



December 7, 2020

Vertex Project #: 19E-00575-011

**Spill Closure Report:** Cockburn Fed #002  
Unit M, Section 10, Township 18 South, Range 33 East  
County: Lea  
API 30-025-36282  
Incident Tracking Number: NAB1908655364

**Prepared For:** Devon Energy Production Company  
6488 Seven Rivers Highway  
Artesia, New Mexico 88210

**New Mexico Oil Conservation Division – District 1 – Hobbs**

1625 North French Drive  
Hobbs, New Mexico 88240

Devon Energy Production Company (Devon) retained Vertex Resource Services Inc. (Vertex) to conduct a spill assessment and remediation for an oil and produced water release that occurred on February 23, 2019, at Cockburn Fed #002, API 30-025-36282 (hereafter referred to as “Cockburn”). Devon provided immediate notification of the release to New Mexico Oil Conservation Division (NM OCD) District 1 on February 23, 2019, followed by submission of the initial C-141 Release Notification on March 7, 2019 (Attachment 1). The NM OCD incident tracking number assigned to this release is NAB1908655364.

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 the final report to obtain approval from NM OCD for closure of this release.

**Incident Description**

On February 23, 2019, a release occurred at Devon’s Cockburn site when a water tank was struck by lightning and caught fire. This incident resulted in the release of approximately 127 barrels (bbls) of produced water and 6 bbls of oil into an unlined containment and onto the wellpad. Upon extinguishing the fire, a hydrovac truck was dispatched to the site to recover free fluid. Approximately 44 bbls of produced water and 6 bbls of oil were recovered and removed from the site for disposal at an approved location. No produced water or oil were released off-lease or into undisturbed areas or waterways.

**Site Characterization**

The release at Cockburn occurred on federally-owned land, N 32.75660, W 103.65738, approximately 22 miles southwest of Lovington, New Mexico. The legal description for the site is Unit M, Section 10, Township 18 South, Range 33 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

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3101 Boyd Drive, Carlsbad, New Mexico 88220 | P 575.725.5001

Attachment 2 (Figure 1).

Cockburn 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 surrounding the constructed wellpad.

The surrounding landscape is associated with dune fields and sandy plains, originating from eolian deposits and alluvium derived from sandstone, typical at elevations of 3,000 to 4,400 feet above sea level. The climate is semi-arid, with average annual precipitation ranging between 10 and 12 inches. The plant community has historically been dominated by giant dropseed and other dropseed grass species, with scattered shinnery oak and soapweed yucca. Bare ground and litter compose a significant proportion of ground cover while grasses make up the remainder (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 Cockburn is comprised primarily of Qep – interlaid eolian sands and piedmont-slope deposits from the Holocene to middle Pleistocene ages (New Mexico Bureau of Geology and Mineral Resources, 2020). The Natural Resources Conservation Service Web Soil Survey characterizes the soil at the site as Kermit-Palomas fine sands, predominately found on dunes. These soils are comprised of deep layers of fine sand and tend to be excessively drained with very low runoff and low available moisture 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 Cockburn, though some erosional karst may be possible (United States Department of the Interior, United States Geological Survey, 2020a).

There is no surface water located at Cockburn. The nearest significant watercourse, as defined in Subsection P of 19.15.17.7 NMAC, is an intermittent stream located approximately 7 miles east-northeast of the Cockburn (United States Department of the Interior, United States Geological Survey, 2020b). An intermittent/seasonal pond is located approximately 2.3 miles to the northeast (United States Fish and Wildlife Service, 2020). At Cockburn, 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 recent well to Cockburn is a New Mexico Office of the State Engineer (OSE) well from 2014 located approximately 0.85 miles east-northeast of the release site. Data for that well show a depth to groundwater of 54 feet below ground surface (bgs; New Mexico Office of the State Engineer, New Mexico Water Rights Reporting System, 2020). An older OSE well from 1975, showing a depth to groundwater of 70 feet bgs, is located approximately 0.35 miles north of Cockburn (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 is 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 Cockburn is not subject to the

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requirements of Paragraph (4) of Subsection C of 19.15.29.12 NMAC. As the nearest recent groundwater well is farther than the recommended 0.5 miles from the release site, the depth to groundwater at Cockburn cannot be accurately determined; the closure criteria for the site are determined to be associated with the following 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 <sup>1</sup> (GRO + DRO + MRO)	100 mg/kg
	BTEX <sup>2</sup>	50 mg/kg
	Benzene	10 mg/kg

<sup>1</sup>Total petroleum hydrocarbons (TPH) = gasoline range organics (GRO) + diesel range organics (DRO) + motor oil range organics (MRO)

<sup>2</sup>Benzene, toluene, ethylbenzene and xylenes (BTEX)

## Remedial Actions

An initial spill inspection, completed by Vertex on May 3, 2019, identified and mapped the boundaries of the release (Attachment 2 – Figure 1). The impacted area was determined to be approximately 88 feet wide and 102 feet long; the total affected area was determined to be approximately 7,805 square feet. On May 5, 2020, the burned tanks and damaged equipment were removed from the location. Remediation fieldwork was conducted at Cockburn between May 6 and May 9, 2019, with a Vertex environmental technician on-site to guide excavation of contaminated material using field screening methods. The Daily Field Reports (DFRs) and field screening data associated with the remediation fieldwork are included in Attachment 4.

To aid in the process of re-building the tank battery and getting Cockburn back in production, initial confirmatory sampling for the portion of the excavation where the containment and new tank battery were to be re-built was conducted on May 9, 2019. Several of these initial confirmatory samples did not meet closure criteria as outlined in Table 1. On May 11, 2019, additional excavation was completed, and the failed confirmatory samples re-collected. Initial confirmatory sampling analytical data are summarized in Table 2 (Attachment 5). Laboratory data reports and chain of custody forms are included in Attachment 6.

Following construction of the new tank battery, Vertex returned to complete confirmatory sampling from the remainder of the excavation area. On August 26, 2020, Vertex provided 48-hour notification of confirmatory sampling to NM OCD (Attachment 7), as required by Subparagraph (a) of Paragraph (1) of Subsection D 19.15.29.12 NMAC. On August 31, 2020, Vertex collected an additional 25 five-point composite samples from the base and side walls of the excavation, at depths ranging between 1 and 3 feet bgs. With the addition of these final confirmatory samples, each of the 40 total composite samples collected from the release site 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. All confirmatory 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

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Method 8015 for TPH, including MRO, DRO and GRO. The additional confirmatory sampling laboratory results are summarized in Table 2 (Attachment 5), alongside the initial confirmatory sampling data from the tank battery area.

A GeoExplorer 7000 Series Trimble GPS unit, or equivalent, was used to map the approximate center of each of the five-point composite samples. The confirmatory sampling locations are presented on Figure 2 (Attachment 2). Relevant equipment and prominent features/reference points, including the re-built tank battery, are shown as well.

## Closure Request

Vertex recommends no additional remediation action to address the release at Cockburn. 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, or undetermined. There are no anticipated risks to human, ecological or hydrological receptors associated with the release site.

The excavation was backfilled with non-waste-containing, uncontaminated earthen material, sourced locally, and placed to meet the site's existing grade to prevent water ponding and erosion.

Vertex requests that this incident (NAB1908655364) be closed as all closure requirements set forth in Subsection E of 19.15.29.12 NMAC have been met. Devon 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 February 23, 2019, release at Cockburn

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

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## 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). *Water Column/Average Depth to Water Report*. Retrieved from <http://nmwrrs.ose.state.nm.us/nmwrrs/waterColumn.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, United States Geological Survey. (2020a). *Caves and Karst in the U.S. National Park Service*. Retrieved from <https://www.arcgis.com/home/webmap/viewer.html?webmap=14675403c37948129acb758138f2dd1e>
- United States Department of the Interior, United States Geological Survey. (2020b). *National Water Information System*. Retrieved from <https://maps.waterdata.usgs.gov/mapper/index.html?state=nm>
- United States Fish and Wildlife Service. (2020). *National Wetlands Inventory*. Retrieved from <https://www.fws.gov/wetlands/data/Mapper.html>

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Cockburn Fed #002

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## **Limitations**

This report has been prepared for the sole benefit of Devon Energy Production Company (Devon). 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 Devon. Any use of this report by a third party, or any reliance on decisions made based on it, or damages suffered as a result of the use of this report are the sole responsibility of the user.

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

## **ATTACHMENT 1**

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

State of New Mexico  
Energy Minerals and Natural  
Resources Department

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

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

Incident ID	
District RP	
Facility ID	
Application ID	

## Release Notification

### Responsible Party

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

### Location of Release Source

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

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

Unit Letter	Section	Township	Range	County

Surface Owner: ☐ 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)




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

Incident ID	
District RP	
Facility ID	
Application ID	

<p>Was this a major release as defined by 19.15.29.7(A) NMAC?</p> <p><input type="checkbox"/> Yes <input type="checkbox"/> No</p>	<p>If YES, for what reason(s) does the responsible party consider this a major release?</p>
<p>If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)?</p>	
<p style="text-align: center;">AB</p>	

## Initial Response

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

<input type="checkbox"/> The source of the release has been stopped. <input type="checkbox"/> The impacted area has been secured to protect human health and the environment. <input type="checkbox"/> Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices. ** <input type="checkbox"/> All free liquids and recoverable materials have been removed and managed appropriately.						
If all the actions described above have <u>not</u> been undertaken, explain why: **						
Per 19.15.29.8 B. (4) NMAC the responsible party may commence remediation immediately after discovery of a release. If remediation has begun, please attach a narrative of actions to date. If remedial efforts have been successfully completed or if the release occurred within a lined containment area (see 19.15.29.11(A)(5)(a) NMAC), please attach all information needed for closure evaluation.						
I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.						
<table style="width: 100%;"> <tr> <td style="width: 50%;">Printed Name: _____</td> <td style="width: 50%;">Title: _____</td> </tr> <tr> <td>Signature: <u>Kendra DelTroyos</u></td> <td>Date: _____</td> </tr> <tr> <td>email: _____</td> <td>Telephone: _____</td> </tr> </table>	Printed Name: _____	Title: _____	Signature: <u>Kendra DelTroyos</u>	Date: _____	email: _____	Telephone: _____
Printed Name: _____	Title: _____					
Signature: <u>Kendra DelTroyos</u>	Date: _____					
email: _____	Telephone: _____					
<b><u>OCD Only</u></b> <table style="width: 100%;"> <tr> <td style="width: 50%;">Received by: <u></u></td> <td style="width: 50%;">Date: _____</td> </tr> </table>	Received by: <u></u>	Date: _____				
Received by: <u></u>	Date: _____					

Incident ID	NAB1908655364
District RP	1RP-5406
Facility ID	
Application ID	pAB1908654648

## 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?	<u>&lt; 50</u> (ft bgs)
Did this release impact groundwater or surface water?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> 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)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> 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?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of a wetland?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release overlying a subsurface mine?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release overlying an unstable area such as karst geology?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within a 100-year floodplain?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Did the release impact areas <b>not</b> on an exploration, development, production, or storage site?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> 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.

State of New Mexico  
Oil Conservation Division

Incident ID	NAB1908655364
District RP	1RP-5406
Facility ID	
Application ID	pAB1908654648

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: Lupe Carrasco Title: Environmental Professional  
Signature: Lupe Carrasco Date: 12/7/20  
email: Lupe.Carrasco Telephone: (575) 748-0165

**OCD Only**

Received by: \_\_\_\_\_ Date: \_\_\_\_\_



Incident ID	NAB1908655364
District RP	1RP-5406
Facility ID	
Application ID	pAB1908654648

## 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.*

- ☒ A scaled site and sampling diagram as described in 19.15.29.11 NMAC
- ☒ 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)
- ☒ Laboratory analyses of final sampling (Note: appropriate ODC District office must be notified 2 days prior to final sampling)
- ☒ 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: LupeCarrasco Title: Environmental Professional

Signature: Lupe Carrasco Date: 12/7/20

email: Lupe.Carrasco@dvn.com Telephone: (575) 748-0176

### OCD Only

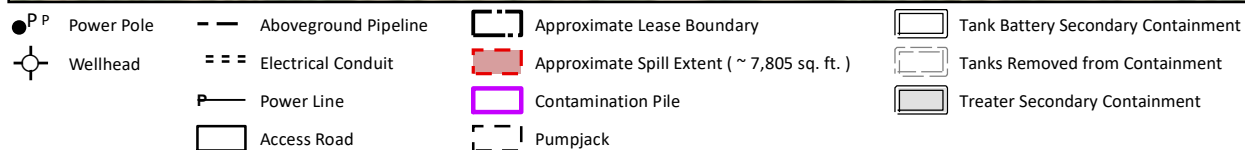
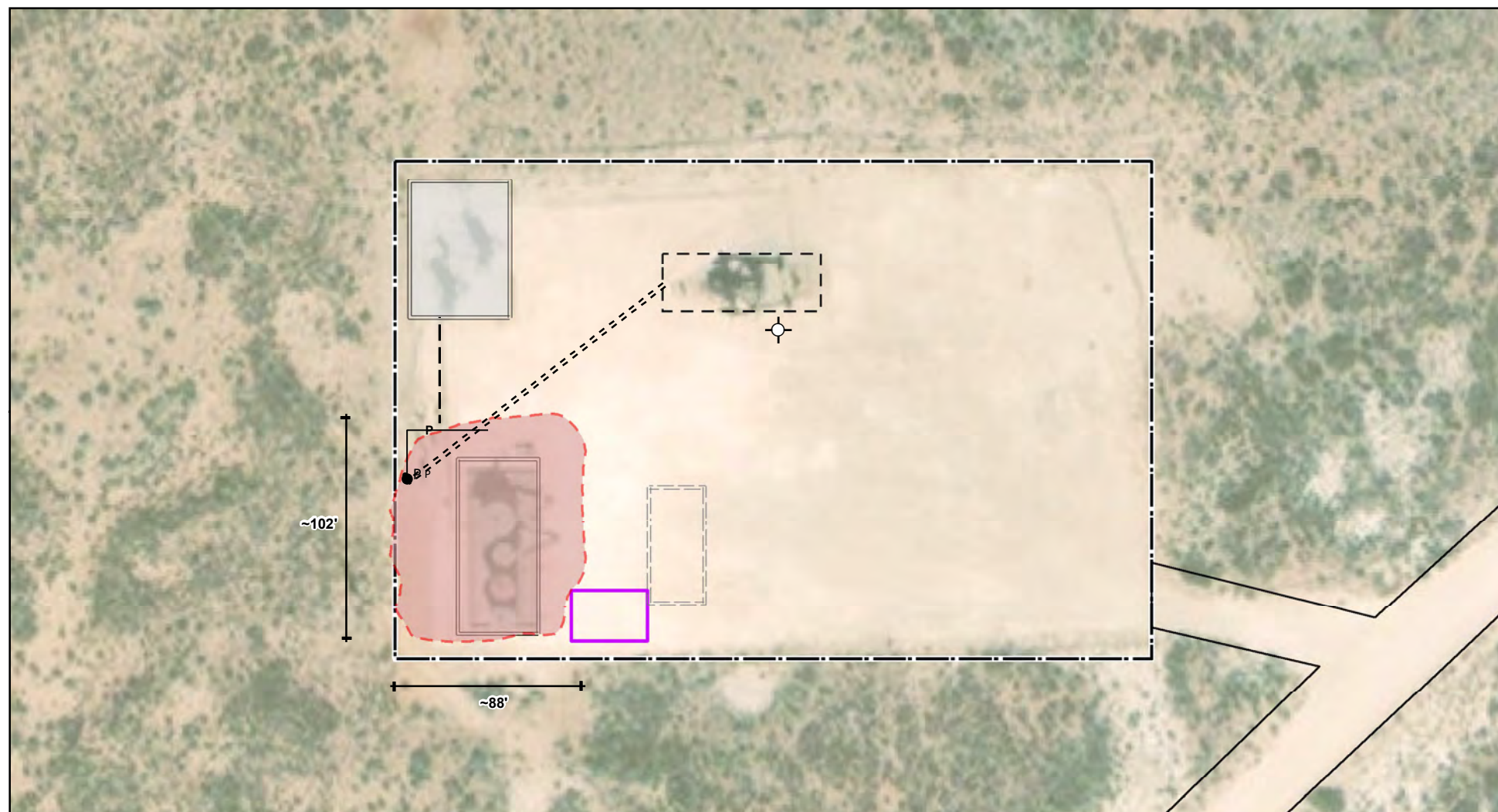
Received by: \_\_\_\_\_ Date: \_\_\_\_\_

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**



0 25 50 Feet  
Map Center:  
Lat/Long: 32.756491, -103.657402

NAD 1983 UTM Zone 13N  
Date: Aug 24/20



### Site Schematic Cockburn Fed #002

FIGURE:

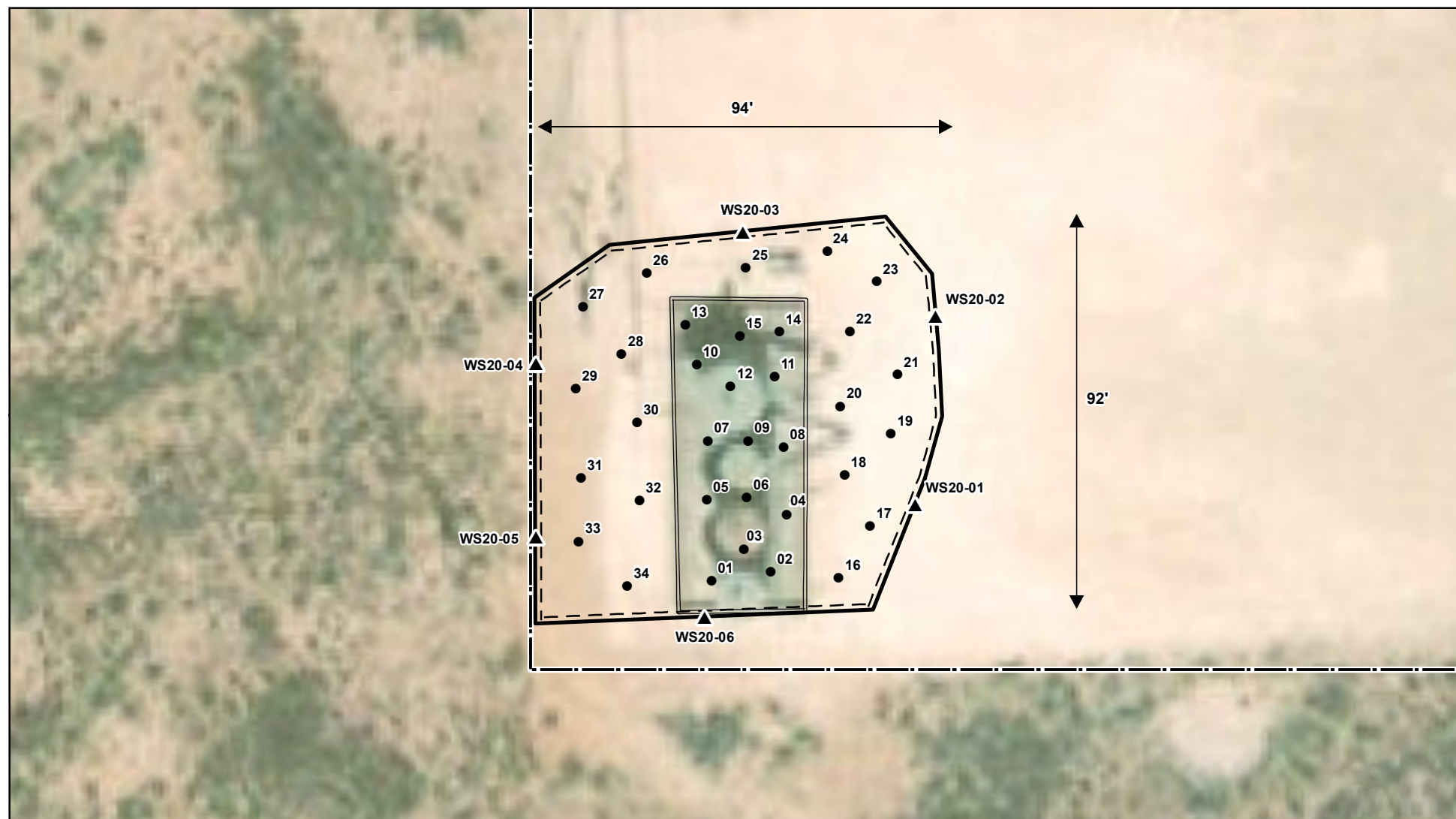
1



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: Background image from ESRI, 2019.

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0 12.5 25 ft

Map Center:  
Lat/Long: 32.756351, -103.657780

NAD 1983 UTM Zone 13N  
Date: Sep 04/20



### Confirmatory Sampling Locations Cockburn Fed 002

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, 2019.

VERSATILITY. EXPERTISE.

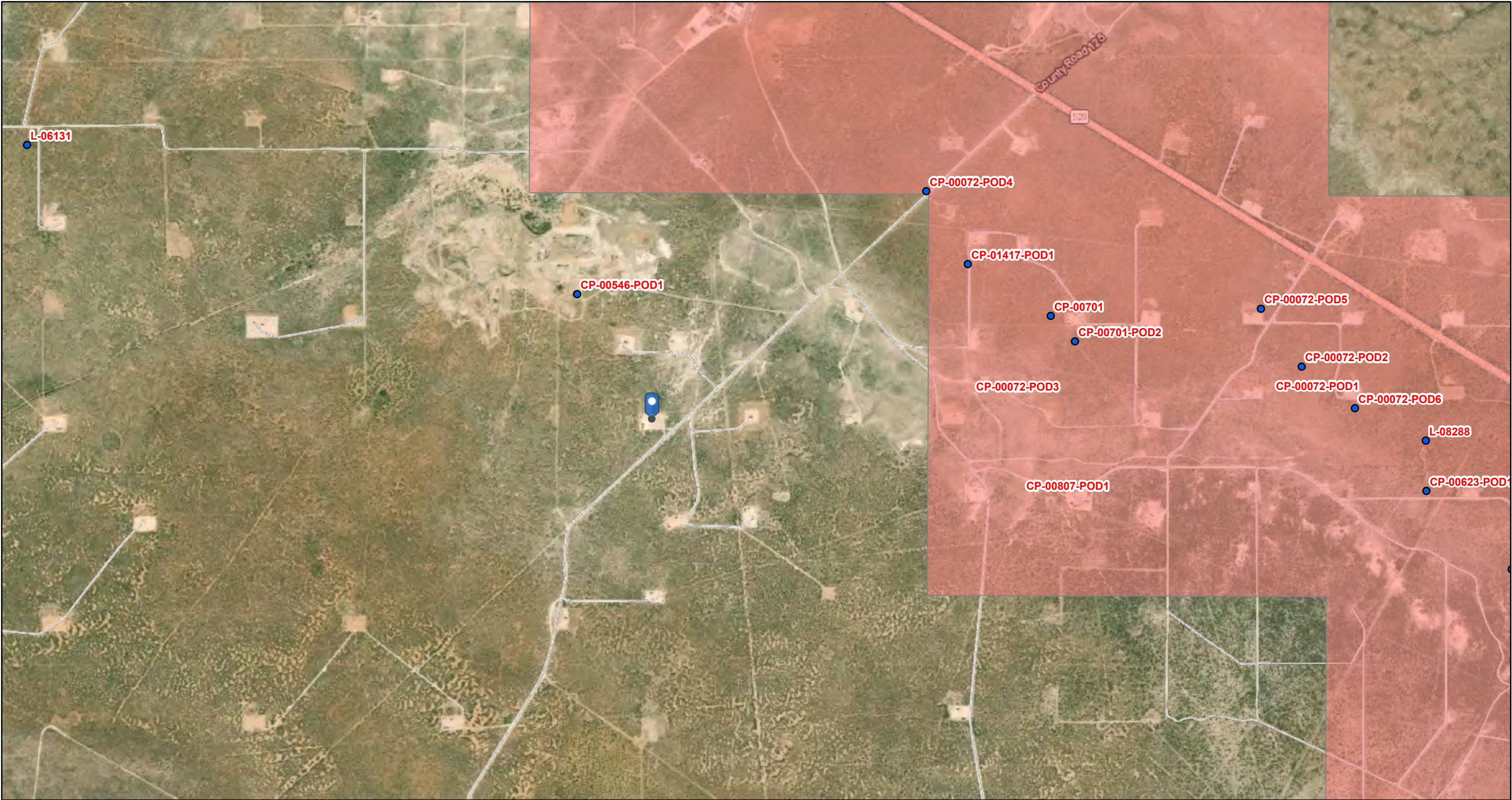
## **ATTACHMENT 3**



Closure Criteria Determination worksheet			
Site Name: Cockburn Federal #002 1RP-5406 30-025-36282			
Spill Coordinates: 32.4548009, -103.392713 651071.15 3591986.05			
Site Specific Conditions		Value	Unit
1	Depth to Groundwater	70	feet
2	Within 300 feet of any continuously flowing watercourse or any other significant watercourse	7,285	feet
3	Within 200 feet of any lakebed, sinkhole or playa lake (measured from the ordinary high-water mark)	1,813	feet
4	Within 300 feet from an occupied residence, school, hospital, institution or church	2,798	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, <b>or</b>	4,417	feet
	ii) Within 1000 feet of any fresh water well or spring	4,417	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	164,521 ft	feet
8	Within the area overlying a subsurface mine	No	(Y/N)
9	Within an unstable area (Karst Map)		Critical High Medium Low
10	Within a 100-year Floodplain	Undetermined Zone D Shaded	year
NMAC 19.15.29.12 E (Table 1) Closure Criteria		<50'	<50' 51-100' >100'



