Form C-141
Page 3

State of New Mexico
Oil Conservation Division

Incident ID	nAB1621430855
District RP	2RP-3807
Facility ID	
Application ID	

Site Assessment/Characterization

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

What is the shallowest depth to groundwater beneath the area affected by the release?	51-100 (ft bgs)
Did this release impact groundwater or surface water?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	☐ Yes ☒ No
Are the lateral extents of the release within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	☐ Yes ☒ No
Are the lateral extents of the release within 500 horizontal feet of a spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes?	☐ Yes ☒ No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	☐ Yes ☒ No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of a wetland?	☐ Yes ☒ No
Are the lateral extents of the release overlying a subsurface mine?	☐ Yes ☒ No
Are the lateral extents of the release overlying an unstable area such as karst geology?	☐ Yes ☒ No
Are the lateral extents of the release within a 100-year floodplain?	☐ Yes ☒ No
Did the release impact areas **not** on an exploration, development, production, or storage site?	☐ Yes ☒ No

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

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

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

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

Form C-141
Page 4

State of New Mexico
Oil Conservation Division

Incident ID	nAB1621430855
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Printed Name: Dale Woodall Title: Env. Professional

Signature: Dale Woodall Date: 12/6/2022

email: dale.woodall@dvn.com Telephone: 575-748-1838

OCD Only

Received by: Jocelyn Harimon Date: 12/07/2022

Form C-141
Page 5

State of New Mexico
Oil Conservation Division

Incident ID	nAB1621430855
District RP	2RP-3807
Facility ID	
Application ID	

Closure

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

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

☒ 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) ****No remediation necessary**

☒ 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: Dale Woodall Title: Env. Professional

Signature: Dale Woodall Date: 12/6/2022

email: dale.woodall@dvn.com Telephone: 575-748-1838

OCD Only

Received by: Jocelyn Harimon Date: 12/07/2022

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: Ashley Maxwell Date: 2/02/2023

Printed Name: Ashley Maxwell Title: Environmental Specialist

Depth to groundwater determined with new test well C-4593-POD1

M&M EXCAVATING, INC.
PO Box 1120
Carlsbad, New Mexico 88221
Phone (575) 236-6600

February 5, 2020

NMOCD District 2
Mr. Robert Hamlet
811 S. First Street
Artesia, New Mexico 88210

Dear Mr. Hamlet:

M&M Excavating, Inc. (MMX) has prepared this Remediation Closure Report for Devon Energy Production Company that describes the release of liquids at the Cotton Draw Unit 153H site (2RP-3807). The site is in Unit B, Section 3, Township 25S, Range 31E, Latitude 32.166134, Longitude -103.764013, Eddy County, New Mexico, on Federal land. Figure 1 provides the vicinity and site location on an USGS 7.5-minute quadrangle map.

Site Information and Closure Criteria

The Cotton Draw Unit 153H is located approximately thirty-four (34) miles southeast of Carlsbad, New Mexico at an elevation of approximately 3,453 feet above mean sea level (amsl).

Based upon well water data. (Appendix B), depth to groundwater in the area is estimated to be between 390 and 470 feet below grade surface (bgs). There are no known water wells within ½ mile of the location, according to the New Mexico Office of the State Engineer (NMOSE) and United State Geological Survey (USGS). The nearest significant watercourse is a Freshwater Pond located approximately 6150 feet to the west.

The sites applicable NMOCD Closure Criteria is for groundwater greater than 100 feet bgs.

Table 2 demonstrates the Closure Criteria applicable to this location. Pertinent well data is attached in Appendix B.

Release Information and Closure Criteria			
Name	Cotton Draw Unit #153H		
API Number	30-015-38535		
Incident Number	2RP-3807		
Source of Release	Water Line on Separator		
Released Material	Produced Water	Released Volume	5 bbls
Recovered Volume	1 bbls	Net Release	4 bbls
NMOCD Closure Criteria	>100 feet to groundwater		

Release Information

On July 26, 2016, two failures were discovered in a single water line that travels from the production test separator to the water tank on the northwest side of the location. Initial response activities were conducted by the operator and included source elimination, site containment and the recovery of approximately 1 bbl of produced water. The C-141 form is included in Appendix A.

Release Characterization and Remediation Activities

To address the multiple RP's on this location, and identify areas of highest chloride impacts, Vertex conducted an electromagnetic (EM) survey on October 8, 2019 of the entire well pad. The area of the subject releases, near the heater treater, is shown with the EM survey results on Figure 3. The full EM report is included in Appendix D.

Using the EM survey to guide to sampling, MMX personnel mobilized to the location on November 1, 2019 to collect initial soil samples around potential areas of concern and the source of the release described in the initial C141. Figure 3 shows the sample locations georeferenced over the EM survey.

A total of three (3) sample locations were established on the pad (L1 & L2) and pasture (L3). Six (6) samples (collected from surface and 2-feet), were collected for laboratory analysis including total chloride using EPA Method 300.0; benzene, toluene, ethylbenzene and total xylenes (BTEX) using EPA Method 8021B; and motor, diesel and gasoline range organics (MRO, DRO, and GRO) by EPA Method 8015D. Samples were placed into laboratory supplied glassware, labeled, and maintained on ice until delivery to Hall Laboratories in Albuquerque, New Mexico (Appendix C).

As summarized in Table 3, all results meet the NMOCD Closure Criteria. All laboratory reports are included in Appendix C.

On behalf of Devon Energy, MMX is requesting the closure of the release associated with 2RP-3807.

Submitted by:
M&M Excavating, Inc.

Parker Kimbley

Parker Kimbley

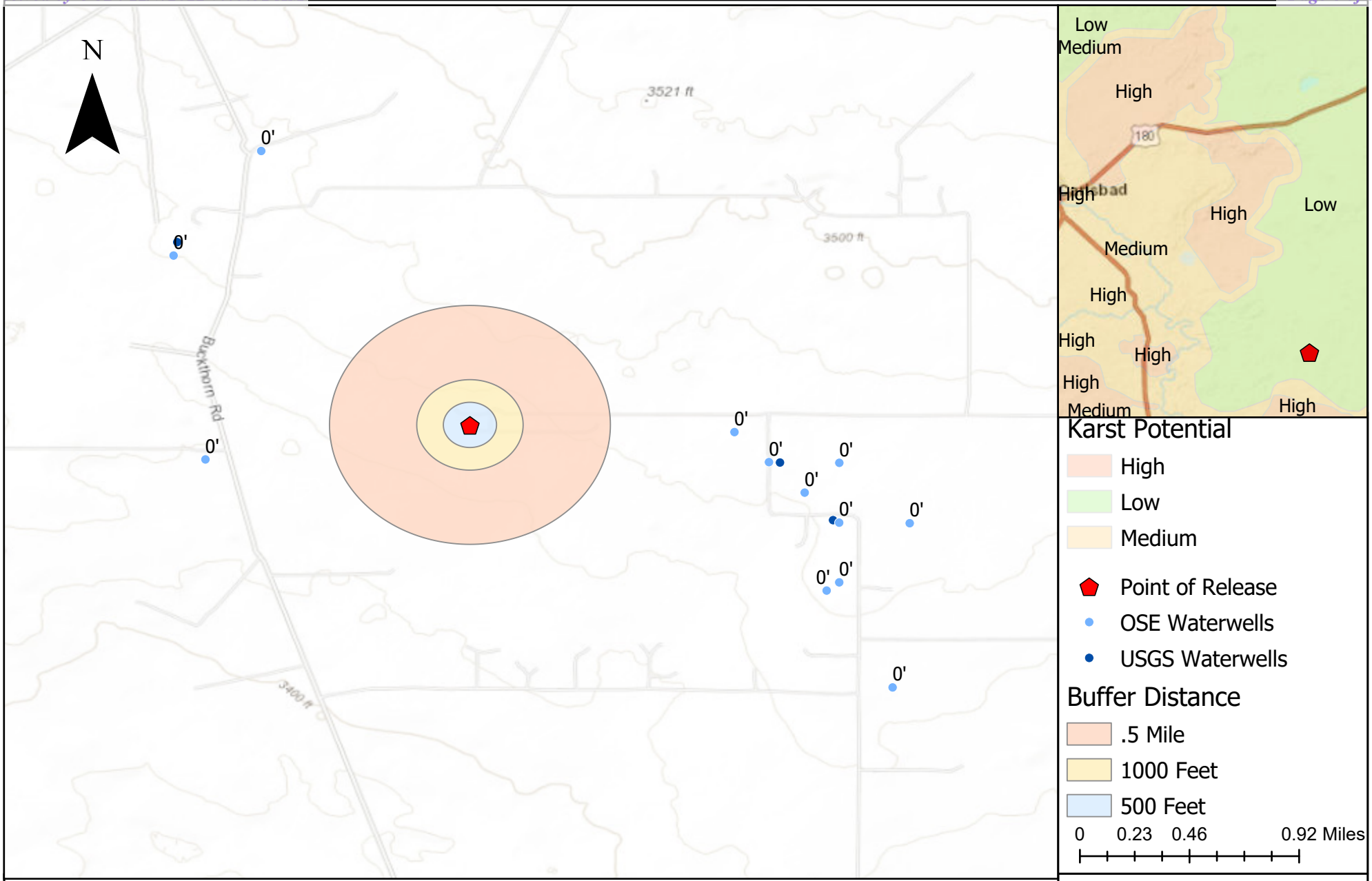
ATTACHMENTS:

Figures:

Tables:

Appendices:

Figures



Regional Vicinity & Wellhead Protection Map
Cotton Draw Unit #153H- Devon Energy
Sec 3 T25S R31E Eddy County, New Mexico

Figure 1

Revisions
By: Date: Descr:
By: Date: Descr:

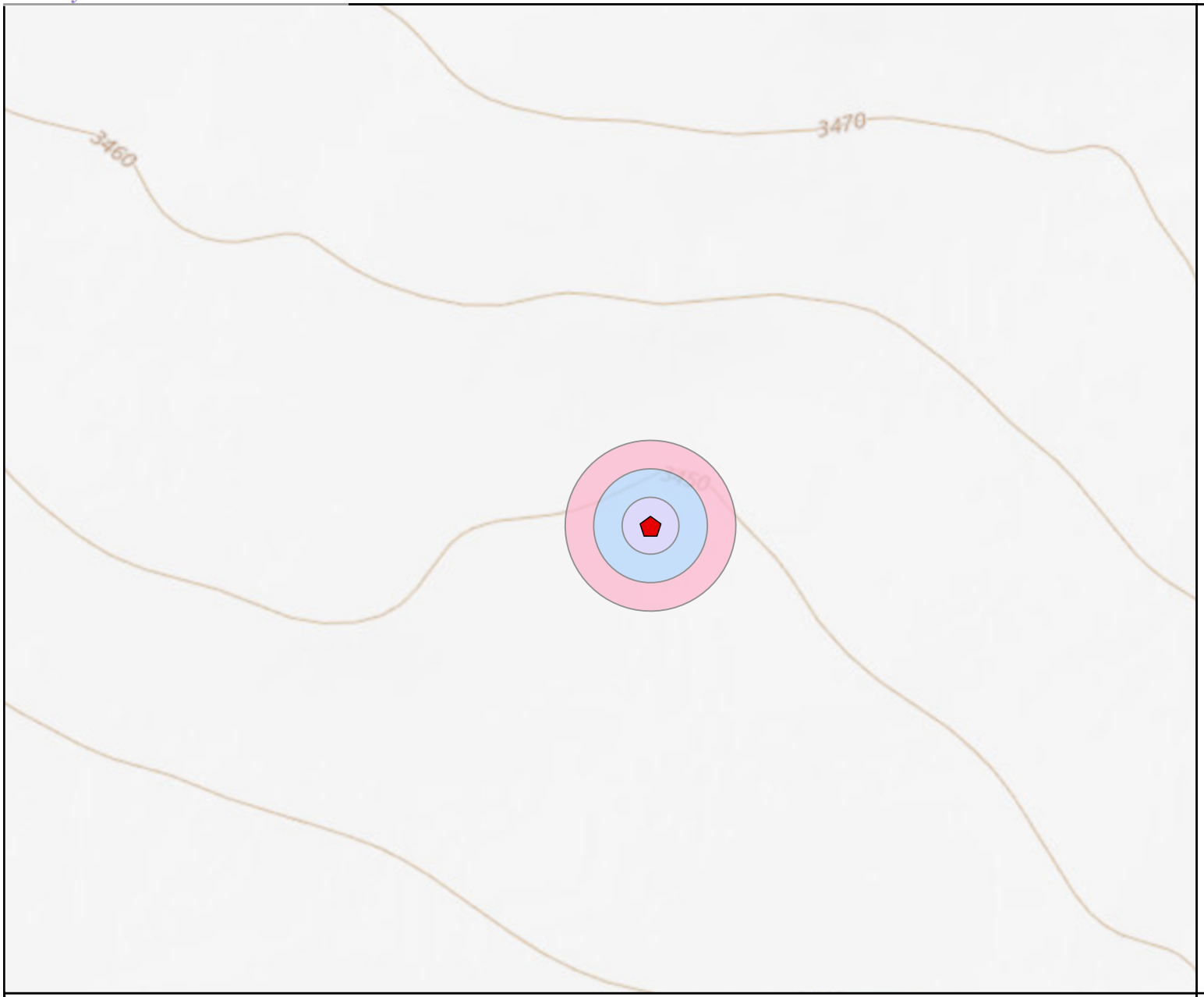
Date Saved: 7/18/2019

Drawn LC
Date 7/18/2019
Checked
Approved

M&M EXCAVATING, INC.

78 Roberson Rd
Carlsbad, NM 88220
(575) 230-6600

P:\5-MM Excavating (5128335)\GIS\ARCGIS\MMX_MIT.aprx



Point of Release
Springs Seeps
Streams Canals
Rivers
NM Wetlands
Lakes Playas
FEMA Flood Zones 2011

Buffer Distance
100 Feet
200 Feet
300 Feet

N

0 425 850 1,700 Feet

Surface Water Protection Map
Cotton Draw Unit 153H - Devon Energy
Sec 3 T25S R31E Eddy County, New Mexico

Figure 2

Revisions
By: Date: Descr:
By: Date: Descr:

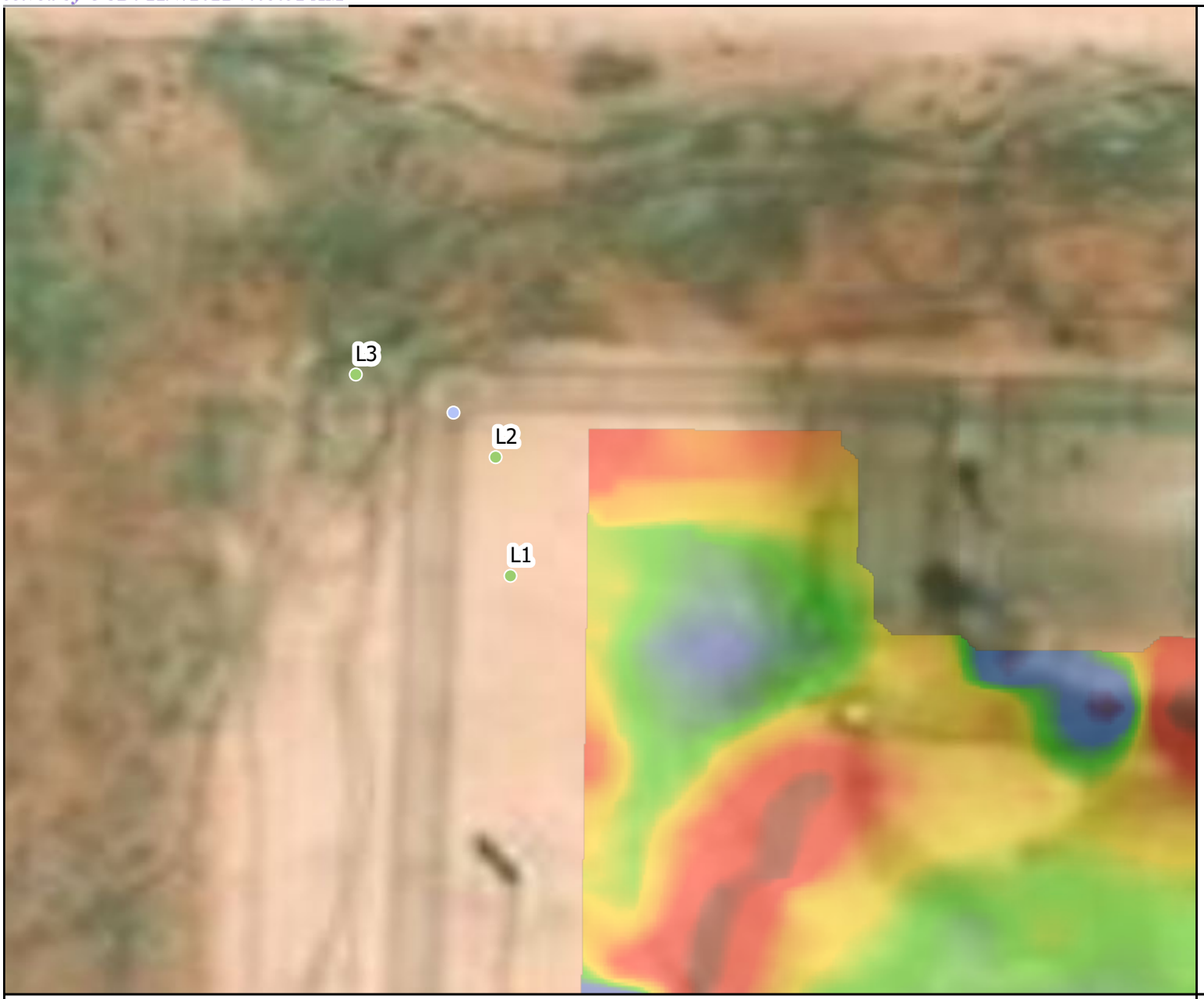
Date Saved: 7/18/2019

Drawn LC
Date 7/18/2019
Checked
Approved

M&M EXCAVATING, INC.

78 Roberson Rd
Carlsbad, NM 88220
(575) 236-6600

P:\5-MM Excavating (5128335)\GIS\ARCGIS\MMX_MIT.aprx



Point of Release

Sample Locations

N

37

Feet

Site & Sample Locations
Cotton Draw Unit 153H - Devon Energy
Eddy County, New Mexico

Figure 3

P:\5-MM Excavating (5128335)\GIS\ARCGIS\MMX_MIT.aprx

Date Saved: 12/3/2019

Revisions

By:_____ Date:_____ Descr:_____

By:_____ Date:_____ Descr:_____

Drawn	LC
Date	12/4/2019
Checked	
Approved	

M&M EXCAVATING, INC.

