Souder, Miller & Associates♦201 S. Halagueno St.♦Carlsbad, NM 88220
(575) 689-8801

November 9, 2018

NMOCD District 2
Ms. Maria Pruett
811 S. First St.
Artesia, NM 88210

SUBJECT: REMEDIATION CLOSURE REPORT FOR THE ICE DANCER 30 FEDERAL COM #002H RELEASE (2RP-4691 & 2RP-4752), EDDY COUNTY, NEW MEXICO

Dear Ms. Pruett

On behalf of Devon Energy Production Company, LP & XTO Energy, Souder, Miller & Associates (SMA) has prepared this REMEDIATION CLOSURE REPORT that describes the remediation of the release site located at the Ice Dancer 30 Federal Com #002H (Ice Dancer) site. The site is in UNIT O, SECTION 30, TOWNSHIP 23S, RANGE 30E, Eddy County, New Mexico, on Federal (BLM) land. Figure 1 illustrates the vicinity and location of the site.

Table 1, below, summarizes information regarding the release.

Table 1: Release Information and Closure Criteria	
Name	Ice Dancer 30 Federal Com #002H
Company	Devon Energy Production Company, LP
Incident Number	2RP-4691 & 2RP-4752
API Number	30-015-39473
Location	32.2698746, -103.9183502
Estimated Date of Release	3/19/2018 & 5/1/2018
Date Reported to NMOCD	3/19/2018 & 5/1/2018
Land Owner	Federal
Reported To	NMOCD District II & BLM
Source of Release	Third party damage to flowline
Released Material	Produced Water & Crude Oil
Released Volume	33 BBLS PW 1 BBL OIL 11 BBLS PW <1 BBL OIL
Recovered Volume	1 BBLs OIL 7 BBL PW <1 BBL OIL
Net Release	33 BBLs PW 4 BBLS PW
NMOCD Closure Criteria	51-100 feet to groundwater
SMA Response Dates	5/15/2018

1.0 Background

2RP-4691

On March 19, 2018, a release occurred on the right-of-way (ROW) leading from the Ice Dancer site due to a third-party contractor rupturing a poly flowline with a pickup hitch. Initial response activities were conducted by the operator, and included clamping the flowline until repairs could be made, and recovering approximately one (1) barrel of free standing fluid. The release affected approximately 750 square feet of pasture immediately south of the lease road and a portion of the lease road to the east.

2RP- 4752

On May 1, 2018, a release occurred on the same ROW leading from the Ice Dancer Site due to another third-party contractor rupturing a surface poly flowline. Initial response activities were again conducted by the operator which included repairing the line and recovering approximately 7 bbls of produced water and less than 1 bbl of oil. The release affected the same area in the pasture as the previous release immediately adjacent to the lease road.

Figure 1 illustrates the regional site vicinity and wellhead protection, Figure 2 illustrates the surface water protection and Figure 3 illustrates the site location. The initial C-141 form is included in Appendix A.

2.0 Site Information and Closure Criteria

The Ice Dancer 30 Federal Com 2H is located approximately 12 miles southeast of Loving, New Mexico on Federal (BLM) land.

As summarized in Table 2 and illustrated in Figure 1, depth to groundwater in the area is estimated to be 90 feet below grade surface (bgs). Although there are no known water sources within ½-mile of the location according to the New Mexico Office of the State Engineer (NMOSE) online water well database, current USGS well data, water level elevation contours, and NOAA vertical data transformation determined depth to groundwater for this location. The nearest surface water is a next order drainage feature into the Dog Town Draw located approximately 12,350 feet to the southwest.

Based on this information, the applicable NMOCD Closure Criteria for this site is for groundwater depth of between 51-100 feet bgs.

The attached Table 2 demonstrates the Closure Criteria justification for this location. Pertinent well data as well as a full groundwater investigation by Adkins Engineering is attached in Appendix B.

3.0 Release Characterization Activities

On May 15, 2018, SMA personnel arrived on site in response to the releases associated with the Ice Dancer Flowline.

SMA performed site delineation activities by collecting soil samples to characterize the affected areas. Soil samples were field-screened for chloride using an electrical conductivity (EC) meter. As indicated in Figure 3, the release areas are within a pipeline ROW shared with several underground pipelines. Because of safety and infrastructure concerns, a hydrovac was dispatched to spot lines and concurrently excavated contaminated soil from the release, as described below in Section 4.

4.0 Soil Remediation Summary

While the hydrovac was on site on May 15, 2018, SMA guided the excavation of contaminated soil by collecting soil samples for field screening for chloride using an EC meter.

Due to safety reasons and the presence of underground gas and SWD lines, excavation was completed with a hydrovac to the maximum extent safely possible, approximately 4 feet bgs. Discrete samples were collected from the bottom of the hydro excavation at 2 and 4 feet. The impacted area was excavated to an area approximately 75 feet by 9 feet bgs. Confirmation samples were comprised of sidewalls (West SW, Northwest SW, Southwest SW, Northeast SW, Southeast SW, East SW). Figure 3 demonstrates the extent of the excavation and sample locations and a photo of the open excavation can be found in Appendix C.

Contaminated soils were removed and replaced with clean backfill material to return the surface to previous contours. The contaminated soil was transported for proper disposal at an NMOCD permitted disposal facility. Sample locations are depicted on Figure 2. All laboratory results are summarized in Table 3. Laboratory reports are included in Appendix D.

A total of 8 sample locations (BH, 6 sidewalls, and L9) were investigated using a shovel and the hydrovac truck, to depths up to 4 feet bgs. A total of 10 samples were collected for laboratory analysis for total chloride using EPA Method 300.0 while 2 of the 10 were analyzed for benzene and total BTEX (benzene, toluene, ethylbenzene and total xylenes) using EPA Method 8021B; MRO, DRO, and GRO (motor, diesel and gasoline range organics, respectively) by EPA Method 8015D. Laboratory samples were placed into laboratory supplied glassware, labeled, and maintained on ice until delivery to Hall Environmental Analysis Laboratory in Albuquerque, New Mexico (Appendix D).

In addition to meeting the Closure Criteria, the top four (4) feet of impacted areas off the well pad meet the Reclamation requirement of 19.15.29.13(D)(1). Locations for all samples are depicted on Figure 2, and a summary of the laboratory results is displayed in Table 3. Results indicated that an area approximately 75 feet by 9 feet by 4 feet deep had been impacted.

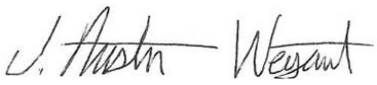
5.0 Scope and Limitations

The scope of our services consisted of the performance of assessment sampling, verification of release stabilization, regulatory liaison, remediation, and preparation of this closure report. All work has been performed in accordance with generally accepted professional environmental consulting practices for oil and gas releases in the Permian Basin in New Mexico.

If there are any questions regarding this report, please contact either Austin Weyant at 575-689-8801 or Shawna Chubbuck at 505-325-7535.

Submitted by:
SOUDER, MILLER & ASSOCIATES

Reviewed by:



Melodie Sanjari
Staff Scientist

Austin Weyant
Senior Scientist

ATTACHMENTS:

Figures:

Figure 1: Regional Vicinity and Well Head Protection Map
Figure 2: Surface Water Protection Location Map
Figure 3: Site and Sample Location Map

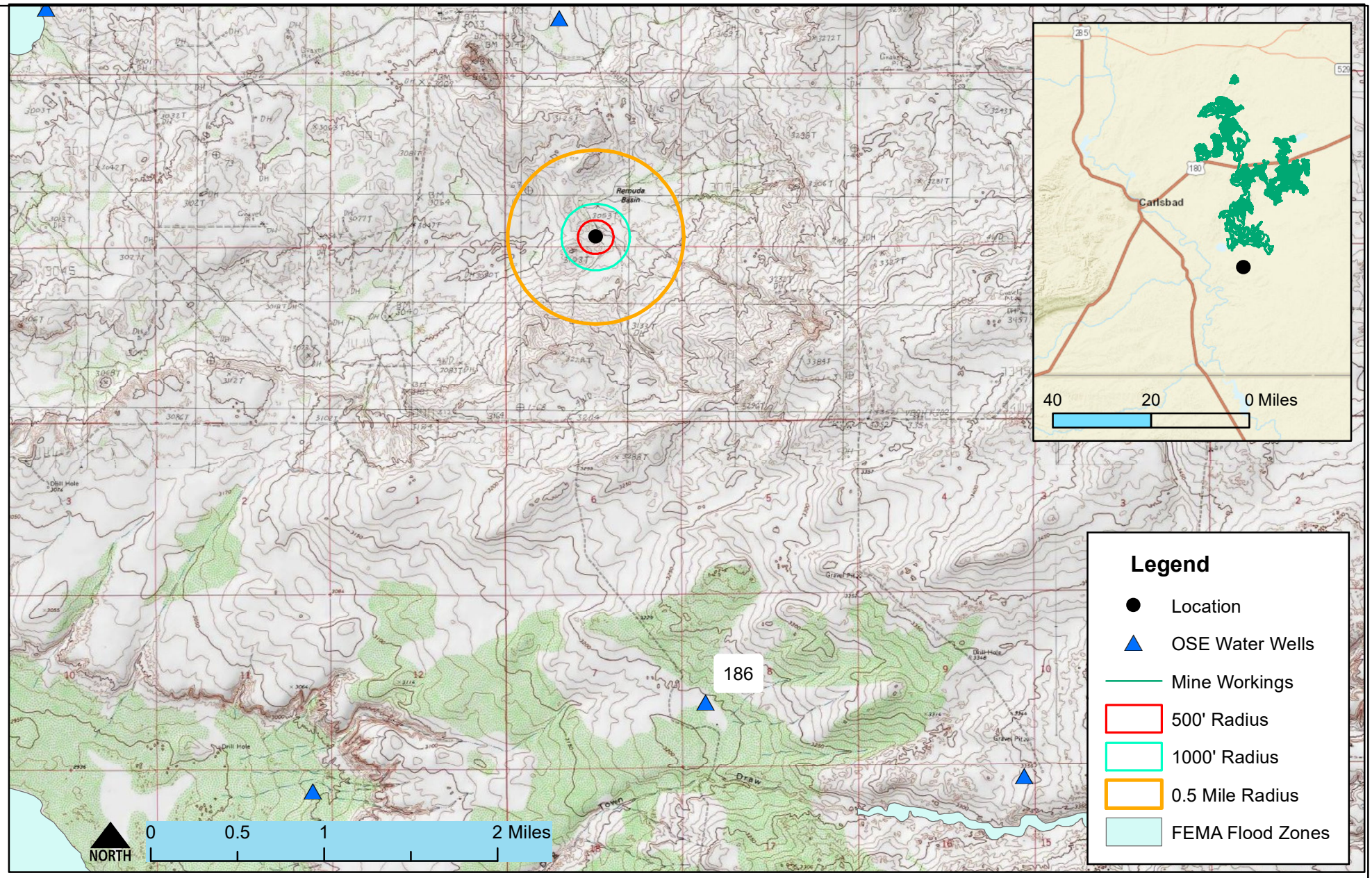
Tables:

Table 2: NMOCD Closure Criteria Justification
Table 3: Summary of Sample Results

Appendices:

Appendix A: Form C141 Initial and Final
Appendix B: Groundwater Report
Appendix C: Photo Log
Appendix D: Laboratory Analytical Report

FIGURES



Regional Site Vicinity & Wellhead Protection Map
Ice Dancer 30 Federal Com #002H - XTO
Eddy County, New Mexico

Figure 1

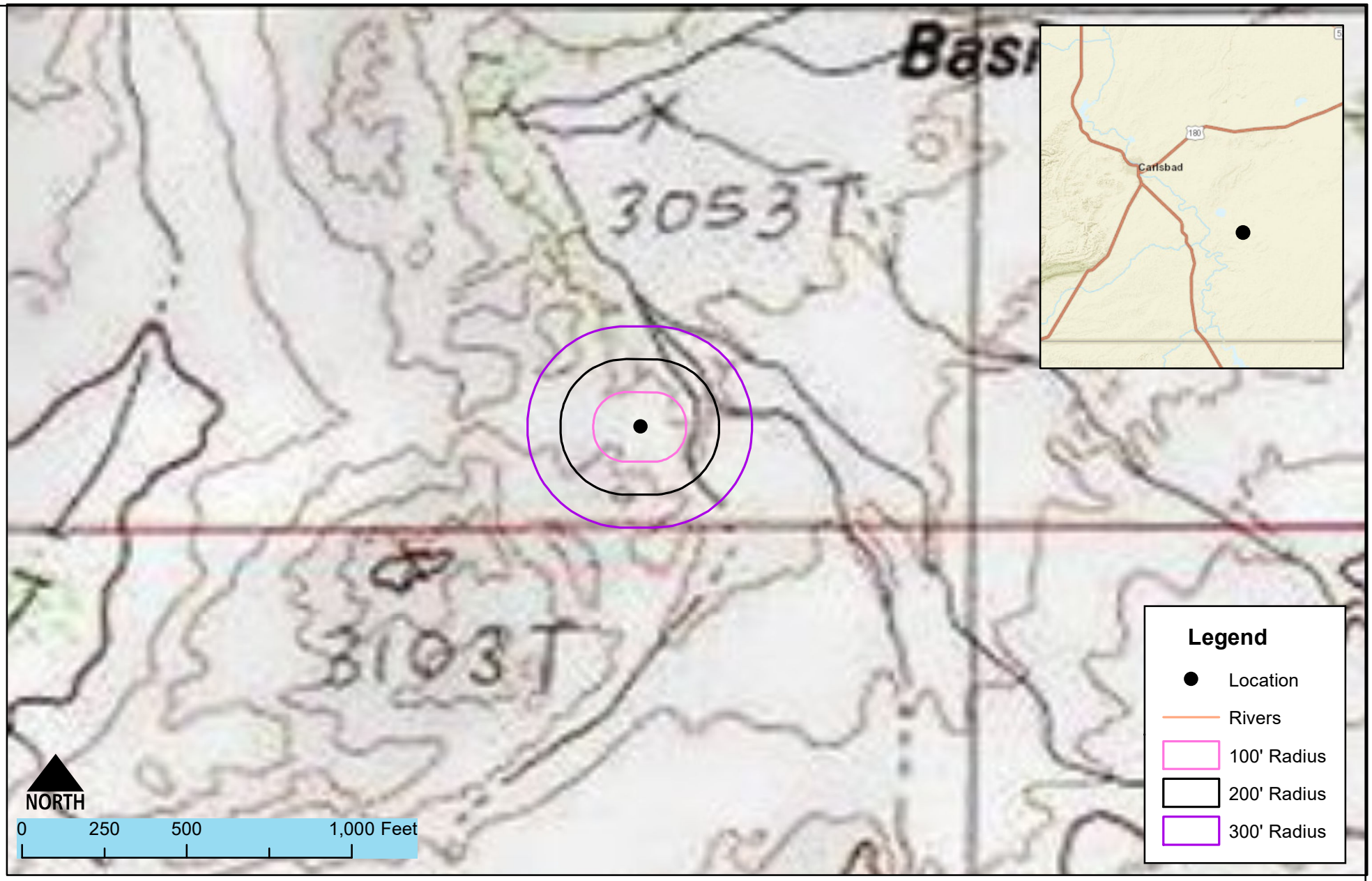
Revisions
By: Date: Descr:
By: Date: Descr:

Drawn Melodie Sanjari
Checked
Approved

201 South Halaguena Street
Carlsbad, New Mexico 88221
(575) 689-7040
www.soudermiller.com
Serving the Southwest & Rocky Mountains

Date Saved: 8/14/2018

Document: C:\Users\mrs\Documents\GISdata\Maps\Ice Dancer.mxd



Surface Water Map
Ice Dancer 30 Federal Com 2H
Eddy County, New Mexico

Figure 2

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

Drawn Melodie Sanjari
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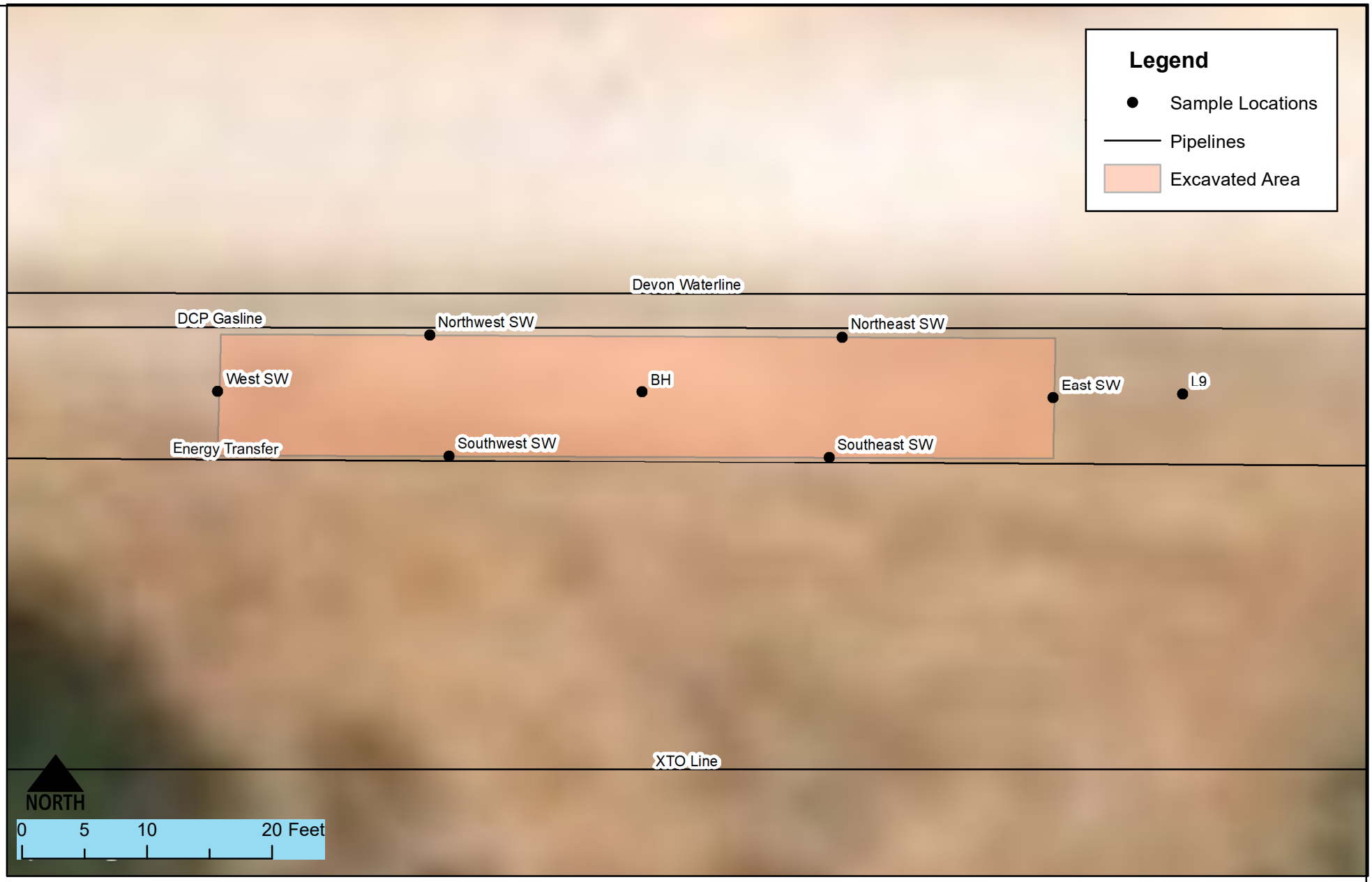
Document: C:\Users\mst\Documents\GISdata\Maps\Ice Dancer.mxd



Site & Sample Location Map
Ice Dancer 30 Federal Com 2H - XTO
Eddy County, New Mexico

Figure 3

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

Drawn Melodie Sanjari
Checked
Approved

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Date Saved: 8/14/2018

Document: C:\Users\mrs.SMA\Documents\GISdata\Maps\Ice Dancer.mxd

TABLES

Site Information (19.15.29.11.A(2, 3, and 4) NMAC)		Source/Notes
Depth to Groundwater (feet bgs)	Approx. 90	Adkins Engineering
Hortizontal Distance From All Water Sources Within 1/2 Mile (ft)	N/A	OSE
Hortizontal Distance to Nearest Significant Watercourse (ft)	12,350'	USGS 7.5 min. Topographic Map

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**
< 50' BGS		600	100		50	10
51' to 100'	X	10000	2500	1000	50	10
>100'		20000	2500	1000	50	10
Surface Water	**yes or no**	**if yes, then**				
<300' from continuously flowing watercourse or other significant watercourse?	no	600	100		50	10
<200' from lakebed, sinkhole or playa lake?	no					
Water Well or Water Source						
<500 feet from spring or a private, domestic fresh water well used by less than 5 households for domestic or stock watering purposes?	no					
<1000' from fresh water well or spring?	no					
Human and Other Areas						
<300' from an occupied permanent residence, school, hospital, institution or church?	no					
within incorporated municipal boundaries or within a defined municipal fresh water well field?	no					
<100' from wetland?	no					
within area overlying a subsurface mine	no					
within an unstable area?	no					
within a 100-year floodplain?	no					

Ice Dancer Sample Summary

Table 3

Sample Number on Figure 3	Sample Date	Depth (feet bgs)	Completed Action	BTEX mg/Kg	Benzene mg/Kg	GRO mg/Kg	DRO mg/Kg	MRO mg/Kg	**Total TPH** mg/Kg	Cl- Laboratory mg/Kg
NMOCD RRAL's Closure Critia				50 mg/Kg	10 mg/Kg				100 mg/Kg	600
BH	5/15/2018	surface	excavated	<0.21	<0.023	<4.7	28	<47	28	8700
	5/15/2018	2	excavated	--	--	--	--	--	--	6000
	5/15/2018	4	excavated	--	--	--	--	--	--	6600
West SW	5/15/2018	0-4	in-situ	--	--	--	--	--	--	71
East SW	5/15/2018	0-4	in-situ	--	--	--	--	--	--	<30
Southwest SW	5/15/2018	0-4	in-situ	--	--	--	--	--	--	370
Southeast SW	5/15/2018	0-4	in-situ	--	--	--	--	--	--	500
Northeast SW	5/15/2018	0-4	in-situ	--	--	--	--	--	--	<30
Northwest SW	5/15/2018	0-4	in-situ	--	--	--	--	--	--	<30
L9	5/15/2018	surface	in-situ	<0.216	<0.024	<4.8	<9.6	<48	<62.4	--
BG	5/15/2018	background	in-situ	--	--	--	--	--	--	110