# Publicly Generated Map



12/1/2020, 12:02:41 PM

GIS WATERS PODs

● Active

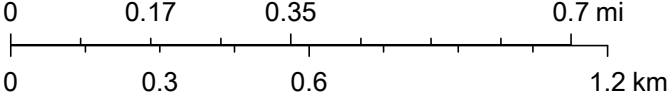
□ OSE District Boundary

Water Right Regulations

■ Critical Management Area - Guidelines

▤ SiteBoundaries

1:18,056



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





# 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 00072 POD6	2	4	4	11	18S	33E	628603	3625179

x

**Driller License:** 1632      **Driller Company:** HOPPER PUMP & DRILLING, INC.

**Driller Name:** CALEB CURRY

**Drill Start Date:** 12/01/2014      **Drill Finish Date:** 12/01/2014      **Plug Date:**

**Log File Date:** 12/15/2014      **PCW Rcv Date:**      **Source:** Shallow

**Pump Type:**      **Pipe Discharge Size:**      **Estimated Yield:** 80 GPM

**Casing Size:** 5.00      **Depth Well:** 100 feet      **Depth Water:** 61 feet

x

Water Bearing Stratifications:	Top	Bottom	Description
	65	80	Sandstone/Gravel/Conglomerate

x

Casing Perforations:	Top	Bottom
	60	100

x

<b>Meter Number:</b>	17847	<b>Meter Make:</b>	MASTERMETER
<b>Meter Serial Number:</b>	8423252	<b>Meter Multiplier:</b>	100.0000
<b>Number of Dials:</b>	6	<b>Meter Type:</b>	Diversion
<b>Unit of Measure:</b>	Gallons	<b>Return Flow Percent:</b>	
<b>Usage Multiplier:</b>		<b>Reading Frequency:</b>	Monthly

x

### Meter Readings (in Acre-Feet)

Read Date	Year	Mtr Reading	Flag	Rdr Comment	Mtr Amount Online
10/01/2018	2018	126095	A	RPT	0
06/01/2019	2019	168524	A	rr	13.021
07/01/2019	2019	170174	A	rr	0.506
10/01/2019	2019	186415	A	RPT	4.984

11/01/2019	2019	186415	A	RPT	0
12/01/2019	2019	186415	A	RPT	0
01/01/2020	2020	186415	A	RPT	0

x

<b>**YTD Meter Amounts:</b>	<b>Year</b>	<b>Amount</b>
	2018	0
	2019	18.511
	2020	0

x

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

8/31/20 11:04 AM

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	Tw	Rng	X	Y
CP 00546	POD1	2	2	4	09	18S	33E	625464	3625597*

**Driller License:** 208 **Driller Company:** VAN NOY, W.L.  
**Driller Name:** VAN NOY, W.L.  
**Drill Start Date:** 06/01/1975 **Drill Finish Date:** 06/03/1975 **Plug Date:**  
**Log File Date:** 10/02/1978 **PCW Rcv Date:** **Source:** Shallow  
**Pump Type:** **Pipe Discharge Size:** **Estimated Yield:**  
**Casing Size:** 6.63 **Depth Well:** 90 feet **Depth Water:** 70 feet

**Water Bearing Stratifications:**

Top	Bottom	Description
70	85	Other/Unknown

**Casing Perforations:**

Top	Bottom
70	85

\*UTM location was derived from PLSS - see Help

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

8/31/20 11:03 AM

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)

<b>Well Tag</b>	<b>POD Number</b>	<b>Q64 Q16 Q4</b>	<b>Sec</b>	<b>Tw</b>	<b>Rng</b>	<b>X</b>	<b>Y</b>
CP 01417	POD1	11	18S	33E	627036	3625738	

x

**Driller License:** 1632 **Driller Company:** HOPPER PUMP & DRILLING, INC.

**Driller Name:** CALEB CURRY

<b>Drill Start Date:</b> 12/01/2014	<b>Drill Finish Date:</b> 12/01/2014	<b>Plug Date:</b>
<b>Log File Date:</b> 12/15/2014	<b>PCW Rcv Date:</b>	<b>Source:</b> Shallow
<b>Pump Type:</b>	<b>Pipe Discharge Size:</b>	<b>Estimated Yield:</b> 6 GPM
<b>Casing Size:</b> 5.00	<b>Depth Well:</b> 120 feet	<b>Depth Water:</b> 54 feet

x

<b>Water Bearing Stratifications:</b>	<b>Top</b>	<b>Bottom</b>	<b>Description</b>
	35	90	Sandstone/Gravel/Conglomerate

x

<b>Casing Perforations:</b>	<b>Top</b>	<b>Bottom</b>
	60	120

x

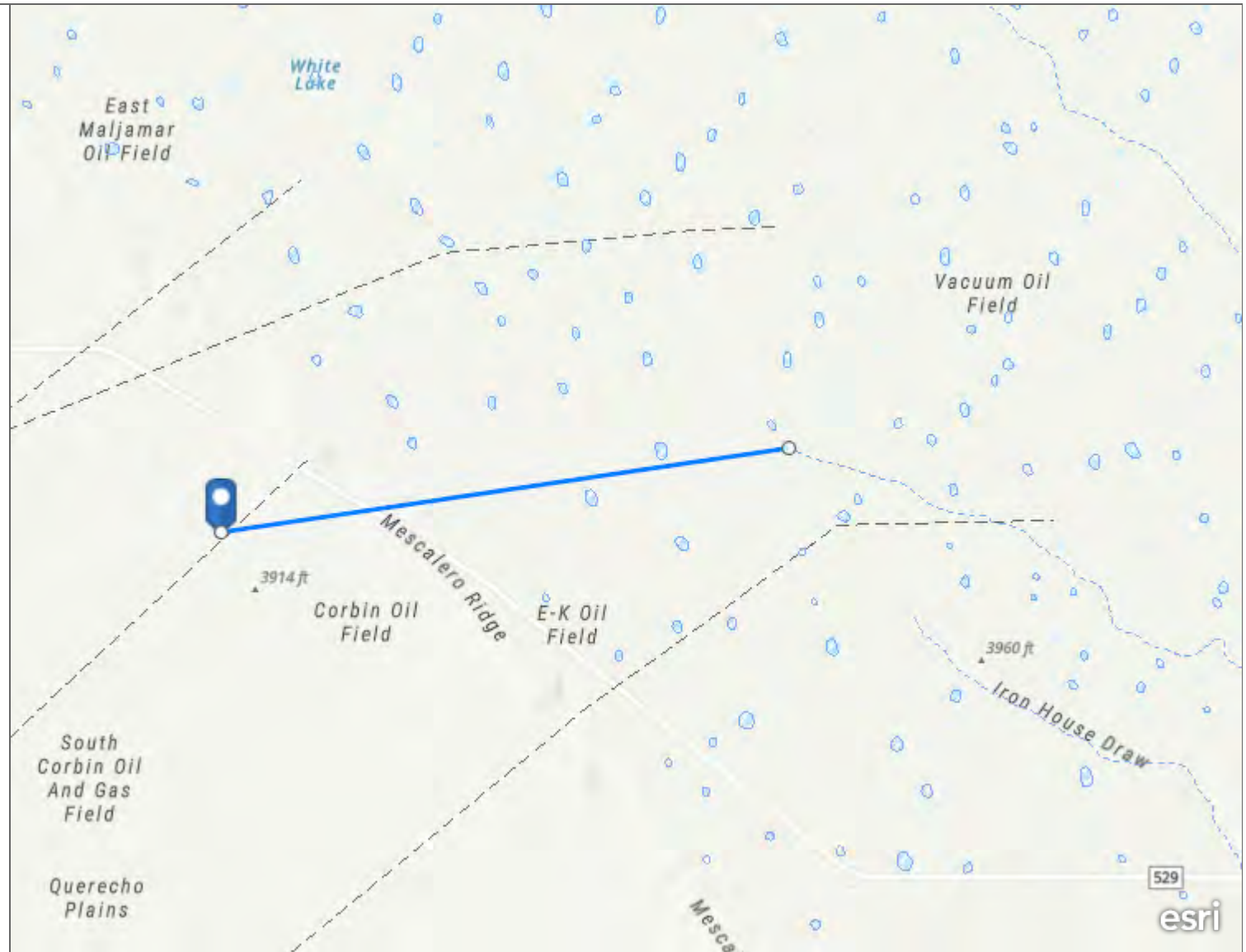
The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

8/31/20 5:26 PM

POINT OF DIVERSION SUMMARY

## My Map

No legend



Esri, NASA, NGA, USGS | Texas Parks & Wildlife, Esri, HERE, Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, USDA | USGS The National Map: National Hydrography Dataset. Data refreshed March, 2020.





U.S. Fish and Wildlife Service

## National Wetlands Inventory

## Cockburn Federal #002 - Nearest Water



December 1, 2020

## Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland

- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond

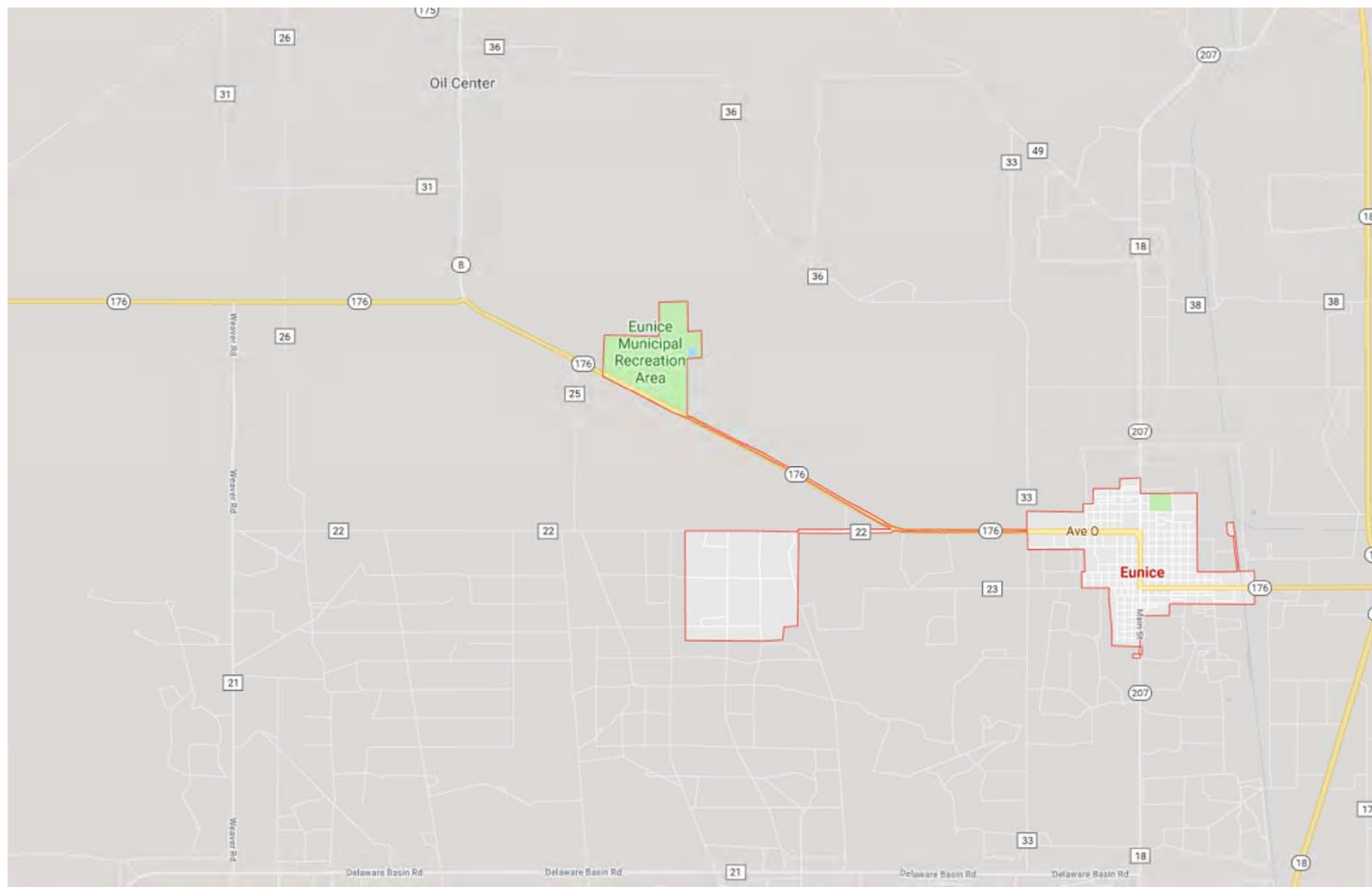
- Lake
- Other
- Riverine

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.



## Eunice

City Limits of Eunice







## Eunice

New Mexico 88231



Mostly Sunny · 67°F  
9:12 AM



Directions



Save



Nearby

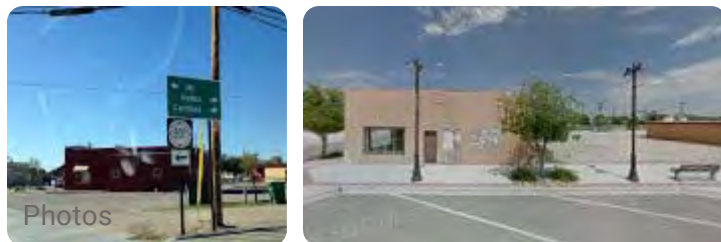


Send to your phone



Share

## Photos



## Quick facts

Eunice is a city in Lea County, New Mexico, United States. The population was 2,562 at the 2000 census. The mayor of Eunice, as of March 2018, is Billy Hobbs. Ground was broken for construction of a National Enrichment Facility, which uses Zippe-type centrifuge technology, to enrich uranium in August, 2006. [Wikipedia](#)

## Hotels

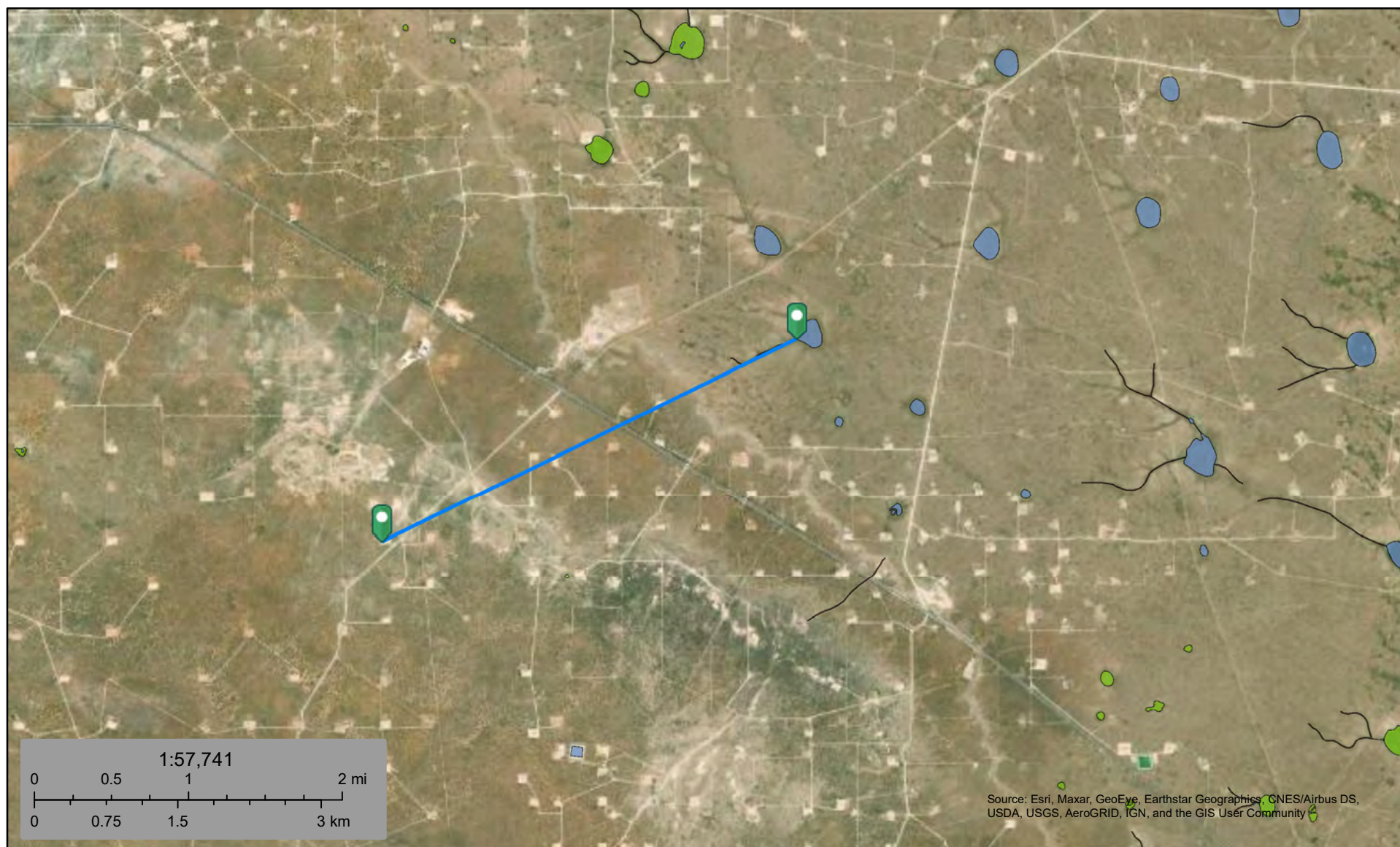
3-star averaging \$135 [View Hotels](#)



U.S. Fish and Wildlife Service

## National Wetlands Inventory

## Cockburn Fed 2 - nearest pond



December 1, 2020

**Wetlands**

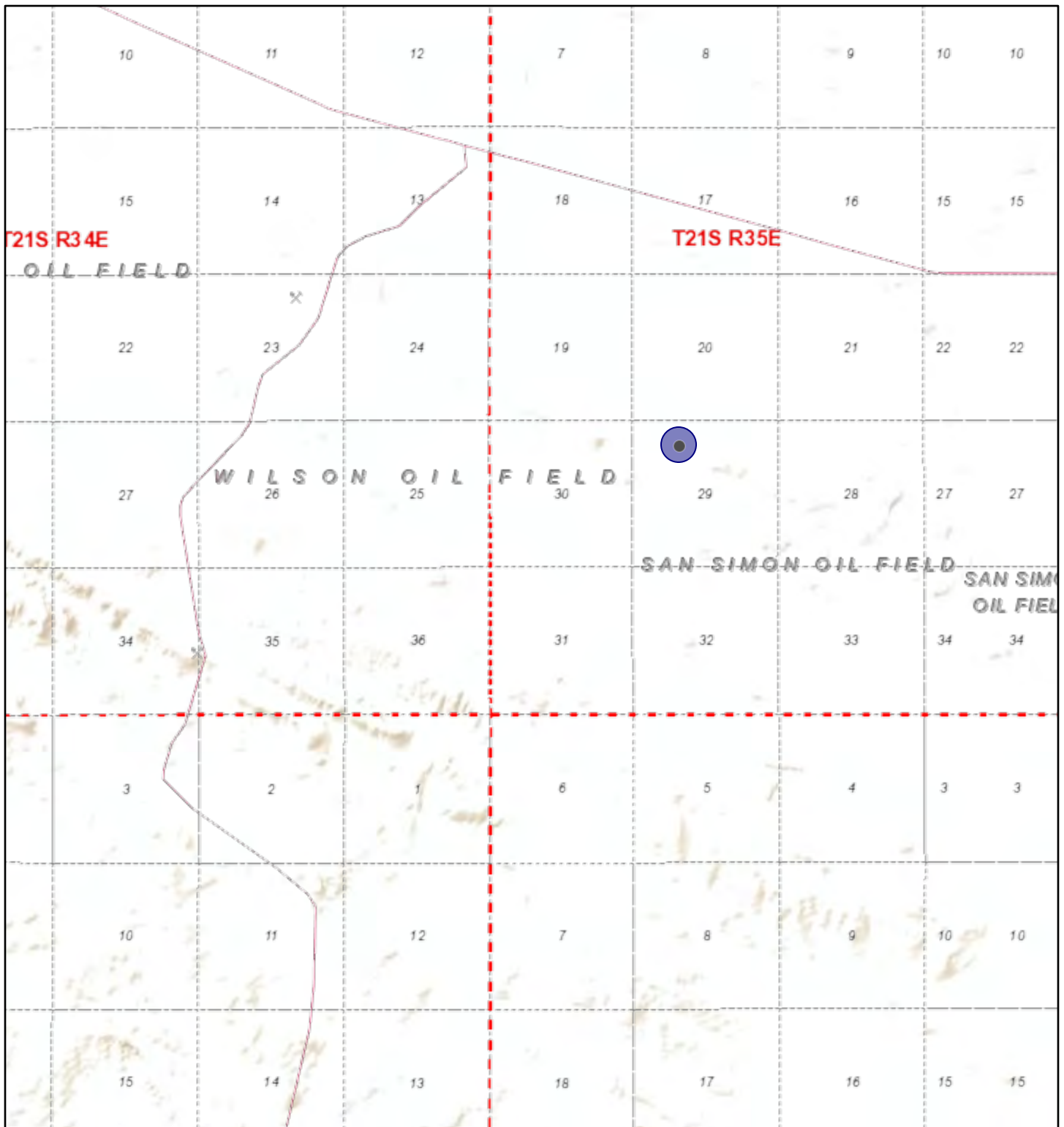
- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland

- 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.

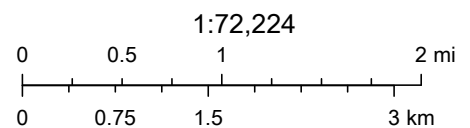
## Active Mine near Cockburn Fed 2



5/6/2019 8:41:11 AM

Registered Mines

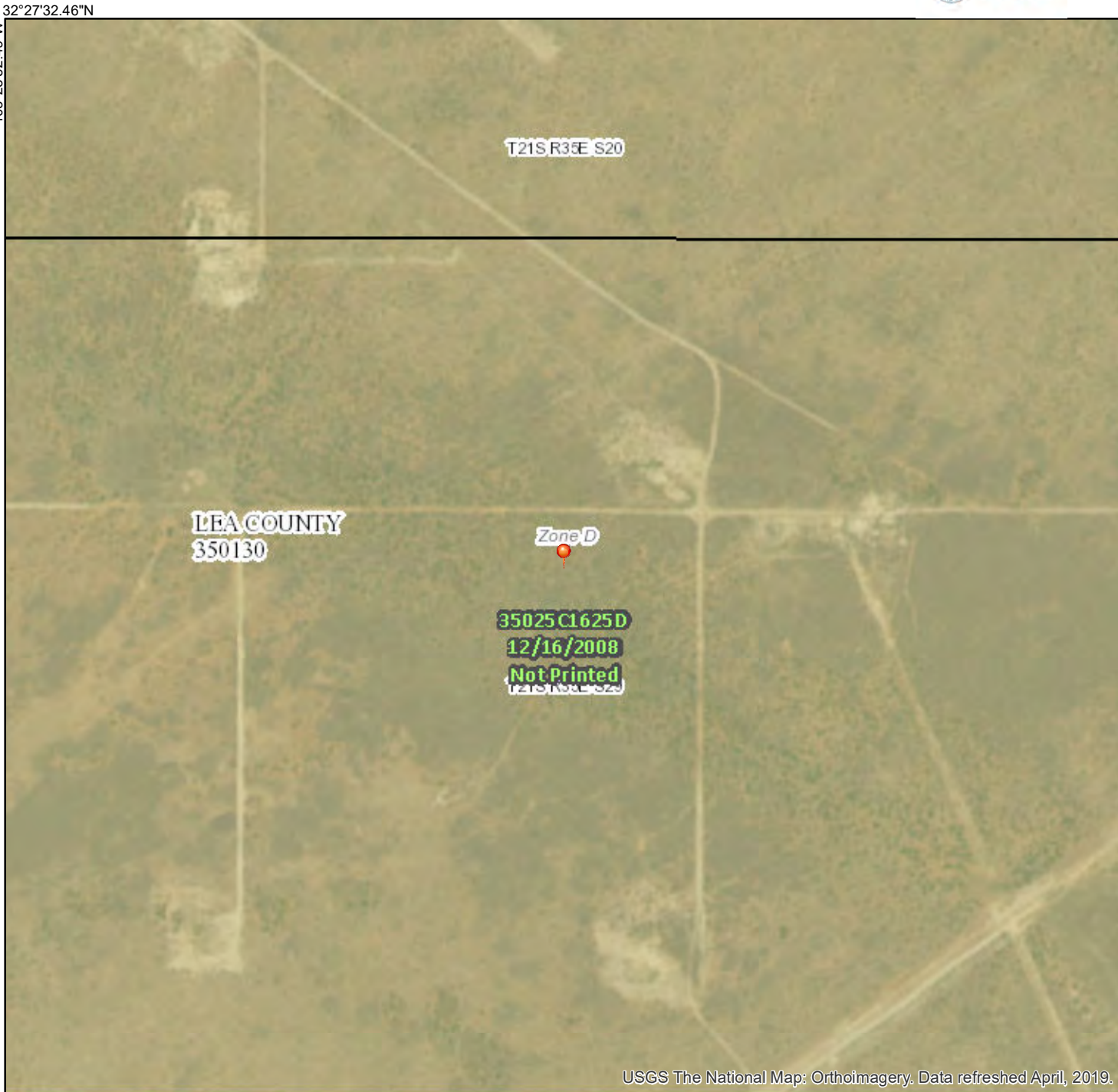
✕ Aggregate, Stone etc.



