February 26, 2021 Vertex Project #: 21E-00176-001

Spill Closure Report: State JR Well #001
Unit P, Section 11, Township 18 South, Range 35 East
County: Lea
API: 30-025-29348
NMOCD Tracking Number: NRM1935349656

Prepared For: Catena Resources Operating, LLC
18402 Hwy 281, Suite 258
San Antonio, Texas 78259

New Mexico Oil Conservation Division – District 1 – Hobbs
1625 North French Drive
Hobbs, New Mexico 88240

Catena Resources Operating, LLC (Catena) retained Vertex Resource Services Inc. (Vertex) to conduct confirmatory sampling for a produced water release that occurred inside containment associated with State JR Well #001, API 30-025-29348 (hereafter referred to as "State JR"). The site was previously owned by Devon Energy Production company and sold to Catena with an open release, via an initial C-141 Release Notification (Attachment 1). The New Mexico Oil Conservation District (NMOCD) tracking number assigned to this incident is NRM1935349656.

This letter provides a description of the confirmatory sampling activities, and demonstrates that closure criteria established in 19.15.29.12 *New Mexico Administrative Code* (NMAC; New Mexico Oil Conservation Division, 2018) have been met and all applicable regulations are being followed. This document is intended to serve as a final report to obtain approval from NM OCD for closure of this release.

Incident Description

On October 20, 2019, a release occurred within the containment associated with Catena's State JR site when the water tanks overflowed. This incident resulted in the release of approximately 7.34 barrels (bbls) of produced water into the earthen bermed containment. Upon discovery of the release, the valves leading to the tanks were closed to prevent any further release. The release was contained and no produced water was released into sensitive areas or waterways.

Site Characterization

The release at State JR occurred on state-owned land, N 32.755423, W 103.420705, approximately 5.89 miles southeast of Buckeye, New Mexico. The legal description for the site is Unit P, Section 11, Township 18 South, Range 35 East, Lea County, New Mexico. This location is within the Permian Basin in southeast New Mexico and has historically been used for oil and gas exploration and production, and rangeland. An aerial photograph and site schematic are included in Attachment 2.

State JR is typical of oil and gas exploration and production sites in the western portion of the Permian Basin, and is

currently used for oil and gas production, and storage.

The surrounding landscape is associated with plains and playa rims at elevations of 2,500 to 4,800 feet above sea level. The climate is semi-arid, with average annual precipitation ranging between 14 and 16 inches. Historically, the plant community has been predominantly creosotebush, perennial grasses with growing point elevated, with sub-dominant midgrasses, cane bluestem, plains bristlegrass, and other shrubs/succulents. Litter and, to a lesser extent, bare ground make up a lesser proportion of the ground cover (United States Department of Agriculture, Natural Resources Conservation Service, 2020). Limited to no vegetation is allowed to grow on the compacted wellpad.

The Geological Map of New Mexico indicates the surface geology at State JR is comprised primarily of To – Ogallala Formation (lower Pliocene to middle Miocene) - Alluvial and eolian deposits and petrocalcic soils of the southern High Plains (New Mexico Bureau of Geology and Mineral Resources, 2020). The National Resources Conservation Service Web Soil Survey characterizes the soil at the site as Kimbrough-Lea complex, characterized by gravelly loam and loam. It tends to be well-drained with high runoff and very low available moisture levels in the soil profile (United States Department of Agriculture, Natural Resources Conservation Service, 2020). There is low potential for karst geology to be present near State JR (United States Department of the Interior, Bureau of Land Management, 2020).

There is no surface water located on-site. The nearest significant watercourse, as defined in Subsection P of 19.15.17.7 NMAC, is a lake located approximately 2.8 miles southeast of State JR (United States Fish and Wildlife Service, 2020). There are no continuously flowing watercourses, lakebeds, sinkholes, playa lakes, or other critical water or community features as outlined in Paragraph (4) of Subsection C of 19.15.29.12 NMAC.

The nearest active well to the site is a New Mexico Office of the State Engineer (NMOSE)-identified well from 1985, located on site with a depth of 46 feet below ground surface (bgs). A second NMOSE-identified well from 1985 is located within the 0.5 mile radius with a depth to groundwater of 154 feet below ground surface (bgs). Documentation pertaining to site characterization and depth to groundwater determination is included in Attachment 3.

Closure Criteria Determination

Using site characterization information, a closure criteria determination worksheet (Attachment 3) was completed to determine if the release was subject to any of the special case scenarios outlined in Paragraph (4) of Subsection C of 19.15.29.12 NMAC. Remediation areas with less than 50 feet to ground water are required to meet the regulations associated with contaminants that meet the most protective concentrations contained in 19.15.29.12 NMAC.

Based on data included in the closure criteria determination worksheet, the release at State JR is not subject to the requirements of Paragraph (4) of Subsection C of 19.15.29.12 NMAC and the closure criteria for the site are determined to be associated with the following constituent concentration limits as shown in Table 1.

Table 1. Closure Criteria for Soils Impacted by a Release

Depth to Groundwater	Constituent	Limit
< 50 feet	Chloride	600 mg/kg
	TPH[1] (GRO + DRO + MRO)	100 mg/kg

	BTEX[2]	50 mg/kg
	Benzene	10 mg/kg

[1]Total petroleum hydrocarbons (TPH) = gasoline range organics (GRO) + diesel range organics (DRO) + motor oil range organics (MRO)
[2]Benzene, toluene, ethylbenzene and xylenes (BTEX)

Remedial Actions

An initial spill inspection was completed by a previous environmental contractor and remediation was completed prior to Vertex being on-site; remediation information was not available. A Vertex technician arrived on-site to determine total area of excavation, which was determined to be approximately 3,305 square feet as shown on Figure 1 (Attachment 2). The Daily Field Report (DFR) associated with the initial excavation inspection is included in Attachment 4.

On January 25, 2021, Vertex provided 48-hour notification of confirmation sampling to NM OCD and the Bureau of Land Management, as required by Subparagraph (a) of Paragraph (1) of Subsection D 19.15.29.12 NMAC (Attachment 5). Vertex was on-site at State JR on January 27, 2021, to conduct confirmation sampling to a maximum depth of 7 feet bgs. Vertex collected a total of 23 five-point composite confirmatory samples from the base and side walls of the excavation area at depths ranging from ground surface to 7 feet bgs. Each composite sample was representative of no more than 200 square feet per the alternate sampling method outlined in Subparagraph (c) of Paragraph (1) of Subsection D 19.15.29.12 NMAC, which does not require prior NMOCD approval. The composite samples were placed into laboratory-provided containers, preserved on ice and submitted to a National Environmental Laboratory Accreditation Program-approved laboratory for chemical analysis.

Laboratory analyses included Method 300.0 for chlorides, Method 8021B for volatile organics, including BTEX, and EPA Method 8015 for TPH, including MRO, DRO and GRO. Final confirmatory sample analytical data are summarized in Table 2, (Attachment 6). Laboratory data reports and chain of custody forms are included in Attachment 7.

A GeoExplorer 7000 Series Trimble global positioning system (GPS) unit, or equivalent, was used to map the approximate center of each of the five-point composite samples. The confirmatory sample locations are presented on Figure 1 (Attachment 2).

Closure Request

Vertex recommends no additional remediation action to address the release at State JR. Laboratory analyses of the confirmatory samples showed constituent of concern concentration levels below NM OCD Closure Criteria for areas where depth to groundwater is less than 50 feet bgs as presented in Table 1. There are no anticipated risks to human, ecological or hydrological receptors associated with the release site.

Vertex requests that this incident be closed as all closure requirements set forth in Subsection E of 19.15.29.12 NMAC have been met. Catena certifies that all information in this report and the attachments is correct, and that they have complied with all applicable closure requirements and conditions specified in Division rules and directives to meet NMOCD requirements to obtain closure on the October 20, 2019, release at State JR.

Should you have any questions or concerns, please do not hesitate to contact me at 575.361.9880 or mpeppin@vertex.ca.

Sincerely,

Monica Peppin
PROJECT MANAGER

Attachments

Attachment 1. NM OCD C-141 Report
Attachment 2. Confirmatory Sample Locations
Attachment 3. Closure Criteria for Soils Impacted by a Release Research Determination Documentation
Attachment 4. Daily Field Report(s) with Photographs
Attachment 5. Required 48-hr Notification of Confirmation Sampling to Regulatory Agencies
Attachment 6. Confirmatory Sample Laboratory Results
Attachment 7. Laboratory Data Reports/Chain of Custody Forms

References

New Mexico Bureau of Geology and Mineral Resources. (2020). *Interactive Geologic Map.* Retrieved from http://geoinfo.nmt.edu

New Mexico Oil Conservation Division. (2018). *New Mexico Administrative Code – Natural Resources and Wildlife Oil and Gas Releases.* Santa Fe, New Mexico.

New Mexico Water Rights Reporting System. (2020). *Water Column/Average Depth to Water Report.* Retrieved from http://nmwrrs.ose.state.nm.us/nmwrrs/waterColumn.html

United States Department of Agriculture, Natural Resources Conservation Service. (2020). *Web Soil Survey*. Retrieved from https://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx

United States Department of the Interior, Bureau of Land Management. (2020). *New Mexico Cave/Karsts*. Retrieved from https://www.blm.gov/programs/recreation/recreation-programs/caves/new-mexico

United States Department of the Interior, United States Geological Survey. (2020). *Groundwater for New Mexico: Water Levels*. Retrieved from https://nwis.waterdata.usgs.gov/nm/nwis/gwlevels?

United States Fish and Wildlife Service. (2020). *National Wetlands Inventory*. Retrieved from https://www.fws.gov/wetlands/Data/Mapper.html

Limitations

This report has been prepared for the sole benefit of Catena Resources Operating, LLC (Catena). This document may not be used by any other person or entity, with the exception of the New Mexico Oil Conservation Division, without the express written consent of Vertex Resource Services Inc. (Vertex) and Catena. Any use of this report by a third party, or any reliance on decisions made based on it, or damages suffered as a result of the use of this report are the sole responsibility of the user.

The information and conclusions contained in this report are based upon work undertaken by trained professional and technical staff in accordance with generally accepted scientific practices current at the time the work was performed. The conclusions and recommendations presented represent the best judgement of Vertex based on the data collected during the assessment. Due to the nature of the assessment and the data available, Vertex cannot warrant against undiscovered environmental liabilities. Conclusions and recommendations presented in this report should not be considered legal advice.

ATTACHMENT 1

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	
District RP	
Facility ID	
Application ID	

Release Notification

N3QEX-191031-C-1410

Responsible Party

Responsible Party	OGRID
Contact Name	Contact Telephone
Contact email	Incident # *(assigned by OCD)*
Contact mailing address	

Location of Release Source

Latitude _____ Longitude _____
(NAD 83 in decimal degrees to 5 decimal places)

Site Name	Site Type
Date Release Discovered	API# *(if applicable)*

Unit Letter	Section	Township	Range	County

Surface Owner: X State ☐ Federal ☐ Tribal ☐ Private (*Name:* _____)

rlm 12/19/2019

Nature and Volume of Release

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

☐ Crude Oil	Volume Released (bbls)	Volume Recovered (bbls)
☐ Produced Water	Volume Released (bbls)	Volume Recovered (bbls)
	Is the concentration of total dissolved solids (TDS) in the produced water >10,000 mg/l?	☐ Yes ☐ No
☐ Condensate	Volume Released (bbls)	Volume Recovered (bbls)
☐ Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
☐ Other (describe)	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)
Cause of Release		

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

Was this a major release as defined by 19.15.29.7(A) NMAC? ☐ Yes ☐ No	If YES, for what reason(s) does the responsible party consider this a major release?
If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)?	

Initial Response

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

☐ The source of the release has been stopped.
☐ The impacted area has been secured to protect human health and the environment.
☐ Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices.
☐ All free liquids and recoverable materials have been removed and managed appropriately.

If all the actions described above have not 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: _____ Title: _____

Signature: Kendra DeHoyos Date: _____

email: _____ Telephone: _____

OCD Only

Received by: _____ Date: _____

State of New Mexico
Oil Conservation Division

Incident ID	NRM1935349656
District RP	
Facility ID	
Application ID	

Site Assessment/Characterization

This information must be provided to the appropriate district office no later than 90 days after the release discovery date.

