
SH3 @ 0-3"	3/21/19	0-3"	In-Situ	<0.050	<0.300	<10.0	108	108	31.9	139.9	176
SH3 @ 3-6"	3/21/19	3-6"	In-Situ	<0.050	<0.300	<10.0	32.2	32.2	<10.0	32.2	112
NH3 @ 0-3"	3/21/19	0-3"	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	64
NH3 @ 3-6"	3/21/19	3-6"	In-Situ	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	32
EH @ 0-3"	3/21/19	0-3"	In-Situ	<0.050	<0.300	<10.0	15.5	15.5	<10.0	15.5	80
EH @ 3-6"	3/21/19	3-6"	In-Situ	<0.050	<0.300	<10.0	16.6	16.6	<10.0	16.6	32
Closure Criteria				10	50	-	-	1,000	-	2,500	20,000

A "Site & Sample Location Map" is provided as Attachment #3. Field Data, if applicable, is provided as Attachment #9. Soil profile observations are provided on Attachment #5. Laboratory analytical reports are provided as Attachment #6.

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## PROPOSED REMEDIATION PLAN

Based on laboratory analytical results, site characteristics and field observations made during the initial site assessment, Vanguard Operating, LLC proposes the following remediation activities designed to advance the Site toward an approved closure:

- Utilizing mechanical equipment, excavate impacted soil in the area characterized by sample point WC to a depth of approximately 1 Ft. bgs, or until laboratory analytical results from confirmation soil samples indicate TPH and chloride concentrations are below the NMOCD Closure Criteria.
- Scrape impacted soil in the area moderately impacted by overspray, characterized by sample point V1, to a depth of approximately 6 inches (in.) bgs.
- Excavation sidewalls will be advanced horizontally until laboratory analytical results from confirmation soil samples indicate BTEX, TPH and chloride concentrations are below the NMOCD Closure Criteria.
- Treat the remaining area within the affected pasture with a Microblaze<sup>®</sup> solution to aid in natural attenuation/bioremediation of hydrocarbon impact.
- Excavated soil will be temporarily stockpiled on-site, pending transportation under manifest to an NMOCD-approved disposal facility.
- Vanguard maintains further excavation of impacted soil affected above the NMOCD Reclamation Standard for TPH within the pasture area east of the tank battery, characterized by soil samples V2 @ 0-3" and SH3 @ 0-3", is not practicable and would damage viable vegetation. This is based on the absence of chloride with the soil and presence of viable native vegetation within the overspray area.
- Upon receiving favorable laboratory analytical results from confirmation soil samples (below the NMOCD Closure Criteria) excavated areas will be backfilled with locally sourced, non-impacted "like" material. Excavation backfill will be placed at or near original relative positions. The affected area will be contoured and/or compacted to achieve erosion control, stability and preservation of surface water flow to the extent practicable.

## SAMPLING PLAN

Upon completion of excavation activities, representative five-point composite excavation confirmation soil samples will be collected from the excavation sidewalls in each cardinal direction, representing no more than **50 linear ft.** A minimum of **one (1)** representative five-point composite excavation confirmation soil sample will be collected from the base of the excavated area representing every **500 square feet.** Additional, "discrete" confirmation soil samples will be collected from wet or visibly stained areas inferred to have been affected by the release, as necessary.

## TIMELINE AND ESTIMATED VOLUME OF SOIL TO BE REMEDIATED

Remediation activities are expected to be completed **within 90 days** of receiving necessary approval(s) of this Site Assessment Summary and Proposed Remediation Plan. Based on laboratory analytical results, site characteristics and field observations made during the initial site assessment it is estimated that approximately **240 cubic yards** of soil has been affected above the NMOCD Closure Criteria.

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## RESTORATION, RECLAMATION AND RE-VEGETATION PLAN

Restoration, reclamation and re-vegetation of impacted material on the caliche well pad north and east of the tank battery will be conducted in accordance with NMAC 19.15.29.13 once the facility is no longer needed for production or subsequent drilling operations. Once the area is no longer in use, restoration, reclamation and re-vegetation will include but is not limited to the following:

- Excavation and removal of impacted soil present within the top four (4) Ft. affected above 600 mg/kg for chloride and 100 mg/kg for TPH.
- Backfill with non-waste containing, uncontaminated, earthen material with chloride concentrations less than 600 mg/kg. Excavation backfill will include a top layer, which is either the background thickness of topsoil or one foot of suitable material to establish vegetation at the site, whichever is greater.
- Upon reclaiming the facility, the Site will be reseeded in accordance with the landowner and/or applicable surface agency during the first favorable growing season.
- Areas affected by restoration and reclamation activities will be monitored until a life-form ratio of plus or minimum fifty percent of pre-disturbance levels and a total percent plant cover of at least seventy percent of pre-disturbance levels, excluding noxious weeds.

If you have any questions, or need any additional information, please feel free to contact Chuck Johnston or the undersigned by phone or email.

Respectfully,



Joel W. Lowry  
Environmental Professional  
Lowry Environmental & Associates, LLC

- Attachments:**
- Attachment #1- Figure 1 - Topographic Map
  - Attachment #2- Figure 2 - Aerial Map
  - Attachment #3- Figure 3 - Site & Sample Location Map
  - Attachment #4- Depth to Groundwater Information
  - Attachment #5- Soil Profile
  - Attachment #6- Laboratory Analytical Reports
  - Attachment #7- Photographic Log
  - Attachment #8- Release Notification (FORM C-141)
  - Attachment #9- Field Data

## **LIMITATIONS**

This document has been prepared on behalf of Vanguard Operating, LLC. Use of information contained in this report, including exhibits and attachments, by any other party without the consent of LEA and/or Vanguard Operating, LLC is prohibited.

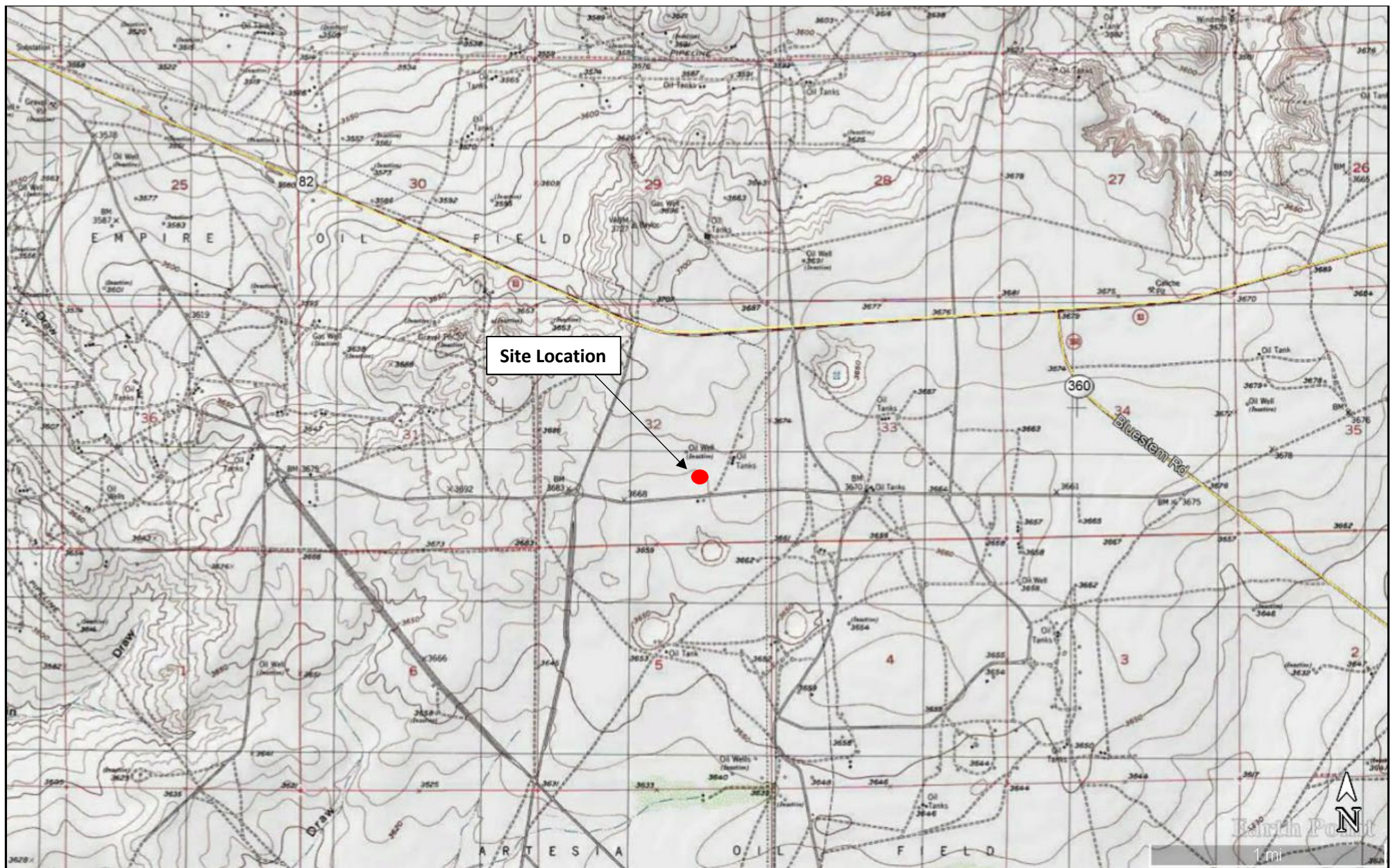
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LEA has prepared this report to the best of its ability. No other warranty, expressed or implied, is made or intended.