Sources: Esri, USGS, NOAA, Sources: Esri, Garmin, USGS, NPS



# National Flood Hazard Layer FIRMette



## Legend

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

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

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

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

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

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

MAP PANELS		Digital Data Available
		No Digital Data Available
		Unmapped

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

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

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 5/6/2019 at 11:44:27 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

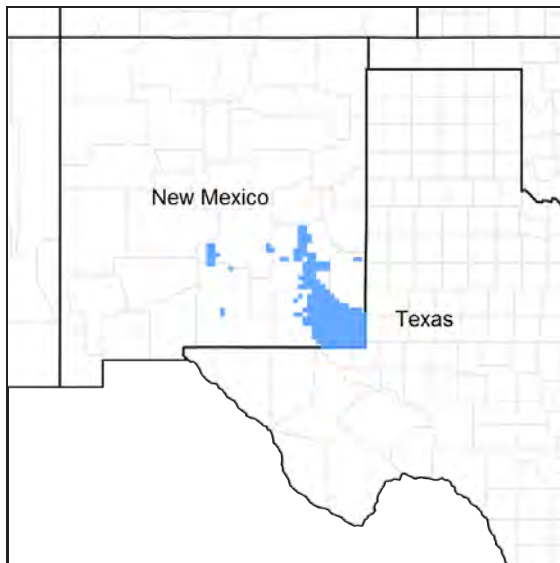
This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory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

## Ecological site R042XC005NM Deep Sand

Accessed: 12/01/2020

### General information

**Provisional.** A provisional ecological site description has undergone quality control and quality assurance review. It contains a working state and transition model and enough information to identify the ecological site.



**Figure 1. Mapped extent**

Areas shown in blue indicate the maximum mapped extent of this ecological site. Other ecological sites likely occur within the highlighted areas. It is also possible for this ecological site to occur outside of highlighted areas if detailed soil survey has not been completed or recently updated.

**Table 1. Dominant plant species**

Tree	Not specified
Shrub	Not specified
Herbaceous	Not specified

### Physiographic features

This site occurs on terraces, Piedmonts, dunes fields, or upland plains. Parent material consists of eolian deposits and alluvium derived from sandstone. Slopes range from 0 to 15 percent, usually less than 5 percent. Low, stabilized hummocks or dunes frequently occur. Elevations range from 2,842 to 4,500 feet.

**Table 2. Representative physiographic features**

Landforms	(1) Dune (2) Parna dune (3) Terrace
Flooding frequency	None
Ponding frequency	None
Elevation	2,842–4,500 ft

Slope	0–15%
Aspect	Aspect is not a significant factor

## 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 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.

Both temperature and moisture favor warm season perennial plant growth. During years of abundant winter and early spring moisture, cool season growth and annual forbs, make up an important component of this site. Strong winds blow from the west from January through June, which accelerates soil drying during a critical period for cool season 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.

**Table 3. Representative climatic features**

Frost-free period (average)	221 days
Freeze-free period (average)	240 days
Precipitation total (average)	13 in

## Influencing water features

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

## Soil features

Soils are deep or very deep. Surface textures are sand loam, fine sand or loamy fine sand, Underlying material textures are loamy fine sand, fine sand, sand or fine sandy loam. Because of the coarse textures and rapid drying of the surface, the soil, if unprotected by plant cover and organic residue, becomes windblown and low hummocks or dunes are formed around shrubs.

Characteristic soils are:

Anthony  
Aguena  
Kermit  
Likes  
Pintura  
Bluepoint

**Table 4. Representative soil features**

Surface texture	(1) Sand (2) Fine sand (3) Loamy fine sand
Family particle size	(1) Sandy
Drainage class	Well drained to excessively drained



Permeability class	Moderate to very rapid
Soil depth	60–72 in
Surface fragment cover <=3"	0–5%
Surface fragment cover >3"	0%
Available water capacity (0-40in)	3–5 in
Calcium carbonate equivalent (0-40in)	5–15%
Electrical conductivity (0-40in)	0–4 mmhos/cm
Sodium adsorption ratio (0-40in)	0–2
Soil reaction (1:1 water) (0-40in)	6.6–7.8
Subsurface fragment volume <=3" (Depth not specified)	5–10%
Subsurface fragment volume >3" (Depth not specified)	0%

## Ecological dynamics

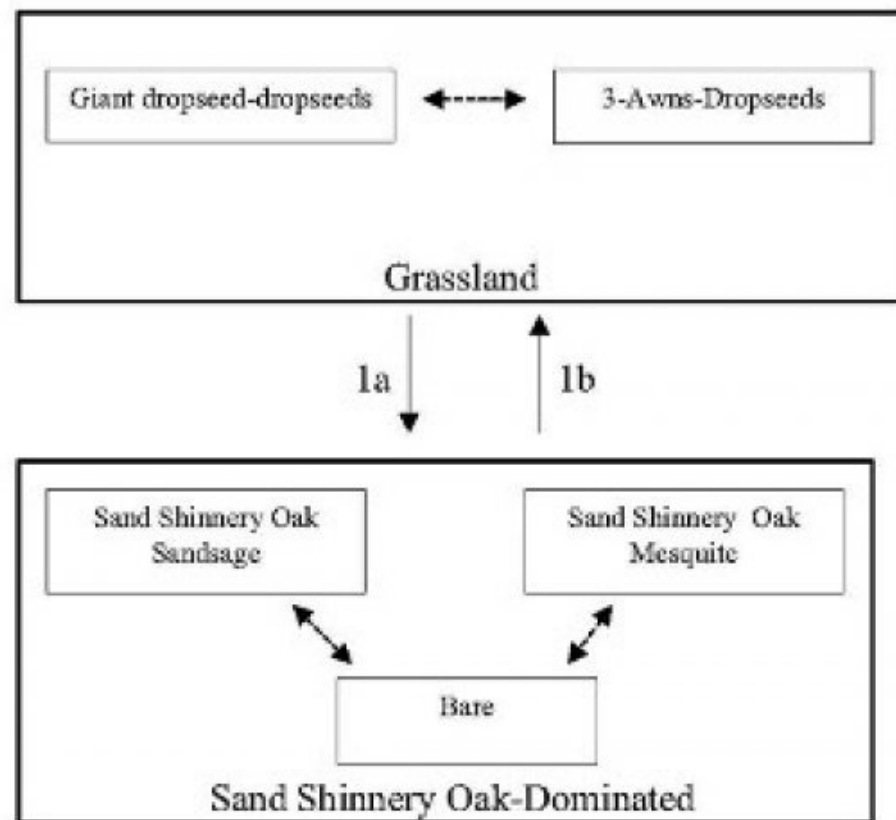
### Overview

The Deep Sand site occurs adjacent to and/or intergraded with the Sandhills and Sandy sites (SD-3). The Deep Sand site can be distinguished by slopes less than eight percent (approximately five percent) and textural changes at depths greater than 40 inches. The Deep Sand site has well drained soils with a surface texture of sand or loamy fine sand. The Sandhills site has slopes greater than eight percent and textural depths greater than 60 inches. Conversely, the Sandy site has slopes less than five percent and depths to textural change commonly around 20 inches. The historic plant community of the Deep Sand site is dominated primarily by giant dropseed (*Sporobolus giganteus*) and other dropseeds (*S. flexuosus*, *S. contractus*, *S. cryptandrus*), with scattered shinnery oak (*Quercus havardii*) and soapweed yucca (*Yucca glauca*). Other herbaceous species include threeawns (*Aristida* spp.), bluestems (*Schizachyrium scoparium* and *Andropogon hallii*), and annual and perennial forbs distributed relative to precipitation occurrences. Bare ground and litter compose a significant proportion of ground cover while grasses are the remainder. Shinnery oak will increase with an associated decrease in dropseed and bluestem abundance possibly due to climatic change, fire suppression, interspecific competition, and excessive grazing. Continued grass cover loss may result in a transition to a shinnery oak dominated state with increases in sand sage (*Artemisia filifolia*) and honey mesquite (*Prosopis glandulosa*). However, brush management may restore the grassland component and reverse the shinnery oak state back toward the historic plant community.

## State and transition model

## Plant Communities and Transitional Pathways (diagram)

### MLRA-42, SD-3, Deep Sand



1.a Climate, fire suppression, competition,  
over grazing

1.b Brush control, Prescribed grazing

Figure 4.

State 1

## Historic Climax Plant Community

### Community 1.1

#### Historic Climax Plant Community

State Containing Historic Plant Community

Grassland: The historic plant community is dominated by giant dropseed, other dropseeds, threeawns, and bluestems. Dominant woody plants include shinnery oak and soapweed yucca. Forb abundance and distribution varies and is dependent on annual rainfall. The Deep Sand site typically exists in sandy plains and dunes (Sosebee 1983). Grass dominance stabilizes the potentially erosive sandy soils. Historical fire suppression, however, may have contributed to increased woody plant abundance, which has reduced grass species. Further, drought conditions compounded with excessive grazing likely has driven most grass species out of competition with shrubs which has resulted in a shinnery oak dominated state with sand sage and mesquite (Young et al. 1948).

Diagnosis: Grassland dominated by dropseeds, threeawns, and bluestems. Small shrubs, such as shinnery oak and soapweed yucca, and subshrubs are dispersed throughout the grassland.

Other grasses that could appear on this site would include: flatsedge, almejitita signalgrass, big bluestem, Indiangrass, fall witchgrass, hairy grama and red lovegrass

Other shrubs include: fourwing saltbush, mesquite, ephedra and broom snakeweed.

Other forbs include: wooly and scarlet gaura, wooly dalea, phlox heliotrope, scorpionweed, deerstongue, fleabane, nama, hoffmanseggia, lemon beebalm and stickleaf.

**Table 5. Annual production by plant type**

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Grass/Grasslike	396	858	1320
Shrub/Vine	108	234	360
Forb	96	208	320
<b>Total</b>	<b>600</b>	<b>1300</b>	<b>2000</b>

**Table 6. Ground cover**

Tree foliar cover	0%
Shrub/vine/liana foliar cover	0%
Grass/grasslike foliar cover	15-20%
Forb foliar cover	0%
Non-vascular plants	0%
Biological crusts	0%
Litter	35-40%
Surface fragments >0.25" and <=3"	0%
Surface fragments >3"	0%
Bedrock	0%
Water	0%
Bare ground	35-40%

**Figure 6. Plant community growth curve (percent production by month).  
NM2805, HCPC. SD-3 Deep Sand - Warm season plant community .**

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

### Shinnery Oak Dominated

#### Community 2.1

#### Shinnery Oak Dominated



**Shinnery Oak Dominated:** This state is dominated by shinnery oak with subdominants of sand sage or mesquite. Bare ground is a significant component in this state as well. Shinnery oak is characterized by dense stands in sandy soils; however, as clay percentage increases, shinnery oak decreases. Shinnery oak abundance and distribution increase with disturbances, such as excessive grazing and fire, due to an aggressive rhizome system. As shinnery oak abundance increases, an associated increase of mesquite, sand sage, and soapweed yucca also occurs. Shinnery oak's extensive root system allows the oak to competitively exclude grasses and forbs. Sand sage, however, stabilizes light sandy soils from wind erosion and can co-exist with herbaceous species by protecting them in heavily grazed conditions (Davis and Bonham 1979). Shinnery oak has been found primarily in very deep, excessively drained, and rapidly permeable soils. Shinnery oak is associated with landforms which are gently undulating to rolling uplands, very gently sloping to moderately steep slopes, and upland plains, alluvial fans and valley sideslopes. Shinnery oak and sand sage can be controlled with herbicide if applied in the spring with a subsequent rest from grazing (Herbel et al. 1979, Pettit 1986). In addition, repetitive seasons of goat browsing can also reduce shinnery oak abundance. Patches should be maintained during brush control, however, to prevent erosion and to provide wildlife cover and forage. Further, as shinnery oak and other shrubs increase, bare patches and erosion will increase due to a lack of herbaceous ground cover.

**Diagnosis:** Shinnery oak dominated with subdominant sand sage, honey mesquite, and soapweed yucca with increasing frequency and size of bare patches.

Transition to Shinnery oak dominated state (1a): The historic plant community begins to shift toward the shinnery oak dominated state as drivers such as climate change, fire suppression, interspecific competition, and excessive grazing contribute to alterations in soil properties and herbaceous cover. Cover loss and surface soil erosion are initial indicators of transition followed by an increase of shrub species abundance and bare patch expansion.

Key indicators of approach to transition:

- Loss of grass and forb cover
- Surface soil erosion
- Bare patch expansion
- Increased shrub species abundance and composition

Transition to Historic Plant Community (1b): The shinnery oak dominated state may transition back toward the historic plant community as new drivers are introduced such as prescribed grazing, brush control, and discontinued drought conditions.

## Additional community tables

Table 7. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Lb/Acre)	Foliar Cover (%)
<b>Grass/Grasslike</b>					
1	<b>Warm Season</b>			450–585	
	spike dropseed	SPCO4	<i>Sporobolus contractus</i>	450–585	–
	sand dropseed	SPCR	<i>Sporobolus cryptandrus</i>	450–585	–
	mesa dropseed	SPFL2	<i>Sporobolus flexuosus</i>	450–585	–
	giant dropseed	SPGI	<i>Sporobolus giganteus</i>	450–585	–
2	<b>Warm Season</b>			65–104	
	sand bluestem	ANHA	<i>Andropogon hallii</i>	65–104	–
	little bluestem	SCSC	<i>Schizachyrium scoparium</i>	65–104	–
3	<b>Warm Season</b>			39–91	
	threeawn	ARIST	<i>Aristida</i>	39–91	–
4	<b>Warm Season</b>			13–39	
	thin paspalum	PASE5	<i>Paspalum setaceum</i>	13–39	–
5	<b>Warm Season</b>			13–39	
	black grama	BOER4	<i>Bouteloua eriopoda</i>	13–39	–
6	<b>Warm Season</b>			13–39	
	mat sandbur	CELO3	<i>Cenchrus longispinus</i>	13–39	–
7	<b>Warm Season</b>			13–39	
	Havard's panicgrass	PAHA2	<i>Panicum havardii</i>	13–39	–
8	<b>Warm Season</b>			13–65	
	plains bristlegrass	SEVU2	<i>Setaria vulpiseta</i>	13–65	–
9	<b>Other Annual Grasses</b>			13–65	
	Grass, annual	2GA	<i>Grass, annual</i>	13–65	–
<b>Shrub/Vine</b>					
10	<b>Shrub</b>			65–130	
	Havard oak	QUHA3	<i>Quercus havardii</i>	65–130	–
11	<b>Shrub</b>			13–39	

	sand sagebrush	ARFI2	<i>Artemisia filifolia</i>	13–39	–
12	<b>Shrub</b>			65–130	
	yucca	YUCCA	<i>Yucca</i>	65–130	–
13	<b>Shrub</b>			13–39	
	rabbitbrush	CHRY9	<i>Chrysothamnus</i>	13–39	–
14	<b>Other Shrubs</b>			13–39	
	Shrub (>.5m)	2SHRUB	<i>Shrub (&gt;.5m)</i>	13–39	–
<b>Forb</b>					
15	<b>Forb</b>			39–91	
	croton	CROTO	<i>Croton</i>	39–91	–
	Indian blanket	GAPU	<i>Gaillardia pulchella</i>	39–91	–
16	<b>Forb</b>			39–91	
	aster	ASTER	<i>Aster</i>	39–91	–
	whitest evening primrose	OEAL	<i>Oenothera albicaulis</i>	39–91	–
	beardtongue	PENST	<i>Penstemon</i>	39–91	–
17	<b>Forb</b>			39–91	
	touristplant	DIWI2	<i>Dimorphocarpa wislizeni</i>	39–91	–
	buckwheat	ERIOG	<i>Eriogonum</i>	39–91	–
	sunflower	HELIA3	<i>Helianthus</i>	39–91	–
	spiny false fiddleleaf	HYSP	<i>Hydrolea spinosa</i>	39–91	–
	threadleaf ragwort	SEFLF	<i>Senecio flaccidus var. flaccidus</i>	39–91	–
18	<b>Other Forbs</b>			13–65	
	Forb (herbaceous, not grass nor grass-like)	2FORB	<i>Forb (herbaceous, not grass nor grass-like)</i>	13–65	–

## Animal community

This site provides habitat which supports a resident animal population characterized by pronghorn, antelope, black-tailed jackrabbit, spotted ground squirrel, Ord's kangaroo rat, northern grasshopper mouse, southern plains woodrat, badger, meadowlark, roadrunner, white-necked raven, cactus wren, lesser prairie chicken, morning dove, scaled quail, Harris hawk, side blotched lizard, marbled whiptail, Texas horned lizard, western diamondback rattlesnake and ornate box turtle. In the area called Mescalero Sands, there are white-tailed and mule deer.

## Hydrological functions

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

Hydrologic Interpretations

Soil Series Hydrologic Group

Anthony B

Bluepoint A

Kermit A

Aguena A

Likes A

Pintura A

## Recreational uses

This site offers limited recreation potential for hiking, horseback riding, nature observation and photography; game bird, predator, antelope, and deer hunting.

## Wood products

This site has no potential for wood products.

## Other products

This site is suitable for grazing by all kinds and classes of livestock during all seasons of the year. Shinnery oak is toxic in the late bud or early leaf stage. Shinnery oak will increase, as will sand sagebrush following drought. Changes in the fire return interval have also favored an increase in shrub cover. The dropseeds and bluestem will decrease. This site responds very well to brush management and deferment. This site is well suited to a grazing system that rotates the season of use. Nesting habitat for lesser prairie chicken can be improved by providing residual cover that is at least 14 inches high.

## Other information

Guide to Suggested Initial Stocking Rate Acres per Animal Unit Month

Similarity Index Ac/AUM

100 - 76 2.0 – 3.8

75 – 51 3.0 – 6.0

50 – 26 5.0 – 10.0

25 – 0 10.1 +

## Inventory data references

Other 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 Cited

Davis, Joseph H., III and Bonham, Charles D. 1979. Interference of sand sagebrush canopy with needleandthread. Journal of Range Management 32(5):384-386.

Herbel, C. H, Steger, R, Gould, W. L. 1974. Managing semidesert ranges of the Southwest. Circular 456. Las Cruces, NM: New Mexico State University, Cooperative Extension Service. 48 p.

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## Contributors

Don Sylvester  
Quinn Hodgson

## Rangeland health reference sheet

Interpreting Indicators of Rangeland Health is a qualitative assessment protocol used to determine ecosystem condition based on benchmark characteristics described in the Reference Sheet. A suite of 17 (or more) indicators are typically considered in an assessment. The ecological site(s) representative of an assessment location must be known prior to applying the protocol and must be verified based on soils and climate. Current plant community cannot be used to identify the ecological site.

Author(s)/participant(s)	
Contact for lead author	
Date	
Approved by	
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

## Indicators

### 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, 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 of structure and A-horizon color and thickness):

---

### 10. Effect of community phase 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 annual-production or live foliar cover using symbols: >>, >, = to indicate much greater than, greater than, and equal to):**

Dominant:

Sub-dominant:

Other:

Additional:

---

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

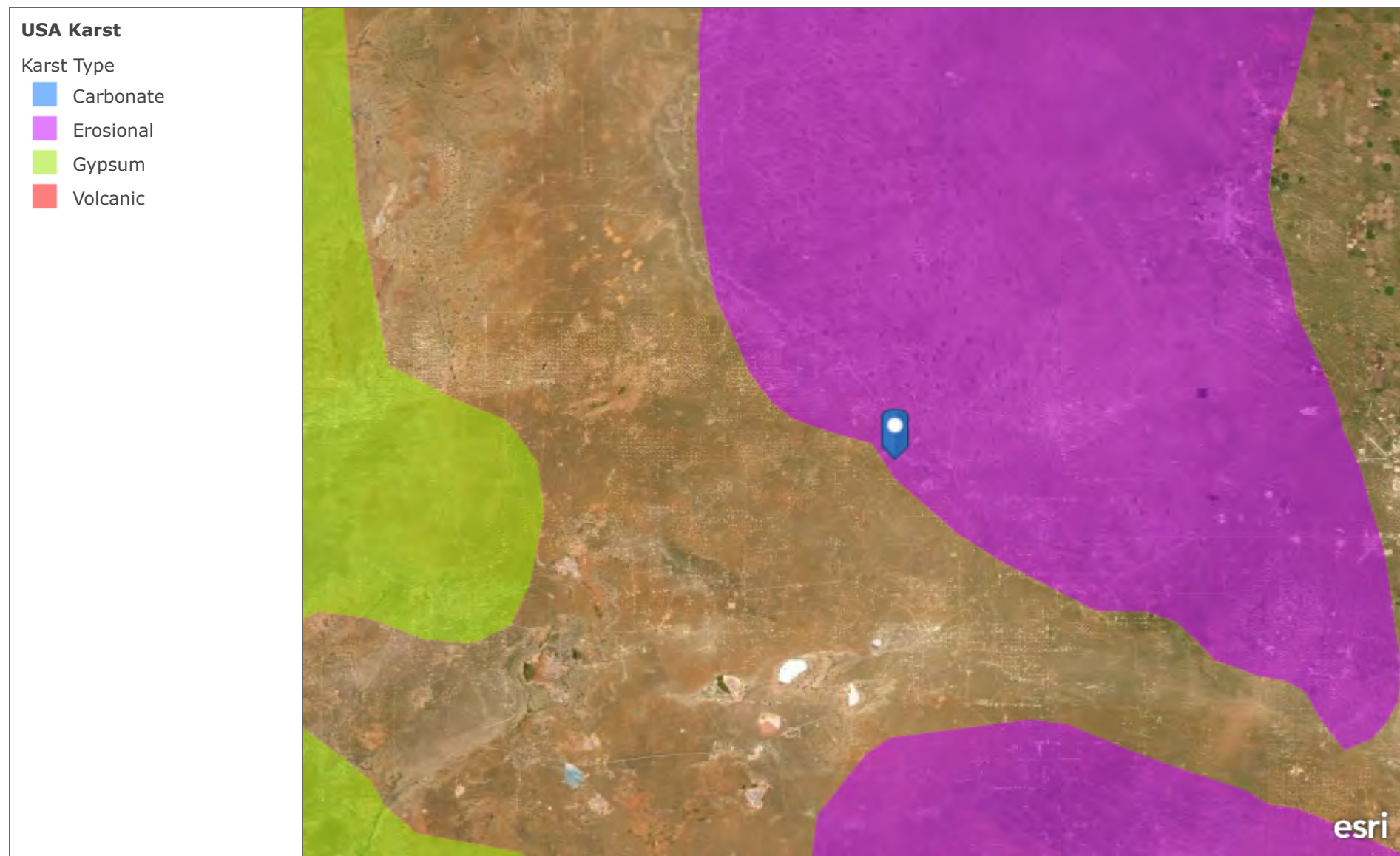
14. **Average percent litter cover (%) and depth ( in):**
- 

15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-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 indicators, we are describing what is NOT expected in the reference state for the ecological site:**
- 

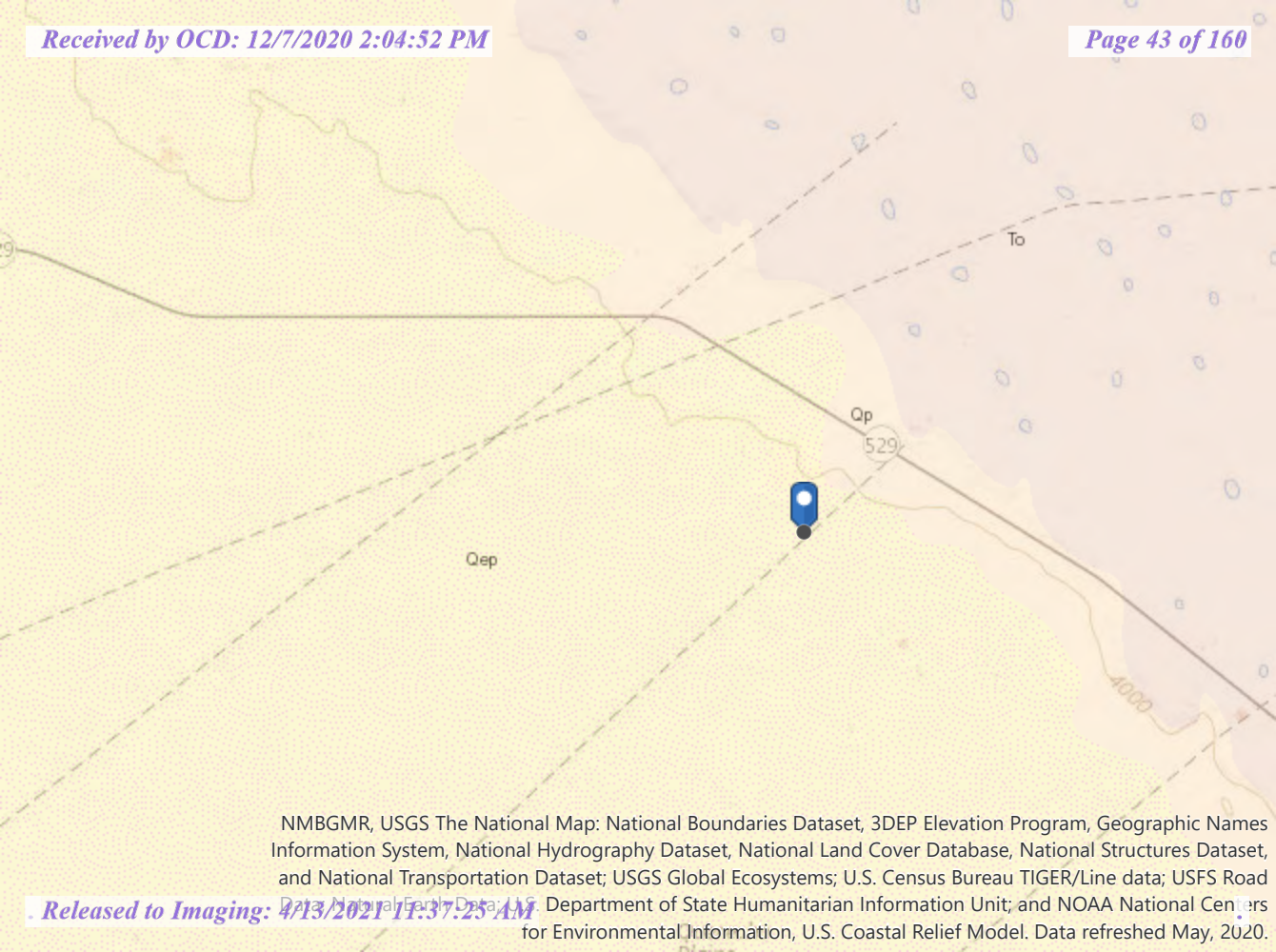
17. **Perennial plant reproductive capability:**
-

## USA Karst



A map showing karst areas in the United States based on the U.S. Geological Survey Open-File Report 2004-1352

U.S. Geological Survey Open-File Report 2004-1352, Caves and Karst in the U.S. National Park Service, AGI Karst Map of the US. | Earthstar Geographics



NMBGMR, 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 Bureau TIGER/Line data; USFS Road Data; Natural Earth Data; U.S. Department of State Humanitarian Information Unit; and NOAA National Centers for Environmental Information, U.S. Coastal Relief Model. Data refreshed May, 2020.