78 Roberson Rd
Carlsbad, NM 88220
(575) 236-6600

Tables

Table 2: NMOCD Closure Criteria

Cotton Draw Unit #117H

Devon Energy Production Company

Site Information (19.15.29.11.A(2, 3, and 4) NMAC)			Source/Notes
Depth to Groundwater (feet bgs)		>51	NMOSE & USGS (Appendix B)
Hortizontal Distance From All Water Sources Within 1/2 Mile (ft)		--	
Hortizontal Distance to Nearest Significant Watercourse (ft)		6150	Freshwater pond to the west

Closure Criteria (19.15.29.12.B(4) and Table 1 NMAC)							
Depth to Groundwater			Closure Criteria (units in mg/kg)				
			Chloride *numerical limit or background, whichever is greater	TPH	GRO + DRO	BTEX	Benzene
Less than 50' BGS			600	100		50	10
>100'			20000	2500	1000	50	10
51'-100'	x		10000	2500	1000	50	10
Surface Water	Yes	No	if yes, then				
Less than 300' from continuously flowing watercourse or other significant watercourse?		x	600	100		50	10
Less than 200' from lakebed, sinkhole or playa lake?		x					
Water Well or Water Source							
Less than 500 feet from spring or a private, domestic fresh water well used by less than 5 households for domestic or stock watering purposes?		x					
Less than 1000' from fresh water well or spring?		x					
Human and Other Areas							
Less than 300' from an occupied permanent residence, school, hospital, institution or church?		x					
Within incorporated municipal boundaries or within a defined municipal fresh water well field?		x					
Less than 100' from wetland?		x					
Within area overlying a subsurface mine		x					
Within an unstable area?		x					
Within a 100-year floodplain?		x					

M & M EXCAVATING, INC.

Table 3: Summary of Sample Results

Cotton Draw Unit #153H

Devon Energy Production Company

Sample ID	Sample Date	Depth (feet bgs)	BTEX mg/Kg	Benzene mg/Kg	GRO mg/Kg	DRO mg/Kg	MRO mg/Kg	Total TPH mg/Kg	Cl- mg/Kg
NMOCD Closure Criteria			50	10				2,500	10,000
2RP-3807									
L1	11/1/2019	surface	<0.217	<0.024	<4.8	<9.6	<48	<62	<61
		2	--	--	--	--	--	--	93.0
L2		surface	<0.212	<0.024	<4.7	<9.5	<47	<61.2	6000
		2	--	--	--	--	--	--	2300
L3		surface	<0.225	<0.025	<5.0	<9.9	<50	<64.9	<60
		2	--	--	--	--	--	--	<60

M & M EXCAVATING, INC.

Appendix A:
C141 Forms

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

State of New Mexico
Energy Minerals and Natural Resources

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

NM OIL CONSERVATION
ARTESIA DISTRICT
JUL 27 2016
RECEIVED

Form C-141
Revised August 8, 2011

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

Release Notification and Corrective Action

nAB1621430855

OPERATOR

☒ Initial Report ☒ Final Report

Name of Company Devon Energy Production Company 6137	**Contact** Jake Harrington, Production Foreman
Address 6488 Seven Rivers Hwy Artesia, NM 88210	**Telephone No.** 432-214-5175
Facility Name Cotton Draw Unit 153H	**Facility Type** Oil

Surface Owner Federal	**Mineral Owner** Federal	**API No** 30-015-38535

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
B	3	25S	31E	200'	FNL	1980'	FEL	Eddy

Latitude: 32.16613000 **Longitude:** -103.7631000

NATURE OF RELEASE

Type of Release Produced Water	**Volume of Release** 5bbls	**Volume Recovered** 1bbl
Source of Release Water line from test separator	**Date and Hour of Occurrence** July 26, 2016 @ 10:00 AM	**Date and Hour of Discovery** July 26, 2016 @ 10:00 AM
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	**If YES, To Whom?** Jim Amos, BLM Mike Bratcher, OCD	
By Whom? Mike McMahan, Asst. Production Foreman	**Date and Hour** Jim Amos, BLM July 26, 2016 @12:30 PM Mike Bratcher, OCD July 26, 2016 @ 12:35 PM	
Was a Watercourse Reached? ☐ Yes ☒ No	**If YES, Volume Impacting the Watercourse** N/A	

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

Describe Cause of Problem and Remedial Action Taken.*
A water line from the production test separator to the water tank developed two leaks due to corrosion. The line was isolated to stop the release. Working on repairs to the line.

Describe Area Affected and Cleanup Action Taken.*
Approximately 5bbls produced water was released on location from two separate leaks on a single water line that travels from the production test separator to the water tank on the Northwest side of pad. Each release flowed in a Northern direction into the pasture. Approximate total size of the first affected area was 15'x30' including 5'x5' in the pasture and the second area affected was approximately a total size of 15'x20' including 1'x15' in the pasture. A vacuum truck was contacted and recovered 1bbl produced water. An environmental agency will be contacted for remediation.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Signature: Sheila Fisher	OIL CONSERVATION DIVISION Signed By Approved by Environmental Specialist:
Printed Name: Sheila Fisher	
Title: **Field Admin Support**	Approval Date: 7/28/16 Expiration Date: N/A
E-mail Address: **Sheila.fisher@dvn.com**	Conditions of Approval: **Remediation per O.C.D. Rules & Guidelines SUBMIT REMEDIATION PROPOSAL NO LATER THAN: 9/1/16** Attached ☐
Date: 7/27/16 Phone: **575.748.1829**	

* Attach Additional Sheets If Necessary

JRP-3807

Form C-141
Page 3

State of New Mexico
Oil Conservation Division

Incident ID	nAB1621430855
District RP	2RP-3807
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Are the lateral extents of the release within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)?	☐ Yes ☒ No
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Are the lateral extents of the release within 500 horizontal feet of a spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes?	☐ Yes ☒ No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	☐ Yes ☒ No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of a wetland?	☐ Yes ☒ No
Are the lateral extents of the release overlying a subsurface mine?	☐ Yes ☒ No
Are the lateral extents of the release overlying an unstable area such as karst geology?	☐ Yes ☒ No
Are the lateral extents of the release within a 100-year floodplain?	☐ Yes ☒ No
Did the release impact areas **not** on an exploration, development, production, or storage site?	☐ Yes ☒ No

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

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

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

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

Form C-141
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State of New Mexico
Oil Conservation Division

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Printed Name: Dale Woodall Title: Env. Professional

Signature: Dale Woodall Date: 12/6/2022

email: dale.woodall@dvn.com Telephone: 575-748-1838

OCD Only

Received by: _____ Date: _____

Form C-141
Page 5

State of New Mexico
Oil Conservation Division

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Closure

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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) ****No remediation necessary**

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

☒ Description of remediation activities

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Printed Name: Dale Woodall Title: Env. Professional

Signature: Dale Woodall Date: 12/6/2022

email: dale.woodall@dvn.com Telephone: 575-748-1838

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: _____

Bratcher, Mike, EMNRD

From: Fisher, Sheila <Sheila.Fisher@dvn.com>
Sent: Wednesday, July 27, 2016 11:16 AM
To: Shelly Tucker (stucker@blm.gov); Bratcher, Mike, EMNRD; Patterson, Heather, EMNRD
Cc: McMahan, Mike; Carter, Ray; Harrington, Jake; Fulks, Brett
Subject: Cotton Draw Unit 153H_5bbl pw release_7.26.16
Attachments: Cotton Draw Unit 153H_5bbl pw release_Initial C-141_7.26.16.doc; Cotton Draw Unit 153H_5bbl pw release_GIS Image_7.26.16.pdf; Cotton Draw Unit 153H_5bbl pw release_pic 1 of 5_7.26.16.JPG; Cotton Draw Unit 153H_5bbl pw release_pic 2 of 5_7.26.16.JPG; Cotton Draw Unit 153H_5bbl pw release_pic 3 of 5_7.26.16.JPG; Cotton Draw Unit 153H_5bbl pw release_pic 4 of 5_7.26.16.JPG; Cotton Draw Unit 153H_5bbl pw release_pic 5 of 5_7.26.16.jpg

Good Morning,

Attached please find the Initial C-141, GIS Image and photo for the 5bbl produced water release at the Cotton Draw Unit 153H.

If you have any questions please feel free to contact me.

Thank you

Sheila Fisher
Field Admin Support
Production
B-Schedule

Devon Energy Corporation
PO Box 250
Artesia, NM 88211
575 748 1829 Direct

devon

Appendix B:
Water Well Data
with 12/6/2022 addendum

ADDENDUM

Location name: COTTON DRAW UNIT #153H

OCD Spill Number: nAB1621430855

From: Dale Woodall, Devon Energy

Date: 12/6/2022

Since this report for the above referenced spill(s) was written, there has been an update in the status of the PODs for the location.

A review of New Mexico Office of the State Engineers (OSE) online water well database (New Mexico Office of the State Engineer (NMOSE) online water well database https://gis.ose.state.nm.us/gisapps/ose_pod_locations/).

One pod location is within ½ mile radius and less than 25 years old.

C-4593 POD 1 (installed in 2022) did not encounter groundwater and is within 0.5 miles of the location

The spill was remediated to criteria for DTW of 51-100 feet bgs.

Boring log of the well C-4593 POD1 is attached.

A map denoting the location of pod C4593 and Cotton Draw Unit 153H is attached.

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	C 04593 POD1	3	4	4	34	24S	31E	616903	3559674

Driller License:	1249	**Driller Company:**	ATKINS ENGINEERING ASSOC. INC.		
Driller Name:	JACKIE ATKINS				
Drill Start Date:	03/09/2022	**Drill Finish Date:**	03/10/2022	**Plug Date:**	03/15/2022
Log File Date:	04/04/2022	**PCW Rcv Date:**		**Source:**	
Pump Type:		**Pipe Discharge Size:**		**Estimated Yield:**	
Casing Size:		**Depth Well:**	55 feet	**Depth Water:**	

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

(A CLW##### in the POD suffix indicates the POD has been replaced & no longer serves a water right file.)