**ATTACHMENT #1**

**Figure 1 - Topographic Map**





**LEGEND:**

● Site Location

**Figure 1**  
 Topographic Map  
 Vanguard Operating, LLC  
 Aspen 32 State Com #1 Battery  
 GPS: 32.78743, -104.19457  
 EddyCounty, New Mexico



Drafted by: jwl

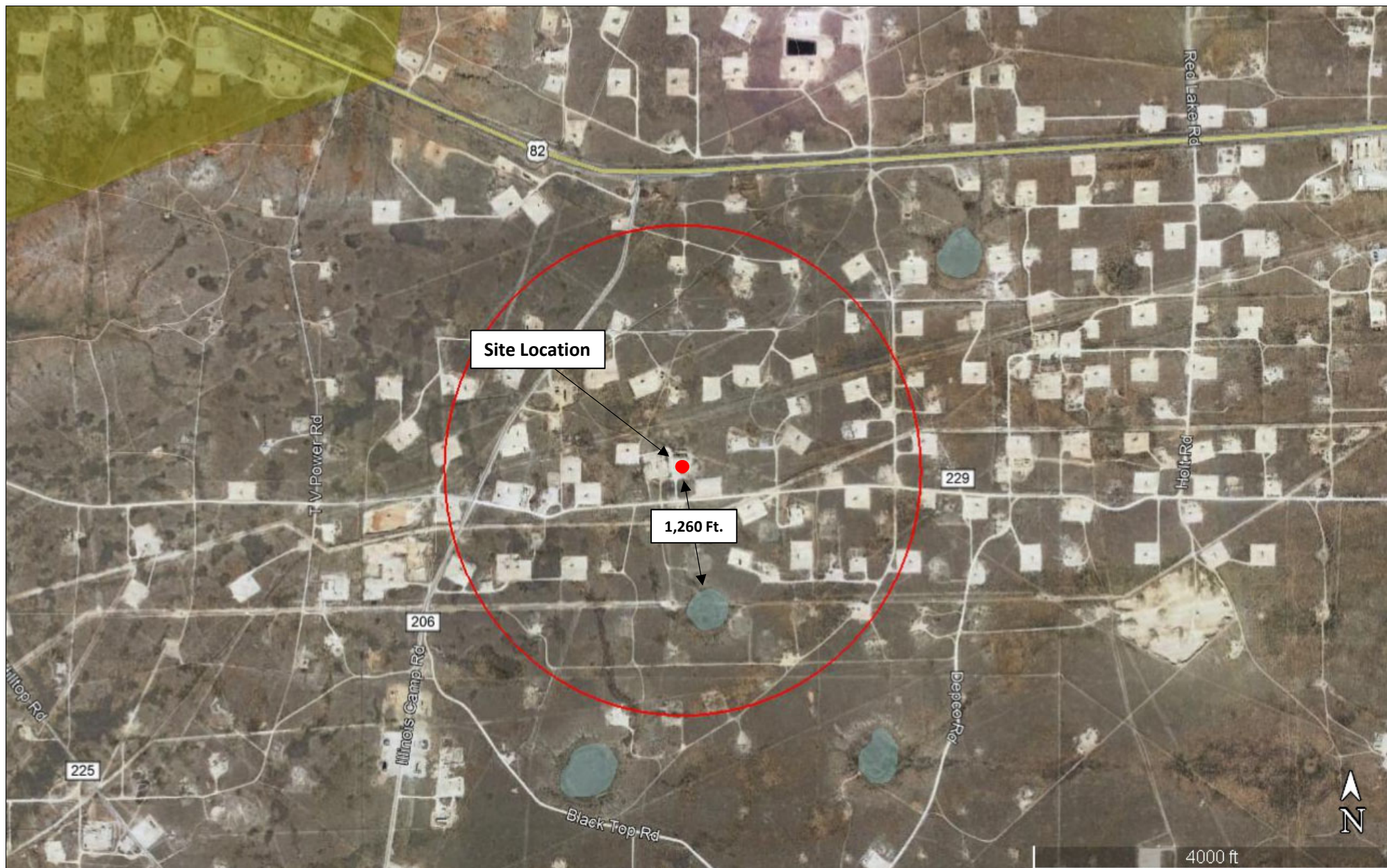
Checked by: client

Date: 4/10/2019

## **ATTACHMENT #2**

### **Figure 2 - Aerial Map**





**LEGEND:**

- |  |  |
|--|--|
| <span style="color: red;">●</span> Site Location   |  Non-Industrial Building                                    |
| <span style="color: blue;">○</span> Fresh Water Well   |  Subsurface Mine  |
|  100-Year Floodplain | <span style="color: red; border: 1px solid red; border-radius: 50%; width: 10px; height: 10px; display: inline-block;"></span> 1/2 Mile Radius |
|  High/Critical Karst |  Playa Lake   |

**Figure 2**  
 Aerial Map  
 Vanguard Operating, LLC  
 Aspen 32 State Com #1 Battery  
 GPS: 32.78743, -104.19457  
 EddyCounty, New Mexico

**LOWRY**  
 environmental

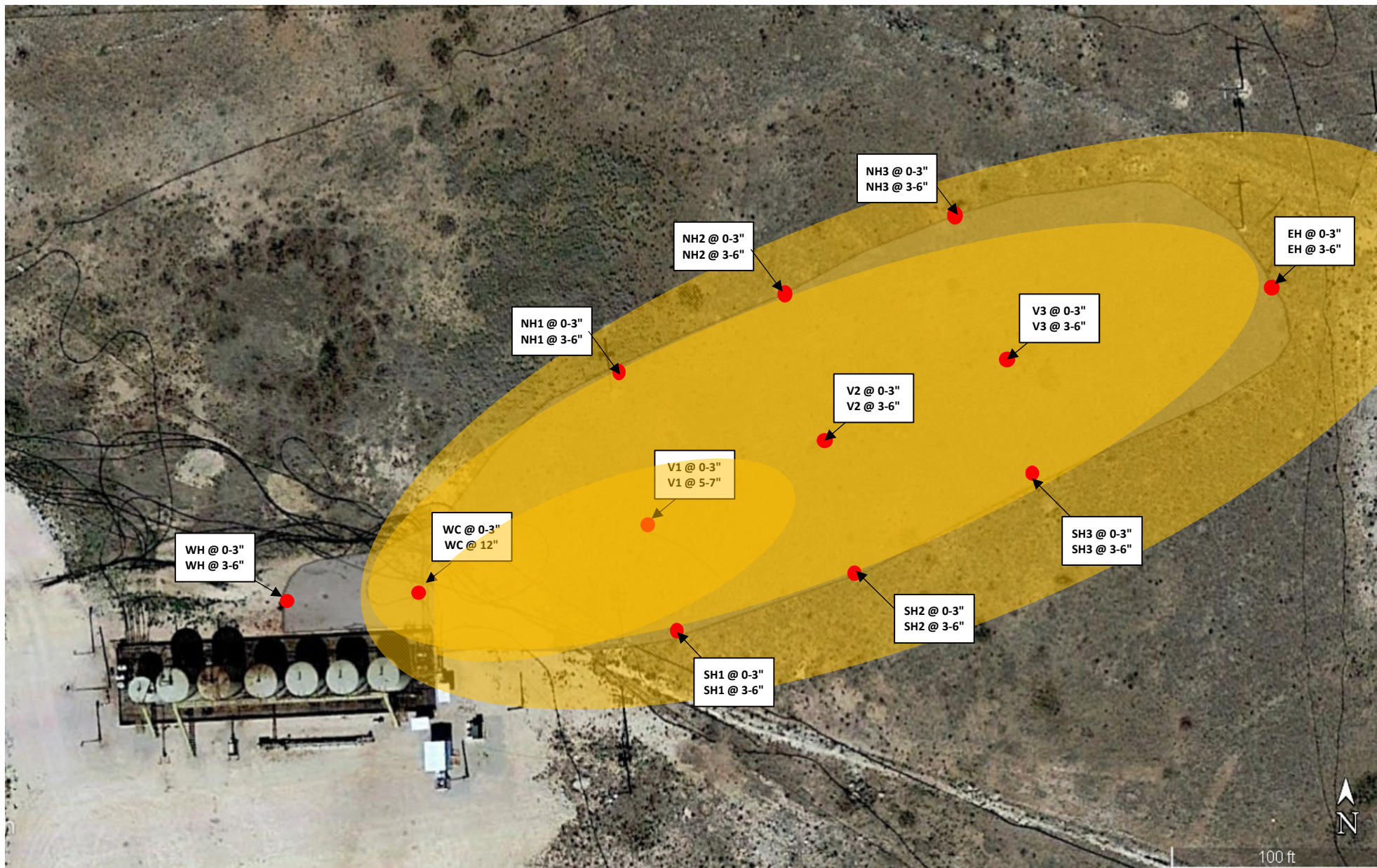



Drafted by: jwl      Checked by: client      Date: 4/10/2019

### **ATTACHMENT #3**

**Figure 3 - Site & Sample Location Map**





<p><b>LEGEND:</b></p> <ul style="list-style-type: none"> <li><span style="color: red;">●</span> Sample Point</li> <li><span style="background-color: yellow; border: 1px solid black; display: inline-block; width: 20px; height: 10px;"></span> Affected Area</li> <li><span style="border-bottom: 2px dashed red; display: inline-block; width: 20px;"></span> Test Trench</li> <li><span style="border-bottom: 2px solid red; display: inline-block; width: 20px;"></span> Buried Pipeline</li> <li><span style="border-bottom: 2px dashed black; display: inline-block; width: 20px;"></span> Excavated Area</li> </ul>	<p><b>Figure 3</b></p> <p>Site &amp; Sample Location Map</p> <p>Vanguard Operating, LLC</p> <p>Aspen 32 State Com#1 Battery</p> <p>GPS: 32.78743, -104.19457</p> <p>EddyCounty, New Mexico</p>	<div style="text-align: center;">  <p><b>LOWRY</b> environmental</p> </div> <div style="display: flex; justify-content: space-between; font-size: small;"> <span>Drafted by: jwl</span> <span>Checked by: client</span> <span>Date: 4/2/2019</span> </div>
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**ATTACHMENT #4**  
**Depth to Groundwater Information**



*New Mexico Office of the State Engineer*  
**Water Column/Average Depth to Water**

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(quarters are 1=NW 2=NE 3=SW 4=SE)  
(quarters are smallest to largest) (NAD83 UTM in meters)

No records found.