"--" = Not Analyze

excavated

APPENDIX A
FORM C141 INITIAL AND FINAL

NM OIL CONSERVATION
ARTESIA DISTRICT

APR 03 2018

RECEIVED

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

Form C-141
Revised April 3, 2017

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

Release Notification and Corrective Action

nAB1809439206

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company: XTO Energy DEVON 6137	Contact: Amy Ruth
Address: 522 W. Mermod, Suite 704 Carlsbad, N.M. 88220	Telephone No: 575-689-3380
Facility Name: Devon Ice Dancer 30 Federal Com 2H	Facility Type: Exploration and Production

Surface Owner: Federal	Mineral Owner: Federal	API No: 30-015-39473

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
O	30	23S	30E	270	South	2640	East	Eddy

Latitude 32.269294° **Longitude** -103.920730° NAD83

NATURE OF RELEASE

Type of Release: Produced Water and Crude Oil	Volume of Release: 34 bbls 33 PW 1 oil	Volume Recovered: 1 bbl Oil
Source of Release: Third party damage to flowline by Terra contractor	Date and Hour of Occurrence: 3/19/2018 3 pm	Date and Hour of Discovery: 3/19/2018 3 pm
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? Mike Bratcher/Crystal Weaver (NMOCD), Shelly Tucker/Jim Amos (BLM)	
By Whom? Kyle Littrell	Date and Hour: 3/20/2018 4:56 pm by phone and email	
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.*
Terra contractor ruptured poly flow line with pickup hitch when crossing line, causing a leak. Flow line was clamped until repairs could be made.

Describe Area Affected and Cleanup Action Taken.*
The release affected approximately 750 square feet of pasture immediately south of the lease road and 140 square feet of lease road to the east. Free standing fluids were recovered. An environmental contract company was retained to assist with delineation and remediation efforts.

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:

Printed Name: Amy Ruth

Title: Environmental Coordinator

E-mail Address: Amy_Ruth@xtoenergy.com

Date: 4/3/2018 Phone: 575-689-3380

OIL CONSERVATION DIVISION

Approved by Environmental Specialist: Signed By Mike Bratcher

Approval Date: 4/4/18 Expiration Date: N/A

Conditions of Approval: See Attached

Attached ☐ 2RP-4691

* Attach Additional Sheets If Necessary

Operator/Responsible Party,

The OCD has received the form C-141 you provided on 4/3/2018 regarding an unauthorized release. The information contained on that form has been entered into our incident database and remediation case number 2RP-4691 has been assigned. **Please refer to this case number in all future correspondence.**

It is the Division's obligation under both the Oil & Gas Act and Water Quality Act to provide for the protection of public health and the environment. Our regulations (19.15.29.11 NMAC) state the following,

> *The responsible person shall complete division-approved corrective action for releases that endanger public health or the environment. The responsible person shall address releases in accordance with a remediation plan submitted to and approved by the division or with an abatement plan submitted in accordance with 19.15.30 NMAC.* [emphasis added]

Release characterization is the first phase of corrective action unless the release is ongoing or is of limited volume and all impacts can be immediately addressed. Proper and cost-effective remediation typically cannot occur without adequate characterization of the impacts of any release. Furthermore, the Division has the ability to impose reasonable conditions upon the efforts it oversees. **As such, the Division is requiring a workplan for the characterization of impacts associated with this release be submitted to the OCD District 2 office in ARTESIA on or before 5/3/2018. If and when the release characterization workplan is approved, there will be an associated deadline for submittal of the resultant investigation report. Modest extensions of time to these deadlines may be granted, but only with acceptable justification.**

The goals of a characterization effort are: 1) determination of the lateral and vertical extents along with the magnitude of soil contamination. 2) determine if groundwater or surface waters have been impacted. 3) If groundwater or surface waters have been impacted, what are the extents and magnitude of that impact. 4) The characterization of any other adverse impacts that may have occurred (examples: impacts on vegetation, impacts on wildlife, air quality, loss of use of property, etc.). To meet these goals as quickly as possible, the following items must, at a minimum, be addressed in the release characterization workplan and subsequent reporting:

- Horizontal delineation of soil impacts in each of the four cardinal compass directions. Adsorbed soil contamination must be characterized for the following constituents using the associated laboratory methods: benzene, toluene, ethylbenzene, and total xylenes by either Method 8260 or 8021, total petroleum hydrocarbons by Method 8015 extended range (GRO+DRO+MRO; C_6 thru C_{36}), and for chloride by Method 300. This is not an exclusive list of potential contaminants. Analyzed parameters should be modified based on the nature of the released substance(s). Soil sampling must be both within the impacted area and beyond.

- Vertical delineation of soil impacts. Adsorbed soil contamination must be characterized for the following constituents using the associated laboratory methods: benzene, toluene, ethylbenzene, and total xylenes by either Method 8260 or 8021, total petroleum hydrocarbons by Method 8015 extended range (GRO+DRO+MRO; C_6 thru C_{36}), and for chloride by Method 300. As above, this is not an exclusive list of potential contaminants and can be modified. Vertical characterization samples should be taken at depth intervals no greater than five feet apart. Lithologic description of encountered soils must also be provided. At least ten vertical feet of soils with contaminant concentrations at or below these values must be demonstrated as existing above the water table.

- Nominal detection limits for field and laboratory analyses must be provided.

- Composite sampling is not generally allowed.

- Field screening and assessment techniques are acceptable (headspace, titration, EC [include algorithm for validation purposes], EM, etc.), but the sampling and assay procedures must be clearly defined. Copies of field notes are highly desirable. A statistically significant set of split samples must be submitted for confirmatory laboratory analysis, including the laterally farthest and vertically deepest sets of soil samples. Make sure there are at least two soil samples submitted

for laboratory analysis from each borehole or test pit (highest observed contamination and deepest depth investigated). Copies of the actual laboratory results must be provided including chain of custody documentation.

•Probable depth to shallowest protectable groundwater and lateral distance to nearest surface water. If there is an estimate of groundwater depth, the information used to arrive at that estimate must be provided. If there is a reasonable assumption that the depth to protectable water is 50 feet or less, the responsible party should anticipate the need for at least one groundwater monitoring well to be installed in the area of likely maximum contamination.

• If groundwater contamination is encountered, an additional investigation workplan may be required to determine the extents of that contamination. Groundwater and/or surface water samples, if any, must be analyzed by a competent laboratory for volatile organic hydrocarbons (typically Method 8260 full list), total dissolved solids, pH, major anions and cations including chloride and sulfate, dissolved iron, and dissolved manganese. The investigation workplan must provide the groundwater sampling method(s) and sample handling protocols. To the fullest extent possible, aqueous analyses must be undertaken using nominal method detection limits. As with the soil analyses, copies of the actual laboratory results must be provided including chain of custody documentation.

• Accurately scaled and well-drafted site maps must be provided providing the location of borings, test pits, monitoring wells, potentially impacted areas, and significant surface features including roads and site infrastructure that might limit either the release characterization or remedial efforts. Field sketches may be included in subsequent reporting, but should not be considered stand-alone documentation of the site's layout. Digital photographic documentation of the location and fieldwork is recommended, especially if unusual circumstances are encountered.

Nothing herein should be interpreted to preclude emergency response actions or to imply immediate remediation by removal cannot proceed as warranted. Nonetheless, characterization of impacts and confirmation of the effectiveness of remedial efforts must still be provided to the OCD before any release incident will be closed.

Jim Griswold
OCD Environmental Bureau Chief
1220 South St. Francis Drive
Santa Fe, New Mexico 87505
505-476-3465
jim.griswold@state.nm.us

Bratcher, Mike, EMNRD

From: Ruth, Amy <Amy_Ruth@xtoenergy.com>
Sent: Tuesday, April 3, 2018 3:42 PM
To: Bratcher, Mike, EMNRD; Weaver, Crystal, EMNRD; Tucker, Shelly; Jim Amos
Cc: Littrell, Kyle; Sanders, Toady; Foust, Bryan; McSpadden, Wes; Reichling, Elizabeth
Subject: Initial C-141 - Devon Ice Dancer 30 Fed Com 2H 3-19-18
Attachments: Initial C-141 - Devon Ice Dancer 30 Fed Com 2H 3-19-18.pdf

Good Afternoon,

Attached is the initial C-141 detailing the release for which XTO submitted initial notification via phone and email on March 20, 2018. Please contact us with questions or concerns any time. Thanks for your help and feedback.

Respectfully,

Amy C. Ruth
Delaware Basin Division
Environmental Coordinator
3104 E. Greene Street | Carlsbad, NM 88220 | M: 432.661.0571 | O: 575.689.3380

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: XTO Energy/Devon	OGRID 6137
Contact Name: Amy Ruth	Contact Telephone: 575-689-3380
Contact email: Amy_Ruth@xtoenergy.com	Incident # *(assigned by OCD); 2RP-4691*
Contact mailing address: 522 W. Mermod, Suite 704 Carlsbad NM 88220	

Location of Release Source

Latitude 32.269294 Longitude -103.920730
(NAD 83 in decimal degrees to 5 decimal places)

Site Name: Devon Ice Dancer 30 Federal Com 2H	Site Type: Exploration/Production
Date Release Discovered; 3/9/2018	API# *(if applicable) 30-015-39473*

Unit Letter	Section	Township	Range	County
O	30	23S	30E	Eddy

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

Nature and Volume of Release

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

☒ Crude Oil	Volume Released (bbls) 1	Volume Recovered (bbls) 1
☒ Produced Water	Volume Released (bbls) 34	Volume Recovered (bbls) 0
	Is the concentration of dissolved chloride in the produced water >10,000 mg/l?	☒ Yes ☐ No
☐ Condensate	Volume Released (bbls)	Volume Recovered (bbls)
☐ Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
☐ Other (describe)	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)
Cause of Release		

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

Was this a major release as defined by 19.15.29.7(A) NMAC? ☒ Yes ☐ No	If YES, for what reason(s) does the responsible party consider this a major release? >25 bbls
If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)? Yes, by Kyle Littrell to NMOCD and BLM on 3/20/2018 by phone and email	

Initial Response

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

☒ The source of the release has been stopped.

☒ The impacted area has been secured to protect human health and the environment.

☒ Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices.

☒ All free liquids and recoverable materials have been removed and managed appropriately.

If all the actions described above have not been undertaken, explain why:

Per 19.15.29.8 B. (4) NMAC the responsible party may commence remediation immediately after discovery of a release. If remediation has begun, please attach a narrative of actions to date. If remedial efforts have been successfully completed or if the release occurred within a lined containment area (see 19.15.29.11(A)(5)(a) NMAC), please attach all information needed for closure evaluation.

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

Printed Name: Kyle Littrell Title: EHS Coordinator

Signature: Date: 11-9-18

email: Kyle_Littrell@xtoenergy.com Telephone: 432 221 7331

OCD Only

Received by: Date:

Incident ID	
District RP	
Facility ID	
Application ID	

Site Assessment/Characterization

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

What is the shallowest depth to groundwater beneath the area affected by the release?	90 (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.

