May 29, 2019

#5E27950-BG11

NMOCD District 1
1625 N. French Drive
Hobbs, New Mexico 88240

SUBJECT: Remediation Plan for the State AA #001 SWD Release (1RP-5257), Lea County, New Mexico

To Whom It May Concern:

On behalf of Marathon Oil Permian LLC, Souder, Miller & Associates (SMA) has prepared this Remediation Plan that describes the delineation and proposed remediation for a release of produced water at the State AA #001 salt water disposal (SWD) site. The site is in Unit I, Section 35, Township 21S, Range 34E, Lea County, New Mexico, on New Mexico State Land. Figure 1 illustrates the vicinity and site location on an USGS 7.5-minute quadrangle map.

Table 1, summarizes information regarding the release.

Table 1: Release Information and Closure Criteria			
Name	State AA #001	Company	Marathon Oil Permian LLC
API Number	30-025-02605	Location	32.43342° -103.433816°
Incident Number	2RP-5257		
Estimated Date of Release	October 18, 2018	Date Reported to NMOCD	November 2, 2018
Land Owner	State	Reported To	NMOCD, NMSLO
Source of Release	Hole on bottom of produced water tank		
Released Volume	232 bbl	Released Material	Produced Water
Recovered Volume	0 bbl	Net Release	232 bbl
NMOCD Closure Criteria	<50 feet to groundwater		
SMA Response Dates	October 22, 2018, March 7, 2019, and April 25, 2019		

1.0 Background

On October 18, 2018, a Site Operator reported staining around one of the produced water tanks at the State AA #001 SWD site. The tank was gauged, and the resulting liquid depth was measured at 10 inches. The previous tank gauge measurement had reported a liquid level of 7 feet, 7 inches, verifying that a release had occurred. It was suspected that a hole had developed in the bottom of the tank and allowed approximately 232 barrels (bbl) of produced water to flow out of the tank and into the unlined tank battery.

Initial response activities were conducted by Marathon, and included draining the remaining liquids in the tank and isolating the tank. No free liquids were observed to recover. The contaminated soils were left in place in the tank battery and will be removed during site remediation.

Figure 1 illustrates the vicinity and site location, and Figures 2 through 4 illustrate the release location. The C-141 form is included in Appendix A.

2.0 Site Information and Closure Criteria

The State AA #001 is located approximately 45 miles east of Carlsbad, New Mexico on State land at an elevation of approximately 3,630 feet above mean sea level (amsl).

Based upon a drill log file for water well CP-00934 from the New Mexico Office of the State Engineer (NMOSE) online water well database (*https://gis.ose.state.nm.us/gisapps/ose_pod_locations/*), depth to groundwater in the area is estimated to be as shallow as 42 feet below grade surface (bgs). The water well is located approximately 1.0 miles southeast of the site location at 3,608 feet amsl and is also the closest known water source to the release location.

The site is located within a depression along the path of an unnamed arroyo, according to the San Simon Ranch Quad 7.5-min USGS topographic map. Figure 2 illustrates the site with 200 and 300-foot radii to indicate that it does lie within a sensitive area (unnamed arroyo) as described in 19.15.29.12.C(4) NMAC.

Based on the information presented herein, the applicable NMOCD Closure Criteria for this site is for groundwater depth of less than 50 feet bgs. Unless a deferral is approved by NMOCD per 19.15.29.12.B.(2), the site will be restored to meet the standards of Table I of 19.15.29.12 NMAC. Table 3 in the attachments demonstrates the Closure Criteria applicable to this location. Pertinent well data is attached in Appendix B.

3.0 Release Characterization Activities and Findings

3.1 Initial Site Assessment, October 22, 2018

On October 22, 2018, SMA personnel arrived on site in response to the release associated with State AA #001. SMA performed initial site delineation activities by collecting soil samples around the release source area and throughout the visibly stained area within the tank battery. A total of seven sample locations (L1-L7) and seven perimeter/sidewall samples (SW1-SW7) were investigated using a hand-auger, to depths up to 2-feet bgs. The samples were field screened for chloride using an electrical conductivity (EC) meter using Method 4500. It was noted that all sample locations were saturated and had a strong hydrocarbon odor. Field-screening results indicated chloride levels as high as 7,404 parts per million (ppm, equivalent to mg/kg) within the stained area inside the tank battery. Background field readings indicated chloride concentrations of 118 ppm.

Initial sampling field results are included in Table 4, and sample locations are shown in Figure 3.

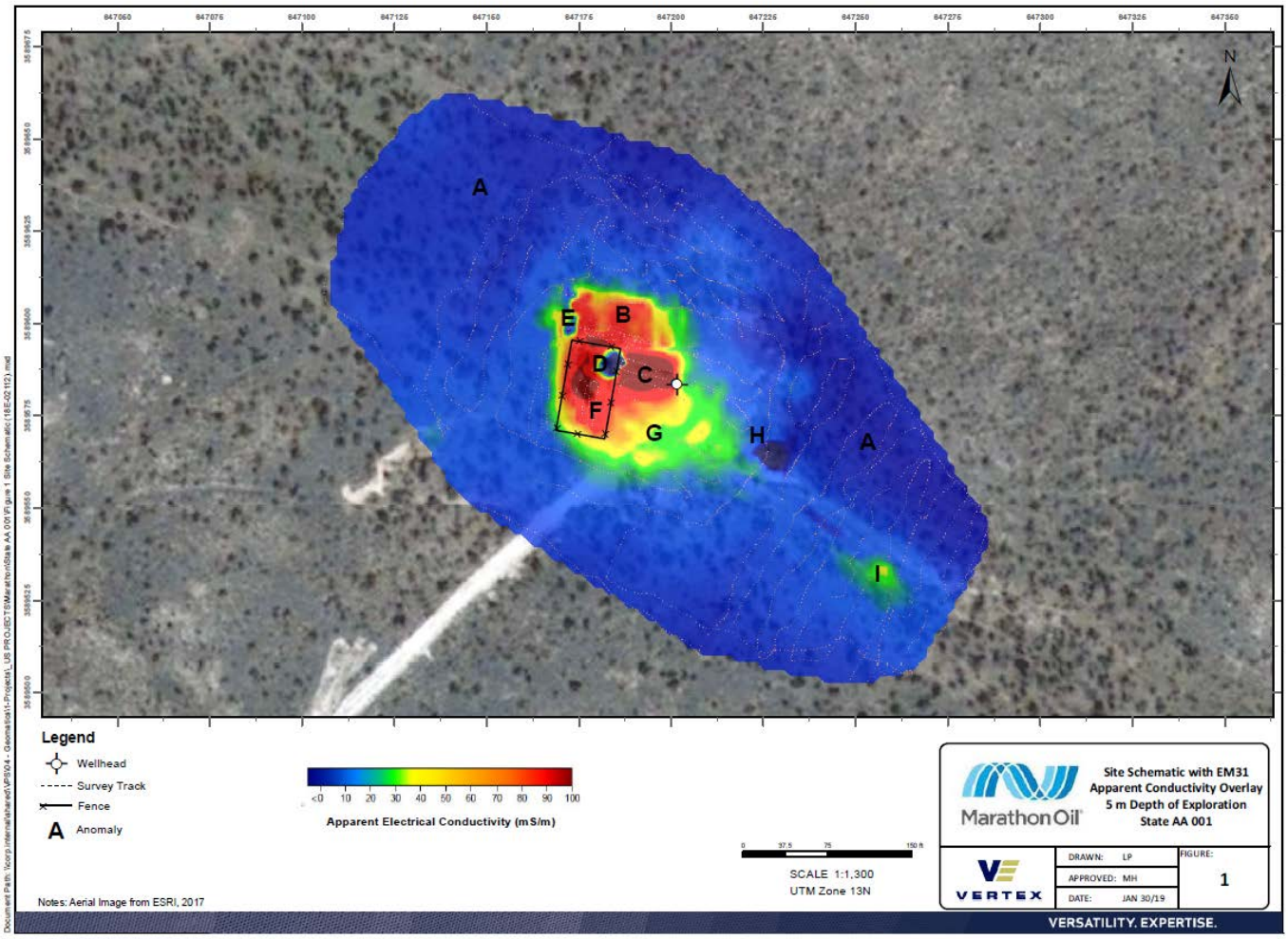
3.2 Electromagnetic Survey, January 9, 2019

On January 9, 2019, Vertex Resource Services Inc. (Vertex) conducted an electromagnetic (EM) survey of the entire wellsite and extending off the wellsite. The purpose of the EM survey was to map variations in ground conductivity that may identify the location of and extent of a produced water release, which are typically high in chlorides and exhibit high conductivity readings. The survey was performed using a Geonics EM31 Terrain Conductivity Meter at 10-yard spaced transects across the site.

Results of the survey indicated elevated conductivity levels, relative to background, on the well pad, particularly in the areas of the tank battery, north of the tank battery, and northeast of the tank battery, as shown in Image 1, below. The highest conductivity readings (>100 – 200 milli-Siemen/meter (mS/M)) were reported inside the tank battery where the release occurred, and along the pipe that runs from the pump to the injection wellhead. The specific depth of the elevated conductivity could not be determined using the EM survey method; however, the effective measurement depth of the instrument is approximately 16 feet and readings are a weighted average. Note that a small hotspot occurred southeast of the tank battery (denoted as "I" in Image 1); this hotspot was a result of two partially buried metal stakes and not due to contamination.

A copy of the Vertex EM survey report is included in Appendix B.

Image 1. Vertex EM Survey Results



3.3 Confirmation Soil Borings, March 7, 2019

To determine the vertical extent of contamination, SMA oversaw drilling of soil borings on March 7, 2019. Soil borings were drilled using a trailer mounted LST1G drill rig operated by C&M. The borings were drilled using a hollow stem auger (HSA) and sampled using the split-spoon method. Samples were field-screened for chloride using an EC meter under Method 4500 and hydrocarbons using a PetroFLAG® Hydrocarbon Analyzer. A subset of samples were selected by SMA to be analyzed for the laboratory methods listed below:

- EPA Method 300.0 – Chloride
- EPA Method 8015 – Total Petroleum Hydrocarbons (TPH) for Gasoline Range Organics (GRO), Diesel Range Organics (DRO), and Motor Oil Range Organics (MRO)

A background soil boring (BG1), located approximately 260 feet northwest and upgradient of the well pad, was drilled to 15 feet bgs. Chloride concentrations for the background sample were below laboratory detection limits (<60 mg/kg).

Soil boring SB1 was drilled inside the tank battery in a depressed area that exhibited signs of liquid pooling. The drill rig augured to 27 feet, at which point moisture was detected. Drilling ceased at that depth since permits were not obtained from NMOSE to drill into groundwater. Samples from SB1 were laboratory analyzed at the 15- and 27-foot depths. Laboratory results indicated chloride concentrations of 3,700 mg/kg at 15 feet and 1,600 mg/kg at 27 feet. Total petroleum hydrocarbons for GRO, DRO, and MRO were non-detect for both samples.

Soil boring SB2 was drilled north-northeast of the pad in the area indicated by the EM survey to also be high in conductivity. Field-screening results indicated soil chlorides were elevated (2,637 mg/kg) to at least 4 feet bgs, with concentrations below 600 mg/kg at 8- and 12-feet depths. Laboratory results at 12 feet indicated chloride concentrations at 730 mg/kg.

Soil boring SB3 was drilled on the eastern edge of the pad and downgradient of the release. Field-screening results indicated soil chlorides were below the closure level at 4-, 10-, and 15-foot depths. Laboratory results at 10 feet indicated chloride concentration of 710 mg/kg.

Samples collected for laboratory analysis were analyzed by Hall Environmental Analytical Laboratory in Albuquerque, NM, for total chloride using EPA Method 300.0,and MRO, DRO, and GRO by EPA Method 8015D. Field and analytical results for soil borings SB1 through SB3 are shown in Table 5, locations are shown in Figure 4, and laboratory results are included in Appendix E

3.4 Confirmation Soil Borings/Temporary “Wells”, April 25, 2019

SMA obtained NMOSE-approved permits to drill “temporary wells” to fully delineate the vertical extent of chloride contamination, which had a potential to extend into the shallow groundwater. Drilling was performed on April 25, 2019, using a CME 55 track-mounted drill rig operated by HRL Solutions, Inc. (HRL). Drilling resumed at soil boring SB1, starting at 30 feet and extending to 40 feet bgs. Samples were collected and field-screened at 30, 35, and 40 feet bgs, and laboratory analyzed at 30 and 35 feet bgs. Results indicated chloride concentrations were below the closure criteria of 600 mg/kg at all depths. Additionally, groundwater was not encountered during drilling operations. The boring was set as a temporary well for one week. Upon returning a week later, it was observed that no groundwater had entered the well. The well was removed, plugged, and abandoned per NMOSE specifications.

An additional soil boring/well (SB5) was drilled approximately 50 feet southeast of SB3. SB5 was drilled and sampled at 20, 30, and 40 feet bgs in an effort to fully delineate the horizontal and vertical extents of chloride contamination on the eastern portion of the well pad. All three sample depths indicated field-

screening results below 600 mg/kg for chlorides, and laboratory results for SB5 at 20 and 30 feet confirmed chloride concentrations were below closure standards.

Field and analytical results for soil borings SB3 and SB5 are shown in Tables 4 and 5, and locations are shown in Figure 4. *(Note that there is no SB4.)* The NMOSE-approved well permits, WR-07, WD-08, and WD-11, are included in Appendix C. Field notes are included in Appendix D, and laboratory reports are included in Appendix E.

3.5 Summary of Contamination

As determined by field and laboratory testing, results indicate that the area inside the tank battery is contaminated with petroleum hydrocarbons to a depth of approximately 10 feet bgs, and chloride contamination extends to 30 feet bgs inside the tank battery, comprising a total of 53,400 ft^3 (1,967 yd^3) of impacted soil, in situ. This impacted area is labelled "Area 1" in Figure 4.

The well pad outside of the tank battery indicated presence of elevated chlorides remain on the well pad and extend to a maximum depth of approximately 15 feet. This impacted area consists of approximately 208,200 ft^3 (7,711 yd^3), in situ, and is shown as "Area 2" in Figure 4.

A total of 261,300 ft^3 (9,678 yd^3) at the site area above closure criteria for petroleum hydrocarbon and/or chlorides. Depth to groundwater at the site is greater than 40 feet, and drilling has demonstrated that contamination does not extend to groundwater. Section 4.0 details the proposed remediation for the site.

4.0 Proposed Soil Remediation Work Plan

SMA proposes targeted excavation and removal of petroleum-impacted soils inside the tank battery (Area 1), which extends to approximately 10 feet bgs. At 10 feet, or when laboratory results confirm hydrocarbon contamination has been removed, SMA proposes installing a compacted soil clay/bentonite liner to prevent leaching of remaining chlorides deeper into the soils. SMA proposes placement of a 12-inch thick clay/bentonite-enhanced low permeability layer at the base of the excavation. Clean soil will then be placed over the clay/bentonite-enhanced layer to surface, leveled, and contoured to match the surrounding grade. This low-permeability cover will effectively prevent water infiltration into the soils below that remain high in chloride concentration, and thus, preventing the leaching of chloride ions into the local groundwater.

Additionally, SMA proposes excavation and removal of chlorides from the well pad outside of the tank battery (Area 2) down to 4 feet bgs, at which point, a compacted soil bentonite/clay liner will be installed. Similar to Area 1, the clay/bentonite liner will be approximately 12 inches thick and covered with clean fill to surface, leveled, and contoured to match the surrounding grade.