**UTMNAD83 Radius Search (in meters):**

**Easting (X):** 575426.9

**Northing (Y):** 3628040.2

**Radius:** 1608

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The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

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4/10/19 11:29 AM

WATER COLUMN/ AVERAGE  
DEPTH TO WATER



## National Water Information System: Web Interface

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Data Category:	Geographic Area:	
Groundwater	United States	GO

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Groundwater levels for the Nation

### Search Results -- 1 sites found

Agency code = usgs

site\_no list =

- 324642104111001

Minimum number of levels = 1

[Save file of selected sites](#) to local disk for future upload

### USGS 324642104111001 18S.28E.04.131444

Eddy County, New Mexico

Latitude 32°46'42", Longitude 104°11'10" NAD27

Land-surface elevation 3,640 feet above NGVD29

The depth of the well is 145.00 feet below land surface.

This well is completed in the Rustler Formation (312RSLR) local aquifer.

#### Output formats

<a href="#">Table of data</a>
<a href="#">Tab-separated data</a>
<a href="#">Graph of data</a>
<a href="#">Reselect period</a>

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 measurement
1985-06-04		D	109.39				2	Z	S	
1990-09-19		D	106.60				2	Z	S	
1994-03-09		D	107.65				2	Z	S	

#### 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	Z	Other conditions existed that would affect the measured water level (explain in remarks).
Method of measurement	S	Steel-tape measurement.
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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**Title: Groundwater for USA: Water Levels**

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Page Contact Information: [USGS Water Data Support Team](#)

Page Last Modified: 2019-03-25 12:10:12 EDT

0.56 0.54 nadww01



## National Water Information System: Web Interface

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Groundwater	United States	GO

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### Search Results -- 1 sites found

Agency code = usgs

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- 324633104105401

Minimum number of levels = 1

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### USGS 324633104105401 18S.28E.04.32412

Eddy County, New Mexico

Latitude 32°46'33", Longitude 104°10'54" NAD27

Land-surface elevation 3,665 feet above NAVD88

This well is completed in the Alluvium, Bolson Deposits and Other Surface Deposits (110AVMB) local aquifer.

#### Output formats

<a href="#">Table of data</a>
<a href="#">Tab-separated data</a>
<a href="#">Graph of data</a>
<a href="#">Reselect period</a>

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
1985-06-04		D	103.08				2		U	
1989-02-02		D	107.27				2		U	
1994-03-09		D	100.78				2		S	
1999-01-13		D	102.01				2		S	USGS

#### 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	S	Steel-tape measurement.
Method of measurement	U	Unknown method.
Measuring agency		Not determined
Measuring agency	USGS	U.S. Geological Survey
Source of measurement	S	Measured by personnel of reporting agency.
Source of measurement	U	Source is unknown.
Water-level approval status	A	Approved for publication -- Processing and review completed.

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0.57 0.52 nadww01



## National Water Information System: Web Interface

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Groundwater	United States	GO

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Groundwater levels for the Nation

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site\_no list =

- 324724104082301

Minimum number of levels = 1

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### USGS 324724104082301 17S.28E.35.42233

Eddy County, New Mexico

Latitude 32°47'24", Longitude 104°08'23" NAD27

Land-surface elevation 3,659 feet above NGVD29

The depth of the well is 280.00 feet below land surface.

This well is completed in the Rustler Formation (312RSLR) local aquifer.

#### Output formats

<a href="#">Table of data</a>
<a href="#">Tab-separated data</a>
<a href="#">Graph of data</a>
<a href="#">Reselect period</a>

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 measurement
1986-05-21		D	257.90				2	Z	S	
1986-05-27		D	257.90				2	Z	R	
1990-09-19		D	257.41				2	P	S	
1994-03-01		D	257.79				2	Z	S	

#### 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	P	Site was being pumped.
Status	Z	Other conditions existed that would affect the measured water level (explain in remarks).
Method of measurement	R	Reported, method not known.
Method of measurement	S	Steel-tape measurement.
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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**Title: Groundwater for USA: Water Levels**

**URL: <https://nwis.waterdata.usgs.gov/nwis/gwlevels?>**



Page Contact Information: [USGS Water Data Support Team](#)

Page Last Modified: 2019-03-25 12:13:17 EDT

0.71 0.68 nadww01



## National Water Information System: Web Interface

[USGS Water Resources](#)

Data Category:	Geographic Area:	
Groundwater	United States	GO

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Groundwater levels for the Nation

### Search Results -- 1 sites found

Agency code = usgs

site\_no list =

- 324920104124101

Minimum number of levels = 1

[Save file of selected sites](#) to local disk for future upload

### USGS 324920104124101 17S.28E.19.234233

Eddy County, New Mexico

Latitude 32°49'20", Longitude 104°12'41" NAD27

Land-surface elevation 3,613 feet above NAVD88

This well is completed in the San Andres Limestone (313SADR) local aquifer.

#### Output formats

<a href="#">Table of data</a>
<a href="#">Tab-separated data</a>
<a href="#">Graph of data</a>
<a href="#">Reselect period</a>

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 measurment
1948-12-02		D	224.28			2	P		U	
1979-10-05		D	191.20			2			U	
1983-04-13		D	191.15			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	P	Site was being pumped.
Method of measurement	U	Unknown method.
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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**Title: Groundwater for USA: Water Levels**

**URL: <https://nwis.waterdata.usgs.gov/nwis/gwlevels?>**



Page Contact Information: [USGS Water Data Support Team](#)

Page Last Modified: 2019-03-25 12:14:37 EDT

0.51 0.48 nadww01



## National Water Information System: Web Interface

[USGS Water Resources](#)

Data Category:	Geographic Area:	
Groundwater	United States	GO

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- [Full News](#) 

Groundwater levels for the Nation

### Search Results -- 1 sites found

Agency code = usgs

site\_no list =

- 324855104093101

Minimum number of levels = 1

[Save file of selected sites](#) to local disk for future upload

### USGS 324855104093101 17S.28E.22.34242

Eddy County, New Mexico

Latitude 32°48'55", Longitude 104°09'31" NAD27

Land-surface elevation 3,578 feet above NGVD29

The depth of the well is 95.00 feet below land surface.

This well is completed in the Alluvium, Bolson Deposits and Other Surface Deposits (110AVMB) local aquifer.

#### Output formats

<a href="#">Table of data</a>
<a href="#">Tab-separated data</a>
<a href="#">Graph of data</a>
<a href="#">Reselect period</a>

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 measurement
1986-05-20		D	75.40				2	Z	S	
1990-09-19		D	76.19				2	Z	S	
1994-03-01		D	77.32				2	Z	S	
1999-01-13		D	78.55				2		S	USGS

#### 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
Status	Z	Other conditions existed that would affect the measured water level (explain in remarks).
Method of measurement	S	Steel-tape measurement.
Measuring agency		Not determined
Measuring agency	USGS	U.S. Geological Survey
Source of measurement	S	Measured by personnel of reporting agency.
Source of measurement	U	Source is unknown.
Water-level approval status	A	Approved for publication -- Processing and review completed.



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**Title: Groundwater for USA: Water Levels**

**URL: <https://nwis.waterdata.usgs.gov/nwis/gwlevels?>**

Page Contact Information: [USGS Water Data Support Team](#)

Page Last Modified: 2019-03-25 12:15:59 EDT

0.53   0.46 nadww01



**ATTACHMENT #5**  
**Soil Profile**

# SOIL PROFILE

Site Name: Aspen

Date: 3-21-19

Description		Depth (ft. bgs)
Brown top Soil		1 0-4
Fractured rock		2 4-12
		3
		4
		5
		6
		7
		8
		9
		0
		1
		2
		3
		4
		5
		6
		7
		8
		9
		0
		1
		2
		3
		4
		5
		6
		7
		8
		9
		0
		1
		2
		3
		4
		5
		6
		7
		8
		9
		0

**ATTACHMENT #6**  
**Laboratory Analytical Reports**



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

---

March 27, 2019

JOEL LOWRY

LOWRY ENVIROMENTAL & ASSOCIATES

PO BOX 296

LOVINGTON, NM 88260

RE: ASPEN 32 STATE COM #1 BATTERY

Enclosed are the results of analyses for samples received by the laboratory on 03/22/19 12:24.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-18-11. 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](http://www.tceq.texas.gov/field/qa/lab_accred_certif.html).

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

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

Accreditation applies to public drinking water matrices.

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

Sincerely,

A handwritten signature in black ink that reads "Mike Snyder". The signature is fluid and cursive, with the first name "Mike" and last name "Snyder" clearly distinguishable.

Mike Snyder For Celey D. Keene

Lab Director/Quality Manager

**Analytical Results For:**

LOWRY ENVIROMENTAL & ASSOCIATES  
JOEL LOWRY  
PO BOX 296  
LOVINGTON NM, 88260  
Fax To:

Received:	03/22/2019	Sampling Date:	03/21/2019
Reported:	03/27/2019	Sampling Type:	Soil
Project Name:	ASPEN 32 STATE COM #1 BATTERY	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	VANGUARD OPERATING - EDDY CO NM		

**Sample ID: WC @ 0-3" (H901110-01)**

BTEx 8021B		mg/kg		Analyzed By: MS				S-04	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	03/26/2019	ND	2.04	102	2.00	1.08	
<b>Toluene*</b>	<b>0.603</b>	0.050	03/26/2019	ND	2.13	106	2.00	2.71	
<b>Ethylbenzene*</b>	<b>5.01</b>	0.050	03/26/2019	ND	2.32	116	2.00	3.52	
<b>Total Xylenes*</b>	<b>10.3</b>	0.150	03/26/2019	ND	6.46	108	6.00	4.76	
<b>Total BTEx</b>	<b>15.9</b>	0.300	03/26/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 249 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
<b>Chloride</b>	<b>15200</b>	16.0	03/25/2019	ND	400	100	400	0.00	

TPH 8015M		mg/kg		Analyzed By: MS				S-06	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
<b>GRO C6-C10*</b>	<b>204</b>	50.0	03/23/2019	ND	221	111	200	3.37	
<b>DRO &gt;C10-C28*</b>	<b>4250</b>	50.0	03/23/2019	ND	217	108	200	9.10	
<b>EXT DRO &gt;C28-C36</b>	<b>780</b>	50.0	03/23/2019	ND					

Surrogate: 1-Chlorooctane 185 % 41-142

Surrogate: 1-Chlorooctadecane 197 % 37.6-147

Cardinal Laboratories

\*=Accredited Analyte

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Mike Snyder For Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