What is the shallowest depth to groundwater beneath the area affected by the release?	46 (ft bgs)
Did this release impact groundwater or surface water?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	☐ Yes ☒ 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)?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	☐ Yes ☒ 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?	☐ Yes ☒ No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	☐ Yes ☒ No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of a wetland?	☐ Yes ☒ No
Are the lateral extents of the release overlying a subsurface mine?	☐ Yes ☒ No
Are the lateral extents of the release overlying an unstable area such as karst geology?	☐ Yes ☒ No
Are the lateral extents of the release within a 100-year floodplain?	☐ Yes ☒ No
Did the release impact areas **not** on an exploration, development, production, or storage site?	☐ Yes ☒ No

Attach a comprehensive report (electronic submittals in .pdf format are preferred) demonstrating the lateral and vertical extents of soil contamination associated with the release have been determined. Refer to 19.15.29.11 NMAC for specifics.

Characterization Report Checklist: ***Each of the following items must be included in the report.***

- ☒ Scaled site map showing impacted area, surface features, subsurface features, delineation points, and monitoring wells.
- ☒ Field data
- ☒ NA Data table of soil contaminant concentration data
- ☒ Depth to water determination
- ☒ Determination of water sources and significant watercourses within ½-mile of the lateral extents of the release
- ☒ NA Boring or excavation logs
- ☒ Photographs including date and GIS information
- ☒ Topographic/Aerial maps
- ☒ Laboratory data including chain of custody

If the site characterization report does not include completed efforts at remediation of the release, the report must include a proposed remediation plan. That plan must include the estimated volume of material to be remediated, the proposed remediation technique, proposed sampling plan and methods, anticipated timelines for beginning and completing the remediation. The closure criteria for a release are contained in Table 1 of 19.15.29.12 NMAC, however, use of the table is modified by site- and release-specific parameters.

Form C-141
Page 4

State of New Mexico
Oil Conservation Division

Incident ID	NRM1935349656
District RP	
Facility ID	
Application ID	

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: Anthony Riggan Title: VP of Production Operations

Signature: [signature] Date: 7-26-21

email: ariggan@catenares.com Telephone: 210-428-6144

OCD Only

Received by: Date:

Form C-141
Page 6

State of New Mexico
Oil Conservation Division

Incident ID	NRM1935349656
District RP	
Facility ID	
Application ID	

Closure

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

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

[x] A scaled site and sampling diagram as described in 19.15.29.11 NMAC

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

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

[x] Description of remediation activities

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

Printed Name: Anthony Riggan Title: VP of Production Operations

Signature: Date: 2-26-21

email: ariggan@catenares.com Telephone: 210-428-6144

OCD Only

Received by: Date:

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

Closure Approved by: Date:

Printed Name: Title:

ATTACHMENT 2

- Base Sample (Prefixed by "BS21-")
- Wall Sample (Prefixed by "WS21-")
- Approximate Lease Boundary
- Excavation 2' (1,414 sq. ft.)
- Excavation 7' (1,891 sq. ft.)

VERTEX

0 5 10 20 ft.

WGS 1984 UTM Zone 13N
Date: Jan 28/21

Map Center:
Lat: 32.755413,
Long:-103.420713

N

Confirmatory Schematic
State JR Well #1

FIGURE: 1

CATENA RESOURCES

Geospatial data presented in this figure may be derived from external sources and Vertex does not assume any liability for inaccuracies. This figure is intended for reference use only and is not certified for legal, survey, or engineering purposes.

Note: Basemap imagery from ESRI, 2019

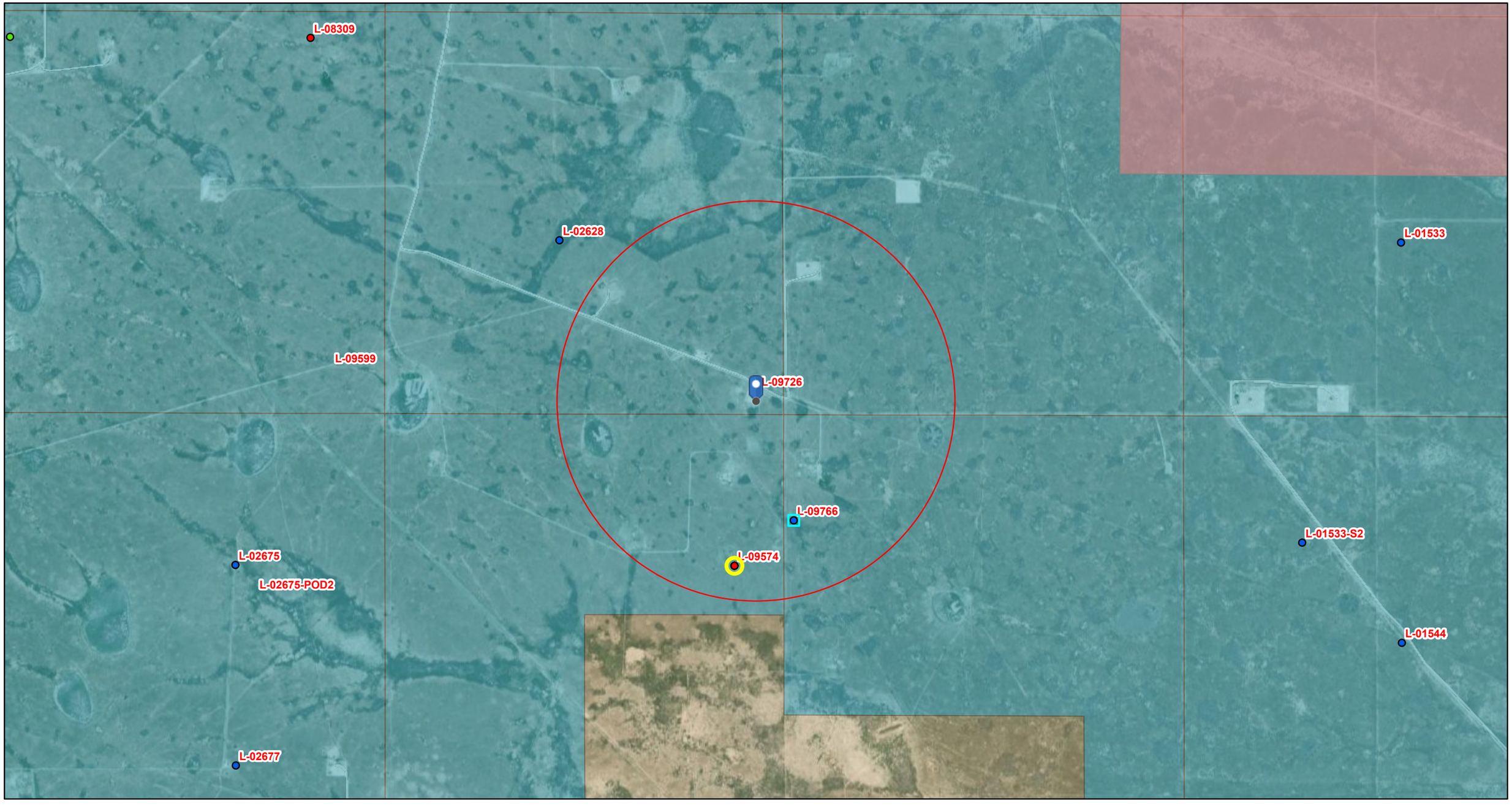
VERSATILITY. EXPERTISE.

Document Path: G:\1-Projects_US PROJECTS\Catena Resources Management\21E-00176\001 - State JR Well #1\Figure 1 Confirmatory Schematic State JR Well #1.mxd

ATTACHMENT 3

Table 1.			
Site Name: State JR. Well #1			
Spill Coordinates:		**X: 32.755423**	Y: -103.420705
Site Specific Conditions		**Value**	**Unit**
1	Depth to Groundwater	**<50**	feet
2	Within 300 feet of any continuously flowing watercourse or any other significant watercourse	14,764	feet
3	Within 200 feet of any lakebed, sinkhole or playa lake (measured from the ordinary high-water mark)	14,764	feet
4	Within 300 feet from an occupied residence, school, hospital, institution or church	9,164	feet
5	i) Within 500 feet of a spring or a private, domestic fresh water well used by less than five households for domestic or stock watering purposes, **or**	9,164	feet
	ii) Within 1000 feet of any fresh water well or spring	9,164	feet
6	Within incorporated municipal boundaries or within a defined municipal fresh water field covered under a municipal ordinance adopted pursuant to Section 3-27-3 NMSA 1978 as amended, unless the municipality specifically approves	No	(Y/N)
7	Within 300 feet of a wetland	2,176	feet
8	Within the area overlying a subsurface mine	No	(Y/N)
9	Within an unstable area (Karst Map)	Low	Critical High Medium Low
10	Within a 100-year Floodplain	>100	year
11	Soil Type	Kimbrough Lea	
12	Ecological Classification	Gravelly Loamy	
13	Geology	To- Alluvial and eolian deposits and petrocalcic soils	
NMAC 19.15.29.12 E (Table 1) Closure Criteria		<50'	<50' 51-100' >100'

State JR Well #001



2/12/2021, 11:40:48 AM

GIS WATERS PODs
- Plugged
- Active
- Pending
- Capped

OSE District Boundary

Water Right Regulations
- Critical Management Area - Guidelines

New Mexico State Trust Lands
- Both Estates
- SiteBoundaries

1:18,056

0 0.17 0.35 0.7 mi

0 0.3 0.6 1.2 km

USDA FSA, GeoEye, Maxar, Esri, HERE, iPC, U.S. Department of Energy Office of Legacy Management, Esri, HERE, Garmin, iPC

OSE POD Locations

New Mexico Office of the State Engineer
Point of Diversion Summary

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

Well Tag	POD Number	Q64	Q16	Q4	Sec	Twn	Rng	X	Y
	L 09726	4	4	4	11	18S	35E	647953	3625318*

Driller License: 46 **Driller Company:** ABBOTT BROTHERS COMPANY

Driller Name: ABBOTT, MURRELL

Drill Start Date: 07/25/1985 **Drill Finish Date:** 07/26/1985 **Plug Date:**

Log File Date: 08/02/1985 **PCW Rcv Date:** **Source:** Shallow

Pump Type: **Pipe Discharge Size:** **Estimated Yield:**

Casing Size: 7.00 **Depth Well:** 135 feet **Depth Water:** 48 feet

Water Bearing Stratifications:	Top	Bottom	Description
	48	89	Other/Unknown
	126	135	Other/Unknown

Casing Perforations:	Top	Bottom
	63	135

***UTM location was derived from PLSS - see Help**

New Mexico Office of the State Engineer
Point of Diversion Summary

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

Well Tag	POD Number	Q64	Q16	Q4	Sec	Twn	Rng	X	Y
	L 09766	1	1		13	18S	35E	648106	3624799

Driller License:	854	**Driller Company:**	GARY KIDD		
Driller Name:	KIDD, GARY (LD)				
Drill Start Date:	12/04/1985	**Drill Finish Date:**	12/06/1985	**Plug Date:**	
Log File Date:	01/02/1986	**PCW Rcv Date:**		**Source:**	Shallow
Pump Type:		**Pipe Discharge Size:**		**Estimated Yield:**	35 GPM
Casing Size:	5.00	**Depth Well:**	135 feet	**Depth Water:**	135 feet

