VERTEX

July 22, 2020 Vertex Project #: 20E-00239-010

Spill Closure Report: Nina Cortell Federal Com #124H
Unit M, Section 3, Township 22 South, Range 32 East
County: Lea
API: 30-025-44550
Tracking Number: NRM2012169218

Prepared For: Matador Production Company
One Lincoln Center
5400 LBJ Freeway
Dallas, Texas 75240

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

Matador Production Company (Matador) retained Vertex Resource Services Inc. (Vertex) to conduct a spill assessment and remediation following a produced water release that occurred at Nina Cortell Federal Com #124H, API 30-025-44550 (hereafter referred to as "Nina Cortell"). Matador provided immediate notification of the release to New Mexico Oil Conservation Division (NM OCD) District 1 and the New Mexico State Land Office (SLO), who owns the land, on April 29, 2020, via email. The initial C-141 Release Notification was submitted immediately thereafter (Attachment 1). The NM OCD tracking number assigned to this incident is NRM2012169218.

This letter provides a description of the spill assessment and remediation 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 April 28, 2020, a release occurred at Matador's Nina Cortell when a filter pot nipple failed due to corrosion. This incident resulted in the release of approximately 117 barrels (bbls) of produced water onto the constructed wellpad. A vacuum truck arrived on-site to recover free fluids; approximately 50 bbls of produced water were recovered. The spill was contained on-site. No produced water was released into undisturbed areas or waterways.

Site Characterization

Nina Cortell is located on state-owned land, N 32.414187, W 103.668236, approximately 32 miles east of Carlsbad, New Mexico. The legal description for the site is Unit M, Section 3, Township 22 South, Range 32 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.

Nina Cortell 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 following sections specifically describe the area around the release site on the western portion of the wellpad where the production equipment is located.

The surrounding landscape has historically been associated with upland plains and is not prime farmland. The climate is semi-arid, with average annual precipitation ranging between 10 and 15 inches. The plant community is dominated by black grama, with some bush muhly, blue grama and dropseed grass species as sub-dominants. Shrubs, consisting of yucca, javalinabush, prickly pear and mesquite, are sparsely dotted across the generally uniform grass cover. Patches of bare ground typically become more common and expand during extended periods of drought or due to continuous heavy grazing (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 Nina Cortell is comprised of lithological unit Qp – Piedmont alluvial deposits from the Holocene to lower Pleistocene (New Mexico Bureau of Geology and Mineral Resources, 2020). The National Resources Conservation Service Web Soil Survey characterizes the soil at the site as Simona fine sandy loam, which is characterized by shallow, fine sandy or gravelly fine sandy loam that formed in calcareous sandy sediments over fractured indurated caliche. This type of soil tends to be well-drained with very high runoff and very low available water storage 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 Nina Cortell (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 draw located approximately 0.5 miles northeast of the site (United States Fish and Wildlife Service, 2020). At Nina Cortell, there are no continuously flowing watercourses or significant 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 is a New Mexico Office of the State Engineer well from 2014 located approximately 0.9 miles southwest of the site. Data for that well shows the shallowest water bearing stratification at 55 feet below ground surface (bgs; New Mexico Office of the State Engineer, New Mexico Water Rights Reporting System, 2020). 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.

Based on data included in the closure criteria determination worksheet, the release at Nina Cortell 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 constituent concentration limits based on depth to groundwater. As the nearest groundwater well is further than 0.5 miles from the release site, the depth to groundwater at Nina Cortell cannot be accurately determined and the closure criteria for the site are determined to be associated with the below constituent concentration limits.

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, ethyl benzene and xylenes (BTEX)

Remedial Actions

Vertex completed initial spill inspection and site characterization activities at Nina Cortell on April 29, 2020. The Daily Field Report (DFR) associated with the site visit is included in Attachment 4. Characterization soil samples were collected and field screened, and a selection of those samples was submitted for laboratory analysis to confirm the field screening data. Using initial field screening and soil sample laboratory data, as presented in Table 2 (Attachment 5), the release at Nina Cortell was delineated horizontally and vertically as presented on Figure 1 (Attachment 2). The impacted area was determined to be approximately 185 feet long by 95 feet wide; the total affected area of potential impact was determined to be approximately 8,310 square feet.

Excavation of impacted soils began on June 3, 2020, with a Vertex representative on-site to conduct field screening to guide the excavation and determine final horizontal and vertical extents of the excavation area as presented on Figure 2 (Attachment 2). On June 30, 2020, Vertex provided 48-hour notification of confirmation sampling to NM OCD and the SLO, as required by Subparagraph (a) of Paragraph (1) of Subsection D 19.15.29.12 NMAC (Attachment 6). On July 2, 2020, as remediation activities were concluding, Vertex collected a total of 27 five-point composite confirmatory samples from the base and side walls of the excavation, at depths ranging between ground surface and one foot 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 NM OCD 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. Confirmatory sample analytical data are summarized in Table 3 (Attachment 5). 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 2 (Attachment 2). Relevant equipment and prominent features/reference points at the site are mapped as well.

Closure Request

Vertex recommends no additional remediation to address the release at Nina Cortell. 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. Matador 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 NM OCD requirements to obtain closure on the April 28, 2020, release at Nina Cortell.

Should you have any questions or concerns, please do not hesitate to contact the undersigned at 505.506.0040 or ngordon@vertex.ca.

Sincerely,

Natalie Gordon
PROJECT MANAGER

Attachments

Attachment 1. NM OCD C-141 Report
Attachment 2. Figures - Site Schematic and Confirmatory Sample Locations
Attachment 3. Closure Criteria for Soils Impacted by a Release Determination Documentation
Attachment 4. Daily Field Report(s) with Photographs
Attachment 5. Laboratory Results Data Tables
Attachment 6. Required 48-hr Notification of Confirmatory Sampling to Regulatory Agencies
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 Office of the State Engineer, New Mexico Water Rights Reporting System. (2020). *Well Log/Meter Information Report*. Retrieved from http://nmwrrs.ose.state.nm.us/nmwrrs/meterReport.html.

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

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 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 Matador Production Company (Matador). 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 Matador. 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	NRM2012169218
District RP	
Facility ID	
Application ID	

Release Notification

Responsible Party

Responsible Party: Matador Production Company	OGRID: 228937
Contact Name: John Hurt	Contact Telephone: 972-371-5200
Contact email: JHurt@matadorresources.com	Incident # *(assigned by OCD)*
Contact mailing address: 5400 LBJ Freeway, Suite 1500 Dallas, TX 75240	

Location of Release Source

Latitude 32.4141876 Longitude -103.6682361
(NAD 83 in decimal degrees to 5 decimal places)

Site Name: Nina Cortell Federal Com 124H	Site Type: Oil Well-Tank Battery
Date Release Discovered: 04/28/2020	API# *(if applicable)* 30-025-44550

Unit Letter	Section	Township	Range	County
M	3	22S	32E	Lea

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

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) 117 bbls	Volume Recovered (bbls) 50 bbls
	Is the concentration of dissolved chloride 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)
☐	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)

Cause of Release:

Filter pot nipple failed due to corrosion.

Form C-141
Page 2

State of New Mexico
Oil Conservation Division

Incident ID	NRM2012169218
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? > 25 bbls

If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)?

On April 29, 2020 at approximately 12:00pm, Natalie Gordon of Vertex provided immediate notification via email to Mr. Jim Griswold and Mr. Mike Bratcher of NM OCD, the general NM OCD District 1 spills email, and Mr. Ryan Mann of NM SLO.

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: John Hurt Title: RES Specialist

Signature: Date: 4/29/20

email: JHurt@matadorresources.com Telephone: 972- 371-5200

OCD Only

Received by: Ramona Marcus Date: 4/30/2020

State of New Mexico
Oil Conservation Division

Incident ID	NRM2012169218
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?	55 (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
- ☒ 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
- ☒ 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	NRM2012169218
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: John Hurt . Title: RES Specialist

Signature: [signature] Date: 7/27/20

email: JHurt@matadorresources.com . Telephone: 972-371-5200 .

OCD Only

Received by: _____ Date: _____

State of New Mexico
Oil Conservation Division

Incident ID	NRM2012169218
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: John Hurt Title: RES Specialist

Signature: Date: 7/27/20

email: JHurt@matadorresources.com Telephone: 972-371-5200

OCD Only

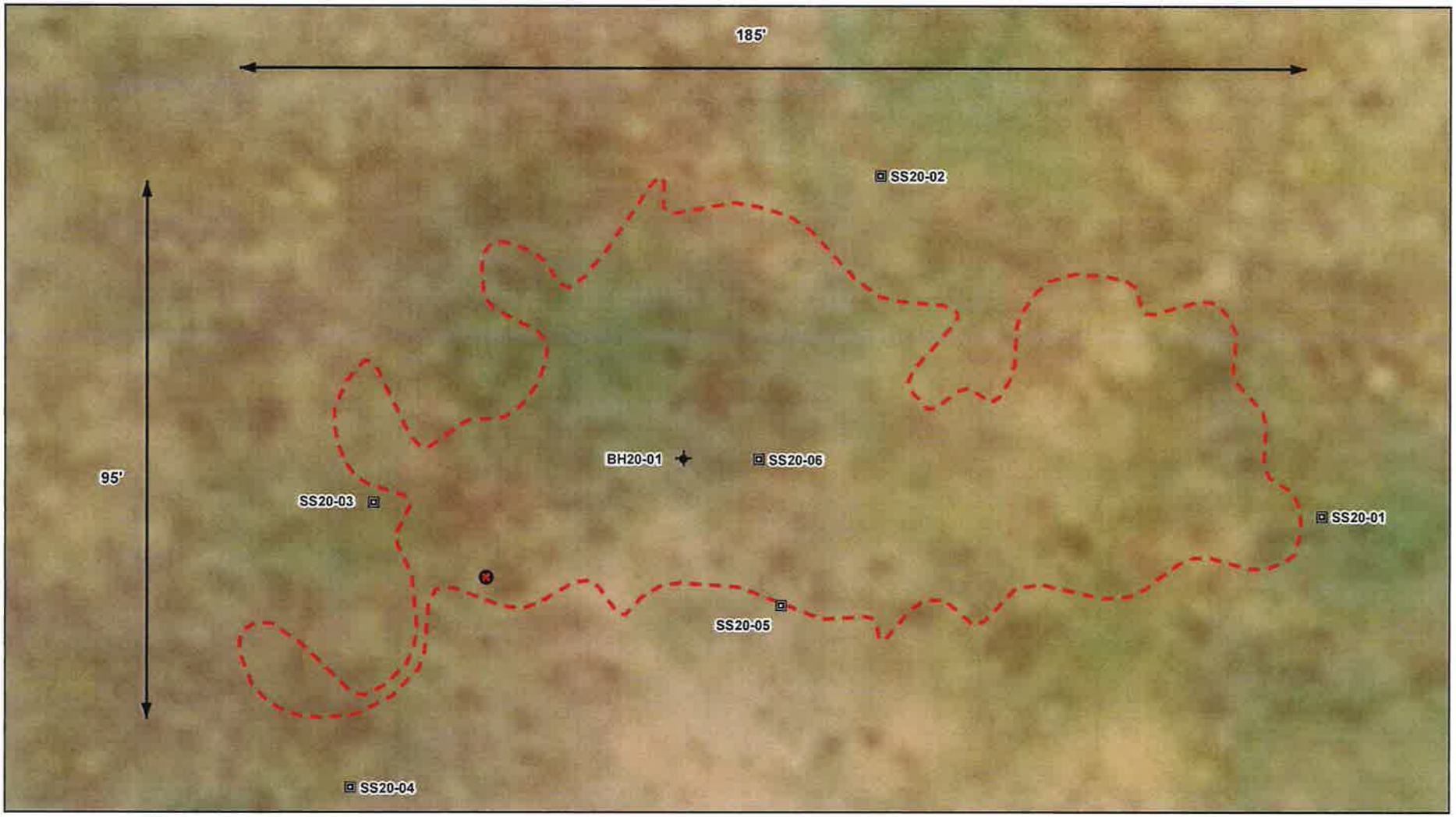
Received by: Date:

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



Borehole
Point of Release
Surface Sample
Approximate Spill Extent (~ 8,310 sq.ft.)

VERTEX

0 5 10 20 30 ft

Map Center:
Lat/Long: 32.414007, -103.667998

NAD 1983 UTM Zone 13N
Date: May 07/20

N

Site Schematic and Initial Characterization
Nina Cortell Federal Com #124H

FIGURE:
1

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: Imagery from ESRI, 2017.

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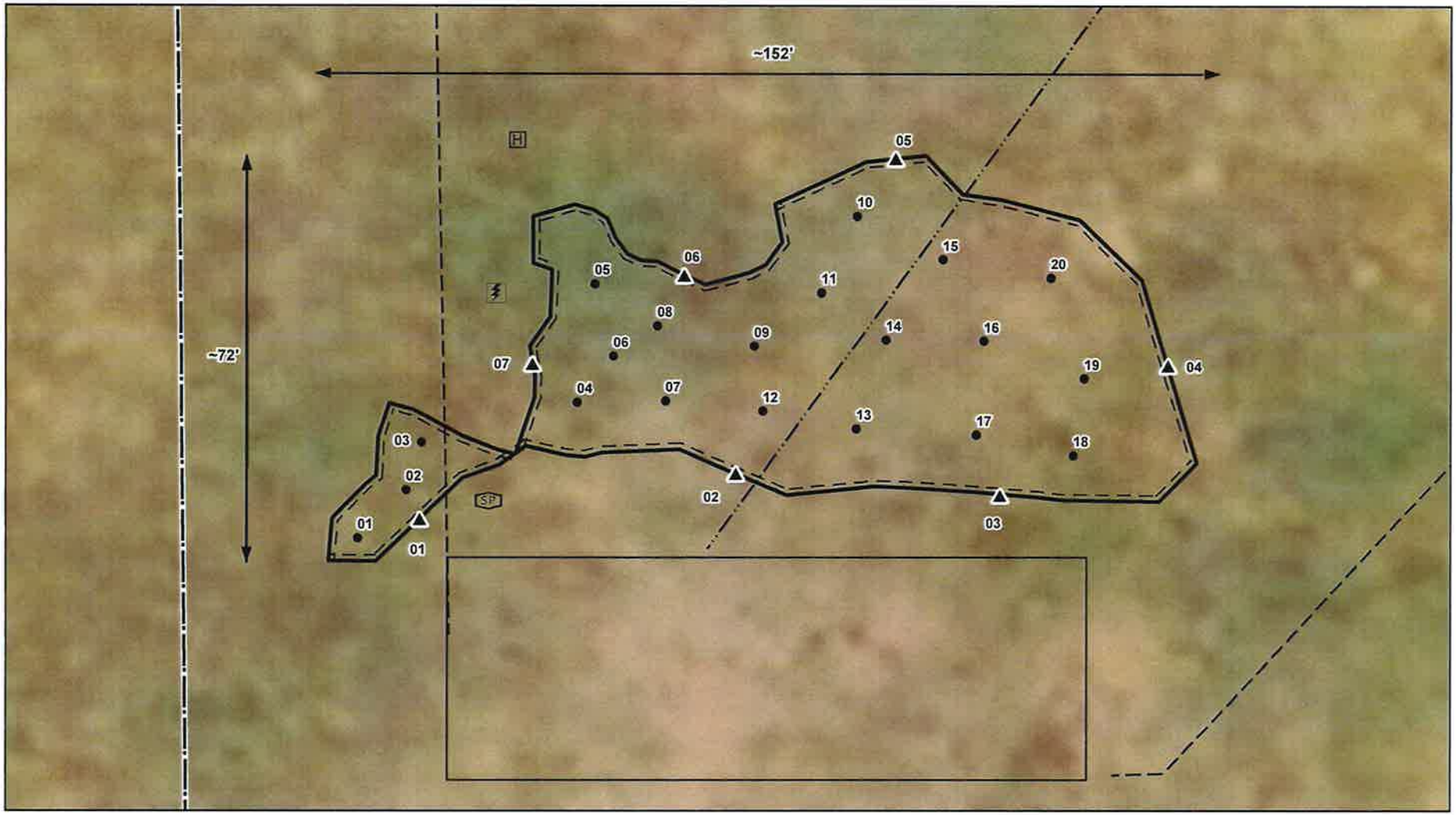
Document Path: G:\1-Projects_US PROJECTS\Matador Resources\20E-002389\010 Nina Cortell Fed Com #124H\Figure 1 Nina Cortell Fed Com 124H.mxd



- Base Sample (Prefixed by BS20-)
- Electical Box
- Heater
- Scrubber Pot
- Wall Sample (Prefixed by WS20-)
- Pipeline (Aboveground)
- Pipeline (Underground)
- Approximate Lease Boundary
- Excavation (~5,438 sq.ft.)
- Infrastructure

VERTEX

0 5 10 20 30 ft

Map Center:
Lat/Long: 32.413957, -103.667990

NAD 1983 UTM Zone 13N
Date: Jul 02/20

N

Confirmatory Sampling Locations
Nina Cortell Federal Com #124H

FIGURE: 2

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: Imagery from ESRI, 2017.

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Document Path: G:\1-Projects_US PROJECTS\Matador Resources\20E-00239\010 Nina Cortell Fed Com #124H\Figure 2 Confirmation Schematic Nina Cortell Fed Com 124H.mxd

ATTACHMENT 3

Closure Criteria Worksheet			
Site Name: Nina Cortell Fed Com 124H			
Spill Coordinates:		32.414007	-103.667998
Site Specific Conditions		Value	Unit
1	Depth to Groundwater	55	feet
2	Within 300 feet of any continuously flowing watercourse or any other significant watercourse	2,826	feet
3	Within 200 feet of any lakebed, sinkhole or playa lake (measured from the ordinary high-water mark)	56,866	feet
4	Within 300 feet from an occupied residence, school, hospital, institution or church	19,346	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**	4,882	feet
	ii) Within 1000 feet of any fresh water well or spring		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	2,665	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	Simona fine sandy loam	
12	Ecological Classification	Shallow Sandy	
13	Geology	Qp - Piedmont alluvial deposits	
	NMAC 19.15.29.12 E (Table 1) Closure Criteria	51-100'	<50' 51-100' >100'

Nina Cortell OSE Wells

6/26/2020, 1:08:01 PM

OSE District Boundary

GIS WATERS PODs
- Active
- Pending
- Plugged

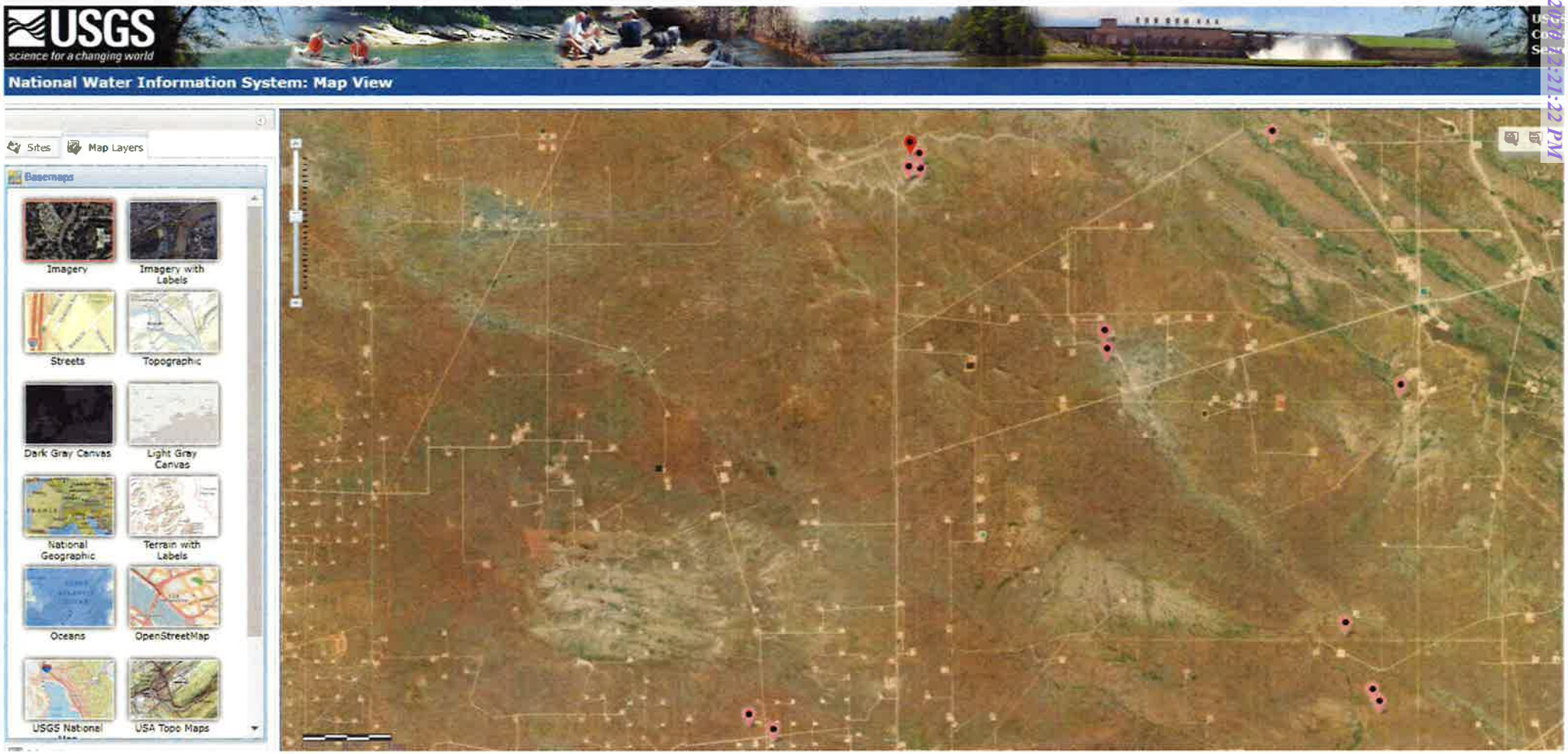
Conveyances
- Acequia
- Acequia Tunnel
- Canal
- Channel
- Closed Drain
- Community Ditch
- Connector
- Culvert
- Ditch
- Diversion Weir
- Drain
- Feeder
- Interior Drain
- Lateral
- Pipe
- Wasteway
- Other
- Unknown

1:36,112

0 0.38 0.75 1.5 mi

0 0.5 1 2 km

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, Esri, HERE, Garmin, (c) OpenStreetMap contributors, Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user



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	Tws	Rng	X	Y
NA	CP 01701 POD1	1	3		35	21S	32E	626652	3589283

Driller License: 1706 **Driller Company:** ELITE DRILLERS CORPORATION

Driller Name: WALLACE, BRYCE J.

Drill Start Date:	10/15/2018	**Drill Finish Date:**	11/29/2018	**Plug Date:**	
Log File Date:	12/13/2018	**PCW Rcv Date:**		**Source:**	Artesian
Pump Type:		**Pipe Discharge Size:**		**Estimated Yield:**	30 GPM
Casing Size:	6.00	**Depth Well:**	840 feet	**Depth Water:**	560 feet

Water Bearing Stratifications:	Top	Bottom	Description
	560	575	Sandstone/Gravel/Conglomerate
	750	770	Sandstone/Gravel/Conglomerate

Casing Perforations:	Top	Bottom
	460	840

6/26/20 12:56 PM POINT OF DIVERSION SUMMARY

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	Tws	Rng	X	Y
	C 02821	2	2	3	14	22S	32E	627303	3584563*

Driller License: 1348 **Driller Company:** TAYLOR WATER WELL SERVICE

Driller Name:

Drill Start Date:	06/12/2001	**Drill Finish Date:**	06/23/2001	**Plug Date:**	
Log File Date:	10/04/2001	**PCW Rcv Date:**		**Source:**	Shallow
Pump Type:		**Pipe Discharge Size:**		**Estimated Yield:**	2 GPM
Casing Size:	5.00	**Depth Well:**	540 feet	**Depth Water:**	340 feet

Water Bearing Stratifications:	Top	Bottom	Description
	410	540	Sandstone/Gravel/Conglomerate

Casing Perforations:	Top	Bottom
	410	430
	440	540

***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	Tws	Rng	X	Y
	C 03717 POD1	4	4	1	09	22S	32E	624094	3586365

Driller License:	1058	**Driller Company:**	KEY'S DRILLING & PUMP SERVICE		
Driller Name:	KEY, GARY				
Drill Start Date:	08/04/2014	**Drill Finish Date:**	08/12/2014	**Plug Date:**	
Log File Date:	08/26/2014	**PCW Rcv Date:**		**Source:**	Shallow
Pump Type:		**Pipe Discharge Size:**		**Estimated Yield:**	2 GPM
Casing Size:	10.00	**Depth Well:**	650 feet	**Depth Water:**	

Water Bearing Stratifications:	Top	Bottom	Description
	55	72	Sandstone/Gravel/Conglomerate
	620	630	Sandstone/Gravel/Conglomerate

Casing Perforations:	Top	Bottom
	2	20

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
NA	C 04144 POD2	3	1	3	07	22S	32E	620147	3585768

Driller License: 1456 **Driller Company:** WHITE DRILLING COMPANY

Driller Name: ATKINS., WILLIAM B.