LOWRY ENVIROMENTAL & ASSOCIATES  
JOEL LOWRY  
PO BOX 296  
LOVINGTON NM, 88260  
Fax To:

Received: 03/22/2019  
Reported: 03/27/2019  
Project Name: ASPEN 32 STATE COM #1 BATTERY  
Project Number: NONE GIVEN  
Project Location: VANGUARD OPERATING - EDDY CO NM

Sampling Date: 03/21/2019  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Jodi Henson

**Sample ID: WC @ 4-12" (H901110-02)**

BTEx 8021B		mg/kg		Analyzed By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	03/26/2019	ND	1.92	96.0	2.00	0.0910	
Toluene*	0.110	0.050	03/26/2019	ND	1.79	89.4	2.00	0.810	
Ethylbenzene*	0.416	0.050	03/26/2019	ND	1.91	95.6	2.00	2.03	
Total Xylenes*	0.886	0.150	03/26/2019	ND	5.92	98.6	6.00	1.83	
Total BTEX	1.41	0.300	03/26/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 99.6 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	12700	16.0	03/25/2019	ND	400	100	400	0.00	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	16.8	10.0	03/23/2019	ND	221	111	200	3.37	
DRO >C10-C28*	473	10.0	03/23/2019	ND	217	108	200	9.10	
EXT DRO >C28-C36	90.3	10.0	03/23/2019	ND					

Surrogate: 1-Chlorooctane 101 % 41-142

Surrogate: 1-Chlorooctadecane 101 % 37.6-147

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Mike Snyder For Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

LOWRY ENVIROMENTAL & ASSOCIATES  
JOEL LOWRY  
PO BOX 296  
LOVINGTON NM, 88260  
Fax To:

Received: 03/22/2019  
Reported: 03/27/2019  
Project Name: ASPEN 32 STATE COM #1 BATTERY  
Project Number: NONE GIVEN  
Project Location: VANGUARD OPERATING - EDDY CO NM

Sampling Date: 03/21/2019  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Jodi Henson

**Sample ID: WH @ 0-3" (H901110-03)**

BTEx 8021B		mg/kg		Analyzed By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	03/26/2019	ND	1.92	96.0	2.00	0.0910	
Toluene*	<0.050	0.050	03/26/2019	ND	1.79	89.4	2.00	0.810	
Ethylbenzene*	<0.050	0.050	03/26/2019	ND	1.91	95.6	2.00	2.03	
Total Xylenes*	<0.150	0.150	03/26/2019	ND	5.92	98.6	6.00	1.83	
Total BTEX	<0.300	0.300	03/26/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 95.0 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	64.0	16.0	03/25/2019	ND	400	100	400	0.00	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	03/23/2019	ND	221	111	200	3.37	
DRO >C10-C28*	30.0	10.0	03/23/2019	ND	217	108	200	9.10	
EXT DRO >C28-C36	<10.0	10.0	03/23/2019	ND					

Surrogate: 1-Chlorooctane 91.3 % 41-142

Surrogate: 1-Chlorooctadecane 91.2 % 37.6-147

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Mike Snyder For Celey D. Keene, Lab Director/Quality Manager



**Analytical Results For:**

LOWRY ENVIROMENTAL & ASSOCIATES  
JOEL LOWRY  
PO BOX 296  
LOVINGTON NM, 88260  
Fax To:

Received: 03/22/2019  
Reported: 03/27/2019  
Project Name: ASPEN 32 STATE COM #1 BATTERY  
Project Number: NONE GIVEN  
Project Location: VANGUARD OPERATING - EDDY CO NM

Sampling Date: 03/21/2019  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Jodi Henson

**Sample ID: WH @ 3-6" (H901110-04)**

BTEx 8021B		mg/kg		Analyzed By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	03/26/2019	ND	1.92	96.0	2.00	0.0910	
Toluene*	<0.050	0.050	03/26/2019	ND	1.79	89.4	2.00	0.810	
Ethylbenzene*	<0.050	0.050	03/26/2019	ND	1.91	95.6	2.00	2.03	
Total Xylenes*	<0.150	0.150	03/26/2019	ND	5.92	98.6	6.00	1.83	
Total BTEX	<0.300	0.300	03/26/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 94.9 % 73.3-129

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	03/25/2019	ND	400	100	400	0.00	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	03/23/2019	ND	221	111	200	3.37	
DRO >C10-C28*	<10.0	10.0	03/23/2019	ND	217	108	200	9.10	
EXT DRO >C28-C36	<10.0	10.0	03/23/2019	ND					


Surrogate: 1-Chlorooctane 90.5 % 41-142

Surrogate: 1-Chlorooctadecane 88.8 % 37.6-147

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Mike Snyder For Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

LOWRY ENVIROMENTAL & ASSOCIATES  
JOEL LOWRY  
PO BOX 296  
LOVINGTON NM, 88260  
Fax To:

Received:	03/22/2019	Sampling Date:	03/21/2019
Reported:	03/27/2019	Sampling Type:	Soil
Project Name:	ASPEN 32 STATE COM #1 BATTERY	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	VANGUARD OPERATING - EDDY CO NM		

**Sample ID: SH1 @ 0-3" (H901110-05)**

BTEx 8021B		mg/kg		Analyzed By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	03/26/2019	ND	1.92	96.0	2.00	0.0910	
Toluene*	<0.050	0.050	03/26/2019	ND	1.79	89.4	2.00	0.810	
Ethylbenzene*	<0.050	0.050	03/26/2019	ND	1.91	95.6	2.00	2.03	
Total Xylenes*	<0.150	0.150	03/26/2019	ND	5.92	98.6	6.00	1.83	
Total BTEX	<0.300	0.300	03/26/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 96.0 % 73.3-129

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	03/25/2019	ND	400	100	400	0.00	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	03/23/2019	ND	221	111	200	3.37	
DRO >C10-C28*	22.4	10.0	03/23/2019	ND	217	108	200	9.10	
EXT DRO >C28-C36	<10.0	10.0	03/23/2019	ND					

Surrogate: 1-Chlorooctane 87.7 % 41-142

Surrogate: 1-Chlorooctadecane 87.9 % 37.6-147

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\*=Accredited Analyte

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Mike Snyder For Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

LOWRY ENVIROMENTAL & ASSOCIATES  
JOEL LOWRY  
PO BOX 296  
LOVINGTON NM, 88260  
Fax To:

Received:	03/22/2019	Sampling Date:	03/21/2019
Reported:	03/27/2019	Sampling Type:	Soil
Project Name:	ASPEN 32 STATE COM #1 BATTERY	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	VANGUARD OPERATING - EDDY CO NM		

**Sample ID: SH1 @ 3-6" (H901110-06)**

BTEx 8021B		mg/kg		Analyzed By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	03/26/2019	ND	1.92	96.0	2.00	0.0910	
Toluene*	<0.050	0.050	03/26/2019	ND	1.79	89.4	2.00	0.810	
Ethylbenzene*	<0.050	0.050	03/26/2019	ND	1.91	95.6	2.00	2.03	
Total Xylenes*	<0.150	0.150	03/26/2019	ND	5.92	98.6	6.00	1.83	
Total BTEX	<0.300	0.300	03/26/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 95.7 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	32.0	16.0	03/25/2019	ND	400	100	400	0.00	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	03/23/2019	ND	221	111	200	3.37	
DRO >C10-C28*	19.8	10.0	03/23/2019	ND	217	108	200	9.10	
EXT DRO >C28-C36	<10.0	10.0	03/23/2019	ND					

Surrogate: 1-Chlorooctane 87.0 % 41-142

Surrogate: 1-Chlorooctadecane 86.8 % 37.6-147

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\*=Accredited Analyte

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Mike Snyder For Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

 LOWRY ENVIROMENTAL & ASSOCIATES  
 JOEL LOWRY  
 PO BOX 296  
 LOVINGTON NM, 88260  
 Fax To:

Received:	03/22/2019	Sampling Date:	03/21/2019
Reported:	03/27/2019	Sampling Type:	Soil
Project Name:	ASPEN 32 STATE COM #1 BATTERY	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	VANGUARD OPERATING - EDDY CO NM		

**Sample ID: V1 @ 0-3" (H901110-07)**

BTEx 8021B		mg/kg		Analyzed By: ms						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	03/26/2019	ND	1.92	96.0	2.00	0.0910		
Toluene*	<0.050	0.050	03/26/2019	ND	1.79	89.4	2.00	0.810		
Ethylbenzene*	<0.050	0.050	03/26/2019	ND	1.91	95.6	2.00	2.03		
Total Xylenes*	<0.150	0.150	03/26/2019	ND	5.92	98.6	6.00	1.83		
Total BTEX	<0.300	0.300	03/26/2019	ND						

Surrogate: 4-Bromofluorobenzene (PID) 94.7 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	160	16.0	03/25/2019	ND	400	100	400	0.00		

TPH 8015M		mg/kg		Analyzed By: MS				S-06	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<50.0	50.0	03/23/2019	ND	221	111	200	3.37	
DRO >C10-C28*	4640	50.0	03/23/2019	ND	217	108	200	9.10	
EXT DRO >C28-C36	1200	50.0	03/23/2019	ND					

Surrogate: 1-Chlorooctane 96.8 % 41-142

Surrogate: 1-Chlorooctadecane 252 % 37.6-147

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Mike Snyder For Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

LOWRY ENVIROMENTAL & ASSOCIATES  
JOEL LOWRY  
PO BOX 296  
LOVINGTON NM, 88260  
Fax To:

Received: 03/22/2019  
Reported: 03/27/2019  
Project Name: ASPEN 32 STATE COM #1 BATTERY  
Project Number: NONE GIVEN  
Project Location: VANGUARD OPERATING - EDDY CO NM

Sampling Date: 03/21/2019  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Jodi Henson

**Sample ID: V1 @ 5-7" (H901110-08)**

BTEx 8021B		mg/kg		Analyzed By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	03/26/2019	ND	1.92	96.0	2.00	0.0910	
Toluene*	<0.050	0.050	03/26/2019	ND	1.79	89.4	2.00	0.810	
Ethylbenzene*	<0.050	0.050	03/26/2019	ND	1.91	95.6	2.00	2.03	
Total Xylenes*	<0.150	0.150	03/26/2019	ND	5.92	98.6	6.00	1.83	
Total BTEX	<0.300	0.300	03/26/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 95.2 % 73.3-129