Map Unit Description: Kermit-Palomas fine sands, 0 to 12 percent slopes---Lea County, New Mexico

Cockburn Federal #002

## Lea County, New Mexico

### KD—Kermit-Palomas fine sands, 0 to 12 percent slopes

#### Map Unit Setting

*National map unit symbol:* dmpv

*Elevation:* 3,000 to 4,400 feet

*Mean annual precipitation:* 10 to 12 inches

*Mean annual air temperature:* 60 to 62 degrees F

*Frost-free period:* 190 to 205 days

*Farmland classification:* Not prime farmland

#### Map Unit Composition

*Kermit and similar soils:* 70 percent

*Palomas and similar soils:* 20 percent

*Minor components:* 10 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Kermit

##### Setting

*Landform:* Dunes

*Landform position (two-dimensional):* Shoulder, backslope, footslope

*Landform position (three-dimensional):* Side slope

*Down-slope shape:* Convex, linear, concave

*Across-slope shape:* Convex

*Parent material:* Calcareous sandy eolian deposits derived from sedimentary rock

##### Typical profile

*A - 0 to 8 inches:* fine sand

*C - 8 to 60 inches:* fine sand

##### Properties and qualities

*Slope:* 3 to 12 percent

*Depth to restrictive feature:* More than 80 inches

*Drainage class:* Excessively drained

*Runoff class:* Very low

*Capacity of the most limiting layer to transmit water (Ksat):* Very high (20.00 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Maximum salinity:* Nonsaline (0.0 to 1.0 mmhos/cm)

*Sodium adsorption ratio, maximum:* 2.0

*Available water capacity:* Low (about 3.1 inches)

##### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 7e

Map Unit Description: Kermit-Palomas fine sands, 0 to 12 percent slopes---Lea County, New Mexico

Cockburn Federal #002

*Hydrologic Soil Group:* A  
*Ecological site:* R042XC005NM - Deep Sand  
*Hydric soil rating:* No

### Description of Palomas

#### Setting

*Landform:* Dunes  
*Landform position (two-dimensional):* Shoulder, backslope, footslope  
*Landform position (three-dimensional):* Side slope  
*Down-slope shape:* Convex, linear, concave  
*Across-slope shape:* Convex  
*Parent material:* Alluvium derived from sandstone

#### Typical profile

*A - 0 to 16 inches:* fine sand  
*Bt - 16 to 60 inches:* sandy clay loam  
*Bk - 60 to 66 inches:* sandy loam

#### Properties and qualities

*Slope:* 0 to 5 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Well drained  
*Runoff class:* Low  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.60 to 2.00 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum content:* 50 percent  
*Gypsum, maximum content:* 1 percent  
*Maximum salinity:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Sodium adsorption ratio, maximum:* 2.0  
*Available water capacity:* Moderate (about 7.5 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 7e  
*Hydrologic Soil Group:* B  
*Ecological site:* R042XC003NM - Loamy Sand  
*Hydric soil rating:* No

### Minor Components

#### Pyote

*Percent of map unit:* 4 percent  
*Ecological site:* R042XC003NM - Loamy Sand  
*Hydric soil rating:* No

#### Maljamar

*Percent of map unit:* 4 percent  
*Ecological site:* R042XC003NM - Loamy Sand

Map Unit Description: Kermit-Palomas fine sands, 0 to 12 percent slopes---Lea County, New Mexico

Cockburn Federal #002

*Hydric soil rating:* No

**Palomas**

*Percent of map unit:* 1 percent

*Ecological site:* R042XC003NM - Loamy Sand

*Hydric soil rating:* No

**Dune land**

*Percent of map unit:* 1 percent

*Hydric soil rating:* No

## Data Source Information

Soil Survey Area: Lea County, New Mexico

Survey Area Data: Version 17, Jun 8, 2020

## **ATTACHMENT 4**





## Daily Site Visit Report

Client:	Devon Energy Corporation	Inspection Date:	5/3/2019
Site Location Name:	Cockburn Federal #002	Report Run Date:	8/10/2019 10:46 PM
Project Owner:	Amanda Davis	File (Project) #:	19E-00575
Project Manager:	Dennis Williams	API #:	30-025-36282
Client Contact Name:	Amanda Davis	Reference	Facility Fire
Client Contact Phone #:	(575) 748-0176		

### Summary of Times

Left Office	5/3/2019 11:00 AM
Arrived at Site	5/3/2019 12:15 PM
Departed Site	5/3/2019 2:00 PM
Returned to Office	5/3/2019 3:15 PM

### Summary of Daily Operations

**12:54** Arrive on location  
Fill out safety paperwork  
Conduct initial site inspection  
GPS spill  
Outline spill w/ white paint and white pin flags  
Complete DFR  
Return to office

### Next Steps & Recommendations

- 1 Create Field File folder  
Determine clean up plan  
Excavate spill area and Field Screen

# Daily Site Visit Report



## Site Photos

Viewing Direction: Southwest



Containment area after fire/spill

Viewing Direction: South



Containment area after fire/spill

Viewing Direction: Southeast



Containment area after fire/spill

Viewing Direction: East



Containment area after fire/spill



## Daily Site Visit Report

**Viewing Direction: East**



Containment area after fire/spill

**Viewing Direction: Northeast**



Containment area after fire/spill

**Viewing Direction: North**



Containment area after fire/spill

**Viewing Direction: Northwest**



Containment area after fire/spill





## Daily Site Visit Report

Viewing Direction: Northwest



Containment area after fire/spill

Viewing Direction: West



Containment area after fire/spill

Viewing Direction: East



Burnt tanks removed from containment

Viewing Direction: Southeast



Burnt tanks removed from containment



## Daily Site Visit Report

**Viewing Direction: Southwest**



Burnt tanks removed from containment

**Viewing Direction: Northwest**



Burnt tanks removed from containment

**Viewing Direction: West**



Containment from containment

**Viewing Direction: South**







Contaminated material removed from containment





## Daily Site Visit Report

<p><b>Viewing Direction: East</b></p>  <p><small>Descriptive Photo Viewing Direction: East Desc: Contaminated material removed from containment Created: 5/3/2019 1:17:17 PM Lat:32.758222, Long:-103.857223</small></p> <p>Contaminated material removed from containment</p>	<p><b>Viewing Direction: Northeast</b></p>  <p><small>Descriptive Photo Viewing Direction: Northeast Desc: Contaminated material removed from containment Created: 5/3/2019 1:17:17 PM Lat:32.758220, Long:-103.857580</small></p> <p>Contaminated material removed from containment</p>
<p><b>Viewing Direction: North</b></p>  <p><small>Descriptive Photo Viewing Direction: North Desc: Contaminants west of containment Created: 5/3/2019 1:14:58 PM Lat:32.758221, Long:-103.857218</small></p> <p>Contaminants west of containment</p>	<p><b>Viewing Direction: South</b></p>  <p><small>Descriptive Photo Viewing Direction: South Desc: Electrical box west of containment Created: 5/3/2019 1:19:52 PM Lat:32.758433, Long:-103.857891</small></p> <p>Electrical box west of containment</p>



## Daily Site Visit Report

Viewing Direction: North



Pump jack

## Daily Site Visit Report



Daily Site Visit Signature

**Inspector:** Austin Harris

**Signature:**

A handwritten signature in black ink, appearing to be 'AH' or similar, written over a horizontal line.

Signature



## Daily Site Visit Report

Client:	Devon Energy Corporation	Inspection Date:	5/6/2019
Site Location Name:	Cockburn Federal #002	Report Run Date:	5/7/2019 2:58 AM
Project Owner:	Amanda Davis	File (Project) #:	19E-00575
Project Manager:	Dennis Williams	API #:	30-025-36282
Client Contact Name:	Amanda Davis	Reference	Facility Fire
Client Contact Phone #:	(575) 748-0176		

### Summary of Times

Left Office	5/6/2019 8:00 AM
Arrived at Site	5/6/2019 9:30 AM
Departed Site	5/6/2019 6:26 PM
Returned to Office	5/6/2019 7:55 PM

### Summary of Daily Operations

**18:12** Excavate based on field screening results to meet closure criteria

### Next Steps & Recommendations

- 1 Continue field screening.
- 2 Continue excavation
- 3 Haul contaminated material

### Sampling

# Daily Site Visit Report



TP19-01									
Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?	

TP19-02									
Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?	

TP19-03									
Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?	



## Daily Site Visit Report



## Site Photos

Viewing Direction: West



Exterior of containment

Viewing Direction: East



Excavation outside of containment

Viewing Direction: North



Side of containment

Viewing Direction: East



North side of containment



## Daily Site Visit Report



## Daily Site Visit Report



Daily Site Visit Signature

**Inspector:** Dennis Williams

**Signature:**   
Signature



## Daily Site Visit Report

Client:	Devon Energy Corporation	Inspection Date:	5/8/2019
Site Location Name:	Cockburn Federal #002	Report Run Date:	5/9/2019 1:10 AM
Project Owner:	Amanda Davis	File (Project) #:	19E-00575
Project Manager:	Dennis Williams	API #:	30-025-36282
Client Contact Name:	Amanda Davis	Reference	Facility Fire
Client Contact Phone #:	(575) 748-0176		

### Summary of Times

Left Office	5/8/2019 7:30 AM
Arrived at Site	5/8/2019 9:00 AM
Departed Site	5/8/2019 5:09 PM
Returned to Office	5/8/2019 6:30 PM

### Summary of Daily Operations

**16:58** Fill out arrival, safety, and ground disturbance forms  
Tailgate safety meeting  
Continue excavating and field screening  
Have contaminated soil hauled off  
Fill out DFR  
Demobilize



### Next Steps & Recommendations

- 1 Continue excavation
- 2 Have rest of contaminated soil hauled off
- 3 Take and ship samples

### Sampling



## Daily Site Visit Report

SS19-10									
	Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
	9 ft.	0 ppm	73 ppm			BTEX (EPA SW-846 Method 8021B/8260B), Chloride (EPA 300.0), TPH (EPA SW-846 Method 8015M)		,	Yes
SS19-11									
	Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
	8 ft.	0 ppm	61 ppm	Low (30-600 ppm)	74 ppm	BTEX (EPA SW-846 Method 8021B/8260B), Chloride (EPA 300.0), TPH (EPA SW-846 Method 8015M)		,	Yes



# Daily Site Visit Report



## Site Photos

Viewing Direction: West



Excavation area

Viewing Direction: North



Soil being loaded into belly dump

Viewing Direction: Northwest



Contaminated soil pile

## Daily Site Visit Report



### Depth Sample Photos

Sample Point ID: SS19-10



Depth: 9ft.

Sample Point ID: SS19-11



Depth: 8ft.

## Daily Site Visit Report



Daily Site Visit Signature

**Inspector:** Jason Crabtree

**Signature:**

A handwritten signature in black ink, consisting of a large, stylized 'J' followed by a series of loops and a long horizontal stroke. The signature is written over a thin horizontal line.

Signature



## Daily Site Visit Report

Client:	Devon Energy Corporation	Inspection Date:	5/9/2019
Site Location Name:	Cockburn Federal #002	Report Run Date:	5/10/2019 3:30 AM
Project Owner:	Amanda Davis	File (Project) #:	19E-00575
Project Manager:	Dennis Williams	API #:	30-025-36282
Client Contact Name:	Amanda Davis	Reference	Facility Fire
Client Contact Phone #:	(575) 748-0176		

### Summary of Times

Left Office	5/9/2019 7:45 AM
Arrived at Site	5/9/2019 9:15 AM
Departed Site	5/9/2019 5:00 PM
Returned to Office	5/9/2019 7:00 PM

### Summary of Daily Operations

#### 9:21 Fill out arrival, safety, and ground disturbance forms

- Continue excavation and field screening
- Haul off contaminated soil
- Take pictures
- Collect samples
- Fill out DFR
- Meet Skip to ship samples
- Return to office

### Next Steps & Recommendations

- 1 Haul off remainder of contaminated soil

### Sampling







# Daily Site Visit Report

SS19-01									
Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?	
3 ft.		70 ppm	Low (30-600 ppm)	86 ppm	BTEX (EPA SW-846 Method 8021B/8260B), Chloride (EPA 300.0), TPH (EPA SW-846 Method 8015M)		32.75625574, -103.65792699	Yes	
SS19-02									
Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?	
2 ft.		85 ppm	Low (30-600 ppm)	30 ppm	BTEX (EPA SW-846 Method 8021B/8260B), Chloride (EPA 300.0), TPH (EPA SW-846 Method 8015M)		32.75636740, -103.65792582	Yes	
SS19-03									
Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?	
8 ft.	0 ppm	77 ppm			BTEX (EPA SW-846 Method 8021B/8260B), Chloride (EPA 300.0), TPH (EPA SW-846 Method 8015M)		32.75640918, -103.65784198	Yes	
SS19-04									
Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?	
8 ft.	0 ppm	58 ppm			BTEX (EPA SW-846 Method 8021B/8260B), Chloride (EPA 300.0), TPH (EPA SW-846 Method 8015M)		32.75641085, -103.65788052	Yes	





# Daily Site Visit Report

SS19-05									
	Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
	5 ft.	1 ppm	72 ppm			BTEX (EPA SW-846 Method 8021B/8260B), Chloride (EPA 300.0), TPH (EPA SW-846 Method 8015M)		32.75634539, -103.65789035	Yes
SS19-06									
	Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
	3 ft.	0 ppm	81 ppm			BTEX (EPA SW-846 Method 8021B/8260B), Chloride (EPA 300.0), TPH (EPA SW-846 Method 8015M)		32.75633362, -103.65773970	Yes
SS19-07									
	Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
	3 ft.	0 ppm	66 ppm	Low (30-600 ppm)	37 ppm	BTEX (EPA SW-846 Method 8021B/8260B), Chloride (EPA 300.0), TPH (EPA SW-846 Method 8015M)		32.75620656, -103.65782761	Yes
SS19-08									
	Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
	3 ft.	0 ppm	63 ppm	Low (30-600 ppm)	314 ppm	BTEX (EPA SW-846 Method 8021B/8260B), Chloride (EPA 300.0), TPH (EPA SW-846 Method 8015M)		32.74534843, -103.65765820	Yes




## Daily Site Visit Report



SS19-09									
Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?	
3 ft.	0 ppm	54 ppm	Low (30-600 ppm)	74 ppm	BTEX (EPA SW-846 Method 8021B/8260B), Chloride (EPA 300.0), TPH (EPA SW-846 Method 8015M)		32.75647715, -103.65778209	Yes	
SS19-10									
Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?	
8 ft.	0 ppm	73 ppm			BTEX (EPA SW-846 Method 8021B/8260B), Chloride (EPA 300.0), TPH (EPA SW-846 Method 8015M)		32.75623696, -103.65778678	Yes	
SS19-11									
Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?	
8 ft.	0 ppm	62 ppm	Low (30-600 ppm)	74 ppm	BTEX (EPA SW-846 Method 8021B/8260B), Chloride (EPA 300.0), TPH (EPA SW-846 Method 8015M)		32.75623278, -103.65785975	Yes	
SS19-12									
Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?	
8 ft.	2 ppm	88 ppm	Low (30-600 ppm)	30 ppm	BTEX (EPA SW-846 Method 8021B/8260B), Chloride (EPA 300.0), TPH (EPA SW-846 Method 8015M)		32.75636931, -103.65779380	Yes	



## Daily Site Visit Report

SS19-13									
	Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
	8 ft.	2 ppm	54 ppm	Low (30-600 ppm)	30 ppm	BTEX (EPA SW-846 Method 8021B/8260B), Chloride (EPA 300.0), TPH (EPA SW-846 Method 8015M)		32.75636721, - 103.65787270	Yes
SS19-14									
	Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
	2 ft.	4 ppm	74 ppm	Low (30-600 ppm)	62 ppm	BTEX (EPA SW-846 Method 8021B/8260B), Chloride (EPA 300.0), TPH (EPA SW-846 Method 8015M)		32.75643434, - 103.65771565	Yes
SS19-15									
	Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
	8 ft.	1 ppm	69 ppm	Low (30-600 ppm)	51 ppm	BTEX (EPA SW-846 Method 8021B/8260B), Chloride (EPA 300.0), TPH (EPA SW-846 Method 8015M)		32.75630927, - 103.65778284	Yes

# Daily Site Visit Report



## Site Photos

Viewing Direction: West



Excavation area

Viewing Direction: West



Contaminated soil pile

Viewing Direction: Southwest



Excavation area



## Daily Site Visit Report



## Depth Sample Photos

Sample Point ID: SS19-12



Depth: 8ft.

Sample Point ID: SS19-13



Depth: 8ft.

Sample Point ID: SS19-14



Depth: 2ft.

Sample Point ID: SS19-15



Depth: 8ft.





## Daily Site Visit Report

Sample Point ID: SS19-01



Depth: 3ft.

Sample Point ID: SS19-02



Depth: 2ft.

Sample Point ID: SS19-03



Depth: 8ft.

Sample Point ID: SS19-04



Depth: 8ft.



## Daily Site Visit Report

Sample Point ID: SS19-05



Depth: 5ft.

Sample Point ID: SS19-06



Depth: 3ft.

Sample Point ID: SS19-07



Depth: 3ft.

Sample Point ID: SS19-08



Depth: 3ft.





## Daily Site Visit Report

Sample Point ID: SS19-09



Depth: 3ft.

Sample Point ID: SS19-10



Depth: 8ft.

Sample Point ID: SS19-11



Depth: 8ft.

## Daily Site Visit Report



Daily Site Visit Signature

**Inspector:** Jason Crabtree

**Signature:**

A handwritten signature in black ink, consisting of a large, stylized 'J' followed by a 'C' and a horizontal line extending to the right. Below the signature is a thin horizontal line with the word 'Signature' written in small text underneath it.



## Daily Site Visit Report

Client:	Devon Energy Corporation	Inspection Date:	5/11/2019
Site Location Name:	Cockburn Federal #002	Report Run Date:	5/11/2019 8:46 PM
Project Owner:	Amanda Davis	File (Project) #:	19E-00575
Project Manager:	Dennis Williams	API #:	30-025-36282
Client Contact Name:	Amanda Davis	Reference	Facility Fire
Client Contact Phone #:	(575) 748-0176		

### Summary of Times

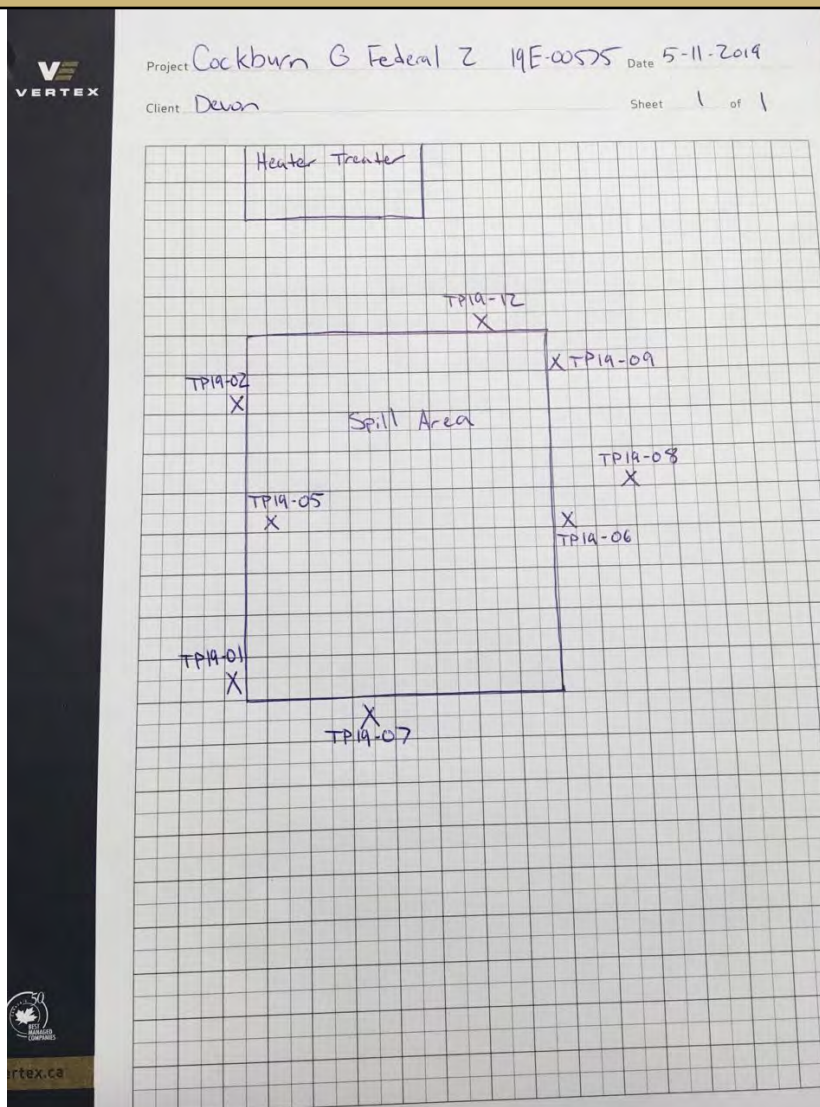
Left Office	5/11/2019 8:00 AM
Arrived at Site	5/11/2019 9:15 AM
Departed Site	5/11/2019 1:15 PM
Returned to Office	5/11/2019 2:30 PM



## Daily Site Visit Report



## Site Sketch



# Daily Site Visit Report



## Summary of Daily Operations

**12:19** Fill out arrival, safety, and ground disturbance forms

Tailgate safety meeting

Excavate and sample

Field screen

Take pictures

Fill out DFR

Demobilize

Ship samples



Return to office

## Next Steps & Recommendations

1 Ship samples





2 Backfill

## Sampling

TP19-01									
	Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
	6 ft.	0 ppm	33 ppm	High (300-6000ppm)	274 ppm	BTEX (EPA SW-846 Method 8021B/8260B), Chloride (EPA 300.0), TPH (EPA SW-846 Method 8015M)		32.75625574, -103.65792699	Yes
TP19-02									
	Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
	5 ft.	0 ppm	39 ppm			BTEX (EPA SW-846 Method 8021B/8260B), Chloride (EPA 300.0), TPH (EPA SW-846 Method 8015M)		32.75636740, -103.65792582	Yes





## Daily Site Visit Report

TP19-05									
	Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
	8 ft.	0 ppm	35 ppm	High (300-6000ppm)	274 ppm	BTEX (EPA SW-846 Method 8021B/8260B), Chloride (EPA 300.0), TPH (EPA SW-846 Method 8015M)		32.75634539, -103.65789035	Yes
TP19-06									
	Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
	6 ft.	1 ppm	32 ppm	High (300-6000ppm)	274 ppm	BTEX (EPA SW-846 Method 8021B/8260B), Chloride (EPA 300.0), TPH (EPA SW-846 Method 8015M)		32.75633362, -103.65773970	Yes
TP19-07									
	Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
	6 ft.	1 ppm	37 ppm	High (300-6000ppm)	274 ppm	BTEX (EPA SW-846 Method 8021B/8260B), Chloride (EPA 300.0), TPH (EPA SW-846 Method 8015M)		32.75620656, -103.65782761	Yes
TP19-08									
	Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
	6 ft.	2 ppm	40 ppm	High (300-6000ppm)	274 ppm	BTEX (EPA SW-846 Method 8021B/8260B), Chloride (EPA 300.0), TPH (EPA SW-846 Method 8015M)		32.75634843, -103.65765820	Yes



## Daily Site Visit Report

TP19-09									
	Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
	6 ft.	1 ppm	26 ppm	High (300-6000ppm)	274 ppm	BTEX (EPA SW-846 Method 8021B/8260B), Chloride (EPA 300.0), TPH (EPA SW-846 Method 8015M)		32.75647715, -103.65778209	Yes
TP19-12									
	Depth ft	VOC PID	Petro Flag TPH ppm	Quantab Range ppm	Quantab Reading ppm	Lab Analysis	Picture	Trimble Location	Marked On Site Sketch?
	9 ft.	0 ppm	26 ppm	High (300-6000ppm)	274 ppm	BTEX (EPA SW-846 Method 8021B/8260B), Chloride (EPA 300.0), TPH (EPA SW-846 Method 8015M)		32.75636931, -103.65779380	Yes

## Daily Site Visit Report



### Site Photos

Viewing Direction: Northwest



Excavation area

Viewing Direction: North



Clean fill dirt on site



# Daily Site Visit Report



## Depth Sample Photos

Sample Point ID: TP19-01



Depth: 6ft.

Sample Point ID: TP19-02



Depth: 5ft.