Drill Start Date:	01/30/2018	**Drill Finish Date:**	01/30/2018	**Plug Date:**	
Log File Date:	02/15/2018	**PCW Rcv Date:**		**Source:**	Shallow
Pump Type:		**Pipe Discharge Size:**		**Estimated Yield:**	
Casing Size:	2.00	**Depth Well:**	60 feet	**Depth Water:**	55 feet

Water Bearing Stratifications:	Top	Bottom	Description
	52	56	Sandstone/Gravel/Conglomerate
	56	59	Sandstone/Gravel/Conglomerate
	59	60	Shale/Mudstone/Siltstone

Casing Perforations:	Top	Bottom
	40	60

6/26/20 12:58 PM POINT OF DIVERSION SUMMARY

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National Water Information System: Web Interface

USGS Water Resources

Data Category: Groundwater ▼ Geographic Area: United States ▼ GO

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Search Results -- 1 sites found

site_no list =

- 322314103384301

Minimum number of levels = 1

Save file of selected sites to local disk for future upload

USGS 322314103384301 22S.32E.14.32322

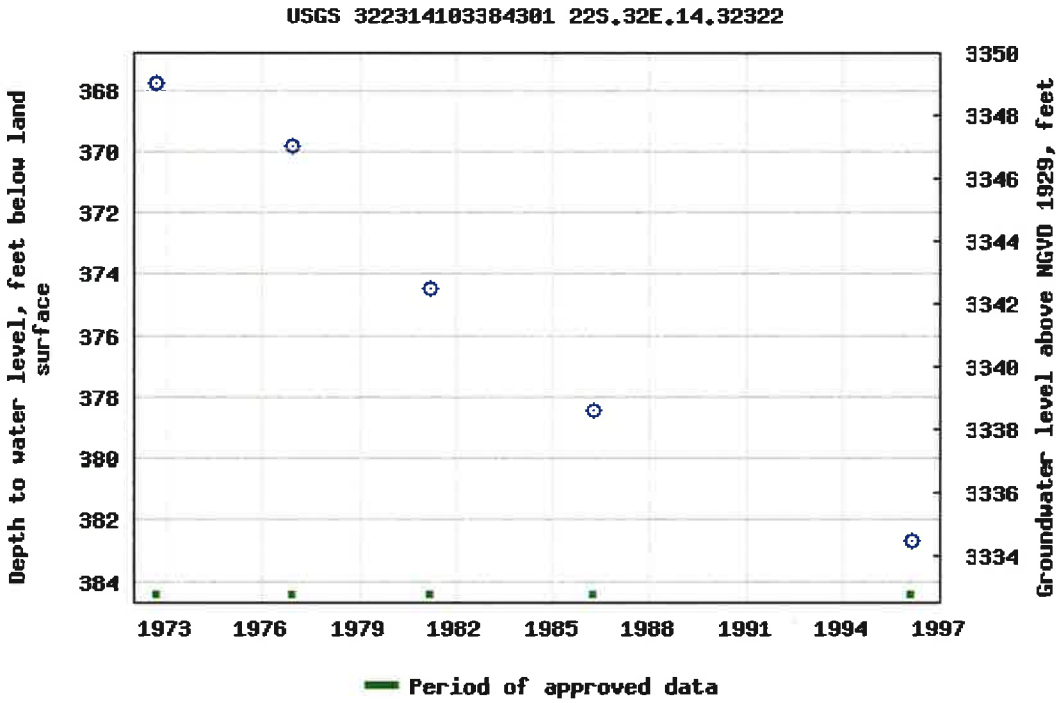
Available data for this site Groundwater: Field measurements ▼ GO

Lea County, New Mexico
Hydrologic Unit Code 13070007
Latitude 32°23'23", Longitude 103°38'53" NAD27

Land-surface elevation 3,717.00 feet above NGVD29
The depth of the well is 435 feet below land surface.
This well is completed in the Santa Rosa Sandstone (231SNRS) local aquifer.

Output formats

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



Breaks in the plot represent a gap of at least one year between field measurements.
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U.S. Department of the Interior | U.S. Geological Survey

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

Page Contact Information: USGS Water Data Support Team
Page Last Modified: 2020-05-08 18:40:27 EDT
4.29 0.52 nadww01

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site_no list =

- 322702103344001

Minimum number of levels = 1

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USGS 322702103344001 21S.33E.28.12443

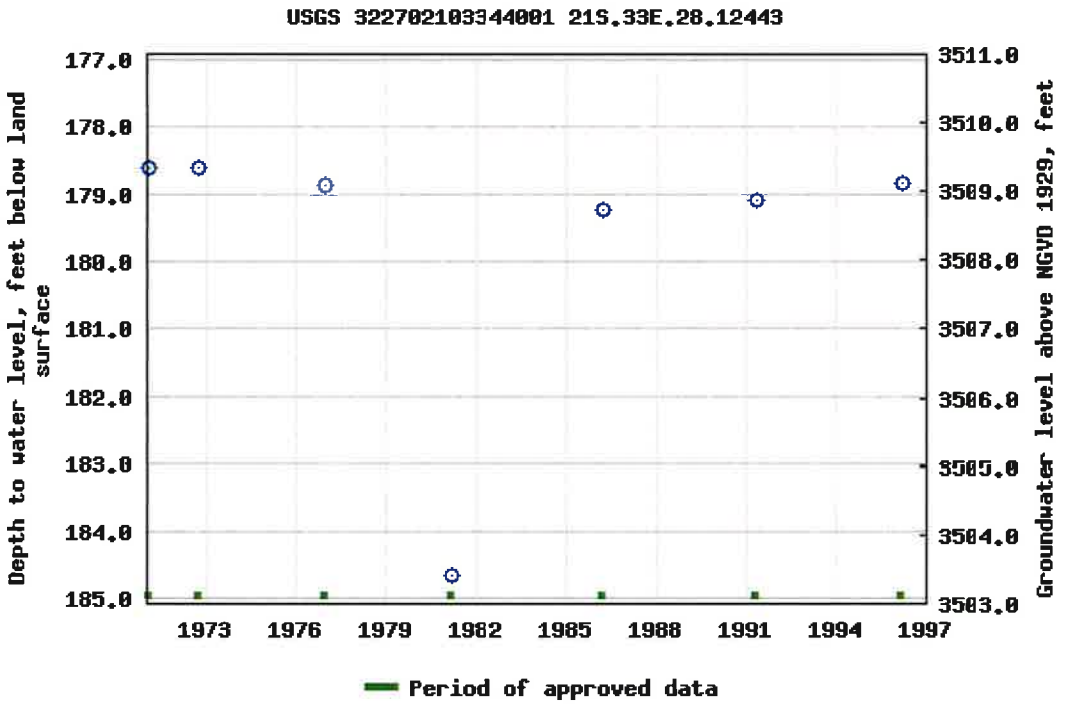
Available data for this site Groundwater: Field measurements ▼ GO

Lea County, New Mexico
Hydrologic Unit Code 13070007
Latitude 32°27'13", Longitude 103°34'42" NAD27

Land-surface elevation 3,688.00 feet above NGVD29
The depth of the well is 224 feet below land surface.
This well is completed in the Chinle Formation (231CHNL) local aquifer.

Output formats

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



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site_no list =

- 322851103365201

Minimum number of levels = 1

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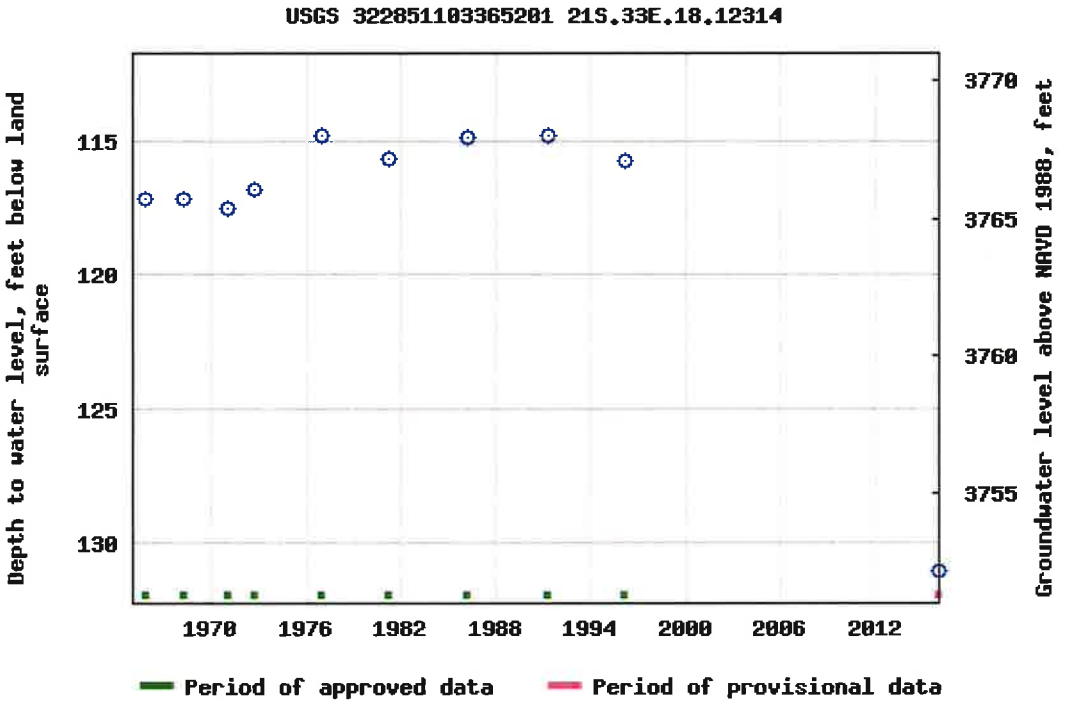
USGS 322851103365201 21S.33E.18.12314

Available data for this site Groundwater: Field measurements ▼ GO

Lea County, New Mexico
Hydrologic Unit Code 13070007
Latitude 32°29'06.6", Longitude 103°37'00.6" NAD83
Land-surface elevation 3,883 feet above NAVD88
The depth of the well is 123 feet below land surface.
This well is completed in the Alluvium, Bolson Deposits and Other Surface Deposits (110AVMB) local aquifer.

Output formats

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



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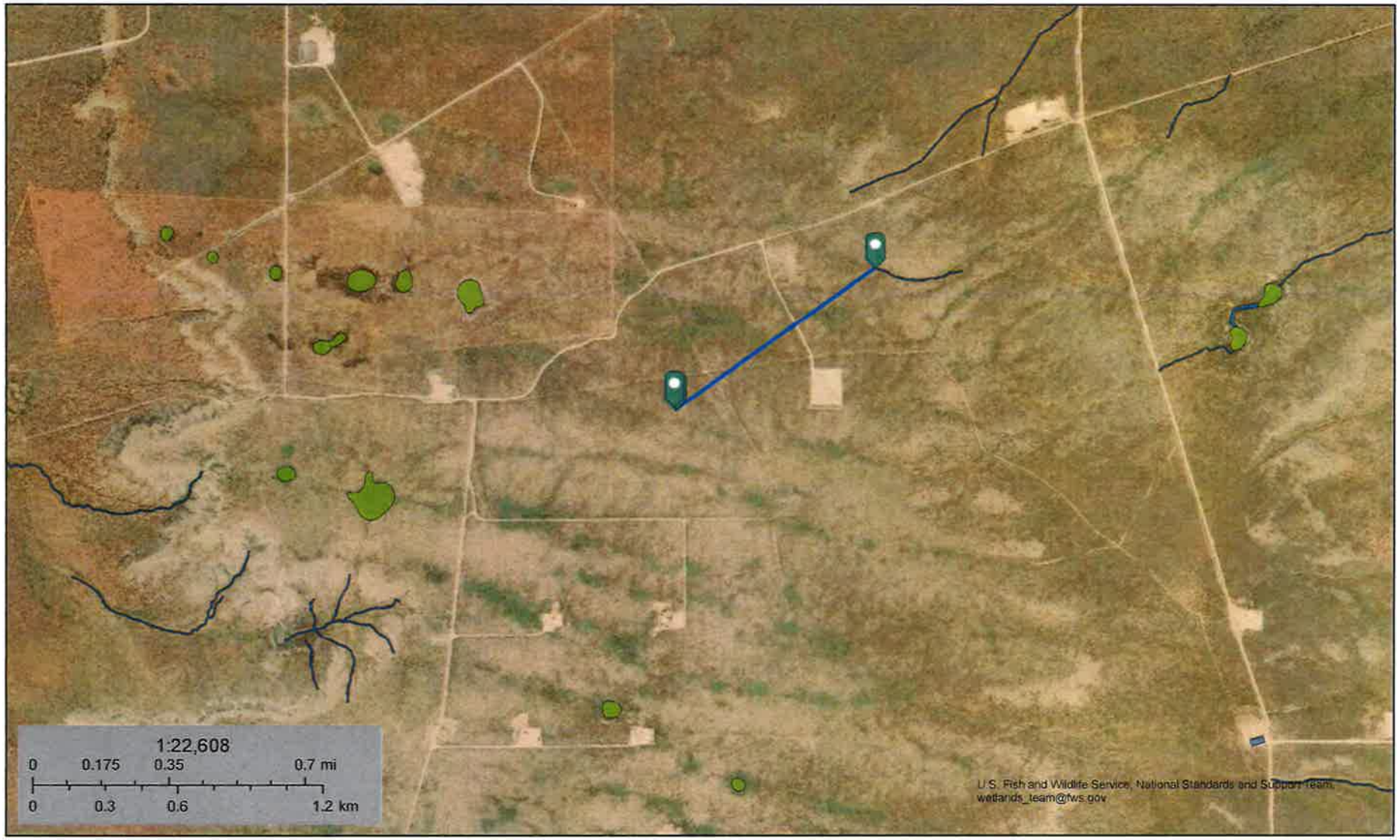
5.02 0.52 nadww01

U.S. Fish and Wildlife Service

National Wetlands Inventory

Nina Cortell Stream - 2826 ft



May 8, 2020

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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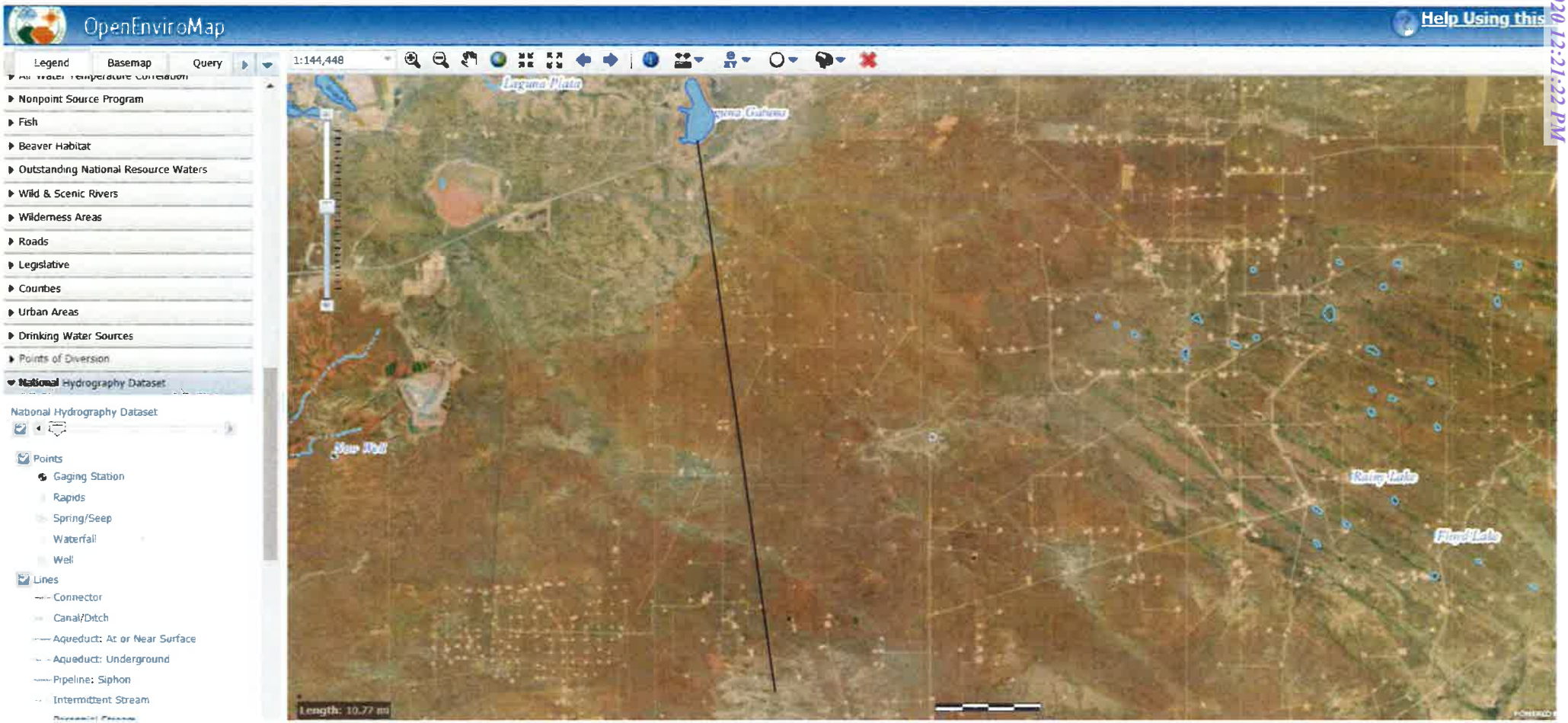
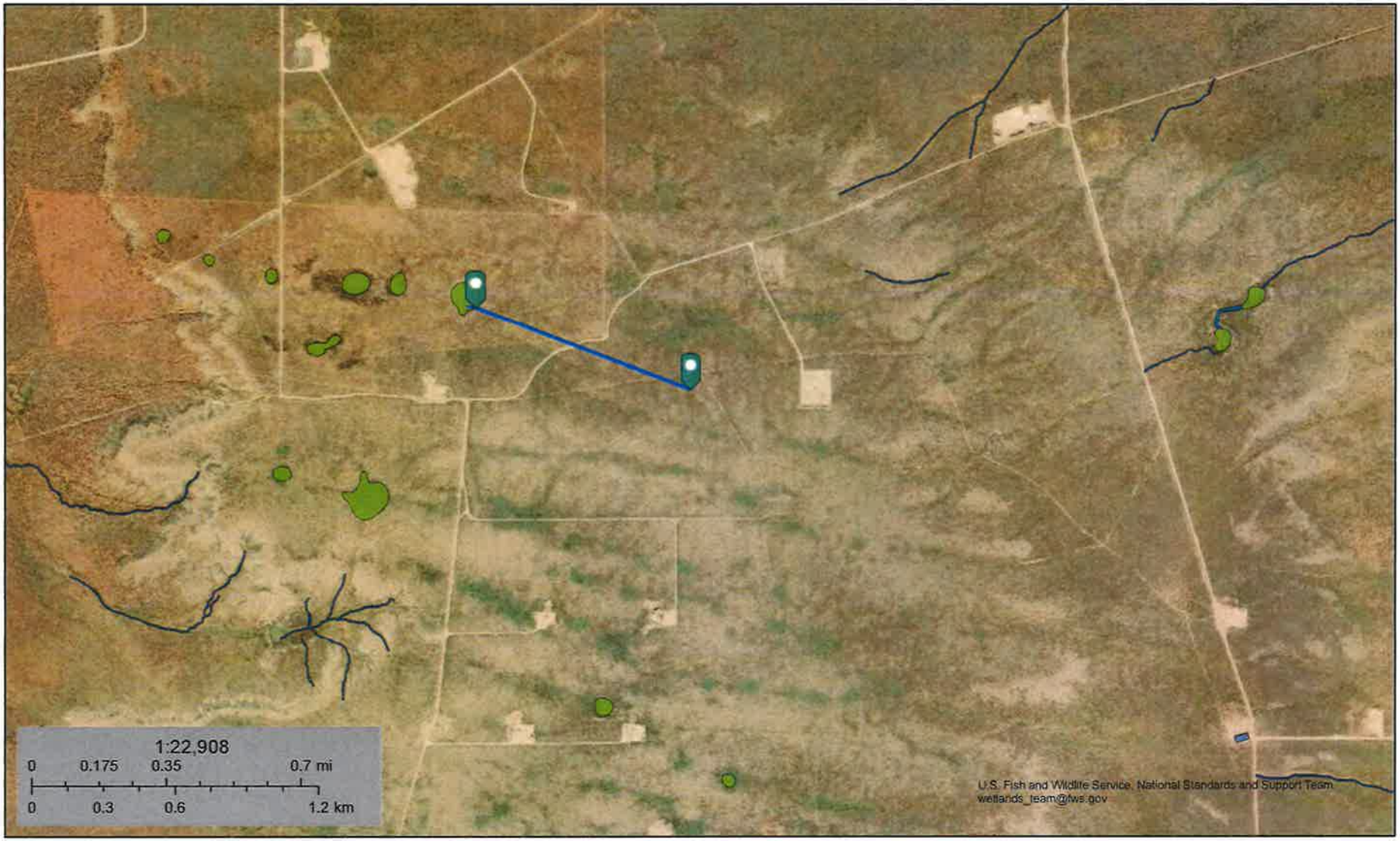


U.S. Fish and Wildlife Service

National Wetlands Inventory

NIna Cortell Wetland - 2665 ft



May 8, 2020

Wetlands

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

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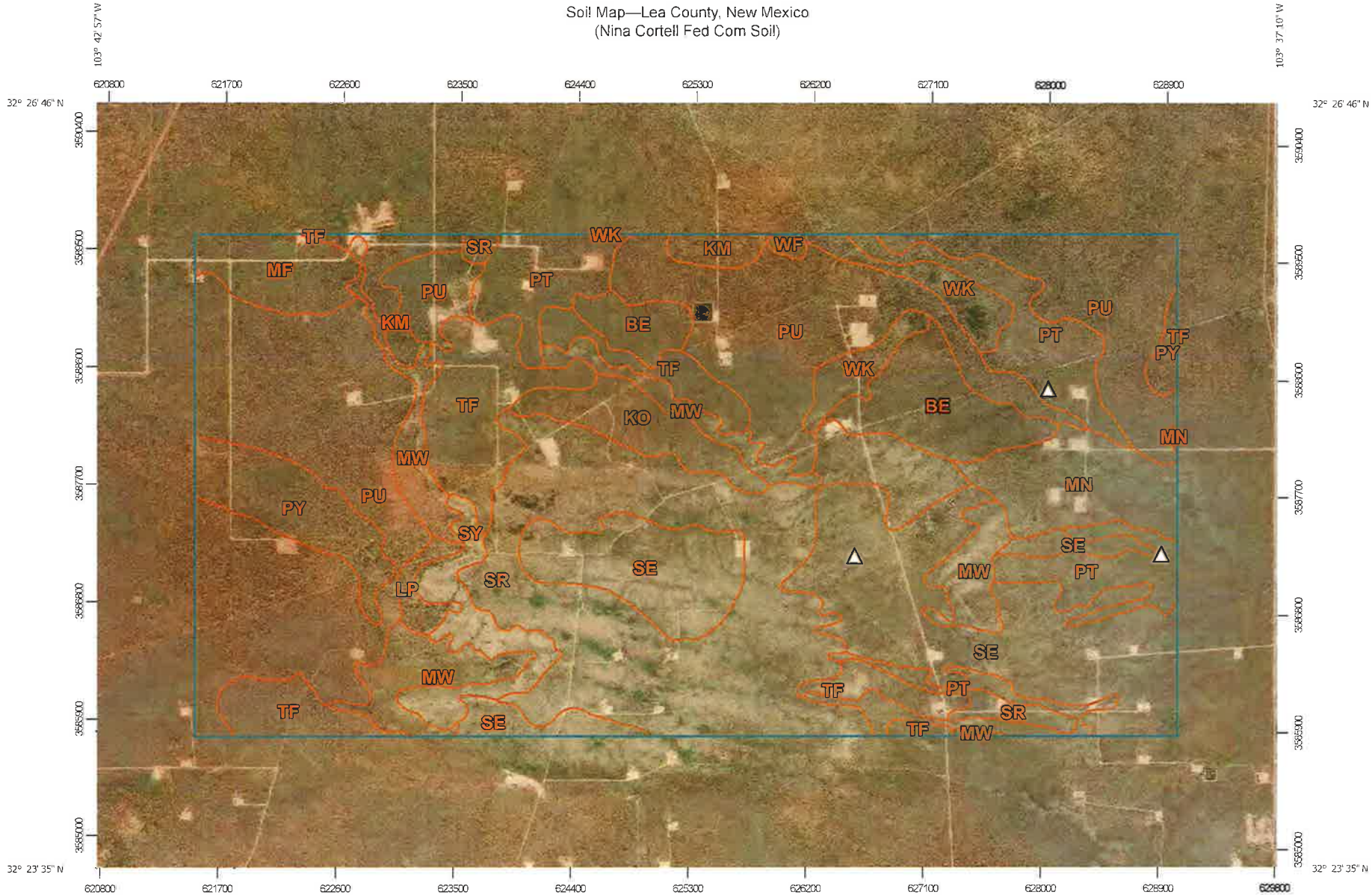
Soil Map—Lea County, New Mexico
(Nina Cortell Fed Com Soil)



Map Scale: 1:41,400 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 500 1000 2000 3000

Feet: 0 2000 4000 8000 12000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 13N WGS84

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.