A summary of the soils to be excavated are included in Table 2 below:

Table 2: Proposed Soil Excavation Volume

Area	Area Excavated (ft^2)	Depth of Excavation (ft)	Volume Excavated, in situ (ft^3)	Volume Excavated, in situ (yd^3)
Area 1 – Tank Battery	1,770	10	17,700	656
Area 2 – Well Pad	13,880	4	55,520	2,056
Total	15,650	4-10	73,220	2,712

SMA will guide the excavation by collecting soil samples for field screening for hydrocarbon impacts using a calibrated MiniRAE 2000 photoionization detector (PID) and PetroFLAG® Hydrocarbon Analyzer. Chlorides will be field-screened using an EC meter.

Confirmation samples will be comprised of 5-point composite samples from each wall and base, and each composite sample representing less than 200-ft^2 of exposed excavation area. Samples will be analyzed for:

- EPA Method 300.0 – Chloride
- EPA Method 8015 – TPH GRO, DRO, and MRO
- EPA Method 8021 – Benzene, Toluene, Ethylbenzene, and total Xylenes (BTEX)

The contaminated soil will be transported for disposal at R360 near Hobbs, NM, an NMOCD permitted disposal facility. Upon approval by NMOCD, the projected timeline for completion of remediation activities is approximately 90 days.

5.0 Scope and Limitations

The scope of our services included: assessment sampling; verifying release stabilization, regulatory liaison, and preparing this remediation plan. 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 Stephanie Hinds or Shawna Chubbuck at 505-325-7535.

Submitted by:
SOUDER, MILLER & ASSOCIATES

Stephanie Hinds
Staff EIT II

Reviewed by:

Shawna Chubbuck
Senior Scientist

ATTACHMENTS:

Figures:

Figure 1: Vicinity and Well Head Protection Map
Figure 2: Surface Water Radius Map
Figure 3: Initial Site Assessment Sampling Locations
Figure 4: Soil Boring Locations and Impacted Areas

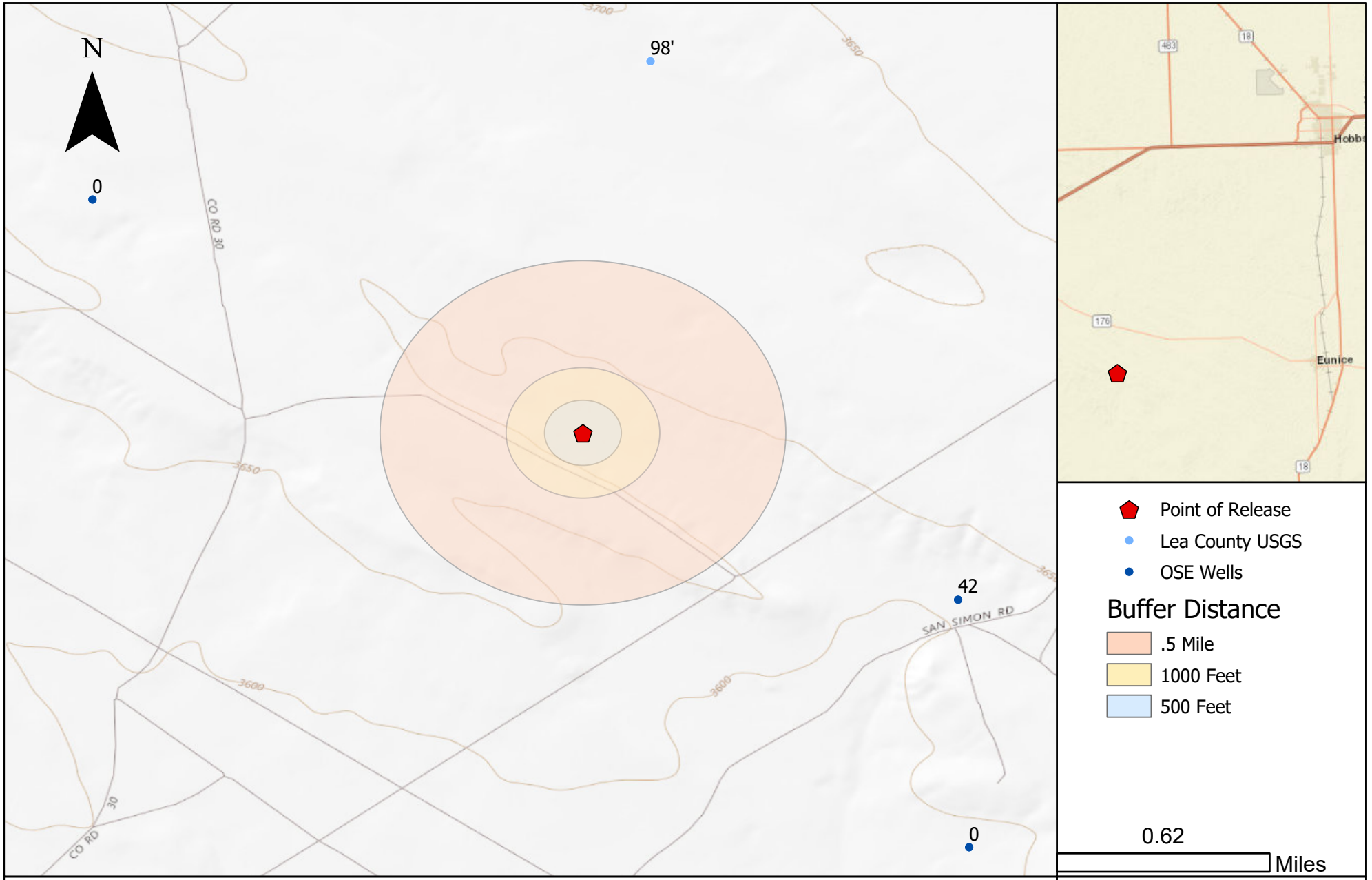
Tables:

Table 2: Proposed Soil Excavation Volume
Table 3: NMOCD Closure Criteria Justification
Table 4: Summary of Initial Field Conductivity Results
Table 5: Summary of Sample Results

Appendices:

Appendix A: Form C141
Appendix B: Vertex *Electromagnetic Survey Results and Interpretation for State AA 001* Report
Appendix C: NMOSE Well Drilling Permits WR-07, WD-08, and WD-11
Appendix D: Field Notes
Appendix E: Laboratory Analytical Reports

FIGURES



Regional Vicinity & Wellhead Protection Map
State AA #1- Marathon
Sec 35 T21S R34E, NM

Figure 1

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

Date Saved: 2/4/2019

Drawn Heather Patterson
Date 2/4/2019
Checked
Approved

SMA

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

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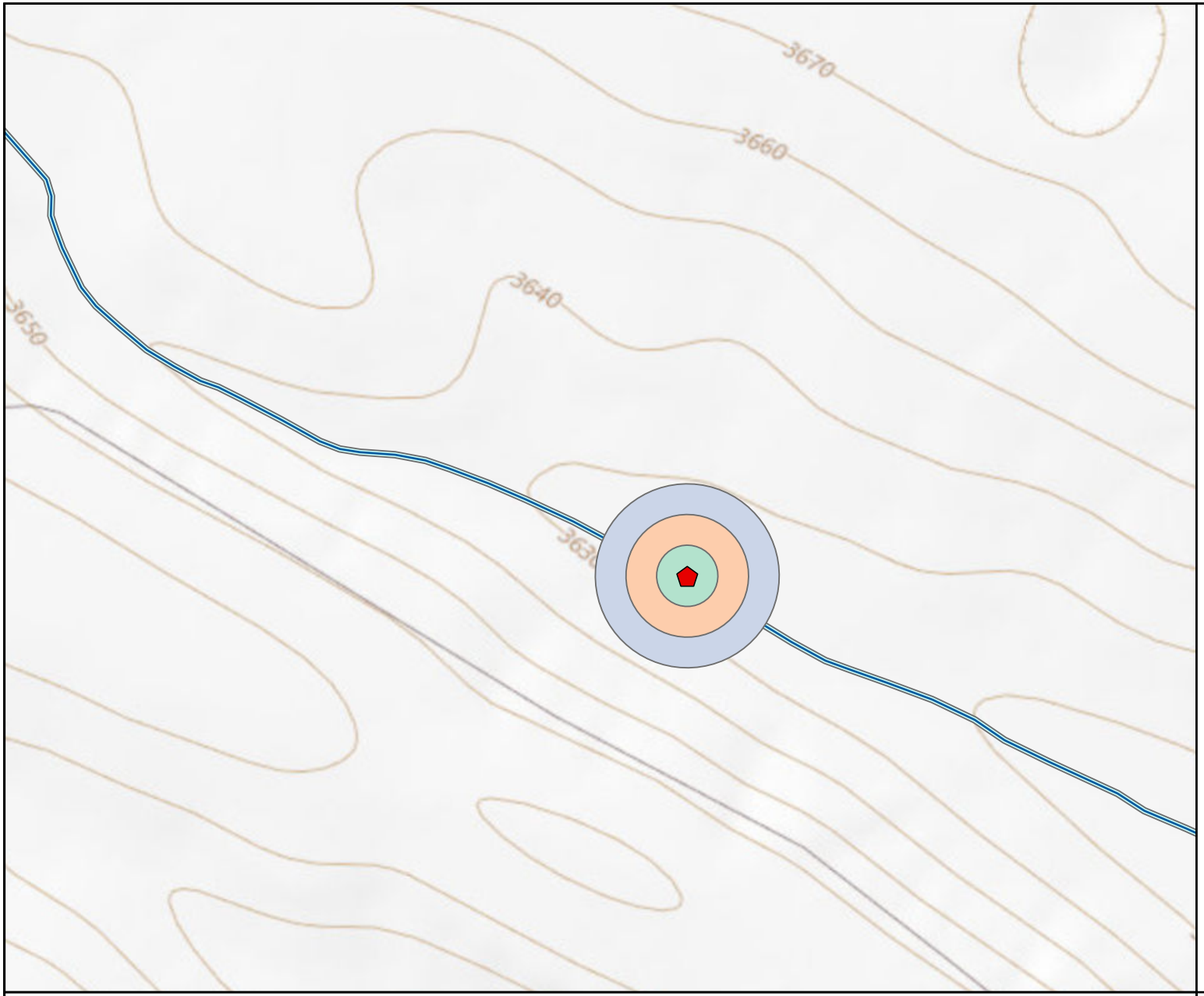

Legend

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

Buffer Distance

- 100 Feet
- 200 Feet
- 300 Feet

N

750 Feet

Surface Water Protection Map
State AA #1- Marathon
Sec 35 T21S R34E, NM

Figure 2

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Date Saved: 2/4/2019

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

Drawn Heather Patterson
Date 2/4/2019
Checked
Approved

SMA

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FIGURE 3

Project No: 5E27950

Scale: Horiz: 1" = 20'
Vert: N/A

Date: May 2019

THIS DRAWING IS INCOMPLETE AND NOT TO BE USED FOR CONSTRUCTION UNLESS IT IS STAMPED, SIGNED AND DATED

Designed SAH
Drawn DJB
Checked RSA

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MARATHON

CARLSBAD, NEW MEXICO

INITIAL SITE ASSESSMENT SAMPLING LOCATIONS STATE AA #0001 SWD SECTION 35, T21S, R34E

LEA COUNTY

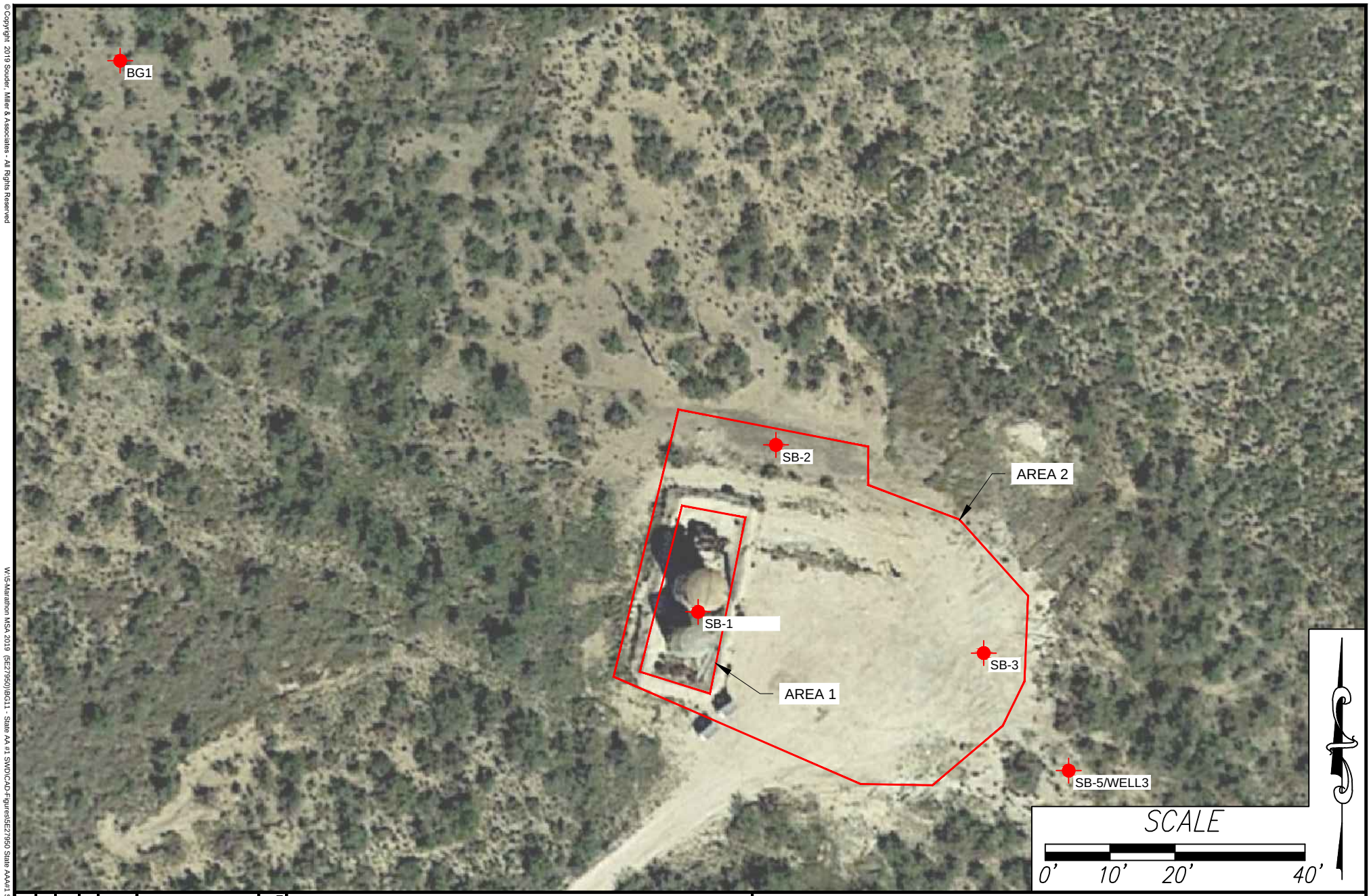

FIGURE 4

Project No: 5E27950

Scale: Horiz: 1" = 20'
Vert: N/A

Date: May 2019

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Designed SAH
Drawn DJB
Checked RSA

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MARATHON

CARLSBAD, NEW MEXICO

SOIL BORING LOCATIONS AND IMPACTED AREAS
STATE AA #0001 SWD
SECTION 35, T21S, R34E

LEA COUNTY

TABLES

Table 3:
NMOCD Closure Criteria Justification

Marathon Oil Permian LLC
State AA #001

Site Information (19.15.29.11.A(2, 3, and 4) NMAC)		Source/Notes
Depth to Groundwater (feet bgs)	~42'	NMOSE online water well database, CP-00934, drill log file date 9/14/2005
Hortizontal Distance From All Water Sources Within 1/2 Mile (ft)	none	NMOSE online water well database, active well CP-00934, located 1.0 mi to SE
Hortizontal Distance to Nearest Significant Watercourse (ft)	0'	Google Earth Pro and San Simon Ranch Quad 7.5-min USGS Topo Map, well along a depression, intermittent flow line