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

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

Printed Name: Kyle Littrell Title: EHS Coordinator

Signature: Date: 11-9-18

email: kyle_littrell@xtoenergy.com Telephone: 432 221 7331

OCD Only

Received by: Date:

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

Closure

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

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

☒ 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: Kyle Littrell Title: EHS Coordinator

Signature: Date: 11-9-18

email: kyle-littrell@xtoenergy.com Telephone: 432 221 7331

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:

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

MAY 15 2018
DISTRICT II-ARTESIA O.C.D.

Form C-141
Revised April 3, 2017

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

Release Notification and Corrective Action

NAB1813754884

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company: XTO Energy (6137 Devon)	Contact: Amy C. Ruth
Address: 3104 E. Greene St., Carlsbad, N.M. 88220	Telephone No: 575-689-3380
Facility Name: Devon Ice Dancer 30 Federal Com 2H	Facility Type: Exploration and Production

Surface Owner: Federal	Mineral Owner: Federal	API No: 30-015-39473

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
O	30	23S	30E	230	South	2515	East	Eddy

Latitude 32.269178° **Longitude** -103.92033° NAD83

NATURE OF RELEASE

Type of Release: Produced Water with Crude Oil	Volume of Release: 11 BPW, <1 BO	Volume Recovered: 7 BPW, <1 BO
Source of Release: Third party damage to Flow Line	Date and Hour of Occurrence: 5/1/2018 8 am	Date and Hour of Discovery: 5/1/2018 8 am
Was Immediate Notice Given? ☐ Yes ☐ No ☒ Not Required	If YES, To Whom? N/A	
By Whom? N/A	Date and Hour: N/A	
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.*
Road maintenance crew struck a Devon surface poly flow line. Line was repaired.

Describe Area Affected and Cleanup Action Taken.*
The release affected the lease road and pasture soils immediately adjacent to the lease road. Standing fluids were recovered. Maintenance contractor has retained an environmental company to assist with remediation efforts.

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:

Printed Name: Amy C. Ruth

Title: Environmental Coordinator

E-mail Address: Amy_Ruth@xtoenergy.com

Date: 5/15/2018 Phone: 575-689-3380

OIL CONSERVATION DIVISION

Signed By

Approved by Environmental Specialist:

Approval Date: 5/16/18 Expiration Date: N/A

Conditions of Approval: See attached

Attached ☐ ARP-4752

* Attach Additional Sheets If Necessary

Operator/Responsible Party,

The OCD has received the form C-141 you provided on 5/15/2018 regarding an unauthorized release. The information contained on that form has been entered into our incident database and remediation case number 2RP-4752 has been assigned. **Please refer to this case number in all future correspondence.**

It is the Division's obligation under both the Oil & Gas Act and Water Quality Act to provide for the protection of public health and the environment. Our regulations (19.15.29.11 NMAC) state the following,

> *The responsible person shall complete division-approved corrective action for releases that endanger public health or the environment. The responsible person shall address releases in accordance with a remediation plan submitted to and approved by the division or with an abatement plan submitted in accordance with 19.15.30 NMAC.* [emphasis added]

Release characterization is the first phase of corrective action unless the release is ongoing or is of limited volume and all impacts can be immediately addressed. Proper and cost-effective remediation typically cannot occur without adequate characterization of the impacts of any release. Furthermore, the Division has the ability to impose reasonable conditions upon the efforts it oversees. **As such, the Division is requiring a workplan for the characterization of impacts associated with this release be submitted to the OCD District 2 office in ARTESIA on or before 6/15/2018. If and when the release characterization workplan is approved, there will be an associated deadline for submittal of the resultant investigation report. Modest extensions of time to these deadlines may be granted, but only with acceptable justification.**

The goals of a characterization effort are: 1) determination of the lateral and vertical extents along with the magnitude of soil contamination. 2) determine if groundwater or surface waters have been impacted. 3) If groundwater or surface waters have been impacted, what are the extents and magnitude of that impact. 4) The characterization of any other adverse impacts that may have occurred (examples: impacts on vegetation, impacts on wildlife, air quality, loss of use of property, etc.). To meet these goals as quickly as possible, the following items must, at a minimum, be addressed in the release characterization workplan and subsequent reporting:

- Horizontal delineation of soil impacts in each of the four cardinal compass directions. Adsorbed soil contamination must be characterized for the following constituents using the associated laboratory methods: benzene, toluene, ethylbenzene, and total xylenes by either Method 8260 or 8021, total petroleum hydrocarbons by Method 8015 extended range (GRO+DRO+MRO; C_6 thru C_{36}), and for chloride by Method 300. This is not an exclusive list of potential contaminants. Analyzed parameters should be modified based on the nature of the released substance(s). Soil sampling must be both within the impacted area and beyond.

- Vertical delineation of soil impacts. Adsorbed soil contamination must be characterized for the following constituents using the associated laboratory methods: benzene, toluene, ethylbenzene, and total xylenes by either Method 8260 or 8021, total petroleum hydrocarbons by Method 8015 extended range (GRO+DRO+MRO; C_6 thru C_{36}), and for chloride by Method 300. As above, this is not an exclusive list of potential contaminants and can be modified. Vertical characterization samples should be taken at depth intervals no greater than five feet apart. Lithologic description of encountered soils must also be provided. At least ten vertical feet of soils with contaminant concentrations at or below these values must be demonstrated as existing above the water table.

- Nominal detection limits for field and laboratory analyses must be provided.

- Composite sampling is not generally allowed.

- Field screening and assessment techniques are acceptable (headspace, titration, EC [include algorithm for validation purposes], EM, etc.), but the sampling and assay procedures must be clearly defined. Copies of field notes are highly desirable. A statistically significant set of split samples must be submitted for confirmatory laboratory analysis, including the laterally farthest and vertically deepest sets of soil samples. Make sure there are at least two soil samples submitted

for laboratory analysis from each borehole or test pit (highest observed contamination and deepest depth investigated). Copies of the actual laboratory results must be provided including chain of custody documentation.

•Probable depth to shallowest protectable groundwater and lateral distance to nearest surface water. If there is an estimate of groundwater depth, the information used to arrive at that estimate must be provided. If there is a reasonable assumption that the depth to protectable water is 50 feet or less, the responsible party should anticipate the need for at least one groundwater monitoring well to be installed in the area of likely maximum contamination.

• If groundwater contamination is encountered, an additional investigation workplan may be required to determine the extents of that contamination. Groundwater and/or surface water samples, if any, must be analyzed by a competent laboratory for volatile organic hydrocarbons (typically Method 8260 full list), total dissolved solids, pH, major anions and cations including chloride and sulfate, dissolved iron, and dissolved manganese. The investigation workplan must provide the groundwater sampling method(s) and sample handling protocols. To the fullest extent possible, aqueous analyses must be undertaken using nominal method detection limits. As with the soil analyses, copies of the actual laboratory results must be provided including chain of custody documentation.

• Accurately scaled and well-drafted site maps must be provided providing the location of borings, test pits, monitoring wells, potentially impacted areas, and significant surface features including roads and site infrastructure that might limit either the release characterization or remedial efforts. Field sketches may be included in subsequent reporting, but should not be considered stand-alone documentation of the site's layout. Digital photographic documentation of the location and fieldwork is recommended, especially if unusual circumstances are encountered.

Nothing herein should be interpreted to preclude emergency response actions or to imply immediate remediation by removal cannot proceed as warranted. Nonetheless, characterization of impacts and confirmation of the effectiveness of remedial efforts must still be provided to the OCD before any release incident will be closed.

Jim Griswold
OCD Environmental Bureau Chief
1220 South St. Francis Drive
Santa Fe, New Mexico 87505
505-476-3465
jim.griswold@state.nm.us

Bratcher, Mike, EMNRD

From: Ruth, Amy <Amy_Ruth@xtoenergy.com>
Sent: Tuesday, May 15, 2018 4:05 PM
To: Bratcher, Mike, EMNRD; Weaver, Crystal, EMNRD; Tucker, Shelly; Jim Amos
Cc: Littrell, Kyle; Sanders, Toady; McSpadden, Wes; Foust, Bryan
Subject: RE: Initial C-141 - Devon Ice Dancer 30 Fed Com 2H 5-1-18 (API 30-015-39473)
Attachments: Initial C-141 - Devon Ice Dancer 30 Fed Com 2H 5-1-18.pdf

Good Afternoon,

Please find attached the initial C-141 detailing the accidental release from the referenced facility. If you have questions, feel free to call anytime, and have a good evening.

Respectfully,

Amy C. Ruth
Delaware Basin Division
Environmental Coordinator
3104 E. Greene Street | Carlsbad, NM 88220 | M: 432.661.0571 | O: 575.689.3380

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: XTO Energy/Devon	OGRID 6137
Contact Name: Amy Ruth	Contact Telephone: 575-689-3380
Contact email: Amy_Ruth@xtoenergy.com	Incident # *(assigned by OCD); 2RP-4752*
Contact mailing address: 522 W. Mermod, Suite 704 Carlsbad NM 88220	

Location of Release Source

Latitude 32.269294 Longitude -103.920730
(NAD 83 in decimal degrees to 5 decimal places)

Site Name: Devon Ice Dancer 30 Federal Com 2H	Site Type: Exploration/Production
Date Release Discovered; 5/1/2018	API# *(if applicable) 30-015-39473*

Unit Letter	Section	Township	Range	County
O	30	23S	30E	Eddy

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

Nature and Volume of Release

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

☒ Crude Oil	Volume Released (bbls) <1	Volume Recovered (bbls) <1
☒ Produced Water	Volume Released (bbls) 11	Volume Recovered (bbls) 7
	Is the concentration of dissolved chloride in the produced water >10,000 mg/l?	☒ Yes ☐ No
☐ Condensate	Volume Released (bbls)	Volume Recovered (bbls)
☐ Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
☐ Other (describe)	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)
Cause of Release		

Form C-141
Page 2

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

Was this a major release as defined by 19.15.29.7(A) NMAC? ☐ Yes ☒ No	If YES, for what reason(s) does the responsible party consider this a major release? <25 bbls
If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)? Not required	

Initial Response

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

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

If all the actions described above have not been undertaken, explain why:

Per 19.15.29.8 B. (4) NMAC the responsible party may commence remediation immediately after discovery of a release. If remediation has begun, please attach a narrative of actions to date. If remedial efforts have been successfully completed or if the release occurred within a lined containment area (see 19.15.29.11(A)(5)(a) NMAC), please attach all information needed for closure evaluation.