Water Bearing Stratifications:	Top	Bottom	Description
	60	130	Other/Unknown

Casing Perforations:	Top	Bottom
	94	135

U.S. Fish and Wildlife Service
National Wetlands Inventory

State JR Well #001

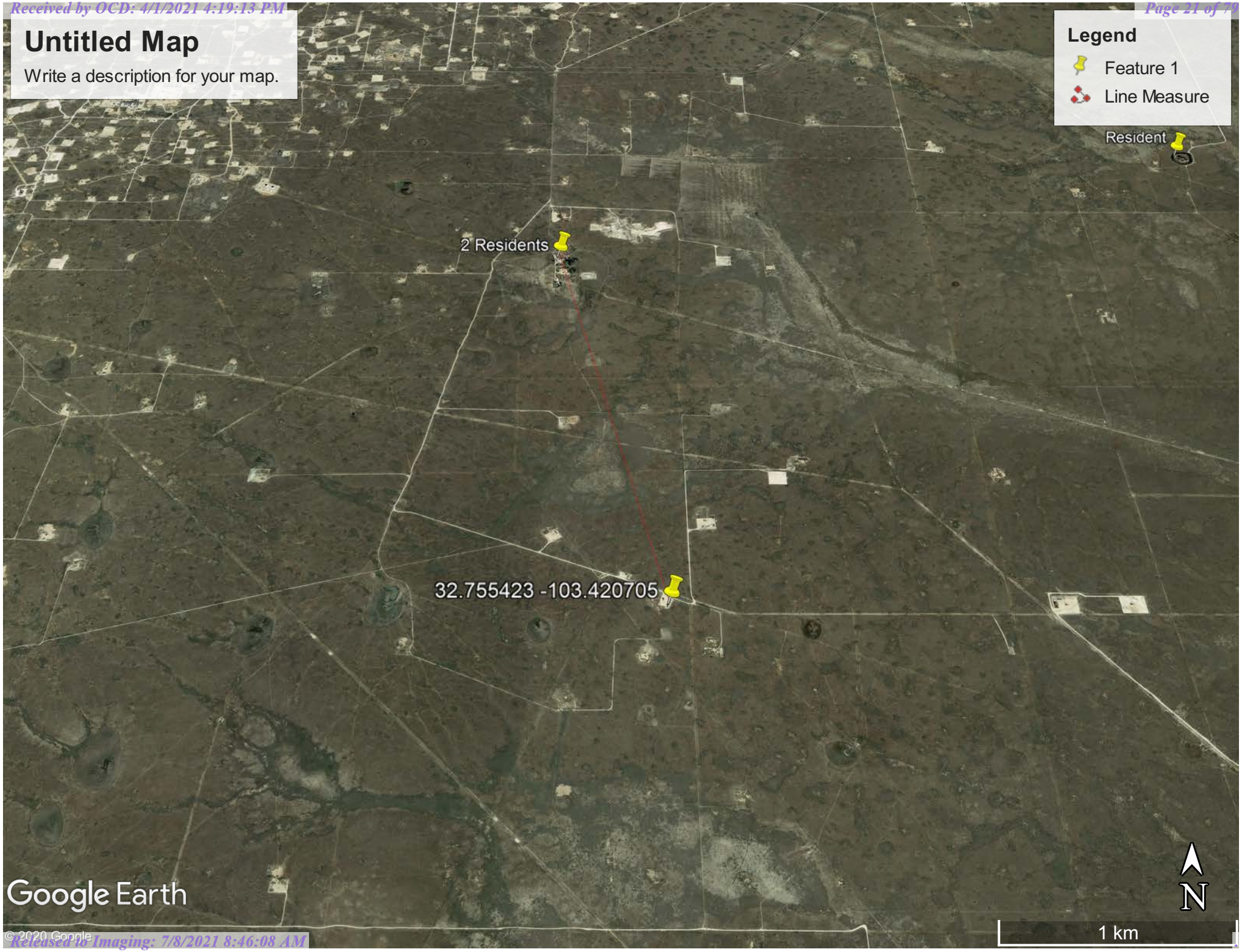
February 12, 2021

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

National Wetlands Inventory (NWI)
This page was produced by the NWI mapper

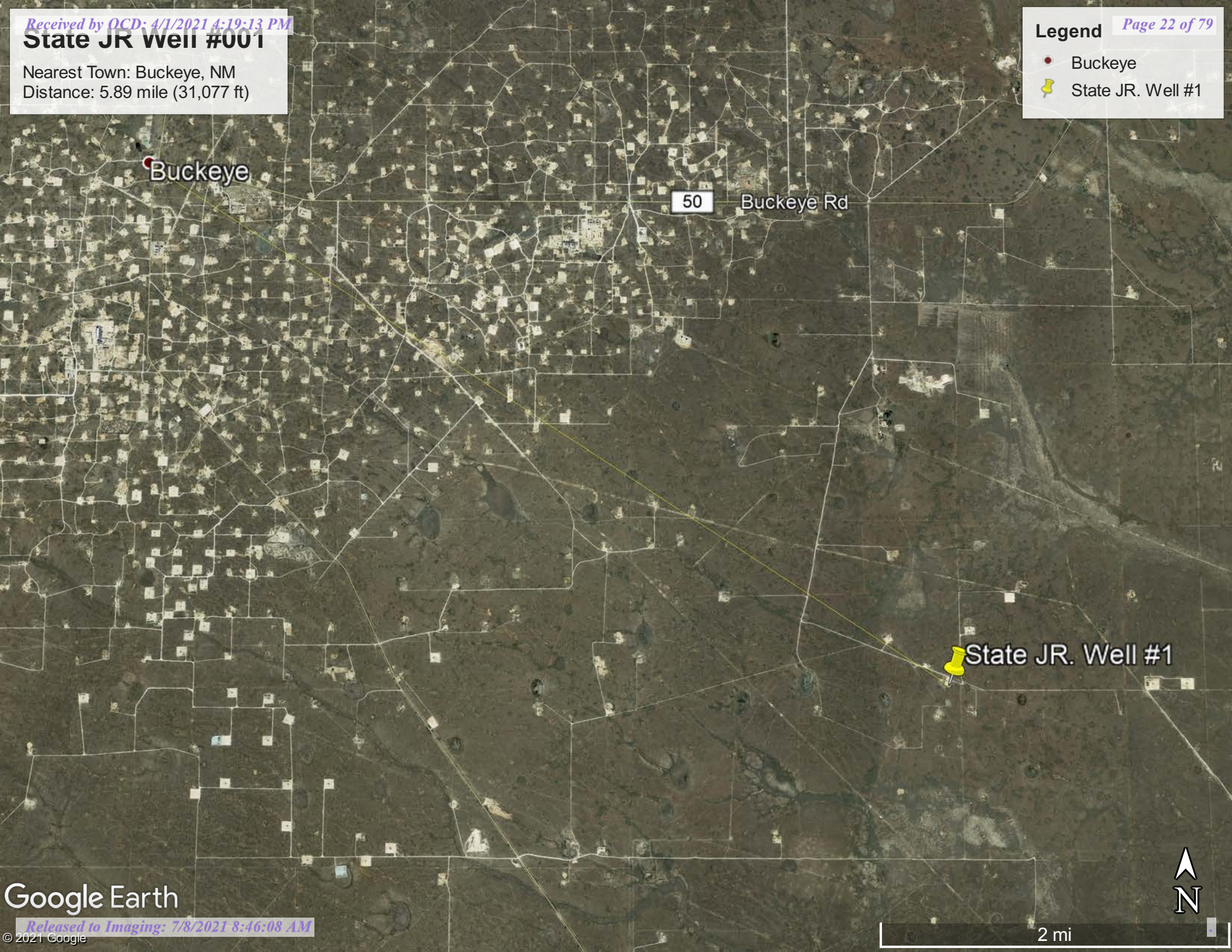

Untitled Map
Write a description for your map.
Legend
Feature 1
Line Measure
Resident
2 Residents
32.755423 -103.420705
Google Earth
© 2020 Google
N
1 km

State JR Well #001

Nearest Town: Buckeye, NM
Distance: 5.89 mile (31,077 ft)