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	03/25/2019	ND	400	100	400	0.00	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	03/23/2019	ND	221	111	200	3.37	
DRO >C10-C28*	610	10.0	03/23/2019	ND	217	108	200	9.10	
EXT DRO >C28-C36	130	10.0	03/23/2019	ND					

Surrogate: 1-Chlorooctane 94.1 % 41-142

Surrogate: 1-Chlorooctadecane 108 % 37.6-147

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Mike Snyder For Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

LOWRY ENVIROMENTAL & ASSOCIATES  
JOEL LOWRY  
PO BOX 296  
LOVINGTON NM, 88260  
Fax To:

Received: 03/22/2019  
Reported: 03/27/2019  
Project Name: ASPEN 32 STATE COM #1 BATTERY  
Project Number: NONE GIVEN  
Project Location: VANGUARD OPERATING - EDDY CO NM

Sampling Date: 03/21/2019  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Jodi Henson

**Sample ID: NH1 @ 0-3" (H901110-09)**

BTEx 8021B		mg/kg		Analyzed By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	03/26/2019	ND	1.92	96.0	2.00	0.0910	
Toluene*	<0.050	0.050	03/26/2019	ND	1.79	89.4	2.00	0.810	
Ethylbenzene*	<0.050	0.050	03/26/2019	ND	1.91	95.6	2.00	2.03	
Total Xylenes*	<0.150	0.150	03/26/2019	ND	5.92	98.6	6.00	1.83	
Total BTEX	<0.300	0.300	03/26/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 94.3 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	32.0	16.0	03/25/2019	ND	400	100	400	0.00	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	03/23/2019	ND	221	111	200	3.37	
DRO >C10-C28*	12.7	10.0	03/23/2019	ND	217	108	200	9.10	
EXT DRO >C28-C36	<10.0	10.0	03/23/2019	ND					

Surrogate: 1-Chlorooctane 89.0 % 41-142

Surrogate: 1-Chlorooctadecane 89.3 % 37.6-147

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Mike Snyder For Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

 LOWRY ENVIROMENTAL & ASSOCIATES  
 JOEL LOWRY  
 PO BOX 296  
 LOVINGTON NM, 88260  
 Fax To:

Received:	03/22/2019	Sampling Date:	03/21/2019
Reported:	03/27/2019	Sampling Type:	Soil
Project Name:	ASPEN 32 STATE COM #1 BATTERY	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	VANGUARD OPERATING - EDDY CO NM		

**Sample ID: NH1 @ 3-6" (H901110-10)**

BTEx 8021B		mg/kg		Analyzed By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	03/26/2019	ND	1.92	96.0	2.00	0.0910	
Toluene*	<0.050	0.050	03/26/2019	ND	1.79	89.4	2.00	0.810	
Ethylbenzene*	<0.050	0.050	03/26/2019	ND	1.91	95.6	2.00	2.03	
Total Xylenes*	<0.150	0.150	03/26/2019	ND	5.92	98.6	6.00	1.83	
Total BTEX	<0.300	0.300	03/26/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 94.6 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	32.0	16.0	03/25/2019	ND	400	100	400	0.00	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	03/23/2019	ND	221	111	200	3.37	
DRO >C10-C28*	14.7	10.0	03/23/2019	ND	217	108	200	9.10	
EXT DRO >C28-C36	<10.0	10.0	03/23/2019	ND					

Surrogate: 1-Chlorooctane 79.4 % 41-142

Surrogate: 1-Chlorooctadecane 79.8 % 37.6-147

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Mike Snyder For Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

LOWRY ENVIROMENTAL & ASSOCIATES  
JOEL LOWRY  
PO BOX 296  
LOVINGTON NM, 88260  
Fax To:

Received:	03/22/2019	Sampling Date:	03/21/2019
Reported:	03/27/2019	Sampling Type:	Soil
Project Name:	ASPEN 32 STATE COM #1 BATTERY	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	VANGUARD OPERATING - EDDY CO NM		

**Sample ID: NH2 @ 0-3" (H901110-11)**

BTEx 8021B		mg/kg		Analyzed By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	03/26/2019	ND	1.92	96.0	2.00	0.0910	
Toluene*	<0.050	0.050	03/26/2019	ND	1.79	89.4	2.00	0.810	
Ethylbenzene*	<0.050	0.050	03/26/2019	ND	1.91	95.6	2.00	2.03	
Total Xylenes*	<0.150	0.150	03/26/2019	ND	5.92	98.6	6.00	1.83	
Total BTEX	<0.300	0.300	03/26/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 96.1 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	128	16.0	03/25/2019	ND	400	100	400	0.00	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	03/23/2019	ND	221	111	200	3.37	
DRO >C10-C28*	12.1	10.0	03/23/2019	ND	217	108	200	9.10	
EXT DRO >C28-C36	<10.0	10.0	03/23/2019	ND					

Surrogate: 1-Chlorooctane 92.2 % 41-142

Surrogate: 1-Chlorooctadecane 92.8 % 37.6-147

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Mike Snyder For Celey D. Keene, Lab Director/Quality Manager



**Analytical Results For:**

 LOWRY ENVIROMENTAL & ASSOCIATES  
 JOEL LOWRY  
 PO BOX 296  
 LOVINGTON NM, 88260  
 Fax To:

Received:	03/22/2019	Sampling Date:	03/21/2019
Reported:	03/27/2019	Sampling Type:	Soil
Project Name:	ASPEN 32 STATE COM #1 BATTERY	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	VANGUARD OPERATING - EDDY CO NM		

**Sample ID: NH2 @ 3-6" (H901110-12)**

BTEx 8021B		mg/kg		Analyzed By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	03/27/2019	ND	1.92	96.0	2.00	0.0910	
Toluene*	<0.050	0.050	03/27/2019	ND	1.79	89.4	2.00	0.810	
Ethylbenzene*	<0.050	0.050	03/27/2019	ND	1.91	95.6	2.00	2.03	
Total Xylenes*	<0.150	0.150	03/27/2019	ND	5.92	98.6	6.00	1.83	
Total BTEX	<0.300	0.300	03/27/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 95.9 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	32.0	16.0	03/25/2019	ND	400	100	400	0.00	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	03/23/2019	ND	221	111	200	3.37	
DRO >C10-C28*	<10.0	10.0	03/23/2019	ND	217	108	200	9.10	
EXT DRO >C28-C36	<10.0	10.0	03/23/2019	ND					

Surrogate: 1-Chlorooctane 89.0 % 41-142

Surrogate: 1-Chlorooctadecane 88.0 % 37.6-147

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**Analytical Results For:**

LOWRY ENVIROMENTAL & ASSOCIATES  
JOEL LOWRY  
PO BOX 296  
LOVINGTON NM, 88260  
Fax To:

Received:	03/22/2019	Sampling Date:	03/21/2019
Reported:	03/27/2019	Sampling Type:	Soil
Project Name:	ASPEN 32 STATE COM #1 BATTERY	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	VANGUARD OPERATING - EDDY CO NM		

**Sample ID: V2 @ 0-3" (H901110-13)**

BTEx 8021B		mg/kg		Analyzed By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	03/27/2019	ND	1.92	96.0	2.00	0.0910	
Toluene*	<0.050	0.050	03/27/2019	ND	1.79	89.4	2.00	0.810	
Ethylbenzene*	<0.050	0.050	03/27/2019	ND	1.91	95.6	2.00	2.03	
Total Xylenes*	<0.150	0.150	03/27/2019	ND	5.92	98.6	6.00	1.83	
Total BTEX	<0.300	0.300	03/27/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 94.8 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	112	16.0	03/25/2019	ND	400	100	400	0.00	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	03/23/2019	ND	221	111	200	3.37	
DRO >C10-C28*	528	10.0	03/23/2019	ND	217	108	200	9.10	
EXT DRO >C28-C36	146	10.0	03/23/2019	ND					

Surrogate: 1-Chlorooctane 85.5 % 41-142

Surrogate: 1-Chlorooctadecane 101 % 37.6-147

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Mike Snyder For Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

 LOWRY ENVIROMENTAL & ASSOCIATES  
 JOEL LOWRY  
 PO BOX 296  
 LOVINGTON NM, 88260  
 Fax To:

 Received: 03/22/2019  
 Reported: 03/27/2019  
 Project Name: ASPEN 32 STATE COM #1 BATTERY  
 Project Number: NONE GIVEN  
 Project Location: VANGUARD OPERATING - EDDY CO NM

 Sampling Date: 03/21/2019  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: V2 @ 3-6" (H901110-14)**

BTEx 8021B		mg/kg		Analyzed By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	03/27/2019	ND	1.92	96.0	2.00	0.0910	
Toluene*	<0.050	0.050	03/27/2019	ND	1.79	89.4	2.00	0.810	
Ethylbenzene*	<0.050	0.050	03/27/2019	ND	1.91	95.6	2.00	2.03	
Total Xylenes*	<0.150	0.150	03/27/2019	ND	5.92	98.6	6.00	1.83	
Total BTEX	<0.300	0.300	03/27/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 94.3 % 73.3-129

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	03/25/2019	ND	400	100	400	0.00	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	03/23/2019	ND	221	111	200	3.37	
DRO >C10-C28*	78.2	10.0	03/23/2019	ND	217	108	200	9.10	
EXT DRO >C28-C36	18.8	10.0	03/23/2019	ND					

Surrogate: 1-Chlorooctane 83.2 % 41-142

Surrogate: 1-Chlorooctadecane 89.6 % 37.6-147

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Mike Snyder For Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

LOWRY ENVIROMENTAL & ASSOCIATES  
JOEL LOWRY  
PO BOX 296  
LOVINGTON NM, 88260  
Fax To:

Received: 03/22/2019  
Reported: 03/27/2019  
Project Name: ASPEN 32 STATE COM #1 BATTERY  
Project Number: NONE GIVEN  
Project Location: VANGUARD OPERATING - EDDY CO NM