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

Printed Name: Kyle Littrell Title: EHS Coordinator

Signature: [signature] Date: 11-9-18

email: Kyle_littrell@xtoenergy.com Telephone: 432 221 7331

OCD Only

Received by: Date:

Form C-141
Page 3

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

Site Assessment/Characterization

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

What is the shallowest depth to groundwater beneath the area affected by the release?	90 (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	
District RP	
Facility ID	
Application ID	

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Printed Name: Kyle Littrell Title: EHS Coordinator

Signature: Date: 11-9-18

email: kyle_littrell@xtoenergy.com Telephone: 432 221 7331

OCD Only

Received by: Date:

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

Closure

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

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

☒ 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: Kyle Littrell Title: EHS Coordinator

Signature: Date: 11-9-18

email: Kyle-Littrell@xtoenergy.com Telephone: 432 221 7331

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:

APPENDIX B
GROUNDWATER REPORT

Atkins ENGINEERING ASSOCIATES INC.
2904 W 2nd St.
Roswell, NM 88201
voice: 575.624.2420
fax: 575.624.2421
www.atkinseng.com

11/8/2018

Melodie Sanjari
Staff Scientist
Souder, Miller & Associates
201 S. Halagueno
Carlsbad, NM 88220

Transmitted via email on the date of this report to melodie.sanjari@soudermiller.com

Re: Groundwater Determination Ice Dancer 30 Federal Com #002H (2RP-4752)

Ms. Sanjari:

Atkins Engineering Associates, Inc. (AEA) has completed a groundwater determination for the Ice Dancer 30 Federal Com #002H (site) located in the SW/4SW/4SE/4 (Unit O) of Section 30, Township 23S, Range 30E, NMPM (Figure 1). The general site elevation was interpolated to be at 3,067 feet above mean sea level NGVD29 from the USGS Topographic map. The current USGS well data use a vertical datum of NAVD88. Using the NOAA vertical data transformation tool https://vdatum.noaa.gov/vdatumweb/ the site reported an elevation of 3,069 feet amsl NAVD88.

Shallow groundwater at the site is estimated to be greater than 50 feet but less than 100 feet below land surface.

Geology/Hydrogeology

The subject site falls east of the Pecos River in an area with eolian deposits of the Phanerizoic/ Cenozoic and Quaternary age. At this location first groundwater is expected to be found in the Permian Rustler formation which outcrops at the surface approximately a mile to the northeast and the southwest. Underlying this area of interest is the Rustler formation consists of anhydrite, gypsum, interbedded sandy clay and shale and irregular beds of dolomite (Hendrickson and Jones, 1952). Groundwater from the Rustler in this area migrates west and south toward discharge to the Pecos River

OSE Well Records

A search of the Office of the State Engineer (OSE) New Mexico Water Rights Reporting System (NMWRRS) for the site section and all the adjoining sections was conducted.

Table 1: PLSS Sections for OSE NMWRRS search

Sec. 24, 23S, 29E	Sec. 19, 23S, 30E	Sec. 20, 23S, 30E
Sec. 25, 23S, 29E	Sec. 30, 23S, 30E	Sec. 29, 23S, 30E
Sec. 36, 23S, 29E	Sec. 31, 23S, 30E	Sec. 32 23S, 30E

This search revealed one entry for an exploratory well C-2486. The OSE database entry puts the well in the SW/4NE/4SW/4 of Section 19, Township 23S, Range 30 East; however, the well record places the well in the NW/4NW/4SW/4 of said Section 19. The well record indicates a slight show of water "Windmill water 5GPM" in a sand and small gravel layer from 48-80 feet. The well was not completed, and no static water level was given. The well record for C-2846 is attached. The results of the NMWRRS database searches are attached in Appendix B.

USGS/OSE Recording wells

The same PLSS sections were searched for USGS/OSE observation wells. Two observation wells were located USGS well 321717103561001 located in the NW/4NE/4SW/4NW/4SE/4 of Section 24, Township 23 South, Range 24 East, and USGS well 321742103552601 located in the NW/4NE/4SE/4SW/4NE/4NW/4 of Section 19, Township 23 South, Range 30 East. Both wells are reported as livestock wells, and it is common for ranches to drill to the first available water bearing zone.

Figure a: Site vs nearby wells

Both these wells indicate they are completed in the Permian Rustler formation with water levels reporting in the 50-70-foot range but at lower land surface elevations than the Site.

Rustler well data is sparse on the east side of the Pecos River, an extraction of USGS observation well isolated a group of sixteen USGS observation wells east of the river with “modern” and overlapping data points (Figure 2). Water level data from comparable time periods (within a month of each other) were consolidated for the wells and 14-16 data points were available in early 1983, late 1987, late 1992 and early 1998 (Appendix C). These USGS wells did not report measured water level data after 1998.

Using the USGS latitude/longitude and vertical data (NAVD1988), the water level elevation from the 1998 entry was gridded (kriging) using Surfer 14. Contours for that water level elevation period was generated and projected into ArcGIS. Figure b show the site versus the water level elevation contours in 1998.

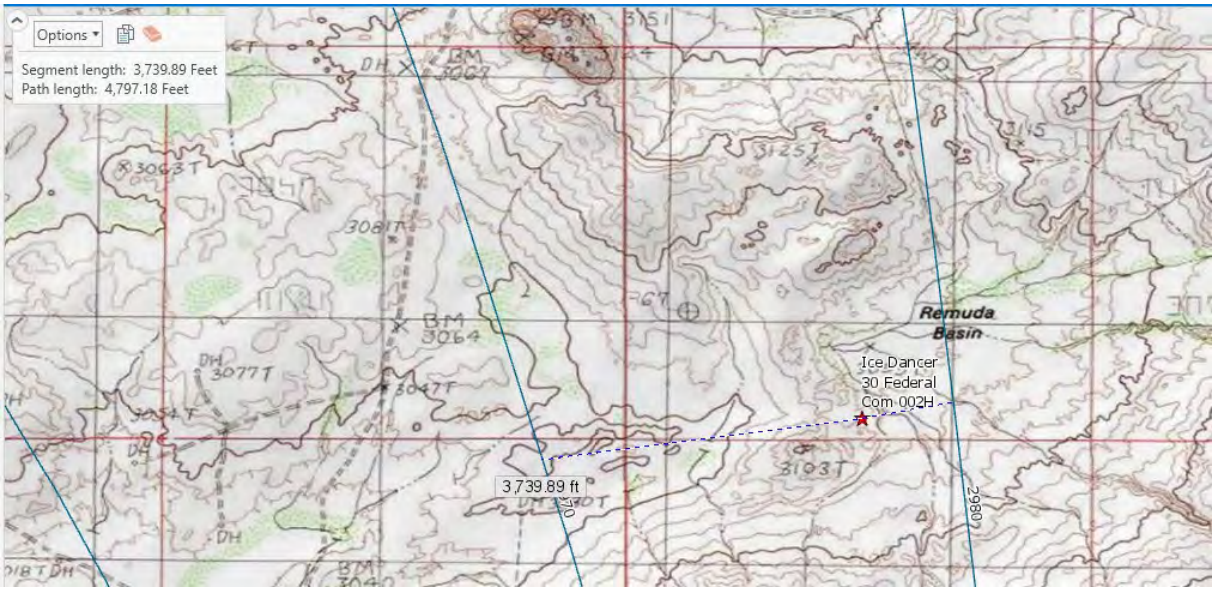


Figure b: Site vs 1998 Water Level Elevation Contours

Analysis and Conclusion

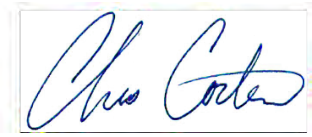
Based on the 1998 water level elevation contours, the water level elevation at the site was approximately 2,978 feet amsl NAVD88. With a land surface elevation of 3,069 feet amsl NAVD88, the projected 1998 shallow groundwater was projected to be 91 feet below land surface.

The nearby USGS wells do not show much deviation in depths to water over their observed measurement, in this area the water table does not appear to vary greatly (see Appendix C) There is no reason to indicate this would not continue into 2019, though updated observations of the existing USGS/OSE observation wells used in this report could determine the current conditions near the site.

Water beneath the site is anticipated to be greater than 50 feet but less than 100 feet.

If you have any questions, please contact me at chris@atkinseng.com or 575.624.2420

Sincerely,



Chris Cortez

References

USGS/OSE field schedules as noted above

USGS National Water Information System-Groundwater Levels for New Mexico,

1952 Hendrickson, G.E. and Jones, R.S. Geology and Ground-Water Resources of Eddy County, New Mexico.

Appendix A: Figures

Icedancer Fed

N

0 500 1,000 2,000 Feet

1 inch =2000 feet

Figure 1: Site USGS Topographic Map with USGS Wells

Atkins ENGINEERING ASSOCIATES

Figure 2: Site and USGS Rustler Observation Wells

USGS Rustler Observation Wells
Icedancer Fed

0 2 4 8 Miles

1 inch equals 4 miles

N

Atkins ENGINEERING ASSOCIATES

Appendix B: NMWRRS and Well Record

New Mexico Office of the State Engineer

Active & Inactive Points of Diversion

(with Ownership Information)

No PODs found.

PLSS Search:

Section(s): 24 **Township:** 23S **Range:** 29E

New Mexico Office of the State Engineer

Active & Inactive Points of Diversion

(with Ownership Information)

No PODs found.

PLSS Search:

Section(s): 25 **Township:** 23S **Range:** 29E

New Mexico Office of the State Engineer

Active & Inactive Points of Diversion

(with Ownership Information)

No PODs found.

PLSS Search:

Section(s): 36 **Township:** 23S **Range:** 29E

New Mexico Office of the State Engineer

Active & Inactive Points of Diversion

(with Ownership Information)

(acre ft per annum) (R=POD has been replaced and no longer serves this file, C=the file is closed) (quarters are 1=NW 2=NE 3=SW 4=SE) (quarters are smallest to largest) (NAD83 UTM in meters)

WR File Nbr	Sub basin	Use	Diversion	Owner	County	POD Number	Code	Grant	Source	q 6416	q 4	q	Sec	Tws	Rng	X	Y
C 02486	C	PRO	0	TEXACO EXPLORATION & PROD.	ED	C 02486				3	2	3	19	23S	30E	601304	3572832*

Record Count: 1

PLSS Search:

Section(s): 19 **Township:** 23S **Range:** 30E

Sorted by: File Number

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

New Mexico Office of the State Engineer

Active & Inactive Points of Diversion

(with Ownership Information)

No PODs found.

PLSS Search:

Section(s): 20 **Township:** 23S **Range:** 30E

New Mexico Office of the State Engineer

Active & Inactive Points of Diversion

(with Ownership Information)

No PODs found.

PLSS Search:

Section(s): 29 **Township:** 23S **Range:** 30E

New Mexico Office of the State Engineer

Active & Inactive Points of Diversion

(with Ownership Information)

No PODs found.

PLSS Search:

Section(s): 30 **Township:** 23S **Range:** 30E

New Mexico Office of the State Engineer

Active & Inactive Points of Diversion

(with Ownership Information)

No PODs found.

PLSS Search:

Section(s): 31 **Township:** 23S **Range:** 30E

New Mexico Office of the State Engineer

Active & Inactive Points of Diversion

(with Ownership Information)

No PODs found.

PLSS Search:

Section(s): 32 **Township:** 23S **Range:** 30E

Revised June 1972

STATE ENGINEER OFFICE

WELL RECORD

Section 1. GENERAL INFORMATION

(A) Owner of well Texaco Exploration & Production Owner's Well No. C2486
Street or Post Office Address P.O. Box 764
City and State Hobbs, NM 88240

Well was drilled under Permit No. _____ and is located in the:

a. SW ¼ ¼ ¼ ¼ of Section 19 Township 23S Range 30E N.M.P.M. Eddy Co.

b. Tract No. _____ of Map No. _____ of the _____

c. Lot No. _____ of Block No. _____ of the _____
Subdivision, recorded in _____ County.

d. X= _____ feet, Y= _____ feet, N.M. Coordinate System _____ Zone in the _____ Grant.