Legend

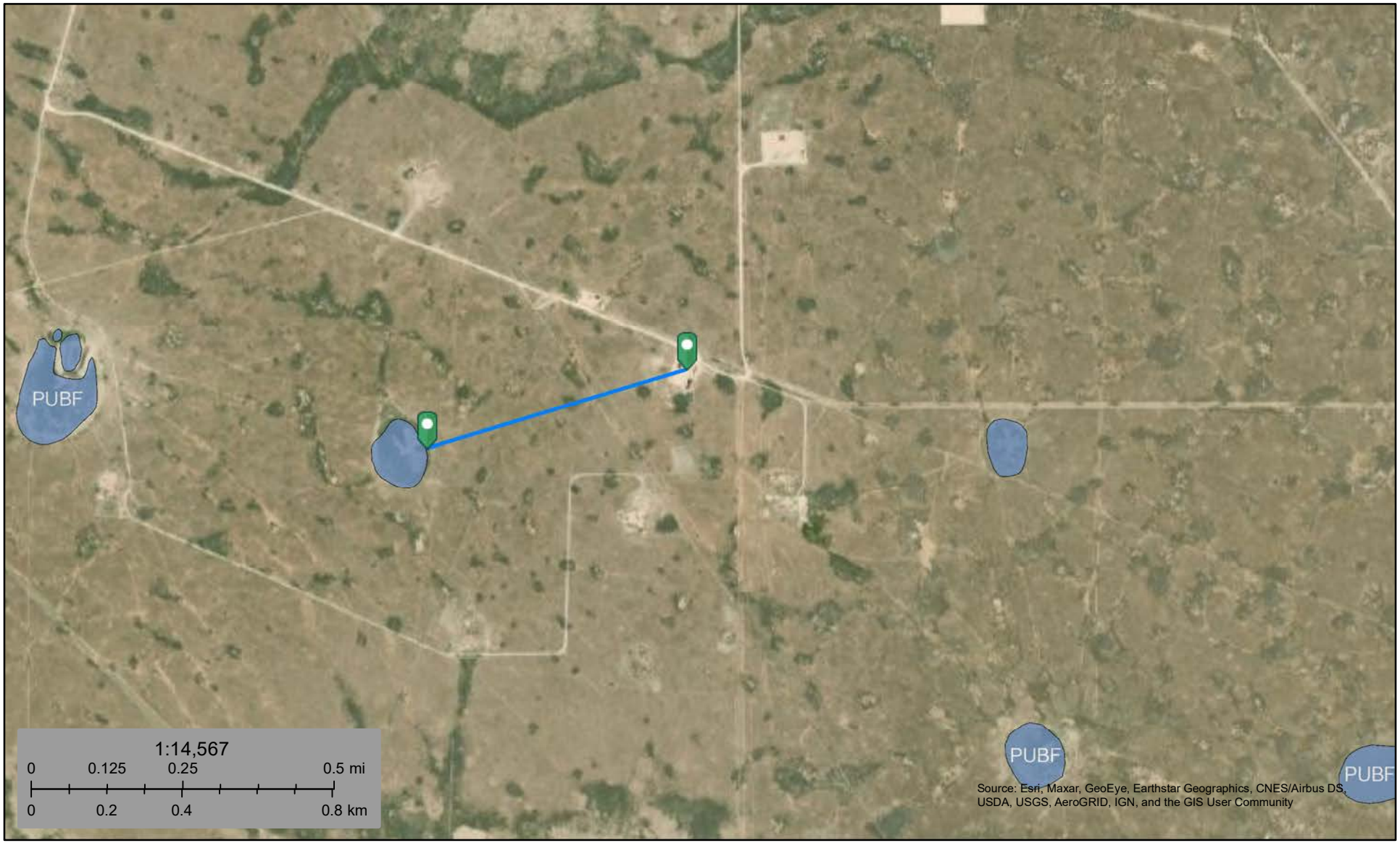
- Buckeye
- State JR. Well #1



U.S. Fish and Wildlife Service

National Wetlands Inventory

State JR. Well #1 Wetlands



January 26, 2021

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

National Wetlands Inventory (NWI)
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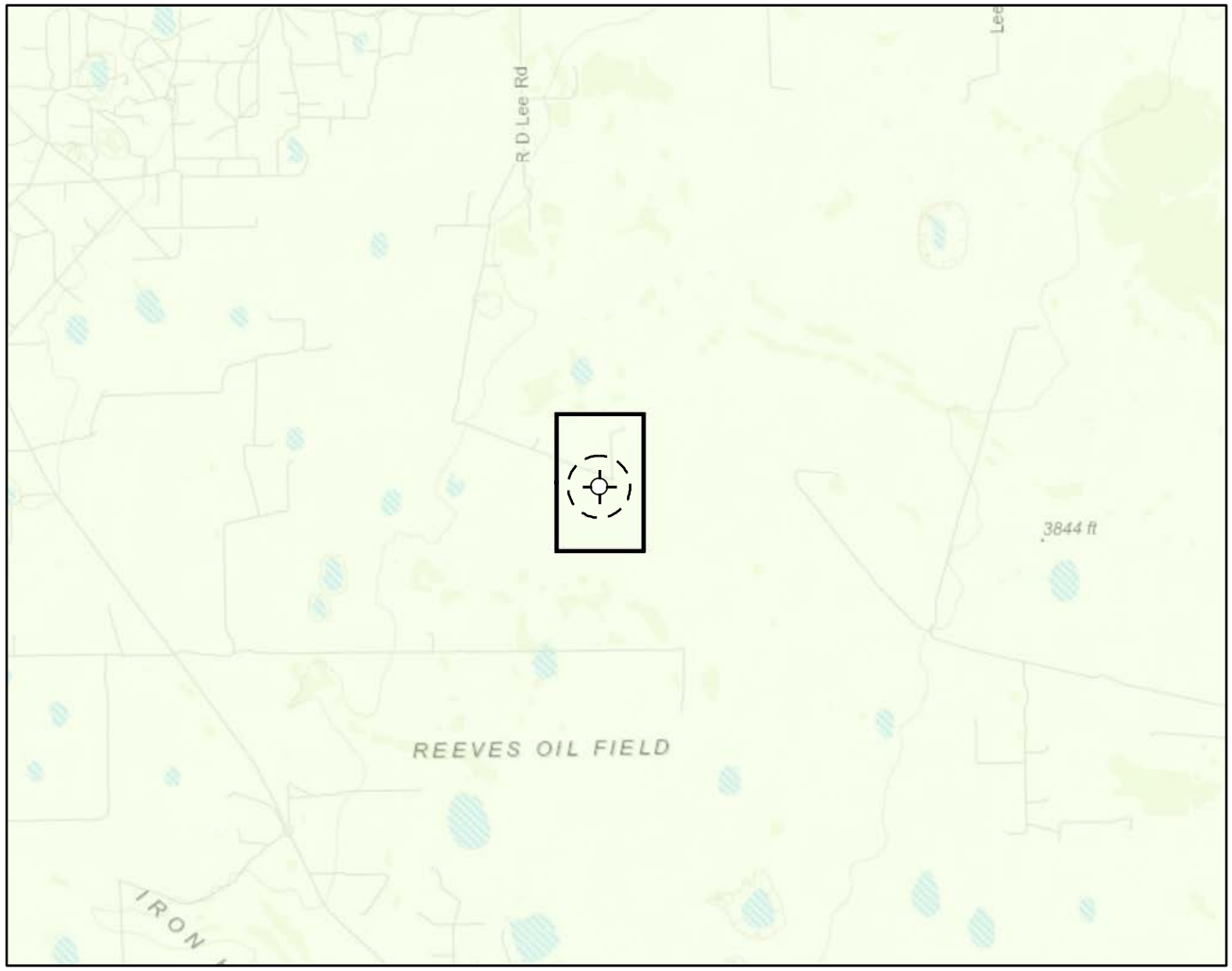


Karst Potential

- Critical
- High
- Medium
- Low

- Site
- Site Buffer (1,000 ft.)

Overview Map

0 0.25 0.5 1 mi

Detail Map

0 150 300 600 ft.

VERTEX

Map Center:
Lat/Long: 32.755348, -103.420610

NAD 1983 UTM Zone 13N
Date: Jan 27/21

N

Karst Potential
State JR Well #1

FIGURE:
X

CATENA RESOURCES

Geospatial data presented in this figure may be derived from external sources and Vertex does not assume any liability for inaccuracies. This figure is intended for reference use only and is not certified for legal, survey, or engineering purposes.

Note: Inset Map, ESRI 20XX; Overview Map: ESRI World Topographic

VERSATILITY. EXPERTISE.

Document Path: G:\1-Projects_US PROJECTS\Catena Resources Management\21E-00176\001 - State JR Well #1\Fig X Karst Potential State JR Well #1.mxd

National Flood Hazard Layer FIRMette

FEMA

103°25'33"W 32°45'35"N

103°24'56"W 32°45'4"N

Feet 1:6,000

0 250 500 1,000 1,500 2,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 2/12/2021 at 1:37 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Soil Map—Lea County, New Mexico

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features

- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Lea County, New Mexico
Survey Area Data: Version 17, Jun 8, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Feb 7, 2020—May 12, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
KU	Kimbrough-Lea complex, dry, 0 to 3 percent slopes	2.8	100.0%
Totals for Area of Interest		**2.8**	**100.0%**

Lea County, New Mexico

KU—Kimbrough-Lea complex, dry, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2tw46
Elevation: 2,500 to 4,800 feet
Mean annual precipitation: 14 to 16 inches
Mean annual air temperature: 57 to 63 degrees F
Frost-free period: 180 to 220 days
Farmland classification: Not prime farmland

Map Unit Composition

Kimbrough and similar soils: 45 percent
Lea and similar soils: 25 percent
Minor components: 30 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Kimbrough

Setting

Landform: Plains, playa rims
Down-slope shape: Linear, convex
Across-slope shape: Linear, concave
Parent material: Loamy eolian deposits derived from sedimentary rock

Typical profile

A - 0 to 3 inches: gravelly loam
Bw - 3 to 10 inches: loam
Bkkm1 - 10 to 16 inches: cemented material
Bkkm2 - 16 to 80 inches: cemented material

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: 4 to 18 inches to petrocalcic
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.01 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 95 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 1.0
Available water capacity: Very low (about 1.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Ecological site: R077DY049TX - Very Shallow 12-17" PZ
Hydric soil rating: No

Description of Lea

Setting

Landform: Plains
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Calcareous, loamy eolian deposits from the blackwater draw formation of pleistocene age over indurated caliche of pliocene age

Typical profile

A - 0 to 10 inches: loam
Bk - 10 to 18 inches: loam
Bkk - 18 to 26 inches: gravelly fine sandy loam
Bkkm - 26 to 80 inches: cemented material

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: 22 to 30 inches to petrocalcic
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 90 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 3.0
Available water capacity: Very low (about 2.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Ecological site: R077DY047TX - Sandy Loam 12-17" PZ
Hydric soil rating: No

Minor Components

Douro

Percent of map unit: 12 percent
Landform: Plains
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R077DY047TX - Sandy Loam 12-17" PZ
Other vegetative classification: Unnamed (G077DH000TX)
Hydric soil rating: No

Kenhill

Percent of map unit: 12 percent
Landform: Plains
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R077DY038TX - Clay Loam 12-17" PZ
Hydric soil rating: No

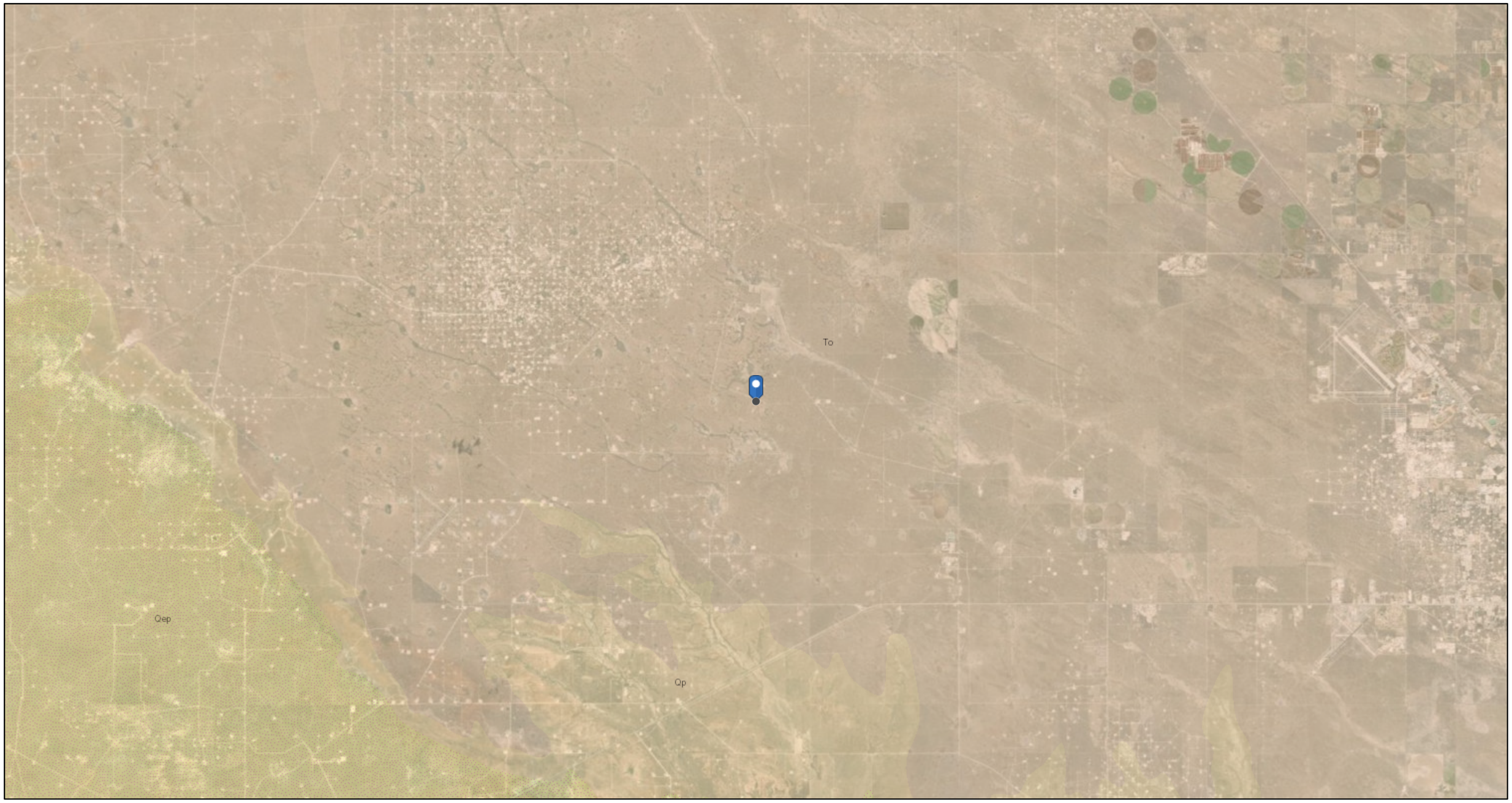
Spraberry

Percent of map unit: 6 percent
Landform: Plains, playa rims
Down-slope shape: Linear, convex
Across-slope shape: Linear
Ecological site: R077DY049TX - Very Shallow 12-17" PZ
Other vegetative classification: Unnamed (G077DH000TX)
Hydric soil rating: No

Data Source Information

Soil Survey Area: Lea County, New Mexico
Survey Area Data: Version 17, Jun 8, 2020

State JR Well #001



2/12/2021, 12:41:20 PM

Faults

- Fault, Exposed
- Fault, Intermittent
- Fault, Concealed
- Shere Zone

1:144,448

0 1.5 3 6 mi

0 2.25 4.5 9 km

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, NMBGMR

ATTACHMENT 4

Daily Site Visit Report

Client:	Catena Resources	Inspection Date:	1/27/2021
Site Location Name:	State JR #001	Report Run Date:	1/28/2021 10:59 PM
Client Contact Name:	Anthony Riggan	API #:	30-025-29348
Client Contact Phone #:	(713) 702-6817		
Unique Project ID	-State JR #001	Project Owner:	Anthony Riggan
Project Reference #	NRM1935349656	Project Manager:	Natalie Gordon

Summary of Times

Arrived at Site	1/27/2021 9:00 AM
Departed Site	1/27/2021 4:29 PM

Field Notes

13:00 Excavation completed where release occurred. Area east of equipment is a depth of 2’ but tapers up to ground level. Larger part of excavation is 7’ deep where a tank was removed to complete clean up

Next Steps & Recommendations

1. Send samples for lab analysis
2. Backfill excavated area
3. Closure report

Daily Site Visit Report

Site Photos

Viewing Direction: Southwest	**Viewing Direction**: North
	
7’ excavation area	Excavation east side of equipment
Viewing Direction: West	**Viewing Direction**: Southwest
	
Excavation east of equipment	Excavation east of equipment

Daily Site Visit Report

Viewing Direction: North	**Viewing Direction**: Northeast
	
West part of excavation	Excavation area
Viewing Direction: Northeast	**Viewing Direction**: South
	
Excavation area	Excavation area

Daily Site Visit Report

Viewing Direction: West

Excavation area

Daily Site Visit Report

Daily Site Visit Signature

Inspector: Monica Peppin

Signature:

ATTACHMENT 5

Natalie Gordon

From: Dhugal Hanton <vertexresourcegroupusa@gmail.com>
Sent: Monday, January 25, 2021 1:15 PM
To: Natalie Gordon
Subject: Fwd: NRM1935349656:State JR Well #1 - 48-hr Notification of Confirmatory Sampling

---------- Forwarded message ---------
From: **Dhugal Hanton** <vertexresourcegroupusa@gmail.com>
Date: Mon, Jan 25, 2021 at 1:14 PM
Subject: NRM1935349656:State JR Well #1 - 48-hr Notification of Confirmatory Sampling
To: Enviro, OCD, EMNRD <OCD.Enviro@state.nm.us>, <spills@slo.state.nm.us>, <rmann@slo.state.nm.us>, Boone, Brandon W. <bboone@slo.state.nm.us>

All,

Please accept this email as 48-hr notification that Vertex Resource Services has scheduled confirmatory sampling to be conducted at State JR Well #1 for the following release:

NRM1935349656 DOR: October 20, 2019

This work will be completed on behalf of Catena Resources.