Sample Point ID: TP19-05



Depth: 8ft.

Sample Point ID: TP19-06



Depth: 6ft.



## Daily Site Visit Report

Sample Point ID: TP19-08



Depth: 6ft.

Sample Point ID: TP19-09



Depth: 6ft.

Sample Point ID: TP19-12



Depth: 9ft.

Sample Point ID: TP19-07



Depth: 6ft.

## Daily Site Visit Report



Daily Site Visit Signature

**Inspector:** Jason Crabtree

**Signature:**

  
Signature





## Spill Response and Sampling

Client: Devon  
Date: 8/31  
Site Name: Cockburn  
Site Location:  
Project Owner:  
Project Manager:  
Project #:

Initial Spill Information - Record on First Visit	
Spill Date:	
Spill Volume:	
Spill Cause:	
Spill Product:	
Recovered Spill Volume:	
Recovery Method:	

		Sampling			Data Collection (Check for Yes)			
Sample ID	Depth (ft)	Field Screening			Lab Analysis	Picture	Trimble Coordinates	Marked on Site Sketch
		VOC (PID)	PetroFlag TPH (ppm)	Quantab (High/Low) + or -				
SS/IP/BH - Year - Number Ex. BH18-01	Ex. 2ft	Ex. 400 ppm	200 ppm	Ex. 'High +	Ex. Hydrocarbon Chloride			
BS16	1			0.02/24.2	10:30			
17	1		44	0.25/24.6	10:25			
18	3			0.13/24.1				
19	1			0.08/25.2				
20	3		38	0.14/23.8				
21	1			0.16/24.6				
22	3		62	0.18/23.8				
23	1		51	0.16/25.4				
24	1			0.14/26.2				
25	1		29	0.34/25.7				
26	1		66	0.30/25.6				
27	1			0.33/28.5				
28	3		24	0.34/26.2				
29	1			0.27/27.5				
30	3		26	0.17/26.5				
31	1			0.07/27.1				
32	3			0.08/27.6				
33	1		37	0.29/28.6				
34	3		58	0.12/21.9				



## Spill Response and Sampling

Client:	Devon
Date:	8/31
Site Name:	Cockburn
Site Location:	
Project Owner:	
Project Manager:	
Project #:	

Initial Spill Information - Record on First Visit	
Spill Date:	
Spill Volume:	
Spill Cause:	
Spill Product:	
Recovered Spill Volume:	
Recovery Method:	

[illegible]



## **ATTACHMENT 5**

Client Name: Devon Energy Production Company  
 Site Name: Cockburn Fed #002  
 NM OCD Tracking #: NAB1908655364  
 Project #: 19E-00575-011  
 Lab Reports: 1905519, H901724 and 2009111

Table 2. Confirmatory Sampling Laboratory Data - Depth to Groundwater < 50 feet										
Sample Description			Petroleum Hydrocarbons							Inorganic
Sample ID*	Depth (ft)	Sample Date	Volatile		Extractable					
			Benzene	BTEX (Total)	Gasoline Range Organics (GRO)	Diesel Range Organics (DRO)	Motor Oil Range Organics (MRO)	(GRO + DRO)	Total Petroleum Hydrocarbons (TPH)	
SS19-01	3	May 9, 2019	<0.025	<0.225	<5.0	210	170	210	380	860
TP19-01	6	May 11, 2019	<0.050	<0.300	<10.0	<10.0	<10.0	<20.0	<30.0	<16
SS19-02	2	May 9, 2019	<0.025	<0.225	<5.0	89	81	89	170	410
TP19-02	5	May 11, 2019	<0.050	<0.300	<10.0	<10.0	<10.0	<20.0	<30.0	<16
SS19-03	8	May 9, 2019	<0.025	<0.225	<5.0	<9.7	<48	<14.7	<62.7	62
SS19-04	8	May 9, 2019	<0.025	<0.225	<5.0	<10.0	<50	<15.0	<65.0	95
SS19-05	5	May 9, 2019	<0.025	<0.225	<5.0	160	130	160	290	740
TP19-05	8	May 11, 2019	<0.050	<0.300	<10.0	<10.0	<10.0	<20.0	<30.0	16
SS19-06	3	May 9, 2019	<0.025	<0.225	<5.0	150	130	150	280	640
TP19-06	6	May 11, 2019	<0.050	<0.300	<10.0	<10.0	<10.0	<20.0	<30.0	16
SS19-07	3	May 9, 2019	<0.025	<0.225	<5.0	260	210	260	470	610
TP19-07	6	May 11, 2019	<0.050	<0.300	<10.0	<10.0	<10.0	<20.0	<30.0	48
SS19-08	3	May 9, 2019	<0.025	<0.225	<5.0	200	170	200	370	830
TP19-08	6	May 11, 2019	<0.050	<0.300	<10.0	<10.0	<10.0	<20.0	<30.0	64
SS19-09	3	May 9, 2019	<0.025	<0.225	<5.0	180	140	180	320	570
TP19-09	6	May 11, 2019	<0.050	<0.300	<10.0	<10.0	<10.0	<20.0	<30.0	80
SS19-10	8	May 9, 2019	<0.025	<0.225	<5.0	<9.3	<46	<14.3	<60.3	38
SS19-11	8	May 9, 2019	<0.025	<0.225	<5.0	<9.8	<49	<14.8	<63.8	37
SS19-12	8	May 9, 2019	<0.025	<0.225	<5.0	56	60	56	116	490
TP19-12	9	May 11, 2019	<0.050	<0.300	<10.0	<10.0	<10.0	<20.0	<30.0	<16
SS19-13	8	May 9, 2019	<0.025	<0.225	<5.0	<9.8	<49	<14.8	<63.8	210
SS19-14	2	May 9, 2019	<0.025	<0.225	<5.0	<9.9	<49	<14.9	<63.9	71
SS19-15	8	May 9, 2019	<0.025	<0.225	<5.0	<9.5	<47	<14.5	<61.5	150
BS20-16	1	August 31, 2020	<0.025	<0.222	<4.9	<9.4	<47	<14.3	<61.3	60
BS20-17	1	August 31, 2020	<0.024	<0.219	<4.9	<9.2	<46	<14.1	<60.1	170
BS20-18	3	August 31, 2020	<0.025	<0.221	<4.9	<9.5	<47	<14.4	<61.4	77
BS20-19	1	August 31, 2020	<0.024	<0.22	<4.9	<9.6	<48	<14.5	<62.5	<60
BS20-20	3	August 31, 2020	<0.025	<0.222	<4.9	<8.9	<45	<13.8	<58.8	<60
BS20-21	1	August 31, 2020	<0.024	<0.215	<4.8	<9.7	<49	<14.5	<63.5	<60
BS20-22	3	August 31, 2020	<0.024	<0.216	<4.8	<10	<50	<14.8	<64.8	86
BS20-23	1	August 31, 2020	<0.024	<0.22	<4.9	<9.7	<49	<14.6	<63.6	72
BS20-24	1	August 31, 2020	<0.024	<0.219	<4.9	<9.8	<49	<14.7	<63.7	63
BS20-25	1	August 31, 2020	<0.025	<0.244	<5.0	<9.8	<49	<14.8	<63.8	81
BS20-26	1	August 31, 2020	<0.025	<0.225	<5.0	<10	<50	<15	<65	200
BS20-27	1	August 31, 2020	<0.025	<0.225	<5.0	<9.7	<48	<14.7	<62.7	110
BS20-28	3	August 31, 2020	<0.025	<0.225	<5.0	<9.7	<48	<14.7	<62.7	68
BS20-29	1	August 31, 2020	<0.025	<0.222	<4.9	<9.9	<50	<14.8	<64.8	<60
BS20-30	3	August 31, 2020	<0.025	<0.222	<4.9	<9.9	<49	<14.8	<63.8	83
BS20-31	1	August 31, 2020	<0.025	<0.222	<4.9	<9.6	<48	<14.5	>62.5	<60
BS20-32	3	August 31, 2020	<0.025	<0.222	<4.9	<10	<50	<14.9	<64.9	<60
BS20-33	1	August 31, 2020	<0.023	<0.207	<4.6	<9.6	<48	<14.2	<62.2	75
BS20-34	3	August 31, 2020	<0.025	<0.225	<5.0	<9.8	<49	<14.8	<63.8	<60
WS20-01	0-1	August 31, 2020	<0.025	<0.224	<5.0	<9.7	<48	<14.7	<62.7	<60
WS20-02	0-1	August 31, 2020	<0.025	<0.225	<5.0	<9.8	<49	<14.8	<63.8	<60
WS20-03	0-1	August 31, 2020	<0.025	<0.224	<5.0	<9.6	<48	<14.6	<62.6	<60
WS20-04	0-1	August 31, 2020	<0.025	<0.221	<4.9	<10	<50	<14.9	<64.9	<60
WS20-05	0-1	August 31, 2020	<0.025	<0.225	<5.0	<9.8	<49	<14.8	<63.8	<60
WS20-06	0-1	August 31, 2020	<0.025	<0.224	<5.0	<9.4	<47	<14.4	<61.4	92

Bold and grey shaded indicates exceedance outside of NM OCD Closure Criteria

Bold and green shaded indicates a re-sample of areas previously exceeding closure criteria

\* Sampling nomenclature was recorded incorrectly for re-collected samples from SS to TP. Locations did not change.

## **ATTACHMENT 6**



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

September 11, 2020

Natalie Gordon

Devon Energy

6488 Seven Rivers Highway

Artesia, NM 88210

TEL: (575) 748-0176

FAX:

RE: Cockburn G Federal 002

OrderNo.: 2009111

Dear Natalie Gordon:

Hall Environmental Analysis Laboratory received 25 sample(s) on 9/2/2020 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](http://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,

A handwritten signature in black ink, appearing to read "Andy Freeman", is written over a horizontal line.

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

## Analytical Report

Lab Order 2009111

Date Reported: 9/11/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BS20-16 1'

Project: Cockburn G Federal 002

Collection Date: 8/31/2020 10:30:00 AM

Lab ID: 2009111-001

Matrix: SOIL

Received Date: 9/2/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.4		mg/Kg	1	9/4/2020 7:46:08 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	9/4/2020 7:46:08 PM
Surr: DNOP	82.8	30.4-154		%Rec	1	9/4/2020 7:46:08 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CAS</b>
Chloride	ND	60		mg/Kg	20	9/9/2020 9:51:34 PM
<b>EPA METHOD 8260B: VOLATILES SHORT LIST</b>						Analyst: <b>JMR</b>
Benzene	ND	0.025		mg/Kg	1	9/6/2020 7:21:55 PM
Toluene	ND	0.049		mg/Kg	1	9/6/2020 7:21:55 PM
Ethylbenzene	ND	0.049		mg/Kg	1	9/6/2020 7:21:55 PM
Xylenes, Total	ND	0.099		mg/Kg	1	9/6/2020 7:21:55 PM
Surr: 1,2-Dichloroethane-d4	102	70-130		%Rec	1	9/6/2020 7:21:55 PM
Surr: 4-Bromofluorobenzene	98.3	70-130		%Rec	1	9/6/2020 7:21:55 PM
Surr: Dibromofluoromethane	112	70-130		%Rec	1	9/6/2020 7:21:55 PM
Surr: Toluene-d8	103	70-130		%Rec	1	9/6/2020 7:21:55 PM
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>						Analyst: <b>JMR</b>
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	9/6/2020 7:21:55 PM
Surr: BFB	98.2	70-130		%Rec	1	9/6/2020 7:21:55 PM

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2009111

Date Reported: 9/11/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BS20-17 1'

Project: Cockburn G Federal 002

Collection Date: 8/31/2020 10:40:00 AM

Lab ID: 2009111-002

Matrix: SOIL

Received Date: 9/2/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.2		mg/Kg	1	9/4/2020 8:59:23 PM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	9/4/2020 8:59:23 PM
Surr: DNOP	88.7	30.4-154		%Rec	1	9/4/2020 8:59:23 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CAS</b>
Chloride	170	60		mg/Kg	20	9/9/2020 10:28:48 PM
<b>EPA METHOD 8260B: VOLATILES SHORT LIST</b>						Analyst: <b>JMR</b>
Benzene	ND	0.024		mg/Kg	1	9/6/2020 7:50:35 PM
Toluene	ND	0.049		mg/Kg	1	9/6/2020 7:50:35 PM
Ethylbenzene	ND	0.049		mg/Kg	1	9/6/2020 7:50:35 PM
Xylenes, Total	ND	0.097		mg/Kg	1	9/6/2020 7:50:35 PM
Surr: 1,2-Dichloroethane-d4	101	70-130		%Rec	1	9/6/2020 7:50:35 PM
Surr: 4-Bromofluorobenzene	99.5	70-130		%Rec	1	9/6/2020 7:50:35 PM
Surr: Dibromofluoromethane	116	70-130		%Rec	1	9/6/2020 7:50:35 PM
Surr: Toluene-d8	108	70-130		%Rec	1	9/6/2020 7:50:35 PM
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>						Analyst: <b>JMR</b>
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	9/6/2020 7:50:35 PM
Surr: BFB	102	70-130		%Rec	1	9/6/2020 7:50:35 PM

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2009111

Date Reported: 9/11/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BS20-18 3'

Project: Cockburn G Federal 002

Collection Date: 8/31/2020 10:50:00 AM

Lab ID: 2009111-003

Matrix: SOIL

Received Date: 9/2/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	9/4/2020 9:23:58 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	9/4/2020 9:23:58 PM
Surr: DNOP	87.3	30.4-154		%Rec	1	9/4/2020 9:23:58 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CAS</b>
Chloride	77	60		mg/Kg	20	9/9/2020 10:41:13 PM
<b>EPA METHOD 8260B: VOLATILES SHORT LIST</b>						Analyst: <b>JMR</b>
Benzene	ND	0.025		mg/Kg	1	9/6/2020 8:19:11 PM
Toluene	ND	0.049		mg/Kg	1	9/6/2020 8:19:11 PM
Ethylbenzene	ND	0.049		mg/Kg	1	9/6/2020 8:19:11 PM
Xylenes, Total	ND	0.098		mg/Kg	1	9/6/2020 8:19:11 PM
Surr: 1,2-Dichloroethane-d4	97.4	70-130		%Rec	1	9/6/2020 8:19:11 PM
Surr: 4-Bromofluorobenzene	99.5	70-130		%Rec	1	9/6/2020 8:19:11 PM
Surr: Dibromofluoromethane	110	70-130		%Rec	1	9/6/2020 8:19:11 PM
Surr: Toluene-d8	103	70-130		%Rec	1	9/6/2020 8:19:11 PM
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>						Analyst: <b>JMR</b>
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	9/6/2020 8:19:11 PM
Surr: BFB	99.7	70-130		%Rec	1	9/6/2020 8:19:11 PM

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2009111

Date Reported: 9/11/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BS20-19 1'

Project: Cockburn G Federal 002

Collection Date: 8/31/2020 11:00:00 AM

Lab ID: 2009111-004

Matrix: SOIL

Received Date: 9/2/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	9/4/2020 9:48:25 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	9/4/2020 9:48:25 PM
Surr: DNOP	96.4	30.4-154		%Rec	1	9/4/2020 9:48:25 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CAS</b>
Chloride	ND	60		mg/Kg	20	9/9/2020 11:18:26 PM
<b>EPA METHOD 8260B: VOLATILES SHORT LIST</b>						Analyst: <b>JMR</b>
Benzene	ND	0.024		mg/Kg	1	9/6/2020 8:47:45 PM
Toluene	ND	0.049		mg/Kg	1	9/6/2020 8:47:45 PM
Ethylbenzene	ND	0.049		mg/Kg	1	9/6/2020 8:47:45 PM
Xylenes, Total	ND	0.098		mg/Kg	1	9/6/2020 8:47:45 PM
Surr: 1,2-Dichloroethane-d4	99.4	70-130		%Rec	1	9/6/2020 8:47:45 PM
Surr: 4-Bromofluorobenzene	104	70-130		%Rec	1	9/6/2020 8:47:45 PM
Surr: Dibromofluoromethane	108	70-130		%Rec	1	9/6/2020 8:47:45 PM
Surr: Toluene-d8	101	70-130		%Rec	1	9/6/2020 8:47:45 PM
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>						Analyst: <b>JMR</b>
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	9/6/2020 8:47:45 PM
Surr: BFB	101	70-130		%Rec	1	9/6/2020 8:47:45 PM

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2009111

Date Reported: 9/11/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BS20-20 3'

Project: Cockburn G Federal 002

Collection Date: 8/31/2020 11:10:00 AM

Lab ID: 2009111-005

Matrix: SOIL

Received Date: 9/2/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	8.9		mg/Kg	1	9/4/2020 10:37:33 PM
Motor Oil Range Organics (MRO)	ND	45		mg/Kg	1	9/4/2020 10:37:33 PM
Surr: DNOP	90.6	30.4-154		%Rec	1	9/4/2020 10:37:33 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CAS</b>
Chloride	ND	60		mg/Kg	20	9/9/2020 11:30:51 PM
<b>EPA METHOD 8260B: VOLATILES SHORT LIST</b>						Analyst: <b>JMR</b>
Benzene	ND	0.025		mg/Kg	1	9/6/2020 9:16:16 PM
Toluene	ND	0.049		mg/Kg	1	9/6/2020 9:16:16 PM
Ethylbenzene	ND	0.049		mg/Kg	1	9/6/2020 9:16:16 PM
Xylenes, Total	ND	0.099		mg/Kg	1	9/6/2020 9:16:16 PM
Surr: 1,2-Dichloroethane-d4	99.8	70-130		%Rec	1	9/6/2020 9:16:16 PM
Surr: 4-Bromofluorobenzene	99.0	70-130		%Rec	1	9/6/2020 9:16:16 PM
Surr: Dibromofluoromethane	109	70-130		%Rec	1	9/6/2020 9:16:16 PM
Surr: Toluene-d8	102	70-130		%Rec	1	9/6/2020 9:16:16 PM
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>						Analyst: <b>JMR</b>
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	9/6/2020 9:16:16 PM
Surr: BFB	98.4	70-130		%Rec	1	9/6/2020 9:16:16 PM

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

## Analytical Report

Lab Order 2009111

Date Reported: 9/11/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BS20-21 1'

Project: Cockburn G Federal 002

Collection Date: 8/31/2020 11:20:00 AM

Lab ID: 2009111-006

Matrix: SOIL

Received Date: 9/2/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	9/4/2020 11:02:07 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	9/4/2020 11:02:07 PM
Surr: DNOP	91.0	30.4-154		%Rec	1	9/4/2020 11:02:07 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CAS</b>
Chloride	80	60		mg/Kg	20	9/9/2020 11:43:15 PM
<b>EPA METHOD 8260B: VOLATILES SHORT LIST</b>						Analyst: <b>JMR</b>
Benzene	ND	0.024		mg/Kg	1	9/8/2020 5:11:52 PM
Toluene	ND	0.048		mg/Kg	1	9/8/2020 5:11:52 PM
Ethylbenzene	ND	0.048		mg/Kg	1	9/8/2020 5:11:52 PM
Xylenes, Total	ND	0.095		mg/Kg	1	9/8/2020 5:11:52 PM
Surr: 1,2-Dichloroethane-d4	101	70-130		%Rec	1	9/8/2020 5:11:52 PM
Surr: 4-Bromofluorobenzene	97.6	70-130		%Rec	1	9/8/2020 5:11:52 PM
Surr: Dibromofluoromethane	117	70-130		%Rec	1	9/8/2020 5:11:52 PM
Surr: Toluene-d8	100	70-130		%Rec	1	9/8/2020 5:11:52 PM
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>						Analyst: <b>JMR</b>
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	9/8/2020 5:11:52 PM
Surr: BFB	102	70-130		%Rec	1	9/8/2020 5:11:52 PM

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2009111

Date Reported: 9/11/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BS20-22 3'

Project: Cockburn G Federal 002

Collection Date: 8/31/2020 11:30:00 AM

Lab ID: 2009111-007

Matrix: SOIL

Received Date: 9/2/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	9/4/2020 11:26:37 PM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	9/4/2020 11:26:37 PM
Surr: DNOP	80.5	30.4-154		%Rec	1	9/4/2020 11:26:37 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CAS</b>
Chloride	86	60		mg/Kg	20	9/9/2020 11:55:39 PM
<b>EPA METHOD 8260B: VOLATILES SHORT LIST</b>						Analyst: <b>JMR</b>
Benzene	ND	0.024		mg/Kg	1	9/8/2020 5:40:29 PM
Toluene	ND	0.048		mg/Kg	1	9/8/2020 5:40:29 PM
Ethylbenzene	ND	0.048		mg/Kg	1	9/8/2020 5:40:29 PM
Xylenes, Total	ND	0.096		mg/Kg	1	9/8/2020 5:40:29 PM
Surr: 1,2-Dichloroethane-d4	96.7	70-130		%Rec	1	9/8/2020 5:40:29 PM
Surr: 4-Bromofluorobenzene	99.3	70-130		%Rec	1	9/8/2020 5:40:29 PM
Surr: Dibromofluoromethane	113	70-130		%Rec	1	9/8/2020 5:40:29 PM
Surr: Toluene-d8	99.5	70-130		%Rec	1	9/8/2020 5:40:29 PM
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>						Analyst: <b>JMR</b>
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	9/8/2020 5:40:29 PM
Surr: BFB	99.9	70-130		%Rec	1	9/8/2020 5:40:29 PM

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2009111

Date Reported: 9/11/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BS20-23 1'

Project: Cockburn G Federal 002

Collection Date: 8/31/2020 11:40:00 AM

Lab ID: 2009111-008

Matrix: SOIL

Received Date: 9/2/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	9/4/2020 11:51:10 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	9/4/2020 11:51:10 PM
Surr: DNOP	59.6	30.4-154		%Rec	1	9/4/2020 11:51:10 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CAS</b>
Chloride	72	60		mg/Kg	20	9/10/2020 12:08:04 AM
<b>EPA METHOD 8260B: VOLATILES SHORT LIST</b>						Analyst: <b>JMR</b>
Benzene	ND	0.024		mg/Kg	1	9/8/2020 6:09:04 PM
Toluene	ND	0.049		mg/Kg	1	9/8/2020 6:09:04 PM
Ethylbenzene	ND	0.049		mg/Kg	1	9/8/2020 6:09:04 PM
Xylenes, Total	ND	0.098		mg/Kg	1	9/8/2020 6:09:04 PM
Surr: 1,2-Dichloroethane-d4	98.2	70-130		%Rec	1	9/8/2020 6:09:04 PM
Surr: 4-Bromofluorobenzene	104	70-130		%Rec	1	9/8/2020 6:09:04 PM
Surr: Dibromofluoromethane	111	70-130		%Rec	1	9/8/2020 6:09:04 PM
Surr: Toluene-d8	100	70-130		%Rec	1	9/8/2020 6:09:04 PM
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>						Analyst: <b>JMR</b>
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	9/8/2020 6:09:04 PM
Surr: BFB	103	70-130		%Rec	1	9/8/2020 6:09:04 PM

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2009111

Date Reported: 9/11/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BS20-24 1'

Project: Cockburn G Federal 002

Collection Date: 8/31/2020 11:50:00 AM

Lab ID: 2009111-009

Matrix: SOIL

Received Date: 9/2/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	9/5/2020 12:15:35 AM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	9/5/2020 12:15:35 AM
Surr: DNOP	71.9	30.4-154		%Rec	1	9/5/2020 12:15:35 AM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CAS</b>
Chloride	63	60		mg/Kg	20	9/10/2020 12:20:28 AM
<b>EPA METHOD 8260B: VOLATILES SHORT LIST</b>						Analyst: <b>JMR</b>
Benzene	ND	0.024		mg/Kg	1	9/8/2020 6:37:33 PM
Toluene	ND	0.049		mg/Kg	1	9/8/2020 6:37:33 PM
Ethylbenzene	ND	0.049		mg/Kg	1	9/8/2020 6:37:33 PM
Xylenes, Total	ND	0.097		mg/Kg	1	9/8/2020 6:37:33 PM
Surr: 1,2-Dichloroethane-d4	98.2	70-130		%Rec	1	9/8/2020 6:37:33 PM
Surr: 4-Bromofluorobenzene	100	70-130		%Rec	1	9/8/2020 6:37:33 PM
Surr: Dibromofluoromethane	111	70-130		%Rec	1	9/8/2020 6:37:33 PM
Surr: Toluene-d8	102	70-130		%Rec	1	9/8/2020 6:37:33 PM
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>						Analyst: <b>JMR</b>
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	9/8/2020 6:37:33 PM
Surr: BFB	99.7	70-130		%Rec	1	9/8/2020 6:37:33 PM

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

## Analytical Report

Lab Order 2009111

Date Reported: 9/11/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BS20-25 1'

Project: Cockburn G Federal 002

Collection Date: 8/31/2020 12:00:00 PM

Lab ID: 2009111-010

Matrix: SOIL

Received Date: 9/2/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	9/5/2020 12:40:04 AM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	9/5/2020 12:40:04 AM
Surr: DNOP	80.2	30.4-154		%Rec	1	9/5/2020 12:40:04 AM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CAS</b>
Chloride	81	59		mg/Kg	20	9/10/2020 12:32:53 AM
<b>EPA METHOD 8260B: VOLATILES SHORT LIST</b>						Analyst: <b>JMR</b>
Benzene	ND	0.025		mg/Kg	1	9/8/2020 7:06:02 PM
Toluene	ND	0.050		mg/Kg	1	9/8/2020 7:06:02 PM
Ethylbenzene	ND	0.050		mg/Kg	1	9/8/2020 7:06:02 PM
Xylenes, Total	ND	0.099		mg/Kg	1	9/8/2020 7:06:02 PM
Surr: 1,2-Dichloroethane-d4	97.2	70-130		%Rec	1	9/8/2020 7:06:02 PM
Surr: 4-Bromofluorobenzene	104	70-130		%Rec	1	9/8/2020 7:06:02 PM
Surr: Dibromofluoromethane	113	70-130		%Rec	1	9/8/2020 7:06:02 PM
Surr: Toluene-d8	100	70-130		%Rec	1	9/8/2020 7:06:02 PM
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>						Analyst: <b>JMR</b>
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	9/8/2020 7:06:02 PM
Surr: BFB	103	70-130		%Rec	1	9/8/2020 7:06:02 PM