(R=POD has been replaced, O=orphaned, C=the file is closed)

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

POD Number	Code	POD Sub-basin	County	Q 64	Q 16	Q 4	Sec	Twn	Rng	X	Y	Distance	Depth Well	Depth Water	Water Column
C 02574		CUB	ED	1	1	2	02	25S	31E	618092	3559494*	1516			
C 02571		CUB	ED	4	1	2	02	25S	31E	618292	3559294*	1731	860		
C 02573		CUB	ED	1	4	2	02	25S	31E	618499	3559091*	1971			
C 02572		CUB	ED	4	2	2	02	25S	31E	618695	3559294*	2131	852		
C 02569		CUB	ED	4	4	2	02	25S	31E	618699	3558891*	2215	1016		
C 03830 POD1		CUB	ED	4	2	4	02	25S	31E	618632	3558432	2328	450		
C 02570		CUB	ED	4	2	4	02	25S	31E	618704	3558489*	2366	895		
C 02568		CUB	ED	4	3	1	01	25S	31E	619103	3558892*	2605	1025		
C 03891 POD1		CUB	ED	4	4	2	01	25S	30E	610608	3558890	6001	635	429	206
C 02250		CUB	ED	3	1	4	21	25S	31E	614912	3553620*	6134	400	390	10

Average Depth to Water: **409 feet**
Minimum Depth: **390 feet**
Maximum Depth: **429 feet**

Record Count: 10

UTMNAD83 Radius Search (in meters):

Easting (X): 616576 **Northing (Y):** 3559525 **Radius:** 6500

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

7/18/19 4:41 PM

WATER COLUMN/ AVERAGE DEPTH TO WATER

WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

1. GENERAL AND WELL LOCATION

OSE POD NO. (WELL NO.)	WELL TAG ID NO.	OSE FILE NO(S).
POD 1 (TW-1)		C-4593

WELL OWNER NAME(S)	PHONE (OPTIONAL)
Devon Energy	575-748-1838

WELL OWNER MAILING ADDRESS	CITY	STATE	ZIP
6488 7 Rivers Hwy	Artesia	NM	88210

WELL LOCATION (FROM GPS)		DEGREES	MINUTES	SECONDS	
	LATITUDE	32	10	2.97	N
	LONGITUDE	103	45	36.48	W

* ACCURACY REQUIRED: ONE TENTH OF A SECOND
* DATUM REQUIRED: WGS 84

DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS – PLSS (SECTION, TOWNSHIP, RANGE) WHERE AVAILABLE

SW L4 Sec 34 T24S R31E, NMPM

2. DRILLING & CASING INFORMATION

LICENSE NO.	NAME OF LICENSED DRILLER	NAME OF WELL DRILLING COMPANY
1249	Jackie D. Atkins	Atkins Engineering Associates, Inc.

DRILLING STARTED	DRILLING ENDED	DEPTH OF COMPLETED WELL (FT)	BORE HOLE DEPTH (FT)	DEPTH WATER FIRST ENCOUNTERED (FT)
03/09/2022	03/10/2022	temporary well casing	±55	n/a

COMPLETED WELL IS: ☐ ARTESIAN ☑ DRY HOLE ☐ SHALLOW (UNCONFINED)

STATIC WATER LEVEL IN COMPLETED WELL (FT): dry

DATE STATIC MEASURED: 03/10/22,03/15/22

DRILLING FLUID: ☐ AIR ☐ MUD ADDITIVES – SPECIFY:

DRILLING METHOD: ☐ ROTARY ☐ HAMMER ☐ CABLE TOOL ☑ OTHER – SPECIFY: Hollow Stem Auger

CHECK HERE IF PITLESS ADAPTER IS INSTALLED ☐

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	BORE HOLE DIAM (inches)	CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen)	CASING CONNECTION TYPE (add coupling diameter)	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)	SLOT SIZE (inches)
0	55	±6.5	Boring	--	--	--	--

3. ANNULAR MATERIAL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL	AMOUNT (cubic feet)	METHOD OF PLACEMENT

OSE DII APR 4 2022 PM2:04

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 01/28/2022)

FILE NO. C-4593	POD NO. 1	TRN NO. 718730
LOCATION 24S.31E.34 344	WELL TAG ID NO. —	PAGE 1 OF 2

4. HYDROGEOLOGIC LOG OF WELL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	THICKNESS (feet)	COLOR AND TYPE OF MATERIAL ENCOUNTERED - INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES **(attach supplemental sheets to fully describe all units)**	WATER BEARING? (YES / NO)	ESTIMATED YIELD FOR WATER-BEARING ZONES (gpm)
0	4	4	Caliche, with medium to fine grained sand, white and Red	Y ✓ N	
4	24	20	Sand, medium/ fine grained, poorly graded, with caliche gravel, Tan	Y ✓ N	
24	55	31	Sand, medium/ fine grained, poorly graded, Reddish Brown	Y ✓ N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	

METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA:

☐ PUMP ☐ AIR LIFT ☐ BAILER ☐ OTHER – SPECIFY:

TOTAL ESTIMATED WELL YIELD (gpm): 0.00

5. TEST; RIG SUPERVISION

WELL TEST — TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING DISCHARGE METHOD, START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.

MISCELLANEOUS INFORMATION: Temporary well material removed and soil boring backfilled using drill cuttings from total depth to ten feet below ground surface(bgs), then hydrated bentonite chips ten feet bgs to surface.

PRINT NAME(S) OF DRILL RIG SUPERVISOR(S) THAT PROVIDED ONSITE SUPERVISION OF WELL CONSTRUCTION OTHER THAN LICENSEE:

Shane Eldridge, Cameron Pruitt

6. SIGNATURE

THE UNDERSIGNED HEREBY CERTIFIES THAT, TO THE BEST OF HIS OR HER KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED HOLE AND THAT HE OR SHE WILL FILE THIS WELL RECORD WITH THE STATE ENGINEER AND THE PERMIT HOLDER WITHIN 30 DAYS AFTER COMPLETION OF WELL DRILLING:

Jack Atkins — Jackie D. Atkins — OSE DIT APR 4 2022 PM2:04 — 03/31/2022

SIGNATURE OF DRILLER / PRINT SIGNEE NAME — DATE

FOR OSE INTERNAL USE — WR-20 WELL RECORD & LOG (Version 01/28/2022)

FILE NO. C-4593	POD NO. 1	TRN NO. 718730	
LOCATION 24S.31E.34 344		WELL TAG ID NO. —	PAGE 2 OF 2

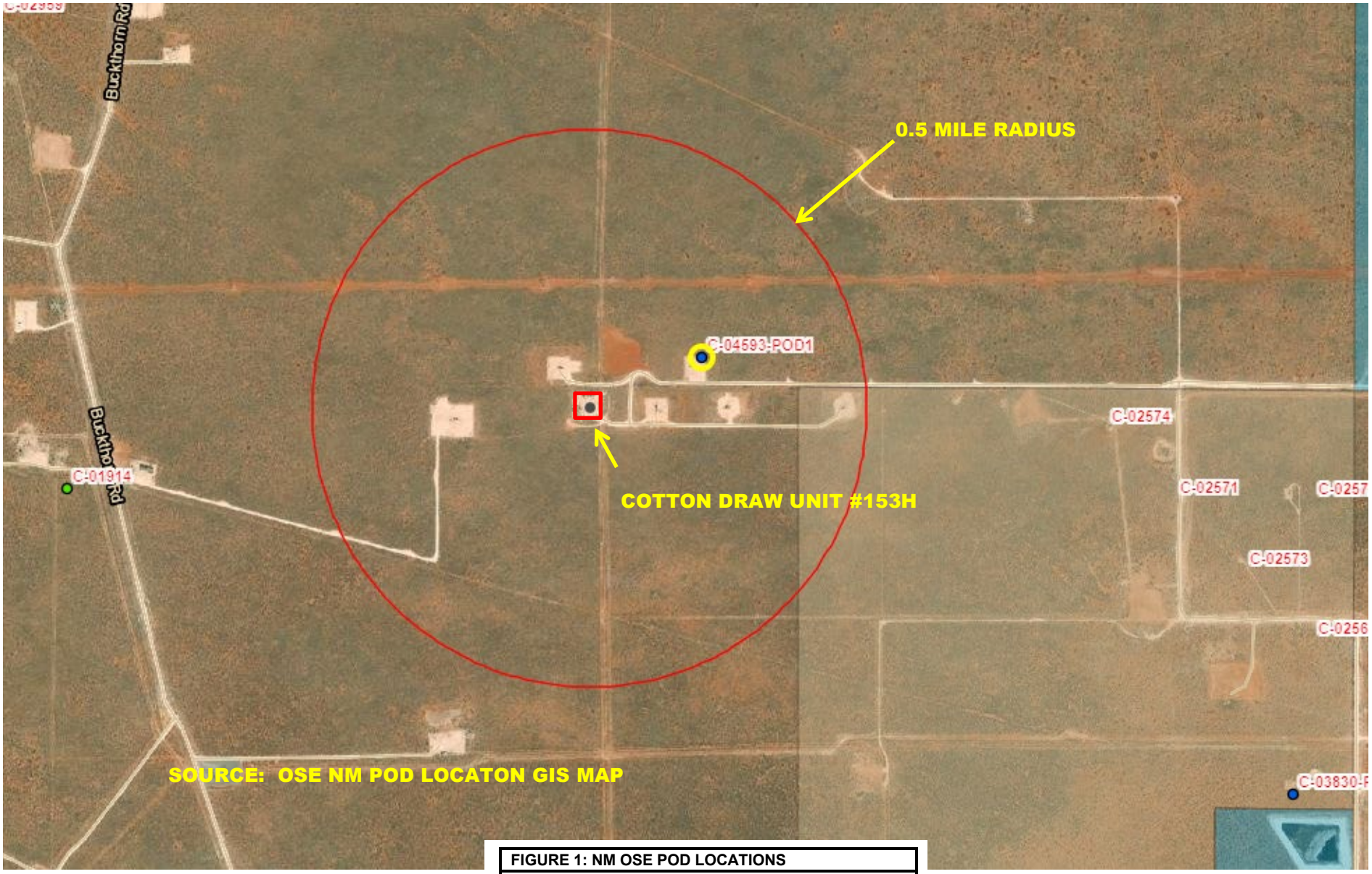

FIGURE 1: NM OSE POD LOCATIONS	
COTTON DRAW UNIT #153H	
32.1661758,-103.7636108	
OCD INCIDENT nAB1621430855	
drawn by: RDW	Date: 12/2022

Mike A. Hamman, P.E.
State Engineer

Roswell Office
1900 WEST SECOND STREET
ROSWELL, NM 88201

STATE OF NEW MEXICO
OFFICE OF THE STATE ENGINEER

Trn Nbr: 719171
File Nbr: C 04595
Well File Nbr: C 04595 POD1

Apr. 05, 2022

DALE WOODALL
DEVON ENERGY
6488 7 RIVERS HWY
ARTESIA, NM 88210

Greetings:

The above numbered permit was issued in your name on 02/16/2022.