On Wednesday, January 27, 2021, at approximately 12:00 p.m., Monica Peppin of Vertex will be onsite to conduct confirmatory sampling. Monica can be reached at 575-361-9880. If you need directions to the site, please do not hesitate to contact her. If you have any questions or concerns regarding this notification, please give me a call at 505-506-0040.

Thank you,
Natalie

Natalie Gordon
Project Manager

Vertex Resource Group Ltd.
213 S. Mesa Street
Carlsbad, NM 88220

P 575.725.5001 ext 709
C 505.506.0040
F

www.vertex.ca

ATTACHMENT 6

ATTACHMENT 7

Client Name: Catena Resources
Site Name: State JR Well #1
NM OCD Tracking Number: NRM1935349656
Project #: 21E-00176-001
Lab Report: 2101A20

Table 2. Confirmatory Sample Laboratory Results - Depth to Groundwater <50 feet

Sample Description			Petroleum Hydrocarbons							Inorganic
			Volatile		Extractable					
Sample ID	Depth (ft)	Sample Date	Benzene	BTEX (Total)	Gasoline Range Organics (GRO)	Diesel Range Organics (DRO)	Motor Oil Range Organics (MRO)	(GRO + DRO)	Total Petroleum Hydrocarbons (TPH)	Chloride
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
WS21-01	0-2	January 27, 2021	<0.024	<0.097	<4.9	<9.6	<48	<15.5	<63.5	<60
WS21-02	0-2	January 27, 2021	<0.024	<0.096	<4.8	<9.6	<48	<14.4	<62.4	<60
WS21-03	0-7	January 27, 2021	<0.025	<0.10	<5.0	<9.5	<48	<14.5	<62.5	<60
WS21-04	0-7	January 27, 2021	<0.024	<0.095	<4.7	<9.3	<46	<14.0	<60.0	<60
WS21-05	0-7	January 27, 2021	<0.023	<0.093	<4.7	<8.8	<44	<13.5	<57.5	<61
WS21-06	0-7	January 27, 2021	<0.025	<0.098	<4.9	<10	<50	<14.9	<64.9	<60
WS21-07	0-7	January 27, 2021	<0.024	<0.095	<4.8	<9.7	<48	<14.5	<62.5	<60
WS21-08	0-7	January 27, 2021	<0.025	<0.099	<4.9	<9.3	<47	<14.2	<61.2	<60
WS21-09	0-7	January 27, 2021	<0.024	<0.096	<4.8	<9.7	<49	<14.5	<63.5	<60
WS21-10	0-2	January 27, 2021	<0.025	<0.099	<4.9	<9.5	<48	<14.4	<62.4	<60
WS21-11	0-2	January 27, 2021	<0.024	<0.094	<4.7	<9.6	<48	<14.3	<62.3	<60
WS21-12	0-2	January 27, 2021	<0.024	<0.097	<4.9	<9.5	<48	<14.4	<62.4	<60
WS21-13	0-2	January 27, 2021	<0.024	<0.096	<4.8	<10	<50	<14.8	<64.8	<60
WS21-14	0-2	January 27, 2021	<0.024	<0.096	<4.8	<9.8	<49	<14.6	<63.6	<61
BS21-01	2	January 27, 2021	<0.024	<0.094	<4.7	<8.5	<43	<13.2	<56.2	<60
BS21-02	7	January 27, 2021	<0.024	<0.097	<4.9	<9.1	<45	<14.0	<59.0	<60
BS21-03	7	January 27, 2021	<0.023	<0.094	<4.7	<9.5	<48	<14.2	<62.2	<60
BS21-04	7	January 27, 2021	<0.023	<0.093	<4.7	<9.1	<45	<13.8	<58.8	<60
BS21-05	7	January 27, 2021	<0.023	<0.092	<4.6	<9.6	<48	<14.2	<62.2	<60
BS21-06	7	January 27, 2021	<0.024	<0.095	<4.8	<9.5	<47	<14.3	<61.3	<60
BS21-07	2	January 27, 2021	<0.023	<0.093	<4.7	<9.7	<49	<14.4	<63.4	<60
BS21-08	2	January 27, 2021	<0.025	<0.10	<5.0	<9.6	<48	<14.6	<62.6	<60
BS21-09	2	January 27, 2021	<0.025	<0.099	<5.0	<9.1	<45	<14.1	<59.1	<60

"-" - Not assessed/analyzed
Bold and gray shaded indicates exceedance outside of NM OCD Closure Criteria
Bold and green shaded indicates a re-sample of areas previously exceeding closure criteria

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: clients.hallenvironmental.com

February 03, 2021

Natalie Gordon

Vertex Resource Group Ltd.
3101 Boyd Drive
Carlsbad, NM 88220
TEL: (505) 506-0040
FAX

RE: State JR Well 1 OrderNo.: 2101A20

Dear Natalie Gordon:

Hall Environmental Analysis Laboratory received 23 sample(s) on 1/28/2021 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **2101A20**
Date Reported: **2/3/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** WS21-01 0-2
Project: State JR Well 1 **Collection Date:** 1/27/2021 10:30:00 AM
Lab ID: 2101A20-001 **Matrix:** SOIL **Received Date:** 1/28/2021 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	1/29/2021 11:18:21 AM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	1/29/2021 11:18:21 AM
Surr: DNOP	84.1	30.4-154		%Rec	1	1/29/2021 11:18:21 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/29/2021 7:59:28 PM
Surr: BFB	97.1	75.3-105		%Rec	1	1/29/2021 7:59:28 PM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.024		mg/Kg	1	1/29/2021 7:59:28 PM
Toluene	ND	0.049		mg/Kg	1	1/29/2021 7:59:28 PM
Ethylbenzene	ND	0.049		mg/Kg	1	1/29/2021 7:59:28 PM
Xylenes, Total	ND	0.097		mg/Kg	1	1/29/2021 7:59:28 PM
Surr: 4-Bromofluorobenzene	97.8	80-120		%Rec	1	1/29/2021 7:59:28 PM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	1/29/2021 10:06:07 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **2101A20**
Date Reported: **2/3/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** WS21-02 0-2
Project: State JR Well 1 **Collection Date:** 1/27/2021 10:35:00 AM
Lab ID: 2101A20-002 **Matrix:** SOIL **Received Date:** 1/28/2021 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	1/29/2021 12:30:11 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	1/29/2021 12:30:11 PM
Surr: DNOP	114	30.4-154		%Rec	1	1/29/2021 12:30:11 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	1/29/2021 9:10:22 PM
Surr: BFB	96.4	75.3-105		%Rec	1	1/29/2021 9:10:22 PM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.024		mg/Kg	1	1/29/2021 9:10:22 PM
Toluene	ND	0.048		mg/Kg	1	1/29/2021 9:10:22 PM
Ethylbenzene	ND	0.048		mg/Kg	1	1/29/2021 9:10:22 PM
Xylenes, Total	ND	0.096		mg/Kg	1	1/29/2021 9:10:22 PM
Surr: 4-Bromofluorobenzene	98.2	80-120		%Rec	1	1/29/2021 9:10:22 PM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	1/29/2021 10:43:20 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **2101A20**
Date Reported: **2/3/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** WS21-03 0-7
Project: State JR Well 1 **Collection Date:** 1/27/2021 10:40:00 AM
Lab ID: 2101A20-003 **Matrix:** SOIL **Received Date:** 1/28/2021 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	1/29/2021 12:54:13 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	1/29/2021 12:54:13 PM
Surr: DNOP	85.5	30.4-154		%Rec	1	1/29/2021 12:54:13 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	1/29/2021 10:21:08 PM
Surr: BFB	96.7	75.3-105		%Rec	1	1/29/2021 10:21:08 PM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.025		mg/Kg	1	1/29/2021 10:21:08 PM
Toluene	ND	0.050		mg/Kg	1	1/29/2021 10:21:08 PM
Ethylbenzene	ND	0.050		mg/Kg	1	1/29/2021 10:21:08 PM
Xylenes, Total	ND	0.10		mg/Kg	1	1/29/2021 10:21:08 PM
Surr: 4-Bromofluorobenzene	98.3	80-120		%Rec	1	1/29/2021 10:21:08 PM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	1/29/2021 10:55:45 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **2101A20**
Date Reported: **2/3/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** WS21-04 0-7
Project: State JR Well 1 **Collection Date:** 1/27/2021 10:45:00 AM
Lab ID: 2101A20-004 **Matrix:** SOIL **Received Date:** 1/28/2021 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	ND	9.3		mg/Kg	1	1/29/2021 1:18:06 PM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	1/29/2021 1:18:06 PM
Surr: DNOP	87.4	30.4-154		%Rec	1	1/29/2021 1:18:06 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	1/29/2021 10:44:49 PM
Surr: BFB	99.5	75.3-105		%Rec	1	1/29/2021 10:44:49 PM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.024		mg/Kg	1	1/29/2021 10:44:49 PM
Toluene	ND	0.047		mg/Kg	1	1/29/2021 10:44:49 PM
Ethylbenzene	ND	0.047		mg/Kg	1	1/29/2021 10:44:49 PM
Xylenes, Total	ND	0.095		mg/Kg	1	1/29/2021 10:44:49 PM
Surr: 4-Bromofluorobenzene	101	80-120		%Rec	1	1/29/2021 10:44:49 PM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	1/29/2021 11:08:09 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **2101A20**
Date Reported: **2/3/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** WS21-05 0-7
Project: State JR Well 1 **Collection Date:** 1/27/2021 10:50:00 AM
Lab ID: 2101A20-005 **Matrix:** SOIL **Received Date:** 1/28/2021 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	ND	8.8		mg/Kg	1	1/29/2021 1:42:11 PM
Motor Oil Range Organics (MRO)	ND	44		mg/Kg	1	1/29/2021 1:42:11 PM
Surr: DNOP	95.3	30.4-154		%Rec	1	1/29/2021 1:42:11 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	1/29/2021 11:08:20 PM
Surr: BFB	97.4	75.3-105		%Rec	1	1/29/2021 11:08:20 PM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.023		mg/Kg	1	1/29/2021 11:08:20 PM
Toluene	ND	0.047		mg/Kg	1	1/29/2021 11:08:20 PM
Ethylbenzene	ND	0.047		mg/Kg	1	1/29/2021 11:08:20 PM
Xylenes, Total	ND	0.093		mg/Kg	1	1/29/2021 11:08:20 PM
Surr: 4-Bromofluorobenzene	99.8	80-120		%Rec	1	1/29/2021 11:08:20 PM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	61		mg/Kg	20	1/29/2021 11:20:34 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **2101A20**
Date Reported: **2/3/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** WS21-06 0-7
Project: State JR Well 1 **Collection Date:** 1/27/2021 10:55:00 AM
Lab ID: 2101A20-006 **Matrix:** SOIL **Received Date:** 1/28/2021 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	1/29/2021 2:06:07 PM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	1/29/2021 2:06:07 PM
Surr: DNOP	89.9	30.4-154		%Rec	1	1/29/2021 2:06:07 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/29/2021 11:32:22 PM
Surr: BFB	97.2	75.3-105		%Rec	1	1/29/2021 11:32:22 PM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.025		mg/Kg	1	1/29/2021 11:32:22 PM
Toluene	ND	0.049		mg/Kg	1	1/29/2021 11:32:22 PM
Ethylbenzene	ND	0.049		mg/Kg	1	1/29/2021 11:32:22 PM
Xylenes, Total	ND	0.098		mg/Kg	1	1/29/2021 11:32:22 PM
Surr: 4-Bromofluorobenzene	98.3	80-120		%Rec	1	1/29/2021 11:32:22 PM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	1/29/2021 11:32:58 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **2101A20**
Date Reported: **2/3/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** WS21-07 0-7
Project: State JR Well 1 **Collection Date:** 1/27/2021 11:00:00 AM
Lab ID: 2101A20-007 **Matrix:** SOIL **Received Date:** 1/28/2021 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	1/29/2021 2:30:06 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	1/29/2021 2:30:06 PM
Surr: DNOP	90.7	30.4-154		%Rec	1	1/29/2021 2:30:06 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	1/29/2021 11:55:54 PM
Surr: BFB	97.8	75.3-105		%Rec	1	1/29/2021 11:55:54 PM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.024		mg/Kg	1	1/29/2021 11:55:54 PM
Toluene	ND	0.048		mg/Kg	1	1/29/2021 11:55:54 PM
Ethylbenzene	ND	0.048		mg/Kg	1	1/29/2021 11:55:54 PM
Xylenes, Total	ND	0.095		mg/Kg	1	1/29/2021 11:55:54 PM
Surr: 4-Bromofluorobenzene	100	80-120		%Rec	1	1/29/2021 11:55:54 PM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	1/29/2021 11:45:23 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **2101A20**
Date Reported: **2/3/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** WS21-08 0-7
Project: State JR Well 1 **Collection Date:** 1/27/2021 11:05:00 AM
Lab ID: 2101A20-008 **Matrix:** SOIL **Received Date:** 1/28/2021 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	ND	9.3		mg/Kg	1	1/29/2021 2:53:59 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	1/29/2021 2:53:59 PM
Surr: DNOP	94.2	30.4-154		%Rec	1	1/29/2021 2:53:59 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/30/2021 12:19:37 AM
Surr: BFB	96.3	75.3-105		%Rec	1	1/30/2021 12:19:37 AM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.025		mg/Kg	1	1/30/2021 12:19:37 AM
Toluene	ND	0.049		mg/Kg	1	1/30/2021 12:19:37 AM
Ethylbenzene	ND	0.049		mg/Kg	1	1/30/2021 12:19:37 AM
Xylenes, Total	ND	0.099		mg/Kg	1	1/30/2021 12:19:37 AM
Surr: 4-Bromofluorobenzene	99.6	80-120		%Rec	1	1/30/2021 12:19:37 AM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	1/29/2021 11:57:48 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **2101A20**
Date Reported: **2/3/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** WS21-09 0-7
Project: State JR Well 1 **Collection Date:** 1/27/2021 11:10:00 AM
Lab ID: 2101A20-009 **Matrix:** SOIL **Received Date:** 1/28/2021 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	1/29/2021 3:18:09 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	1/29/2021 3:18:09 PM
Surr: DNOP	95.1	30.4-154		%Rec	1	1/29/2021 3:18:09 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	1/30/2021 12:43:06 AM
Surr: BFB	96.9	75.3-105		%Rec	1	1/30/2021 12:43:06 AM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.024		mg/Kg	1	1/30/2021 12:43:06 AM
Toluene	ND	0.048		mg/Kg	1	1/30/2021 12:43:06 AM
Ethylbenzene	ND	0.048		mg/Kg	1	1/30/2021 12:43:06 AM
Xylenes, Total	ND	0.096		mg/Kg	1	1/30/2021 12:43:06 AM
Surr: 4-Bromofluorobenzene	97.8	80-120		%Rec	1	1/30/2021 12:43:06 AM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	1/30/2021 12:10:13 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **2101A20**
Date Reported: **2/3/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** WS21-10 0-2
Project: State JR Well 1 **Collection Date:** 1/27/2021 11:15:00 AM
Lab ID: 2101A20-010 **Matrix:** SOIL **Received Date:** 1/28/2021 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	1/29/2021 3:42:08 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	1/29/2021 3:42:08 PM
Surr: DNOP	90.6	30.4-154		%Rec	1	1/29/2021 3:42:08 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/30/2021 1:53:57 AM
Surr: BFB	96.1	75.3-105		%Rec	1	1/30/2021 1:53:57 AM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.025		mg/Kg	1	1/30/2021 1:53:57 AM
Toluene	ND	0.049		mg/Kg	1	1/30/2021 1:53:57 AM
Ethylbenzene	ND	0.049		mg/Kg	1	1/30/2021 1:53:57 AM
Xylenes, Total	ND	0.099		mg/Kg	1	1/30/2021 1:53:57 AM
Surr: 4-Bromofluorobenzene	98.0	80-120		%Rec	1	1/30/2021 1:53:57 AM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	2/1/2021 12:39:22 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **2101A20**
Date Reported: **2/3/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** WS21-11 0-2
Project: State JR Well 1 **Collection Date:** 1/27/2021 11:20:00 AM
Lab ID: 2101A20-011 **Matrix:** SOIL **Received Date:** 1/28/2021 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	1/29/2021 4:06:15 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	1/29/2021 4:06:15 PM
Surr: DNOP	101	30.4-154		%Rec	1	1/29/2021 4:06:15 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	1/30/2021 2:17:24 AM
Surr: BFB	95.6	75.3-105		%Rec	1	1/30/2021 2:17:24 AM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.024		mg/Kg	1	1/30/2021 2:17:24 AM
Toluene	ND	0.047		mg/Kg	1	1/30/2021 2:17:24 AM
Ethylbenzene	ND	0.047		mg/Kg	1	1/30/2021 2:17:24 AM
Xylenes, Total	ND	0.094		mg/Kg	1	1/30/2021 2:17:24 AM
Surr: 4-Bromofluorobenzene	97.2	80-120		%Rec	1	1/30/2021 2:17:24 AM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	2/1/2021 12:51:46 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **2101A20**
Date Reported: **2/3/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** WS21-12 0-2
Project: State JR Well 1 **Collection Date:** 1/27/2021 11:25:00 AM
Lab ID: 2101A20-012 **Matrix:** SOIL **Received Date:** 1/28/2021 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	1/29/2021 4:30:14 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	1/29/2021 4:30:14 PM
Surr: DNOP	90.3	30.4-154		%Rec	1	1/29/2021 4:30:14 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/30/2021 2:40:53 AM
Surr: BFB	96.6	75.3-105		%Rec	1	1/30/2021 2:40:53 AM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.024		mg/Kg	1	1/30/2021 2:40:53 AM
Toluene	ND	0.049		mg/Kg	1	1/30/2021 2:40:53 AM
Ethylbenzene	ND	0.049		mg/Kg	1	1/30/2021 2:40:53 AM
Xylenes, Total	ND	0.097		mg/Kg	1	1/30/2021 2:40:53 AM
Surr: 4-Bromofluorobenzene	98.5	80-120		%Rec	1	1/30/2021 2:40:53 AM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	2/1/2021 1:04:10 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **2101A20**
Date Reported: **2/3/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** WS21-13 0-2
Project: State JR Well 1 **Collection Date:** 1/27/2021 11:30:00 AM
Lab ID: 2101A20-013 **Matrix:** SOIL **Received Date:** 1/28/2021 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	1/29/2021 4:54:20 PM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	1/29/2021 4:54:20 PM
Surr: DNOP	97.5	30.4-154		%Rec	1	1/29/2021 4:54:20 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	1/30/2021 3:04:23 AM
Surr: BFB	98.6	75.3-105		%Rec	1	1/30/2021 3:04:23 AM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.024		mg/Kg	1	1/30/2021 3:04:23 AM
Toluene	ND	0.048		mg/Kg	1	1/30/2021 3:04:23 AM
Ethylbenzene	ND	0.048		mg/Kg	1	1/30/2021 3:04:23 AM
Xylenes, Total	ND	0.096		mg/Kg	1	1/30/2021 3:04:23 AM
Surr: 4-Bromofluorobenzene	101	80-120		%Rec	1	1/30/2021 3:04:23 AM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	2/1/2021 1:16:34 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **2101A20**
Date Reported: **2/3/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** WS21-14 0-2
Project: State JR Well 1 **Collection Date:** 1/27/2021 11:35:00 AM
Lab ID: 2101A20-014 **Matrix:** SOIL **Received Date:** 1/28/2021 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	1/29/2021 5:18:15 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	1/29/2021 5:18:15 PM
Surr: DNOP	86.3	30.4-154		%Rec	1	1/29/2021 5:18:15 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	1/30/2021 3:27:56 AM
Surr: BFB	98.1	75.3-105		%Rec	1	1/30/2021 3:27:56 AM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.024		mg/Kg	1	1/30/2021 3:27:56 AM
Toluene	ND	0.048		mg/Kg	1	1/30/2021 3:27:56 AM
Ethylbenzene	ND	0.048		mg/Kg	1	1/30/2021 3:27:56 AM
Xylenes, Total	ND	0.096		mg/Kg	1	1/30/2021 3:27:56 AM
Surr: 4-Bromofluorobenzene	101	80-120		%Rec	1	1/30/2021 3:27:56 AM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	61		mg/Kg	20	2/1/2021 1:53:48 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **2101A20**
Date Reported: **2/3/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** BS21-01 2
Project: State JR Well 1 **Collection Date:** 1/27/2021 11:40:00 AM
Lab ID: 2101A20-015 **Matrix:** SOIL **Received Date:** 1/28/2021 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	ND	8.5		mg/Kg	1	1/29/2021 5:42:25 PM
Motor Oil Range Organics (MRO)	ND	43		mg/Kg	1	1/29/2021 5:42:25 PM
Surr: DNOP	102	30.4-154		%Rec	1	1/29/2021 5:42:25 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	1/30/2021 3:51:29 AM
Surr: BFB	97.2	75.3-105		%Rec	1	1/30/2021 3:51:29 AM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.024		mg/Kg	1	1/30/2021 3:51:29 AM
Toluene	ND	0.047		mg/Kg	1	1/30/2021 3:51:29 AM
Ethylbenzene	ND	0.047		mg/Kg	1	1/30/2021 3:51:29 AM
Xylenes, Total	ND	0.094		mg/Kg	1	1/30/2021 3:51:29 AM
Surr: 4-Bromofluorobenzene	99.9	80-120		%Rec	1	1/30/2021 3:51:29 AM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	2/1/2021 2:06:12 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **2101A20**
Date Reported: **2/3/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** BS21-02 7
Project: State JR Well 1 **Collection Date:** 1/27/2021 11:45:00 AM
Lab ID: 2101A20-016 **Matrix:** SOIL **Received Date:** 1/28/2021 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	ND	9.1		mg/Kg	1	1/29/2021 6:06:23 PM
Motor Oil Range Organics (MRO)	ND	45		mg/Kg	1	1/29/2021 6:06:23 PM
Surr: DNOP	84.9	30.4-154		%Rec	1	1/29/2021 6:06:23 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/30/2021 4:14:59 AM
Surr: BFB	96.6	75.3-105		%Rec	1	1/30/2021 4:14:59 AM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.024		mg/Kg	1	1/30/2021 4:14:59 AM
Toluene	ND	0.049		mg/Kg	1	1/30/2021 4:14:59 AM
Ethylbenzene	ND	0.049		mg/Kg	1	1/30/2021 4:14:59 AM
Xylenes, Total	ND	0.097		mg/Kg	1	1/30/2021 4:14:59 AM
Surr: 4-Bromofluorobenzene	98.2	80-120		%Rec	1	1/30/2021 4:14:59 AM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	2/1/2021 2:18:37 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **2101A20**
Date Reported: **2/3/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** BS21-03 7
Project: State JR Well 1 **Collection Date:** 1/27/2021 11:50:00 AM
Lab ID: 2101A20-017 **Matrix:** SOIL **Received Date:** 1/28/2021 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	1/29/2021 6:30:28 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	1/29/2021 6:30:28 PM
Surr: DNOP	94.3	30.4-154		%Rec	1	1/29/2021 6:30:28 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	1/30/2021 4:38:31 AM
Surr: BFB	97.6	75.3-105		%Rec	1	1/30/2021 4:38:31 AM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.023		mg/Kg	1	1/30/2021 4:38:31 AM
Toluene	ND	0.047		mg/Kg	1	1/30/2021 4:38:31 AM
Ethylbenzene	ND	0.047		mg/Kg	1	1/30/2021 4:38:31 AM
Xylenes, Total	ND	0.094		mg/Kg	1	1/30/2021 4:38:31 AM
Surr: 4-Bromofluorobenzene	100	80-120		%Rec	1	1/30/2021 4:38:31 AM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	2/1/2021 2:31:02 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **2101A20**
Date Reported: **2/3/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** BS21-04 7
Project: State JR Well 1 **Collection Date:** 1/27/2021 11:55:00 AM
Lab ID: 2101A20-018 **Matrix:** SOIL **Received Date:** 1/28/2021 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	ND	9.1		mg/Kg	1	1/29/2021 6:54:25 PM
Motor Oil Range Organics (MRO)	ND	45		mg/Kg	1	1/29/2021 6:54:25 PM
Surr: DNOP	74.7	30.4-154		%Rec	1	1/29/2021 6:54:25 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	1/30/2021 5:02:03 AM
Surr: BFB	94.9	75.3-105		%Rec	1	1/30/2021 5:02:03 AM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.023		mg/Kg	1	1/30/2021 5:02:03 AM
Toluene	ND	0.047		mg/Kg	1	1/30/2021 5:02:03 AM
Ethylbenzene	ND	0.047		mg/Kg	1	1/30/2021 5:02:03 AM
Xylenes, Total	ND	0.093		mg/Kg	1	1/30/2021 5:02:03 AM
Surr: 4-Bromofluorobenzene	96.6	80-120		%Rec	1	1/30/2021 5:02:03 AM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	2/1/2021 2:43:25 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **2101A20**
Date Reported: **2/3/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** BS21-05 7
Project: State JR Well 1 **Collection Date:** 1/27/2021 12:00:00 PM
Lab ID: 2101A20-019 **Matrix:** SOIL **Received Date:** 1/28/2021 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	1/29/2021 7:18:39 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	1/29/2021 7:18:39 PM
Surr: DNOP	87.1	30.4-154		%Rec	1	1/29/2021 7:18:39 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	1/30/2021 5:26:05 AM
Surr: BFB	96.5	75.3-105		%Rec	1	1/30/2021 5:26:05 AM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.023		mg/Kg	1	1/30/2021 5:26:05 AM
Toluene	ND	0.046		mg/Kg	1	1/30/2021 5:26:05 AM
Ethylbenzene	ND	0.046		mg/Kg	1	1/30/2021 5:26:05 AM
Xylenes, Total	ND	0.092		mg/Kg	1	1/30/2021 5:26:05 AM
Surr: 4-Bromofluorobenzene	98.4	80-120		%Rec	1	1/30/2021 5:26:05 AM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	2/1/2021 2:55:50 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **2101A20**
Date Reported: **2/3/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** BS21-06 7
Project: State JR Well 1 **Collection Date:** 1/27/2021 12:05:00 PM
Lab ID: 2101A20-020 **Matrix:** SOIL **Received Date:** 1/28/2021 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **mb**
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	2/1/2021 4:44:46 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	2/1/2021 4:44:46 PM
Surr: DNOP	105	30.4-154		%Rec	1	2/1/2021 4:44:46 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	1/30/2021 7:47:43 AM
Surr: BFB	97.2	75.3-105		%Rec	1	1/30/2021 7:47:43 AM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.024		mg/Kg	1	1/30/2021 7:47:43 AM
Toluene	ND	0.048		mg/Kg	1	1/30/2021 7:47:43 AM
Ethylbenzene	ND	0.048		mg/Kg	1	1/30/2021 7:47:43 AM
Xylenes, Total	ND	0.095		mg/Kg	1	1/30/2021 7:47:43 AM
Surr: 4-Bromofluorobenzene	99.8	80-120		%Rec	1	1/30/2021 7:47:43 AM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	2/1/2021 3:08:14 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **2101A20**
Date Reported: **2/3/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** BS21-07 2
Project: State JR Well 1 **Collection Date:** 1/27/2021 12:10:00 PM
Lab ID: 2101A20-021 **Matrix:** SOIL **Received Date:** 1/28/2021 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **mb**
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	2/1/2021 5:57:06 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	2/1/2021 5:57:06 PM
Surr: DNOP	97.2	30.4-154		%Rec	1	2/1/2021 5:57:06 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	1/30/2021 8:11:11 AM
Surr: BFB	96.6	75.3-105		%Rec	1	1/30/2021 8:11:11 AM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.023		mg/Kg	1	1/30/2021 8:11:11 AM
Toluene	ND	0.047		mg/Kg	1	1/30/2021 8:11:11 AM
Ethylbenzene	ND	0.047		mg/Kg	1	1/30/2021 8:11:11 AM
Xylenes, Total	ND	0.093		mg/Kg	1	1/30/2021 8:11:11 AM
Surr: 4-Bromofluorobenzene	99.6	80-120		%Rec	1	1/30/2021 8:11:11 AM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	59		mg/Kg	20	2/1/2021 3:20:38 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2101A20**
Date Reported: **2/3/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** BS21-08 2
Project: State JR Well 1 **Collection Date:** 1/27/2021 12:15:00 PM
Lab ID: 2101A20-022 **Matrix:** SOIL **Received Date:** 1/28/2021 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **mb**
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	2/1/2021 6:20:59 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	2/1/2021 6:20:59 PM
Surr: DNOP	116	30.4-154		%Rec	1	2/1/2021 6:20:59 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	1/30/2021 9:21:41 AM
Surr: BFB	94.5	75.3-105		%Rec	1	1/30/2021 9:21:41 AM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.025		mg/Kg	1	1/30/2021 9:21:41 AM
Toluene	ND	0.050		mg/Kg	1	1/30/2021 9:21:41 AM
Ethylbenzene	ND	0.050		mg/Kg	1	1/30/2021 9:21:41 AM
Xylenes, Total	ND	0.10		mg/Kg	1	1/30/2021 9:21:41 AM
Surr: 4-Bromofluorobenzene	98.7	80-120		%Rec	1	1/30/2021 9:21:41 AM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	2/1/2021 3:33:03 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