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

## Analytical Report

Lab Order 2009111

Date Reported: 9/11/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BS20-26 1'

Project: Cockburn G Federal 002

Collection Date: 8/31/2020 12:10:00 PM

Lab ID: 2009111-011

Matrix: SOIL

Received Date: 9/2/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	9/5/2020 1:04:23 AM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	9/5/2020 1:04:23 AM
Surr: DNOP	86.0	30.4-154		%Rec	1	9/5/2020 1:04:23 AM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CAS</b>
Chloride	200	60		mg/Kg	20	9/10/2020 12:45:18 AM
<b>EPA METHOD 8260B: VOLATILES SHORT LIST</b>						Analyst: <b>JMR</b>
Benzene	ND	0.025		mg/Kg	1	9/8/2020 7:34:40 PM
Toluene	ND	0.050		mg/Kg	1	9/8/2020 7:34:40 PM
Ethylbenzene	ND	0.050		mg/Kg	1	9/8/2020 7:34:40 PM
Xylenes, Total	ND	0.10		mg/Kg	1	9/8/2020 7:34:40 PM
Surr: 1,2-Dichloroethane-d4	97.2	70-130		%Rec	1	9/8/2020 7:34:40 PM
Surr: 4-Bromofluorobenzene	102	70-130		%Rec	1	9/8/2020 7:34:40 PM
Surr: Dibromofluoromethane	117	70-130		%Rec	1	9/8/2020 7:34:40 PM
Surr: Toluene-d8	99.6	70-130		%Rec	1	9/8/2020 7:34:40 PM
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>						Analyst: <b>JMR</b>
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	9/8/2020 7:34:40 PM
Surr: BFB	101	70-130		%Rec	1	9/8/2020 7:34:40 PM

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		



## Analytical Report

Lab Order 2009111

Date Reported: 9/11/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BS20-27 1'

Project: Cockburn G Federal 002

Collection Date: 8/31/2020 12:20:00 PM

Lab ID: 2009111-012

Matrix: SOIL

Received Date: 9/2/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	9/5/2020 1:28:57 AM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	9/5/2020 1:28:57 AM
Surr: DNOP	81.5	30.4-154		%Rec	1	9/5/2020 1:28:57 AM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CAS</b>
Chloride	110	60		mg/Kg	20	9/10/2020 12:57:43 AM
<b>EPA METHOD 8260B: VOLATILES SHORT LIST</b>						Analyst: <b>JMR</b>
Benzene	ND	0.025		mg/Kg	1	9/8/2020 8:03:08 PM
Toluene	ND	0.050		mg/Kg	1	9/8/2020 8:03:08 PM
Ethylbenzene	ND	0.050		mg/Kg	1	9/8/2020 8:03:08 PM
Xylenes, Total	ND	0.10		mg/Kg	1	9/8/2020 8:03:08 PM
Surr: 1,2-Dichloroethane-d4	99.5	70-130		%Rec	1	9/8/2020 8:03:08 PM
Surr: 4-Bromofluorobenzene	104	70-130		%Rec	1	9/8/2020 8:03:08 PM
Surr: Dibromofluoromethane	113	70-130		%Rec	1	9/8/2020 8:03:08 PM
Surr: Toluene-d8	98.9	70-130		%Rec	1	9/8/2020 8:03:08 PM
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>						Analyst: <b>JMR</b>
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	9/8/2020 8:03:08 PM
Surr: BFB	100	70-130		%Rec	1	9/8/2020 8:03:08 PM

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

## Analytical Report

Lab Order 2009111

Date Reported: 9/11/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BS20-28 3'

Project: Cockburn G Federal 002

Collection Date: 8/31/2020 12:30:00 PM

Lab ID: 2009111-013

Matrix: SOIL

Received Date: 9/2/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	9/5/2020 1:53:33 AM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	9/5/2020 1:53:33 AM
Surr: DNOP	84.8	30.4-154		%Rec	1	9/5/2020 1:53:33 AM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CAS</b>
Chloride	68	59		mg/Kg	20	9/10/2020 1:10:07 AM
<b>EPA METHOD 8260B: VOLATILES SHORT LIST</b>						Analyst: <b>JMR</b>
Benzene	ND	0.025		mg/Kg	1	9/8/2020 8:31:39 PM
Toluene	ND	0.050		mg/Kg	1	9/8/2020 8:31:39 PM
Ethylbenzene	ND	0.050		mg/Kg	1	9/8/2020 8:31:39 PM
Xylenes, Total	ND	0.10		mg/Kg	1	9/8/2020 8:31:39 PM
Surr: 1,2-Dichloroethane-d4	97.8	70-130		%Rec	1	9/8/2020 8:31:39 PM
Surr: 4-Bromofluorobenzene	101	70-130		%Rec	1	9/8/2020 8:31:39 PM
Surr: Dibromofluoromethane	110	70-130		%Rec	1	9/8/2020 8:31:39 PM
Surr: Toluene-d8	100	70-130		%Rec	1	9/8/2020 8:31:39 PM
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>						Analyst: <b>JMR</b>
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	9/8/2020 8:31:39 PM
Surr: BFB	102	70-130		%Rec	1	9/8/2020 8:31:39 PM

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

## Analytical Report

Lab Order 2009111

Date Reported: 9/11/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BS20-29 1'

Project: Cockburn G Federal 002

Collection Date: 8/31/2020 12:40:00 PM

Lab ID: 2009111-014

Matrix: SOIL

Received Date: 9/2/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	9/5/2020 2:18:03 AM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	9/5/2020 2:18:03 AM
Surr: DNOP	84.8	30.4-154		%Rec	1	9/5/2020 2:18:03 AM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CAS</b>
Chloride	ND	60		mg/Kg	20	9/10/2020 1:47:21 AM
<b>EPA METHOD 8260B: VOLATILES SHORT LIST</b>						Analyst: <b>JMR</b>
Benzene	ND	0.025		mg/Kg	1	9/8/2020 9:00:09 PM
Toluene	ND	0.049		mg/Kg	1	9/8/2020 9:00:09 PM
Ethylbenzene	ND	0.049		mg/Kg	1	9/8/2020 9:00:09 PM
Xylenes, Total	ND	0.099		mg/Kg	1	9/8/2020 9:00:09 PM
Surr: 1,2-Dichloroethane-d4	97.2	70-130		%Rec	1	9/8/2020 9:00:09 PM
Surr: 4-Bromofluorobenzene	106	70-130		%Rec	1	9/8/2020 9:00:09 PM
Surr: Dibromofluoromethane	110	70-130		%Rec	1	9/8/2020 9:00:09 PM
Surr: Toluene-d8	99.6	70-130		%Rec	1	9/8/2020 9:00:09 PM
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>						Analyst: <b>JMR</b>
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	9/8/2020 9:00:09 PM
Surr: BFB	103	70-130		%Rec	1	9/8/2020 9:00:09 PM

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

## Analytical Report

Lab Order 2009111

Date Reported: 9/11/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BS20-30 3'

Project: Cockburn G Federal 002

Collection Date: 8/31/2020 12:50:00 PM

Lab ID: 2009111-015

Matrix: SOIL

Received Date: 9/2/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	9/5/2020 2:42:28 AM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	9/5/2020 2:42:28 AM
Surr: DNOP	89.5	30.4-154		%Rec	1	9/5/2020 2:42:28 AM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CAS</b>
Chloride	83	60		mg/Kg	20	9/10/2020 1:59:45 AM
<b>EPA METHOD 8260B: VOLATILES SHORT LIST</b>						Analyst: <b>JMR</b>
Benzene	ND	0.025		mg/Kg	1	9/8/2020 9:28:36 PM
Toluene	ND	0.049		mg/Kg	1	9/8/2020 9:28:36 PM
Ethylbenzene	ND	0.049		mg/Kg	1	9/8/2020 9:28:36 PM
Xylenes, Total	ND	0.099		mg/Kg	1	9/8/2020 9:28:36 PM
Surr: 1,2-Dichloroethane-d4	101	70-130		%Rec	1	9/8/2020 9:28:36 PM
Surr: 4-Bromofluorobenzene	96.4	70-130		%Rec	1	9/8/2020 9:28:36 PM
Surr: Dibromofluoromethane	117	70-130		%Rec	1	9/8/2020 9:28:36 PM
Surr: Toluene-d8	97.8	70-130		%Rec	1	9/8/2020 9:28:36 PM
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>						Analyst: <b>JMR</b>
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	9/8/2020 9:28:36 PM
Surr: BFB	97.8	70-130		%Rec	1	9/8/2020 9:28:36 PM

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2009111

Date Reported: 9/11/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BS20-31 1'

Project: Cockburn G Federal 002

Collection Date: 8/31/2020 1:00:00 PM

Lab ID: 2009111-016

Matrix: SOIL

Received Date: 9/2/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	9/5/2020 3:07:00 AM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	9/5/2020 3:07:00 AM
Surr: DNOP	82.8	30.4-154		%Rec	1	9/5/2020 3:07:00 AM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CAS</b>
Chloride	ND	60		mg/Kg	20	9/10/2020 2:12:09 AM
<b>EPA METHOD 8260B: VOLATILES SHORT LIST</b>						Analyst: <b>JMR</b>
Benzene	ND	0.025		mg/Kg	1	9/8/2020 9:57:07 PM
Toluene	ND	0.049		mg/Kg	1	9/8/2020 9:57:07 PM
Ethylbenzene	ND	0.049		mg/Kg	1	9/8/2020 9:57:07 PM
Xylenes, Total	ND	0.099		mg/Kg	1	9/8/2020 9:57:07 PM
Surr: 1,2-Dichloroethane-d4	95.4	70-130		%Rec	1	9/8/2020 9:57:07 PM
Surr: 4-Bromofluorobenzene	102	70-130		%Rec	1	9/8/2020 9:57:07 PM
Surr: Dibromofluoromethane	110	70-130		%Rec	1	9/8/2020 9:57:07 PM
Surr: Toluene-d8	106	70-130		%Rec	1	9/8/2020 9:57:07 PM
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>						Analyst: <b>JMR</b>
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	9/8/2020 9:57:07 PM
Surr: BFB	102	70-130		%Rec	1	9/8/2020 9:57:07 PM

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2009111

Date Reported: 9/11/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BS20-32 3'

Project: Cockburn G Federal 002

Collection Date: 8/31/2020 1:10:00 PM

Lab ID: 2009111-017

Matrix: SOIL

Received Date: 9/2/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	9/5/2020 3:31:27 AM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	9/5/2020 3:31:27 AM
Surr: DNOP	83.0	30.4-154		%Rec	1	9/5/2020 3:31:27 AM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	9/5/2020 7:33:51 PM
Surr: BFB	96.4	75.3-105		%Rec	1	9/5/2020 7:33:51 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.025		mg/Kg	1	9/8/2020 1:17:54 PM
Toluene	ND	0.049		mg/Kg	1	9/8/2020 1:17:54 PM
Ethylbenzene	ND	0.049		mg/Kg	1	9/8/2020 1:17:54 PM
Xylenes, Total	ND	0.099		mg/Kg	1	9/8/2020 1:17:54 PM
Surr: 4-Bromofluorobenzene	98.6	80-120		%Rec	1	9/8/2020 1:17:54 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CAS</b>
Chloride	ND	60		mg/Kg	20	9/10/2020 2:24:34 AM

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2009111

Date Reported: 9/11/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BS20-33 1'

Project: Cockburn G Federal 002

Collection Date: 8/31/2020 1:20:00 PM

Lab ID: 2009111-018

Matrix: SOIL

Received Date: 9/2/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	9/5/2020 3:55:57 AM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	9/5/2020 3:55:57 AM
Surr: DNOP	75.9	30.4-154		%Rec	1	9/5/2020 3:55:57 AM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	9/5/2020 8:44:07 PM
Surr: BFB	95.3	75.3-105		%Rec	1	9/5/2020 8:44:07 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.023		mg/Kg	1	9/8/2020 2:28:34 PM
Toluene	ND	0.046		mg/Kg	1	9/8/2020 2:28:34 PM
Ethylbenzene	ND	0.046		mg/Kg	1	9/8/2020 2:28:34 PM
Xylenes, Total	ND	0.092		mg/Kg	1	9/8/2020 2:28:34 PM
Surr: 4-Bromofluorobenzene	95.1	80-120		%Rec	1	9/8/2020 2:28:34 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CAS</b>
Chloride	75	60		mg/Kg	20	9/10/2020 3:01:47 AM

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2009111

Date Reported: 9/11/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: BS20-34 3'

Project: Cockburn G Federal 002

Collection Date: 8/31/2020 1:30:00 PM

Lab ID: 2009111-019

Matrix: SOIL

Received Date: 9/2/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	9/5/2020 4:20:21 AM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	9/5/2020 4:20:21 AM
Surr: DNOP	76.5	30.4-154		%Rec	1	9/5/2020 4:20:21 AM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	9/5/2020 9:54:18 PM
Surr: BFB	96.0	75.3-105		%Rec	1	9/5/2020 9:54:18 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.025		mg/Kg	1	9/8/2020 2:52:08 PM
Toluene	ND	0.050		mg/Kg	1	9/8/2020 2:52:08 PM
Ethylbenzene	ND	0.050		mg/Kg	1	9/8/2020 2:52:08 PM
Xylenes, Total	ND	0.10		mg/Kg	1	9/8/2020 2:52:08 PM
Surr: 4-Bromofluorobenzene	98.0	80-120		%Rec	1	9/8/2020 2:52:08 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CAS</b>
Chloride	ND	60		mg/Kg	20	9/10/2020 3:39:00 AM

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

## Analytical Report

Lab Order 2009111

Date Reported: 9/11/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: WS20-01 0-1'

Project: Cockburn G Federal 002

Collection Date: 8/31/2020 1:40:00 PM

Lab ID: 2009111-020

Matrix: SOIL

Received Date: 9/2/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	9/5/2020 4:44:47 AM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	9/5/2020 4:44:47 AM
Surr: DNOP	82.3	30.4-154		%Rec	1	9/5/2020 4:44:47 AM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	9/5/2020 10:17:42 PM
Surr: BFB	94.4	75.3-105		%Rec	1	9/5/2020 10:17:42 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.025		mg/Kg	1	9/8/2020 3:15:46 PM
Toluene	ND	0.050		mg/Kg	1	9/8/2020 3:15:46 PM
Ethylbenzene	ND	0.050		mg/Kg	1	9/8/2020 3:15:46 PM
Xylenes, Total	ND	0.099		mg/Kg	1	9/8/2020 3:15:46 PM
Surr: 4-Bromofluorobenzene	99.9	80-120		%Rec	1	9/8/2020 3:15:46 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CAS</b>
Chloride	ND	60		mg/Kg	20	9/10/2020 4:16:14 AM

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2009111

Date Reported: 9/11/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: WS20-02 0-1'

Project: Cockburn G Federal 002

Collection Date: 8/31/2020 1:50:00 PM

Lab ID: 2009111-021

Matrix: SOIL

Received Date: 9/2/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>mb</b>
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	9/6/2020 12:25:02 AM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	9/6/2020 12:25:02 AM
Surr: DNOP	76.8	30.4-154		%Rec	1	9/6/2020 12:25:02 AM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	9/5/2020 10:40:59 PM
Surr: BFB	93.6	75.3-105		%Rec	1	9/5/2020 10:40:59 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.025		mg/Kg	1	9/8/2020 3:39:13 PM
Toluene	ND	0.050		mg/Kg	1	9/8/2020 3:39:13 PM
Ethylbenzene	ND	0.050		mg/Kg	1	9/8/2020 3:39:13 PM
Xylenes, Total	ND	0.10		mg/Kg	1	9/8/2020 3:39:13 PM
Surr: 4-Bromofluorobenzene	97.2	80-120		%Rec	1	9/8/2020 3:39:13 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CAS</b>
Chloride	ND	60		mg/Kg	20	9/10/2020 4:28:39 AM

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2009111

Date Reported: 9/11/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: WS20-03 0-1'

Project: Cockburn G Federal 002

Collection Date: 8/31/2020 2:00:00 PM

Lab ID: 2009111-022

Matrix: SOIL

Received Date: 9/2/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>mb</b>
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	9/6/2020 1:13:39 AM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	9/6/2020 1:13:39 AM
Surr: DNOP	88.2	30.4-154		%Rec	1	9/6/2020 1:13:39 AM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	9/5/2020 11:04:24 PM
Surr: BFB	95.8	75.3-105		%Rec	1	9/5/2020 11:04:24 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.025		mg/Kg	1	9/8/2020 4:02:43 PM
Toluene	ND	0.050		mg/Kg	1	9/8/2020 4:02:43 PM
Ethylbenzene	ND	0.050		mg/Kg	1	9/8/2020 4:02:43 PM
Xylenes, Total	ND	0.099		mg/Kg	1	9/8/2020 4:02:43 PM
Surr: 4-Bromofluorobenzene	100	80-120		%Rec	1	9/8/2020 4:02:43 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CAS</b>
Chloride	ND	60		mg/Kg	20	9/10/2020 4:41:03 AM

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2009111

Date Reported: 9/11/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: WS20-04 0-1'

Project: Cockburn G Federal 002

Collection Date: 8/31/2020 2:10:00 PM

Lab ID: 2009111-023

Matrix: SOIL

Received Date: 9/2/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>CLP</b>
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	9/5/2020 6:28:05 AM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	9/5/2020 6:28:05 AM
Surr: DNOP	84.2	30.4-154		%Rec	1	9/5/2020 6:28:05 AM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	9/5/2020 11:27:52 PM
Surr: BFB	95.4	75.3-105		%Rec	1	9/5/2020 11:27:52 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.025		mg/Kg	1	9/8/2020 4:26:07 PM
Toluene	ND	0.049		mg/Kg	1	9/8/2020 4:26:07 PM
Ethylbenzene	ND	0.049		mg/Kg	1	9/8/2020 4:26:07 PM
Xylenes, Total	ND	0.098		mg/Kg	1	9/8/2020 4:26:07 PM
Surr: 4-Bromofluorobenzene	97.8	80-120		%Rec	1	9/8/2020 4:26:07 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CAS</b>
Chloride	ND	60		mg/Kg	20	9/10/2020 4:53:28 AM

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

## Analytical Report

Lab Order 2009111

Date Reported: 9/11/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: WS20-05 0-1'

Project: Cockburn G Federal 002

Collection Date: 8/31/2020 2:20:00 PM

Lab ID: 2009111-024

Matrix: SOIL

Received Date: 9/2/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>mb</b>
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	9/6/2020 1:37:48 AM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	9/6/2020 1:37:48 AM
Surr: DNOP	84.3	30.4-154		%Rec	1	9/6/2020 1:37:48 AM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	9/5/2020 11:51:21 PM
Surr: BFB	91.5	75.3-105		%Rec	1	9/5/2020 11:51:21 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.025		mg/Kg	1	9/8/2020 4:49:33 PM
Toluene	ND	0.050		mg/Kg	1	9/8/2020 4:49:33 PM
Ethylbenzene	ND	0.050		mg/Kg	1	9/8/2020 4:49:33 PM
Xylenes, Total	ND	0.10		mg/Kg	1	9/8/2020 4:49:33 PM
Surr: 4-Bromofluorobenzene	98.8	80-120		%Rec	1	9/8/2020 4:49:33 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CAS</b>
Chloride	ND	60		mg/Kg	20	9/10/2020 5:05:52 AM

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 2009111

Date Reported: 9/11/2020

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: WS20-06 0-1

Project: Cockburn G Federal 002

Collection Date: 8/31/2020 2:30:00 PM

Lab ID: 2009111-025

Matrix: SOIL

Received Date: 9/2/2020 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>mb</b>
Diesel Range Organics (DRO)	ND	9.4		mg/Kg	1	9/6/2020 2:01:58 AM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	9/6/2020 2:01:58 AM
Surr: DNOP	84.6	30.4-154		%Rec	1	9/6/2020 2:01:58 AM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	9/6/2020 12:14:39 AM
Surr: BFB	95.5	75.3-105		%Rec	1	9/6/2020 12:14:39 AM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.025		mg/Kg	1	9/8/2020 5:13:02 PM
Toluene	ND	0.050		mg/Kg	1	9/8/2020 5:13:02 PM
Ethylbenzene	ND	0.050		mg/Kg	1	9/8/2020 5:13:02 PM
Xylenes, Total	ND	0.099		mg/Kg	1	9/8/2020 5:13:02 PM
Surr: 4-Bromofluorobenzene	98.3	80-120		%Rec	1	9/8/2020 5:13:02 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CAS</b>
Chloride	92	60		mg/Kg	20	9/10/2020 5:18:16 AM

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

<b>Qualifiers:</b>	*	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 Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 2009111

11-Sep-20

**Client:** Devon Energy  
**Project:** Cockburn G Federal 002

Sample ID: <b>MB-55056</b>	SampType: <b>mblk</b>	TestCode: <b>EPA Method 300.0: Anions</b>								
Client ID: <b>PBS</b>	Batch ID: <b>55056</b>	RunNo: <b>71728</b>								
Prep Date: <b>9/9/2020</b>	Analysis Date: <b>9/9/2020</b>	SeqNo: <b>2509221</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: <b>LCS-55056</b>	SampType: <b>lcs</b>	TestCode: <b>EPA Method 300.0: Anions</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>55056</b>	RunNo: <b>71728</b>								
Prep Date: <b>9/9/2020</b>	Analysis Date: <b>9/9/2020</b>	SeqNo: <b>2509222</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	92.4	90	110			

Sample ID: <b>MB-55062</b>	SampType: <b>mblk</b>	TestCode: <b>EPA Method 300.0: Anions</b>								
Client ID: <b>PBS</b>	Batch ID: <b>55062</b>	RunNo: <b>71728</b>								
Prep Date: <b>9/9/2020</b>	Analysis Date: <b>9/10/2020</b>	SeqNo: <b>2509277</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: <b>LCS-55062</b>	SampType: <b>lcs</b>	TestCode: <b>EPA Method 300.0: Anions</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>55062</b>	RunNo: <b>71728</b>								
Prep Date: <b>9/9/2020</b>	Analysis Date: <b>9/10/2020</b>	SeqNo: <b>2509278</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	93.8	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 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



**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 2009111

11-Sep-20

**Client:** Devon Energy  
**Project:** Cockburn G Federal 002

Sample ID: <b>MB-54939</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>PBS</b>	Batch ID: <b>54939</b>	RunNo: <b>71644</b>								
Prep Date: <b>9/3/2020</b>	Analysis Date: <b>9/5/2020</b>	SeqNo: <b>2504470</b>			Units: <b>mg/Kg</b>					
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	6.7		10.00		67.3	30.4	154			

Sample ID: <b>LCS-54939</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>54939</b>	RunNo: <b>71644</b>								
Prep Date: <b>9/3/2020</b>	Analysis Date: <b>9/5/2020</b>	SeqNo: <b>2504473</b>			Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	56	10	50.00	0	111	70	130			
Surr: DNOP	2.7		5.000		54.4	30.4	154			

Sample ID: <b>LCS-54951</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>54951</b>	RunNo: <b>71657</b>								
Prep Date: <b>9/4/2020</b>	Analysis Date: <b>9/5/2020</b>	SeqNo: <b>2505398</b>			Units: <b>%Rec</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	4.0		5.000		79.7	30.4	154			

Sample ID: <b>LCS-54955</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>54955</b>	RunNo: <b>71657</b>								
Prep Date: <b>9/4/2020</b>	Analysis Date: <b>9/5/2020</b>	SeqNo: <b>2505399</b>			Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	53	10	50.00	0	106	70	130			
Surr: DNOP	3.9		5.000		77.3	30.4	154			

Sample ID: <b>MB-54951</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>PBS</b>	Batch ID: <b>54951</b>	RunNo: <b>71657</b>								
Prep Date: <b>9/4/2020</b>	Analysis Date: <b>9/5/2020</b>	SeqNo: <b>2505403</b>			Units: <b>%Rec</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	8.4		10.00		84.3	30.4	154			

Sample ID: <b>MB-54955</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>PBS</b>	Batch ID: <b>54955</b>	RunNo: <b>71657</b>								
Prep Date: <b>9/4/2020</b>	Analysis Date: <b>9/5/2020</b>	SeqNo: <b>2505404</b>			Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								

**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

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 2009111

11-Sep-20

**Client:** Devon Energy  
**Project:** Cockburn G Federal 002

Sample ID: <b>MB-54955</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>PBS</b>	Batch ID: <b>54955</b>	RunNo: <b>71657</b>								
Prep Date: <b>9/4/2020</b>	Analysis Date: <b>9/5/2020</b>	SeqNo: <b>2505404</b> Units: <b>mg/Kg</b>								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	8.3		10.00		82.6	30.4	154			

Sample ID: <b>2009111-001AMS</b>	SampType: <b>MS</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>BS20-16 1'</b>	Batch ID: <b>54921</b>	RunNo: <b>71526</b>								
Prep Date: <b>9/3/2020</b>	Analysis Date: <b>9/4/2020</b>	SeqNo: <b>2506722</b> Units: <b>mg/Kg</b>								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	50	10	49.85	0	100	47.4	136			
Surr: DNOP	4.2		4.985		84.8	30.4	154			