(B) Drilling Contractor West Texas Water Well Service License No. WD1184

Address 3432 W. University, Odessa, TX 79764

Drilling Began 01-26-96 Completed 01-29-96 Type tools air/rotary Size of hole 8-3/4 in.

Elevation of land surface or _____ at well is _____ ft. Total depth of well 350 ft.

Completed well is ☐ shallow ☐ artesian. Depth to water upon completion of well _____ ft.

Section 2. PRINCIPAL WATER-BEARING STRATA

Depth in Feet From	Depth in Feet To	Thickness in Feet	Description of Water-Bearing Formation	Estimated Yield (gallons per minute)
			No water encountered formation log on back	

Section 3. RECORD OF CASING

Diameter (inches)	Pounds per foot	Threads per in.	Depth in Feet Top	Depth in Feet Bottom	Length (feet)	Type of Shoe	Perforations From	Perforations To

Section 4. RECORD OF MUDDING AND CEMENTING

Depth in Feet From	Depth in Feet To	Hole Diameter	Sacks of Mud	Cubic Feet of Cement	Method of Placement

Section 5. PLUGGING RECORD

Plugging Contractor West Texas Water Well Service
Address 3432 W. University, Odessa, TX 79764
Plugging Method pumped cement slurry
Date Well Plugged 01-29-96
Plugging approved by:

_____
State Engineer Representative

No.	Depth in Feet Top	Depth in Feet Bottom	Cubic Feet of Cement
1	0	350	133
2			
3			
4			

FOR USE OF STATE ENGINEER ONLY

Date Received 03-13-96

Quad _____ FWL _____ FSL _____

File No. C-2468 Use OWD "Dry Hole" Location No. 23 S30E.19. 311

Section 6. LOG OF HOLE

Depth in Feet From	Depth in Feet To	Thickness in Feet	Color and Type of Material Encountered
0	1	1	Sand
1	18	17	Caliche
18	27	9	Sand
27	48	21	Caliche
48	80	32	Sand/small gravel (windmill water 5 gpm)
80	235	155	Brown sandy shale
235	350	115	Dark brown sandstone, hard, no water

Section 7. REMARKS AND ADDITIONAL INFORMATION

The undersigned hereby certifies that, to the best of his knowledge and belief, the foregoing is a true and correct record of the above described hole.

Robert E. Collins
Driller

INSTRUCTIONS: This form should be executed in triplicate, preferably typewritten, and submitted to the appropriate district office of the State Engineer. All sections, except Section 5, shall be answered as completely and accurately as possible when any well is drilled, repaired or deepened. When this form is used as a plugging record, only Section 1(a) and Section 5 need be completed.

Appendix C: USGS Tabulation

USGSID	LatDD	LongDD	Alt	AltDatum	Aquifer	DTWJanFeb1983	DTW1987October	DTW1992NovDec	DTW1998JanFeb	WLE1983	WLE1987	WLE1992	WLE1998
323028104050001	32.50790	-104.08384	3238	NAVD88	312RSLR	79.47	80.15	86.78	70.14	3158.5	3157.9	3151.2	3167.9
322700104072301	32.45012	-104.12356	3166	NAVD88	312RSLR	14.81	15.95	16.5	13.29	3151.2	3150.1	3149.5	3152.7
322632104023001	32.44234	-104.04217	3200	NAVD88	312RSLR	160.8	161.07	160.78	161.11	3039.2	3038.9	3039.2	3038.9
322913103564301	32.48744	-103.94672	3300	NAVD88	312RSLR	189.08	198.63	195.36	189.74	3110.9	3101.4	3104.6	3110.3
322736103513401	32.46012	-103.85994	3189	NAVD88	312RSLR	118.75	124.13	124.24	125.4	3070.3	3064.9	3064.8	3063.6
322557103502401	32.43262	-103.84049	3231	NAVD88	312RSLR	178.7	181.71	179.72	178.73	3052.3	3049.3	3051.3	3052.3
322547104035001	32.42984	-104.06439	3162	NAVD88	312RSLR	129.42	--	129.09	128.52	3032.6	--	3032.9	3033.5
322059103585802	32.34984	-103.98327	3022	NAVD88	312RSLR	51.79	51.43	50.89	50.09	2970.2	2970.6	2971.1	2971.9
322453103534301	32.41484	-103.89577	3122	NAVD88	312RSLR	50.54	51.55	50.6	49.15	3071.5	3070.5	3071.4	3072.9
322432103543301	32.40901	-103.90966	3128	NAVD88	312RSLR	60.72	64.99	67.12	66.32	3067.3	3063.0	3060.9	3061.7
322111103542601	32.35318	-103.90771	3022	NAVD88	312RSLR	29.06	25.3	25.04	24.65	2992.9	2996.7	2997.0	2997.4
322114103524801	32.35401	-103.88049	3163	NAVD88	312RSLR	161.38	159.26	156.82	154.74	3001.6	3003.7	3006.2	3008.3
321205103544701	32.20151	-103.91354	3188	NAVD88	312RSLR	235.93	233.3	--	231.02	2952.1	2954.7	--	2957.0
321214103525501	32.20401	-103.88243	3371	NAVD88	312RSLR	344.83	344.51	--	339.47	3026.2	3026.5	--	3031.5
320739103584201	32.12762	-103.97882	3017	NAVD88	312RSLR	140.4	140.33	140.81	140.9	2876.6	2876.7	2876.2	2876.1
320154103562301	32.03179	-103.94020	2974	NAVD88	312RSLR	66.44	49.81	59.28	66.42	2907.6	2924.2	2914.7	2907.6

Appendix D: USGS/OSE Field Schedules

FE-1 State of New Mexico
State Engineer

WELL SCHEDULE

Source of data: Obser [X] Owner [ ] Other _____

Date February 4 1980 Record by Bradley

LOCATION: County Eddy Map 119.1.0

OWNER HART GREENWOOD

DRILLER _____ Completed _____ 19__

Book 23 PAGE 74 SEO 3026.2

TOPO SITUATION _____ S.E.O. Elev 3026.2

DEPTH _____ ft [ ] Rept [ ] Meas Use Stock

CASING 7" in to _____ ft Log _____

PUMP: Type Piston Make _____

Ser.no./model _____ Size of dischg 1½ plastic in.

PRIME MOVER: Make Aermotor W.M. HP _____

Ser.no. tubular steel tower (Power)/Fuel wind

PUMP DRIVE: [ ] Gear Head [ ] Belt Head [ ] Pump Jack

Make _____ Ser.no _____ [ ] VHS

WATER LEVEL: 52.67 ft (rept) (meas) 02 Feb 1983 (above) below top of csg

_____ which is 2.50 ft (above) below LS

PERMANENT RP is no RP

which is _____ ft above below described MP and _____ ft above below LS

REMARKS Well discharges about 75' west underground

AQUIFER(S): Pec SITE ID 32/717 1035610 01

Well No. 1 on Photo C. Ext. 16-22 DPN 15-08067

File No _____ Loc. No. 23.29.24.41321

Remarks cont. into a 5' tall x 21' diameter steel storage tank. W.M. is located about 240' WSW from Texaco #1 Remuda Basin Unit. Waterwell can be measured.

02 Feb 83 : JCG + FAC = Loc. & nearby improvements support hypothesis this well drld for OWD use.

SKETCH: 4/3/85 KD. KF POA sampled disch pipe at well - disconnected plastic - T 72°.

N

#3

7/31/97 now equipped w/ subm. pump same Discharge. 6 joints of old column pipe ranging in length from 10'-12' lying on ground.

65/14.24

66/

63.00 13.38 49.62

65.00 15.40

INITIAL WATER-LEVEL MEASUREMENT	DEPTH TO WATER			
	Below MP			Below LS
	1st	2nd	3rd	
Date Feb. 02, 19 83	69.00	53.00		52.67
Hour 9:45 AM PM Obs	16.34	1.32		0.50
Not POA (X) POA ( )	52.66	52.68		52.17

W L meas after pump shut off ____ min. Pumping W L ( )

Remarks

STATE ENGINEER
Technical Division

Owner / Use	DEPTH TO WATER Below MP 1st	Below MP 2nd	Below LSD	WATER LEVEL ELEV
Use STOCK				
Date 2 2 ,1983	69.00	53.00	52.67	3026
Hour 9 45 AM PM Obs JCG-RAC	16.34	0.32	0.50	52
Not POA (X) POA ( )	52.66	52.68	52.17	2974

W L meas after pump shut off _____ min. Pumping W L ( )
Remarks _____

Date OCT 14 ,1987	60.00	61.00	51.04	3026
Hour AM PM Obs JG	8.96	9.96	0.50	51
Not POA (X) POA ( )	51.04	51.04	50.54	2975

W L meas after pump shut off _____ min. Pumping W L ( )
Remarks _____

Date NOV. 16 ,1992 DU	53.00	54.00	51.64	3026
Hour 12:15 AM PM Obs CW	1.36	2.36	0.50	51
Not POA (X) POA ( )	51.64	51.64	51.14	2975

W L meas after pump shut off _____ min. Pumping W L ( )
Remarks MP = TC

Date 2 2 ,1998	63.00	65.00	49.60	3026
Hour 1235 AM PM Obs RF/RR	13.38	15.40	0.50	49
Not POA (X) POA ( )	49.62	49.60	49.10	2977

W L meas after pump shut off _____ min. Pumping W L ( )
Remarks _____

Latitude _____ Longitude 15-08067
File No _____ Location No 23.29.24.41321

STATE ENGINEER
Technical Division

Owner HART GREENWOOD Use Stock	DEPTH TO WATER			WATER LEVEL ELEV
	Below MP 1st	Below MP 2nd	Below LSD	
Date JAN 29, 03	65.00	66.00	50.76	3026
Hour 1400 AM PM Obs MB/BT	14.24	15.24	0.50	50
Not POA (✓) POA ( )	50.76	50.76	50.26	2976

W L meas after pump shut off______ min. Pumping W L ( )

Remarks ACCESS WELL BY NEGOTIATING FENCE EAST OF TANK

Date ____ ____, 19____				
Hour ____ AM PM Obs ____				
Not POA ( ) POA ( )				

W L meas after pump shut off______ min. Pumping W L ( )

Remarks ______

Date ____ ____, 19____				
Hour ____ AM PM Obs ____				
Not POA ( ) POA ( )				

W L meas after pump shut off______ min. Pumping W L ( )

Remarks ______

Date ____ ____, 19____				
Hour ____ AM PM Obs ____				
Not POA ( ) POA ( )				

W L meas after pump shut off______ min. Pumping W L ( )

Remarks ______

Latitude ______ Longitude 15-08067

File No ______ Location No 23.29.24.41321

QUALITY CONTROL SHEET — STATE ENGINEER

DATE	COLLECTOR	P.O.C	REMARKS & USE	RESULTS
7/9/87	JCG	EDP	POA 72° STOCK	37/CL 257/COND
4/01/92	DH - CW	DP	T66°F POA	55 - 2830
7/31/97	PF - CW	DP	70° pumped 8 mins.	54 2810
			Send Results	
	OWNER: HART		GREENWOOD	
			P.O. Box 104	
			CARLSBAD, N.M.	