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	yes	600	100		50	10
51' to 100'		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?	yes (intermittent watercourse)	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					

SMA #

Table 4:
Summary of Field Conductivity Results

Marathon Oil Permian LLC
State AA #001

Sample	Date	EC readings (mS)	Temp	Chloride (ppm)
L1-1	10/22/2018	0.402	21.2	494
L1-2	10/22/2018	2.26	20.0	**3179**
L2-2	10/22/2018	0.573	19.9	**791**
L3-1	10/22/2018	0.257	20.1	335
L3-2	10/22/2018	0.586	19.0	**848**
L4-1	10/22/2018	0.507	18.4	**762**
L4-2	10/22/2018	0.581	18.8	**849**
L5-1	10/22/2018	0.535	21.4	**674**
L5-2	10/22/2018	0.353	19.0	518
L6-1	10/22/2018	0.285	14.0	634
L6-2	10/22/2018	0.51	18.8	**749**
SW1	10/22/2018	0.542	20.2	**735**
SW2	10/22/2018	1.65	19.4	**2340**
SW3	10/22/2018	0.316	19.3	452
SW4	10/22/2018	3.97	19.3	**5632**
SW5	10/22/2018	5.22	19.3	**7404**
SW6	10/22/2018	0.082	19.1	129
SW7	10/22/2018	0.373	19.1	542
BG	10/22/2018	0.077	19.2	118
BG1-6	3/7/2019	0.05	18.0	131
BG1-15	3/7/2019	0.04	16.9	163
SB1-5	3/7/2019	1.68	18.5	**2420**
SB1-10	3/7/2019	1.72	19.6	**2430**
SB1-15	3/7/2019	1.4	19.1	**1998**
SB1-26	3/7/2019	0.65	20.5	**875**
SB1-27	3/7/2019	0.61	19.6	**856**
SB2-4	3/7/2019	1.8	19.4	**2637**
SB2-8	3/7/2019	0.35	19.8	480
SB2-12	3/7/2019	0.3	19.3	430
SB3-4	3/7/2019	0.14	20.1	169
SB3-10	3/7/2019	0.36	20.1	481
SB3-15	3/7/2019	0.34	19.7	469

L: location
BG: background
SW: sidewall
SB: soil boring

Table 5:
Summary of Sample Results

Marathon Oil Permian LLC
State AA #001

Sample ID	Date Sampled	Depth	Chloride mg/kg		GRO mg/kg	DRO mg/kg	MRO mg/kg	Total TPH mg/kg	
NMOCD Closure Levels			600					100	
			Lab	Field	Lab	Lab	Lab	Lab	Field
BG1 (background)	3/7/2019	5-6	--	131	--	--	--	--	--
	3/7/2019	14-15	<60	163	--	--	--	--	--
SB1	3/7/2019	5	--	2420	--	--	--	--	6297
	3/7/2019	10	--	2430	--	--	--	--	--
	3/7/2019	15	3700	1998	<4.6	<9.3	<47	<60.9	530
	3/7/2019	26-27	--	875	--	--	--	--	--
	3/7/2019	27	1600	856	<4.7	<9.2	<46	<59.9	637
	4/25/2019	30	210	403	--	--	--	--	--
	4/25/2019	35	380	345	--	--	--	--	--
	4/25/2019	40	--	111	--	--	--	--	--
SB2	3/7/2019	4	--	2637	--	--	--	--	624
	3/7/2019	8	--	480	--	--	--	--	526
	3/7/2019	12	730	430	<4.7	<9.8	<49	<63.5	536
SB3	3/7/2019	4	--	169	--	--	--	--	--
	3/7/2019	10	--	481	--	--	--	--	562
	3/7/2019	15	710	469	<4.9	<9.6	<48	<62.5	541
SB5	4/25/2019	20	490	266	--	--	--	--	--
	4/25/2019	30	<30	<60	--	--	--	--	--
	4/25/2019	40	--	<60	--	--	--	--	--

APPENDIX A.

FORM C141

APPENDIX A.

FORM C141

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	NOY1830941911
District RP	1RP-5257
Facility ID	
Application ID	pOY1830942336

Release Notification

Responsible Party

Responsible Party Marathon Oil Permian LLC	OGRID 372098
Contact Name Callie Karrigan	Contact Telephone 575-297-0956
Contact email cnkarrigan@marathonoil.com	Incident # *(assigned by OCD)* NOY1830941911
Contact mailing address 4111 Tidwell Road, Carlsbad New Mexico, 88220	

Location of Release Source

Latitude 32.43342 Longitude -103.433816
(NAD 83 in decimal degrees to 5 decimal places)

Site Name State AA No. 1	Site Type SWD
Date Release Discovered 10/18/18	API# *(if applicable)* 30-025-02605

Unit Letter	Section	Township	Range	County
I	35	21S	34E	LEA

State minerals

Surface Owner: ☑ State ☐ Federal ☐ Tribal ☑ Private (*Name:* Merchant Livestock LLC)

Nature and Volume of Release

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

☐ Crude Oil	Volume Released (bbls)	Volume Recovered (bbls)
☑ Produced Water	Volume Released (bbls) 232	Volume Recovered (bbls) 0
	Is the concentration of total dissolved solids (TDS) in the produced water >10,000 mg/l?	☑ Yes ☐ No
☐ Condensate	Volume Released (bbls)	Volume Recovered (bbls)
☐ Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
☐ Other (describe)	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)

Cause of Release

The Site Operator reported staining around one of the produced water tanks. The previous tank gauge was 7'7" and when the Operator gauged the tank after observing staining, the gauge of the tank was 10". It is believed the release was due to a hole that developed on the bottom of the tank.

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? Release exceeds the unauthorized volume of 25 barrels.

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

Yes. Notification provided by Callie Karrigan on 10/19/18 7:04 am to Olivia Yu, Christina Hernandez, Jim Griswold via 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:

Tank was drained and isolated. There were no free liquids to recover. Stained material is in containment and will be cleaned up during site remediation.

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: Callie Karrigan Title: HES Professional

Signature: Callie Karrigan Date: 11/01/18

email: cnkarrigan@marathonoil.com Telephone: 575-297-0956

OCD Only

RECEIVED
By Olivia Yu at 11:48 am, Nov 05, 2018

Received by: _____ Date: _____

APPENDIX B.

VERTEX *ELECTROMAGNETIC SURVEY RESULTS AND INTERPRETATION FOR STATE AA 001* REPORT

January 30, 2019 Vertex Project #: 18E-02112-11

Marathon Oil Permian LLC.
4111 S. Tidwell Rd
Carlsbad, New Mexico 88220

Attention: Callie Karrigan

Re: Electromagnetic Survey Results and Interpretation for State AA 001

Ms. Karrigan,

Marathon Oil Permian LLC. (Marathon) retained Vertex Resource Services Inc. (Vertex) to conduct an electromagnetic (EM) survey at the upstream facility State AA 001 (hereafter referred to as the "site"). The site is located approximately 16 miles west of Eunice, New Mexico. Vertex personnel conducted the EM survey on January 9, 2019. This letter reviews the results of the EM survey at the site and discusses the apparent conductivity anomalies that were observed.

Method

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

Ground conductivity is influenced by the following:

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

Ground conductivity measurements were acquired using the Geonics EM31 Terrain Conductivity Meter. Data were collected continuously along regularly spaced transects across the site, with a line spacing of approximately 10 yards. Data were logged using a Juniper Systems Archer2 Data Logger with an integrated global positioning system (GPS).

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

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

Interpretation

The results of the EM31 survey are presented in Figure 1. Pertinent features and anomalies are identified and discussed in the table below.

Anomaly	Conductivity Range (mS/m)	Description
A	5 – 10	Low conductivity region possibly representative of background conditions (blue contours). These very low conductivity values are indicative of coarse-grained, unconsolidated, well-drained sandy soils.
B	30 – 70	Elevated conductivity region on the north edge of the lease pad. May be attributable to increased TDS, increased clay content, and/or metal influence. Possible evidence of a former pit (yellow to orange contours).
C	75 – 200	High conductivity response measured adjacent and parallel to surface pipe between the wellhead and pump. Likely attributable to the close proximity to the metal pipe but may be attributable to increased TDS and/or increased clay content (dark red contours).
D	< 0	Metal response adjacent to the pump (dark blue contours).
E	Oscillating Values	Signature metal response coincident with an underground cable sign.
F	30 – 130	Elevated conductivity region within the fenced area immediately south of the pump. May be attributable to increased TDS, increased clay content, and/or metal influence (yellow to red contours).
G	25 – 60	Moderately elevated conductivity zone coincident with the southwest portion of the lease pad. May be attributable to increased TDS, increased clay content, and/or metal influence (green to yellow contours).
H	< 0	Isolated metal response (dark blue contours).
I	18 – 33	Localized area of slightly elevated conductivity southeast of the lease pad within the dry creek channel (green contours).

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

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

Should you have any questions or concerns, please do not hesitate to contact the undersigned at 403.229.3969 or mhammond@vertex.ca.

Sincerely,

Dhugal Hanton
VICE PRESIDENT – ENVIRONMENT

Mark Hammond, P.Geo., P.Biol., PMP
MANAGER, GEOPHYSICS

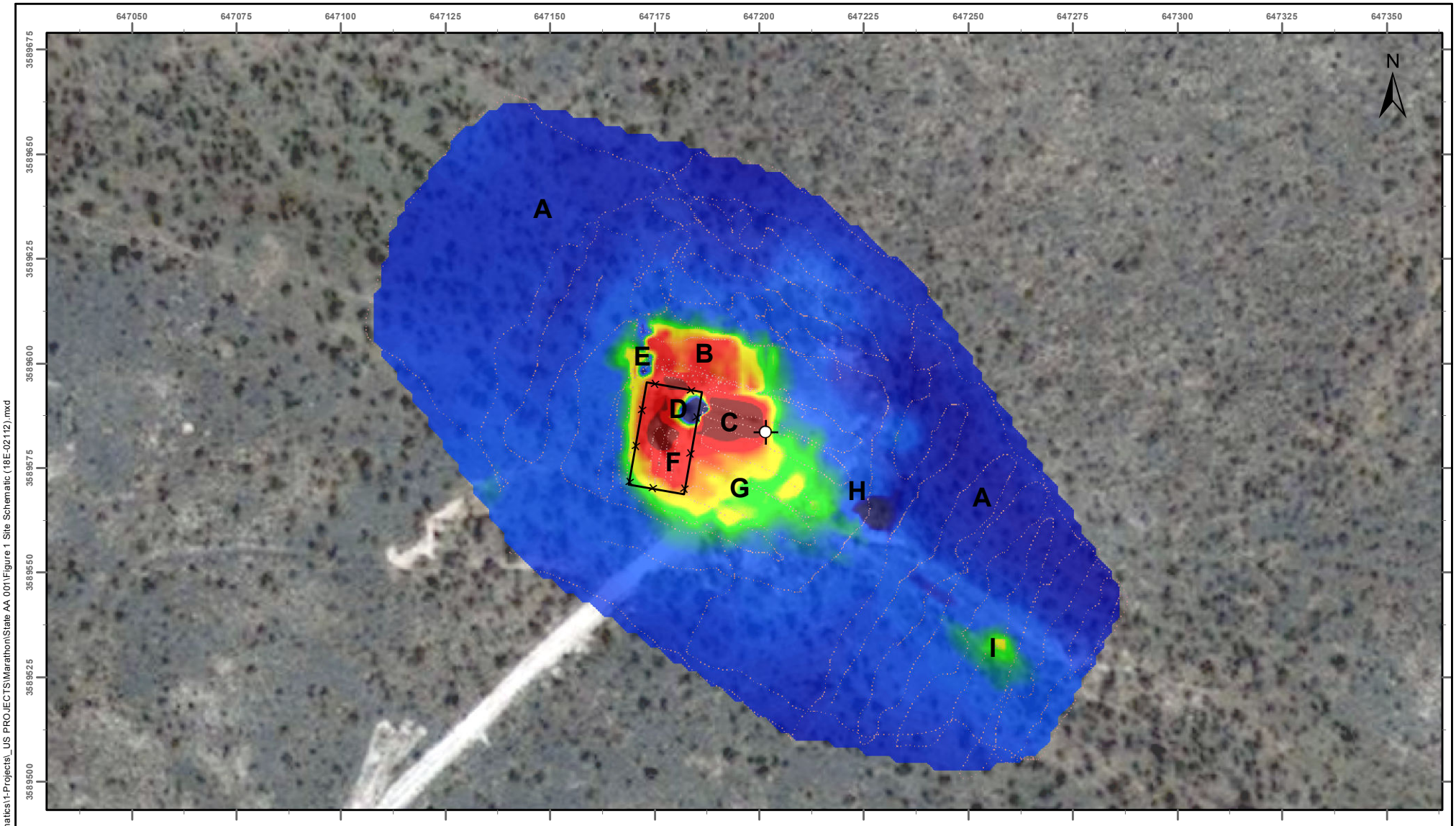
Attachments

Attachment 1. Figure 1

Limitations

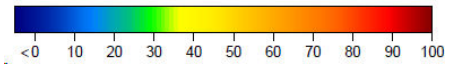
This report has been prepared for the sole benefit of Marathon Oil Permian LLC. (Marathon). This document may not be used by any other person or entity without the express written consent of Vertex Resource Services Inc. (Vertex) and Marathon. Any use of this report by a third party, or any reliance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

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



Legend

- Wellhead
- Survey Track
- Fence
- A Anomaly



Apparent Electrical Conductivity (mS/m)

0 37.5 75 150 ft

SCALE 1:1,300
UTM Zone 13N

Notes: Aerial Image from ESRI, 2017

Marathon Oil

Site Schematic with EM31 Apparent Conductivity Overlay 5 m Depth of Exploration State AA 001

VERTEX

DRAWN:	LP
APPROVED:	MH
DATE:	JAN 30/19

FIGURE: 1

VERSATILITY. EXPERTISE.

Document Path: \\corp.internal\shared\VPS\04 - Geomatics\1-Projects_US PROJECTS\Marathon\State AA 001\Figure 1 Site Schematic (18E-02112).mxd

APPENDIX C.

NMOSE WELL DRILLING PERMITS

WR-07, WD-08, AND WD-11

John R. D Antonio, Jr., P.E.
State Engineer

Roswell Office
1900 WEST SECOND STREET
ROSWELL, NM 88201

Trn Nbr: 645764
File Nbr: CP 01787

STATE OF NEW MEXICO
OFFICE OF THE STATE ENGINEER

Apr. 16, 2019

MARATHON OIL COMPANY
C/O STEPHANIE HINDS
SOUDER MILLER & ASSOCIATES
401 W BROADWAY
FARMINGTON, NM 87401

Greetings:

Your approved copy of the above numbered permit to drill a well for non-consumptive purposes is enclosed. You must obtain an additional permit if you intend to use the water. It is your responsibility to provide the contracted well driller with a copy of the permit that must be made available during well drilling activities.

Carefully review the attached conditions of approval for all specific permit requirements.

* If use of this well is temporary in nature and the well will be plugged at the end of the well usage, the OSE must initially approve of the plugging. If plugging approval is not conditioned in this permit, the applicant must submit a Plugging Plan of Operations for approval prior to the well being plugged. The Plugging Record must be properly completed and submitted to the OSE within 30 days of the well plugging.