Sample ID: <b>2009111-001AMSD</b>	SampType: <b>MSD</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>BS20-16 1'</b>	Batch ID: <b>54921</b>	RunNo: <b>71526</b>								
Prep Date: <b>9/3/2020</b>	Analysis Date: <b>9/4/2020</b>	SeqNo: <b>2506723</b> Units: <b>mg/Kg</b>								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	50	10	50.00	0	99.6	47.4	136	0.504	43.4	
Surr: DNOP	4.3		5.000		85.0	30.4	154	0	0	

Sample ID: <b>LCS-54921</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>54921</b>	RunNo: <b>71526</b>								
Prep Date: <b>9/3/2020</b>	Analysis Date: <b>9/4/2020</b>	SeqNo: <b>2506732</b> Units: <b>mg/Kg</b>								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	47	10	50.00	0	93.2	70	130			
Surr: DNOP	3.7		5.000		75.0	30.4	154			

Sample ID: <b>MB-54921</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>PBS</b>	Batch ID: <b>54921</b>	RunNo: <b>71526</b>								
Prep Date: <b>9/3/2020</b>	Analysis Date: <b>9/4/2020</b>	SeqNo: <b>2506733</b> Units: <b>mg/Kg</b>								
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	8.3		10.00		82.9	30.4	154			

**Qualifiers:**

\* Value exceeds Maximum Contaminant Level.  
D Sample Diluted Due to Matrix  
H Holding times for preparation or analysis exceeded  
ND Not Detected at the Reporting Limit  
PQL Practical 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

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 2009111

11-Sep-20

**Client:** Devon Energy**Project:** Cockburn G Federal 002

Sample ID: <b>mb-54909</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8015D: Gasoline Range</b>								
Client ID: <b>PBS</b>	Batch ID: <b>54909</b>	RunNo: <b>71654</b>								
Prep Date: <b>9/2/2020</b>	Analysis Date: <b>9/5/2020</b>	SeqNo: <b>2505130</b>			Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	960		1000		96.3	75.3	105			

Sample ID: <b>lcs-54909</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8015D: Gasoline Range</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>54909</b>	RunNo: <b>71654</b>								
Prep Date: <b>9/2/2020</b>	Analysis Date: <b>9/5/2020</b>	SeqNo: <b>2505131</b>			Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	23	5.0	25.00	0	90.2	72.5	106			
Surr: BFB	1100		1000		108	75.3	105			S

Sample ID: <b>2009111-018ams</b>	SampType: <b>MS</b>	TestCode: <b>EPA Method 8015D: Gasoline Range</b>								
Client ID: <b>BS20-33 1'</b>	Batch ID: <b>54909</b>	RunNo: <b>71654</b>								
Prep Date: <b>9/2/2020</b>	Analysis Date: <b>9/5/2020</b>	SeqNo: <b>2505134</b>			Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	22	4.9	24.73	0	88.1	61.3	114			
Surr: BFB	1100		989.1		106	75.3	105			S

Sample ID: <b>2009111-018amsd</b>	SampType: <b>MSD</b>	TestCode: <b>EPA Method 8015D: Gasoline Range</b>								
Client ID: <b>BS20-33 1'</b>	Batch ID: <b>54909</b>	RunNo: <b>71654</b>								
Prep Date: <b>9/2/2020</b>	Analysis Date: <b>9/5/2020</b>	SeqNo: <b>2505135</b>			Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	20	4.8	23.90	0	83.2	61.3	114	9.19	20	
Surr: BFB	1000		956.0		106	75.3	105	0	0	S

Sample ID: <b>mb-54964</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8015D: Gasoline Range</b>								
Client ID: <b>PBS</b>	Batch ID: <b>54964</b>	RunNo: <b>71681</b>								
Prep Date: <b>9/4/2020</b>	Analysis Date: <b>9/8/2020</b>	SeqNo: <b>2506602</b>			Units: <b>%Rec</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	940		1000		94.0	75.3	105			

Sample ID: <b>lcs-54964</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8015D: Gasoline Range</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>54964</b>	RunNo: <b>71681</b>								
Prep Date: <b>9/4/2020</b>	Analysis Date: <b>9/8/2020</b>	SeqNo: <b>2506603</b>			Units: <b>%Rec</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	1100		1000		108	75.3	105			S

**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

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 2009111

11-Sep-20

**Client:** Devon Energy  
**Project:** Cockburn G Federal 002

Sample ID: <b>mb-54909</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>PBS</b>	Batch ID: <b>54909</b>	RunNo: <b>71681</b>								
Prep Date: <b>9/2/2020</b>	Analysis Date: <b>9/8/2020</b>	SeqNo: <b>2506639</b> Units: <b>mg/Kg</b>								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	1.0		1.000		101	80	120			

Sample ID: <b>lcs-54909</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>54909</b>	RunNo: <b>71681</b>								
Prep Date: <b>9/2/2020</b>	Analysis Date: <b>9/8/2020</b>	SeqNo: <b>2506640</b> Units: <b>mg/Kg</b>								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.82	0.025	1.000	0	81.5	80	120			
Toluene	0.86	0.050	1.000	0	85.9	80	120			
Ethylbenzene	0.87	0.050	1.000	0	87.1	80	120			
Xylenes, Total	2.6	0.10	3.000	0	87.2	80	120			
Surr: 4-Bromofluorobenzene	1.0		1.000		100	80	120			

Sample ID: <b>2009111-017ams</b>	SampType: <b>MS</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>BS20-32 3'</b>	Batch ID: <b>54909</b>	RunNo: <b>71681</b>								
Prep Date: <b>9/2/2020</b>	Analysis Date: <b>9/8/2020</b>	SeqNo: <b>2506642</b> Units: <b>mg/Kg</b>								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.82	0.025	0.9980	0	82.0	76.3	120			
Toluene	0.88	0.050	0.9980	0	87.9	78.5	120			
Ethylbenzene	0.90	0.050	0.9980	0	89.9	78.1	124			
Xylenes, Total	2.7	0.10	2.994	0	90.9	79.3	125			
Surr: 4-Bromofluorobenzene	0.98		0.9980		98.4	80	120			

Sample ID: <b>2009111-017amsd</b>	SampType: <b>MSD</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>BS20-32 3'</b>	Batch ID: <b>54909</b>	RunNo: <b>71681</b>								
Prep Date: <b>9/2/2020</b>	Analysis Date: <b>9/8/2020</b>	SeqNo: <b>2506643</b> Units: <b>mg/Kg</b>								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.84	0.025	0.9970	0	84.1	76.3	120	2.44	20	
Toluene	0.87	0.050	0.9970	0	87.6	78.5	120	0.499	20	
Ethylbenzene	0.89	0.050	0.9970	0	88.9	78.1	124	1.27	20	
Xylenes, Total	2.7	0.10	2.991	0	89.7	79.3	125	1.39	20	
Surr: 4-Bromofluorobenzene	0.98		0.9970		97.8	80	120	0	0	

**Qualifiers:**

\* Value exceeds Maximum Contaminant Level.  
D Sample Diluted Due to Matrix  
H Holding times for preparation or analysis exceeded  
ND Not Detected at the Reporting Limit  
PQL Practical 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

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 2009111

11-Sep-20

**Client:** Devon Energy  
**Project:** Cockburn G Federal 002

Sample ID: <b>mb-54964</b>	SampType: <b>MBLK</b>				TestCode: <b>EPA Method 8021B: Volatiles</b>					
Client ID: <b>PBS</b>	Batch ID: <b>54964</b>				RunNo: <b>71681</b>					
Prep Date: <b>9/4/2020</b>	Analysis Date: <b>9/8/2020</b>				SeqNo: <b>2506653</b>	Units: <b>%Rec</b>				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	0.98		1.000		97.8	80	120			

Sample ID: <b>LCS-54964</b>	SampType: <b>LCS</b>				TestCode: <b>EPA Method 8021B: Volatiles</b>					
Client ID: <b>LCSS</b>	Batch ID: <b>54964</b>				RunNo: <b>71681</b>					
Prep Date: <b>9/4/2020</b>	Analysis Date: <b>9/8/2020</b>				SeqNo: <b>2506654</b>	Units: <b>%Rec</b>				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	0.98		1.000		98.1	80	120			

**Qualifiers:**

\* Value exceeds Maximum Contaminant Level.  
D Sample Diluted Due to Matrix  
H Holding times for preparation or analysis exceeded  
ND Not Detected at the Reporting Limit  
PQL Practical 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

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 2009111

11-Sep-20

**Client:** Devon Energy  
**Project:** Cockburn G Federal 002

Sample ID: <b>Ics-54903</b>	SampType: <b>LCS4</b>	TestCode: <b>EPA Method 8260B: Volatiles Short List</b>								
Client ID: <b>BatchQC</b>	Batch ID: <b>54903</b>	RunNo: <b>71660</b>								
Prep Date: <b>9/2/2020</b>	Analysis Date: <b>9/6/2020</b>	SeqNo: <b>2505690</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.86	0.025	1.000	0	86.3	80	120			
Toluene	0.98	0.050	1.000	0	98.1	80	120			
Ethylbenzene	1.0	0.050	1.000	0	101	80	120			
Xylenes, Total	3.1	0.10	3.000	0	103	80	120			
Surr: 1,2-Dichloroethane-d4	0.48		0.5000		96.0	70	130			
Surr: 4-Bromofluorobenzene	0.49		0.5000		98.6	70	130			
Surr: Dibromofluoromethane	0.54		0.5000		109	70	130			
Surr: Toluene-d8	0.51		0.5000		103	70	130			

Sample ID: <b>mb-54903</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8260B: Volatiles Short List</b>								
Client ID: <b>PBS</b>	Batch ID: <b>54903</b>	RunNo: <b>71660</b>								
Prep Date: <b>9/2/2020</b>	Analysis Date: <b>9/6/2020</b>	SeqNo: <b>2505691</b>	Units: <b>mg/Kg</b>							
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	0.50		0.5000		100	70	130			
Surr: 4-Bromofluorobenzene	0.50		0.5000		101	70	130			
Surr: Dibromofluoromethane	0.55		0.5000		110	70	130			
Surr: Toluene-d8	0.53		0.5000		105	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 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



**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 2009111

11-Sep-20

**Client:** Devon Energy  
**Project:** Cockburn G Federal 002

Sample ID: <b>ics-54903</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8015D Mod: Gasoline Range</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>54903</b>	RunNo: <b>71660</b>								
Prep Date: <b>9/2/2020</b>	Analysis Date: <b>9/6/2020</b>	SeqNo: <b>2505705</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	22	5.0	25.00	0	89.0	70	130			
Surr: BFB	490		500.0		98.6	70	130			

Sample ID: <b>mb-54903</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8015D Mod: Gasoline Range</b>								
Client ID: <b>PBS</b>	Batch ID: <b>54903</b>	RunNo: <b>71660</b>								
Prep Date: <b>9/2/2020</b>	Analysis Date: <b>9/6/2020</b>	SeqNo: <b>2505712</b>	Units: <b>mg/Kg</b>							
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		103	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 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

Page 33 of 33



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: Devon Energy

Work Order Number: 2009111

RcptNo: 1

Received By: Juan Rojas

9/2/2020 8:00:00 AM

*[Signature]*

Completed By: Juan Rojas

9/2/2020 10:46:15 AM

*[Signature]*

Reviewed By:

*JR 9/2/20*

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

# of preserved  
bottles checked  
for pH:

( $<2$  or  $>12$  unless noted)

Adjusted? ☐

Checked by: *SPA 9.2.20*

### 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 $^{\circ}\text{C}$	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.8	Good				
2	0.1	Good				









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 noted on the analytical report



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

May 14, 2019

AMANDA DAVIS

Devon Energy Corp- Artesia

P.O. Box 250

Artesia, NM 88211

RE: COCKBURN FED

Enclosed are the results of analyses for samples received by the laboratory on 05/13/19 10:35.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-18-11. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (\*). For a complete list of accredited analytes and matrices visit the TCEQ website at [www.tceq.texas.gov/field/qa/lab\\_accred\\_certif.html](http://www.tceq.texas.gov/field/qa/lab_accred_certif.html).

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

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

Accreditation applies to public drinking water matrices.

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

Sincerely,

A handwritten signature in black ink that reads "Celey D. Keene". The signature is written in a cursive, flowing style.

Celey D. Keene

Lab Director/Quality Manager





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

**Analytical Results For:**

Devon Energy Corp- Artesia  
 AMANDA DAVIS  
 P.O. Box 250  
 Artesia NM, 88211  
 Fax To: (505) 746-9072

Received: 05/13/2019  
 Reported: 05/14/2019  
 Project Name: COCKBURN FED  
 Project Number: 19E - 00575  
 Project Location: DEVON - EDDY CO NM

Sampling Date: 05/11/2019  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Tamara Oldaker

**Sample ID: TP 19 - 01 6' (H901724-01)**

BTEX 8021B		mg/kg		Analyzed By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	05/13/2019	ND	1.99	99.6	2.00	1.52	
Toluene*	<0.050	0.050	05/13/2019	ND	2.09	105	2.00	0.951	
Ethylbenzene*	<0.050	0.050	05/13/2019	ND	2.02	101	2.00	0.924	
Total Xylenes*	<0.150	0.150	05/13/2019	ND	6.09	102	6.00	0.854	
Total BTEX	<0.300	0.300	05/13/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 102 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0	16.0	05/14/2019	ND	400	100	400	4.08	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	05/13/2019	ND	201	100	200	0.780	
DRO >C10-C28*	<10.0	10.0	05/13/2019	ND	188	94.1	200	0.0654	
EXT DRO >C28-C36	<10.0	10.0	05/13/2019	ND					

Surrogate: 1-Chlorooctane 91.7 % 41-142

Surrogate: 1-Chlorooctadecane 93.0 % 37.6-147

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



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

**Analytical Results For:**

Devon Energy Corp- Artesia  
 AMANDA DAVIS  
 P.O. Box 250  
 Artesia NM, 88211  
 Fax To: (505) 746-9072

Received: 05/13/2019  
 Reported: 05/14/2019  
 Project Name: COCKBURN FED  
 Project Number: 19E - 00575  
 Project Location: DEVON - EDDY CO NM

Sampling Date: 05/11/2019  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Tamara Oldaker

**Sample ID: TP 19 - 02 5' (H901724-02)**

BTEx 8021B		mg/kg		Analyzed By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	05/13/2019	ND	1.99	99.6	2.00	1.52	
Toluene*	<0.050	0.050	05/13/2019	ND	2.09	105	2.00	0.951	
Ethylbenzene*	<0.050	0.050	05/13/2019	ND	2.02	101	2.00	0.924	
Total Xylenes*	<0.150	0.150	05/13/2019	ND	6.09	102	6.00	0.854	
Total BTEX	<0.300	0.300	05/13/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 103 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	<16.0	16.0	05/14/2019	ND	400	100	400	4.08		

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	05/13/2019	ND	201	100	200	0.780	
DRO >C10-C28*	<10.0	10.0	05/13/2019	ND	188	94.1	200	0.0654	
EXT DRO >C28-C36	<10.0	10.0	05/13/2019	ND					

Surrogate: 1-Chlorooctane 92.7 % 41-142

Surrogate: 1-Chlorooctadecane 93.3 % 37.6-147

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\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



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

**Analytical Results For:**

Devon Energy Corp- Artesia  
 AMANDA DAVIS  
 P.O. Box 250  
 Artesia NM, 88211  
 Fax To: (505) 746-9072

Received: 05/13/2019  
 Reported: 05/14/2019  
 Project Name: COCKBURN FED  
 Project Number: 19E - 00575  
 Project Location: DEVON - EDDY CO NM

Sampling Date: 05/11/2019  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Tamara Oldaker

**Sample ID: TP 19 - 05 8' (H901724-03)**

BTEx 8021B		mg/kg		Analyzed By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	05/13/2019	ND	1.99	99.6	2.00	1.52	
Toluene*	<0.050	0.050	05/13/2019	ND	2.09	105	2.00	0.951	
Ethylbenzene*	<0.050	0.050	05/13/2019	ND	2.02	101	2.00	0.924	
Total Xylenes*	<0.150	0.150	05/13/2019	ND	6.09	102	6.00	0.854	
Total BTEX	<0.300	0.300	05/13/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 104 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	16.0	16.0	05/14/2019	ND	400	100	400	4.08	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	05/13/2019	ND	201	100	200	0.780	
DRO >C10-C28*	<10.0	10.0	05/13/2019	ND	188	94.1	200	0.0654	
EXT DRO >C28-C36	<10.0	10.0	05/13/2019	ND					

Surrogate: 1-Chlorooctane 89.6 % 41-142

Surrogate: 1-Chlorooctadecane 91.0 % 37.6-147

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\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



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

**Analytical Results For:**

Devon Energy Corp- Artesia  
 AMANDA DAVIS  
 P.O. Box 250  
 Artesia NM, 88211  
 Fax To: (505) 746-9072

Received: 05/13/2019  
 Reported: 05/14/2019  
 Project Name: COCKBURN FED  
 Project Number: 19E - 00575  
 Project Location: DEVON - EDDY CO NM

Sampling Date: 05/11/2019  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Tamara Oldaker

**Sample ID: TP 19 - 06 6' (H901724-04)**

BTEx 8021B		mg/kg		Analyzed By: ms						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	05/13/2019	ND	1.99	99.6	2.00	1.52		
Toluene*	<0.050	0.050	05/13/2019	ND	2.09	105	2.00	0.951		
Ethylbenzene*	<0.050	0.050	05/13/2019	ND	2.02	101	2.00	0.924		
Total Xylenes*	<0.150	0.150	05/13/2019	ND	6.09	102	6.00	0.854		
Total BTEX	<0.300	0.300	05/13/2019	ND						

Surrogate: 4-Bromofluorobenzene (PID) 102 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	16.0	16.0	05/14/2019	ND	400	100	400	0.00		

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	05/13/2019	ND	201	100	200	0.780	
DRO >C10-C28*	<10.0	10.0	05/13/2019	ND	188	94.1	200	0.0654	
EXT DRO >C28-C36	<10.0	10.0	05/13/2019	ND					

Surrogate: 1-Chlorooctane 96.1 % 41-142

Surrogate: 1-Chlorooctadecane 97.9 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager



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

**Analytical Results For:**

Devon Energy Corp- Artesia  
 AMANDA DAVIS  
 P.O. Box 250  
 Artesia NM, 88211  
 Fax To: (505) 746-9072

Received: 05/13/2019  
 Reported: 05/14/2019  
 Project Name: COCKBURN FED  
 Project Number: 19E - 00575  
 Project Location: DEVON - EDDY CO NM

Sampling Date: 05/11/2019  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Tamara Oldaker

**Sample ID: TP 19 - 07 6' (H901724-05)**

BTEx 8021B		mg/kg		Analyzed By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	05/13/2019	ND	1.99	99.6	2.00	1.52	
Toluene*	<0.050	0.050	05/13/2019	ND	2.09	105	2.00	0.951	
Ethylbenzene*	<0.050	0.050	05/13/2019	ND	2.02	101	2.00	0.924	
Total Xylenes*	<0.150	0.150	05/13/2019	ND	6.09	102	6.00	0.854	
Total BTEX	<0.300	0.300	05/13/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 104 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	48.0	16.0	05/14/2019	ND	400	100	400	0.00	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	05/13/2019	ND	201	100	200	0.780	
DRO >C10-C28*	<10.0	10.0	05/13/2019	ND	188	94.1	200	0.0654	
EXT DRO >C28-C36	<10.0	10.0	05/13/2019	ND					

Surrogate: 1-Chlorooctane 95.6 % 41-142

Surrogate: 1-Chlorooctadecane 98.2 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager





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**Analytical Results For:**

Devon Energy Corp- Artesia  
 AMANDA DAVIS  
 P.O. Box 250  
 Artesia NM, 88211  
 Fax To: (505) 746-9072

Received: 05/13/2019  
 Reported: 05/14/2019  
 Project Name: COCKBURN FED  
 Project Number: 19E - 00575  
 Project Location: DEVON - EDDY CO NM

Sampling Date: 05/11/2019  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Tamara Oldaker

**Sample ID: TP 19 - 08 6' (H901724-06)**

BTEx 8021B		mg/kg		Analyzed By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	05/13/2019	ND	1.99	99.6	2.00	1.52	
Toluene*	<0.050	0.050	05/13/2019	ND	2.09	105	2.00	0.951	
Ethylbenzene*	<0.050	0.050	05/13/2019	ND	2.02	101	2.00	0.924	
Total Xylenes*	<0.150	0.150	05/13/2019	ND	6.09	102	6.00	0.854	
Total BTEX	<0.300	0.300	05/13/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 103 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	64.0	16.0	05/14/2019	ND	400	100	400	0.00		

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	05/13/2019	ND	201	100	200	0.780	
DRO >C10-C28*	<10.0	10.0	05/13/2019	ND	188	94.1	200	0.0654	
EXT DRO >C28-C36	<10.0	10.0	05/13/2019	ND					

Surrogate: 1-Chlorooctane 95.0 % 41-142

Surrogate: 1-Chlorooctadecane 97.0 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

Devon Energy Corp- Artesia  
 AMANDA DAVIS  
 P.O. Box 250  
 Artesia NM, 88211  
 Fax To: (505) 746-9072

Received: 05/13/2019  
 Reported: 05/14/2019  
 Project Name: COCKBURN FED  
 Project Number: 19E - 00575  
 Project Location: DEVON - EDDY CO NM

Sampling Date: 05/11/2019  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Tamara Oldaker

**Sample ID: TP 19 - 09 6' (H901724-07)**

BTEx 8021B		mg/kg		Analyzed By: ms						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	05/13/2019	ND	1.99	99.6	2.00	1.52		
Toluene*	<0.050	0.050	05/13/2019	ND	2.09	105	2.00	0.951		
Ethylbenzene*	<0.050	0.050	05/13/2019	ND	2.02	101	2.00	0.924		
Total Xylenes*	<0.150	0.150	05/13/2019	ND	6.09	102	6.00	0.854		
Total BTEX	<0.300	0.300	05/13/2019	ND						

Surrogate: 4-Bromofluorobenzene (PID) 101 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	80.0	16.0	05/14/2019	ND	400	100	400	0.00		

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	05/13/2019	ND	201	100	200	0.780	
DRO >C10-C28*	<10.0	10.0	05/13/2019	ND	188	94.1	200	0.0654	
EXT DRO >C28-C36	<10.0	10.0	05/13/2019	ND					

Surrogate: 1-Chlorooctane 87.1 % 41-142

Surrogate: 1-Chlorooctadecane 89.6 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

Devon Energy Corp- Artesia  
 AMANDA DAVIS  
 P.O. Box 250  
 Artesia NM, 88211  
 Fax To: (505) 746-9072

Received: 05/13/2019  
 Reported: 05/14/2019  
 Project Name: COCKBURN FED  
 Project Number: 19E - 00575  
 Project Location: DEVON - EDDY CO NM

Sampling Date: 05/11/2019  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Tamara Oldaker

**Sample ID: TP 19 - 12 9' (H901724-08)**

BTEx 8021B		mg/kg		Analyzed By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	05/14/2019	ND	1.99	99.6	2.00	1.52	
Toluene*	<0.050	0.050	05/14/2019	ND	2.09	105	2.00	0.951	
Ethylbenzene*	<0.050	0.050	05/14/2019	ND	2.02	101	2.00	0.924	
Total Xylenes*	<0.150	0.150	05/14/2019	ND	6.09	102	6.00	0.854	
Total BTEx	<0.300	0.300	05/14/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 105 % 73.3-129

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	<16.0	16.0	05/14/2019	ND	400	100	400	0.00		

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	05/13/2019	ND	201	100	200	0.780	
DRO >C10-C28*	<10.0	10.0	05/13/2019	ND	188	94.1	200	0.0654	
EXT DRO >C28-C36	<10.0	10.0	05/13/2019	ND					

Surrogate: 1-Chlorooctane 92.5 % 41-142

Surrogate: 1-Chlorooctadecane 93.8 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager

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### Notes and Definitions

QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C Samples reported on an as received basis (wet) unless otherwise noted on report

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A handwritten signature in black ink, appearing to read "Celey D. Keene".