The Well Record was received in this office on 04/04/2022, stating that it had been completed on 03/09/2022, and was a dry well. The well is to be plugged according to 19.27.4.30 NMAC.

Please note that another well can be drilled under this permit if the well is completed and the well log filed on or before 02/16/2023.

If you have any questions, please feel free to contact us.

Sincerely,

Azucena Ramirez
(575)622-6521

drywell

National Water Information System: Web Interface

Click to hideNews Bulletins

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- Full News

Groundwater levels for the Nation

Search Results -- 1 sites found

site_no list =

- 320932103443801

Minimum number of levels = 1

Save file of selected sites to local disk for future upload

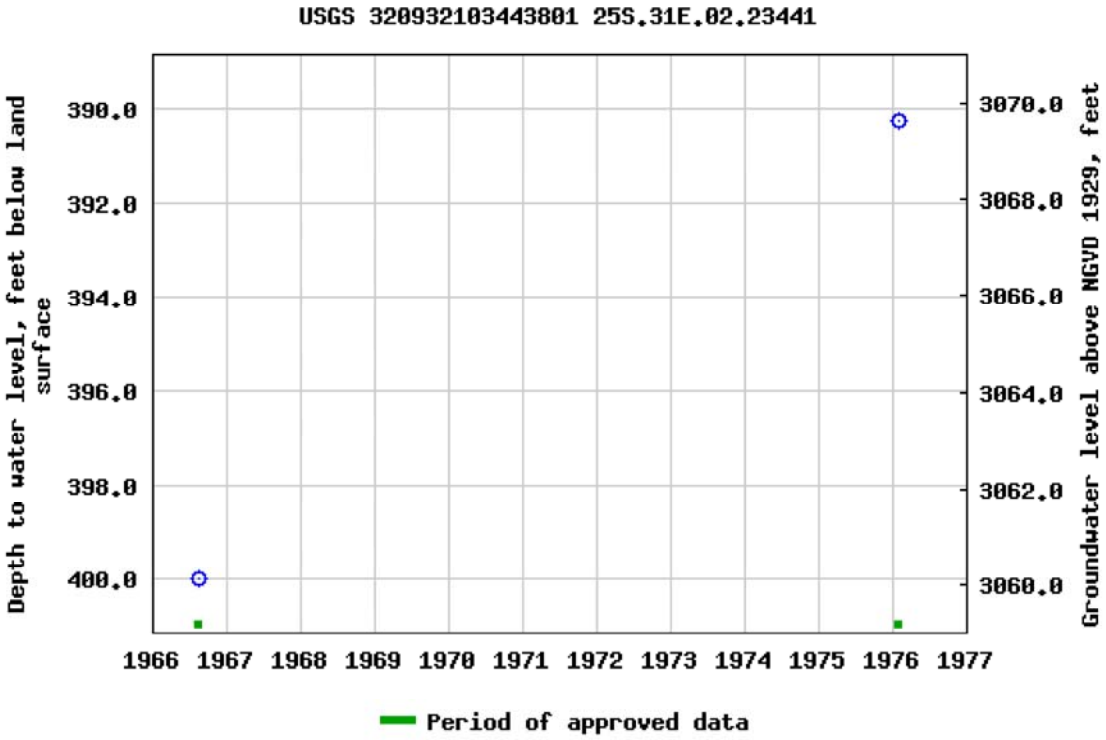
USGS 320932103443801 25S.31E.02.23441

Available data for this site Groundwater: Field measurements | GO

Eddy County, New Mexico
Hydrologic Unit Code 13070001
Latitude 32°09'37.4", Longitude 103°44'29.6" NAD83
Land-surface elevation 3,460.00 feet above NGVD29
The depth of the well is 1,016 feet below land surface.
This well is completed in the Rustler Formation (312RSLR) local aquifer.

Output formats

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



Breaks in the plot represent a gap of at least one year between field measurements.
Download a presentation-quality graph

Questions about sites/data?
Feedback on this web site
Automated retrievals
Help
Data Tips
Explanation of terms
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Title: Groundwater for USA: Water Levels
URL: https://nwis.waterdata.usgs.gov/nwis/gwlevels?

Page Contact Information: USGS Water Data Support Team
Page Last Modified: 2019-07-18 14:51:17 EDT
1.07 1.03 nadww01

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Groundwater levels for the Nation

Search Results -- 1 sites found

site_no list =

- 320952103444401

Minimum number of levels = 1

Save file of selected sites to local disk for future upload

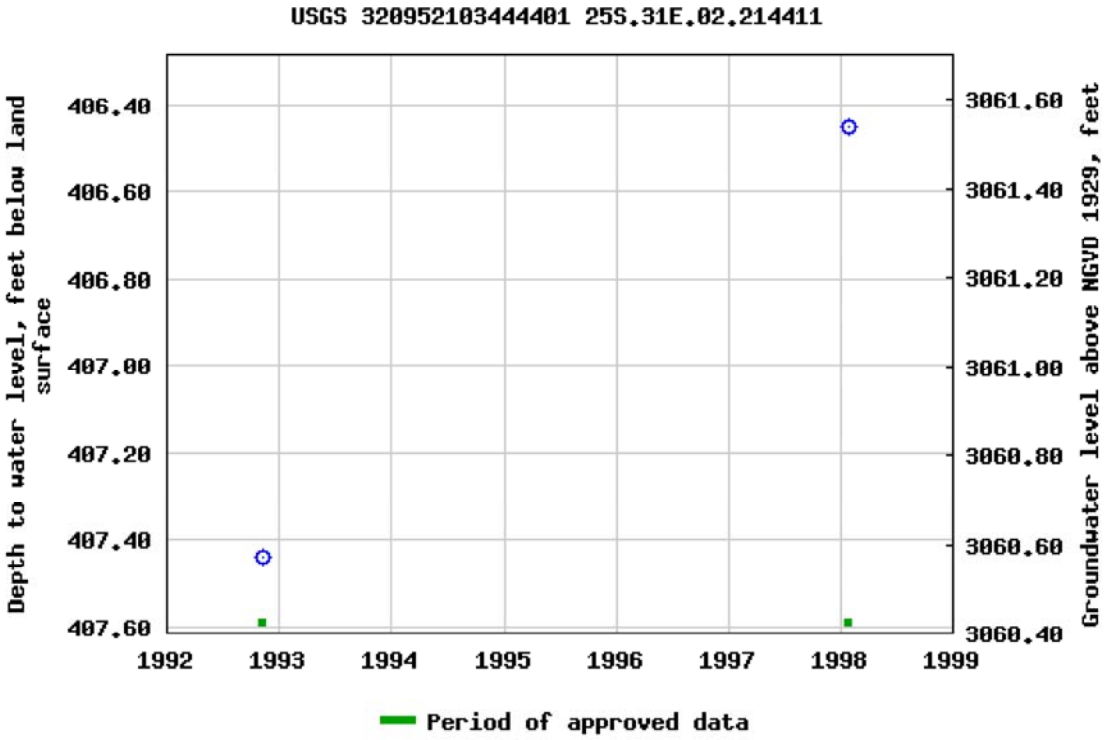
USGS 320952103444401 25S.31E.02.214411

Available data for this site Groundwater: Field measurements | GO

Eddy County, New Mexico
Hydrologic Unit Code 13070001
Latitude 32°09'50.0", Longitude 103°44'41.2" NAD83
Land-surface elevation 3,468.0 feet above NGVD29
This well is completed in the Azotea Tongue of Seven Rivers Formation (313AZOT) local aquifer.

Output formats

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



Breaks in the plot represent a gap of at least one year between field measurements.
Download a presentation-quality graph

Questions about sites/data?
Feedback on this web site
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Data Tips
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Title: Groundwater for USA: Water Levels
URL: https://nwis.waterdata.usgs.gov/nwis/gwlevels?