* If the final intended purpose and condition requires a well ID tag and meter installation, the applicant must immediately send a completed meter report form to this office.

* The well record and log must be submitted within 30 days of the completion of the well or if the attempt was a dry hole.

* This permit expires and will be cancelled if no well is drilled and/or a well log is not received by the date set forth in the conditions of approval.

Appropriate forms can be downloaded from the OSE website www.ose.state.nm.us.

Sincerely,

Claudia Cuillen
(575)622-6521

Enclosure

explore

File No. CP-1787

NEW MEXICO OFFICE OF THE STATE ENGINEER

WR-07 APPLICATION FOR PERMIT TO DRILL

A WELL WITH NO WATER RIGHT

(check applicable box):

For fees, see State Engineer website: http://www.ose.state.nm.us/

Purpose:	☐ Pollution Control And/Or Recovery	☐ Ground Source Heat Pump
☒ Exploratory Well (Pump test)	☐ Construction Site/Public Works Dewatering	☐ Other(Describe):
☐ Monitoring Well	☐ Mine Dewatering	

A separate permit will be required to apply water to beneficial use regardless if use is consumptive or nonconsumptive.

☐ Temporary Request - Requested Start Date: Requested End Date:

Plugging Plan of Operations Submitted? ☒ Yes ☐ No

1. APPLICANT(S)

Name: Souder, Miller & Associates on behalf of Marathon Oil Company	Name:
Contact or Agent: check here if Agent ☒ Stephanie Hinds	Contact or Agent: check here if Agent ☐
Mailing Address: 401 W. Broadway	Mailing Address:
City: Farmington	City:
State: NM Zip Code: 87401	State: Zip Code:
Phone: 505-325-7535 ☒ Home ☐ Cell Phone (Work):	Phone: ☐ Home ☐ Cell Phone (Work):
E-mail (optional): stephanie.hinds@soudermiller.com	E-mail (optional):

STATE ENGINEER OFFICE ROSWELL, NEW MEXICO 2019 APR -8 AM 9:15

FOR OSE INTERNAL USE Application for Permit, Form WR-07, Rev 11/17/16

File No.: CP-1787	Trn. No.: 645764	Receipt No.: 2-40646
Trans Description (optional): Exp1		
Sub-Basin: CP	PCW/LOG Due Date:	

2. WELL(S) Describe the well(s) applicable to this application.

Location Required: Coordinate location must be reported in NM State Plane (NAD 83), UTM (NAD 83), or Latitude/Longitude (Lat/Long - WGS84).
District II (Roswell) and District VII (Cimarron) customers, provide a PLSS location in addition to above.

☐ NM State Plane (NAD83) (Feet)
☐ NM West Zone
☐ NM East Zone
☐ NM Central Zone

☐ UTM (NAD83) (Meters)
☐ Zone 12N
☐ Zone 13N

■ Lat/Long (WGS84) (to the nearest 1/10th of second)

Well Number (if known):	X or Easting or Longitude:	Y or Northing or Latitude:	Provide if known: -Public Land Survey System (PLSS) (*Quarters or Halves , Section, Township, Range*) OR - Hydrographic Survey Map & Tract; OR - Lot, Block & Subdivision; OR - Land Grant Name
Well 1	103°26'6.09"W	32°26'2.73"N	NE1/4 SE1/4 of T21S, R34E, S35
Well 2	103°26'4.16"W	32°26'1.03"N	NE1/4 SE1/4 of T21S, R34E, S35
Well 3	103°26'2.50"W	32°26'0.43"N	NE1/4 SE1/4 of T21S, R34E, S35

NOTE: If more well locations need to be described, complete form WR-08 (Attachment 1 – POD Descriptions)
Additional well descriptions are attached: ☐ **Yes** ■ **No** **If yes, how many**_____

Other description relating well to common landmarks, streets, or other:
Located near State AA #1 SWD, API 30-025-02605

Well is on land owned by: State or Private - Merchant Livestock LLC

Well Information: NOTE: If more than one (1) well needs to be described, provide attachment. Attached? ☐ **Yes** ■ **No**
If yes, how many_____

Approximate depth of well (feet): 45	Outside diameter of well casing (inches): 2 inch
Driller Name: HRL COMPLIANCE SOLUTIONS, INC	Driller License Number: 1789

3. ADDITIONAL STATEMENTS OR EXPLANATIONS

Soil borings will be drilled for investigative purposes, which is to delineate the vertical extent of chloride contamination due to a produced water release at the State AA #1 SWD. Groundwater may be as shallow as 30 feet. Temporary wells will be installed if contamination is shown to extend to groundwater. If chloride contamination cleans up prior to reaching groundwater, then no wells will be installed.

FOR OSE INTERNAL USE — Application for Permit, Form WR-07

File No.:	Trn No.:

4. SPECIFIC REQUIREMENTS: The applicant must include the following, as applicable to each well type. Please check the appropriate boxes, to indicate the information has been included and/or attached to this application:

Exploratory: ☒ Include a description of any proposed pump test, if applicable.	**Pollution Control and/or Recovery:** ☐ Include a plan for pollution control/recovery, that includes the following: ☐ A description of the need for the pollution control or recovery operation. ☐ The estimated maximum period of time for completion of the operation. ☐ The annual diversion amount. ☐ The annual consumptive use amount. ☐ The maximum amount of water to be diverted and injected for the duration of the operation. ☐ The method and place of discharge.	**Construction De-Watering:** ☐ Include a description of the proposed dewatering operation, ☐ The estimated duration of the operation, ☐ The maximum amount of water to be diverted, ☐ A description of the need for the dewatering operation, and, ☐ A description of how the diverted water will be disposed of.	**Mine De-Watering:** ☐ Include a plan for pollution control/recovery, that includes the following: ☐ A description of the need for mine dewatering. ☐ The estimated maximum period of time for completion of the operation. ☐ The source(s) of the water to be diverted. ☐ The geohydrologic characteristics of the aquifer(s). ☐ The maximum amount of water to be diverted per annum. ☐ The maximum amount of water to be diverted for the duration of the operation. ☐ The quality of the water. ☐ The method of measurement of water diverted. ☐ The recharge of water to the aquifer. ☐ Description of the estimated area of hydrologic effect of the project. ☐ The method and place of discharge. ☐ An estimation of the effects on surface water rights and underground water rights from the mine dewatering project. ☐ A description of the methods employed to estimate effects on surface water rights and underground water rights. ☐ Information on existing wells, rivers, springs, and wetlands within the area of hydrologic effect.
Monitoring: ☐ Include the reason for the monitoring well, and, ☐ The duration of the planned monitoring.	☐ The method of measurement of water produced and discharged. ☐ The source of water to be injected. ☐ The method of measurement of water injected. ☐ The characteristics of the aquifer. ☐ The method of determining the resulting annual consumptive use of water and depletion from any related stream system. ☐ Proof of any permit required from the New Mexico Environment Department. ☐ An access agreement if the applicant is not the owner of the land on which the pollution plume control or recovery well is to be located.	**Ground Source Heat Pump:** ☐ Include a description of the geothermal heat exchange project, ☐ The number of boreholes for the completed project and required depths. ☐ The time frame for constructing the geothermal heat exchange project, and, ☐ The duration of the project. ☐ Preliminary surveys, design data, and additional information shall be included to provide all essential facts relating to the request.	

ACKNOWLEDGEMENT

I, We (name of applicant(s)), Stephanie Hinds
Print Name(s)

affirm that the foregoing statements are true to the best of (my, our) knowledge and belief.

Applicant Signature

Applicant Signature

STATE ENGINEER OFFICE
ROSWELL, NEW MEXICO
2019 APR -3 AM 9:15

ACTION OF THE STATE ENGINEER

This application is:

☒ approved ☐ partially approved ☐ denied

provided it is not exercised to the detriment of any others having existing rights, and is not contrary to the conservation of water in New Mexico nor detrimental to the public welfare and further subject to the attached conditions of approval.

Witness my hand and seal this 16th day of APRIL 20 19, for the State Engineer.

JOHN R. D'ANTONIO JR., P.E., State Engineer

By: JUAN HERNANDEZ
Signature Print

Title: WATER RESOURCES MANAGER I
Print

FOR OSE INTERNAL USE

Application for Permit, Form WR-07

File No.:	Trn No.:

NEW MEXICO STATE ENGINEER OFFICE
PERMIT TO EXPLORE

SPECIFIC CONDITIONS OF APPROVAL

17-1B Depth of the well shall not exceed the thickness of the Ogallala formation.

17-4 No water shall be appropriated and beneficially used under this permit.

17-6 The well authorized by this permit shall be plugged completely using the following method per Rules and Regulations Governing Well Driller Licensing, Construction, Repair and Plugging of Wells; Subsection C of 19.27.4.30 NMAC unless an alternative plugging method is proposed by the well owner and approved by the State Engineer upon completion of the permitted use. All pumping appurtenance shall be removed from the well prior to plugging. To plug a well, the entire well shall be filled from the bottom upwards to ground surface using a tremie pipe. The bottom of the tremie shall remain submerged in the sealant throughout the entire sealing process; other placement methods may be acceptable and approved by the state engineer. The well shall be plugged with an office of the state engineer approved sealant for use in the plugging of non-artesian wells. The well driller shall cut the casing off at least four (4) feet below ground surface and fill the open hole with at least two vertical feet of approved sealant. The driller must fill or cover any open annulus with sealant. Once the sealant has cured, the well driller or well owner may cover the seal with soil. A Plugging Report for said well shall be filed with the Office of the State Engineer in a District Office within 30 days of completion of the plugging.

17-7 The Permittee shall utilize the highest and best technology available to ensure conservation of water to the maximum extent practical.

Trn Desc: CP 01787 POD1-POD3

File Number: CP 01787
Trn Number: 645764

NEW MEXICO STATE ENGINEER OFFICE
PERMIT TO EXPLORE

SPECIFIC CONDITIONS OF APPROVAL (Continued)

17-B The well shall be drilled by a driller licensed in the State of New Mexico in accordance with 72-12-12 NMSA 1978. A licensed driller shall not be required for the construction of a well driven without the use of a drill rig, provided that the casing shall not exceed two and three-eighths (2 3/8) inches outside diameter.

17-C The well driller must file the well record with the State Engineer and the applicant within 30 days after the well is drilled or driven. It is the well owner's responsibility to ensure that the well driller files the well record.
The well driller may obtain the well record form from any District Office or the Office of the State Engineer website.

17-C2 No water shall be diverted from this well except for testing purposes which shall not exceed ten (10) cumulative days, and well shall be plugged or capped on or before , unless a permit to use water from this well is acquired from the Office of the State Engineer.

17-P The well shall be constructed, maintained, and operated to prevent inter-aquifer exchange of water and to prevent loss of hydraulic head between hydrogeologic zones.

17-Q The State Engineer retains jurisdiction over this permit.

17-R Pursuant to section 72-8-1 NMSA 1978, the permittee shall allow the State Engineer and OSE representatives entry upon private property for the performance of their respective duties, including access to the ditch or acequia to measure flow and also to the well for meter reading and water level measurement.

NEW MEXICO STATE ENGINEER OFFICE
PERMIT TO EXPLORE

SPECIFIC CONDITIONS OF APPROVAL (Continued)

LOG The Point of Diversion CP 01787 POD1 must be completed and the Well Log filed on or before 04/15/2020.

LOG The Point of Diversion CP 01787 POD2 must be completed and the Well Log filed on or before 04/15/2020.

LOG The Point of Diversion CP 01787 POD3 must be completed and the Well Log filed on or before 04/15/2020.

IT IS THE PERMITTEE'S RESPONSIBILITY O OBTAIN ALL AUTHORIZATIONS AND PERMISSIONS TO DRILL ON PROPERTY OF OTHER OWNERSHIP BEFORE COMMENCING ACTIVITIES UNDER THIS PERMIT.

ACTION OF STATE ENGINEER

Notice of Intention Rcvd:	Date Rcvd. Corrected:
Formal Application Rcvd: 04/08/2019	Pub. of Notice Ordered:
Date Returned - Correction:	Affidavit of Pub. Filed:

This application is approved provided it is not exercised to the detriment of any others having existing rights, and is not contrary to the conservation of water in New Mexico nor detrimental to the public welfare of the state; and further subject to the specific conditions listed previously.

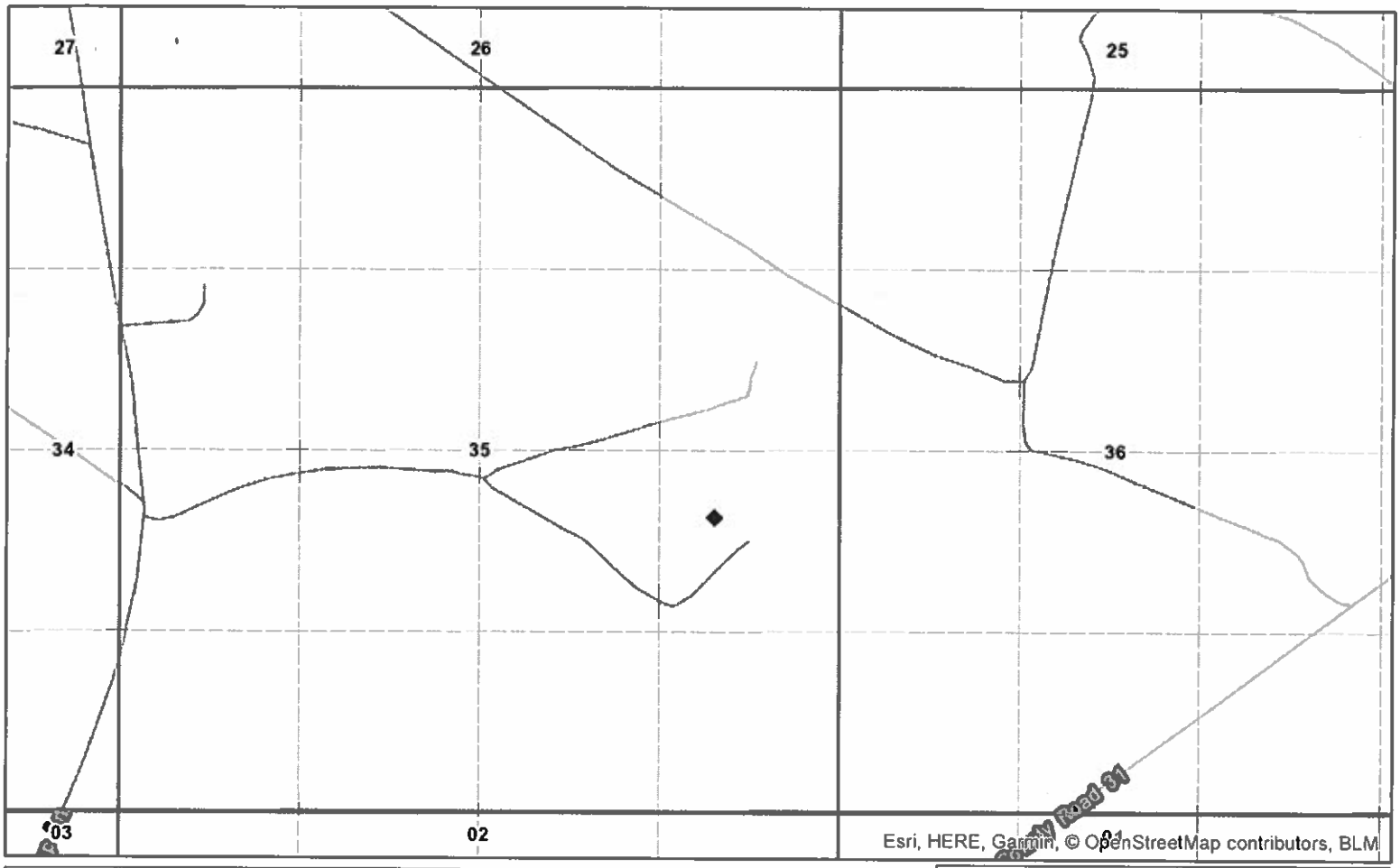
Witness my ~~hand and~~ seal this 16 day of Apr A.D., 2019