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 16, Sep 15, 2019

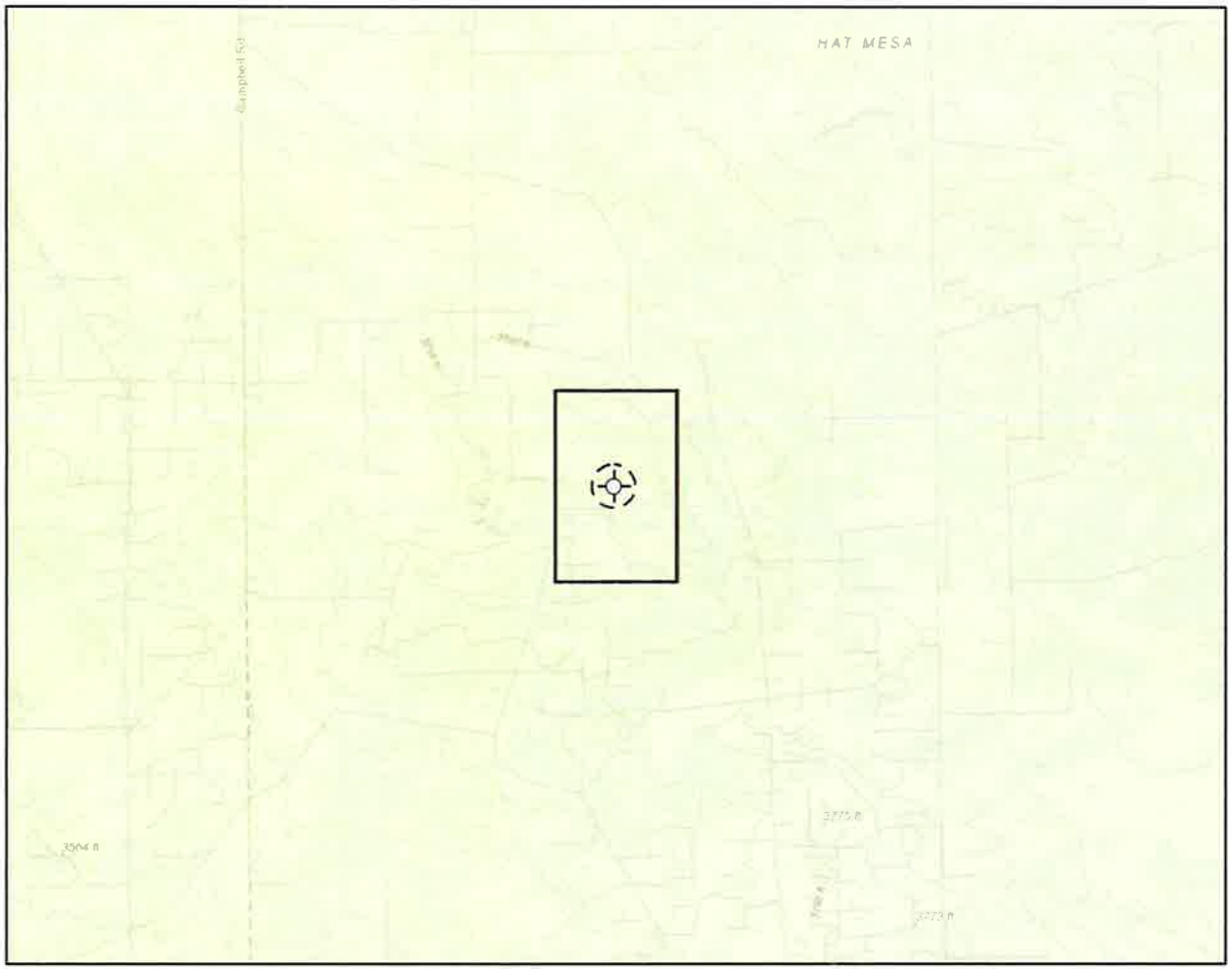
Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

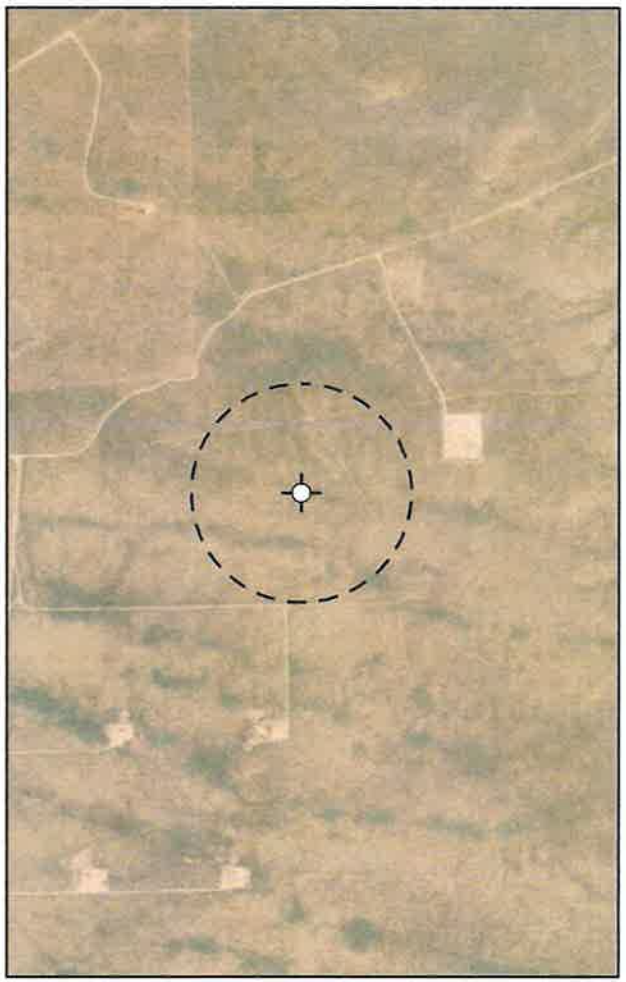
Date(s) aerial images were photographed: Dec 31, 2009—Sep 17, 2017

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
BE	Berino-Cacique loamy fine sands association	291.7	4.1%
KM	Kermit soils and dune land, 0 to 12 percent slopes	122.6	1.7%
KO	Kimbrough gravelly loam, dry, 0 to 3 percent slopes	150.5	2.1%
LP	Largo-Pajarito complex, rarely flooded	40.7	0.6%
MF	Maljamar and palomas fine sands, 0 to 3 percent slopes	150.2	2.1%
MN	Ratliff-Wink fine sandy loams	243.5	3.4%
MW	Mobeetie-Potter association, 1 to 15 percent slopes	396.0	5.5%
PT	Pyote loamy fine sand	587.8	8.2%
PU	Pyote and maljamar fine sands	1,916.9	26.7%
PY	Pyote soils and dune land	229.8	3.2%
SE	Simona fine sandy loam, 0 to 3 percent slopes	1,035.1	14.4%
SR	Simona-Upton association	1,184.1	16.5%
SY	Stony rolling land	160.2	2.2%
TF	Tonuco loamy fine sand, 0 to 3 percent slopes	514.7	7.2%
WF	Wink fine sand	10.9	0.2%
WK	Wink loamy fine sand	153.0	2.1%
Totals for Area of Interest		**7,187.7**	**100.0%**





Karst Potential
- Critical
- High
- Medium
- Low

Site

Site Buffer (1000 ft.)

Overview Map
0 0.25 0.5 1 mi

Detail Map
0 600 1,200 ft.

VERTEX

Map Center:
Lat/Long: 32.413957, -103.667672

NAD 1983 UTM Zone 13N
Date: Jun 09/20

N

Karst Potential Map
Nina Cortell Fed Com #124H

FIGURE:
X

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 2018; Overview Map - ESRI World Topographic

VERSATILITY. EXPERTISE.

Document Path: G:\1-Projects_US PROJECTS\Matador Resources\20E-002390\010 Nina Cortell Fed Com #124H\Figure x Nina Cortell Fed Com 124H Karst.mxd

Lea County, New Mexico

SE—Simona fine sandy loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: dmr2
Elevation: 3,000 to 4,200 feet
Mean annual precipitation: 10 to 15 inches
Mean annual air temperature: 58 to 62 degrees F
Frost-free period: 190 to 205 days
Farmland classification: Not prime farmland

Map Unit Composition

Simona and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Simona

Setting

Landform: Plains
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Calcareous eolian deposits derived from sedimentary rock

Typical profile

A - 0 to 8 inches: fine sandy loam
Bk - 8 to 16 inches: gravelly fine sandy loam
Bkm - 16 to 26 inches: cemented material

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: 7 to 20 inches to petrocalcic
Natural drainage class: Well drained
Runoff class: Very 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 in profile: 35 percent
Gypsum, maximum in profile: 1 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 2.0
Available water storage in profile: Very low (about 2.0 inches)

Interpretive groups

Land capability classification (irrigated): 6s

Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Ecological site: Shallow Sandy (R042XC002NM)
Hydric soil rating: No

Minor Components

Kimbrough
Percent of map unit: 8 percent
Ecological site: Very Shallow 16-21" PZ (R077CY037TX)
Hydric soil rating: No

Lea
Percent of map unit: 7 percent
Ecological site: Limy Upland 16-21" PZ (R077CY028TX)
Hydric soil rating: No

Data Source Information

Soil Survey Area: Lea County, New Mexico
Survey Area Data: Version 16, Sep 15, 2019

United States Department of Agriculture
NRCS Natural Resources Conservation Service

Ecological Site Description

Data Access

> Data Edit/Entry, Download, Reports
> ESD Options
> Return to Reports Selection Screen

Report Selections

> General
> Physiographic Features
> Climate Features
> Water Features
> Soil Features
> Plant Communities
> Site Interpretations
> Supporting Information
Rangeland Health Reference Sheet
Complete Report
> HTML Printable Format

United States Department of Agriculture Natural Resources Conservation Service Ecological Site Description

Section I: Ecological Site Characteristics

Ecological Site Identification and Concept

Site stage: **Draft**
Site name: **Shallow Sandy**
Site type: Rangeland
Site ID: R042XC002NM
Major land resource area (MLRA): 042-Southern Desertic Basins, Plains, and Mountains

MLRA 42

Physiographic Features

This site occures on plains, alluvial fans, uplands, or fan piedmonts. The parent material consists of mixed loamy alluvium or eolian material derived from igneous and sedimentory bedrock. The petrocalcic layer is at a depth of 10 to 25 inches and undulating.

Slopes are nearly level to undulating, usually less than 9 percent. Elevations range from 2,842 to 4,500 feet.

Landform: (1) Plain
(2) Fan piedmont
(3) Alluvial fan

	Minimum	Maximum

Elevation (feet):	2842	4500
Slope (percent):	1	9
Ponding		
Runoff class:	Negligible	Very low
Aspect:	No Influence on this site	

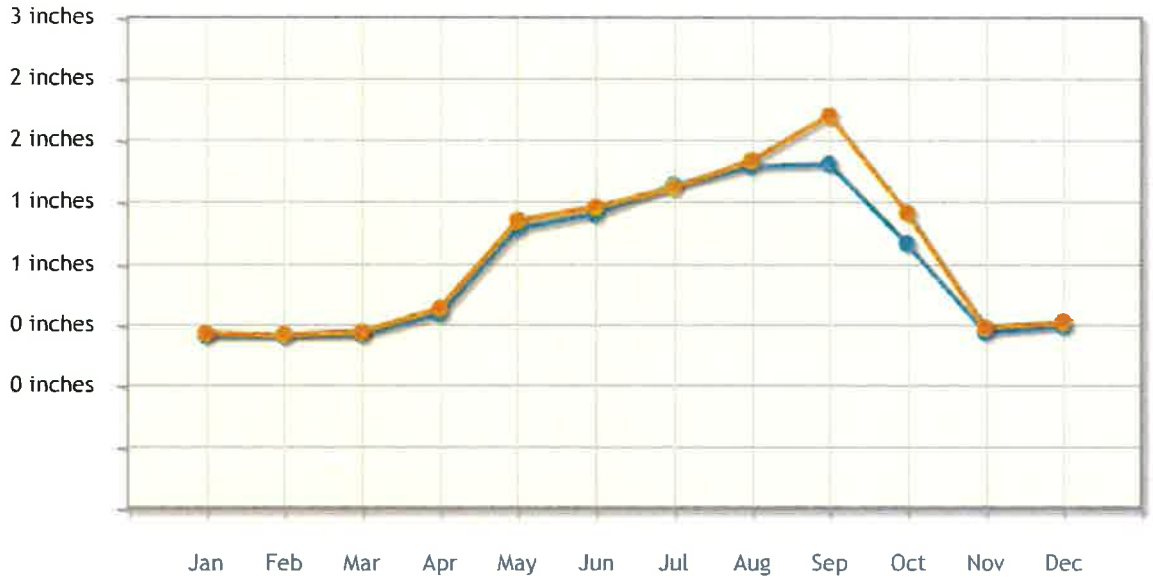
Climatic Features

The average annual precipitation ranges from 8 to 13 inches. Variations of 5 inches, more or less, are common. Over 80 percent of the precipitation falls from April through October. Most of the summer precipitation comes in the form of high intensity – short duration thunderstorms. Temperatures are characterized by distinct seasonal changes and large annual and diurnal temperature changes. The average annual temperature is 61 degrees with extremes of 25 degrees below zero in the winter to 112 degrees in the summer. The average frost-free season is from 207 to 220 days. The last killing frost is in late March or early April, and the first killing frost is in late October or early November. Temperature and rainfall both favor warm season perennial plant growth. In years of abundant spring moisture, annual forbs and cool season grasses can make up an important component of the site. The vegetation of this site can take advantage of the moisture and the time it falls. Because of the soil profile, little moisture can be stored in the soil for any length of time. Moisture is readily available to the plants from the time it falls. Strong winds from the southwest blow from January through June which rapidly dries out the soil profile during a critical period for plant growth. Climate data was obtained from http://www.wrcc.sage.dri.edu/summary/climsmnm.html web site using 50% probability for freeze-free and frost-free seasons using 28.5 degrees F and 32.5 degrees F respectively.

	Averaged
Frost-free period (days):	200
Freeze-free period (days):	219
Mean annual precipitation (inches):	13.00

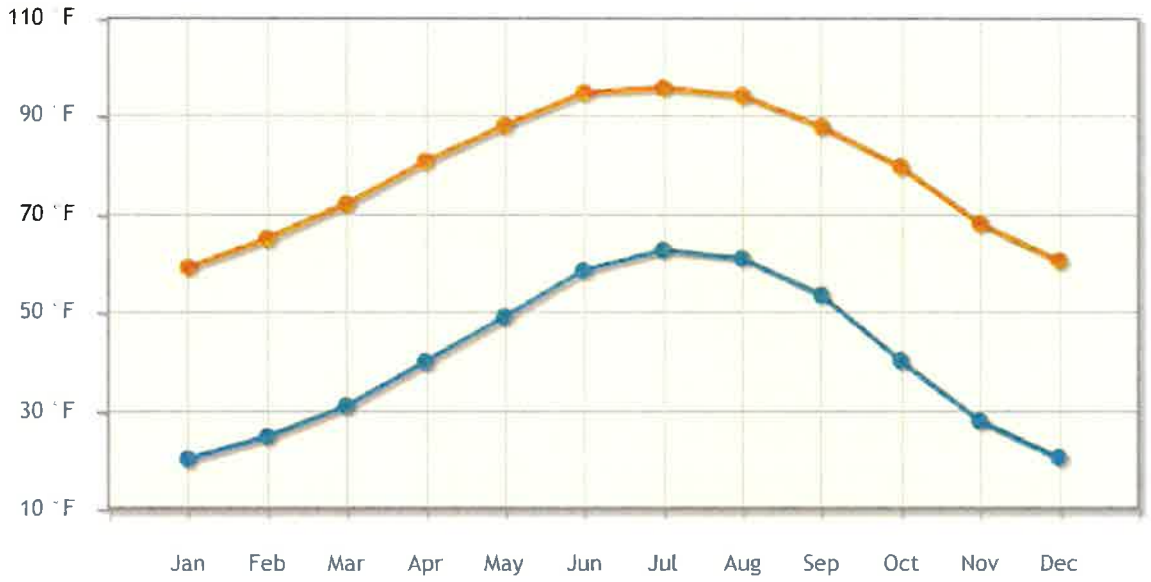
Monthly Precipitation (Inches):

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
High	0.42	0.41	0.43	0.63	1.35	1.46	1.62	1.84	2.20	1.41	0.47	0.51
Low	0.40	0.40	0.41	0.58	1.28	1.40	1.64	1.79	1.81	1.16	0.43	0.48



Monthly Temperature (°F):

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
High	59.7	65.6	72.7	81.5	88.7	95.4	96.4	94.8	88.5	80.4	68.7	61.1
Low	20.6	25.2	31.4	40.4	49.6	59.1	63.3	61.6	54.1	40.7	28.4	20.9



Climate stations: (1) NM0600, Artesia, NM. Period of record 1961-1990
(2) NM0992 Bitter Lakes WL Refuge, NM Period of Record 1961-1990
(3) NM1469 Carlsbad, NM Period of Record 1961-1990
(4) NM293792 Hagerman, NM Period of Record 1961-1990
(5) NM299563 Waste Isolation Plant, NM Period of Record 1961-1990
(6) NM4346 Jal, NM Period of Record 1961-1990

Influencing Water Features

This site is not influenced from water from wetlands or streams.

Representative Soil Features

Soils are very shallow to shallow, less than 20 inches in depth. Surface and subsurface textures are gravelly loamy sand, gravelly fine sandy loam or fine sandy loam.

An indurated calache layer occurs at depths of 6 to 25 inches and is at an average of 15 inches from the surface. Underlying material textures are very gravelly fine sandy loam, very gravelly sandy loam, gravelly fine sandy loam. Gravels are calcium carbonate concretions, calcium carbonate content ranges from 30 to 65 percent.

The indurated caliche layer typically holds water up in the profile for short periods within the root zone of plants. These soils will blow if left unprotected by vegetation.

Minimum and maximum values listed below represent the characteristic soils for this site.

Characteristic soils are:
Simona
Jerag

Surface texture: (1) Fine sandy loam
(2) Loamy fine sand
(3)Gravelly Fine sandy loam

Subsurface texture group: Loamy

	Minimum	Maximum
Surface fragments <=3" (% cover):	5	25
Surface fragments >3" (% cover):	0	0
Subsurface fragments <=3" (% volume):	5	25
Subsurface fragments >3" (% volume):	0	0

Drainage class: Well drained to moderately well drained

Permeability class: Moderately slow to moderate

	Minimum	Maximum
Depth (inches):	7	24
Available water capacity (inches):	1.00	2.00
Electrical conductivity (mmhos/cm):	0	4

Sodium adsorption ratio:	0	0
Calcium carbonate equivalent (percent):	5	15
Soil reaction (1:1 water):	7.4	8.0

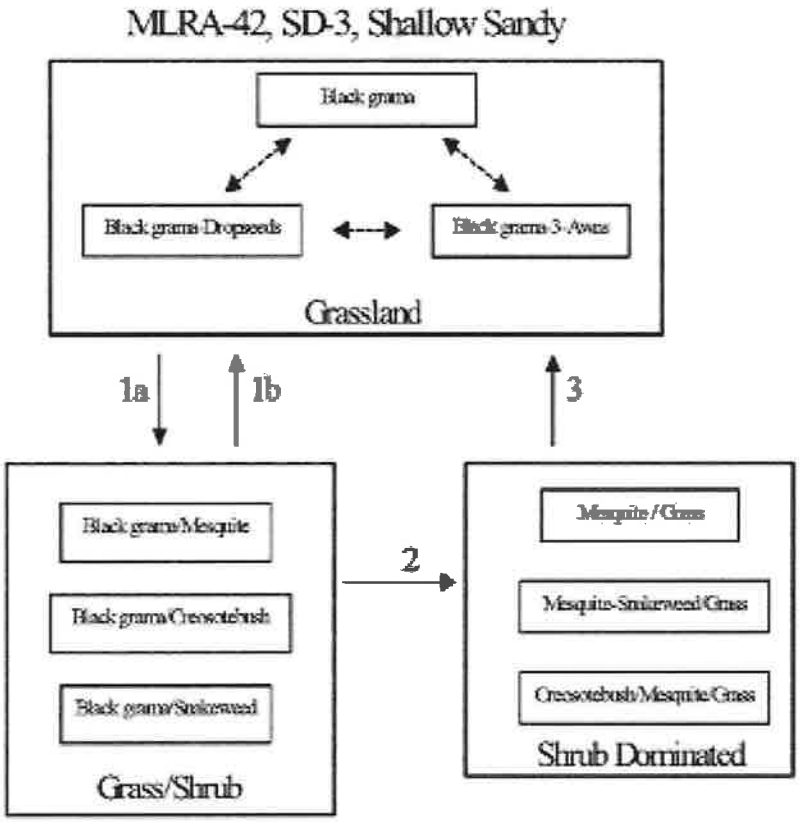
Plant Communities

Ecological Dynamics of the Site

Overview
The Shallow Sandy site occurs on upland plains, and tops of low ridges and mesas, associated with Sandy, Loamy Sand, and Shallow sites. Coarse to moderately coarse soil surface textures, shallow depth (<20 inches) to an indurated caliche layer (petrocalcic horizon), and an overwhelming dominance by black grama help to distinguish this site. The historic plant community of the Shallow Sandy site is a black grama dominated grassland sparsely dotted with shrubs. Shrubs, especially mesquite and creosotebush can increase or colonize due to the dispersal of shrub seeds by livestock or wildlife. This increase in mesquite and colonization of creosotebush may be enhanced by proximity to areas with existing high shrub densities. Fire suppression, and the loss of grass cover due to overgrazing or drought may facilitate the increase and encroachment of shrubs. Persistent loss of grass cover, competition for resources by shrubs, and periods of climate with increased winter precipitation and dry summers, may initiate the transition to a shrub-dominated state.

State-and-Transition Diagram

Plant Communities and Transitional Pathways (diagram)



1a. Seed dispersal, drought, overgrazing, fire suppression.
1b. Prescribed fire, brush control, prescribed grazing.

2. Persistent loss of grass cover, resource competition, increased winter precipitation.

3. Brush control, range seeding, prescribed grazing.

State 1: Historic Climax Plant Community

Community Phase 1.1: Historic Climax Plant Community

Plant Communities Photo Display & Descriptive Diagnosis

MLRA 42; SD-3; Shallow Sandy

Grass/Shrub

•Black grama/Mesquite with some dropseeds, threeawns, yucca, and snakeweed
•Grass cover moderate more or less uniform, with bare patches expanding near shrub bases
•Simona fine sandy loam-soil series

Transition to Shrub-Dominated

•Black grama/Mesquite with increased amount of threeawns and dropseeds
•Grass cover becoming patchy
•Simona fine sandy loam-soil series

Shrub-Dominated

•Creosotebush-Mesquite community
•Grasscover very patchy, threeawns, bush muhly, with a little black grama
•Simona gravelly fine sandy loam-soil series

Grassland: This site responds well to management and is resistant to state change, due to the shallow depth to petrocalcic horizon and sandy surface textures. The sandy surface textures allow rapid water infiltration and the petrocalcic horizon helps to keep water perched and available to shallow rooted grasses. Black grama is the dominant species in the historic plant community, averaging 50 to 60 percent of the total production for this site. Bush muhly, blue grama, and dropseeds are present as sub-dominants. Typically, yucca, javalinabush, range ratany, prickly pear, and mesquite are sparsely dotted across the landscape. Leatherweed croton, cutleaf happlopappus, wooly groundsel, and threadleaf groundsel are common forbs. Continuous heavy grazing or extended periods of drought will cause a loss of grass cover characterized by a decrease in black grama, bush muhly, blue and sideoats grama, plains bristlegrass, and Arizona cottontop. Dropseeds and or threeawns may increase and become sub-dominant to black grama. Continued loss of grass cover in conjunction with dispersal of shrub seeds and fire suppression is believed to cause the transition to a state with increased amounts of

shrubs (Grass/Shrub state).

Diagnosis: Black grama is the dominant grass species. Grass cover uniformly distributed. Shrubs are a minor component averaging only two to five percent canopy cover. Litter cover is high (40-50 percent of area), and litter movement is limited to smaller size class litter and short distances (<. 5m).

Other grasses that could appear on this site would include: six-weeks grama, fluffgrass, false-buffalograss, hairy grama, little bluestem, bristle panicum, cane bluestem, Indian ricegrass, tridens spp., and red lovegrass.

Other woody plants include: pricklypear, cholla, fourwing saltbush, catclaw mimosa, winterfat, American tarbush and mesquite.

Other forbs include: globemallow, verbena, desert holly, senna, plains blackfoot, trailing fleabane, fiddleneck, deerstongue, wooly Indianwheat, and locoweed.