Page Contact Information: USGS Water Data Support Team
Page Last Modified: 2019-07-18 15:51:15 EDT
0.95 0.9 nadww01

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Groundwater levels for the Nation

Search Results -- 1 sites found

site_no list =

- 321034103465501

Minimum number of levels = 1

Save file of selected sites to local disk for future upload

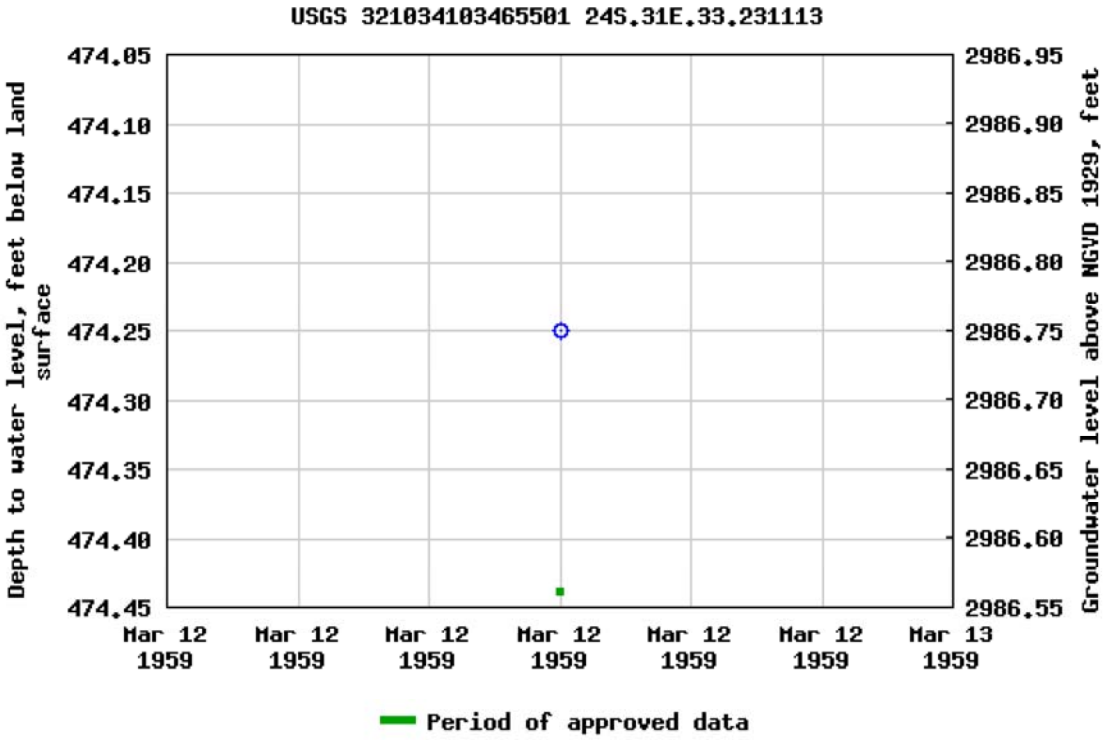
USGS 321034103465501 24S.31E.33.231113

Available data for this site Groundwater: Field measurements | GO

Eddy County, New Mexico
Hydrologic Unit Code 13070001
Latitude 32°10'38.2", Longitude 103°46'53.0" NAD83
Land-surface elevation 3,461.00 feet above NGVD29
The depth of the well is 740 feet below land surface.
This well is completed in the Rustler Formation (312RSLR) local aquifer.

Output formats

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



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

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

Page Contact Information: USGS Water Data Support Team
Page Last Modified: 2019-07-18 17:04:24 EDT
0.95 0.89 nadww01

Appendix C:
Laboratory Analytical Reports

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

November 13, 2019

Melodie Sanjari

Souder, Miller & Associates
201 S Halagueno
Carlsbad, NM 88221
TEL: (575) 689-8801
FAX

RE: 153 2RP3807 OrderNo.: 1911186

Dear Melodie Sanjari:

Hall Environmental Analysis Laboratory received 6 sample(s) on 11/6/2019 for the analyses presented in the following report.

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

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

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

Sincerely,

Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1911186**
Date Reported: **11/13/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: L1 Surf
Project: 153 2RP3807
Collection Date: 11/1/2019 11:45:00 AM
Lab ID: 1911186-001 **Matrix:** SOIL **Received Date:** 11/6/2019 9:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	ND	61		mg/Kg	20	11/11/2019 5:52:12 PM	48707
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	11/7/2019 11:20:48 PM	48631
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	11/7/2019 11:20:48 PM	48631
Surr: DNOP	79.1	70-130		%Rec	1	11/7/2019 11:20:48 PM	48631
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	11/7/2019 8:15:49 PM	48621
Surr: BFB	87.3	77.4-118		%Rec	1	11/7/2019 8:15:49 PM	48621
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.024		mg/Kg	1	11/7/2019 8:15:49 PM	48621
Toluene	ND	0.048		mg/Kg	1	11/7/2019 8:15:49 PM	48621
Ethylbenzene	ND	0.048		mg/Kg	1	11/7/2019 8:15:49 PM	48621
Xylenes, Total	ND	0.097		mg/Kg	1	11/7/2019 8:15:49 PM	48621
Surr: 4-Bromofluorobenzene	96.0	80-120		%Rec	1	11/7/2019 8:15:49 PM	48621

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

Qualifiers:

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

Analytical Report
Lab Order **1911186**
Date Reported: **11/13/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: L1 2'
Project: 153 2RP3807
Collection Date: 11/1/2019 11:55:00 AM
Lab ID: 1911186-002 **Matrix:** SOIL **Received Date:** 11/6/2019 9:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	93	60		mg/Kg	20	11/11/2019 6:04:32 PM	48707

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

Qualifiers:

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

Analytical Report
Lab Order **1911186**
Date Reported: **11/13/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: L2 Surf
Project: 153 2RP3807
Collection Date: 11/1/2019 12:00:00 PM
Lab ID: 1911186-003 **Matrix:** SOIL **Received Date:** 11/6/2019 9:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	6000	300		mg/Kg	100	11/12/2019 7:15:20 PM	48707
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **BRM**	
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	11/8/2019 8:06:36 AM	48647
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	11/8/2019 8:06:36 AM	48647
Surr: DNOP	95.7	70-130		%Rec	1	11/8/2019 8:06:36 AM	48647
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	11/7/2019 2:25:18 PM	48635
Surr: BFB	91.6	77.4-118		%Rec	1	11/7/2019 2:25:18 PM	48635
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.024		mg/Kg	1	11/7/2019 2:25:18 PM	48635
Toluene	ND	0.047		mg/Kg	1	11/7/2019 2:25:18 PM	48635
Ethylbenzene	ND	0.047		mg/Kg	1	11/7/2019 2:25:18 PM	48635
Xylenes, Total	ND	0.094		mg/Kg	1	11/7/2019 2:25:18 PM	48635
Surr: 4-Bromofluorobenzene	97.0	80-120		%Rec	1	11/7/2019 2:25:18 PM	48635

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

Qualifiers:

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

Analytical Report
Lab Order **1911186**
Date Reported: **11/13/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: L2 2'
Project: 153 2RP3807
Collection Date: 11/1/2019 12:10:00 PM
Lab ID: 1911186-004 **Matrix:** SOIL **Received Date:** 11/6/2019 9:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	2300	60		mg/Kg	20	11/12/2019 12:52:40 PM	48727

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

Qualifiers:

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

Analytical Report
Lab Order **1911186**
Date Reported: **11/13/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: L3 Surf
Project: 153 2RP3807
Collection Date: 11/1/2019 12:15:00 PM
Lab ID: 1911186-005 **Matrix:** SOIL **Received Date:** 11/6/2019 9:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst:	**MRA**
Chloride	ND	60		mg/Kg	20	11/12/2019 1:05:01 PM	48727
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst:	**BRM**
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	11/8/2019 8:33:35 AM	48647
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	11/8/2019 8:33:35 AM	48647
Surr: DNOP	106	70-130		%Rec	1	11/8/2019 8:33:35 AM	48647
EPA METHOD 8015D: GASOLINE RANGE						Analyst:	**NSB**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	11/7/2019 3:35:35 PM	48635
Surr: BFB	89.1	77.4-118		%Rec	1	11/7/2019 3:35:35 PM	48635
EPA METHOD 8021B: VOLATILES						Analyst:	**NSB**
Benzene	ND	0.025		mg/Kg	1	11/7/2019 3:35:35 PM	48635
Toluene	ND	0.050		mg/Kg	1	11/7/2019 3:35:35 PM	48635
Ethylbenzene	ND	0.050		mg/Kg	1	11/7/2019 3:35:35 PM	48635
Xylenes, Total	ND	0.10		mg/Kg	1	11/7/2019 3:35:35 PM	48635
Surr: 4-Bromofluorobenzene	96.9	80-120		%Rec	1	11/7/2019 3:35:35 PM	48635

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

Qualifiers:

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

Analytical Report
Lab Order **1911186**
Date Reported: **11/13/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: L3 2'
Project: 153 2RP3807
Collection Date: 11/1/2019 12:25:00 PM
Lab ID: 1911186-006 **Matrix:** SOIL **Received Date:** 11/6/2019 9:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	ND	60		mg/Kg	20	11/12/2019 2:06:44 PM	48727

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

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1911186**
13-Nov-19

Client: Souder, Miller & Associates
Project: 153 2RP3807

Sample ID: **MB-48707** SampType: **mblk** TestCode: **EPA Method 300.0: Anions**
Client ID: **PBS** Batch ID: **48707** RunNo: **64384**
Prep Date: **11/11/2019** Analysis Date: **11/11/2019** SeqNo: **2205115** Units: **mg/Kg**

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

Sample ID: **LCS-48707** SampType: **lcs** TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSS** Batch ID: **48707** RunNo: **64384**
Prep Date: **11/11/2019** Analysis Date: **11/11/2019** SeqNo: **2205116** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	96.3	90	110			

Sample ID: **MB-48727** SampType: **mblk** TestCode: **EPA Method 300.0: Anions**
Client ID: **PBS** Batch ID: **48727** RunNo: **64445**
Prep Date: **11/12/2019** Analysis Date: **11/12/2019** SeqNo: **2206183** Units: **mg/Kg**

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

Sample ID: **LCS-48727** SampType: **lcs** TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSS** Batch ID: **48727** RunNo: **64445**
Prep Date: **11/12/2019** Analysis Date: **11/12/2019** SeqNo: **2206184** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	95.0	90	110			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1911186**