John R. D Antonio, Jr., P.E. , State Engineer

By: _____
JUAN HERNANDEZ

Trn Desc: CP 01787 POD1-POD3

File Number: CP 01787
Trn Number: 645764



Coordinates

UTM - NAD 83 (m) - Zone 13

Easting 647128.272

Northing 3589630.366

State Plane - NAD 83 (f) - Zone E

Easting 818490.111

Northing 522817.014

Degrees Minutes Seconds

Latitude 32 : 26 : 2.730000

Longitude -103 : 26 : 6.090000

Location pulled from Coordinate Search

NEW MEXICO OFFICE OF THE STATE ENGINEER

1:18,056

mi

0 0.05 0.1 0.2

N

GUILLEN 4/16/2019

Spatial Information

County: Lea

Groundwater Basin: Capitan

Abstract Area:Capitan-CP

Land Grant:
Not in Land Grant

Restrictions:

NA

PLSS Description

SENWNESE Qtr of Sec 35 of 021S 034E

Derived from CADNSDI- Qtr Sec. locations are calculated and are only approximations

Parcel Information

UPC/DocNum:

Parcel Owner:

Address:

Legal:

POD Information

Owner: SOUDER, MILLER & ASSOCIATES

File Number: CP-1787 POD1

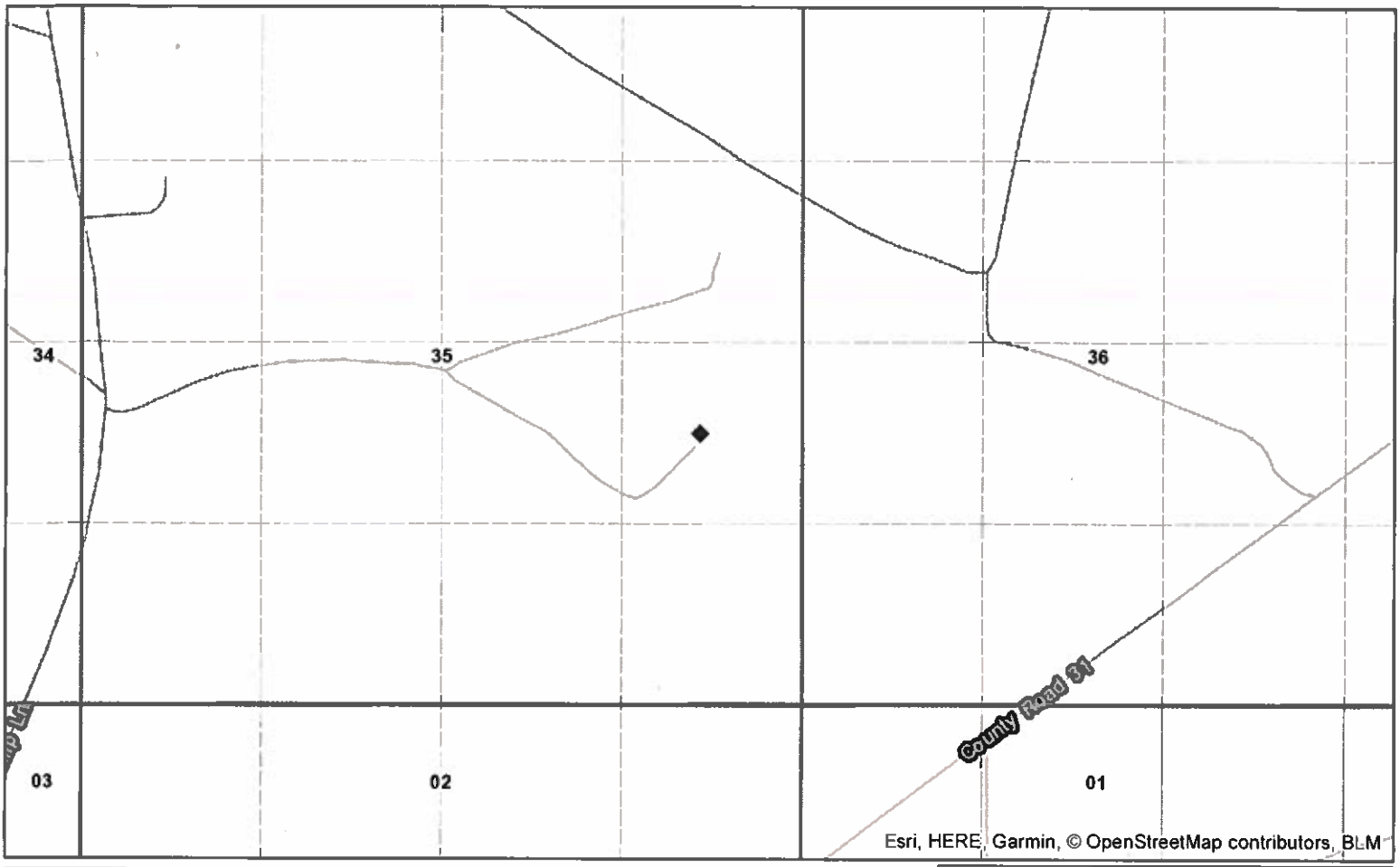
POD Status: NoData

Permit Status: NoData

Permit Use: NoData

Purpose: EXPL

- Coord Search Location
- WRAB Abstract Project Areas
- BLM Land Grant
- PLSSTownship
- PLSSFirstDiv...
- PLSSSecond...



Coordinates

UTM - NAD 83 (m) - Zone 13

Easting 647179.446

Northing 3589578.751

State Plane - NAD 83 (f) - Zone E

Easting 818656.965

Northing 522646.605

Degrees Minutes Seconds

Latitude 32 : 26 : 1.030000

Longitude -103 : 26 : 4.160000

Location pulled from Coordinate Search

NEW MEXICO OFFICE OF THE STATE ENGINEER

1:18,056

mi

0 0.05 0.1 0.2

N

GUILLEN 4/16/2019

Spatial Information

County: Lea

Groundwater Basin: Capitan

Abstract Area:Capitan-CP

Land Grant:
Not in Land Grant

Restrictions:

NA

PLSS Description

NESWNESE Qtr of Sec 35 of 021S 034E

Derived from CADNSDI- Qtr Sec. locations are calculated and are only approximations

Parcel Information

UPC/DocNum:

Parcel Owner:

Address:

Legal:

POD Information

Owner: SOUDER, MILLER & ASSOCIATES

File Number: CP-1787 POD2

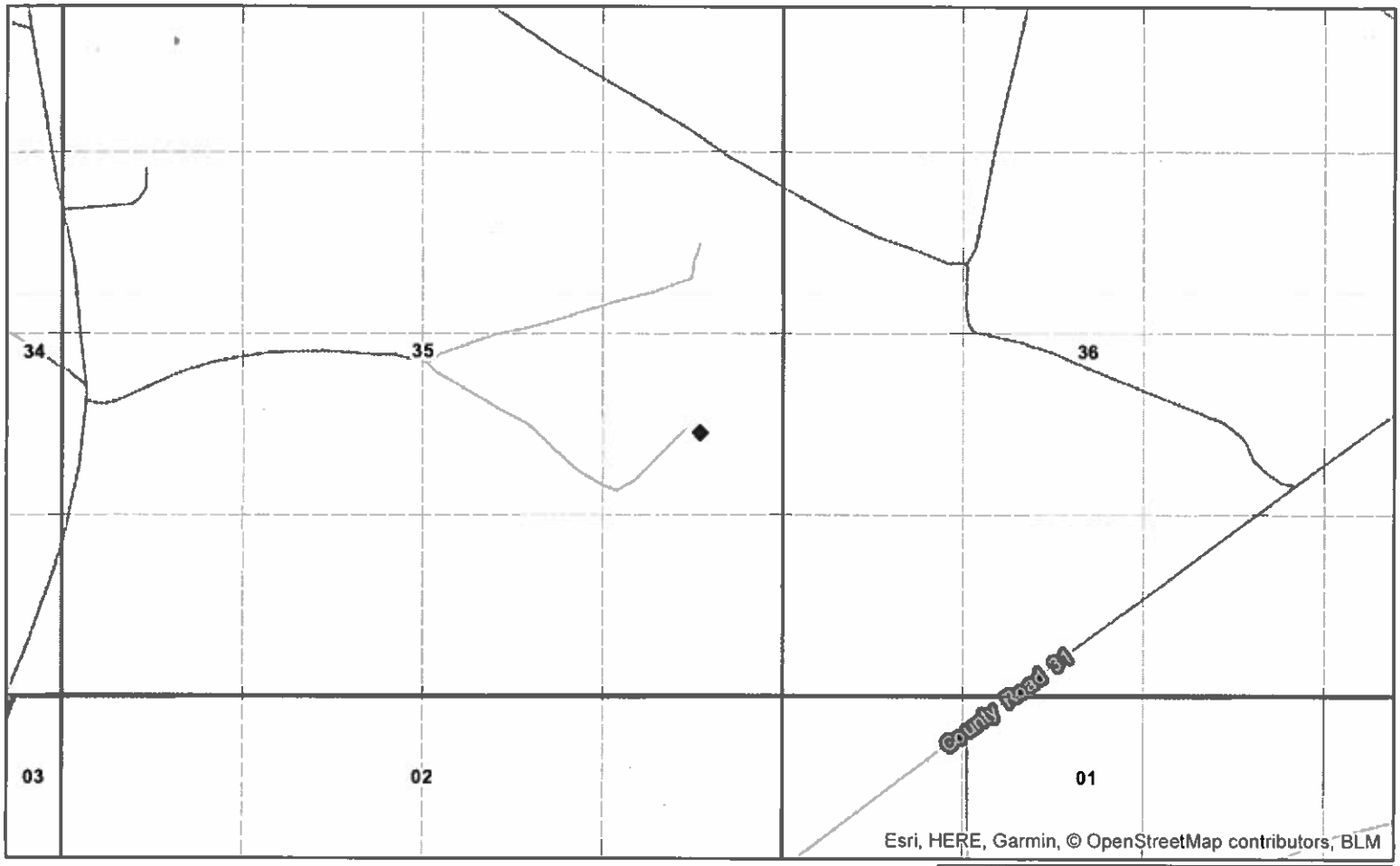
POD Status: NoData

Permit Status: NoData

Permit Use: NoData

Purpose: EXPL

- Coord Search Location
- WRAB Abstract Project Areas
- BLM Land Grant
- PLSSTownship
- PLSSFirstDiv...
- PLSSSecond...



Coordinates

UTM - NAD 83 (m) - Zone 13

Easting 647223.072

Northing 3589560.908

State Plane - NAD 83 (f) - Zone E

Easting 818799.745

Northing 522587.167

Degrees Minutes Seconds

Latitude 32 : 26 : 0.430000

Longitude -103 : 26 : 2.500000

Location pulled from Coordinate Search

NEW MEXICO OFFICE OF THE STATE ENGINEER

1:18,056

mi

0 0.05 0.1 0.2

N

GUILLEN 4/16/2019

Spatial Information

County: Lea

Groundwater Basin: Capitan

Abstract Area:Capitan-CP

Land Grant:
Not in Land Grant

Restrictions:

NA

PLSS Description

NWSENESE Qtr of Sec 35 of 021S 034E

Derived from CADNSDI- Qtr Sec. locations are calculated and are only approximations

Parcel Information

UPC/DocNum:

Parcel Owner:

Address:

Legal:

POD Information

Owner: SOUDER, MILLER & ASSOCIATES

File Number: CP-1787 POD3

POD Status: NoData

Permit Status: NoData

Permit Use: NoData

Purpose: EXPL

- Coord Search Location
- WRAB Abstract Project Areas
- BLM Land Grant
- PLSSTownship
- PLSSFirstDiv...
- PLSSSecond...

STATE OF NEW MEXICO
OFFICE OF THE STATE ENGINEER
ROSWELL

John D' Antonio, P.E.
State Engineer

District II
1900 West Second St.
Roswell, New Mexico 88201
Phone: (575) 622-6521
Fax: (575) 623-8559

April 11, 2019

Marathon Oil Company
c/o Souder, Miller & Associates
401 West Broadway
Farmington, NM 87401

RE: *Well Plugging Plan of Operations* (CP-1787 POD1-POD3)

Greetings:
Attached is your copy of the Well Plugging Plan of Operations for the above described project.

The proposed method of operations for the subject coreholes is found to be acceptable and in accordance with the Rules and Regulations Governing Well Driller Licensing; Construction, Repair and Plugging of Wells 19.27.4 NMAC adopted June 30, 2017 by the State Engineer subject to the following:

The applicant states the coreholes are not anticipated to encounter groundwater. Should the coreholes be dry to total depth, the applicant, may apply clean native fill to 10 feet bgs followed by a 10 ft seal to ground surface. The applicant may use bentonite pellets in lieu of cuttings if desired.

Should groundwater be encountered, direct pour of pellets may be conducted provided the applicant apply the sealant in lifts, maintain a record of the amount applied, anticipated tag and actual tag. The pellets should be hydrated in lifts according to manugaturer's instructions.

Sincerely,

Alvaro Alvarado
Water Resources Manager I
Cc Santa Fe

WELL PLUGGING PLAN OF OPERATIONS

NOTE: A Well Plugging Plan of Operations shall be filed with and accepted by the Office of the State Engineer prior to plugging.

I. FILING FEE: There is no filing fee for this form.

II. GENERAL / WELL OWNERSHIP:

Existing Office of the State Engineer POD Number (Well Number) for well to be plugged: Well 1 cp-1787 POD1

Name of well owner: Souder, Miller & Associates, agent for Marathon Oil Company

Mailing address: 401 W. Broadway

City: Farmington State: NM Zip code: 87401

Phone number: 505-325-7535 E-mail: stephanie.hinds@soudermiller.com

III. WELL DRILLER INFORMATION:

Well Driller contracted to provide plugging services: HRL Compliance Solutions, Inc.

New Mexico Well Driller License No.: 1789 Expiration Date: 12/20/2020

STATE ENGINEER OFFICE
ROSWELL, NEW MEXICO
2019 APR -8 AM 9:16

IV. WELL INFORMATION:

Note: A copy of the existing Well Record for the well to be plugged should be attached to this plan.

1) GPS Well Location: Latitude: 32 deg, 26 min, 2.73 sec
Longitude: 103 deg, 26 min, 6.09 sec, WGS84
☐ Check if seconds are decimal format.

2) Reason(s) for plugging well:

Well is intended only for temporary investigative purposes; no monitoring is planned at this time. Boring will be drilled into groundwater (only if contamination is shown to extend to groundwater), at which point it will be sampled for lab analysis. The well will then be backfilled with drill cuttings.

3) Was well used for any type of monitoring program? No If yes, please use section VII of this form to detail what hydrogeologic parameters were monitored. If the well was used to monitor contaminated or poor quality water, authorization from the New Mexico Environment Department may be required prior to plugging.

4) Does the well tap brackish, saline, or otherwise poor quality water? unknown If yes, provide additional detail, including analytical results and/or laboratory report(s):

Analytical results will be provided.