Historic Climax Plant Community Plant Species Composition

Grass/Grasslike

Group	Group name	Common name	Symbol	Scientific name	Annual Production (pounds per acre) Low	Annual Production (pounds per acre) High	Foliar cover (percent) Low	Foliar cover (percent) High
1	-Warm Season				413	495		
		black grama	BOER4	*Bouteloua eriopoda*	413	495		
2	-Warm Season				41	83		
		bush muhly	MUPO2	*Muhlenbergia porteri*	41	83		
3	-Warm Season				41	83		
		blue grama	BOGR2	*Bouteloua gracilis*	41	83		
4	-Warm Season				25	41		
		sideoats grama	BOCU	*Bouteloua curtipendula*	25	41		
5	-Warm Season				41	83		
		spike dropseed	SPCO4	*Sporobolus contractus*	41	83		
		sand dropseed	SPCR	*Sporobolus cryptandrus*	41	83		
		mesa dropseed	SPFL2	*Sporobolus flexuosus*	41	83		

6 -Warm Season				17	41
	perennial threeawn spp.	ARIST	*Aristida*	17	41
7 -Warm Season				41	83
	Arizona cottontop	DICA8	*Digitaria californica*	41	83
	plains bristlegrass	SEVU2	*Setaria vulpiseta*	41	83
8 -Warm Season				41	83
	field sandbur	CELO3	*Cenchrus longispinus*	41	83
	hooded windmillgrass	CHCU2	*Chloris cucullata*	41	83
9 -Other Perennial Grasses				25	41
	Grass, perennial	2GP		25	41

Shrub/Vine

Group	Group name	Common name	Symbol	Scientific name	Annual Production (pounds per acre) Low	Annual Production (pounds per acre) High	Foliar cover (percent) Low	Foliar cover (percent) High
10 -Shrub					8	25		
		javilina bush	COER5	*Condalia ericoides*	8	25		
11 -Shrub					8	25		
		yucca spp.	YUCCA	*Yucca*	8	25		
12 -Shrub					8	25		
		ephedra spp.	EPHED	*Ephedra*	8	25		
		range ratany (littleleaf)	KRER	*Krameria erecta*	8	25		
13 -Shrub					8	25		
		feather dalea	DAFO	*Dalea formosa*	8	25		
14 -Shrub					8	25		
		broom snakeweed	GUSA2	*Gutierrezia sarothrae*	8	25		
15 -Other Shrubs					25	41		

	Shrub (>.5m)	2SHRUB		25	41

Forb

Group	Group name	Common name	Symbol	Scientific name	Annual Production (pounds per acre) Low	Annual Production (pounds per acre) High	Foliar cover (percent) Low	Foliar cover (percent) High
16	-Forb				17	41		
		leather croton	CRPOP	*Croton pottsii var. pottsii*	17	41		
		cutleaf haplopappus (Gooding's tansyaster)	MAPIG2	*Machaeranthera pinnatifida var. gooddingii*	17	41		
17	-Forb				17	41		
		woolly groundsel	PACA15	*Packera cana*	17	41		
		threadleaf groundsel	SEFLF	*Senecio flaccidus var. flaccidus*	17	41		
18	-Forb				8	25		
		halfshrub sundrop (whitest evening primrose)	OEAL	*Oenothera albicaulis*	8	25		
19	-Other Forbs				8	25		
		Forb (herbaceous, not grass nor grass-like)	2FORB		8	25		

Annual Production by Plant Type

Plant type	Annual Production (lbs/ac) Low	Representative value	High
Grass/Grasslike	474	652	830
Forb	78	107	136
Shrub/Vine	48	66	84
Total	600	825	1050

Structure and Cover

Ground Cover

Vegetative cover	Minimum	Maximum
Grasses/grasslikes	30%	35%

Nonvegetative cover	Minimum	Maximum
Litter	40%	50%
Bare ground	15%	25%

Plant Growth Curve

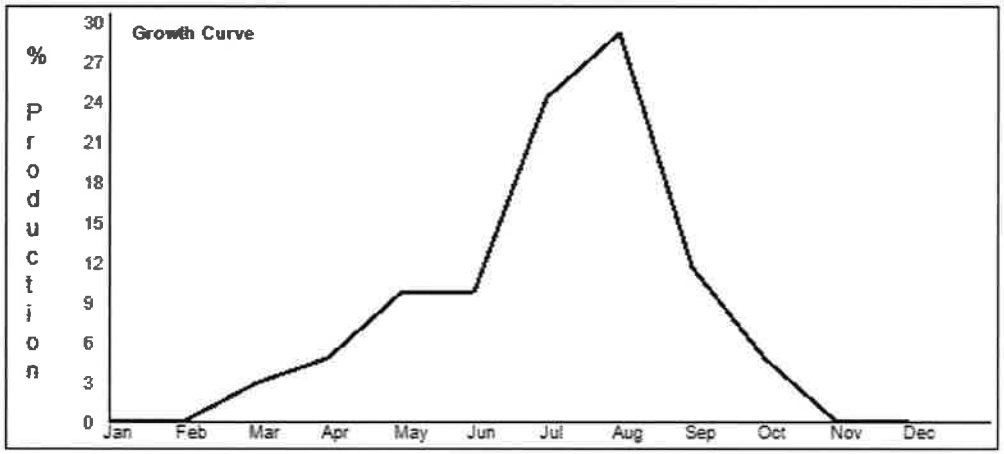
Growth curve number: NM2802

Growth curve name: R042XC002NM-Shallow Sandy-HCPC

Growth curve description: SD-3 Shallow Sandy - Warm season plant community

Percent Production by Month

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	3	5	10	10	25	30	12	5	0	0



State 2: Grass/Shrub

Community Phase 2.2: Grass/Shrub

Grass/Shrub: This state is characterized by the notable presence of shrubs, especially mesquite, broom snakeweed, and/or creosotebush, however grasses remain as the dominant species. Black grama is the dominant grass species. Threeawns and or dropseeds are sub-dominant. The susceptibility of the Shallow Sandy site to shrub encroachment may be higher when located adjacent to other sites with high densities of mesquite or creosotebush. Retrogression within this site is characterized by decreases in grass cover and increasing densities of shrubs.

Diagnosis: Black grama remains as the dominant grass species. Grass cover varies in response to the amount of shrub increase, ranging from uniform to patchy. Shrubs are found at increased densities relative to the grassland state, especially mesquite, creosotebush, or broom snakeweed.

Transition to Grass/Shrub (1a) Historically fire may have kept mesquite and other shrubs in check by completely killing some species and disrupting seed production cycles and suppressing the establishment of shrub seedlings in others. Fire suppression combined with seed dispersal by livestock and wildlife is believed to be the factors responsible for the establishment and increase in shrubs.1, 3 Loss of grass cover due to overgrazing, prolonged periods of drought, or their combination, reduces fire fuel loads and increases the susceptibility of the site to shrub establishment.

Key indicators of approach to transition:
Increase in the relative abundance of dropseeds and threeawns
Presence of shrub seedlings
Loss of organic matter—evidenced by an increase in physical soil crusts 8

Transition back to Grassland (1b) Brush control is necessary to initiate the transition back to the grassland state. If adequate fuel loads remain, possibly the reintroduction of fire as a management tool will assist in the transition back, however, mixed results have been observed concerning the effects of fire on black grama grasslands.6 Prescribed grazing will help ensure adequate rest following brush control and will assist in the establishment and maintenance of grass cover capable of sustaining fire.

State 3: Shrub Dominated

Community Phase 3.3: Shrub Dominated

Shrub-Dominated: Across the range of soil types included in the Shallow Sandy site, mesquite is typically the dominant shrub, but it does occur as a co-dominant or sub-dominant species with creosotebush or broom snakeweed. Mesquite tends to dominate when the Shallow Sandy site occurs as part of a complex or in association with Sandy or Loamy Sand sites. Creosotebush tends to dominate on Shallow Sandy sites that occur as part of, or adjacent to Shallow Sites. Broom snakeweed increases in response to heavy grazing, but tends to cycle in and out depending on timing of rainfall. However, once the site is dominated by shrubs and snakeweed becomes well established, it tends to remain as a major component in the shrub dominated state.

Diagnosis: Mesquite, creosotebush, or snakeweed cover is high, exceeding that of grasses. Grass cover is patchy with large connected bare areas present. Black grama, threeawns, or dropseeds may be the dominant grass. Evidence of accelerated wind erosion in the form of pedestalling of plants, and soil deposition around shrub bases may be common.

Transition to Shrub-Dominated (2) Persistent loss of grass cover and the resulting increased competition between shrubs and remaining grasses for dwindling resources (especially soil moisture) may drive this transition.5 Additionally periods of increased winter precipitation may facilitate periodic episodes of shrub expansion and establishment. 4

Key indicators of approach to transition:
Increase in size and frequency of bare patches.
Loss of grass cover in shrub interspaces.
Increased signs of erosion, evidenced by pedestalling of plants, and soil and litter deposition on leeward side of plants. 7

Transition back to Grassland (3) Brush control is necessary to reduce competition from shrubs and reestablish grasses. Range seeding may be necessary if insufficient grasses remain, The benefits, and costs, will vary depending upon the degree of site degradation, and adequate precipitation following seeding.

Section II: Ecological Site Interpretations

Animal Community

This site provides habitats which support a resident animal community that is characterized by pronghorn antelope, swift fox, black-tailed jackrabbit, spotted ground squirrel, Ord's kangaroo rat, northern grasshopper

mouse, coyote, horned lark, meadowlark, lark bunting, scaled quail, morning dove, side-blotched lizard, round-tailed horned lizard, marbled whiptail, prairie rattlesnake and ornate box turtle.

Plant Preference by Animal Kind

Animal kind: Livestock cattle

Common name	Scientific name	Plant part	J	F	M	A	M	J	J	A	S	O	N	D
sideoats grama	*Bouteloua curtipendula*	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
black grama	*Bouteloua eriopoda*	Entire plant	P	P	P	D	D	D	D	D	D	D	P	P
blue grama	*Bouteloua gracilis*	Entire plant	D	D	D	D	P	P	P	P	P	D	D	D
bush muhly	*Muhlenbergia porteri*	Entire plant	P	P	P	P	P	P	P	P	P	P	P	P
yucca spp.	*Yucca*	Flowers					P	P						

Legend: P=Preferred; D=Desirable; U=Undesirable; N=Not consumed; E=Emergency; T=Toxic; X=Used, but degree of utilization unknown

Hydrology Functions

The runoff curve numbers are determined by field investigations using hydraulic cover conditions and hydrologic soil groups.

Hydrologic Interpretations
Soil Series Hydrologic Group
Jarag D
Simona D

Recreational Uses

This site offers recreation for hiking, horseback riding, nature observation and photography, and quail and dove hunting. During years of abundant spring moisture, this site displays a riot of color from wildflowers during May and June. A few summer and fall flowers also occur.

Wood Products

The natural potential plant community of this site affords little or no wood products. Where the site has been invaded by mesquite or cholla cactus the roots and stems of these plants provide attractive material for a

variety of curiosities, such as lamps and small furniture.

Other Products

This site is suitable for grazing by all kinds and classes of livestock during all seasons of the year. Because of the sandy textures and shallow profile, this site will respond rapidly to management. As this site deteriorates, plants such as black grama, bush muhly, blue and sideoats grama, plains bristlegrass and Arizona cottontop, will decrease and be replaced by plants such as threeawns, mesquite, creosote bush, and broom snakeweed. This also causes a decrease in ground cover, leaving the soil to blow. This site responds best to a system of management that rotates the season of use.

Other Information

Guide to Suggested Initial Stocking Rate Acres per Animal Unit Month
Similarity Index Ac/AUM
100 - 76 2.5 – 3.5
75 – 51 3.2 – 4.6
50 – 26 4.5 – 7.5
25 – 0 7.6 +

Supporting Information

Associated Sites

Site name	Site ID	Site narrative
Sandy	R042XC004NM	Sandy sites often occur in association or in a complex with Shallow Sandy Sites.

Similar Sites

Site name	Site ID	Site narrative
Sandy	R042XC004NM	Sandy ecological sites are similar to Shallow Sandy sites in species composition and Transition pathways.

State Correlation

This site has been correlated with the following states: NM TX

Inventory Data References

Data collection for this site was done in conjunction with the progressive soil surveys within the Southern Desertic Basins, Plains and Mountains, Major Land Resource Areas of New Mexico. This site has been mapped and correlated with soils in the following soil surveys. Eddy County, Lea County, and Chaves County.

Other References

Literature References:

1. Brooks, M.L. and D.A. Pyke. 2001. Invasive plants and fire in the deserts of North America. Pages 1–14 in K.E.M. Galley and T.P. Wilson (eds.). Proceedings of the Invasive Species Workshop: the Role of Fire in the Control and Spread of Invasive Species.

2. Hennessy, J.T., R.P. Gibbens, J.M. Tromble, and M. Cardenas. 1983. Water properties of caliche. J. Range Manage. 36: 723-726.

3. Humphrey, R.R. 1974. Fire in the deserts and desert grassland of North America. In: Kozlowski, T. T.; Ahlgren, C. E., eds. Fire and ecosystems. New York: Academic Press: 365-400.

4. Moir, W.H., and J. A. Ludwig. 1991. Plant succession and changing land features in desert grasslands. P. 15-18. In P.F. Ffolliott and W.T. Swank (eds.) People and the temperate region: a summary of research from the United States Man and the Biosphere Program 1991. U.S. Dept. State, Publ No. 9839, Nat. Tech. Info. Serv., U.S. Dept. Commerce, Springfield, Illinois. 63 p.

5. Tiedemann, A. R. and J. O. Klemmedson. 1977. Effect of mesquite trees on vegetation and soils in the desert grassland. J. Range Manage. 30: 361-367.

6. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (2002, September). Fire Effects Information System, [Online]. Available: http://www.fs.fed.us/database/feis/ [accessed 2/10/03].

7. U.S. Department of Agriculture, Natural Resources Conservation Service. 2001. Soil Quality Information Sheets. Rangeland Soil Quality—Wind Erosion. Rangeland Sheet 10 [Online]. Available: http://www.statlab.iastate.edu/survey/SQI/range.html

8. U.S. Department of Agriculture, Natural Resources Conservation Service. 2001. Soil Quality Information

Sheets. Rangeland Soil Quality—Physical and Biological Soil Crusts. Rangeland Sheet 7 [Online]. Available: http://www.statlab.iastate.edu/survey/SQI/range.html

Site Authors

David Trujillo
Don Sylvester

Reference Sheet

Author(s)/participant(s):

Contact for lead author:

Date: **MLRA:** 042X **Ecological Site:** Shallow Sandy R042XC002NM This *must* be verified based on soils and climate (see Ecological Site Description). Current plant community cannot be used to identify the ecological site.

Composition (indicators 10 and 12) based on: Annual Production, Foliar Cover, Biomass

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Indicators. For each indicator, describe the potential for the site. Where possible, (1) use numbers, (2) include expected range of values for above- and below-average years for **each** community and natural distrurbance regimes within the reference state, when appropriate and (3) cite data. Continue descriptions on separate sheet.

---

1. **Number and extent of rills:**

---

2. **Presence of water flow patterns:**

---

3. **Number and height of erosional pedestals or terracettes:**

4. **Bare ground from Ecological Site Description or other studies (rock, litter, standing dead, lichen, moss, plant canopy are not bare ground):**

5. **Number of gullies and erosion associated with gullies:**

6. **Extent of wind scoured, blowouts and/or depositional areas:**

7. **Amount of litter movement (describe size and distance expected to travel):**

8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):**

9. **Soil surface structure and SOM content (include type and strength of structure, and A-horizon color and thickness):**

10. **Effect on plant community composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:**

11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):**

12. **Functional/Structural Groups (list in order of descending dominance by above-ground weight using symbols: >>, >, = to indicate much greater than, greater than, and equal to) with dominants and sub-dominants and "others" on separate lines:**

Dominant:
Sub-dominant:
Other:
Additional:

---

13. Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):

---

14. Average percent litter cover (%) and depth (inches):

---

15. Expected annual production (this is TOTAL above-ground production, not just forage production):

---

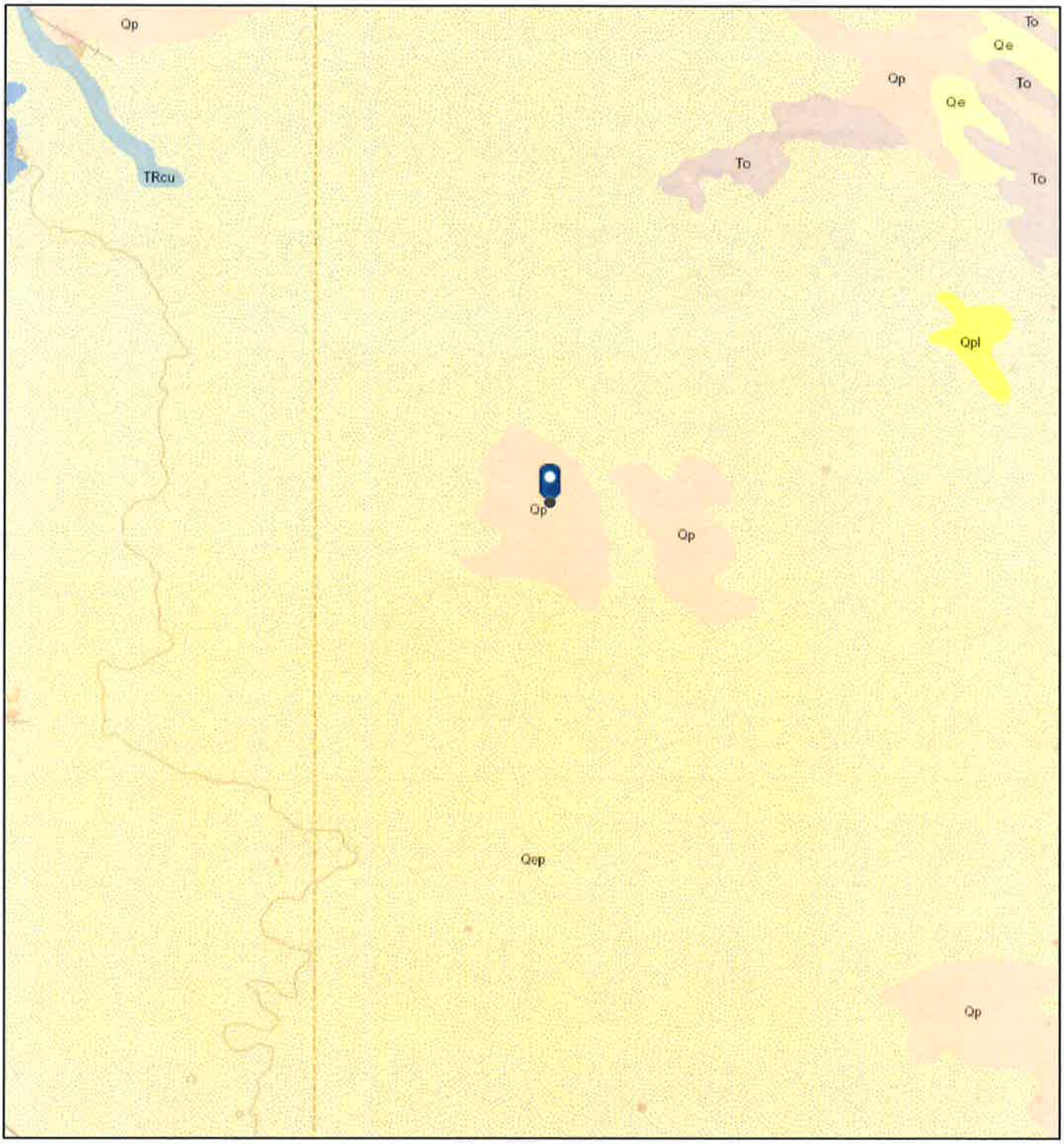
16. Potential invasive (including noxious) species (native and non-native). List Species which BOTH characterize degraded states and have the potential to become a dominant or co-dominant species on the ecological site if their future establishment and growth is not actively controlled by management interventions. Species that become dominant for only one to several years (e.g., short-term response to drought or wildfire) are not invasive plants. Note that unlike other indicator, we are describing what is NOT expected in the reference state for the ecological site:

---

17. Perennial plant reproductive capability:

Back to Top

ArcGIS Web Map



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0 1 2 4 mi

0 1.5 3 6 km

Faults

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

Dikes

- <all other values>
- Dike
- Dike intruding fault

Volcanic Vents

USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census

Web AppBuilder for ArcGIS

USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National

ATTACHMENT 4

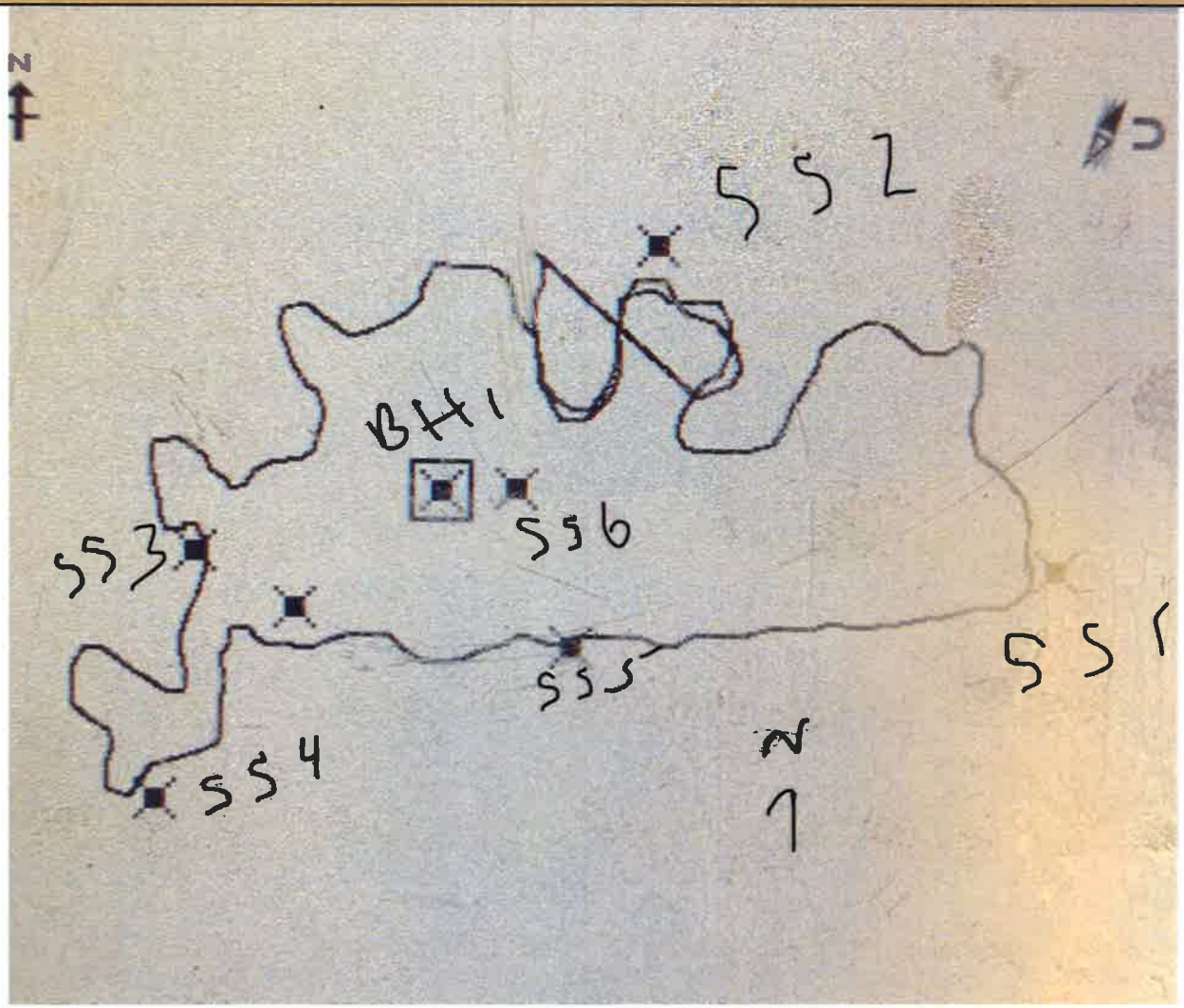
Daily Site Visit Report

Client:	Matador Resources	Inspection Date:	4/29/2020
Site Location Name:	Nina Cortell Federal Com 124H	Report Run Date:	5/5/2020 2:19 PM
Project Owner:		File (Project) #:	
Project Manager:		API #:	30-025-44550
Client Contact Name:	John Hurt	Reference	
Client Contact Phone #:			

Summary of Times	
Left Office	4/29/2020 11:05 AM
Arrived at Site	4/29/2020 11:05 AM
Departed Site	4/29/2020 3:17 PM
Returned to Office	4/29/2020 4:30 PM

Daily Site Visit Report

Site Sketch



Daily Site Visit Report

VERTEX

Summary of Daily Operations

12:10 Map produced water release.

Delineate release by collecting field screens.

Store samples for possibilities submittal to lab.

Next Steps & Recommendations

1 Submit samples for analysis

2 Remediate spill if assigned by Matador

Sampling

BH20-01

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
1 ft.	18 ppm	53 ppm	Low (30-600 ppm)	460 ppm		✓	32.413993, -103.668046	Yes

SS20-01

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
0 ft.	15 ppm	36 ppm	Low (30-600 ppm)	450 ppm		✓	32.41395, -103.66767	Yes

Daily Site Visit Report

VERTEX

SS20-02

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
0 ft.	8 ppm	29 ppm	Low (30-600 ppm)	380 ppm		✓	32.41412, -103.66791	Yes

SS20-03

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
0 ft.	12 ppm	59 ppm	Low (30-600 ppm)	370 ppm		✓	32.41396, -103.66819	Yes

SS20-04

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
0 ft.	8 ppm	20 ppm	Low (30-600 ppm)	340 ppm		✓	32.41383, -103.66822	Yes

SS20-05

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
0 ft.	11 ppm	55 ppm	Low (30-600 ppm)	320 ppm		✓	32.41391, -103.6679	Yes

Daily Site Visit Report

VERTEX

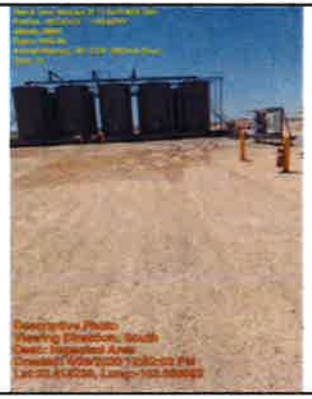
SS20-06

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
0 ft.	100 ppm	560 ppm	High (300-6000ppm)	8300 ppm		✓	32.41399, -103.66800	Yes

Daily Site Visit Report

VERTEX

Site Photos

Viewing Direction: South	**Viewing Direction**: West
	
Impacted Area	Impacted Area
Viewing Direction: East	**Viewing Direction**: East
	
Impacted Area	Impacted Area

Daily Site Visit Report

Viewing Direction: Southwest

Impacted Area

Viewing Direction: North

Impacted Area

Viewing Direction: North

Impacted Area

Daily Site Visit Report

VERTEX

Depth Sample Photos

Sample Point ID: SS20-01

Depth: 0 ft.