Analytical Report
Lab Order **2101A20**
Date Reported: **2/3/2021**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd. **Client Sample ID:** BS21-09 2
Project: State JR Well 1 **Collection Date:** 1/27/2021 12:20:00 PM
Lab ID: 2101A20-023 **Matrix:** SOIL **Received Date:** 1/28/2021 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **mb**
Diesel Range Organics (DRO)	ND	9.1		mg/Kg	1	2/1/2021 6:44:56 PM
Motor Oil Range Organics (MRO)	ND	45		mg/Kg	1	2/1/2021 6:44:56 PM
Surr: DNOP	110	30.4-154		%Rec	1	2/1/2021 6:44:56 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	1/30/2021 10:32:41 AM
Surr: BFB	93.6	75.3-105		%Rec	1	1/30/2021 10:32:41 AM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.025		mg/Kg	1	1/30/2021 10:32:41 AM
Toluene	ND	0.050		mg/Kg	1	1/30/2021 10:32:41 AM
Ethylbenzene	ND	0.050		mg/Kg	1	1/30/2021 10:32:41 AM
Xylenes, Total	ND	0.099		mg/Kg	1	1/30/2021 10:32:41 AM
Surr: 4-Bromofluorobenzene	97.3	80-120		%Rec	1	1/30/2021 10:32:41 AM
EPA METHOD 300.0: ANIONS						Analyst: **VP**
Chloride	ND	60		mg/Kg	20	2/1/2021 3:45:27 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2101A20**

03-Feb-21

Client: Vertex Resource Group Ltd.

Project: State JR Well 1

Sample ID: **MB-57808** SampType: **MBLK** TestCode: **EPA Method 300.0: Anions**

Client ID: **PBS** Batch ID: **57808** RunNo: **74942**

Prep Date: **1/29/2021** Analysis Date: **1/29/2021** SeqNo: **2645957** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: **LCS-57808** SampType: **LCS** TestCode: **EPA Method 300.0: Anions**

Client ID: **LCSS** Batch ID: **57808** RunNo: **74942**

Prep Date: **1/29/2021** Analysis Date: **1/29/2021** SeqNo: **2645958** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	15	1.5	15.00	0	98.7	90	110			

Sample ID: **MB-57824** SampType: **MBLK** TestCode: **EPA Method 300.0: Anions**

Client ID: **PBS** Batch ID: **57824** RunNo: **74979**

Prep Date: **2/1/2021** Analysis Date: **2/1/2021** SeqNo: **2647186** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: **LCS-57824** SampType: **LCS** TestCode: **EPA Method 300.0: Anions**

Client ID: **LCSS** Batch ID: **57824** RunNo: **74979**

Prep Date: **2/1/2021** Analysis Date: **2/1/2021** SeqNo: **2647187** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	94.9	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2101A20**
03-Feb-21

Client: Vertex Resource Group Ltd.
Project: State JR Well 1

Sample ID: **MB-57786**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **57786**	RunNo: **74955**
Prep Date: **1/28/2021**	Analysis Date: **1/29/2021**	SeqNo: **2645996** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	11		10.00		107	30.4	154			

Sample ID: **LCS-57786**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **57786**	RunNo: **74955**
Prep Date: **1/28/2021**	Analysis Date: **1/29/2021**	SeqNo: **2645997** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	48	10	50.00	0	95.2	68.9	141			
Surr: DNOP	4.7		5.000		93.6	30.4	154			

Sample ID: **2101A20-001AMS**	SampType: **MS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **WS21-01 0-2**	Batch ID: **57786**	RunNo: **74955**
Prep Date: **1/28/2021**	Analysis Date: **1/29/2021**	SeqNo: **2646001** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	41	8.7	43.71	0	94.4	15	184			
Surr: DNOP	4.3		4.371		99.1	30.4	154			

Sample ID: **2101A20-001AMSD**	SampType: **MSD**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **WS21-01 0-2**	Batch ID: **57786**	RunNo: **74955**
Prep Date: **1/28/2021**	Analysis Date: **1/29/2021**	SeqNo: **2646002** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	40	9.5	47.57	0	84.2	15	184	2.95	23.9	
Surr: DNOP	4.0		4.757		83.4	30.4	154	0	0	

Sample ID: **MB-57811**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **57811**	RunNo: **74965**
Prep Date: **1/30/2021**	Analysis Date: **2/1/2021**	SeqNo: **2647276** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	10		10.00		104	30.4	154			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2101A20**
03-Feb-21

Client: Vertex Resource Group Ltd.
Project: State JR Well 1

Sample ID: **LCS-57811** SampType: **LCS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS** Batch ID: **57811** RunNo: **74965**
Prep Date: **1/30/2021** Analysis Date: **2/1/2021** SeqNo: **2647277** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	53	10	50.00	0	106	68.9	141			
Surr: DNOP	5.0		5.000		99.4	30.4	154			

Sample ID: **2101A20-020AMS** SampType: **MS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **BS21-06 7** Batch ID: **57811** RunNo: **74965**
Prep Date: **1/30/2021** Analysis Date: **2/1/2021** SeqNo: **2647278** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	53	9.8	49.16	0	107	15	184			
Surr: DNOP	5.0		4.916		101	30.4	154			

Sample ID: **2101A20-020AMSD** SampType: **MSD** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **BS21-06 7** Batch ID: **57811** RunNo: **74965**
Prep Date: **1/30/2021** Analysis Date: **2/1/2021** SeqNo: **2647279** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	49	9.5	47.30	0	103	15	184	8.07	23.9	
Surr: DNOP	4.6		4.730		96.5	30.4	154	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2101A20**
03-Feb-21

Client: Vertex Resource Group Ltd.
Project: State JR Well 1

Sample ID: **2101a20-002ams** SampType: **MS** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **WS21-02 0-2** Batch ID: **57782** RunNo: **74945**
Prep Date: **1/28/2021** Analysis Date: **1/29/2021** SeqNo: **2646047** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	27	4.8	24.18	0	112	61.3	114			
Surr: BFB	1000		967.1		108	75.3	105			S