5) Static water level: unknown feet below land surface / feet above land surface (circle one)

6) Depth of the well: ~45 feet

7) Inside diameter of innermost casing: 2 inches.

8) Casing material: PVC

9) The well was constructed with:

☐ an open-hole production interval, state the open interval: _____

☒ a well screen or perforated pipe, state the screened interval(s): ~5-10 feet of 0.010" slotted screen

10) What annular interval surrounding the artesian casing of this well is cement-grouted? N/A

11) Was the well built with surface casing? no If yes, is the annulus surrounding the surface casing grouted or otherwise sealed? N/A If yes, please describe:

12) Has all pumping equipment and associated piping been removed from the well? yes If not, describe remaining equipment and intentions to remove prior to plugging in Section VII of this form.

V. DESCRIPTION OF PLANNED WELL PLUGGING:

Note: If this plan proposes to plug an artesian well in a way other than with cement grout, placed bottom to top with a tremie pipe, a detailed diagram of the well showing proposed final plugged configuration shall be attached, as well as any additional technical information, such as geophysical logs, that are necessary to adequately describe the proposal.

1) Describe the method by which cement grout shall be placed in the well, or describe requested plugging methodology proposed for the well:

Well will be plugged using drill cuttings from the bore hole from total depth to ground surface.

2) Will well head be cut-off below land surface after plugging? N/A

VI. PLUGGING AND SEALING MATERIALS:

Note: The plugging of a well that taps poor quality water may require the use of a specialty cement or specialty sealant

1) For plugging intervals that employ cement grout, complete and attach Table A.

2) For plugging intervals that will employ approved non-cement based sealant(s), complete and attach Table B.

3) Theoretical volume of grout required to plug the well to land surface: N/A

4) Type of Cement proposed: N/A

5) Proposed cement grout mix: N/A gallons of water per 94 pound sack of Portland cement.

6) Will the grout be: N/A batch-mixed and delivered to the site

N/A mixed on site

7) Grout additives requested, and percent by dry weight relative to cement:

N/A

8) Additional notes and calculations:

N/A

VII. ADDITIONAL INFORMATION: List additional information below, or on separate sheet(s):

If there is a possibility of soil contamination extending into groundwater, then a temporary well will be placed. Upon reaching groundwater, a temporary screen will be placed, and a groundwater sample will be collected. After groundwater sample has been collected, the temporary well will be backfilled with drill cuttings from total depth up to ground surface.

VIII. SIGNATURE:

I, Stephanie Hinds, say that I have carefully read the foregoing Well Plugging Plan of Operations and any attachments, which are a part hereof; that I am familiar with the rules and regulations of the State Engineer pertaining to the plugging of wells and will comply with them, and that each and all of the statements in the Well Plugging Plan of Operations and attachments are true to the best of my knowledge and belief.

Stephanie Hinds — Signature of Applicant

4/8/2019 — Date

IX. ACTION OF THE STATE ENGINEER:

This Well Plugging Plan of Operations is:

✓ Approved subject to the attached conditions.

_____ Not approved for the reasons provided on the attached letter.

Witness my hand and official seal this 11 day of April, 2019

STATE ENGINEER OFFICE
ROSWELL, NEW MEXICO
2019 APR -8 AM 9:16

Tom Blaine P.E., New Mexico State Engineer

By: For Adam Morley

TABLE A - For plugging intervals that employ cement grout. Start with deepest interval.

	Interval 1 – deepest	Interval 2	Interval 3 – most shallow
			Note: if the well is non-artesian and breaches only one aquifer, use only this column.
Top of proposed interval of grout placement (ft bgl)			
Bottom of proposed interval of grout placement (ft bgl)			
Theoretical volume of grout required per interval (gallons)			
Proposed cement grout mix gallons of water per 94-lb. sack of Portland cement			
Mixed on-site or batch-mixed and delivered?			
Grout additive 1 requested			
Additive 1 percent by dry weight relative to cement			
Grout additive 2 requested			
Additive 2 percent by dry weight relative to cement			

TABLE B - For plugging intervals that will employ approved non-cement based sealant(s). Start with deepest interval.

	Interval 1 – deepest	Interval 2	Interval 3 – most shallow
			Note: if the well is non-artesian and breaches only one aquifer, use only this column.
Top of proposed interval of sealant placement (ft bgl)			
Bottom of proposed sealant of grout placement (ft bgl)			
Theoretical volume of sealant required per interval (gallons)			
Proposed abandonment sealant (manufacturer and trade name)			

STATE OF NEW MEXICO
OFFICE OF THE STATE ENGINEER
ROSWELL

John D' Antonio, P.E.
State Engineer

District II
1900 West Second St.
Roswell, New Mexico 88201
Phone: (575) 622-6521
Fax: (575) 623-8559

April 11, 2019

Marathon Oil Company
c/o Souder, Miller & Associates
401 West Broadway
Farmington, NM 87401

RE: *Well Plugging Plan of Operations* (CP-1787 POD1-POD3)

Greetings:
Attached is your copy of the Well Plugging Plan of Operations for the above described project.

The proposed method of operations for the subject coreholes is found to be acceptable and in accordance with the Rules and Regulations Governing Well Driller Licensing; Construction, Repair and Plugging of Wells 19.27.4 NMAC adopted June 30, 2017 by the State Engineer subject to the following:

The applicant states the coreholes are not anticipated to encounter groundwater. Should the coreholes be dry to total depth, the applicant, may apply clean native fill to 10 feet bgs followed by a 10 ft seal to ground surface. The applicant may use bentonite pellets in lieu of cuttings if desired.

Should groundwater be encountered, direct pour of pellets may be conducted provided the applicant apply the sealant in lifts, maintain a record of the amount applied, anticipated tag and actual tag. The pellets should be hydrated in lifts according to manugaturer's instructions.

Sincerely,

Alvaro Alvarado
Water Resources Manager I
Cc Santa Fe

WELL PLUGGING PLAN OF OPERATIONS

NOTE: A Well Plugging Plan of Operations shall be filed with and accepted by the Office of the State Engineer prior to plugging.

I. FILING FEE: There is no filing fee for this form.

II. GENERAL / WELL OWNERSHIP:

Existing Office of the State Engineer POD Number (Well Number) for well to be plugged: Well 2 CP-1787 POD2

Name of well owner: Souder, Miller & Associates, agent for Marathon Oil Company

Mailing address: 401 W. Broadway

City: Farmington State: NM Zip code: 87401

Phone number: 505-325-7535 E-mail: stephanie.hinds@soudermiller.com

2019 APR -8 AM 9:16
STATE ENGINEER OFFICE
ROSWELL, NEW MEXICO

III. WELL DRILLER INFORMATION:

Well Driller contracted to provide plugging services: HRL Compliance Solutions, Inc.

New Mexico Well Driller License No.: 1789 Expiration Date: 12/20/2020

IV. WELL INFORMATION:

Note: A copy of the existing Well Record for the well to be plugged should be attached to this plan.

1) GPS Well Location: Latitude: 32 deg, 26 min, 1.03 sec
Longitude: 103 deg, 26 min, 4.16 sec, WGS84
☐ Check if seconds are decimal format.

2) Reason(s) for plugging well:

Well is intended only for temporary investigative purposes; no monitoring is planned at this time. Boring will be drilled into groundwater (only if contamination is shown to extend to groundwater), at which point it will be sampled for lab analysis. The well will then be backfilled with drill cuttings.

3) Was well used for any type of monitoring program? No If yes, please use section VII of this form to detail what hydrogeologic parameters were monitored. If the well was used to monitor contaminated or poor quality water, authorization from the New Mexico Environment Department may be required prior to plugging.

4) Does the well tap brackish, saline, or otherwise poor quality water? unknown If yes, provide additional detail, including analytical results and/or laboratory report(s):

Analytical results will be provided.

5) Static water level: unknown feet below land surface / feet above land surface (circle one)

6) Depth of the well: ~45 feet

7) Inside diameter of innermost casing: 2 inches.

8) Casing material: PVC

9) The well was constructed with:

☐ an open-hole production interval, state the open interval: _____

■ a well screen or perforated pipe, state the screened interval(s): ~5-10 feet of 0.010" slotted screen

10) What annular interval surrounding the artesian casing of this well is cement-grouted? N/A

11) Was the well built with surface casing? no If yes, is the annulus surrounding the surface casing grouted or otherwise sealed? N/A If yes, please describe:

12) Has all pumping equipment and associated piping been removed from the well? yes If not, describe remaining equipment and intentions to remove prior to plugging in Section VII of this form.

V. DESCRIPTION OF PLANNED WELL PLUGGING:

Note: If this plan proposes to plug an artesian well in a way other than with cement grout, placed bottom to top with a tremie pipe, a detailed diagram of the well showing proposed final plugged configuration shall be attached, as well as any additional technical information, such as geophysical logs, that are necessary to adequately describe the proposal.

1) Describe the method by which cement grout shall be placed in the well, or describe requested plugging methodology proposed for the well:

Well will be plugged using drill cuttings from the bore hole from total depth to ground surface.

2) Will well head be cut-off below land surface after plugging? N/A

VI. PLUGGING AND SEALING MATERIALS:

Note: The plugging of a well that taps poor quality water may require the use of a specialty cement or specialty sealant

1) For plugging intervals that employ cement grout, complete and attach Table A.

2) For plugging intervals that will employ approved non-cement based sealant(s), complete and attach Table B.

3) Theoretical volume of grout required to plug the well to land surface: N/A

4) Type of Cement proposed: N/A

5) Proposed cement grout mix: N/A gallons of water per 94 pound sack of Portland cement.

6) Will the grout be: N/A batch-mixed and delivered to the site

N/A mixed on site

7) Grout additives requested, and percent by dry weight relative to cement:

N/A

8) Additional notes and calculations:

N/A

VII. ADDITIONAL INFORMATION: List additional information below, or on separate sheet(s):

If there is a possibility of soil contamination extending into groundwater, then a temporary well will be placed. Upon reaching groundwater, a temporary screen will be placed, and a groundwater sample will be collected. After groundwater sample has been collected, the temporary well will be backfilled with drill cuttings from total depth up to ground surface.

VIII. SIGNATURE:

I, Stephanie Hinds, say that I have carefully read the foregoing Well Plugging Plan of Operations and any attachments, which are a part hereof; that I am familiar with the rules and regulations of the State Engineer pertaining to the plugging of wells and will comply with them, and that each and all of the statements in the Well Plugging Plan of Operations and attachments are true to the best of my knowledge and belief.

Stephanie Hinds — Signature of Applicant

4/8/2019 — Date

IX. ACTION OF THE STATE ENGINEER:

This Well Plugging Plan of Operations is:

✓ Approved subject to the attached conditions.

_____ Not approved for the reasons provided on the attached letter.

Witness my hand and official seal this 11 day of APRIL, 2019

Tom Blaine P.E., New Mexico State Engineer

By: Tom Blaine

2019 APR -8 AM 9:16

STATE ENGINEER OFFICE
ROSWELL, NEW MEXICO

TABLE A - For plugging intervals that employ cement grout. Start with deepest interval.

	Interval 1 – deepest	Interval 2	Interval 3 – most shallow
			Note: if the well is non-artesian and breaches only one aquifer, use only this column.
Top of proposed interval of grout placement (ft bgl)			
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Theoretical volume of grout required per interval (gallons)			
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Grout additive 1 requested			
Additive 1 percent by dry weight relative to cement			
Grout additive 2 requested			
Additive 2 percent by dry weight relative to cement			

TABLE B - For plugging intervals that will employ approved non-cement based sealant(s). Start with deepest interval.

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Top of proposed interval of sealant placement (ft bgl)			
Bottom of proposed sealant of grout placement (ft bgl)			
Theoretical volume of sealant required per interval (gallons)			
Proposed abandonment sealant (manufacturer and trade name)			

STATE OF NEW MEXICO
OFFICE OF THE STATE ENGINEER
ROSWELL

John D' Antonio, P.E.
State Engineer

District II
1900 West Second St.
Roswell, New Mexico 88201
Phone: (575) 622-6521
Fax: (575) 623-8559

April 11, 2019

Marathon Oil Company
c/o Souder, Miller & Associates
401 West Broadway
Farmington, NM 87401

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Should groundwater be encountered, direct pour of pellets may be conducted provided the applicant apply the sealant in lifts, maintain a record of the amount applied, anticipated tag and actual tag. The pellets should be hydrated in lifts according to manugaturer's instructions.

Sincerely,

Alvaro Alvarado
Water Resources Manager I
Cc Santa Fe

WELL PLUGGING PLAN OF OPERATIONS

NOTE: A Well Plugging Plan of Operations shall be filed with and accepted by the Office of the State Engineer prior to plugging.

I. FILING FEE: There is no filing fee for this form.

II. GENERAL / WELL OWNERSHIP:

Existing Office of the State Engineer POD Number (Well Number) for well to be plugged: Well 3 cp-1787 POD3

Name of well owner: Souder, Miller & Associates, agent for Marathon Oil Company

Mailing address: 401 W. Broadway

City: Farmington State: NM Zip code: 87401

Phone number: 505-325-7535 E-mail: stephanie.hinds@soudermiller.com

III. WELL DRILLER INFORMATION:

Well Driller contracted to provide plugging services: HRL Compliance Solutions, Inc.

New Mexico Well Driller License No.: 1789 Expiration Date: 12/20/2020

2019 APR -8 AM 9:16
STATE ENGINEER OFFICE
ROSWELL, NEW MEXICO

IV. WELL INFORMATION:

Note: A copy of the existing Well Record for the well to be plugged should be attached to this plan.

1) GPS Well Location: Latitude: 32 deg, 26 min, 0.43 sec
Longitude: 103 deg, 26 min, 2.50 sec, WGS84
☐ Check if seconds are decimal format.

2) Reason(s) for plugging well:

Well is intended only for temporary investigative purposes; no monitoring is planned at this time. Boring will be drilled into groundwater (only if contamination is shown to extend to groundwater), at which point it will be sampled for lab analysis. The well will then be backfilled with drill cuttings.

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8) Additional notes and calculations:

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Stephanie Hinds — Signature of Applicant

4/8/2019 — Date

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✓ Approved subject to the attached conditions.

_____ Not approved for the reasons provided on the attached letter.

Witness my hand and official seal this 11 day of April, 2019

Tom Blaine P.E., New Mexico State Engineer

By: For Adrian Morley

STATE ENGINEER OFFICE
ROSWELL, NEW MEXICO
2019 APR -8 AM 9:16

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Theoretical volume of grout required per interval (gallons)			
Proposed cement grout mix gallons of water per 94-lb. sack of Portland cement			
Mixed on-site or batch-mixed and delivered?			
Grout additive 1 requested			
Additive 1 percent by dry weight relative to cement			
Grout additive 2 requested			
Additive 2 percent by dry weight relative to cement			

TABLE B - For plugging intervals that will employ approved non-cement based sealant(s). Start with deepest interval.

	Interval 1 – deepest	Interval 2	Interval 3 – most shallow
			Note: if the well is non-artesian and breaches only one aquifer, use only this column.
Top of proposed interval of sealant placement (ft bgl)			
Bottom of proposed sealant of grout placement (ft bgl)			
Theoretical volume of sealant required per interval (gallons)			
Proposed abandonment sealant (manufacturer and trade name)			

APPENDIX D.

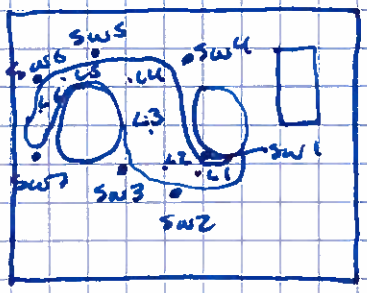
FIELD NOTES

SUBJECT initial Sampling PROJECT State AA #1 PAGE 1

CLIENT Marathon oil DATE 10/22/2018 BY CA

CHECKED BY

- Arrived @ location @ 12:20 p
- Went to go take a look at spill area.