Sample Point ID: SS20-02

Depth: 0 ft.

Sample Point ID: SS20-03

Depth: 0 ft.

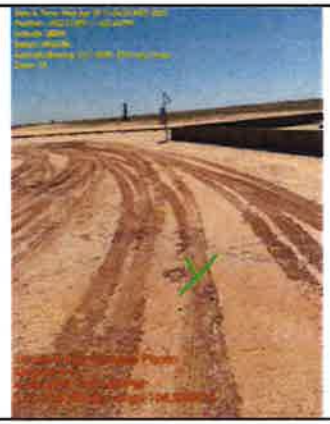
Sample Point ID: SS20-04

Depth: 0 ft.

Daily Site Visit Report

Sample Point ID: SS20-05

Depth: 0 ft.

Sample Point ID: SS20-06

Depth: 0 ft.

Sample Point ID: BH20-01

Depth: 1 ft.

Daily Site Visit Report

VERTEX

Daily Site Visit Signature

Inspector: Kevin Smith

Signature: 

Fire and Explosion Prevention Plan

SMS-12-051-ENG

VERTEX

A.What are we doing?

Date:	6/2/20	Location:	Nina cortell fed com tb
Worksite Supervisor (print name): Terrell Willard		Work Permit #:	
Work to be performed:			
Soil remediation under lines and beside tank battery			

	Yes	No	N/A
1.Have you done this job before?	X		
2.Are the people on this site qualified to help assess the fire explosion hazards for this work?	X		

B.What can go wrong?

Identify what fuel, oxygen and energy sources can combine to cause problem (see next page).

Fuel Sources	Oxygen Sources	Energy Sources	Critical Risk Factors STOP work & implement controls
Tank battery(H2S)	Atmosphere	Backhoe	

C. What are we doing to stop things from going wrong?

Identify and list Engineering and Administrative Controls. (see next page)

Engineering Controls	Administrative Controls
1. Move equipment when regine starts on machine.	1. Monitor
2.	2.
3.	3.
4.	4.
5.	5.

D. What if something goes wrong anyways?

Identify and list emergency equipment and PPE required for the planned work. (see next page)

Emergency Controls	PPE
1. Gather at muster area	1. First aid kit
2. Call 911	2. Fire extstingusher
3.	3. Fr clothing
4.	4. H2S monitor
5.	5.

Pre-Start-Up Review

	Yes	No	N/A
1. Is a detailed, operations-specific fire and explosion prevention plan (FEPP) required?		X	
2. Have work plans, site hazard assessment and the FEPP been reviewed with workers?		X	
3. Have all applicable MSDS and manufacturers specifications been reviewed?	X		
4. Are more detailed work procedures required for job? Prime Contractor ☐ Contractor ☐		X	
5. Have you issued all required work permits and held safety meetings with workers?	X		
6. Who will be supplying detection equipment? Is the person trained and qualified?	X		
7. Has all equipment been inspected? Has any detection equipment been function tested?	X		
8. Do all workers understand their roles in controlling and responding to an emergency?	X		
9. Have you stopped and thought about the work procedures and possible human errors?	X		
10. Are there any changes to operations or working conditions that require revisions to FEPP?		X	

Worksite Supervisor (signature):

Fire and Explosion Prevention Plan
SMS-12-051-ENG

VERTEX

Reference List of Fuel, Oxygen and Energy Sources

Fuel Sources	Oxygen Sources	Energy Sources
☐ Natural Gas.	**Oxygen Sources during planned introduction of air:**	☐ Flames.
☒ Hydrogen Sulphide.		☐ Heating sources.
☐ Liquid Propane Gases (LPGs), including propane and butane.	☒ Air-based operations.	☒ Hot work.
	☐ Air purging.	☐ Electric arcs and sparks fromnon-explosion proofequipment and other electrical sources.
☐ Other gases such as hydrogen or acetylene.	**Oxygen Sources during unplanned introduction of air:**	
Liquids and Vapours:	☐ Trucking and other surface operations that may pull air into a tank (during emptying) or pipeline.	☐ Static electricity.
☒ Crude Oil and Condensate.		☐ Hot surfaces.
☐ Natural Gas Liquids (NGLs).		☐ Friction and mechanical sparks.
☐ Hydrocarbon-based drilling, frac and workover fluids.		☐ Spontaneous combustion.
	☐ Over balanced operations.	☐ Chemical action and sparks.
☒ Gasoline, diesel, other fuels.	☐ Swabbing and other downhole operations may create a vacuum in a well.	☐ Sudden decompression.
☐ Methanol.		☐ Pressure or compression ignition (dieseling).
☐ Lubricants.		
Chemicals and Lubricants:	☐ Other operations that can cause a negative pressure (vacuum).	☐ Pyrophors, such as iron sulphide from corrosion.
☐ Solvents and cleaning agents.		
☐ Hydraulic fluids and lubricants.	☐ Pockets of trapped air created during installation and servicing of equipment.	☐ Hypergolic reactions such as those involving chemicals used to fracture wells.
☐ Chemicals for well servicing and stimulations.		
Solids:	☐ Oxidized (weathered) Hydrocarbons.	☐ Vehicles (including ignition or exhaust piping. Also diesel engines).
☐ Wax.		
☐ Lubricants.	☐ Oxidizing chemicals.	☐ Smoking.
☐ Sealants.	☐ Chemical reactions.	☐ Cell Phones, Pagers, Radios and other communication devices.
☐ Packings, "O" rings, diaphragms and valve seats.	☐ On-site generated nitrogen.	
☐ Paints and coatings.		
☐ Building materials.		
☐ Dead/ dry vegetation.		
☐ Packaging materials.		
☐ Wood dust.		

Reference List of Possible Fire and Explosion Controls

Engineering/ Design	Administrative	Emergency	PPE
☐ Design Specifications.	☒ Vehicle Access Control.	☒ Detection Equipment.	☒ Personal Monitor.
☒ Equipment Spacing.	☐ Area Classifications.	☐ ERP – Site Specific.	☒ Eye Guards.
☐ Emergency Shutdowns.	☐ Change Management.	☐ Escape Equipment.	☐ Face Shields.
☐ Inventory Control.	☐ Code of Practice.	☒ Evacuation Plans.	☒ Foot Protection.
☐ Explosion Proof Equip.	☒ Industry Best Practices.	☐ First Aid Trans. Plan.	☒ Hand (Gloves).
☐ Grounding/ Bonding.	☒ Job Safety Assessment.	☐ Emergency Vehicle.	☒ Head Protection.
☐ Isolating (Blank/Blind).	☐ Lookout/ Tagout.	☐ First Aid Equipment.	☒ Body (FR Clothing).
☐ Material Substitution.	☒ Pre-Start-up Review.	☐ First Aid Attendant.	☐ Body (Other).
☒ Pressure Control.	☐ Restricted Areas.	☒ Fire Extinguishers.	☐ SCBA/ SABA.
☐ Preventive Maintenance.	☒ Safety Rules.	☐ Fire Control Equip.	☐ Other Respirators.
☐ Purge In/ Out of Service.	☒ Task Specific Procedure.	☒ Muster Area.	☐ Safety Harness/ Line.
☐ Fire/ Spark Barriers.	☒ Training/ Awareness.	☒ Safety Stand-by Man.	☐ Other Specialized PPE.
☐ Seals and Gaskets.	☒ Warning Signs.	☐ Spill Containment.	
☐ Temperature Control.	☒ Work Permits.	☐ Wash Facilities.	
☐ Workspace Ventilation.	☐ Written Procedures.	☒ Wind Indicator.	

Daily Site Visit Report

Client:	Matador Resources	Inspection Date:	6/5/2020
Site Location Name:	Nina Cortell Federal Com 124H	Report Run Date:	6/3/2020 10:42 PM
Project Owner:		File (Project) #:	
Project Manager:		API #:	30-025-44550
Client Contact Name:	John Hurt	Reference	
Client Contact Phone #:			

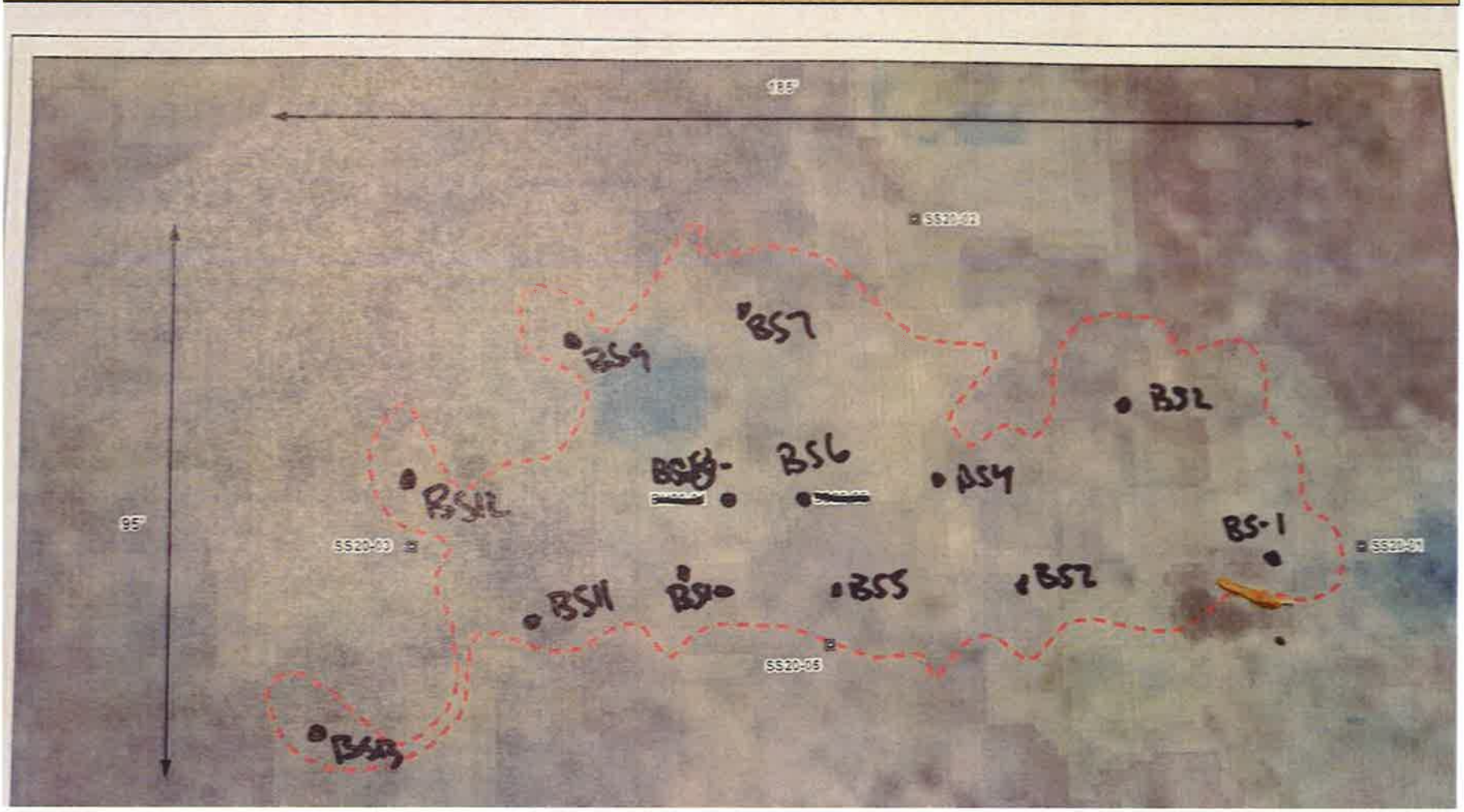
Summary of Times

Left Office	6/3/2020 8:46 AM
Arrived at Site	6/3/2020 8:46 AM
Departed Site	
Returned to Office	

Daily Site Visit Report

VERTEX

Site Sketch



Daily Site Visit Report

VERTEX

Summary of Daily Operations

11:53 Complete Tailgate meeting and discuss fire prevention plan and execution.

Begin remediation and collect field screens as excavation is completed to ensure below NM OCD standards.

Excavation to be completed 3-6 inches below ground surface.

Next Steps & Recommendations

1 Continue remediation on site tomorrow with Wildwest. Excavation up to this point has been hand digging around infrastructure on site.

Daily Site Visit Report

VERTEX

Site Photos

Viewing Direction: South

Release area prior to remediation.

Viewing Direction: West

Release area prior to remediation

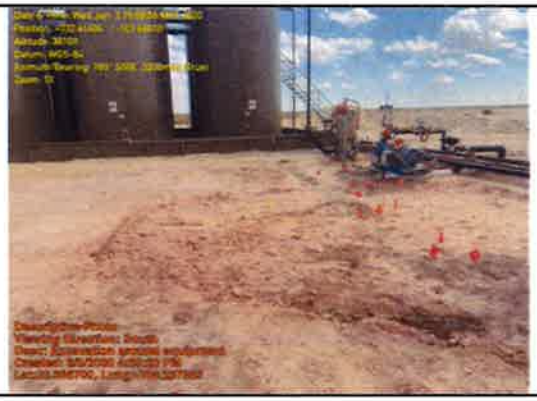
Viewing Direction: Southwest

Area prior to remediation

Viewing Direction: East

Area prior to remediation

Daily Site Visit Report

Viewing Direction: South

Excavation around equipment

Daily Site Visit Report

Daily Site Visit Signature

Inspector: Kevin Smith

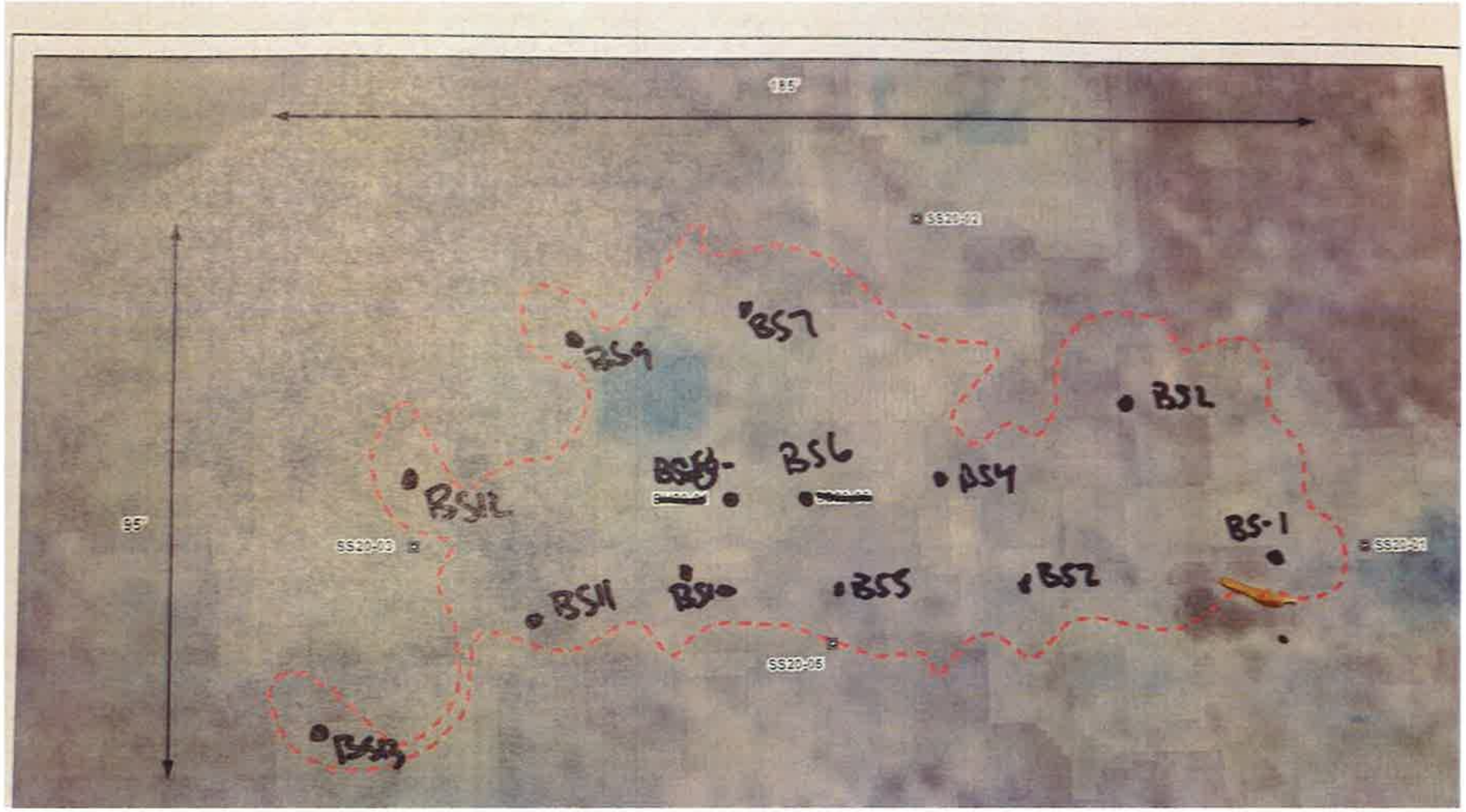
Signature:

Daily Site Visit Report

Client:	Matador Resources	Inspection Date:	6/4/2020
Site Location Name:	Nina Cortell Federal Com 124H	Report Run Date:	6/4/2020 10:30 PM
Project Owner:		File (Project) #:	
Project Manager:		API #:	30-025-44550
Client Contact Name:	John Hurt	Reference	
Client Contact Phone #:			

Summary of Times	
Left Office	6/4/2020 8:50 AM
Arrived at Site	6/4/2020 8:50 AM
Departed Site	6/4/2020 5:33 PM
Returned to Office	6/4/2020 6:44 PM

Daily Site Visit Report



Daily Site Visit Report

VERTEX

Summary of Daily Operations

8:32 Guide remediation activity by collecting fields screens (primarily EC) as Wildwest Services completes excavation.

Next Steps & Recommendations

1 Collect confirmatory samples of footprint and sidewalls per NMAC regulations.

2 Proceed with site closure.

Sampling

ES-Base20-01

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
0.5 ft.	115 ppm		High (300-6000ppm)	2900 ppm		✓	,	Yes

ES-Base20-02

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
0.5 ft.	16 ppm		High (300-6000ppm)	2300 ppm		✓	,	Yes

ES-Base20-03

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
0.5 ft.	11 ppm		High (300-6000ppm)	3700 ppm		✓	,	Yes

Daily Site Visit Report

VERTEX

ES-Base20-04

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
0.5 ft.	19 ppm		High (300-6000ppm)	3300 ppm		✓	,	Yes

ES-Base20-05

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
0.5 ft.	15 ppm		High (300-6000ppm)	2100 ppm		✓	,	Yes

ES-Base20-06

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
0.5 ft.	30 ppm		High (300-6000ppm)	4000 ppm		✓	,	Yes

ES-Base20-07

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
0.5 ft.	14 ppm		High (300-6000ppm)	1900 ppm		✓	,	Yes

Daily Site Visit Report

VERTEX

ES-Base20-08

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
0.5 ft.	12 ppm		High (300-6000ppm)	1800 ppm		✓	,	Yes

ES-Base20-09

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
0.5 ft.	10 ppm		High (300-6000ppm)	2400 ppm		✓	,	Yes

ES-Base20-10

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
0.5 ft.	13 ppm		High (300-6000ppm)	2900 ppm	TPH (TX1005)	✓	,	Yes

ES-Base20-11

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
0.5 ft.	8 ppm		High (300-6000ppm)	1300 ppm		✓	,	Yes

Daily Site Visit Report

VERTEX

ES-Base20-12

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
0.5 ft.	0 ppm		High (300-6000ppm)	1000 ppm		✓	,	Yes

ES-Base20-12

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
0.5 ft.	15 ppm		High (300-6000ppm)	2900 ppm		✓	,	Yes

ES-Base20-13

Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
0.5 ft.	16 ppm		High (300-6000ppm)	1700 ppm		✓	,	Yes

Daily Site Visit Report

VERTEX

Site Photos

Viewing Direction: South

Remediation in progress

Viewing Direction: South

Remediation in progress

Viewing Direction: South

Remediation in progress

Viewing Direction: North

Remediation in progress

Daily Site Visit Report

Viewing Direction: South	**Viewing Direction**: South
	
Final excavation	Final excavation
Viewing Direction: Southwest	**Viewing Direction**: East
	
Final excavation	Final excavation

Daily Site Visit Report

Viewing Direction: Southeast

Final excavation

Viewing Direction: Southwest

Final excavation

Viewing Direction: South

Final excavation

Daily Site Visit Report

VERTEX

Daily Site Visit Signature

Inspector: Kevin Smith

Signature: 

Daily Site Visit Report

Client:	Matador Resources	Inspection Date:	7/1/2020
Site Location Name:	Nina Cortell Federal Com 124H	Report Run Date:	7/1/2020 10:06 PM
Client Contact Name:	John Hurt	API #:	30-025-44550
Client Contact Phone #:			
Unique Project ID		Project Owner:	
Project Reference #		Project Manager:	

Summary of Times

Arrived at Site	7/1/2020 8:30 AM
Departed Site	7/1/2020 12:00 PM

Field Notes

11:13 Excavation to take out 0.5" after previous excavation had been completed. Aiming to get all samples under strictest closure criteria. Areas within excavation where caliche pad ends and hits a dark loamy soil is coming back clean with field screens. Excavation will come out to 1 ft across

Next Steps & Recommendations

1. Finish collecting confirmation samples
2. Take photos of excavated area

Daily Site Visit Report

VERTEX

Site Photos

Viewing Direction: South

Area of excavation toward west side of pad and north of containment

Daily Site Visit Report

Daily Site Visit Signature

Inspector: Monica Peppin

Signature: 

Daily Site Visit Report

Client:	Matador Resources	Inspection Date:	7/2/2020
Site Location Name:	Nina Cortell Federal Com 124H	Report Run Date:	7/2/2020 7:29 PM
Client Contact Name:	John Hurt	API #:	30-025-44550
Client Contact Phone #:			
Unique Project ID	-Nina Cortell Federal Com 124H	Project Owner:	John Hurt
Project Reference #	NRM2012169218	Project Manager:	Natalie Gordon

Summary of Times

Arrived at Site	7/2/2020 8:00 AM
Departed Site	7/2/2020 10:57 AM

Field Notes

9:00 Excavation complete. Collecting all confirmation samples.