Sampling Date: 03/21/2019  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Jodi Henson

**Sample ID: SH2 @ 0-3" (H901110-15)**

BTEx 8021B		mg/kg		Analyzed By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	03/27/2019	ND	1.92	96.0	2.00	0.0910	
Toluene*	<0.050	0.050	03/27/2019	ND	1.79	89.4	2.00	0.810	
Ethylbenzene*	<0.050	0.050	03/27/2019	ND	1.91	95.6	2.00	2.03	
Total Xylenes*	<0.150	0.150	03/27/2019	ND	5.92	98.6	6.00	1.83	
Total BTEX	<0.300	0.300	03/27/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 94.1 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	160	16.0	03/25/2019	ND	400	100	400	0.00	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	03/23/2019	ND	221	111	200	3.37	
DRO >C10-C28*	13.7	10.0	03/23/2019	ND	217	108	200	9.10	
EXT DRO >C28-C36	<10.0	10.0	03/23/2019	ND					

Surrogate: 1-Chlorooctane 85.9 % 41-142

Surrogate: 1-Chlorooctadecane 87.0 % 37.6-147

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\*=Accredited Analyte

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Mike Snyder For Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

LOWRY ENVIROMENTAL & ASSOCIATES  
JOEL LOWRY  
PO BOX 296  
LOVINGTON NM, 88260  
Fax To:

Received:	03/22/2019	Sampling Date:	03/21/2019
Reported:	03/27/2019	Sampling Type:	Soil
Project Name:	ASPEN 32 STATE COM #1 BATTERY	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	VANGUARD OPERATING - EDDY CO NM		

**Sample ID: SH2 @ 3-6" (H901110-16)**

BTEx 8021B		mg/kg		Analyzed By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	03/27/2019	ND	1.92	96.0	2.00	0.0910	
Toluene*	<0.050	0.050	03/27/2019	ND	1.79	89.4	2.00	0.810	
Ethylbenzene*	<0.050	0.050	03/27/2019	ND	1.91	95.6	2.00	2.03	
Total Xylenes*	<0.150	0.150	03/27/2019	ND	5.92	98.6	6.00	1.83	
Total BTEX	<0.300	0.300	03/27/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 92.6 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	80.0	16.0	03/25/2019	ND	400	100	400	0.00	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	03/23/2019	ND	221	111	200	3.37	
DRO >C10-C28*	19.2	10.0	03/23/2019	ND	217	108	200	9.10	
EXT DRO >C28-C36	<10.0	10.0	03/23/2019	ND					

Surrogate: 1-Chlorooctane 101 % 41-142

Surrogate: 1-Chlorooctadecane 102 % 37.6-147

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\*=Accredited Analyte

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Mike Snyder For Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

LOWRY ENVIROMENTAL & ASSOCIATES  
JOEL LOWRY  
PO BOX 296  
LOVINGTON NM, 88260  
Fax To:

Received:	03/22/2019	Sampling Date:	03/21/2019
Reported:	03/27/2019	Sampling Type:	Soil
Project Name:	ASPEN 32 STATE COM #1 BATTERY	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	VANGUARD OPERATING - EDDY CO NM		

**Sample ID: V3 @ 0-3" (H901110-17)**

BTEx 8021B		mg/kg		Analyzed By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	03/27/2019	ND	1.92	96.0	2.00	0.0910	
Toluene*	<0.050	0.050	03/27/2019	ND	1.79	89.4	2.00	0.810	
Ethylbenzene*	<0.050	0.050	03/27/2019	ND	1.91	95.6	2.00	2.03	
Total Xylenes*	<0.150	0.150	03/27/2019	ND	5.92	98.6	6.00	1.83	
Total BTEX	<0.300	0.300	03/27/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 96.6 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	64.0	16.0	03/25/2019	ND	400	100	400	0.00	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	03/23/2019	ND	221	111	200	3.37	
DRO >C10-C28*	44.3	10.0	03/23/2019	ND	217	108	200	9.10	
EXT DRO >C28-C36	10.8	10.0	03/23/2019	ND					

Surrogate: 1-Chlorooctane 90.6 % 41-142

Surrogate: 1-Chlorooctadecane 94.0 % 37.6-147

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Mike Snyder For Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

 LOWRY ENVIROMENTAL & ASSOCIATES  
 JOEL LOWRY  
 PO BOX 296  
 LOVINGTON NM, 88260  
 Fax To:

 Received: 03/22/2019  
 Reported: 03/27/2019  
 Project Name: ASPEN 32 STATE COM #1 BATTERY  
 Project Number: NONE GIVEN  
 Project Location: VANGUARD OPERATING - EDDY CO NM

 Sampling Date: 03/21/2019  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: V3 @ 3-6" (H901110-18)**

BTEx 8021B		mg/kg		Analyzed By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	03/27/2019	ND	1.92	96.0	2.00	0.0910	
Toluene*	<0.050	0.050	03/27/2019	ND	1.79	89.4	2.00	0.810	
Ethylbenzene*	<0.050	0.050	03/27/2019	ND	1.91	95.6	2.00	2.03	
Total Xylenes*	<0.150	0.150	03/27/2019	ND	5.92	98.6	6.00	1.83	
Total BTEX	<0.300	0.300	03/27/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 95.9 % 73.3-129

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	03/25/2019	ND	416	104	400	0.00	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	03/23/2019	ND	221	111	200	3.37	
DRO >C10-C28*	52.5	10.0	03/23/2019	ND	217	108	200	9.10	
EXT DRO >C28-C36	10.3	10.0	03/23/2019	ND					

Surrogate: 1-Chlorooctane 84.6 % 41-142

Surrogate: 1-Chlorooctadecane 88.1 % 37.6-147

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Mike Snyder For Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

 LOWRY ENVIROMENTAL & ASSOCIATES  
 JOEL LOWRY  
 PO BOX 296  
 LOVINGTON NM, 88260  
 Fax To:

Received:	03/22/2019	Sampling Date:	03/21/2019
Reported:	03/27/2019	Sampling Type:	Soil
Project Name:	ASPEN 32 STATE COM #1 BATTERY	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	VANGUARD OPERATING - EDDY CO NM		

**Sample ID: SH3 @ 0-3" (H901110-19)**

BTEx 8021B		mg/kg		Analyzed By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	03/27/2019	ND	1.92	96.0	2.00	0.0910	
Toluene*	<0.050	0.050	03/27/2019	ND	1.79	89.4	2.00	0.810	
Ethylbenzene*	<0.050	0.050	03/27/2019	ND	1.91	95.6	2.00	2.03	
Total Xylenes*	<0.150	0.150	03/27/2019	ND	5.92	98.6	6.00	1.83	
Total BTEX	<0.300	0.300	03/27/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 96.4 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	176	16.0	03/25/2019	ND	416	104	400	0.00	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	03/23/2019	ND	223	112	200	1.24	
DRO >C10-C28*	108	10.0	03/23/2019	ND	202	101	200	10.8	
EXT DRO >C28-C36	31.9	10.0	03/23/2019	ND					

Surrogate: 1-Chlorooctane 90.2 % 41-142

Surrogate: 1-Chlorooctadecane 99.5 % 37.6-147

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Mike Snyder For Celey D. Keene, Lab Director/Quality Manager



**Analytical Results For:**

LOWRY ENVIROMENTAL & ASSOCIATES  
JOEL LOWRY  
PO BOX 296  
LOVINGTON NM, 88260  
Fax To:

Received: 03/22/2019  
Reported: 03/27/2019  
Project Name: ASPEN 32 STATE COM #1 BATTERY  
Project Number: NONE GIVEN  
Project Location: VANGUARD OPERATING - EDDY CO NM

Sampling Date: 03/21/2019  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Jodi Henson

**Sample ID: SH3 @ 3-6" (H901110-20)**

BTEx 8021B		mg/kg		Analyzed By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	03/27/2019	ND	1.92	96.0	2.00	0.0910	
Toluene*	<0.050	0.050	03/27/2019	ND	1.79	89.4	2.00	0.810	
Ethylbenzene*	<0.050	0.050	03/27/2019	ND	1.91	95.6	2.00	2.03	
Total Xylenes*	<0.150	0.150	03/27/2019	ND	5.92	98.6	6.00	1.83	
Total BTEX	<0.300	0.300	03/27/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 95.0 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	112	16.0	03/25/2019	ND	416	104	400	0.00	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	03/25/2019	ND	213	107	200	1.22	
DRO >C10-C28*	32.2	10.0	03/25/2019	ND	189	94.7	200	0.519	
EXT DRO >C28-C36	<10.0	10.0	03/25/2019	ND					

Surrogate: 1-Chlorooctane 80.2 % 41-142

Surrogate: 1-Chlorooctadecane 84.6 % 37.6-147

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Mike Snyder For Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

LOWRY ENVIROMENTAL & ASSOCIATES  
JOEL LOWRY  
PO BOX 296  
LOVINGTON NM, 88260  
Fax To:

Received: 03/22/2019  
Reported: 03/27/2019  
Project Name: ASPEN 32 STATE COM #1 BATTERY  
Project Number: NONE GIVEN  
Project Location: VANGUARD OPERATING - EDDY CO NM

Sampling Date: 03/21/2019  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Jodi Henson

**Sample ID: NH3 @ 0-3" (H901110-21)**

BTX 8021B		mg/kg		Analyzed By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	03/27/2019	ND	1.92	96.0	2.00	0.0910	
Toluene*	<0.050	0.050	03/27/2019	ND	1.79	89.4	2.00	0.810	
Ethylbenzene*	<0.050	0.050	03/27/2019	ND	1.91	95.6	2.00	2.03	
Total Xylenes*	<0.150	0.150	03/27/2019	ND	5.92	98.6	6.00	1.83	
Total BTX	<0.300	0.300	03/27/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 94.2 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	64.0	16.0	03/25/2019	ND	416	104	400	0.00		

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	03/25/2019	ND	213	107	200	1.22	
DRO >C10-C28*	<10.0	10.0	03/25/2019	ND	189	94.7	200	0.519	
EXT DRO >C28-C36	<10.0	10.0	03/25/2019	ND					