- taking 6 samples with ~~and~~ CA field screen
- Started Sampling @ 1:20 p
- ☐ are side walls taken

- All locations were really wet, and odor of hydrocarbon was very strong for all locations.

Field Screening

Location Name: State AH #1

Date: 10/22/18

Sample Name:	Collection Time:	EC (mS)	Temp (°C)	PID Reading /PF	Soil Color	Primary Soil Type	Moisture Level	Other Remarks/Notes:
AH#1 L1-1	1:22	.402	21.2	—	Light ~~Dark~~ Tan Brown ~~Gray~~ Olive Yellow Red	Gravel ~~Rock~~ ~~Sand~~ Silt ~~Clay~~	Dry Moist ~~Wet~~	~~123~~ 32.433625 -103.434458 HC Smell
L1-2	1:27	2.26	20.0	—	Light ~~Dark~~ Tan Brown ~~Gray~~ Olive Yellow Red	Gravel Rock Sand Silt ~~Clay~~	Dry Moist ~~Wet~~	L1 ~~32.433597 -103.434466~~ HC Smell
L2-2	1:30	.573	19.9	—	Light ~~Dark~~ Tan Brown ~~Gray~~ Olive Yellow Red	Gravel Rock Sand Silt ~~Clay~~	Dry Moist ~~Wet~~	32.433597 103.434466 HC Smell
L3-1	2:02	.257	20.1	—	Light ~~Dark~~ Tan Brown ~~Gray~~ Olive Yellow Red	Gravel Rock Sand Silt ~~Clay~~	Dry Moist ~~Wet~~	32.433608 -103.434494 HC Smell
L3-2	2:05	.586	19.0	—	Light ~~Dark~~ Tan Brown ~~Gray~~ Olive Yellow Red	Gravel Rock Sand Silt ~~Clay~~	Dry Moist ~~Wet~~	HC Smell
L4-1	2:07	.507	18.4	—	Light ~~Dark~~ Tan Brown ~~Gray~~ Olive Yellow Red	Gravel Rock Sand Silt ~~Clay~~	Dry Moist ~~Wet~~	32.433613 103.434525 HC Smell
L4-2	2:10	.581	18.8	—	Light ~~Dark~~ Tan Brown ~~Gray~~ Olive Yellow Red	Gravel Rock Sand Silt ~~Clay~~	Dry Moist ~~Wet~~	HC Smell
L5-1	2:31	.535	21.4	—	~~Light~~ ~~Dark~~ Tan ~~Brown~~ ~~Gray~~ Olive Yellow Red	Gravel Rock ~~Sand~~ Silt ~~Clay~~	Dry ~~Moist~~ ~~Wet~~	32.433583 103.434533 HC Smell
L5-2	2:34	.353	19.0		Light Dark Tan Brown Gray Olive Yellow Red	Gravel Rock Sand Silt Clay	Dry Moist Wet	HC Smell

SMA Field Screening

Location Name: State AA #1

Date: 10/22/2018

Sample Name:	*Collection Time:*	*EC (mS)*	*Temp (°C)*	*PID Reading /PF*	*Soil Color*	*Primary Soil Type*	*Moisture Level*	*Other Remarks/Notes:*
L6-1	2:38	85 .278	14.0	—	Light ~~Dark~~ Tan ~~Brown~~ ~~Gray~~ Olive Yellow Red	Gravel Rock Sand Silt ~~Clay~~	Dry Moist ~~Wet~~	32.433555 103.4345083 HC Smell
L6-2	242	ca .510	18.8	—	Light ~~Dark~~ Tan ~~Brown~~ Gray Olive Yellow Red	Gravel Rock ~~Sand~~ Silt Clay	Dry ~~Moist~~ Wet	HC Smell
Sw 1	258	.542	20.2	—	Light Dark Tan ~~Brown~~ Gray Olive Yellow Red	Gravel Rock ~~Sand~~ Silt Clay	Dry ~~Moist~~ Wet	32.4336138 103.4344694
Sw 2	300	1.65	19.4	—	Light Dark ~~Tan~~ Brown Gray Olive Yellow Red	Gravel Rock ~~Sand~~ Silt Clay	Dry ~~Moist~~ Wet	32.4336 103.434458 berm
Sw 3	302	.316	19.3	—	Light Dark ~~Tan~~ Brown Gray Olive Yellow Red	Gravel Rock ~~Sand~~ Silt Clay	Dry ~~Moist~~ Wet	32.433594 103.434472
Sw 4	304	3.47	19.3°	—	Light Dark ~~Tan~~ Brown Gray Olive Yellow Red	Gravel Rock ~~Sand~~ Silt Clay	Dry ~~Moist~~ Wet	32.433594 103.434472
Sw 5	306	5.22	19.3	—	Light Dark ~~Tan~~ Brown Gray Olive Yellow Red	Gravel Rock ~~Sand~~ Silt Clay	Dry ~~Moist~~ Wet	32.433575 103.434541
Sw 6	309	.082	19.1	—	Light Dark ~~Tan~~ Brown Gray Olive Yellow Red	Gravel Rock ~~Sand~~ Silt Clay	Dry Moist Wet	32.433552 103.434338
Sw 7	312	.373	19.1	—	Light Dark ~~Tan~~ Brown Gray Olive Yellow Red	Gravel Rock ~~Sand~~ Silt Clay	Dry ~~Moist~~ Wet	32.433558 103.434494
BG	320	.077	19.2	—	Dark gray	Sand	moist	32.433816 103.434633

Project: Marathon - State AA #1 SWD
Project #
SMA Field Tech: S. Hinds

Borehole #: BG1
Rig/Sampler Type: Lonestar, HSA w/ split spoon sampling
Driller: C+N

Start Date/Time: 3/7/2019 9:25
Stop Date/Time:
Borehole Diameter: 2"

Sample Depth	Time	Color	Secondary Soil Type	Primary Soil Type	Sorted	Grain Size (Sands Only)	Consolidation	Moisture	OVA results (ppm)	Remarks (Use trace, occasional, freguent and with to desribe increasing amounts)
5-6	11:00	**Light** tan Dark **brown** gray yellow olive red	Gravelly **Sandy** Silty Clayey	Boulder **Sand** Cobble Silt Pebble Clay Gravel	**Poorly** Well	**Very Coarse** Coarse Medium **Fine** Very Fine	Rock Semi-consolidated Dense Plastic **Unconsolidated**	**Dry** Moist Wet	18.0°C 0.05 (131 ppm)	5-5.5: Darker organics w/ sand 5.5-6: Lighter, sandy
14-15	11:45	Light tan Dark brown gray yellow olive red	Gravelly Sandy Silty Clayey	Boulder Sand Cobble Silt Pebble Clay Gravel	Poorly Well	Very Coarse Coarse Medium Fine Very Fine	Rock Semi-consolidated Dense Plastic Unconsolidated	Dry Moist Wet	16.9°C 0.04 (163 ppm)	
		Light tan Dark brown gray yellow olive red	Gravelly Sandy Silty Clayey	Boulder Sand Cobble Silt Pebble Clay Gravel	Poorly Well	Very Coarse Coarse Medium Fine Very Fine	Rock Semi-consolidated Dense Plastic Unconsolidated	Dry Moist Wet		
		Light tan Dark brown gray yellow olive red	Gravelly Sandy Silty Clayey	Boulder Sand Cobble Silt Pebble Clay Gravel	Poorly Well	Very Coarse Coarse Medium Fine Very Fine	Rock Semi-consolidated Dense Plastic Unconsolidated	Dry Moist Wet		
		Light tan Dark brown gray yellow olive red	Gravelly Sandy Silty Clayey	Boulder Sand Cobble Silt Pebble Clay Gravel	Poorly Well	Very Coarse Coarse Medium Fine Very Fine	Rock Semi-consolidated Dense Plastic Unconsolidated	Dry Moist Wet		
		Light tan Dark brown gray yellow olive red	Gravelly Sandy Silty Clayey	Boulder Sand Cobble Silt Pebble Clay Gravel	Poorly Well	Very Coarse Coarse Medium Fine Very Fine	Rock Semi-consolidated Dense Plastic Unconsolidated	Dry Moist Wet		
		Light tan Dark brown gray yellow olive red	Gravelly Sandy Silty Clayey	Boulder Sand Cobble Silt Pebble Clay Gravel	Poorly Well	Very Coarse Coarse Medium Fine Very Fine	Rock Semi-consolidated Dense Plastic Unconsolidated	Dry Moist Wet		
		Light tan Dark brown gray yellow olive red	Gravelly Sandy Silty Clayey	Boulder Sand Cobble Silt Pebble Clay Gravel	Poorly Well	Very Coarse Coarse Medium Fine Very Fine	Rock Semi-consolidated Dense Plastic Unconsolidated	Dry Moist Wet		

Detection of moisture/groundwater at X ft. Drilled to 38', no moisture detected. Very fine soft sand.

Notes:

Project: ______
Project #: State AA #1
SMA Field Tech: SM

Borehole #: SB1
Rig/Sampler Type: HSA, Split spoon
Driller: C+N

Start Date/Time: 12:00
Stop Date/Time: ______
Borehole Diameter: 2"

Sample Depth	Time	Color	Secondary Soil Type	Primary Soil Type	Sorted	Grain Size (Sands Only)	Consolidation	Moisture	OVA results (ppm)	Remarks (Use trace, occasional, frequent and with to desribe increasing amounts)
5	12:15	Light, **Dark**, gray, olive / tan, **brown**, yellow, **red**	Gravelly, Sandy, Silty, **Clayey**	Boulder, Cobble, Pebble, Gravel / **Sand**, Silt, Clay	Poorly, **Mod**, Well	Very Coarse, **Coarse**, **Medium**, **Fine** ↓, Very Fine	Rock, Semi-consolidated, Dense, Plastic, **Unconsolidated**	Dry, **Moist**, Wet	18.5°C 1.68 (2420 ppm)	Mod odor, sticky PF = 3717/1497/1083 GRO DRO MRO
10	12:40	Light, Dark, gray, olive / tan, **brown**, yellow, red	Gravelly, **Sandy**, Silty, Clayey	Boulder, Cobble, Pebble, Gravel / **Sand**, Silt, Clay	**Poorly**, Well	**Very Coarse**, Coarse ↓, **Medium**, Fine, Very Fine	Rock, Semi-consolidated, Dense, Plastic, **Unconsolidated**	**Dry**, Moist, Wet	19.6°C 1.72 (2430)	no odor, few pieces of river rock 1" mixed with caliche
* 15	12:30	Light, Dark, gray, olive / tan, **brown**, yellow, red	Gravelly, **Sandy**, Silty, Clayey	Boulder, Cobble, Pebble, Gravel / **Sand**, Silt, Clay	**Poorly**, Well	**Very Coarse**, Coarse ↓, **Medium**, Fine, Very Fine	Rock, Semi-consolidated, Dense, Plastic, **Unconsolidated**	**Dry**, Moist, Wet	19.1°C 1.40 (1998)	no odor, some caliche mixed in, rock 1" PF = 307/129/95
26-27	14:15	Light, Dark, gray, olive / tan, **brown**, yellow, **red**	Gravelly, **Sandy**, Silty, Clayey	Boulder, Cobble, Pebble, Gravel / **Sand**, Silt, Clay	Poorly, **Mod**, Well	Very Coarse, **Coarse**, **Medium**, Fine, Very Fine	Rock, Semi-consolidated, Dense, Plastic, **Unconsolidated**	Dry, **Moist**, Wet	20.5°C 0.65 (1875 ppm)	sand detecting slight bit of moisture
* 27	14:15	Light, Dark, gray, olive / tan, **brown**, yellow, **red**	Gravelly, **Sandy**, Silty, Clayey	Boulder, Cobble, Pebble, Gravel / **Sand**, Silt, Clay	Poorly, **Mod**, Well	Very Coarse, **Coarse**, **Medium**, Fine, Very Fine	Rock, Semi-consolidated, Dense, Plastic, **Unconsolidated**	Dry, **Moist**, Wet	19.6°C 0.61 (856 ppm)	Collected top of spoon @ 27' PF = 359/157/121
		Light, Dark, gray, olive / tan, brown, yellow, red	Gravelly, Sandy, Silty, Clayey	Boulder, Cobble, Pebble, Gravel / Sand, Silt, Clay	Poorly, Well	Very Coarse, Coarse, Medium, Fine, Very Fine	Rock, Semi-consolidated, Dense, Plastic, Unconsolidated	Dry, Moist, Wet		
		Light, Dark, gray, olive / tan, brown, yellow, red	Gravelly, Sandy, Silty, Clayey	Boulder, Cobble, Pebble, Gravel / Sand, Silt, Clay	Poorly, Well	Very Coarse, Coarse, Medium, Fine, Very Fine	Rock, Semi-consolidated, Dense, Plastic, Unconsolidated	Dry, Moist, Wet		
		Light, Dark, gray, olive / tan, brown, yellow, red	Gravelly, Sandy, Silty, Clayey	Boulder, Cobble, Pebble, Gravel / Sand, Silt, Clay	Poorly, Well	Very Coarse, Coarse, Medium, Fine, Very Fine	Rock, Semi-consolidated, Dense, Plastic, Unconsolidated	Dry, Moist, Wet		

Notes:

Project: Marathon - State AA & 1 Sub
Project #
SMA Field Tech: SH

Borehole # SB 2
Rig/Sampler Type: HSA
Driller: C+N

chloride (ppm)

Start Date/Time: 14:35
Stop Date/Time:
Borehole Diameter: 2"

Sample Depth	Time	Color	Secondary Soil Type	Primary Soil Type	Sorted	Grain Size (Sands Only)	Consolidation	Moisture	OVA results (ppm)	Remarks (Use trace, occasional, frequent and with to desribe increasing amounts)
4	14:40	Light tan Dark brown gray yellow olive red	Gravelly Sandy Silty Clayey	Boulder Sand Cobble Silt Pebble Clay Gravel	Poorly Well	Very Coarse Coarse Medium Fine Very Fine	Rock Semi-consolidated Dense Plastic Unconsolidated	Dry Moist Wet	19.4°C 1.86 (2637 ppm)	Slight hydrocarbon odor. PF = 350/156/118
8	15:00	Light tan Dark brown gray yellow olive red	Gravelly Sandy Silty Clayey	Boulder Sand Cobble Silt Pebble Clay Gravel	Poorly Mod Well	Very Coarse Coarse Medium Fine Very Fine	Rock Semi-consolidated Dense Plastic Unconsolidated	Dry Moist Wet	19.8 0.35 (480 ppm)	No odor. Sft silty sand. PF = 294/131/101
* 12	15:10	Light tan Dark brown gray yellow olive red	Gravelly Sandy Silty Clayey	Boulder Sand Cobble Silt Pebble Clay Gravel	Poorly Mod Well	Very Coarse Coarse Medium Fine Very Fine	Rock Semi-consolidated Dense Plastic Unconsolidated	Dry Moist Wet	19.3°C 0.30 [illegible] (430 ppm)	No odor. Soft silty sand. PF = 319/125/92
		Light tan Dark brown gray yellow olive red	Gravelly Sandy Silty Clayey	Boulder Sand Cobble Silt Pebble Clay Gravel	Poorly Well	Very Coarse Coarse Medium Fine Very Fine	Rock Semi-consolidated Dense Plastic Unconsolidated	Dry Moist Wet		
		Light tan Dark brown gray yellow olive red	Gravelly Sandy Silty Clayey	Boulder Sand Cobble Silt Pebble Clay Gravel	Poorly Well	Very Coarse Coarse Medium Fine Very Fine	Rock Semi-consolidated Dense Plastic Unconsolidated	Dry Moist Wet		
		Light tan Dark brown gray yellow olive red	Gravelly Sandy Silty Clayey	Boulder Sand Cobble Silt Pebble Clay Gravel	Poorly Well	Very Coarse Coarse Medium Fine Very Fine	Rock Semi-consolidated Dense Plastic Unconsolidated	Dry Moist Wet		
		Light tan Dark brown gray yellow olive red	Gravelly Sandy Silty Clayey	Boulder Sand Cobble Silt Pebble Clay Gravel	Poorly Well	Very Coarse Coarse Medium Fine Very Fine	Rock Semi-consolidated Dense Plastic Unconsolidated	Dry Moist Wet		
		Light tan Dark brown gray yellow olive red	Gravelly Sandy Silty Clayey	Boulder Sand Cobble Silt Pebble Clay Gravel	Poorly Well	Very Coarse Coarse Medium Fine Very Fine	Rock Semi-consolidated Dense Plastic Unconsolidated	Dry Moist Wet		