Sample ID: **2101a20-002amsd** SampType: **MSD** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **WS21-02 0-2** Batch ID: **57782** RunNo: **74945**
Prep Date: **1/28/2021** Analysis Date: **1/29/2021** SeqNo: **2646048** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	26	4.7	23.43	0	112	61.3	114	2.39	20	
Surr: BFB	1000		937.2		112	75.3	105	0	0	S

Sample ID: **2101a20-022ams** SampType: **MS** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **BS21-08 2** Batch ID: **57789** RunNo: **74945**
Prep Date: **1/28/2021** Analysis Date: **1/30/2021** SeqNo: **2646069** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	27	4.7	23.52	0	117	61.3	114			S
Surr: BFB	1000		940.7		107	75.3	105			S

Sample ID: **2101a20-022amsd** SampType: **MSD** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **BS21-08 2** Batch ID: **57789** RunNo: **74945**
Prep Date: **1/28/2021** Analysis Date: **1/30/2021** SeqNo: **2646070** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	27	4.8	23.76	0	112	61.3	114	3.08	20	
Surr: BFB	1000		950.6		109	75.3	105	0	0	S

Sample ID: **lcs-57782** SampType: **LCS** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS** Batch ID: **57782** RunNo: **74945**
Prep Date: **1/28/2021** Analysis Date: **1/29/2021** SeqNo: **2646076** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	27	5.0	25.00	0	107	80	120			
Surr: BFB	1100		1000		110	75.3	105			S

Sample ID: **lcs-57789** SampType: **LCS** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS** Batch ID: **57789** RunNo: **74945**
Prep Date: **1/28/2021** Analysis Date: **1/30/2021** SeqNo: **2646077** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2101A20**
03-Feb-21

Client: Vertex Resource Group Ltd.
Project: State JR Well 1

Sample ID: **lcs-57789** SampType: **LCS** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS** Batch ID: **57789** RunNo: **74945**
Prep Date: **1/28/2021** Analysis Date: **1/30/2021** SeqNo: **2646077** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	24	5.0	25.00	0	96.9	80	120			
Surr: BFB	1100		1000		106	75.3	105			S

Sample ID: **mb-57782** SampType: **MBLK** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS** Batch ID: **57782** RunNo: **74945**
Prep Date: **1/28/2021** Analysis Date: **1/29/2021** SeqNo: **2646080** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	990		1000		99.2	75.3	105			

Sample ID: **mb-57789** SampType: **MBLK** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS** Batch ID: **57789** RunNo: **74945**
Prep Date: **1/28/2021** Analysis Date: **1/30/2021** SeqNo: **2646081** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	970		1000		97.1	75.3	105			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2101A20**
03-Feb-21

Client: Vertex Resource Group Ltd.
Project: State JR Well 1

Sample ID: **2101a20-001ams**	SampType: **MS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **WS21-01 0-2**	Batch ID: **57782**	RunNo: **74945**
Prep Date: **1/28/2021**	Analysis Date: **1/29/2021**	SeqNo: **2646098** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.95	0.024	0.9699	0	98.1	76.3	120			
Toluene	0.99	0.048	0.9699	0	102	78.5	120			
Ethylbenzene	0.99	0.048	0.9699	0	102	78.1	124			
Xylenes, Total	3.0	0.097	2.910	0	103	79.3	125			
Surr: 4-Bromofluorobenzene	0.96		0.9699		99.2	80	120			

Sample ID: **2101a20-001amsd**	SampType: **MSD**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **WS21-01 0-2**	Batch ID: **57782**	RunNo: **74945**
Prep Date: **1/28/2021**	Analysis Date: **1/29/2021**	SeqNo: **2646099** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.95	0.024	0.9606	0	99.4	76.3	120	0.392	20	
Toluene	0.99	0.048	0.9606	0	103	78.5	120	0.428	20	
Ethylbenzene	0.99	0.048	0.9606	0	103	78.1	124	0.0450	20	
Xylenes, Total	3.0	0.096	2.882	0	104	79.3	125	0.0251	20	
Surr: 4-Bromofluorobenzene	0.96		0.9606		100	80	120	0	0	

Sample ID: **2101a20-021ams**	SampType: **MS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **BS21-07 2**	Batch ID: **57789**	RunNo: **74945**
Prep Date: **1/28/2021**	Analysis Date: **1/30/2021**	SeqNo: **2646120** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.0	0.023	0.9285	0	109	76.3	120			
Toluene	1.1	0.046	0.9285	0	113	78.5	120			
Ethylbenzene	1.1	0.046	0.9285	0	114	78.1	124			
Xylenes, Total	3.2	0.093	2.786	0	114	79.3	125			
Surr: 4-Bromofluorobenzene	0.96		0.9285		103	80	120			

Sample ID: **2101a20-021amsd**	SampType: **MSD**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **BS21-07 2**	Batch ID: **57789**	RunNo: **74945**
Prep Date: **1/28/2021**	Analysis Date: **1/30/2021**	SeqNo: **2646121** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.0	0.024	0.9747	0	106	76.3	120	1.53	20	
Toluene	1.1	0.049	0.9747	0	108	78.5	120	0.277	20	
Ethylbenzene	1.1	0.049	0.9747	0	108	78.1	124	0.514	20	
Xylenes, Total	3.2	0.097	2.924	0	108	79.3	125	0.0145	20	
Surr: 4-Bromofluorobenzene	0.99		0.9747		102	80	120	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2101A20**
03-Feb-21

Client: Vertex Resource Group Ltd.
Project: State JR Well 1

Sample ID: **LCS-57782**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS**	Batch ID: **57782**	RunNo: **74945**
Prep Date: **1/28/2021**	Analysis Date: **1/29/2021**	SeqNo: **2646126** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.97	0.025	1.000	0	96.6	80	120			
Toluene	0.99	0.050	1.000	0	98.6	80	120			
Ethylbenzene	0.97	0.050	1.000	0	97.4	80	120			
Xylenes, Total	2.9	0.10	3.000	0	97.0	80	120			
Surr: 4-Bromofluorobenzene	1.0		1.000		103	80	120			

Sample ID: **LCS-57789**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS**	Batch ID: **57789**	RunNo: **74945**
Prep Date: **1/28/2021**	Analysis Date: **1/30/2021**	SeqNo: **2646127** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.93	0.025	1.000	0	92.8	80	120			
Toluene	0.96	0.050	1.000	0	96.0	80	120			
Ethylbenzene	0.95	0.050	1.000	0	94.8	80	120			
Xylenes, Total	2.8	0.10	3.000	0	94.3	80	120			
Surr: 4-Bromofluorobenzene	0.98		1.000		98.4	80	120			

Sample ID: **mb-57782**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS**	Batch ID: **57782**	RunNo: **74945**
Prep Date: **1/28/2021**	Analysis Date: **1/29/2021**	SeqNo: **2646128** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	1.0		1.000		99.8	80	120			

Sample ID: **mb-57789**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS**	Batch ID: **57789**	RunNo: **74945**
Prep Date: **1/28/2021**	Analysis Date: **1/30/2021**	SeqNo: **2646129** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	1.0		1.000		100	80	120			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: clients.hallenvironmental.com

Sample Log-In Check List

Client Name: Vertex Resource Group Ltd. Work Order Number: 2101A20 RcptNo: 1

Received By: Sean Livingston 1/28/2021 8:00:00 AM S Livingston

Completed By: Sean Livingston 1/28/2021 8:39:28 AM S Livingston

Reviewed By: CC 1/28/21

Chain of Custody

1. Is Chain of Custody complete? Yes ☑ No ☐ Not Present ☐
2. How was the sample delivered? Courier

Log In

3. Was an attempt made to cool the samples? Yes ☑ No ☐ NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C Yes ☑ No ☐ NA ☐
5. Sample(s) in proper container(s)? Yes ☑ No ☐
6. Sufficient sample volume for indicated test(s)? Yes ☑ No ☐
7. Are samples (except VOA and ONG) properly preserved? Yes ☑ No ☐
8. Was preservative added to bottles? Yes ☐ No ☑ NA ☐
9. Received at least 1 vial with headspace <1/4" for AQ VOA? Yes ☐ No ☐ NA ☑
10. Were any sample containers received broken? Yes ☐ No ☑
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody) Yes ☑ No ☐
12. Are matrices correctly identified on Chain of Custody? Yes ☑ No ☐
13. Is it clear what analyses were requested? Yes ☑ No ☐
14. Were all holding times able to be met? (If no, notify customer for authorization.) Yes ☑ No ☐

# of preserved bottles checked for pH: _____ (<2 or >12 unless noted)

Adjusted? _____

Checked by: DAD 01/28/21

Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

16. Additional remarks:

17. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.8	Good				

Chain-of-Custody Record

Client: ~~B~~. Vortex

Mailing Address:

Phone #:

email or Fax#:

QA/QC Package:
☐ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time: 5 Day
☑ Standard ☐ Rush

Project Name: State JR Well #1

Project #: 21E-00176

Project Manager: Natalie Gordon

Sampler: MJP

On Ice: ☑ Yes ☐ No

# of Coolers: 1

Cooler Temp(including CF): 2.0-0.2=1.8 (°C)

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 2101A20	(BTEX) MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	(Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
1/27	10:30	Soil	WS21-01 0-2	4 oz	ice	001	✓	✓					✓			
	10:35		WS21-02 0-2			002										
	10:40		WS21-03 0-7			003										
	10:45		WS21-04 0-7			004										
	10:50		WS21-05 0-7			005										
	10:55		WS21-06 0-7			006										
	11:00		WS21-07 0-7			007										
	11:05		WS21-08 0-7			008										
	11:10		WS21-09 0-7			009										
	11:15		WS21-10 0-2			010										
	11:20		WS21-11 0-2			011										
↓	11:25	↓	WS21-12 0-2	↓	↓	012	↓	↓					↓			

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
1/27/20	1530				1/27/21	1530
1/27/20	1900		SGL	courier	1/28/21	8:00

Remarks: CC: Monica Peppin & Dennis Williams

Catena Resources

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Chain-of-Custody Record

Client: Vertex

Mailing Address:

Phone #:

email or Fax#:

QA/QC Package:
☐ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time: 5 Day
☑ Standard ☐ Rush

Project Name: State JR Well #1

Project #: 21E-00176

Project Manager: Natalie Gordon

Sampler: MJP

On Ice: ☑ Yes ☐ No

# of Coolers: 1

Cooler Temp(including CF): 2.0 - 0.2 = 1.8 (°C)

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No.	BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
1/27	11:30	Soil	WS21-13 0-2	4 oz	Ice	013	✓	✓					✓			
	11:35		WS21-14 0-2			014										
	11:40		BS21-01 2			015										
	11:45		BS21-02 7			016										
	11:50		BS21-03 7			017										
	11:55		BS21-04 7			018										
	12:00		BS21-05 7			019										
	12:05		BS21-06 7			020										
	12:10		BS21-07 2			021										
	12:15		BS21-08 2			022										
	12:20		BS21-09 2			023										

Date	Time	Relinquished by:	Received by:	Via:	Date	Time
1/27/21	1530				1/27/21	1530
1/27/21	1900		SGL	courier	1/28/21	8:00

Remarks: CC: Monica Peppin & Dennis Williams

Catena

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

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State of New Mexico
Oil Conservation Division

Incident ID	NRM1935349656
District RP	
Facility ID	
Application ID	

Closure

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

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

[x] A scaled site and sampling diagram as described in 19.15.29.11 NMAC

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

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

[x] Description of remediation activities

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

Printed Name: Anthony Riggan Title: VP of Production Operations

Signature: Anthony Riggan Date: 2-26-21

email: ariggan@catenares.com Telephone: 210-428-6144

OCD Only

Received by: Robert Hamlet Date: 7/8/2021

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

Closure Approved by: Robert Hamlet Date: 7/8/2021

Printed Name: Robert Hamlet Title: Environmental Specialist - Advanced

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

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

CONDITIONS

Action 22645

CONDITIONS

Operator:	OGRID:
Catena Resources Operating, LLC 919 Milam Houston, TX 77002	328449
	Action Number: 22645
	Action Type: [C-141] Release Corrective Action (C-141)

CONDITIONS

Created By	Condition	Condition Date
rhamlet	We have received your closure report and final C-141 for Incident #NRM1935349656 STATE JR. WELL #1, thank you. This closure is approved.	7/8/2021