Surrogate: 1-Chlorooctane 88.7 % 41-142

Surrogate: 1-Chlorooctadecane 89.7 % 37.6-147

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**Analytical Results For:**

LOWRY ENVIROMENTAL & ASSOCIATES  
JOEL LOWRY  
PO BOX 296  
LOVINGTON NM, 88260  
Fax To:

Received: 03/22/2019  
Reported: 03/27/2019  
Project Name: ASPEN 32 STATE COM #1 BATTERY  
Project Number: NONE GIVEN  
Project Location: VANGUARD OPERATING - EDDY CO NM

Sampling Date: 03/21/2019  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Jodi Henson

**Sample ID: NH3 @ 3-6" (H901110-22)**

BTX 8021B		mg/kg		Analyzed By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	03/26/2019	ND	1.91	95.5	2.00	1.13	
Toluene*	<0.050	0.050	03/26/2019	ND	1.78	88.9	2.00	2.89	
Ethylbenzene*	<0.050	0.050	03/26/2019	ND	1.90	95.1	2.00	0.944	
Total Xylenes*	<0.150	0.150	03/26/2019	ND	6.02	100	6.00	0.0473	
Total BTX	<0.300	0.300	03/26/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 95.8 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	32.0	16.0	03/25/2019	ND	416	104	400	0.00	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	03/25/2019	ND	213	107	200	1.22	
DRO >C10-C28*	<10.0	10.0	03/25/2019	ND	189	94.7	200	0.519	
EXT DRO >C28-C36	<10.0	10.0	03/25/2019	ND					

Surrogate: 1-Chlorooctane 87.8 % 41-142

Surrogate: 1-Chlorooctadecane 86.4 % 37.6-147

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Mike Snyder For Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

LOWRY ENVIROMENTAL & ASSOCIATES  
JOEL LOWRY  
PO BOX 296  
LOVINGTON NM, 88260  
Fax To:

Received:	03/22/2019	Sampling Date:	03/21/2019
Reported:	03/27/2019	Sampling Type:	Soil
Project Name:	ASPEN 32 STATE COM #1 BATTERY	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	VANGUARD OPERATING - EDDY CO NM		

**Sample ID: EH @ 0-3" (H901110-23)**

BTX 8021B		mg/kg		Analyzed By: ms						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	03/26/2019	ND	1.91	95.5	2.00	1.13		
Toluene*	<0.050	0.050	03/26/2019	ND	1.78	88.9	2.00	2.89		
Ethylbenzene*	<0.050	0.050	03/26/2019	ND	1.90	95.1	2.00	0.944		
Total Xylenes*	<0.150	0.150	03/26/2019	ND	6.02	100	6.00	0.0473		
Total BTX	<0.300	0.300	03/26/2019	ND						

Surrogate: 4-Bromofluorobenzene (PID) 96.9 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	80.0	16.0	03/25/2019	ND	416	104	400	0.00		

TPH 8015M		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10*	<10.0	10.0	03/25/2019	ND	213	107	200	1.22		
DRO >C10-C28*	15.5	10.0	03/25/2019	ND	189	94.7	200	0.519		
EXT DRO >C28-C36	<10.0	10.0	03/25/2019	ND						

Surrogate: 1-Chlorooctane 87.0 % 41-142

Surrogate: 1-Chlorooctadecane 88.7 % 37.6-147

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\*=Accredited Analyte

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Mike Snyder For Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

 LOWRY ENVIROMENTAL & ASSOCIATES  
 JOEL LOWRY  
 PO BOX 296  
 LOVINGTON NM, 88260  
 Fax To:

Received:	03/22/2019	Sampling Date:	03/21/2019
Reported:	03/27/2019	Sampling Type:	Soil
Project Name:	ASPEN 32 STATE COM #1 BATTERY	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	VANGUARD OPERATING - EDDY CO NM		

**Sample ID: EH @ 3-6" (H901110-24)**

BTEx 8021B		mg/kg		Analyzed By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	03/26/2019	ND	1.91	95.5	2.00	1.13	
Toluene*	<0.050	0.050	03/26/2019	ND	1.78	88.9	2.00	2.89	
Ethylbenzene*	<0.050	0.050	03/26/2019	ND	1.90	95.1	2.00	0.944	
Total Xylenes*	<0.150	0.150	03/26/2019	ND	6.02	100	6.00	0.0473	
Total BTEX	<0.300	0.300	03/26/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 97.9 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	32.0	16.0	03/25/2019	ND	416	104	400	0.00		

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	03/25/2019	ND	213	107	200	1.22	
DRO >C10-C28*	16.6	10.0	03/25/2019	ND	189	94.7	200	0.519	
EXT DRO >C28-C36	<10.0	10.0	03/25/2019	ND					

Surrogate: 1-Chlorooctane 88.6 % 41-142

Surrogate: 1-Chlorooctadecane 89.0 % 37.6-147

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Mike Snyder For Celey D. Keene, Lab Director/Quality Manager

### Notes and Definitions

S-06	The recovery of this surrogate is outside control limits due to sample dilution required from high analyte concentration and/or matrix interference's.
S-04	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C Samples reported on an as received basis (wet) unless otherwise noted on report

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Mike Snyder For Celey D. Keene, Lab Director/Quality Manager



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

# CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Company Name: Vanguard Environmental, LLC		<b>BILL TO</b>		<b>ANALYSIS REQUEST</b>							
Project Manager: Joel Lowry		P.O. #:									
Address: 4001 Penbrook Suite 201 Odessa, TX 79762		Company:									
Phone #: _____ Fax #: _____		Vanguard Operating, LLC 4001 Penbrook Ste. 201 Odessa, TX, 79762									
Project Owner: Vanguard Environmental, LLC											
Project Name: Aspen 32 State Com #1 Battery											
Project Location: Eddy Co, NM		Attn:									
Sampler Name: Jordyne Taylor		Chuck Johnson									
FOR LAB USE ONLY											
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		TPH 8015 M. Ext (New Mexico)					
		3/21/19		0900		Chloride 4500 Cl-B					
		3/21/19		0915		BTX 8021					
		3/21/19		0905		TPH TX 1005					
		3/21/19		0920		RUSH					
		3/21/19		0916							
		3/21/19		0935							
		3/21/19		0930							
		3/21/19		0945							
		3/21/19		0935							
3/21/19		0950									

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Relinquished By: <i>Joyce</i>	Date: 3-22-19	Received By: <i>Joel Henderson</i>
Time: 1224		
Date: _____		
Time: _____		

Delivered By: (Circle One) **4.6e / #97**

Sampler - UPS - Bus - Other: ☒ Cool ☐ Intact ☐ Yes ☐ No

Phone Result: ☐ Yes ☐ No ☐ Add'l Phone #: \_\_\_\_\_

Fax Result: ☐ Yes ☐ No ☐ Add'l Fax #: \_\_\_\_\_

REMARKS: *joel@vanguardeml.com*



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

## CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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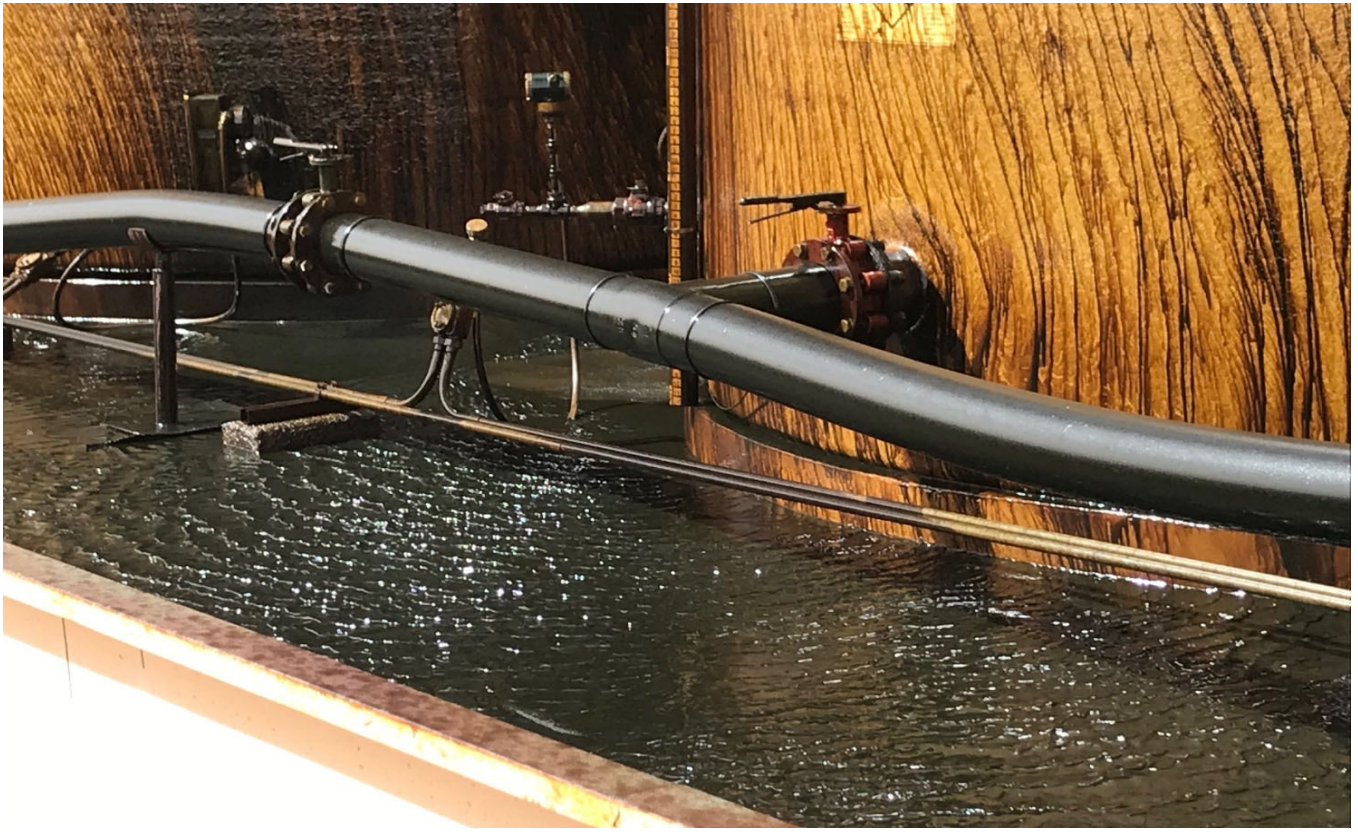
**CHAIN-OF-CUSTODY AND ANALYSIS REQUEST**