Aquifer(s) PRC D.P.N. 15-08067

File No. Location No. 23.29.24.4132

FE-1 State of New Mexico
State Engineer

WELL SCHEDULE

Source of data: Obser ☒ Owner ☒ Other USGS

Date 2/6 19 59 Record by Cooper-Busch

LOCATION: County Eddy Map 119.1.0

OWNER James and Brooner "South Well"

DRILLER _____ Completed _____ 19__

TOPO SITUATION _____ USGS Elev 3043

DEPTH 100 ft ☒ Rept ☐ Meas Use Stock

CASING 7 in to _____ ft Log electric log

PUMP: Type Piston Make _____

Ser.no./model _____ Size of dischg 2 in.

PRIME MOVER: Make aermotor HP _____

Ser.no. Wooden Tower Power/Fuel Wind

PUMP DRIVE: ☐ Gear Head ☐ Belt Head ☐ Pump Jack

Make _____ Ser.no _____ ☐ VHS

WATER LEVEL: 79.2 ft rept (meas) 2/6 19 59 above (below) TC

_____

_____ which is 1.1 ft above (below) LS

PERMANENT RP is _____

_____

_____

_____

which is ____ ft above (below) described MP and ____ ft above (below) LS

REMARKS Well is located 6' east of a plugged

AQUIFER(S): Rsc SITE ID# 321742 1035526 01

Well No. 1 on Photo C-XT-16-222 DPN 15-05116

File No _____ Loc. No. 23.30.19.123421

Remarks cont. 6 5/8" casing. Well discharges into a 20 diameter x 2' tall steel tank located 30' NW of well. Water sample collected. Temp. of water is 66°F. Electric logs ran on this well. 12/10/76 JDA-RLT Water sample collected. Temperature of water 68°F.

SKETCH: 4/3/85 - KOH & KF WTS. Wooden tower has Fallen down.

N

INITIAL WATER-LEVEL MEASUREMENT	DEPTH TO WATER			
	Below MP			Below LS
	1st	2nd	3rd	
Date Feb 6, 1959				79.2
Hour ____ AM PM Obs FEB				1.1
Not POA ( ) POA (X)				78.1

W L meas after pump shut off ____ min. Pumping W L (X)

Remarks ____

STATE ENGINEER
Technical Division

Owner / Use	DEPTH TO WATER Below MP 1st	Below MP 2nd	Below LSD	WATER LEVEL ELEV
Date Feb 6, 1959 Hour ____ AM PM Obs FEB Not POA ( ) POA (X)			79.2	3043
			1.1	78
			78.1	2965+

W L meas after pump shut off ____ min. Pumping W L (X)
Remarks ____

Date April 7, 1959 Hour ____ AM PM Obs FEB Not POA (X) POA ( )			70.4	3043
			1.1	69
			69.3	2974

W L meas after pump shut off ____ min. Pumping W L ( )
Remarks ____

Date Sept 20, 1972 Hour ____ AM PM Obs HCW Not POA (X) POA ( )			69.85	3043
			1.1	69
			68.75	2974

W L meas after pump shut off ____ min. Pumping W L ( )
Remarks Water sample collected from tank.

Date Dec 9, 1975 Hour ____ AM PM Obs HEL Not POA (X) POA ( )			70.59	
			1.60	
			68.99	

W L meas after pump shut off ____ min. Pumping W L ( )
Remarks MP is top of 6"x6" wooden damp 0.50' above TC and 1.60' above LS.

Latitude ____ Longitude 15-05116
File No ____ Location No 23.30.19.12342

STATE ENGINEER
Technical Division

Owner / Use	DEPTH TO WATER Below MP 1st	Below MP 2nd	Below LSD	WATER LEVEL ELEV
Date Jan 15, 19 76	75.00	76.00	71.70	3043
Hour ____ AM PM Obs RKD	3.30	4.30	1.60	70
Not POA (X) POA ( )	71.70	71.70	70.10	2973

W L meas after pump shut off ____ min. Pumping W L ( )
Remarks MP - Top of clamp

Date Jan 19, 19 77	72.00	72.00	70.00	3043
Hour ____ AM PM Obs RKD	2.00	2.00	1.60	68
Not POA ( ) POA (X)	70.00	70.00	68.40	2975

W L meas after pump shut off 7 min. Pumping W L ( )
Remarks 2' between readings MP - Top of clamp

Date OCT 14, 1987	74.00	70.00	68.42	3043
Hour ____ AM (PM) Obs JCB	5.58	1.58	1.10	67
Not POA (X) POA ( )	68.42	68.42	67.32	2976

W L meas after pump shut off ____ min. ✓ Pumping W L ( )
Remarks MP TOP OF CASING

Date May 6, 1993	70.00	69.00	67.20	3043
Hour 1245 AM PM Obs KD	2.80	1.80	1.10	66
Not POA (X) POA ( )	67.20	67.20	66.10	2977 ✓

W L meas after pump shut off ____ min. Pumping W L ( )
Remarks Equip with Subm. No electric

Latitude ____ Longitude 15-05116
File No ____ Location No 23.30.19.123421

78.00
11.36
66.64

79.00
11.30
67.70

77.00
11.12
65.88

76.00

77.00
11.68
65.32

78.00
12.65

STATE ENGINEER
Technical Division

Owner	DEPTH TO WATER			WATER LEVEL ELEV
Use	Below MP 1st	Below MP 2nd	Below LSD	
Date 2 2, 1998	77.00	78.00	65.31	3043
Hour 1250 AM PM Obs PP/RR	11.68	12.69	1.10	64
Not POA (X) POA ( )	65.32	65.31	64.21	2979

W L meas after pump shut off______min. Pumping W L ( )
Remarks Does have power to well now

Date ______ ______, 19___				
Hour______ AM PM Obs ______				
Not POA ( ) POA ( )				

W L meas after pump shut off______min. Pumping W L ( )
Remarks ______

Date ______ ______, 19___				
Hour______ AM PM Obs ______				
Not POA ( ) POA ( )				

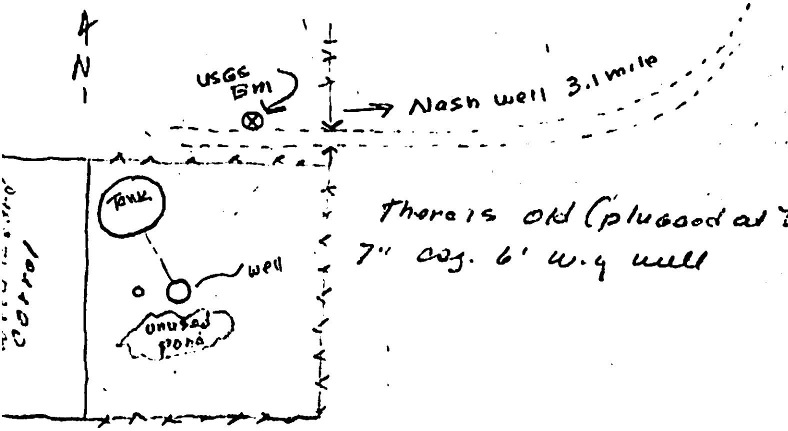
W L meas after pump shut off______min. Pumping W L ( )
Remarks ______

Date ______ ______, 19___				
Hour______ AM PM Obs ______				
Not POA ( ) POA ( )				

W L meas after pump shut off______min. Pumping W L ( )
Remarks ______

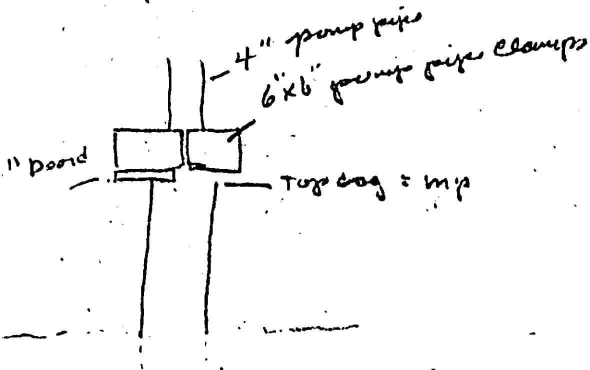
Latitude ______ Longitude 15-05116
File No ______ Location No 23.30.19.123421

Old wooden derrick. Large metal ground tank about 30' to N.W. of well. Board corral adjacent to tank on west. USGS BM C30 (1934) [3043'] across trail road about 70' NE of well



There is old (plugged at top) 7" csg. 6' W. of well

MP is top of csg. NE side. 1.2' above LS. Steel tape gets all wet & have to check. M. Araujo.



View to SW

APPENDIX C
PHOTO LOG

APPENDIX D

LABORATORY ANYLITICAL REPORT

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

May 25, 2018

Austin Weyant
Souder, Miller & Associates
201 S Halagueno
Carlsbad, NM 88221
TEL: (575) 689-7040
FAX

RE: Ice Dancer Area 1 OrderNo.: 1805987

Dear Austin Weyant:

Hall Environmental Analysis Laboratory received 11 sample(s) on 5/17/2018 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 **1805987**
Date Reported: **5/25/2018**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: BH-Surface
Project: Ice Dancer Area 1
Collection Date: 5/15/2018 10:40:00 AM
Lab ID: 1805987-001 **Matrix:** SOIL **Received Date:** 5/17/2018 9:25:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	8700	750		mg/Kg	500	5/22/2018 11:16:57 AM	38246
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **AG**	
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	5/18/2018 7:27:21 PM	38177
Surr: BFB	119	70-130		%Rec	1	5/18/2018 7:27:21 PM	38177
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	28	9.5		mg/Kg	1	5/22/2018 4:51:08 AM	38208
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	5/22/2018 4:51:08 AM	38208
Surr: DNOP	101	70-130		%Rec	1	5/22/2018 4:51:08 AM	38208
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **AG**	
Benzene	ND	0.023		mg/Kg	1	5/18/2018 7:27:21 PM	38177
Toluene	ND	0.047		mg/Kg	1	5/18/2018 7:27:21 PM	38177
Ethylbenzene	ND	0.047		mg/Kg	1	5/18/2018 7:27:21 PM	38177
Xylenes, Total	ND	0.093		mg/Kg	1	5/18/2018 7:27:21 PM	38177
Surr: 4-Bromofluorobenzene	130	70-130		%Rec	1	5/18/2018 7:27:21 PM	38177
Surr: Toluene-d8	90.9	70-130		%Rec	1	5/18/2018 7:27:21 PM	38177

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 Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Analytical Report
Lab Order **1805987**
Date Reported: **5/25/2018**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: BH-2'
Project: Ice Dancer Area 1
Collection Date: 5/15/2018 10:47:00 AM
Lab ID: 1805987-002 **Matrix:** SOIL **Received Date:** 5/17/2018 9:25:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	6000	300		mg/Kg	200	5/22/2018 11:29:22 AM	38246

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 Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Analytical Report
Lab Order **1805987**
Date Reported: **5/25/2018**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: BH-4'
Project: Ice Dancer Area 1
Collection Date: 5/15/2018 10:52:00 AM
Lab ID: 1805987-003 **Matrix:** SOIL **Received Date:** 5/17/2018 9:25:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	6600	300		mg/Kg	200	5/22/2018 11:41:47 AM	38246