13-Nov-19

Client: Souder, Miller & Associates

Project: 153 2RP3807

Sample ID: **MB-48631**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **48631**	RunNo: **64298**
Prep Date: **11/6/2019**	Analysis Date: **11/7/2019**	SeqNo: **2201887** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	12		10.00		116	70	130			

Sample ID: **1911186-003AMS**	SampType: **MS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **L2 Surf**	Batch ID: **48647**	RunNo: **64340**
Prep Date: **11/7/2019**	Analysis Date: **11/8/2019**	SeqNo: **2202262** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	44	8.8	43.78	3.602	93.1	57	142			
Surr: DNOP	4.5		4.378		102	70	130			

Sample ID: **1911186-003AMSD**	SampType: **MSD**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **L2 Surf**	Batch ID: **48647**	RunNo: **64340**
Prep Date: **11/7/2019**	Analysis Date: **11/8/2019**	SeqNo: **2202263** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	56	9.7	48.69	3.602	108	57	142	23.2	20	R
Surr: DNOP	5.9		4.869		122	70	130	0	0	

Sample ID: **LCS-48647**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **48647**	RunNo: **64340**
Prep Date: **11/7/2019**	Analysis Date: **11/8/2019**	SeqNo: **2202281** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	48	10	50.00	0	96.0	63.9	124			
Surr: DNOP	5.1		5.000		103	70	130			

Sample ID: **MB-48647**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **48647**	RunNo: **64340**
Prep Date: **11/7/2019**	Analysis Date: **11/8/2019**	SeqNo: **2202283** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	11		10.00		106	70	130			

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1911186**
13-Nov-19

Client: Souder, Miller & Associates
Project: 153 2RP3807

Sample ID: **LCS-48631**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **48631**	RunNo: **64331**
Prep Date: **11/6/2019**	Analysis Date: **11/8/2019**	SeqNo: **2202322** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	61	10	50.00	0	121	63.9	124			
Surr: DNOP	6.0		5.000		120	70	130			

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1911186**
13-Nov-19

Client: Souder, Miller & Associates
Project: 153 2RP3807

Sample ID: **MB-48621**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **48621**	RunNo: **64315**
Prep Date: **11/6/2019**	Analysis Date: **11/7/2019**	SeqNo: **2201272** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	960		1000		95.7	77.4	118			

Sample ID: **LCS-48621**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **48621**	RunNo: **64315**
Prep Date: **11/6/2019**	Analysis Date: **11/7/2019**	SeqNo: **2201273** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	22	5.0	25.00	0	87.1	80	120			
Surr: BFB	1100		1000		107	77.4	118			

Sample ID: **MB-48635**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **48635**	RunNo: **64314**
Prep Date: **11/6/2019**	Analysis Date: **11/7/2019**	SeqNo: **2201319** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	900		1000		90.4	77.4	118			

Sample ID: **LCS-48635**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **48635**	RunNo: **64314**
Prep Date: **11/6/2019**	Analysis Date: **11/7/2019**	SeqNo: **2201320** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	21	5.0	25.00	0	85.0	80	120			
Surr: BFB	1000		1000		101	77.4	118			

Sample ID: **1911186-003AMS**	SampType: **MS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **L2 Surf**	Batch ID: **48635**	RunNo: **64314**
Prep Date: **11/6/2019**	Analysis Date: **11/7/2019**	SeqNo: **2201322** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	21	4.6	22.87	0	89.8	69.1	142			
Surr: BFB	900		914.9		98.2	77.4	118			

Sample ID: **1911186-003AMSD**	SampType: **MSD**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **L2 Surf**	Batch ID: **48635**	RunNo: **64314**
Prep Date: **11/6/2019**	Analysis Date: **11/7/2019**	SeqNo: **2201323** Units: **mg/Kg**

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

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1911186**
13-Nov-19

Client: Souder, Miller & Associates
Project: 153 2RP3807

Sample ID: **1911186-003AMSD** SampType: **MSD** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **L2 Surf** Batch ID: **48635** RunNo: **64314**
Prep Date: **11/6/2019** Analysis Date: **11/7/2019** SeqNo: **2201323** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	22	4.8	24.15	0	90.6	69.1	142	6.25	20	
Surr: BFB	970		966.2		100	77.4	118	0	0	

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1911186**

13-Nov-19

Client: Souder, Miller & Associates

Project: 153 2RP3807

Sample ID: **MB-48621**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS**	Batch ID: **48621**	RunNo: **64315**
Prep Date: **11/6/2019**	Analysis Date: **11/7/2019**	SeqNo: **2201304** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.95		1.000		95.4	80	120			

Sample ID: **LCS-48621**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS**	Batch ID: **48621**	RunNo: **64315**
Prep Date: **11/6/2019**	Analysis Date: **11/7/2019**	SeqNo: **2201305** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.97	0.025	1.000	0	97.4	80	120			
Toluene	0.94	0.050	1.000	0	94.3	80	120			
Ethylbenzene	0.93	0.050	1.000	0	92.9	80	120			
Xylenes, Total	2.8	0.10	3.000	0	93.3	80	120			
Surr: 4-Bromofluorobenzene	0.98		1.000		98.4	80	120			

Sample ID: **MB-48635**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS**	Batch ID: **48635**	RunNo: **64314**
Prep Date: **11/6/2019**	Analysis Date: **11/7/2019**	SeqNo: **2201336** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.96		1.000		95.8	80	120			

Sample ID: **LCS-48635**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS**	Batch ID: **48635**	RunNo: **64314**
Prep Date: **11/6/2019**	Analysis Date: **11/7/2019**	SeqNo: **2201337** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.94	0.025	1.000	0	93.9	80	120			
Toluene	0.98	0.050	1.000	0	98.0	80	120			
Ethylbenzene	0.99	0.050	1.000	0	98.6	80	120			
Xylenes, Total	3.0	0.10	3.000	0	99.6	80	120			
Surr: 4-Bromofluorobenzene	1.0		1.000		103	80	120			

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1911186**
13-Nov-19

Client: Souder, Miller & Associates
Project: 153 2RP3807

Sample ID: **1911186-005AMS** SampType: **MS** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **L3 Surf** Batch ID: **48635** RunNo: **64314**
Prep Date: **11/6/2019** Analysis Date: **11/7/2019** SeqNo: **2201340** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.92	0.025	0.9950	0	92.2	76	123			
Toluene	0.99	0.050	0.9950	0.009861	98.9	80.3	127			
Ethylbenzene	1.0	0.050	0.9950	0	100	80.2	131			
Xylenes, Total	3.0	0.10	2.985	0.01534	101	78	133			
Surr: 4-Bromofluorobenzene	0.96		0.9950		96.7	80	120			

Sample ID: **1911186-005AMSD** SampType: **MSD** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **L3 Surf** Batch ID: **48635** RunNo: **64314**
Prep Date: **11/6/2019** Analysis Date: **11/7/2019** SeqNo: **2201341** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.93	0.025	0.9940	0	93.4	76	123	1.19	20	
Toluene	1.0	0.050	0.9940	0.009861	99.2	80.3	127	0.190	20	
Ethylbenzene	1.0	0.050	0.9940	0	101	80.2	131	1.07	20	
Xylenes, Total	3.0	0.099	2.982	0.01534	102	78	133	0.457	20	
Surr: 4-Bromofluorobenzene	0.97		0.9940		97.5	80	120	0	0	

Qualifiers:

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

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Sample Log-In Check List

Client Name: **SMA-CARLSBAD** Work Order Number: **1911186** RcptNo: **1**

Received By: **Yazmine Garduno** **11/6/2019 9:10:00 AM**

Completed By: **Erin Melendrez** **11/6/2019 10:25:47 AM**

Reviewed By: YG 11/6/19

Chain of Custody

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

Log In

3. Was an attempt made to cool the samples? Yes ☑ No ☐ NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C Yes ☑ No ☐ NA ☐
5. Sample(s) in proper container(s)? Yes ☑ No ☐
6. Sufficient sample volume for indicated test(s)? Yes ☑ No ☐
7. Are samples (except VOA and ONG) properly preserved? Yes ☑ No ☐
8. Was preservative added to bottles? Yes ☐ No ☑ NA ☐
9. VOA vials have zero headspace? Yes ☐ No ☐ No VOA Vials ☑
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: ENM 11/6/19

Special Handling (if applicable)

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

Person Notified: _____ Date: _____

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

Regarding: _____

Client Instructions: _____

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	4.2	Good	Yes			
2	6.0	Good	Yes			

Chain-of-Custody Record

Client: SMA - Carlsbad

Mailing Address:

Phone #:

email or Fax#:

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

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time:
☐ Standard ☑ Rush 5 day

Project Name:
153-2AP3807

Project #:

Project Manager:
Melodie Sanjari

Sampler: MJP

On Ice: ☑ Yes ☐ No

# of Coolers: 2

Cooler Temp(including CF): 4.3-0.1=4.2 / 6.1-0.1=6.0 (°C)

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

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 1911186	BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
11/1	11:45	Soil	L1 surf	4 oz		-001	✓	✓					✓			
11/1	11:55		L1-2'			-002							✓			
11/1	12:00		L2 surf			-003	✓	✓					✓			
11/1	12:10		L2-2'			-004							✓			
11/1	12:15		L3 surf			-005	✓	✓					✓			
11/1	12:25	↓	L3-2'	↓		-006							✓			

Date	Time	Relinquished by:	Received by:	Via:	Date	Time
11/5/19	1500				11/5/19	1500
11/5/19	1900			Courier	11/6/19	0910

Remarks:
Directbill mmx cc Lupe Carasco

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

Appendix D:
Electromagnetic Survey & Findings

VERTEX

October 25, 2019 Vertex Project #: 19E-03535

Devon Energy Corporation
6488 7 Rivers Highway
Artesia, New Mexico 88210

Attention: Amanda Davis

Re: Electromagnetic Survey Results and Interpretation for Cottonwood Draw Unit #153H

Ms. Davis,

Devon Energy Corporation (Devon) retained Vertex Resource Services Inc. (Vertex) to conduct an electromagnetic (EM) survey at Cottonwood Draw Unit #153H (hereafter referred to as the "site"). The site is located approximately 34 miles southeast of Carlsbad, New Mexico. Vertex personnel conducted the EM survey on October 8, 2019. This letter reviews the results of the EM survey at the site and discusses the apparent conductivity anomalies that were observed.