Next Steps & Recommendations

1 Send samples to lab for analysis

2 Start closure report

Daily Site Visit Report

VERTEX

Site Photos

Viewing Direction: South

Excavation area

Viewing Direction: West

Excavation area

Viewing Direction: West

Excavation area west of containment

Viewing Direction: North

Excavation area along piping west of containment

Daily Site Visit Report

Viewing Direction: East	**Viewing Direction**: North
	
Excavation towards east of containment	Excavation near heater
Viewing Direction: West	**Viewing Direction**: West
	
Field screens	Field screens

Daily Site Visit Report

VERTEX

Daily Site Visit Signature

Inspector: Monica Peppin

Signature:

ATTACHMENT 5

Client Name: Matador Production Company
Site Name: Nina Cortell Federal Com #124H
NM OCD Tracking Number: NRM2012169218
Project #: 20E-00239-010
Lab Report: 2005013

Table 2. Characterization 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)
SS 20-01	0	April 29, 2020	<0.025	<0.222	<4.9	<9.1	<46	<14.0	<60.0	140
SS 20-02	0	April 29, 2020	<0.024	<0.220	<4.9	<9.8	<49	<14.7	<63.7	130
SS 20-03	0	April 29, 2020	<0.025	<0.222	<4.9	<8.8	<44	<13.7	<57.7	150
SS 20-04	0	April 29, 2020	<0.025	<0.225	<5.0	15	59	15	74	340
SS 20-05	0	April 29, 2020	<0.025	<0.224	<5.0	<9.6	<48	<14.6	<62.6	<60
SS 20-06	0	April 29, 2020	<0.025	<0.225	18	110	73	128	201	**13,000**
BH 20-01	1	April 29, 2020	<0.025	<0.221	<4.9	<9.1	<46	<14.0	<60.0	110

"-" - Not assessed/analyzed
Bold and shaded indicates exceedance outside of, or near, applied action level

VERTEX

Client Name: Matador Production Company
Site Name: Nina Cortell Federal Com #124H
NM OCD Tracking Number: NRM2012169218
Project #: 20E-00239-010
Lab Report: 2007172

Table 3. 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)
BS20-01	1	July 1, 2020	<0.024	<0.216	<4.8	<9.1	<46	<13.9	<59.9	94
BS20-02	1	July 1, 2020	<0.024	<0.216	<4.8	<8.9	<45	<13.7	<58.7	300
BS20-03	1	July 1, 2020	<0.024	<0.215	<4.8	<9.4	<47	<14.2	<61.2	170
BS20-04	1	July 1, 2020	<0.024	<0.217	<4.8	<8.5	<43	<13.3	<56.3	130
BS20-05	1	July 1, 2020	<0.023	<0.207	<4.6	<8.9	<45	<13.5	<58.5	61
BS20-06	1	July 1, 2020	<0.023	<0.211	<4.7	<9.5	<47	<14.2	<61.2	83
BS20-07	1	July 1, 2020	<0.024	<0.219	<4.9	<9.0	<45	<13.9	<58.9	81
BS20-08	1	July 1, 2020	<0.025	<0.224	<5.0	<9.5	<47	<14.5	<61.5	240
BS20-09	1	July 1, 2020	<0.023	<<0.211	<4.7	<9.7	<49	<14.4	<63.4	220
BS20-10	1	July 1, 2020	<0.024	<0.216	<4.8	<9.5	<47	<14.3	<61.3	170
BS20-11	1	July 2, 2020	<0.024	<0.216	<4.8	<9.7	<48	<14.5	<62.5	65
BS20-12	1	July 2, 2020	<0.024	<0.215	<4.8	<9.3	<47	<14.1	<61.1	77
BS20-13	1	July 2, 2020	<0.024	<0.216	<4.8	<9.2	<46	<14.0	<60.0	<60
BS20-14	1	July 2, 2020	<0.024	<0.216	<4.8	<9.8	<49	<14.6	<63.6	320
BS20-15	1	July 2, 2020	<0.024	<0.220	<4.9	<9.1	<46	<14.0	<60.0	300
BS20-16	1	July 2, 2020	<0.024	<0.220	<4.9	<9.3	<47	<14.2	<61.2	270
BS20-17	1	July 2, 2020	<0.024	<0.215	<4.8	<9.8	<49	<14.6	<63.6	180
BS20-18	1	July 2, 2020	<0.023	<0.210	<4.7	<9.8	<49	<14.5	<63.5	<60
BS20-19	1	July 2, 2020	<0.023	<0.211	<4.7	<9.6	<48	<14.3	<62.3	350
BS20-20	1	July 2, 2020	<0.025	<0.225	<5.0	<9.6	<48	<14.6	<62.6	370
WS20-01	0-1	July 2, 2020	<0.025	<0.224	<5.0	<9.3	<47	<14.3	<61.3	<60
WS20-02	0-1	July 2, 2020	<0.025	<0.221	<4.9	<9.7	<48	<14.6	<62.6	130
WS20-03	0-1	July 2, 2020	<0.025	<0.225	<5.0	<9.5	<47	<14.5	<61.5	260
WS20-04	0-1	July 2, 2020	<0.025	<0.221	<4.9	<9.4	<47	<14.3	<61.3	83
WS20-05	0-1	July 2, 2020	<0.025	<0.224	<5.0	<9.6	<48	<14.6	<62.6	190
WS20-06	0-1	July 2, 2020	<0.025	<0.225	<5.0	<9.0	<45	<14.0	<59.0	420
WS20-07	0-1	July 2, 2020	<0.025	<0.222	<4.9	<9.4	<47	<14.3	<61.3	200

Bold and shaded indicates exceedance outside of, or near, applied action level

ATTACHMENT 6

Natalie Gordon

From: Dhugal Hanton <vertexresourcegroupusa@gmail.com>
Sent: Tuesday, June 30, 2020 11:25 AM
To: Natalie Gordon
Subject: Fwd: NRM2012169218: Nina Cortell Federal Com 124H - 48-hr Notification of Confirmatory Sampling

---------- Forwarded message ---------
From: **Dhugal Hanton** <vertexresourcegroupusa@gmail.com>
Date: Tue, Jun 30, 2020 at 11:24 AM
Subject: NRM2012169218: Nina Cortell Federal Com 124H - 48-hr Notification of Confirmatory Sampling
To: Bratcher, Mike, EMNRD <Mike.Bratcher@state.nm.us>, EMNRD-OCD-District1spills <emnrd-ocd-district1spills@state.nm.us>, <rmann@slo.state.nm.us>

All,

Please accept this email as 48-hr notification that Vertex Resource Services has scheduled additional remediation field activities and confirmatory sampling to be conducted at Nina Cortell Federal Com 124H for the release that occurred on April 28, 2020, incident tracking # NRM2012169218.

This work will be completed on behalf of Matador Production Company.

On Thursday, July 2, 2020 at approximately 9:00 a.m., Monica Peppin of Vertex will be onsite using field screening methods to guide remediation activities. Monica will conduct final confirmatory re-sampling as the remediation activities finish up, beginning around 12:00 pm. She 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

www.vertex.ca

ATTACHMENT 7

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

May 08, 2020

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

RE: Nina Cortell Fed Com 124H OrderNo.: 2005013

Dear Natalie Gordon:

Hall Environmental Analysis Laboratory received 7 sample(s) on 5/1/2020 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 **2005013**
Date Reported: **5/8/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd.
Project: Nina Cortell Fed Com 124H
Lab ID: 2005013-001 **Matrix:** SOIL

Client Sample ID: SS20-01 0.0'
Collection Date: 4/29/2020 12:49:00 PM
Received Date: 5/1/2020 9:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.1		mg/Kg	1	5/5/2020 7:03:13 PM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	5/5/2020 7:03:13 PM
Surr: DNOP	86.6	55.1-146		%Rec	1	5/5/2020 7:03:13 PM
EPA METHOD 300.0: ANIONS						Analyst: **CAS**
Chloride	140	60		mg/Kg	20	5/6/2020 2:04:23 PM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **JMR**
Benzene	ND	0.025		mg/Kg	1	5/4/2020 12:55:57 AM
Toluene	ND	0.049		mg/Kg	1	5/4/2020 12:55:57 AM
Ethylbenzene	ND	0.049		mg/Kg	1	5/4/2020 12:55:57 AM
Xylenes, Total	ND	0.099		mg/Kg	1	5/4/2020 12:55:57 AM
Surr: 1,2-Dichloroethane-d4	88.8	70-130		%Rec	1	5/4/2020 12:55:57 AM
Surr: 4-Bromofluorobenzene	94.8	70-130		%Rec	1	5/4/2020 12:55:57 AM
Surr: Dibromofluoromethane	100	70-130		%Rec	1	5/4/2020 12:55:57 AM
Surr: Toluene-d8	104	70-130		%Rec	1	5/4/2020 12:55:57 AM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **JMR**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	5/4/2020 12:55:57 AM
Surr: BFB	95.4	70-130		%Rec	1	5/4/2020 12:55:57 AM

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 **2005013**
Date Reported: **5/8/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd.
Project: Nina Cortell Fed Com 124H
Lab ID: 2005013-002 **Matrix:** SOIL

Client Sample ID: SS20-02 0.0'
Collection Date: 4/29/2020 1:03:00 PM
Received Date: 5/1/2020 9:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	5/5/2020 7:27:31 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	5/5/2020 7:27:31 PM
Surr: DNOP	82.5	55.1-146		%Rec	1	5/5/2020 7:27:31 PM
EPA METHOD 300.0: ANIONS						Analyst: **CAS**
Chloride	130	60		mg/Kg	20	5/6/2020 3:06:05 PM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **JMR**
Benzene	ND	0.024		mg/Kg	1	5/4/2020 1:25:08 AM
Toluene	ND	0.049		mg/Kg	1	5/4/2020 1:25:08 AM
Ethylbenzene	ND	0.049		mg/Kg	1	5/4/2020 1:25:08 AM
Xylenes, Total	ND	0.098		mg/Kg	1	5/4/2020 1:25:08 AM
Surr: 1,2-Dichloroethane-d4	88.9	70-130		%Rec	1	5/4/2020 1:25:08 AM
Surr: 4-Bromofluorobenzene	93.7	70-130		%Rec	1	5/4/2020 1:25:08 AM
Surr: Dibromofluoromethane	103	70-130		%Rec	1	5/4/2020 1:25:08 AM
Surr: Toluene-d8	99.6	70-130		%Rec	1	5/4/2020 1:25:08 AM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **JMR**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	5/4/2020 1:25:08 AM
Surr: BFB	92.6	70-130		%Rec	1	5/4/2020 1:25:08 AM

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 Quantitative 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 **2005013**
Date Reported: **5/8/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd.
Project: Nina Cortell Fed Com 124H
Lab ID: 2005013-003 **Matrix:** SOIL

Client Sample ID: SS20-03 0.0'
Collection Date: 4/29/2020 1:25:00 PM
Received Date: 5/1/2020 9:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	8.8		mg/Kg	1	5/5/2020 7:52:02 PM
Motor Oil Range Organics (MRO)	ND	44		mg/Kg	1	5/5/2020 7:52:02 PM
Surr: DNOP	76.8	55.1-146		%Rec	1	5/5/2020 7:52:02 PM
EPA METHOD 300.0: ANIONS						Analyst: **CAS**
Chloride	150	60		mg/Kg	20	5/6/2020 3:18:26 PM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **JMR**
Benzene	ND	0.025		mg/Kg	1	5/4/2020 1:54:18 AM
Toluene	ND	0.049		mg/Kg	1	5/4/2020 1:54:18 AM
Ethylbenzene	ND	0.049		mg/Kg	1	5/4/2020 1:54:18 AM
Xylenes, Total	ND	0.099		mg/Kg	1	5/4/2020 1:54:18 AM
Surr: 1,2-Dichloroethane-d4	86.6	70-130		%Rec	1	5/4/2020 1:54:18 AM
Surr: 4-Bromofluorobenzene	95.7	70-130		%Rec	1	5/4/2020 1:54:18 AM
Surr: Dibromofluoromethane	105	70-130		%Rec	1	5/4/2020 1:54:18 AM
Surr: Toluene-d8	99.7	70-130		%Rec	1	5/4/2020 1:54:18 AM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **JMR**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	5/4/2020 1:54:18 AM
Surr: BFB	95.4	70-130		%Rec	1	5/4/2020 1:54:18 AM

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 **2005013**
Date Reported: **5/8/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd.
Project: Nina Cortell Fed Com 124H
Lab ID: 2005013-004 **Matrix:** SOIL

Client Sample ID: SS20-04 0.0'
Collection Date: 4/29/2020 1:51:00 PM
Received Date: 5/1/2020 9:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	15	9.6		mg/Kg	1	5/6/2020 11:46:54 AM
Motor Oil Range Organics (MRO)	59	48		mg/Kg	1	5/6/2020 11:46:54 AM
Surr: DNOP	118	55.1-146		%Rec	1	5/6/2020 11:46:54 AM
EPA METHOD 300.0: ANIONS						Analyst: **CAS**
Chloride	340	60		mg/Kg	20	5/6/2020 3:30:46 PM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **JMR**
Benzene	ND	0.025		mg/Kg	1	5/4/2020 2:23:25 AM
Toluene	ND	0.050		mg/Kg	1	5/4/2020 2:23:25 AM
Ethylbenzene	ND	0.050		mg/Kg	1	5/4/2020 2:23:25 AM
Xylenes, Total	ND	0.10		mg/Kg	1	5/4/2020 2:23:25 AM
Surr: 1,2-Dichloroethane-d4	85.9	70-130		%Rec	1	5/4/2020 2:23:25 AM
Surr: 4-Bromofluorobenzene	95.3	70-130		%Rec	1	5/4/2020 2:23:25 AM
Surr: Dibromofluoromethane	101	70-130		%Rec	1	5/4/2020 2:23:25 AM
Surr: Toluene-d8	101	70-130		%Rec	1	5/4/2020 2:23:25 AM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **JMR**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	5/4/2020 2:23:25 AM
Surr: BFB	94.9	70-130		%Rec	1	5/4/2020 2:23:25 AM

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 **2005013**
Date Reported: **5/8/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd.
Project: Nina Cortell Fed Com 124H
Lab ID: 2005013-005 **Matrix:** SOIL

Client Sample ID: SS20-05 0.0'
Collection Date: 4/29/2020 2:00:00 PM
Received Date: 5/1/2020 9:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	5/5/2020 8:40:43 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	5/5/2020 8:40:43 PM
Surr: DNOP	93.1	55.1-146		%Rec	1	5/5/2020 8:40:43 PM
EPA METHOD 300.0: ANIONS						Analyst: **CAS**
Chloride	ND	60		mg/Kg	20	5/6/2020 3:43:08 PM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **JMR**
Benzene	ND	0.025		mg/Kg	1	5/4/2020 2:52:34 AM
Toluene	ND	0.050		mg/Kg	1	5/4/2020 2:52:34 AM
Ethylbenzene	ND	0.050		mg/Kg	1	5/4/2020 2:52:34 AM
Xylenes, Total	ND	0.099		mg/Kg	1	5/4/2020 2:52:34 AM
Surr: 1,2-Dichloroethane-d4	89.1	70-130		%Rec	1	5/4/2020 2:52:34 AM
Surr: 4-Bromofluorobenzene	97.1	70-130		%Rec	1	5/4/2020 2:52:34 AM
Surr: Dibromofluoromethane	104	70-130		%Rec	1	5/4/2020 2:52:34 AM
Surr: Toluene-d8	101	70-130		%Rec	1	5/4/2020 2:52:34 AM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **JMR**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	5/4/2020 2:52:34 AM
Surr: BFB	94.2	70-130		%Rec	1	5/4/2020 2:52:34 AM

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 **2005013**
Date Reported: **5/8/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd.
Project: Nina Cortell Fed Com 124H
Lab ID: 2005013-006 **Matrix:** SOIL

Client Sample ID: SS20-06 0.0'
Collection Date: 4/29/2020 2:20:00 PM
Received Date: 5/1/2020 9:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	110	9.3		mg/Kg	1	5/5/2020 9:05:10 PM
Motor Oil Range Organics (MRO)	73	47		mg/Kg	1	5/5/2020 9:05:10 PM
Surr: DNOP	104	55.1-146		%Rec	1	5/5/2020 9:05:10 PM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	13000	600		mg/Kg	200	5/7/2020 6:02:07 PM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **JMR**
Benzene	ND	0.025		mg/Kg	1	5/4/2020 3:21:44 AM
Toluene	ND	0.050		mg/Kg	1	5/4/2020 3:21:44 AM
Ethylbenzene	ND	0.050		mg/Kg	1	5/4/2020 3:21:44 AM
Xylenes, Total	ND	0.10		mg/Kg	1	5/4/2020 3:21:44 AM
Surr: 1,2-Dichloroethane-d4	93.1	70-130		%Rec	1	5/4/2020 3:21:44 AM
Surr: 4-Bromofluorobenzene	88.4	70-130		%Rec	1	5/4/2020 3:21:44 AM
Surr: Dibromofluoromethane	102	70-130		%Rec	1	5/4/2020 3:21:44 AM
Surr: Toluene-d8	101	70-130		%Rec	1	5/4/2020 3:21:44 AM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **JMR**
Gasoline Range Organics (GRO)	18	5.0		mg/Kg	1	5/4/2020 3:21:44 AM
Surr: BFB	93.3	70-130		%Rec	1	5/4/2020 3:21:44 AM

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 **2005013**
Date Reported: **5/8/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd.
Project: Nina Cortell Fed Com 124H
Lab ID: 2005013-007 **Matrix:** SOIL

Client Sample ID: BH20-01 1.0'
Collection Date: 4/29/2020 2:51:00 PM
Received Date: 5/1/2020 9:20:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.1		mg/Kg	1	5/5/2020 9:29:19 PM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	5/5/2020 9:29:19 PM
Surr: DNOP	91.3	55.1-146		%Rec	1	5/5/2020 9:29:19 PM
EPA METHOD 300.0: ANIONS						Analyst: **CAS**
Chloride	110	60		mg/Kg	20	5/6/2020 4:07:49 PM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **JMR**
Benzene	ND	0.025		mg/Kg	1	5/4/2020 3:50:27 AM
Toluene	ND	0.049		mg/Kg	1	5/4/2020 3:50:27 AM
Ethylbenzene	ND	0.049		mg/Kg	1	5/4/2020 3:50:27 AM
Xylenes, Total	ND	0.098		mg/Kg	1	5/4/2020 3:50:27 AM
Surr: 1,2-Dichloroethane-d4	90.0	70-130		%Rec	1	5/4/2020 3:50:27 AM
Surr: 4-Bromofluorobenzene	92.0	70-130		%Rec	1	5/4/2020 3:50:27 AM
Surr: Dibromofluoromethane	104	70-130		%Rec	1	5/4/2020 3:50:27 AM
Surr: Toluene-d8	101	70-130		%Rec	1	5/4/2020 3:50:27 AM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **JMR**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	5/4/2020 3:50:27 AM
Surr: BFB	93.6	70-130		%Rec	1	5/4/2020 3:50:27 AM

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2005013**

08-May-20

Client: Vertex Resource Group Ltd.

Project: Nina Cortell Fed Com 124H

Sample ID: **MB-52301**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBS**	Batch ID: **52301**	RunNo: **68713**
Prep Date: **5/6/2020**	Analysis Date: **5/6/2020**	SeqNo: **2377545** Units: **mg/Kg**

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

Sample ID: **LCS-52301**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSS**	Batch ID: **52301**	RunNo: **68713**
Prep Date: **5/6/2020**	Analysis Date: **5/6/2020**	SeqNo: **2377546** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	94.4	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#: **2005013**

08-May-20

Client: Vertex Resource Group Ltd.

Project: Nina Cortell Fed Com 124H

Sample ID: **MB-52236**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **52236**	RunNo: **68633**
Prep Date: **5/4/2020**	Analysis Date: **5/5/2020**	SeqNo: **2375481** 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	9.9		10.00		99.4	55.1	146			

Sample ID: **LCS-52236**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **52236**	RunNo: **68633**
Prep Date: **5/4/2020**	Analysis Date: **5/5/2020**	SeqNo: **2375544** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	49	10	50.00	0	98.1	70	130			
Surr: DNOP	4.7		5.000		93.7	55.1	146			

Sample ID: **MB-52276**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **52276**	RunNo: **68672**
Prep Date: **5/5/2020**	Analysis Date: **5/6/2020**	SeqNo: **2376162** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	14		10.00		138	55.1	146			

Sample ID: **LCS-52276**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **52276**	RunNo: **68672**
Prep Date: **5/5/2020**	Analysis Date: **5/6/2020**	SeqNo: **2376214** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	6.4		5.000		127	55.1	146			

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#: **2005013**

08-May-20

Client: Vertex Resource Group Ltd.

Project: Nina Cortell Fed Com 124H

Sample ID: **mb-52225**	SampType: **MBLK**	TestCode: **EPA Method 8260B: Volatiles Short List**
Client ID: **PBS**	Batch ID: **52225**	RunNo: **68609**
Prep Date: **5/2/2020**	Analysis Date: **5/3/2020**	SeqNo: **2374030** 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: 1,2-Dichloroethane-d4	0.47		0.5000		93.5	70	130			
Surr: 4-Bromofluorobenzene	0.48		0.5000		96.0	70	130			
Surr: Dibromofluoromethane	0.51		0.5000		103	70	130			
Surr: Toluene-d8	0.49		0.5000		98.7	70	130			

Sample ID: **lcs-52225**	SampType: **LCS**	TestCode: **EPA Method 8260B: Volatiles Short List**
Client ID: **LCSS**	Batch ID: **52225**	RunNo: **68609**
Prep Date: **5/2/2020**	Analysis Date: **5/3/2020**	SeqNo: **2374031** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.95	0.025	1.000	0	94.7	70	130			
Toluene	1.0	0.050	1.000	0	102	70	130			
Ethylbenzene	1.1	0.050	1.000	0	106	70	130			
Xylenes, Total	3.2	0.10	3.000	0	106	70	130			
Surr: 1,2-Dichloroethane-d4	0.46		0.5000		91.5	70	130			
Surr: 4-Bromofluorobenzene	0.49		0.5000		98.9	70	130			
Surr: Dibromofluoromethane	0.51		0.5000		101	70	130			
Surr: Toluene-d8	0.49		0.5000		97.1	70	130			

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#: **2005013**

08-May-20

Client: Vertex Resource Group Ltd.

Project: Nina Cortell Fed Com 124H

Sample ID: **mb-52225**	SampType: **MBLK**	TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **PBS**	Batch ID: **52225**	RunNo: **68609**
Prep Date: **5/2/2020**	Analysis Date: **5/3/2020**	SeqNo: **2374058** 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	490		500.0		97.1	70	130			

Sample ID: **lcs-52225**	SampType: **LCS**	TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **LCSS**	Batch ID: **52225**	RunNo: **68609**
Prep Date: **5/2/2020**	Analysis Date: **5/3/2020**	SeqNo: **2374059** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	21	5.0	25.00	0	83.2	70	130			
Surr: BFB	480		500.0		95.7	70	130			

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: www.hallenvironmental.com

Sample Log-In Check List

Client Name: VERTEX CARLSBAD Work Order Number: 2005013 RcptNo: 1

Received By: Juan Rojas 5/1/2020

Completed By: Isaiah Ortiz 5/1/2020 9:46:23 AM

Reviewed By: JR 5/1/20

Chain of Custody

1. Is Chain of Custody sufficiently 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 ☐	# of preserved bottles checked for pH: (<2 or >12 unless noted)
12. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	Adjusted?
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 ☐	Checked by: QM 5/1/20

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	4.9	Good	Not Present			

Chain-of-Custody Record

Client: Vertex Resource Group

Mailing Address: CW FILE

Phone #:

email or Fax#:

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

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other
☐ EDD (Type)

Turn-Around Time: 5 DAY TAT
☒ Standard ☐ Rush

Project Name: Nina Cortell Fed Com #124H

Project #: 20E-00239-010

Project Manager: Natalie Gordon

Sampler:

On Ice: ☒ Yes ☐ No

# of Coolers: 1

Cooler Temp (including CF): 5.1 -0.2 = 4.9 (°C)

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

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 2005013	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	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
4/24/20	12:49	Soil	SS20-01 0.0'	4oz jar	ICE	-001	X	X					X			
X	1:03	X	SS20-02 0.0'	X	X	-002	X	X					X			
X	1:25	X	SS20-03 0.0'	X	X	-003	X	X					X			
X	1:51	X	SS20-04 0.0'	X	X	-004	X	X					X			
X	2:00	X	SS20-05 0.0'	X	X	-005	X	X					X			
X	2:20	X	SS20-06 0.0'	X	X	-006	X	X					X			
X	2:51	X	BH20-01 1.0'	X	X	-007	X	X					X			

Analysis Request

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
4/30/20	1130				4/30/20	1130
4/30/20	1900			courier	5/1/20	9:20

Remarks: Send Report to Natalie Gordon
Direct Bill Vertex

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.