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 Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Analytical Report
Lab Order **1805987**
Date Reported: **5/25/2018**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: BG1
Project: Ice Dancer Area 1
Collection Date: 5/15/2018 8:10:00 AM
Lab ID: 1805987-004 **Matrix:** SOIL **Received Date:** 5/17/2018 9:25:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	110	30		mg/Kg	20	5/22/2018 1:23:35 AM	38246

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 Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Analytical Report
Lab Order **1805987**
Date Reported: **5/25/2018**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: West SW
Project: Ice Dancer Area 1
Collection Date: 5/15/2018 10:05:00 AM
Lab ID: 1805987-005 **Matrix:** SOIL **Received Date:** 5/17/2018 9:25:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	71	30		mg/Kg	20	5/22/2018 1:36:00 AM	38246

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 Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Analytical Report
Lab Order **1805987**
Date Reported: **5/25/2018**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: East SW
Project: Ice Dancer Area 1
Collection Date: 5/15/2018 11:30:00 AM
Lab ID: 1805987-006 **Matrix:** SOIL **Received Date:** 5/17/2018 9:25:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	ND	30		mg/Kg	20	5/22/2018 1:48:24 AM	38246

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 Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Analytical Report
Lab Order **1805987**
Date Reported: **5/25/2018**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: Southwest SW
Project: Ice Dancer Area 1
Collection Date: 5/15/2018 12:07:00 PM
Lab ID: 1805987-007 **Matrix:** SOIL **Received Date:** 5/17/2018 9:25:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	370	30		mg/Kg	20	5/22/2018 2:00:49 AM	38246

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 Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Analytical Report
Lab Order **1805987**
Date Reported: **5/25/2018**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: Southeast SW
Project: Ice Dancer Area 1
Collection Date: 5/15/2018 12:10:00 PM
Lab ID: 1805987-008 **Matrix:** SOIL **Received Date:** 5/17/2018 9:25:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	500	30		mg/Kg	20	5/22/2018 2:13:13 AM	38246

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 Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Analytical Report
Lab Order **1805987**
Date Reported: **5/25/2018**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: Northeast SW
Project: Ice Dancer Area 1
Collection Date: 5/15/2018 9:47:00 AM
Lab ID: 1805987-009 **Matrix:** SOIL **Received Date:** 5/17/2018 9:25:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	ND	30		mg/Kg	20	5/22/2018 2:25:37 AM	38246

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 Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Analytical Report
Lab Order **1805987**
Date Reported: **5/25/2018**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: Northwest SW
Project: Ice Dancer Area 1
Collection Date: 5/15/2018 9:32:00 AM
Lab ID: 1805987-010 **Matrix:** SOIL **Received Date:** 5/17/2018 9:25:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	ND	30		mg/Kg	20	5/22/2018 2:38:02 AM	38246

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 Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Analytical Report
Lab Order **1805987**
Date Reported: **5/25/2018**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: 19-Surface
Project: Ice Dancer Area 1
Collection Date: 5/15/2018 1:05:00 PM
Lab ID: 1805987-011 **Matrix:** SOIL **Received Date:** 5/17/2018 9:25:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	ND	30		mg/Kg	20	5/22/2018 2:50:27 AM	38246
EPA METHOD 8015D MOD: GASOLINE RANGE						Analyst: **AG**	
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	5/18/2018 7:50:25 PM	38177
Surr: BFB	118	70-130		%Rec	1	5/18/2018 7:50:25 PM	38177
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **TOM**	
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	5/22/2018 5:15:07 AM	38208
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	5/22/2018 5:15:07 AM	38208
Surr: DNOP	95.9	70-130		%Rec	1	5/22/2018 5:15:07 AM	38208
EPA METHOD 8260B: VOLATILES SHORT LIST						Analyst: **AG**	
Benzene	ND	0.024		mg/Kg	1	5/18/2018 7:50:25 PM	38177
Toluene	ND	0.048		mg/Kg	1	5/18/2018 7:50:25 PM	38177
Ethylbenzene	ND	0.048		mg/Kg	1	5/18/2018 7:50:25 PM	38177
Xylenes, Total	ND	0.096		mg/Kg	1	5/18/2018 7:50:25 PM	38177
Surr: 4-Bromofluorobenzene	129	70-130		%Rec	1	5/18/2018 7:50:25 PM	38177
Surr: Toluene-d8	94.0	70-130		%Rec	1	5/18/2018 7:50:25 PM	38177

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 Detection Limit
S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1805987**

25-May-18

Client: Souder, Miller & Associates

Project: Ice Dancer Area 1

Sample ID	**MB-38246**	SampType:	**mblk**	TestCode:	**EPA Method 300.0: Anions**					
Client ID:	**PBS**	Batch ID:	**38246**	RunNo:	**51408**					
Prep Date:	**5/21/2018**	Analysis Date:	**5/21/2018**	SeqNo:	**1673973**	Units:	**mg/Kg**			

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

Sample ID	**LCS-38246**	SampType:	**lcs**	TestCode:	**EPA Method 300.0: Anions**					
Client ID:	**LCSS**	Batch ID:	**38246**	RunNo:	**51408**					
Prep Date:	**5/21/2018**	Analysis Date:	**5/21/2018**	SeqNo:	**1673974**	Units:	**mg/Kg**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	94.0	90	110			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1805987**

25-May-18

Client: Souder, Miller & Associates

Project: Ice Dancer Area 1

Sample ID	**LCS-38208**	SampType:	**LCS**		TestCode:	**EPA Method 8015M/D: Diesel Range Organics**				
Client ID:	**LCSS**	Batch ID:	**38208**		RunNo:	**51394**				
Prep Date:	**5/18/2018**	Analysis Date:	**5/22/2018**		SeqNo:	**1673851**	Units:	**mg/Kg**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	49	10	50.00	0	98.9	70	130			
Surr: DNOP	4.7		5.000		93.9	70	130			

Sample ID	**MB-38208**	SampType:	**MBLK**		TestCode:	**EPA Method 8015M/D: Diesel Range Organics**				
Client ID:	**PBS**	Batch ID:	**38208**		RunNo:	**51394**				
Prep Date:	**5/18/2018**	Analysis Date:	**5/21/2018**		SeqNo:	**1673852**	Units:	**mg/Kg**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	9.9		10.00		98.6	70	130			

Sample ID	**LCS-38269**	SampType:	**LCS**		TestCode:	**EPA Method 8015M/D: Diesel Range Organics**				
Client ID:	**LCSS**	Batch ID:	**38269**		RunNo:	**51394**				
Prep Date:	**5/22/2018**	Analysis Date:	**5/23/2018**		SeqNo:	**1676949**	Units:	**%Rec**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	5.3		5.000		105	70	130			

Sample ID	**MB-38269**	SampType:	**MBLK**		TestCode:	**EPA Method 8015M/D: Diesel Range Organics**				
Client ID:	**PBS**	Batch ID:	**38269**		RunNo:	**51394**				
Prep Date:	**5/22/2018**	Analysis Date:	**5/23/2018**		SeqNo:	**1676950**	Units:	**%Rec**		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	12		10.00		116	70	130			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1805987**

25-May-18

Client: Souder, Miller & Associates

Project: Ice Dancer Area 1

Sample ID	**lcs-38177**	SampType:	**LCS4**	TestCode:	**EPA Method 8260B: Volatiles Short List**
Client ID:	**BatchQC**	Batch ID:	**38177**	RunNo:	**51378**
Prep Date:	**5/17/2018**	Analysis Date:	**5/18/2018**	SeqNo:	**1671710** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.84	0.025	1.000	0	83.9	80	120			
Toluene	0.98	0.050	1.000	0	97.7	80	120			
Ethylbenzene	1.0	0.050	1.000	0	104	80	120			
Xylenes, Total	3.1	0.10	3.000	0	102	80	120			
Surr: 4-Bromofluorobenzene	0.48		0.5000		96.5	70	130			
Surr: Toluene-d8	0.50		0.5000		100	70	130			

Sample ID	**mb-38177**	SampType:	**MBLK**	TestCode:	**EPA Method 8260B: Volatiles Short List**
Client ID:	**PBS**	Batch ID:	**38177**	RunNo:	**51378**
Prep Date:	**5/17/2018**	Analysis Date:	**5/18/2018**	SeqNo:	**1671711** 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	0.65		0.5000		130	70	130			
Surr: Toluene-d8	0.48		0.5000		96.0	70	130			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1805987**

25-May-18

Client: Souder, Miller & Associates

Project: Ice Dancer Area 1

Sample ID	**lcs-38177**	SampType:	**LCS**		TestCode:	**EPA Method 8015D Mod: Gasoline Range**				
Client ID:	**LCSS**	Batch ID:	**38177**		RunNo:	**51378**				
Prep Date:	**5/17/2018**	Analysis Date:	**5/18/2018**		SeqNo:	**1671707**	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	89.9	70	130			
Surr: BFB	510		500.0		102	70	130			

Sample ID	**mb-38177**	SampType:	**MBLK**		TestCode:	**EPA Method 8015D Mod: Gasoline Range**				
Client ID:	**PBS**	Batch ID:	**38177**		RunNo:	**51378**				
Prep Date:	**5/17/2018**	Analysis Date:	**5/18/2018**		SeqNo:	**1672698**	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	590		500.0		119	70	130			

Qualifiers:

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

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: 1805987 RcptNo: 1

Received By: **Isaiah Ortiz** 5/17/2018 9:25:00 AM IO

Completed By: **Ashley Gallegos** 5/17/2018 11:41:43 AM AG

Reviewed By: JB 5/17/18 JB

Labeled by: JB 05/17/18

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: 05/17/18
(<2 or >12 unless noted)
Adjusted? JB
Checked by:

Special Handling (if applicable)

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

Person Notified: Date
By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding:
Client Instructions:

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.2	Good	Yes			

Chain-of-Custody Record

Client: SMA - Carlsbad

Mailing Address:

Phone #:

email or Fax#:

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

Accreditation
☐ NELAP ☐ Other _____
☐ EDD (Type) _____

Turn-Around Time:
☐ Standard ☒ Rush 5 day

Project Name:
Ice Dancer (Area #1)

Project #:

Project Manager:
Austin Weyant

Sampler: MRS

On Ice: ☒ Yes ☐ No

Sample Temperature: 1.2

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 Request ID	Container Type and #	Preservative Type	HEAL No. 1805987	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F^-, Cl^-, NO_3, NO_2, PO_4, SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)					Air Bubbles (Y or N)
5/15/18	10:40	Soil	BH-Surface	402		-001	X		X					X								
	10:47		BH-2'			-002								X								
	10:52		BH-4'			-003								X								
	8:10		BG1			-004								X								
	10:05		West SW			-005								X								
	11:30		East SW			-006								X								
	12:07		Southwest SW			-007								X								
	12:10		Southeast SW			-008								X								
	9:47		Northeast SW			-009								X								
	9:32		Northwest SW			-010								X								
	1:05		19-Surface			-011	X		X					X								

Date:	Time:	Relinquished by:	Received by:	Date	Time
5/16/18	0940			5/16/18	0940
5/16/18	1900		Courier	5/17/18	925

Remarks: Terra

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.