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**ATTACHMENT #7**  
**Photographic Log**



## PHOTOGRAPHIC LOG



**Figure 1** View of the initial release.



**Figure 2** View of the affected pasture area.



## PHOTOGRAPHIC LOG



**Figure 3** View of portion of the affected area and sample locations, facing Southwest.



**Figure 4** View of portion of the affected area and sample locations, facing North.

## PHOTOGRAPHIC LOG



**Figure 5** View of portion of the affected area and sample locations, facing East.



**Figure 6** View of portion of the affected area and sample locations, facing Northwest.



**ATTACHMENT #8**  
**Release Notification (FORM 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 Department  
Oil Conservation Division  
1220 South St. Francis Dr.  
Santa Fe, NM 87505

Form C-141  
Revised August 24, 2018  
Submit to appropriate OCD District office

Incident ID	NAB1908057694
District RP	2RP-5318
Facility ID	
Application ID	pAB1908057424

## Release Notification

### Responsible Party

Responsible Party Vanguard Operating, LLC	OGRID 258350
Contact Name Brent White	Contact Telephone 505-918-0669
Contact email bwhite@vnrenergy.com	Incident # (assigned by OCD) NAB1908057694
Contact mailing address 4001 Penbrook Suite 201 Odessa, TX 79762	

### Location of Release Source

Latitude 32.7874336 Longitude -104.1945724  
(NAD 83 in decimal degrees to 5 decimal places)

Site Name Aspen 32 State Com #1 Battery	Site Type Tank Battery
Date Release Discovered 3-13-2019	API# 30-015-34148

Unit Letter	Section	Township	Range	County
J	32	17S	28E	Eddy

Surface Owner: ☐ State ☐ Federal ☐ Tribal ☐ Private (Name: State Mineral \_\_\_\_\_)

### Nature and Volume of Release

Material(s) Released (Select all that apply and attach calculations or specific justification for the volumes provided below)

<input checked="" type="checkbox"/> Crude Oil	Volume Released (bbls) 60	Volume Recovered (bbls) 55
<input checked="" type="checkbox"/> Produced Water	Volume Released (bbls) 10	Volume Recovered (bbls) 10
	Is the concentration of dissolved chloride in the produced water >10,000 mg/l?	X Yes <input type="checkbox"/> No
<input type="checkbox"/> Condensate	Volume Released (bbls)	Volume Recovered (bbls)
<input type="checkbox"/> Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
<input type="checkbox"/> Other (describe)	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)

The lease operator found a breaker was turned off causing the pumps to stop and alarms to fail. The tanks ran over inside of a lined containment. Extremely high winds did blow a mist of oil over an area east of the battery measuring 150 yards by 75 yards.

A vacuum truck removed 55 bbls of oil and 10 bbls of produced water from the lined containment. Micro-blaze was applied to the soil.

The battery will be cleaned and the liner inspected. The breaker was turned back on and the system was put back on line.

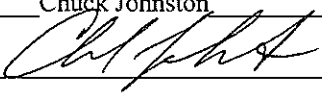

State of New Mexico  
Oil Conservation Division

Incident ID	NAB1908057694
District RP	2RP-5318
Facility ID	
Application ID	pAB1908057424

Was this a major release as defined by 19.15.29.7(A) NMAC?  X Yes <input type="checkbox"/> No	If YES, for what reason(s) does the responsible party consider this a major release? Over 25 bbls.
If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)? Brent White (Vanguard) notified Mike Bratcher by phone (voice mail) 3-14-2019 and then by phone 3-15-2019.	

### Initial Response

*The responsible party must undertake the following actions immediately unless they could create a safety hazard that would result in injury*

<input checked="" type="checkbox"/> The source of the release has been stopped. <input checked="" type="checkbox"/> The impacted area has been secured to protect human health and the environment. <input checked="" type="checkbox"/> Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices. <input checked="" type="checkbox"/> All free liquids and recoverable materials have been removed and managed appropriately.	
If all the actions described above have <u>not</u> been undertaken, explain why:  	
Per 19.15.29.8 B. (4) NMAC the responsible party may commence remediation immediately after discovery of a release. If remediation has begun, please attach a narrative of actions to date. If remedial efforts have been successfully completed or if the release occurred within a lined containment area (see 19.15.29.11(A)(5)(a) NMAC), please attach all information needed for closure evaluation.	
I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.	
Printed Name: <u>Chuck Johnston</u> Signature:  email: <u>cjohnston@vnrenergy.com</u>	Title: <u>EHS Operations Specialist</u> Date: <u>3-20-2019</u> Telephone: <u>432-202-4771</u>
<b><u>OCD Only</u></b> Received by:  Date: <u>3/21/2019</u>	

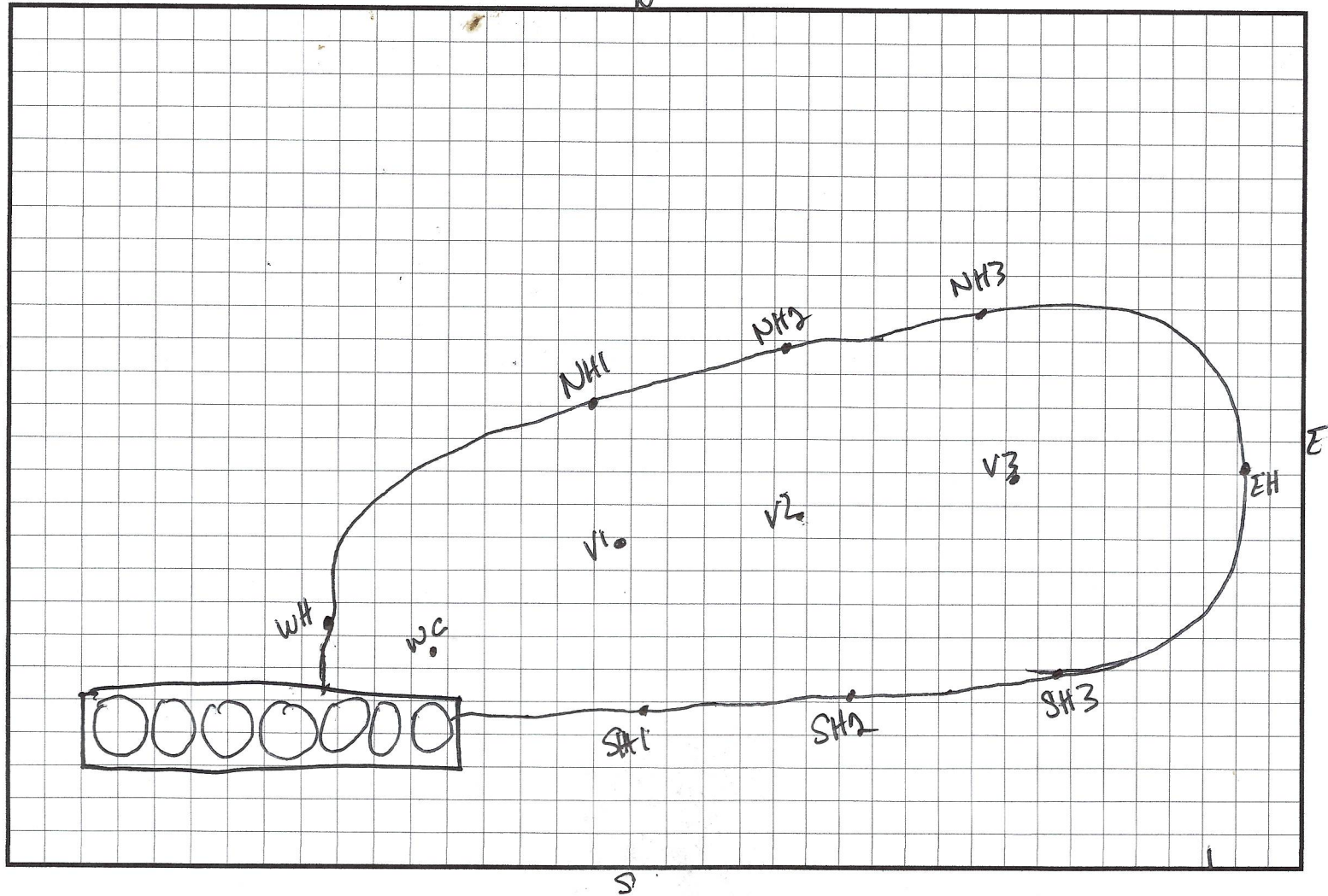


**ATTACHMENT #9**  
**Field Data**

# FIELD NOTES

Site Name: Aspen 32

Date: 3-29-19



Map Release Site

Light - Light Overspray over large area, Limit to the top 1-2"

Moderate Impacts/Pooling North East of Battery on Caliche Pad

Field ID	Odor/PID	Chloride
WL 0-3"	Heavy	>2600
WC 0-12"	Slight	>2600
WH 0-3"	None	<120
WH 0-3"	None	<120

Field ID	Odor/PID	Chloride
SH-1 0-3"	Light	<120
SH-1 3-6"	None	<108
SH-2 0-3"	Light	112
SH-2 3-6"	None	<108

Field ID	Odor/PID	Chloride
WH-2 0-3"	Light	<108
NH-2 0-3"	None	<108
NH-3 0-3"	Light	<108
NH-3 3-6"	None	<108

Field ID	Odor/PID	Chloride
V-1 0-3"	Heavy	1.64
V-1 0-5"	None	<120
V-2 0-3"	Light	<120
V-2 3-6"	None	<120

Field ID	Odor/PID	Chloride
SH-3 0-3"	Light	112
SH-3 3-6"	None	<108
EH 0-3"	Light	<108
EH 3-6"	None	<108

Field ID	Odor/PID	Chloride
EH 0-3"	Light	<108
EH 3-6"	None	<108

Site Name: Aspen

## SAMPLE LOG

Date: 3-21-19

[illegible]