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

July 14, 2020

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

RE: Nina Cortell 124H OrderNo.: 2007172

Dear Natalie Gordon:

Hall Environmental Analysis Laboratory received 27 sample(s) on 7/3/2020 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 **2007172**
Date Reported: **7/14/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd.
Project: Nina Cortell 124H
Lab ID: 2007172-001 **Matrix:** SOIL

Client Sample ID: BS20-01 1'
Collection Date: 7/1/2020 10:30:00 AM
Received Date: 7/3/2020 11:00:00 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	7/7/2020 11:18:17 AM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	7/7/2020 11:18:17 AM
Surr: DNOP	103	55.1-146		%Rec	1	7/7/2020 11:18:17 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	7/9/2020 12:36:05 AM
Surr: BFB	91.6	66.6-105		%Rec	1	7/9/2020 12:36:05 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.024		mg/Kg	1	7/9/2020 12:36:05 AM
Toluene	ND	0.048		mg/Kg	1	7/9/2020 12:36:05 AM
Ethylbenzene	ND	0.048		mg/Kg	1	7/9/2020 12:36:05 AM
Xylenes, Total	ND	0.096		mg/Kg	1	7/9/2020 12:36:05 AM
Surr: 4-Bromofluorobenzene	109	80-120		%Rec	1	7/9/2020 12:36:05 AM
EPA METHOD 300.0: ANIONS						Analyst: **CAS**
Chloride	94	60		mg/Kg	20	7/8/2020 12:59:02 PM

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level
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 **2007172**
Date Reported: **7/14/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd.
Project: Nina Cortell 124H
Lab ID: 2007172-002 **Matrix:** SOIL

Client Sample ID: BS20-02 1'
Collection Date: 7/1/2020 10:35:00 AM
Received Date: 7/3/2020 11:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	ND	8.9		mg/Kg	1	7/7/2020 12:30:53 PM
Motor Oil Range Organics (MRO)	ND	45		mg/Kg	1	7/7/2020 12:30:53 PM
Surr: DNOP	130	55.1-146		%Rec	1	7/7/2020 12:30:53 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	7/9/2020 1:46:46 AM
Surr: BFB	88.8	66.6-105		%Rec	1	7/9/2020 1:46:46 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.024		mg/Kg	1	7/9/2020 1:46:46 AM
Toluene	ND	0.048		mg/Kg	1	7/9/2020 1:46:46 AM
Ethylbenzene	ND	0.048		mg/Kg	1	7/9/2020 1:46:46 AM
Xylenes, Total	ND	0.096		mg/Kg	1	7/9/2020 1:46:46 AM
Surr: 4-Bromofluorobenzene	108	80-120		%Rec	1	7/9/2020 1:46:46 AM
EPA METHOD 300.0: ANIONS						Analyst: **CAS**
Chloride	300	60		mg/Kg	20	7/8/2020 1:11:27 PM

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
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 **2007172**
Date Reported: **7/14/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd.
Project: Nina Cortell 124H
Lab ID: 2007172-003 **Matrix:** SOIL

Client Sample ID: BS20-03 1'
Collection Date: 7/1/2020 10:40:00 AM
Received Date: 7/3/2020 11:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	ND	9.4		mg/Kg	1	7/7/2020 12:55:08 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	7/7/2020 12:55:08 PM
Surr: DNOP	102	55.1-146		%Rec	1	7/7/2020 12:55:08 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	7/9/2020 2:10:12 AM
Surr: BFB	89.1	66.6-105		%Rec	1	7/9/2020 2:10:12 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.024		mg/Kg	1	7/9/2020 2:10:12 AM
Toluene	ND	0.048		mg/Kg	1	7/9/2020 2:10:12 AM
Ethylbenzene	ND	0.048		mg/Kg	1	7/9/2020 2:10:12 AM
Xylenes, Total	ND	0.095		mg/Kg	1	7/9/2020 2:10:12 AM
Surr: 4-Bromofluorobenzene	106	80-120		%Rec	1	7/9/2020 2:10:12 AM
EPA METHOD 300.0: ANIONS						Analyst: **CAS**
Chloride	170	60		mg/Kg	20	7/8/2020 1:23:52 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 **2007172**
Date Reported: **7/14/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd.
Project: Nina Cortell 124H
Lab ID: 2007172-004 **Matrix:** SOIL

Client Sample ID: BS20-04 1'
Collection Date: 7/1/2020 10:45:00 AM
Received Date: 7/3/2020 11:00:00 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	7/7/2020 1:19:26 PM
Motor Oil Range Organics (MRO)	ND	43		mg/Kg	1	7/7/2020 1:19:26 PM
Surr: DNOP	94.8	55.1-146		%Rec	1	7/7/2020 1:19:26 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	7/9/2020 2:33:34 AM
Surr: BFB	92.6	66.6-105		%Rec	1	7/9/2020 2:33:34 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.024		mg/Kg	1	7/9/2020 2:33:34 AM
Toluene	ND	0.048		mg/Kg	1	7/9/2020 2:33:34 AM
Ethylbenzene	ND	0.048		mg/Kg	1	7/9/2020 2:33:34 AM
Xylenes, Total	ND	0.097		mg/Kg	1	7/9/2020 2:33:34 AM
Surr: 4-Bromofluorobenzene	113	80-120		%Rec	1	7/9/2020 2:33:34 AM
EPA METHOD 300.0: ANIONS						Analyst: **CAS**
Chloride	130	60		mg/Kg	20	7/8/2020 1:36:16 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 **2007172**
Date Reported: **7/14/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd.
Project: Nina Cortell 124H
Lab ID: 2007172-005 **Matrix:** SOIL

Client Sample ID: BS20-05 1'
Collection Date: 7/1/2020 10:50:00 AM
Received Date: 7/3/2020 11:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	ND	8.9		mg/Kg	1	7/7/2020 1:43:34 PM
Motor Oil Range Organics (MRO)	ND	45		mg/Kg	1	7/7/2020 1:43:34 PM
Surr: DNOP	106	55.1-146		%Rec	1	7/7/2020 1:43:34 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	7/9/2020 2:56:58 AM
Surr: BFB	93.1	66.6-105		%Rec	1	7/9/2020 2:56:58 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.023		mg/Kg	1	7/9/2020 2:56:58 AM
Toluene	ND	0.046		mg/Kg	1	7/9/2020 2:56:58 AM
Ethylbenzene	ND	0.046		mg/Kg	1	7/9/2020 2:56:58 AM
Xylenes, Total	ND	0.092		mg/Kg	1	7/9/2020 2:56:58 AM
Surr: 4-Bromofluorobenzene	114	80-120		%Rec	1	7/9/2020 2:56:58 AM
EPA METHOD 300.0: ANIONS						Analyst: **CAS**
Chloride	61	60		mg/Kg	20	7/8/2020 1:48:42 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 **2007172**
Date Reported: **7/14/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd.
Project: Nina Cortell 124H
Lab ID: 2007172-006 **Matrix:** SOIL

Client Sample ID: BS20-06 1'
Collection Date: 7/1/2020 10:55:00 AM
Received Date: 7/3/2020 11:00:00 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	7/7/2020 2:07:38 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	7/7/2020 2:07:38 PM
Surr: DNOP	94.2	55.1-146		%Rec	1	7/7/2020 2:07:38 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	7/9/2020 3:20:25 AM
Surr: BFB	91.2	66.6-105		%Rec	1	7/9/2020 3:20:25 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.023		mg/Kg	1	7/9/2020 3:20:25 AM
Toluene	ND	0.047		mg/Kg	1	7/9/2020 3:20:25 AM
Ethylbenzene	ND	0.047		mg/Kg	1	7/9/2020 3:20:25 AM
Xylenes, Total	ND	0.094		mg/Kg	1	7/9/2020 3:20:25 AM
Surr: 4-Bromofluorobenzene	111	80-120		%Rec	1	7/9/2020 3:20:25 AM
EPA METHOD 300.0: ANIONS						Analyst: **CAS**
Chloride	83	60		mg/Kg	20	7/8/2020 2:50:44 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 **2007172**
Date Reported: **7/14/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd.
Project: Nina Cortell 124H
Lab ID: 2007172-007 **Matrix:** SOIL

Client Sample ID: BS20-07 1'
Collection Date: 7/1/2020 11:00:00 AM
Received Date: 7/3/2020 11:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	ND	9.0		mg/Kg	1	7/7/2020 2:31:49 PM
Motor Oil Range Organics (MRO)	ND	45		mg/Kg	1	7/7/2020 2:31:49 PM
Surr: DNOP	95.0	55.1-146		%Rec	1	7/7/2020 2:31:49 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	7/9/2020 3:43:56 AM
Surr: BFB	89.1	66.6-105		%Rec	1	7/9/2020 3:43:56 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.024		mg/Kg	1	7/9/2020 3:43:56 AM
Toluene	ND	0.049		mg/Kg	1	7/9/2020 3:43:56 AM
Ethylbenzene	ND	0.049		mg/Kg	1	7/9/2020 3:43:56 AM
Xylenes, Total	ND	0.097		mg/Kg	1	7/9/2020 3:43:56 AM
Surr: 4-Bromofluorobenzene	109	80-120		%Rec	1	7/9/2020 3:43:56 AM
EPA METHOD 300.0: ANIONS						Analyst: **CAS**
Chloride	81	59		mg/Kg	20	7/8/2020 3:03:08 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 **2007172**
Date Reported: **7/14/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd.
Project: Nina Cortell 124H
Lab ID: 2007172-008 **Matrix:** SOIL

Client Sample ID: BS20-08 1'
Collection Date: 7/1/2020 11:05:00 AM
Received Date: 7/3/2020 11:00:00 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	7/7/2020 2:56:16 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	7/7/2020 2:56:16 PM
Surr: DNOP	108	55.1-146		%Rec	1	7/7/2020 2:56:16 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	7/9/2020 4:07:38 AM
Surr: BFB	90.0	66.6-105		%Rec	1	7/9/2020 4:07:38 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.025		mg/Kg	1	7/9/2020 4:07:38 AM
Toluene	ND	0.050		mg/Kg	1	7/9/2020 4:07:38 AM
Ethylbenzene	ND	0.050		mg/Kg	1	7/9/2020 4:07:38 AM
Xylenes, Total	ND	0.099		mg/Kg	1	7/9/2020 4:07:38 AM
Surr: 4-Bromofluorobenzene	108	80-120		%Rec	1	7/9/2020 4:07:38 AM
EPA METHOD 300.0: ANIONS						Analyst: **CAS**
Chloride	240	60		mg/Kg	20	7/8/2020 3:15:33 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 **2007172**
Date Reported: **7/14/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd.
Project: Nina Cortell 124H
Lab ID: 2007172-009 **Matrix:** SOIL

Client Sample ID: BS20-09 1'
Collection Date: 7/1/2020 11:10:00 AM
Received Date: 7/3/2020 11:00:00 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	7/7/2020 3:20:58 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	7/7/2020 3:20:58 PM
Surr: DNOP	109	55.1-146		%Rec	1	7/7/2020 3:20:58 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	7/9/2020 4:31:23 AM
Surr: BFB	92.9	66.6-105		%Rec	1	7/9/2020 4:31:23 AM
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**
Benzene	ND	0.023		mg/Kg	1	7/9/2020 4:31:23 AM
Toluene	ND	0.047		mg/Kg	1	7/9/2020 4:31:23 AM
Ethylbenzene	ND	0.047		mg/Kg	1	7/9/2020 4:31:23 AM
Xylenes, Total	ND	0.094		mg/Kg	1	7/9/2020 4:31:23 AM
Surr: 4-Bromofluorobenzene	112	80-120		%Rec	1	7/9/2020 4:31:23 AM
EPA METHOD 300.0: ANIONS						Analyst: **CAS**
Chloride	220	60		mg/Kg	20	7/8/2020 3:27:57 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 **2007172**
Date Reported: **7/14/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd.
Project: Nina Cortell 124H
Lab ID: 2007172-010 **Matrix:** SOIL

Client Sample ID: BS20-10 1'
Collection Date: 7/1/2020 11:15:00 AM
Received Date: 7/3/2020 11:00:00 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	7/7/2020 3:45:37 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	7/7/2020 3:45:37 PM
Surr: DNOP	97.1	55.1-146		%Rec	1	7/7/2020 3:45:37 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	7/9/2020 9:46:05 AM
Surr: BFB	91.2	66.6-105		%Rec	1	7/9/2020 9:46:05 AM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.024		mg/Kg	1	7/9/2020 9:46:05 AM
Toluene	ND	0.048		mg/Kg	1	7/9/2020 9:46:05 AM
Ethylbenzene	ND	0.048		mg/Kg	1	7/9/2020 9:46:05 AM
Xylenes, Total	ND	0.096		mg/Kg	1	7/9/2020 9:46:05 AM
Surr: 4-Bromofluorobenzene	110	80-120		%Rec	1	7/9/2020 9:46:05 AM
EPA METHOD 300.0: ANIONS						Analyst: **CAS**
Chloride	170	60		mg/Kg	20	7/8/2020 3:40:21 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 **2007172**
Date Reported: **7/14/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd.
Project: Nina Cortell 124H
Lab ID: 2007172-011 **Matrix:** SOIL

Client Sample ID: BS20-11 1'
Collection Date: 7/2/2020 8:30:00 AM
Received Date: 7/3/2020 11:00:00 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	7/7/2020 4:10:22 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	7/7/2020 4:10:22 PM
Surr: DNOP	97.9	55.1-146		%Rec	1	7/7/2020 4:10:22 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	7/9/2020 10:33:21 AM
Surr: BFB	87.7	66.6-105		%Rec	1	7/9/2020 10:33:21 AM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.024		mg/Kg	1	7/9/2020 10:33:21 AM
Toluene	ND	0.048		mg/Kg	1	7/9/2020 10:33:21 AM
Ethylbenzene	ND	0.048		mg/Kg	1	7/9/2020 10:33:21 AM
Xylenes, Total	ND	0.096		mg/Kg	1	7/9/2020 10:33:21 AM
Surr: 4-Bromofluorobenzene	106	80-120		%Rec	1	7/9/2020 10:33:21 AM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	65	60		mg/Kg	20	7/8/2020 3:48:09 PM

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
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 **2007172**
Date Reported: **7/14/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd.
Project: Nina Cortell 124H
Lab ID: 2007172-012 **Matrix:** SOIL

Client Sample ID: BS20-12 1'
Collection Date: 7/2/2020 8:35:00 AM
Received Date: 7/3/2020 11:00:00 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	7/7/2020 4:35:03 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	7/7/2020 4:35:03 PM
Surr: DNOP	101	55.1-146		%Rec	1	7/7/2020 4:35:03 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	7/9/2020 10:56:52 AM
Surr: BFB	92.6	66.6-105		%Rec	1	7/9/2020 10:56:52 AM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.024		mg/Kg	1	7/9/2020 10:56:52 AM
Toluene	ND	0.048		mg/Kg	1	7/9/2020 10:56:52 AM
Ethylbenzene	ND	0.048		mg/Kg	1	7/9/2020 10:56:52 AM
Xylenes, Total	ND	0.095		mg/Kg	1	7/9/2020 10:56:52 AM
Surr: 4-Bromofluorobenzene	112	80-120		%Rec	1	7/9/2020 10:56:52 AM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	77	60		mg/Kg	20	7/8/2020 4:25:13 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 **2007172**
Date Reported: **7/14/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd.
Project: Nina Cortell 124H
Lab ID: 2007172-013 **Matrix:** SOIL

Client Sample ID: BS20-13 1'
Collection Date: 7/2/2020 8:40:00 AM
Received Date: 7/3/2020 11:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **CLP**
Diesel Range Organics (DRO)	ND	9.2		mg/Kg	1	7/7/2020 4:59:43 PM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	7/7/2020 4:59:43 PM
Surr: DNOP	109	55.1-146		%Rec	1	7/7/2020 4:59:43 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	7/9/2020 11:20:22 AM
Surr: BFB	90.9	66.6-105		%Rec	1	7/9/2020 11:20:22 AM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.024		mg/Kg	1	7/9/2020 11:20:22 AM
Toluene	ND	0.048		mg/Kg	1	7/9/2020 11:20:22 AM
Ethylbenzene	ND	0.048		mg/Kg	1	7/9/2020 11:20:22 AM
Xylenes, Total	ND	0.096		mg/Kg	1	7/9/2020 11:20:22 AM
Surr: 4-Bromofluorobenzene	108	80-120		%Rec	1	7/9/2020 11:20:22 AM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	ND	60		mg/Kg	20	7/8/2020 4:37:33 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 **2007172**
Date Reported: **7/14/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd.
Project: Nina Cortell 124H
Lab ID: 2007172-014 **Matrix:** SOIL

Client Sample ID: BS20-14 1'
Collection Date: 7/2/2020 8:45:00 AM
Received Date: 7/3/2020 11:00:00 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	7/7/2020 5:24:07 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	7/7/2020 5:24:07 PM
Surr: DNOP	108	55.1-146		%Rec	1	7/7/2020 5:24:07 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	7/9/2020 5:15:53 PM
Surr: BFB	98.2	66.6-105		%Rec	1	7/9/2020 5:15:53 PM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.024		mg/Kg	1	7/9/2020 5:15:53 PM
Toluene	ND	0.048		mg/Kg	1	7/9/2020 5:15:53 PM
Ethylbenzene	ND	0.048		mg/Kg	1	7/9/2020 5:15:53 PM
Xylenes, Total	ND	0.096		mg/Kg	1	7/9/2020 5:15:53 PM
Surr: 4-Bromofluorobenzene	113	80-120		%Rec	1	7/9/2020 5:15:53 PM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	320	60		mg/Kg	20	7/8/2020 4:49:54 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 **2007172**
Date Reported: **7/14/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd.
Project: Nina Cortell 124H
Lab ID: 2007172-015 **Matrix:** SOIL

Client Sample ID: BS20-15 1'
Collection Date: 7/2/2020 8:50:00 AM
Received Date: 7/3/2020 11:00:00 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	7/7/2020 5:48:22 PM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	7/7/2020 5:48:22 PM
Surr: DNOP	106	55.1-146		%Rec	1	7/7/2020 5:48:22 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	7/9/2020 5:39:41 PM
Surr: BFB	92.9	66.6-105		%Rec	1	7/9/2020 5:39:41 PM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.024		mg/Kg	1	7/9/2020 5:39:41 PM
Toluene	ND	0.049		mg/Kg	1	7/9/2020 5:39:41 PM
Ethylbenzene	ND	0.049		mg/Kg	1	7/9/2020 5:39:41 PM
Xylenes, Total	ND	0.098		mg/Kg	1	7/9/2020 5:39:41 PM
Surr: 4-Bromofluorobenzene	110	80-120		%Rec	1	7/9/2020 5:39:41 PM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	300	60		mg/Kg	20	7/8/2020 5:26:57 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 **2007172**
Date Reported: **7/14/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd.
Project: Nina Cortell 124H
Lab ID: 2007172-016 **Matrix:** SOIL

Client Sample ID: BS20-16 1'
Collection Date: 7/2/2020 8:55:00 AM
Received Date: 7/3/2020 11:00:00 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	7/7/2020 6:12:32 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	7/7/2020 6:12:32 PM
Surr: DNOP	104	55.1-146		%Rec	1	7/7/2020 6:12:32 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	7/9/2020 6:03:29 PM
Surr: BFB	91.4	66.6-105		%Rec	1	7/9/2020 6:03:29 PM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.024		mg/Kg	1	7/9/2020 6:03:29 PM
Toluene	ND	0.049		mg/Kg	1	7/9/2020 6:03:29 PM
Ethylbenzene	ND	0.049		mg/Kg	1	7/9/2020 6:03:29 PM
Xylenes, Total	ND	0.098		mg/Kg	1	7/9/2020 6:03:29 PM
Surr: 4-Bromofluorobenzene	108	80-120		%Rec	1	7/9/2020 6:03:29 PM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	270	60		mg/Kg	20	7/8/2020 5:39:18 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 **2007172**
Date Reported: **7/14/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd.
Project: Nina Cortell 124H
Lab ID: 2007172-017 **Matrix:** SOIL

Client Sample ID: BS20-17 1'
Collection Date: 7/2/2020 9:00:00 AM
Received Date: 7/3/2020 11:00:00 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	7/7/2020 6:36:42 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	7/7/2020 6:36:42 PM
Surr: DNOP	101	55.1-146		%Rec	1	7/7/2020 6:36:42 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	7/9/2020 7:38:40 PM
Surr: BFB	93.7	66.6-105		%Rec	1	7/9/2020 7:38:40 PM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.024		mg/Kg	1	7/9/2020 7:38:40 PM
Toluene	ND	0.048		mg/Kg	1	7/9/2020 7:38:40 PM
Ethylbenzene	ND	0.048		mg/Kg	1	7/9/2020 7:38:40 PM
Xylenes, Total	ND	0.095		mg/Kg	1	7/9/2020 7:38:40 PM
Surr: 4-Bromofluorobenzene	113	80-120		%Rec	1	7/9/2020 7:38:40 PM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	180	60		mg/Kg	20	7/8/2020 5:51:39 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 **2007172**
Date Reported: **7/14/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd.
Project: Nina Cortell 124H
Lab ID: 2007172-018 **Matrix:** SOIL

Client Sample ID: BS20-18 1'
Collection Date: 7/2/2020 9:05:00 AM
Received Date: 7/3/2020 11:00:00 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	7/7/2020 7:00:53 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	7/7/2020 7:00:53 PM
Surr: DNOP	93.7	55.1-146		%Rec	1	7/7/2020 7:00:53 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	7/9/2020 8:02:23 PM
Surr: BFB	93.3	66.6-105		%Rec	1	7/9/2020 8:02:23 PM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.023		mg/Kg	1	7/9/2020 8:02:23 PM
Toluene	ND	0.047		mg/Kg	1	7/9/2020 8:02:23 PM
Ethylbenzene	ND	0.047		mg/Kg	1	7/9/2020 8:02:23 PM
Xylenes, Total	ND	0.093		mg/Kg	1	7/9/2020 8:02:23 PM
Surr: 4-Bromofluorobenzene	111	80-120		%Rec	1	7/9/2020 8:02:23 PM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	ND	60		mg/Kg	20	7/8/2020 6:03:59 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 **2007172**
Date Reported: **7/14/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd.
Project: Nina Cortell 124H
Lab ID: 2007172-019 **Matrix:** SOIL

Client Sample ID: BS20-19 1'
Collection Date: 7/2/2020 9:10:00 AM
Received Date: 7/3/2020 11:00:00 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	7/7/2020 7:25:03 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	7/7/2020 7:25:03 PM
Surr: DNOP	93.3	55.1-146		%Rec	1	7/7/2020 7:25:03 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	7/9/2020 8:26:03 PM
Surr: BFB	98.7	66.6-105		%Rec	1	7/9/2020 8:26:03 PM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.023		mg/Kg	1	7/9/2020 8:26:03 PM
Toluene	ND	0.047		mg/Kg	1	7/9/2020 8:26:03 PM
Ethylbenzene	ND	0.047		mg/Kg	1	7/9/2020 8:26:03 PM
Xylenes, Total	ND	0.094		mg/Kg	1	7/9/2020 8:26:03 PM
Surr: 4-Bromofluorobenzene	112	80-120		%Rec	1	7/9/2020 8:26:03 PM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	350	60		mg/Kg	20	7/8/2020 6:16:20 PM

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
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 **2007172**
Date Reported: **7/14/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd.
Project: Nina Cortell 124H
Lab ID: 2007172-020 **Matrix:** SOIL

Client Sample ID: BS20-20 1'
Collection Date: 7/2/2020 9:15:00 AM
Received Date: 7/3/2020 11:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	7/11/2020 5:19:21 AM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	7/11/2020 5:19:21 AM
Surr: DNOP	64.9	55.1-146		%Rec	1	7/11/2020 5:19:21 AM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	370	60		mg/Kg	20	7/8/2020 6:28:41 PM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **JMR**
Benzene	ND	0.025		mg/Kg	1	7/7/2020 5:11:26 PM
Toluene	ND	0.050		mg/Kg	1	7/7/2020 5:11:26 PM
Ethylbenzene	ND	0.050		mg/Kg	1	7/7/2020 5:11:26 PM
Xylenes, Total	ND	0.10		mg/Kg	1	7/7/2020 5:11:26 PM
Surr: 1,2-Dichloroethane-d4	112	70-130		%Rec	1	7/7/2020 5:11:26 PM
Surr: 4-Bromofluorobenzene	91.8	70-130		%Rec	1	7/7/2020 5:11:26 PM
Surr: Dibromofluoromethane	122	70-130		%Rec	1	7/7/2020 5:11:26 PM
Surr: Toluene-d8	100	70-130		%Rec	1	7/7/2020 5:11:26 PM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **JMR**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	7/7/2020 5:11:26 PM
Surr: BFB	102	70-130		%Rec	1	7/7/2020 5:11:26 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 **2007172**
Date Reported: **7/14/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd.
Project: Nina Cortell 124H
Lab ID: 2007172-021 **Matrix:** SOIL

Client Sample ID: WS20-01 0-1'
Collection Date: 7/2/2020 9:30:00 AM
Received Date: 7/3/2020 11:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.3		mg/Kg	1	7/11/2020 5:43:48 AM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	7/11/2020 5:43:48 AM
Surr: DNOP	53.6	55.1-146	S	%Rec	1	7/11/2020 5:43:48 AM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	ND	60		mg/Kg	20	7/9/2020 1:54:53 AM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **JMR**
Benzene	ND	0.025		mg/Kg	1	7/7/2020 6:37:29 PM
Toluene	ND	0.050		mg/Kg	1	7/7/2020 6:37:29 PM
Ethylbenzene	ND	0.050		mg/Kg	1	7/7/2020 6:37:29 PM
Xylenes, Total	ND	0.099		mg/Kg	1	7/7/2020 6:37:29 PM
Surr: 1,2-Dichloroethane-d4	113	70-130		%Rec	1	7/7/2020 6:37:29 PM
Surr: 4-Bromofluorobenzene	97.5	70-130		%Rec	1	7/7/2020 6:37:29 PM
Surr: Dibromofluoromethane	120	70-130		%Rec	1	7/7/2020 6:37:29 PM
Surr: Toluene-d8	99.7	70-130		%Rec	1	7/7/2020 6:37:29 PM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **JMR**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	7/7/2020 6:37:29 PM
Surr: BFB	102	70-130		%Rec	1	7/7/2020 6:37:29 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 **2007172**
Date Reported: **7/14/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd.
Project: Nina Cortell 124H
Lab ID: 2007172-022 **Matrix:** SOIL

Client Sample ID: WS20-02 0-1'
Collection Date: 7/2/2020 9:35:00 AM
Received Date: 7/3/2020 11:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	7/11/2020 6:08:07 AM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	7/11/2020 6:08:07 AM
Surr: DNOP	61.4	55.1-146		%Rec	1	7/11/2020 6:08:07 AM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	130	60		mg/Kg	20	7/9/2020 2:56:56 AM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **JMR**
Benzene	ND	0.025		mg/Kg	1	7/7/2020 8:03:31 PM
Toluene	ND	0.049		mg/Kg	1	7/7/2020 8:03:31 PM
Ethylbenzene	ND	0.049		mg/Kg	1	7/7/2020 8:03:31 PM
Xylenes, Total	ND	0.098		mg/Kg	1	7/7/2020 8:03:31 PM
Surr: 1,2-Dichloroethane-d4	109	70-130		%Rec	1	7/7/2020 8:03:31 PM
Surr: 4-Bromofluorobenzene	91.4	70-130		%Rec	1	7/7/2020 8:03:31 PM
Surr: Dibromofluoromethane	118	70-130		%Rec	1	7/7/2020 8:03:31 PM
Surr: Toluene-d8	99.0	70-130		%Rec	1	7/7/2020 8:03:31 PM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **JMR**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	7/7/2020 8:03:31 PM
Surr: BFB	99.3	70-130		%Rec	1	7/7/2020 8:03:31 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 **2007172**
Date Reported: **7/14/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd.
Project: Nina Cortell 124H
Lab ID: 2007172-023 **Matrix:** SOIL

Client Sample ID: WS20-03 0-1'
Collection Date: 7/2/2020 9:40:00 AM
Received Date: 7/3/2020 11:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	7/11/2020 6:32:29 AM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	7/11/2020 6:32:29 AM
Surr: DNOP	70.1	55.1-146		%Rec	1	7/11/2020 6:32:29 AM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	260	60		mg/Kg	20	7/9/2020 3:09:20 AM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **JMR**
Benzene	ND	0.025		mg/Kg	1	7/7/2020 8:32:08 PM
Toluene	ND	0.050		mg/Kg	1	7/7/2020 8:32:08 PM
Ethylbenzene	ND	0.050		mg/Kg	1	7/7/2020 8:32:08 PM
Xylenes, Total	ND	0.10		mg/Kg	1	7/7/2020 8:32:08 PM
Surr: 1,2-Dichloroethane-d4	112	70-130		%Rec	1	7/7/2020 8:32:08 PM
Surr: 4-Bromofluorobenzene	95.8	70-130		%Rec	1	7/7/2020 8:32:08 PM
Surr: Dibromofluoromethane	117	70-130		%Rec	1	7/7/2020 8:32:08 PM
Surr: Toluene-d8	99.0	70-130		%Rec	1	7/7/2020 8:32:08 PM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **JMR**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	7/7/2020 8:32:08 PM
Surr: BFB	101	70-130		%Rec	1	7/7/2020 8:32:08 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 **2007172**
Date Reported: **7/14/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd.
Project: Nina Cortell 124H
Lab ID: 2007172-024 **Matrix:** SOIL