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Celey D. Keene, Lab Director/Quality Manager

11 jo 11 ebgd



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

## CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Company Name: Devon Energy		<b>BILL TO</b>		ANALYSIS REQUEST																			
Project Manager: Amanda Davis		P.O. #:																					
Address: 6488 7 Rivers HWY		Company: Devon Energy																					
City: Artesia		Attn: Amanda Davis																					
Phone #: 575-748-0176		Address:																					
Project #: 19E-00575		City:																					
Project Name: Cockburn Fed		State:																					
Project Location: Eddy County		Zip:																					
Sampler Name: Jason Crabtree		Fax #:																					
FOR LAB USE ONLY																							
Lab I.D.		Sample I.D.		(G)RAB OR (C)OMP.		# CONTAINERS		GROUNDWATER		WASTEWATER		DATE		TIME									
H901724		1		TP19-01		6'		X		X		2019-05-11		10:05									
2		TP19-02		5'		X		X		X		2019-05-11		10:15									
3		TP19-05		8'		X		X		X		2019-05-11		10:25									
4		TP19-06		6'		X		X		X		2019-05-11		10:35									
5		TP19-07		6'		X		X		X		2019-05-11		10:45									
6		TP19-08		6'		X		X		X		2019-05-11		10:55									
7		TP19-09		6'		X		X		X		2019-05-11		11:05									
8		TP19-12		9'		X		X		X		2019-05-11		11:15									
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† Cardinal cannot accept verbal changes. Please fax written changes to 575-393-2476



## Analytical Report

Lab Order 1905519

Date Reported:

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: SS01-3'

Project: Cockburn G Fed 2

Collection Date: 5/9/2019 3:00:00 PM

Lab ID: 1905519-001

Matrix: MEOH (SOIL)

Received Date: 5/10/2019 8:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>TOM</b>
Diesel Range Organics (DRO)	210	10		mg/Kg	1	5/10/2019 11:09:01 AM
Motor Oil Range Organics (MRO)	170	50		mg/Kg	1	5/10/2019 11:09:01 AM
Surr: DNOP	88.9	70-130		%Rec	1	5/10/2019 11:09:01 AM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>RAA</b>
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	5/10/2019 9:59:04 AM
Surr: BFB	97.7	73.8-119		%Rec	1	5/10/2019 9:59:04 AM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>RAA</b>
Benzene	ND	0.025		mg/Kg	1	5/10/2019 9:59:04 AM
Toluene	ND	0.050		mg/Kg	1	5/10/2019 9:59:04 AM
Ethylbenzene	ND	0.050		mg/Kg	1	5/10/2019 9:59:04 AM
Xylenes, Total	ND	0.10		mg/Kg	1	5/10/2019 9:59:04 AM
Surr: 4-Bromofluorobenzene	94.8	80-120		%Rec	1	5/10/2019 9:59:04 AM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>MRA</b>
Chloride	860	30		mg/Kg	20	5/10/2019 12:47:53 PM

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

<b>Qualifiers:</b>	*	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	L	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

## Analytical Report

Lab Order 1905519

Date Reported:

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: SS02-2'

Project: Cockburn G Fed 2

Collection Date: 5/9/2019 3:05:00 PM

Lab ID: 1905519-002

Matrix: MEOH (SOIL)

Received Date: 5/10/2019 8:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>TOM</b>
Diesel Range Organics (DRO)	89	9.5		mg/Kg	1	5/10/2019 11:33:14 AM
Motor Oil Range Organics (MRO)	81	48		mg/Kg	1	5/10/2019 11:33:14 AM
Surr: DNOP	87.3	70-130		%Rec	1	5/10/2019 11:33:14 AM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>RAA</b>
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	5/10/2019 10:22:34 AM
Surr: BFB	97.6	73.8-119		%Rec	1	5/10/2019 10:22:34 AM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>RAA</b>
Benzene	ND	0.025		mg/Kg	1	5/10/2019 10:22:34 AM
Toluene	ND	0.050		mg/Kg	1	5/10/2019 10:22:34 AM
Ethylbenzene	ND	0.050		mg/Kg	1	5/10/2019 10:22:34 AM
Xylenes, Total	ND	0.10		mg/Kg	1	5/10/2019 10:22:34 AM
Surr: 4-Bromofluorobenzene	94.4	80-120		%Rec	1	5/10/2019 10:22:34 AM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>MRA</b>
Chloride	410	30		mg/Kg	20	5/10/2019 1:00:17 PM

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

<b>Qualifiers:</b>	*	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	L	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

Page 2 of 0

## Analytical Report

Lab Order 1905519

Date Reported:

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: SS03-8'

Project: Cockburn G Fed 2

Collection Date: 5/9/2019 3:10:00 PM

Lab ID: 1905519-003

Matrix: MEOH (SOIL)

Received Date: 5/10/2019 8:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>TOM</b>
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	5/10/2019 12:21:35 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	5/10/2019 12:21:35 PM
Surr: DNOP	91.9	70-130		%Rec	1	5/10/2019 12:21:35 PM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>RAA</b>
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	5/10/2019 10:46:00 AM
Surr: BFB	96.6	73.8-119		%Rec	1	5/10/2019 10:46:00 AM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>RAA</b>
Benzene	ND	0.025		mg/Kg	1	5/10/2019 10:46:00 AM
Toluene	ND	0.050		mg/Kg	1	5/10/2019 10:46:00 AM
Ethylbenzene	ND	0.050		mg/Kg	1	5/10/2019 10:46:00 AM
Xylenes, Total	ND	0.10		mg/Kg	1	5/10/2019 10:46:00 AM
Surr: 4-Bromofluorobenzene	93.9	80-120		%Rec	1	5/10/2019 10:46:00 AM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>MRA</b>
Chloride	62	30		mg/Kg	20	5/10/2019 1:37:31 PM

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

<b>Qualifiers:</b>	*	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	L	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

Page 3 of 0

## Analytical Report

Lab Order 1905519

Date Reported:

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: SS04-8'

Project: Cockburn G Fed 2

Collection Date: 5/9/2019 3:15:00 PM

Lab ID: 1905519-004

Matrix: MEOH (SOIL)

Received Date: 5/10/2019 8:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>TOM</b>
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	5/10/2019 12:45:46 PM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	5/10/2019 12:45:46 PM
Surr: DNOP	92.4	70-130		%Rec	1	5/10/2019 12:45:46 PM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>RAA</b>
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	5/10/2019 11:09:20 AM
Surr: BFB	101	73.8-119		%Rec	1	5/10/2019 11:09:20 AM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>RAA</b>
Benzene	ND	0.025		mg/Kg	1	5/10/2019 11:09:20 AM
Toluene	ND	0.050		mg/Kg	1	5/10/2019 11:09:20 AM
Ethylbenzene	ND	0.050		mg/Kg	1	5/10/2019 11:09:20 AM
Xylenes, Total	ND	0.10		mg/Kg	1	5/10/2019 11:09:20 AM
Surr: 4-Bromofluorobenzene	98.6	80-120		%Rec	1	5/10/2019 11:09:20 AM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>MRA</b>
Chloride	95	30		mg/Kg	20	5/10/2019 1:49:56 PM

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

<b>Qualifiers:</b>	*	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	L	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

## Analytical Report

Lab Order 1905519

Date Reported:

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: SS05-5'

Project: Cockburn G Fed 2

Collection Date: 5/9/2019 3:20:00 PM

Lab ID: 1905519-005

Matrix: MEOH (SOIL)

Received Date: 5/10/2019 8:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>TOM</b>
Diesel Range Organics (DRO)	160	9.3		mg/Kg	1	5/10/2019 1:10:06 PM
Motor Oil Range Organics (MRO)	130	47		mg/Kg	1	5/10/2019 1:10:06 PM
Surr: DNOP	92.1	70-130		%Rec	1	5/10/2019 1:10:06 PM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>RAA</b>
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	5/10/2019 11:32:57 AM
Surr: BFB	98.3	73.8-119		%Rec	1	5/10/2019 11:32:57 AM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>RAA</b>
Benzene	ND	0.025		mg/Kg	1	5/10/2019 11:32:57 AM
Toluene	ND	0.050		mg/Kg	1	5/10/2019 11:32:57 AM
Ethylbenzene	ND	0.050		mg/Kg	1	5/10/2019 11:32:57 AM
Xylenes, Total	ND	0.10		mg/Kg	1	5/10/2019 11:32:57 AM
Surr: 4-Bromofluorobenzene	96.0	80-120		%Rec	1	5/10/2019 11:32:57 AM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>MRA</b>
Chloride	740	30		mg/Kg	20	5/10/2019 2:02:20 PM

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

<b>Qualifiers:</b>	*	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	L	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 1905519

Date Reported:

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: SS06-3'

Project: Cockburn G Fed 2

Collection Date: 5/9/2019 3:25:00 PM

Lab ID: 1905519-006

Matrix: MEOH (SOIL)

Received Date: 5/10/2019 8:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>TOM</b>
Diesel Range Organics (DRO)	150	9.5		mg/Kg	1	5/10/2019 1:34:19 PM
Motor Oil Range Organics (MRO)	130	48		mg/Kg	1	5/10/2019 1:34:19 PM
Surr: DNOP	92.0	70-130		%Rec	1	5/10/2019 1:34:19 PM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>RAA</b>
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	5/10/2019 11:56:32 AM
Surr: BFB	96.3	73.8-119		%Rec	1	5/10/2019 11:56:32 AM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>RAA</b>
Benzene	ND	0.025		mg/Kg	1	5/10/2019 11:56:32 AM
Toluene	ND	0.050		mg/Kg	1	5/10/2019 11:56:32 AM
Ethylbenzene	ND	0.050		mg/Kg	1	5/10/2019 11:56:32 AM
Xylenes, Total	ND	0.10		mg/Kg	1	5/10/2019 11:56:32 AM
Surr: 4-Bromofluorobenzene	93.8	80-120		%Rec	1	5/10/2019 11:56:32 AM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>MRA</b>
Chloride	640	30		mg/Kg	20	5/10/2019 2:14:45 PM

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

<b>Qualifiers:</b>	*	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	L	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 1905519

Date Reported:

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: SS07-3'

Project: Cockburn G Fed 2

Collection Date: 5/9/2019 3:30:00 PM

Lab ID: 1905519-007

Matrix: MEOH (SOIL)

Received Date: 5/10/2019 8:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>TOM</b>
Diesel Range Organics (DRO)	260	10		mg/Kg	1	5/10/2019 1:58:37 PM
Motor Oil Range Organics (MRO)	210	50		mg/Kg	1	5/10/2019 1:58:37 PM
Surr: DNOP	96.2	70-130		%Rec	1	5/10/2019 1:58:37 PM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>RAA</b>
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	5/10/2019 12:20:00 PM
Surr: BFB	97.7	73.8-119		%Rec	1	5/10/2019 12:20:00 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>RAA</b>
Benzene	ND	0.025		mg/Kg	1	5/10/2019 12:20:00 PM
Toluene	ND	0.050		mg/Kg	1	5/10/2019 12:20:00 PM
Ethylbenzene	ND	0.050		mg/Kg	1	5/10/2019 12:20:00 PM
Xylenes, Total	ND	0.10		mg/Kg	1	5/10/2019 12:20:00 PM
Surr: 4-Bromofluorobenzene	94.7	80-120		%Rec	1	5/10/2019 12:20:00 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>MRA</b>
Chloride	610	30		mg/Kg	20	5/10/2019 2:27:09 PM

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

<b>Qualifiers:</b>	*	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	L	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 1905519

Date Reported:

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: SS08-3'

Project: Cockburn G Fed 2

Collection Date: 5/9/2019 3:45:00 PM

Lab ID: 1905519-008

Matrix: MEOH (SOIL)

Received Date: 5/10/2019 8:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>TOM</b>
Diesel Range Organics (DRO)	200	9.6		mg/Kg	1	5/10/2019 2:01:12 PM
Motor Oil Range Organics (MRO)	170	48		mg/Kg	1	5/10/2019 2:01:12 PM
Surr: DNOP	110	70-130		%Rec	1	5/10/2019 2:01:12 PM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>RAA</b>
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	5/10/2019 12:43:28 PM
Surr: BFB	97.6	73.8-119		%Rec	1	5/10/2019 12:43:28 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>RAA</b>
Benzene	ND	0.025		mg/Kg	1	5/10/2019 12:43:28 PM
Toluene	ND	0.050		mg/Kg	1	5/10/2019 12:43:28 PM
Ethylbenzene	ND	0.050		mg/Kg	1	5/10/2019 12:43:28 PM
Xylenes, Total	ND	0.10		mg/Kg	1	5/10/2019 12:43:28 PM
Surr: 4-Bromofluorobenzene	95.4	80-120		%Rec	1	5/10/2019 12:43:28 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>MRA</b>
Chloride	830	30		mg/Kg	20	5/10/2019 2:39:34 PM

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

<b>Qualifiers:</b>	*	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	L	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

## Analytical Report

Lab Order 1905519

Date Reported:

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: SS09-3'

Project: Cockburn G Fed 2

Collection Date: 5/9/2019 3:40:00 PM

Lab ID: 1905519-009

Matrix: MEOH (SOIL)

Received Date: 5/10/2019 8:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>TOM</b>
Diesel Range Organics (DRO)	180	9.8		mg/Kg	1	5/10/2019 1:39:07 PM
Motor Oil Range Organics (MRO)	140	49		mg/Kg	1	5/10/2019 1:39:07 PM
Surr: DNOP	109	70-130		%Rec	1	5/10/2019 1:39:07 PM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>RAA</b>
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	5/10/2019 10:38:53 AM
Surr: BFB	89.1	73.8-119		%Rec	1	5/10/2019 10:38:53 AM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>RAA</b>
Benzene	ND	0.025		mg/Kg	1	5/10/2019 10:38:53 AM
Toluene	ND	0.050		mg/Kg	1	5/10/2019 10:38:53 AM
Ethylbenzene	ND	0.050		mg/Kg	1	5/10/2019 10:38:53 AM
Xylenes, Total	ND	0.10		mg/Kg	1	5/10/2019 10:38:53 AM
Surr: 4-Bromofluorobenzene	92.3	80-120		%Rec	1	5/10/2019 10:38:53 AM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>MRA</b>
Chloride	570	30		mg/Kg	20	5/10/2019 2:51:58 PM

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

<b>Qualifiers:</b>	*	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	L	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

## Analytical Report

Lab Order 1905519

Date Reported:

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: SS10-8'

Project: Cockburn G Fed 2

Collection Date: 5/9/2019 3:45:00 PM

Lab ID: 1905519-010

Matrix: MEOH (SOIL)

Received Date: 5/10/2019 8:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>TOM</b>
Diesel Range Organics (DRO)	ND	9.3		mg/Kg	1	5/10/2019 1:17:08 PM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	5/10/2019 1:17:08 PM
Surr: DNOP	104	70-130		%Rec	1	5/10/2019 1:17:08 PM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>RAA</b>
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	5/10/2019 11:01:44 AM
Surr: BFB	87.3	73.8-119		%Rec	1	5/10/2019 11:01:44 AM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>RAA</b>
Benzene	ND	0.025		mg/Kg	1	5/10/2019 11:01:44 AM
Toluene	ND	0.050		mg/Kg	1	5/10/2019 11:01:44 AM
Ethylbenzene	ND	0.050		mg/Kg	1	5/10/2019 11:01:44 AM
Xylenes, Total	ND	0.10		mg/Kg	1	5/10/2019 11:01:44 AM
Surr: 4-Bromofluorobenzene	88.3	80-120		%Rec	1	5/10/2019 11:01:44 AM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>MRA</b>
Chloride	38	30		mg/Kg	20	5/10/2019 3:04:22 PM

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

<b>Qualifiers:</b>	*	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	L	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 1905519

Date Reported:

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: SS11-8'

Project: Cockburn G Fed 2

Collection Date: 5/9/2019 3:50:00 PM

Lab ID: 1905519-011

Matrix: MEOH (SOIL)

Received Date: 5/10/2019 8:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>TOM</b>
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	5/10/2019 12:55:04 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	5/10/2019 12:55:04 PM
Surr: DNOP	105	70-130		%Rec	1	5/10/2019 12:55:04 PM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>RAA</b>
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	5/10/2019 11:24:30 AM
Surr: BFB	87.0	73.8-119		%Rec	1	5/10/2019 11:24:30 AM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>RAA</b>
Benzene	ND	0.025		mg/Kg	1	5/10/2019 11:24:30 AM
Toluene	ND	0.050		mg/Kg	1	5/10/2019 11:24:30 AM
Ethylbenzene	ND	0.050		mg/Kg	1	5/10/2019 11:24:30 AM
Xylenes, Total	ND	0.10		mg/Kg	1	5/10/2019 11:24:30 AM
Surr: 4-Bromofluorobenzene	87.1	80-120		%Rec	1	5/10/2019 11:24:30 AM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>MRA</b>
Chloride	37	30		mg/Kg	20	5/10/2019 3:16:46 PM

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

<b>Qualifiers:</b>	*	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	L	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 1905519

Date Reported:

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: SS12-8'

Project: Cockburn G Fed 2

Collection Date: 5/9/2019 3:55:00 PM

Lab ID: 1905519-012

Matrix: MEOH (SOIL)

Received Date: 5/10/2019 8:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>TOM</b>
Diesel Range Organics (DRO)	56	9.7		mg/Kg	1	5/10/2019 12:33:07 PM
Motor Oil Range Organics (MRO)	60	48		mg/Kg	1	5/10/2019 12:33:07 PM
Surr: DNOP	98.5	70-130		%Rec	1	5/10/2019 12:33:07 PM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>RAA</b>
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	5/10/2019 11:47:14 AM
Surr: BFB	87.2	73.8-119		%Rec	1	5/10/2019 11:47:14 AM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>RAA</b>
Benzene	ND	0.025		mg/Kg	1	5/10/2019 11:47:14 AM
Toluene	ND	0.050		mg/Kg	1	5/10/2019 11:47:14 AM
Ethylbenzene	ND	0.050		mg/Kg	1	5/10/2019 11:47:14 AM
Xylenes, Total	ND	0.10		mg/Kg	1	5/10/2019 11:47:14 AM
Surr: 4-Bromofluorobenzene	88.9	80-120		%Rec	1	5/10/2019 11:47:14 AM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>MRA</b>
Chloride	490	30		mg/Kg	20	5/10/2019 3:29:11 PM

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

<b>Qualifiers:</b>	*	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	L	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 1905519

Date Reported:

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: SS13-8'

Project: Cockburn G Fed 2

Collection Date: 5/9/2019 4:00:00 PM

Lab ID: 1905519-013

Matrix: MEOH (SOIL)

Received Date: 5/10/2019 8:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>TOM</b>
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	5/10/2019 12:11:04 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	5/10/2019 12:11:04 PM
Surr: DNOP	102	70-130		%Rec	1	5/10/2019 12:11:04 PM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>RAA</b>
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	5/10/2019 12:09:52 PM
Surr: BFB	90.0	73.8-119		%Rec	1	5/10/2019 12:09:52 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>RAA</b>
Benzene	ND	0.025		mg/Kg	1	5/10/2019 12:09:52 PM
Toluene	ND	0.050		mg/Kg	1	5/10/2019 12:09:52 PM
Ethylbenzene	ND	0.050		mg/Kg	1	5/10/2019 12:09:52 PM
Xylenes, Total	ND	0.10		mg/Kg	1	5/10/2019 12:09:52 PM
Surr: 4-Bromofluorobenzene	90.7	80-120		%Rec	1	5/10/2019 12:09:52 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>MRA</b>
Chloride	210	60		mg/Kg	20	5/10/2019 12:00:00 PM

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

<b>Qualifiers:</b>	*	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	L	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 1905519

Date Reported:

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: SS14-2'

Project: Cockburn G Fed 2

Collection Date: 5/9/2019 4:05:00 PM

Lab ID: 1905519-014

Matrix: MEOH (SOIL)

Received Date: 5/10/2019 8:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>TOM</b>
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	5/10/2019 11:49:11 AM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	5/10/2019 11:49:11 AM
Surr: DNOP	100	70-130		%Rec	1	5/10/2019 11:49:11 AM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>RAA</b>
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	5/10/2019 12:32:43 PM
Surr: BFB	87.5	73.8-119		%Rec	1	5/10/2019 12:32:43 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>RAA</b>
Benzene	ND	0.025		mg/Kg	1	5/10/2019 12:32:43 PM
Toluene	ND	0.050		mg/Kg	1	5/10/2019 12:32:43 PM
Ethylbenzene	ND	0.050		mg/Kg	1	5/10/2019 12:32:43 PM
Xylenes, Total	ND	0.10		mg/Kg	1	5/10/2019 12:32:43 PM
Surr: 4-Bromofluorobenzene	86.8	80-120		%Rec	1	5/10/2019 12:32:43 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>MRA</b>
Chloride	71	60		mg/Kg	20	5/10/2019 12:00:00 PM

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

<b>Qualifiers:</b>	*	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	L	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## Analytical Report

Lab Order 1905519

Date Reported:

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy

Client Sample ID: SS15-8'

Project: Cockburn G Fed 2

Collection Date: 5/9/2019 4:10:00 PM

Lab ID: 1905519-015

Matrix: MEOH (SOIL)

Received Date: 5/10/2019 8:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>TOM</b>
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	5/10/2019 11:27:08 AM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	5/10/2019 11:27:08 AM
Surr: DNOP	105	70-130		%Rec	1	5/10/2019 11:27:08 AM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>RAA</b>
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	5/10/2019 12:55:27 PM
Surr: BFB	87.1	73.8-119		%Rec	1	5/10/2019 12:55:27 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>RAA</b>
Benzene	ND	0.025		mg/Kg	1	5/10/2019 12:55:27 PM
Toluene	ND	0.050		mg/Kg	1	5/10/2019 12:55:27 PM
Ethylbenzene	ND	0.050		mg/Kg	1	5/10/2019 12:55:27 PM
Xylenes, Total	ND	0.10		mg/Kg	1	5/10/2019 12:55:27 PM
Surr: 4-Bromofluorobenzene	86.5	80-120		%Rec	1	5/10/2019 12:55:27 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>MRA</b>
Chloride	150	60		mg/Kg	20	5/10/2019 12:00:00 PM

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

<b>Qualifiers:</b>	*	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	L	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

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## **ATTACHMENT 7**

## Natalie Gordon

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**From:** Dhugal Hanton <vertexresourcegroupusa@gmail.com>  
**Sent:** Wednesday, August 26, 2020 5:41 PM  
**To:** Natalie Gordon  
**Subject:** Fwd: NAB1908655364: Cockburn Federal #002 - 48-hr Notification of Confirmation Sampling

----- Forwarded message -----

From: **Dhugal Hanton** <[vertexresourcegroupusa@gmail.com](mailto:vertexresourcegroupusa@gmail.com)>  
Date: Wed, Aug 26, 2020 at 5:40 PM  
Subject: NAB1908655364: Cockburn Federal #002 - 48-hr Notification of Confirmation Sampling  
To: <[OCD.Enviro@state.nm.us](mailto:OCD.Enviro@state.nm.us)>, <[tom.bynum@dvn.com](mailto:tom.bynum@dvn.com)>, <[amanda.davis@dvn.com](mailto:amanda.davis@dvn.com)>, <[Lupe.Carrasco@dvn.com](mailto:Lupe.Carrasco@dvn.com)>, <[wesley.mathews@dvn.com](mailto:wesley.mathews@dvn.com)>

All,

Please accept this email as 48-hr notification that Vertex Resource Services has scheduled final confirmatory sampling to be conducted at Cockburn Federal #002 for the release that occurred on February 23, 2019, incident # NAB1908655364 (1RP-5406).

This work will be completed on behalf of Devon Energy Production Company.

On Monday, August 31, 2020 at approximately 8:00 a.m., Monica Peppin of Vertex will be onsite to conduct final confirmatory sampling. 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](http://www.vertex.ca)

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## Natalie Gordon

---

**From:** Dhugal Hanton <vertexresourcegroupusa@gmail.com>  
**Sent:** Thursday, August 27, 2020 3:46 PM  
**To:** Natalie Gordon  
**Subject:** Fwd: NAB1908655364: Cockburn Federal #002 - 48-hr Notification of Confirmation Sampling

----- Forwarded message -----

From: **Dhugal Hanton** <[vertexresourcegroupusa@gmail.com](mailto:vertexresourcegroupusa@gmail.com)>  
Date: Thu, Aug 27, 2020 at 3:45 PM  
Subject: Fwd: NAB1908655364: Cockburn Federal #002 - 48-hr Notification of Confirmation Sampling  
To: CFO\_Spill, BLM\_NM <[blm\\_nm\\_cfo\\_spill@blm.gov](mailto:blm_nm_cfo_spill@blm.gov)>, Amos, James A <[Jamos@blm.gov](mailto:Jamos@blm.gov)>, <[amanda.davis@dnv.com](mailto:amanda.davis@dnv.com)>, Kelsey <[KWade@blm.gov](mailto:KWade@blm.gov)>

----- Forwarded message -----

From: **Dhugal Hanton** <[vertexresourcegroupusa@gmail.com](mailto:vertexresourcegroupusa@gmail.com)>  
Date: Wed, Aug 26, 2020 at 5:40 PM  
Subject: NAB1908655364: Cockburn Federal #002 - 48-hr Notification of Confirmation Sampling  
To: <[OCD.Enviro@state.nm.us](mailto:OCD.Enviro@state.nm.us)>, <[tom.bynum@dnv.com](mailto:tom.bynum@dnv.com)>, <[amanda.davis@dnv.com](mailto:amanda.davis@dnv.com)>, <[Lupe.Carrasco@dnv.com](mailto:Lupe.Carrasco@dnv.com)>, <[wesley.mathews@dnv.com](mailto:wesley.mathews@dnv.com)>

All,

Please accept this email as 48-hr notification that Vertex Resource Services has scheduled final confirmatory sampling to be conducted at Cockburn Federal #002 for the release that occurred on February 23, 2019, incident # NAB1908655364 (1RP-5406).

This work will be completed on behalf of Devon Energy Production Company.

On Monday, August 31, 2020 at approximately 8:00 a.m., Monica Peppin of Vertex will be onsite to conduct final confirmatory sampling. 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  
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**P 575.725.5001 ext 709**  
**C 505.506.0040**

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Incident ID	NAB1908655364
District RP	1RP-5406
Facility ID	
Application ID	pAB1908654648

## 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.*

- ☒ A scaled site and sampling diagram as described in 19.15.29.11 NMAC
- ☒ 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)
- ☒ Laboratory analyses of final sampling (Note: appropriate ODC District office must be notified 2 days prior to final sampling)
- ☒ 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: LupeCarrasco Title: Environmental Professional  
Signature: Lupe Carrasco Date: 12/7/20  
email: Lupe.Carrasco@dvn.com Telephone: (575) 748-0176

**OCD Only**

Received by: Robert Hamlet Date: 4/13/2021

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

Closure Approved by: Robert Hamlet Date: 4/13/2021  
Printed Name: Robert Hamlet Title: Environmental Specialist - Advanced

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

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

CONDITIONS  
  
Action 11447

**CONDITIONS OF APPROVAL**

Operator: DEVON ENERGY PRODUCTION COMPAN			333 West Sheridan Ave.	Oklahoma City, OK73102	OGRID: 6137	Action Number: 11447	Action Type: C-141
OCD Reviewer	Condition						
rhamlet	We have received your closure report and final C-141 for Incident #NAB1908655364 COCKBURN FEDERAL #002, thank you. This closure is approved.						