Method

The fixed-frequency EM method was used to map variations in ground conductivity to identify anomalously conductive soils and infer changes in the soil characteristics and composition. This method uses portable instrumentation consisting of a transmitter coil and a receiver coil. A primary magnetic field from the transmitter coil induces subsurface eddy currents, which in turn generate a secondary magnetic field that is intercepted by the receiver coil. The ratio of the primary and secondary magnetic fields is related to ground conductivity.

Ground conductivity is influenced by the following:

- Concentration of total dissolved solids (TDS) within the groundwater
- Type of substrate
- Soil grain size (fine-grained clay is more electrically conductive than coarse-grained material such as sand or gravel)
- Soil temperature (conductivity decreases as soil temperature approaches freezing)

Ground conductivity measurements were acquired using the Geonics EM31 Terrain Conductivity Meter. Data were collected continuously along transects spaced approximately 5 yards across the site. Data were logged using a Juniper Systems Archer2 Data Logger with an integrated global positioning system (GPS).

The effective depth of investigation for the EM31, as operated during this investigation, is approximately 16 feet. The conductivity values are not specific values from discrete depths; they are weighted averages of conductivity

between the surface and the depth of exploration of the EM field, and are termed 'apparent conductivities'. The apparent conductivity values obtained are in units of millisiemens per metre (mS/m).

Interpretation

The results of the EM31 survey are presented as an apparent conductivity contour map on Figure 1. Pertinent features and anomalies are identified and discussed in the table below.

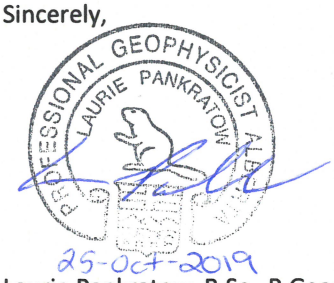
Anomaly	Conductivity Range (mS/m)	Description
A	25 – 50	Low conductivity regions (blue contours) possibly representative of background conditions.
B	90 – >200	Elevated conductivity region (yellow to red contours) at the north edge of the surveyed area. May be attributable to elevated TDS, elevated clay content and/or metal influence.
C	65 – 115	Elevated conductivity region (green to yellow contours) that may be attributable to elevated TDS, elevated clay content and/or metal influence.
D	70 – 95	Elevated conductivity region (green to yellow contours) at the north edge of the surveyed area. May be attributable to elevated TDS, elevated clay content and/or metal influence.
E	70 – 115	Elevated conductivity region (green to orange contours) in the northeast corner of the surveyed area. May be attributable to elevated TDS, elevated clay content and/or metal influence.
F	90 – >200	Elevated conductivity region (yellow to red contours) that may be attributable to metal influence, elevated TDS and/or metal influence.
G	Oscillating Values	Oscillating values coincident with a fence and surface infrastructure. May be attributable to metal influence.
H	95 – 150	Elevated conductivity region (yellow to red contours) in the northwest corner of the surveyed area. May be attributable to elevated TDS, elevated clay content and/or metal influence.
I-I' **J-J'**	Oscillating Values	Linear anomalies possibly attributable to subsurface metal influence.

If it is determined that the elevated conductivity anomalies are coincident with elevated chlorides, an electrical resistivity tomography (ERT) investigation is recommended to determine the vertical extent of the anomalies.

Any subsequent investigations should include areas of apparent background conductivity, as well as potentially impacted areas.

Should you have any questions or concerns, please do not hesitate to contact the undersigned at 587.316.1793 or lpankratow@vertex.ca.

Sincerely,



Laurie Pankratow, B.Sc., P.Geoph.
GEOPHYSICIST
APEGA PERMIT TO PRACTICE #10647

Attachments

Attachment 1. Figures

Limitations

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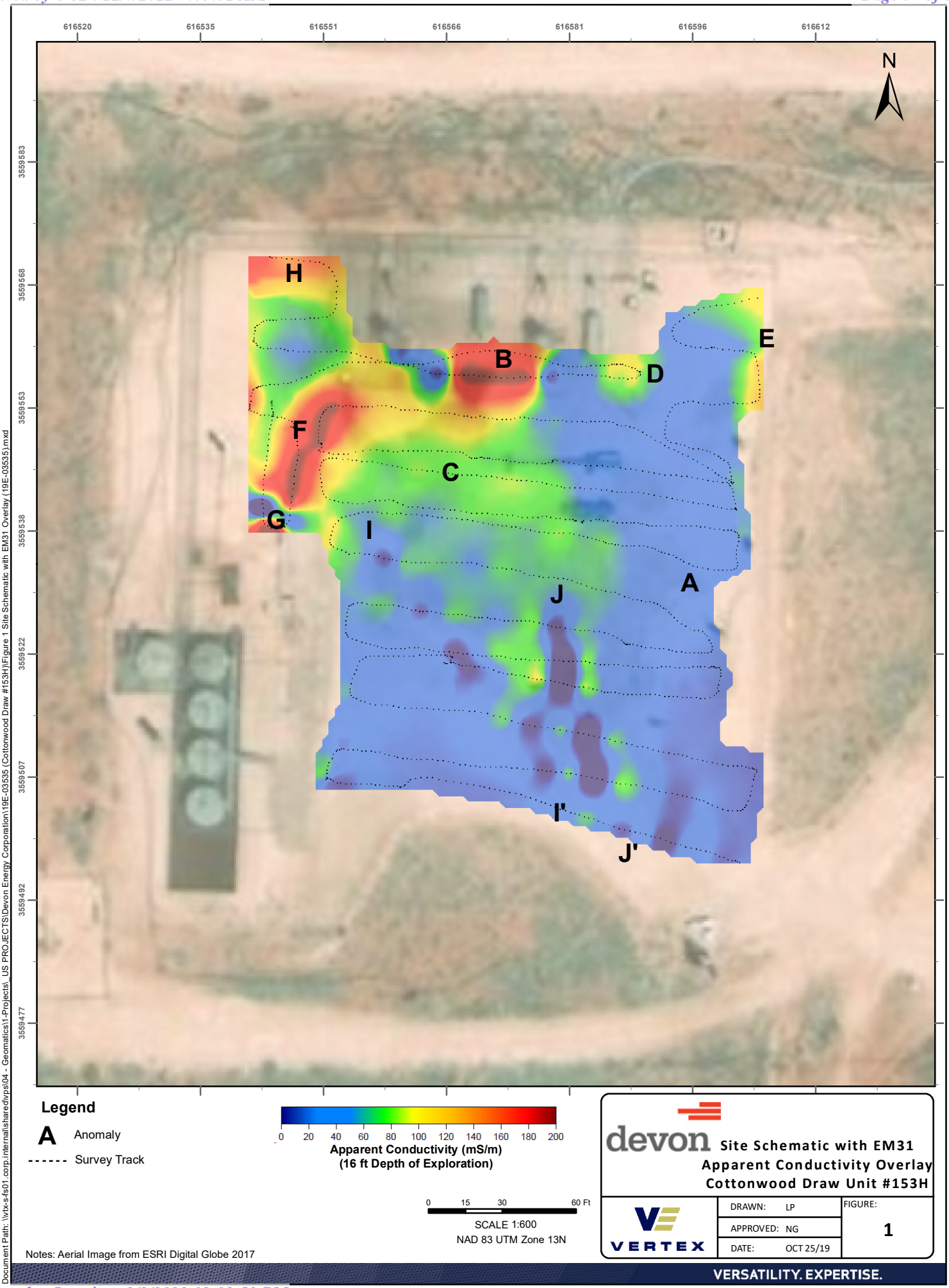
The information and conclusions contained in this report are based upon work undertaken by trained professional and technical staff in accordance with generally accepted scientific practices current at the time the work was performed. The conclusions and recommendations presented represent the best judgement 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



Legend

A Anomaly

------ Survey Track

0 20 40 60 80 100 120 140 160 180 200

Apparent Conductivity (mS/m)
(16 ft Depth of Exploration)

0 15 30 60 Ft

SCALE 1:600
NAD 83 UTM Zone 13N

Notes: Aerial Image from ESRI Digital Globe 2017

devon

Site Schematic with EM31 Apparent Conductivity Overlay Cottonwood Draw Unit #153H

VERTEX

DRAWN:	LP	FIGURE: 1
APPROVED:	NG	
DATE:	OCT 25/19	

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Document Path: \\vtx-s-fs01.corp.internal\sharedvps\04 - Geomatics\1-Projects_US PROJECTS\Devon Energy Corporation\19E-03535 (Cottonwood Draw #153H)\Figure 1 Site Schematic with EM31 Overlay (19E-03535).mxd

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 164675

CONDITIONS

Operator: DEVON ENERGY PRODUCTION COMPANY, LP 333 West Sheridan Ave. Oklahoma City, OK 73102	OGRID: 6137
	Action Number: 164675
	Action Type: [C-141] Release Corrective Action (C-141)

CONDITIONS

Created By	Condition	Condition Date
amaxwell	None	2/2/2023