Client Sample ID: WS20-04 0-1'
Collection Date: 7/2/2020 9:45:00 AM
Received Date: 7/3/2020 11:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.4		mg/Kg	1	7/11/2020 6:56:59 AM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	7/11/2020 6:56:59 AM
Surr: DNOP	66.1	55.1-146		%Rec	1	7/11/2020 6:56:59 AM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	83	60		mg/Kg	20	7/9/2020 3:21:44 AM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **JMR**
Benzene	ND	0.025		mg/Kg	1	7/7/2020 9:00:43 PM
Toluene	ND	0.049		mg/Kg	1	7/7/2020 9:00:43 PM
Ethylbenzene	ND	0.049		mg/Kg	1	7/7/2020 9:00:43 PM
Xylenes, Total	ND	0.098		mg/Kg	1	7/7/2020 9:00:43 PM
Surr: 1,2-Dichloroethane-d4	110	70-130		%Rec	1	7/7/2020 9:00:43 PM
Surr: 4-Bromofluorobenzene	92.7	70-130		%Rec	1	7/7/2020 9:00:43 PM
Surr: Dibromofluoromethane	117	70-130		%Rec	1	7/7/2020 9:00:43 PM
Surr: Toluene-d8	101	70-130		%Rec	1	7/7/2020 9:00:43 PM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **JMR**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	7/7/2020 9:00:43 PM
Surr: BFB	101	70-130		%Rec	1	7/7/2020 9:00:43 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 **2007172**
Date Reported: **7/14/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd.
Project: Nina Cortell 124H
Lab ID: 2007172-025 **Matrix:** SOIL

Client Sample ID: WS20-05 0-1'
Collection Date: 7/2/2020 9:50:00 AM
Received Date: 7/3/2020 11:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	7/11/2020 7:21:21 AM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	7/11/2020 7:21:21 AM
Surr: DNOP	68.7	55.1-146		%Rec	1	7/11/2020 7:21:21 AM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	190	60		mg/Kg	20	7/9/2020 3:34:08 AM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **JMR**
Benzene	ND	0.025		mg/Kg	1	7/7/2020 9:29:22 PM
Toluene	ND	0.050		mg/Kg	1	7/7/2020 9:29:22 PM
Ethylbenzene	ND	0.050		mg/Kg	1	7/7/2020 9:29:22 PM
Xylenes, Total	ND	0.099		mg/Kg	1	7/7/2020 9:29:22 PM
Surr: 1,2-Dichloroethane-d4	111	70-130		%Rec	1	7/7/2020 9:29:22 PM
Surr: 4-Bromofluorobenzene	95.7	70-130		%Rec	1	7/7/2020 9:29:22 PM
Surr: Dibromofluoromethane	116	70-130		%Rec	1	7/7/2020 9:29:22 PM
Surr: Toluene-d8	98.0	70-130		%Rec	1	7/7/2020 9:29:22 PM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **JMR**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	7/7/2020 9:29:22 PM
Surr: BFB	103	70-130		%Rec	1	7/7/2020 9:29:22 PM

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
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 **2007172**
Date Reported: **7/14/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd.
Project: Nina Cortell 124H
Lab ID: 2007172-026 **Matrix:** SOIL

Client Sample ID: WS20-06 0-1'
Collection Date: 7/2/2020 9:55:00 AM
Received Date: 7/3/2020 11:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.0		mg/Kg	1	7/11/2020 7:45:38 AM
Motor Oil Range Organics (MRO)	ND	45		mg/Kg	1	7/11/2020 7:45:38 AM
Surr: DNOP	69.6	55.1-146		%Rec	1	7/11/2020 7:45:38 AM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	420	60		mg/Kg	20	7/9/2020 3:46:33 AM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **JMR**
Benzene	ND	0.025		mg/Kg	1	7/8/2020 5:35:31 PM
Toluene	ND	0.050		mg/Kg	1	7/8/2020 5:35:31 PM
Ethylbenzene	ND	0.050		mg/Kg	1	7/8/2020 5:35:31 PM
Xylenes, Total	ND	0.10		mg/Kg	1	7/8/2020 5:35:31 PM
Surr: 1,2-Dichloroethane-d4	105	70-130		%Rec	1	7/8/2020 5:35:31 PM
Surr: 4-Bromofluorobenzene	93.6	70-130		%Rec	1	7/8/2020 5:35:31 PM
Surr: Dibromofluoromethane	107	70-130		%Rec	1	7/8/2020 5:35:31 PM
Surr: Toluene-d8	106	70-130		%Rec	1	7/8/2020 5:35:31 PM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **JMR**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	7/7/2020 11:51:58 PM
Surr: BFB	98.0	70-130		%Rec	1	7/7/2020 11:51:58 PM

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
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 **2007172**
Date Reported: **7/14/2020**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd.
Project: Nina Cortell 124H
Lab ID: 2007172-027 **Matrix:** SOIL

Client Sample ID: WS20-07 0-1'
Collection Date: 7/2/2020 10:00:00 AM
Received Date: 7/3/2020 11:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**
Diesel Range Organics (DRO)	ND	9.4		mg/Kg	1	7/11/2020 8:09:58 AM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	7/11/2020 8:09:58 AM
Surr: DNOP	73.8	55.1-146		%Rec	1	7/11/2020 8:09:58 AM
EPA METHOD 300.0: ANIONS						Analyst: **MRA**
Chloride	200	60		mg/Kg	20	7/9/2020 3:58:57 AM
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **JMR**
Benzene	ND	0.025		mg/Kg	1	7/8/2020 6:04:14 PM
Toluene	ND	0.049		mg/Kg	1	7/8/2020 6:04:14 PM
Ethylbenzene	ND	0.049		mg/Kg	1	7/8/2020 6:04:14 PM
Xylenes, Total	ND	0.099		mg/Kg	1	7/8/2020 6:04:14 PM
Surr: 1,2-Dichloroethane-d4	104	70-130		%Rec	1	7/8/2020 6:04:14 PM
Surr: 4-Bromofluorobenzene	93.1	70-130		%Rec	1	7/8/2020 6:04:14 PM
Surr: Dibromofluoromethane	110	70-130		%Rec	1	7/8/2020 6:04:14 PM
Surr: Toluene-d8	107	70-130		%Rec	1	7/8/2020 6:04:14 PM
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **JMR**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	7/8/2020 12:20:27 AM
Surr: BFB	99.6	70-130		%Rec	1	7/8/2020 12:20:27 AM

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2007172**

14-Jul-20

Client: Vertex Resource Group Ltd.

Project: Nina Cortell 124H

Sample ID: **MB-53568**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **PBS**	Batch ID: **53568**	RunNo: **70202**							
Prep Date: **7/8/2020**	Analysis Date: **7/8/2020**	SeqNo: **2439470**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: **LCS-53568**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **LCSS**	Batch ID: **53568**	RunNo: **70202**							
Prep Date: **7/8/2020**	Analysis Date: **7/8/2020**	SeqNo: **2439471**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	15	1.5	15.00	0	97.2	90	110			

Sample ID: **MB-53585**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **PBS**	Batch ID: **53585**	RunNo: **70204**							
Prep Date: **7/8/2020**	Analysis Date: **7/8/2020**	SeqNo: **2439554**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: **LCS-53585**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **LCSS**	Batch ID: **53585**	RunNo: **70204**							
Prep Date: **7/8/2020**	Analysis Date: **7/8/2020**	SeqNo: **2439555**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	93.1	90	110			

Sample ID: **MB-53562**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **PBS**	Batch ID: **53562**	RunNo: **70207**							
Prep Date: **7/8/2020**	Analysis Date: **7/8/2020**	SeqNo: **2439786**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: **LCS-53562**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **LCSS**	Batch ID: **53562**	RunNo: **70207**							
Prep Date: **7/8/2020**	Analysis Date: **7/8/2020**	SeqNo: **2439787**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	94.4	90	110			

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#: **2007172**

14-Jul-20

Client: Vertex Resource Group Ltd.

Project: Nina Cortell 124H

Sample ID: **MB-53520**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **53520**	RunNo: **70110**
Prep Date: **7/6/2020**	Analysis Date: **7/7/2020**	SeqNo: **2437862** 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	12		10.00		119	55.1	146			

Sample ID: **LCS-53520**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **53520**	RunNo: **70110**
Prep Date: **7/6/2020**	Analysis Date: **7/7/2020**	SeqNo: **2437863** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	57	10	50.00	0	114	70	130			
Surr: DNOP	5.9		5.000		119	55.1	146			

Sample ID: **2007172-001AMS**	SampType: **MS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **BS20-01 1'**	Batch ID: **53520**	RunNo: **70110**
Prep Date: **7/6/2020**	Analysis Date: **7/7/2020**	SeqNo: **2437865** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	48	9.7	48.50	0	98.2	47.4	136			
Surr: DNOP	4.9		4.850		100	55.1	146			

Sample ID: **2007172-001AMSD**	SampType: **MSD**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **BS20-01 1'**	Batch ID: **53520**	RunNo: **70110**
Prep Date: **7/6/2020**	Analysis Date: **7/7/2020**	SeqNo: **2437866** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	44	9.3	46.60	0	95.2	47.4	136	7.09	43.4	
Surr: DNOP	4.6		4.660		97.9	55.1	146	0	0	

Sample ID: **LCS-53557**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **53557**	RunNo: **70235**
Prep Date: **7/8/2020**	Analysis Date: **7/10/2020**	SeqNo: **2441059** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	49	10	50.00	0	97.5	70	130			
Surr: DNOP	4.6		5.000		92.1	55.1	146			

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#: **2007172**

14-Jul-20

Client: Vertex Resource Group Ltd.

Project: Nina Cortell 124H

Sample ID: **MB-53557**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**							
Client ID: **PBS**	Batch ID: **53557**	RunNo: **70235**							
Prep Date: **7/8/2020**	Analysis Date: **7/10/2020**	SeqNo: **2441060**	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	9.1		10.00		91.3	55.1	146			

Sample ID: **MB-53631**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**							
Client ID: **PBS**	Batch ID: **53631**	RunNo: **70238**							
Prep Date: **7/10/2020**	Analysis Date: **7/11/2020**	SeqNo: **2442244**	Units: **%Rec**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	11		10.00		107	55.1	146			

Sample ID: **LCS-53631**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**							
Client ID: **LCSS**	Batch ID: **53631**	RunNo: **70238**							
Prep Date: **7/10/2020**	Analysis Date: **7/11/2020**	SeqNo: **2442245**	Units: **%Rec**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	5.1		5.000		102	55.1	146			

Sample ID: **2007389-001AMS**	SampType: **MS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**							
Client ID: **BatchQC**	Batch ID: **53631**	RunNo: **70238**							
Prep Date: **7/10/2020**	Analysis Date: **7/11/2020**	SeqNo: **2442247**	Units: **%Rec**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	4.9		4.950		98.4	55.1	146			

Sample ID: **2007389-001AMSD**	SampType: **MSD**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**							
Client ID: **BatchQC**	Batch ID: **53631**	RunNo: **70238**							
Prep Date: **7/10/2020**	Analysis Date: **7/11/2020**	SeqNo: **2442248**	Units: **%Rec**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	3.7		4.730		77.4	55.1	146	0	0	

Sample ID: **2006E67-005AMS**	SampType: **MS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**							
Client ID: **BatchQC**	Batch ID: **53583**	RunNo: **70235**							
Prep Date: **7/9/2020**	Analysis Date: **7/10/2020**	SeqNo: **2442281**	Units: **%Rec**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	4.0		4.638		85.6	55.1	146			

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#: **2007172**

14-Jul-20

Client: Vertex Resource Group Ltd.

Project: Nina Cortell 124H

Sample ID: **2006E67-005AMSD**	SampType: **MSD**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **BatchQC**	Batch ID: **53583**	RunNo: **70235**
Prep Date: **7/9/2020**	Analysis Date: **7/10/2020**	SeqNo: **2442282** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	3.9		4.812		81.8	55.1	146	0	0	

Sample ID: **LCS-53583**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **53583**	RunNo: **70235**
Prep Date: **7/9/2020**	Analysis Date: **7/10/2020**	SeqNo: **2442380** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	4.1		5.000		81.1	55.1	146			

Sample ID: **MB-53583**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **53583**	RunNo: **70235**
Prep Date: **7/9/2020**	Analysis Date: **7/10/2020**	SeqNo: **2442385** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	9.1		10.00		90.7	55.1	146			

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#: **2007172**

14-Jul-20

Client: Vertex Resource Group Ltd.

Project: Nina Cortell 124H

Sample ID: **mb-53506**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **53506**	RunNo: **70196**
Prep Date: **7/6/2020**	Analysis Date: **7/9/2020**	SeqNo: **2439224** 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	910		1000		91.0	66.6	105			

Sample ID: **lcs-53506**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **53506**	RunNo: **70196**
Prep Date: **7/6/2020**	Analysis Date: **7/8/2020**	SeqNo: **2439229** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	23	5.0	25.00	0	90.6	80	120			
Surr: BFB	1000		1000		103	66.6	105			

Sample ID: **2007172-001ams**	SampType: **MS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **BS20-01 1'**	Batch ID: **53506**	RunNo: **70196**
Prep Date: **7/6/2020**	Analysis Date: **7/9/2020**	SeqNo: **2439238** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	21	4.9	24.63	0	85.2	80	120			
Surr: BFB	970		985.2		98.7	66.6	105			

Sample ID: **2007172-001amsd**	SampType: **MSD**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **BS20-01 1'**	Batch ID: **53506**	RunNo: **70196**
Prep Date: **7/6/2020**	Analysis Date: **7/9/2020**	SeqNo: **2439240** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	20	4.8	23.83	0	84.0	80	120	4.76	20	
Surr: BFB	940		953.3		98.6	66.6	105	0	0	

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#: **2007172**

14-Jul-20

Client: Vertex Resource Group Ltd.

Project: Nina Cortell 124H

Sample ID: **mb-53506**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS**	Batch ID: **53506**	RunNo: **70196**
Prep Date: **7/6/2020**	Analysis Date: **7/9/2020**	SeqNo: **2439290** 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	1.1		1.000		109	80	120			

Sample ID: **LCS-53506**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS**	Batch ID: **53506**	RunNo: **70196**
Prep Date: **7/6/2020**	Analysis Date: **7/8/2020**	SeqNo: **2439291** 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	96.9	80	120			
Toluene	0.96	0.050	1.000	0	95.9	80	120			
Ethylbenzene	0.96	0.050	1.000	0	96.0	80	120			
Xylenes, Total	2.9	0.10	3.000	0	97.0	80	120			
Surr: 4-Bromofluorobenzene	1.1		1.000		112	80	120			

Sample ID: **2007175-029ams**	SampType: **MS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **BatchQC**	Batch ID: **53506**	RunNo: **70196**
Prep Date: **7/6/2020**	Analysis Date: **7/8/2020**	SeqNo: **2439293** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.98	0.024	0.9407	0	105	78.5	119			
Toluene	1.0	0.047	0.9407	0	106	75.7	123			
Ethylbenzene	1.0	0.047	0.9407	0	108	74.3	126			
Xylenes, Total	3.1	0.094	2.822	0	109	72.9	130			
Surr: 4-Bromofluorobenzene	1.0		0.9407		111	80	120			

Sample ID: **2007175-029amsd**	SampType: **MSD**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **BatchQC**	Batch ID: **53506**	RunNo: **70196**
Prep Date: **7/6/2020**	Analysis Date: **7/9/2020**	SeqNo: **2439294** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.1	0.025	0.9990	0	106	78.5	119	7.52	20	
Toluene	1.1	0.050	0.9990	0	108	75.7	123	7.58	20	
Ethylbenzene	1.1	0.050	0.9990	0	110	74.3	126	7.63	20	
Xylenes, Total	3.3	0.10	2.997	0	111	72.9	130	7.83	20	
Surr: 4-Bromofluorobenzene	1.1		0.9990		109	80	120	0	0	

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#: **2007172**

14-Jul-20

Client: Vertex Resource Group Ltd.

Project: Nina Cortell 124H

Sample ID: **mb-53518**	SampType: **MBLK**	TestCode: **EPA Method 8260B: Volatiles Short List**
Client ID: **PBS**	Batch ID: **53518**	RunNo: **70166**
Prep Date: **7/6/2020**	Analysis Date: **7/7/2020**	SeqNo: **2438287** 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: 1,2-Dichloroethane-d4	0.53		0.5000		106	70	130			
Surr: 4-Bromofluorobenzene	0.47		0.5000		94.2	70	130			
Surr: Dibromofluoromethane	0.56		0.5000		111	70	130			
Surr: Toluene-d8	0.52		0.5000		103	70	130			

Sample ID: **lcs-53518**	SampType: **LCS4**	TestCode: **EPA Method 8260B: Volatiles Short List**
Client ID: **BatchQC**	Batch ID: **53518**	RunNo: **70166**
Prep Date: **7/6/2020**	Analysis Date: **7/7/2020**	SeqNo: **2438288** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.1	0.025	1.000	0	111	80	120			
Toluene	1.0	0.050	1.000	0	103	80	120			
Ethylbenzene	1.0	0.050	1.000	0	103	80	120			
Xylenes, Total	3.2	0.10	3.000	0	107	80	120			
Surr: 1,2-Dichloroethane-d4	0.52		0.5000		103	70	130			
Surr: 4-Bromofluorobenzene	0.46		0.5000		91.2	70	130			
Surr: Dibromofluoromethane	0.52		0.5000		104	70	130			
Surr: Toluene-d8	0.52		0.5000		103	70	130			

Sample ID: **2007172-020ams**	SampType: **MS4**	TestCode: **EPA Method 8260B: Volatiles Short List**
Client ID: **BS20-20 1'**	Batch ID: **53518**	RunNo: **70166**
Prep Date: **7/6/2020**	Analysis Date: **7/7/2020**	SeqNo: **2438290** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.2	0.025	1.000	0	123	71.1	115			S
Toluene	0.95	0.050	1.000	0	95.3	79.6	132			
Ethylbenzene	0.99	0.050	1.000	0	98.7	83.8	134			
Xylenes, Total	3.1	0.10	3.000	0	103	82.4	132			
Surr: 1,2-Dichloroethane-d4	0.58		0.5000		116	70	130			
Surr: 4-Bromofluorobenzene	0.47		0.5000		94.6	70	130			
Surr: Dibromofluoromethane	0.60		0.5000		121	70	130			
Surr: Toluene-d8	0.52		0.5000		104	70	130			

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#: **2007172**

14-Jul-20

Client: Vertex Resource Group Ltd.

Project: Nina Cortell 124H

Sample ID: **2007172-020amsd** SampType: **MSD4** TestCode: **EPA Method 8260B: Volatiles Short List**

Client ID: **BS20-20 1'** Batch ID: **53518** RunNo: **70166**

Prep Date: **7/6/2020** Analysis Date: **7/7/2020** SeqNo: **2438291** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.2	0.025	0.9980	0	119	71.1	115	3.53	20	S
Toluene	0.96	0.050	0.9980	0	96.3	79.6	132	0.901	20	
Ethylbenzene	1.0	0.050	0.9980	0	100	83.8	134	1.58	20	
Xylenes, Total	3.1	0.10	2.994	0	103	82.4	132	0.455	20	
Surr: 1,2-Dichloroethane-d4	0.57		0.4990		114	70	130	0	0	
Surr: 4-Bromofluorobenzene	0.48		0.4990		96.7	70	130	0	0	
Surr: Dibromofluoromethane	0.59		0.4990		118	70	130	0	0	
Surr: Toluene-d8	0.51		0.4990		102	70	130	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#: **2007172**

14-Jul-20

Client: Vertex Resource Group Ltd.

Project: Nina Cortell 124H

Sample ID: **mb-53518**	SampType: **MBLK**	TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **PBS**	Batch ID: **53518**	RunNo: **70166**
Prep Date: **7/6/2020**	Analysis Date: **7/7/2020**	SeqNo: **2438299** 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	510		500.0		101	70	130			

Sample ID: **lcs-53518**	SampType: **LCS**	TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **LCSS**	Batch ID: **53518**	RunNo: **70166**
Prep Date: **7/6/2020**	Analysis Date: **7/7/2020**	SeqNo: **2438300** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	18	5.0	25.00	0	72.2	70	130			
Surr: BFB	500		500.0		100	70	130			

Sample ID: **2007172-021ams**	SampType: **MS**	TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **WS20-01 0-1'**	Batch ID: **53518**	RunNo: **70166**
Prep Date: **7/6/2020**	Analysis Date: **7/7/2020**	SeqNo: **2438303** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	18	4.9	24.44	0	73.2	70	130			
Surr: BFB	490		488.8		101	70	130			

Sample ID: **2007172-021amsd**	SampType: **MSD**	TestCode: **EPA Method 8015D Mod: Gasoline Range**
Client ID: **WS20-01 0-1'**	Batch ID: **53518**	RunNo: **70209**
Prep Date: **7/6/2020**	Analysis Date: **7/8/2020**	SeqNo: **2440088** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	17	5.0	24.83	0	69.5	70	130	3.58	20	S
Surr: BFB	480		496.5		97.0	70	130	0	0	

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		

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 Lt Work Order Number: 2007172 RcptNo: 1

Received By: Scott Anderson 7/3/2020 11:00:00 AM

Completed By: Isaiah Ortiz 7/3/2020 11:17:33 AM

Reviewed By: DAD 7/3/20

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 ☐	# of preserved bottles checked for pH: (<2 or >12 unless noted)
12. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	Adjusted?
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 ☐	Checked by: SPA 7-3-20

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	2.3	Good	Not Present			

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: Nina Cortell 12H

Project #: 20E-00239

Project Manager: Natalie Gordon

Sampler: MJP

On Ice: ☑ Yes ☐ No

# of Coolers: 1

Cooler Temp(including CF): 2.2+0.1=2.3 (°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. 2007172	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)
7/1	10:30	Soil	BS20-01 1'	4 oz	ice	001	✓	✓					✓			
1	10:35	1	BS20-02 1'	1	1	002	1	1					1			
1	10:40	1	BS20-03 1'	1	1	003	1	1					1			
1	10:45	1	BS20-04 1'	1	1	004	1	1					1			
1	10:50	1	BS20-05 1'	1	1	005	1	1					1			
1	10:55	1	BS20-06 1'	1	1	006	1	1					1			
1	11:00	1	BS20-07 1'	1	1	007	1	1					1			
1	11:05	1	BS20-08 1'	1	1	008	1	1					1			
1	11:10	1	BS20-09 1'	1	1	009	1	1					1			
7/1	11:15	1	BS20-10 1'	1	1	010	1	1					1			
7/2	8:30	1	BS20-11 1'	1	1	011	1	1					1			
7/2	8:35	↓	BS20-12 1'	↓	↓	012	↓	↓					↓			

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
			GCummings		7/2/20	1450
Date: 7/2/20	Time: 1900	Relinquished by: GCummings	Received by:	Via:	Date	Time
			SPA Courier		7.3.20	11:00

Remarks: CC: Natalie Gordon

Matador

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: Nina Cortell 124H

Project #: 20E-00239

Project Manager: Natalie Gordon

Sampler: MJP

On Ice: ☑ Yes ☐ No

# of Coolers: 1

Cooler Temp (including CF): 2.2+0.1 = 2.3 (°C)

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

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 2007172	Analysis Request: (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)
7/2	8:40	Soil	BS20-13 1'	4oz	ice	013	✓	✓					✓			
	8:45		BS20-14 1'			014										
	8:50		BS20-15 1'			015										
	8:55		BS20-16 1'			016										
	9:00		BS20-17 1'			017										
	9:05		BS20-18 1'			018										
	9:10		BS20-19 1'			019										
	9:15		BS20-20 1'			020										
	9:30		WS20-01 0-1			021										
	9:35		WS20-02 0-1			022										
	9:40		WS20-03 0-1			023										
	9:45		WS20-04 0-1			024										

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
			acummings		7/2/20	1150
7/2/20	1900	acummings	SDA	Courier	7-3-20	1100

Remarks: CC: Natalie Gordon

Matador

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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: Nina Cortell 124H

Project #: 20E-00239

Project Manager: Natalie Gordon

Sampler: MJP

On Ice: ☒ Yes ☐ No

# of Coolers: 1

Cooler Temp (including CF): 2.2+0.1 = 2.3 (°C)

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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4901 Hawkins NE - Albuquerque, NM 87109

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

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 2007172	Analysis Request: 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)
7/2	9:50	Soil	WS20-05 0-1	4 oz	ice	025	✓	✓					✓			
"	9:55	"	WS20-06 0-1	"	"	026	✓	✓					✓			
"	10:00	"	WS20-07 0-1	"	"	027	✓	✓					✓			

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
			Acummings		7/2/20	1150
7/2/20	1900	Acummings	SPA	Courier	7.3.20	11:00

Remarks: CC: Natalie Gordon

Matador

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