Notes:

Project: Marathon - State AA #1 SWD
Project #
SMA Field Tech: SH

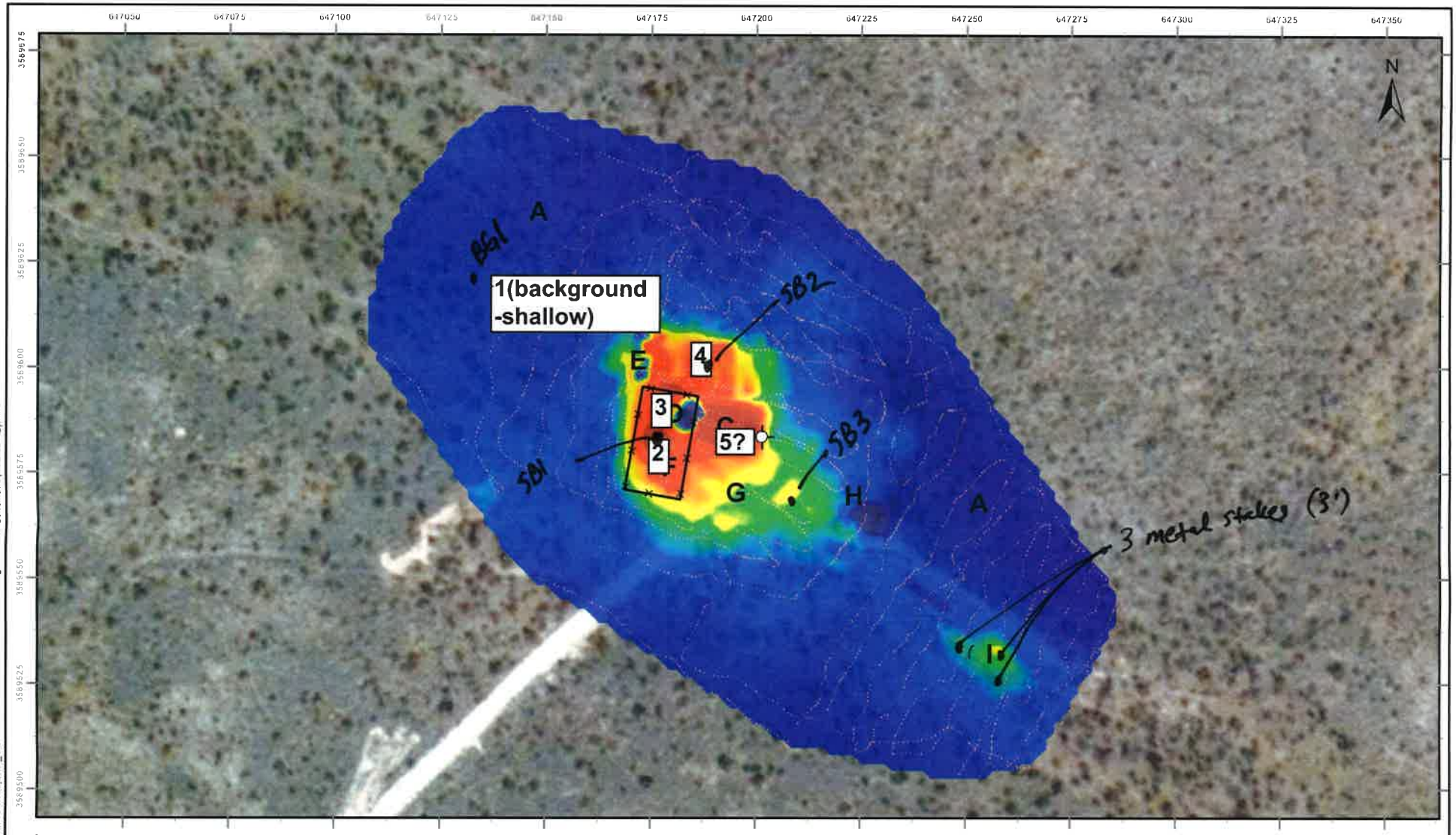
Borehole#: SB3
Rig/SamplerType: HSA
Driller: C+N

Chlorides (EC) ppm

Start Date/Time: 15:15
Stop Date/Time:
Borehole Diameter: 2"

Sample Depth	Time	Color	Secondary Soil Type	Primary Soil Type	Sorted	Grain Size (Sands Only)	Consolidation	Moisture	~~OVA~~ results (ppm)	Remarks (Use trace, occasional, freguent and with to desribe increasing amounts)
4	15:20	Light tan Dark brown gray yellow olive red	Gravelly Sandy Silty Clayey	Boulder Sand Cobble Silt Pebble Clay Gravel	Poorly Mod Well	Very Coarse Coarse Medium Fine Very Fine	Rock Semi-consolidated Dense Plastic Unconsolidated	Dry Moist Wet	20.1°C 0.14 (169 ppm)	
10	15:30	Light tan Dark brown gray yellow olive red	Gravelly Sandy Silty Clayey	Boulder Sand Cobble Silt Pebble Clay Gravel	Poorly Mod Well	Very Coarse Coarse Medium Fine Very Fine	Rock Semi-consolidated Dense Plastic Unconsolidated	Dry Moist Wet	20.1°C 0.36 (48)	PF = 318/138/106
* 15	15:45	Light tan Dark brown gray yellow olive red	Gravelly Sandy Silty Clayey	Boulder Sand Cobble Silt Pebble Clay Gravel	Poorly Moil Well	Very Coarse Coarse Medium Fine Very Fine	Rock Semi-consolidated Dense Plastic Unconsolidated	Dry Moist Wet	19.7°C 0.34 (469)	PF = 328/124/89
		Light tan Dark brown gray yellow olive red	Gravelly Sandy Silty Clayey	Boulder Sand Cobble Silt Pebble Clay Gravel	Poorly Well	Very Coarse Coarse Medium Fine Very Fine	Rock Semi-consolidated Dense Plastic Unconsolidated	Dry Moist Wet		
		Light tan Dark brown gray yellow olive red	Gravelly Sandy Silty Clayey	Boulder Sand Cobble Silt Pebble Clay Gravel	Poorly Well	Very Coarse Coarse Medium Fine Very Fine	Rock Semi-consolidated Dense Plastic Unconsolidated	Dry Moist Wet		
		Light tan Dark brown gray yellow olive red	Gravelly Sandy Silty Clayey	Boulder Sand Cobble Silt Pebble Clay Gravel	Poorly Well	Very Coarse Coarse Medium Fine Very Fine	Rock Semi-consolidated Dense Plastic Unconsolidated	Dry Moist Wet		
		Light tan Dark brown gray yellow olive red	Gravelly Sandy Silty Clayey	Boulder Sand Cobble Silt Pebble Clay Gravel	Poorly Well	Very Coarse Coarse Medium Fine Very Fine	Rock Semi-consolidated Dense Plastic Unconsolidated	Dry Moist Wet		
		Light tan Dark brown gray yellow olive red	Gravelly Sandy Silty Clayey	Boulder Sand Cobble Silt Pebble Clay Gravel	Poorly Well	Very Coarse Coarse Medium Fine Very Fine	Rock Semi-consolidated Dense Plastic Unconsolidated	Dry Moist Wet		

Notes:



Legend

- Wellhead
- Survey Track
- Fence
- A Anomaly

<0 10 20 30 40 50 60 70 80 90 100

Apparent Electrical Conductivity (mS/m)

0 37.5 75 150 ft

SCALE 1:1,300
UTM Zone 13N

Notes: Aerial Image from ESRI, 2017

Marathon Oil

Site Schematic with EM31 Apparent Conductivity Overlay 5 m Depth of Exploration State AA 001

VERTEX

DRAWN:	LP
APPROVED:	MH
DATE:	JAN 30/19

FIGURE: 1

VERSATILITY. EXPERTISE.

Document Path: \\corp.internal\shared\VPS\04 - Geomatics\1-Projects_US PROJECTS\Marathon\State AA 001\Figure 1 Site Schematic (18E-02112).mxd


SB2
SB1
SB3
Google earth
© 2018 Google
N
90 ft

SUBJECT ~~BF~~ State AA # 1 PROJECT PAGE

CLIENT Marathon DATE 4/25/2019 BY JVH

CHECKED

Begin - Sunny ~ 76° @ 11am
End - Sunny - 86° @ 3 pm

- Met w/ HRL (Kelly : Mike) @ Stevens Inn @ 9:00am. They followed me to location.

11am - Arrived on location. Unloaded equipment.

Goal: Sample location 2/SB1 (Priority)

Sample SB5 if time allows.

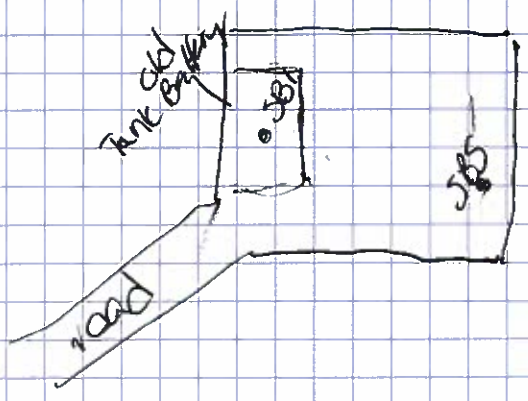
12:30 ~ Brad Blevins showed up on location. Inquired about chloride results. Asked if we could set pipe @ SB1 location to see if any water seeped in.

HRL had already pulled 20' out of hole.

After more discussions with Brad, Steph : Kelly it was agreed to set pipe at current depth screen through 30' due to moist soil.

Update. HRL was able to set screen to 40' ~ length of hole.

~~*~~ HRL will come back next week to check : pull pipe, : plug



1:30 - Staredan SB5 taking samples @ 20', 30', 40'

3:00 Done w/ holes Packed up : headed in.

Field Screening

Location Name: Marathon State AA #1

Date: 4/25/19

NVI

Sample Name:	Collection Time:	EC (mS)	Temp (°C)	PID Reading /PF	Soil Color	Primary Soil Type	Moisture Level	Other Remarks/Notes:
SB1 @ 30'	11:43	.56	28.6		Light Dark; Tan Brown; Gray Olive; Yellow **Red**	Gravel Rock; **Sand** Silt; Clay	Dry **Moist** Wet	
" @ 35'	11:54	.42	25.3		~~Light~~ Dark; Tan Brown; Gray Olive; Yellow **Red**	Gravel Rock; **Sand** ~~Silt~~; Clay	Dry Moist Wet	Soil changed from clay red to light tan/red
@ 40'	12:06	.24	24.8		Light Dark; Tan Brown; Gray Olive; Yellow **Red**	Gravel Rock; **Sand** Silt; Clay	Dry **Moist** Wet	
SB5 @ 20'	1:47	.46	28.5		~~Light~~ Dark; **Tan** Brown; Gray Olive; Yellow Red	Gravel Rock; Sand Silt; Clay	**Dry** Moist Wet	
@ 30'	200	.10	27.1		Light Dark; Tan Brown; Gray Olive; Yellow **Red**	Gravel Rock; **Sand** Silt; Clay	Dry **Moist** Wet	
@ 40	2:20	.08	29.6		~~Light~~ Dark; ~~Tan~~ Brown; Gray Olive; Yellow **Red**	Gravel Rock; **Sand** Silt; Clay	**Dry** Moist Wet	
					Light Dark; Tan Brown; Gray Olive; Yellow Red	Gravel Rock; Sand Silt; Clay	Dry Moist Wet	
					Light Dark; Tan Brown; Gray Olive; Yellow Red	Gravel Rock; Sand Silt; Clay	Dry Moist Wet	
					Light Dark; Tan Brown; Gray Olive; Yellow Red	Gravel Rock; Sand Silt; Clay	Dry Moist Wet	

APPENDIX E.

LABORATORY ANALYTICAL RESULTS

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

March 25, 2019

Stephanie Hinds

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

RE: State AA #1 OrderNo.: 1903466

Dear Stephanie Hinds:

Hall Environmental Analysis Laboratory received 5 sample(s) on 3/9/2019 for the analyses presented in the following report.

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

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

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

Sincerely,

Andy Freeman

Laboratory Manager

4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1903466**
Date Reported: **3/25/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: BGI-15
Project: State AA #1
Collection Date: 3/7/2019 11:45:00 AM
Lab ID: 1903466-001 **Matrix:** SOIL **Received Date:** 3/9/2019 10:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **smb**	
Chloride	ND	60		mg/Kg	20	3/15/2019 12:31:34 PM	43706

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: SBI-15
Project: State AA #1
Collection Date: 3/7/2019 12:50:00 PM
Lab ID: 1903466-002 **Matrix:** SOIL **Received Date:** 3/9/2019 10:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	3700	150		mg/Kg	50	3/19/2019 4:56:36 PM	43722
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **lrm**	
Diesel Range Organics (DRO)	ND	9.3		mg/Kg	1	3/12/2019 1:44:03 PM	43618
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	3/12/2019 1:44:03 PM	43618
Surr: DNOP	124	70-130		%Rec	1	3/12/2019 1:44:03 PM	43618
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	3/13/2019 9:53:22 AM	43605
Surr: BFB	95.6	73.8-119		%Rec	1	3/13/2019 9:53:22 AM	43605

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: SBI-27
Project: State AA #1
Collection Date: 3/7/2019 2:15:00 PM
Lab ID: 1903466-003 **Matrix:** SOIL **Received Date:** 3/9/2019 10:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	1600	60		mg/Kg	20	3/18/2019 10:44:24 AM	43722
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **lrm**	
Diesel Range Organics (DRO)	ND	9.2		mg/Kg	1	3/12/2019 2:08:28 PM	43618
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	3/12/2019 2:08:28 PM	43618
Surr: DNOP	123	70-130		%Rec	1	3/12/2019 2:08:28 PM	43618
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	3/13/2019 10:16:55 AM	43605
Surr: BFB	99.4	73.8-119		%Rec	1	3/13/2019 10:16:55 AM	43605

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: SB2-12
Project: State AA #1
Collection Date: 3/7/2019 3:10:00 PM
Lab ID: 1903466-004 **Matrix:** SOIL **Received Date:** 3/9/2019 10:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	730	60		mg/Kg	20	3/18/2019 10:56:49 AM	43722
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **lrm**	
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	3/12/2019 2:32:47 PM	43618
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	3/12/2019 2:32:47 PM	43618
Surr: DNOP	82.0	70-130		%Rec	1	3/12/2019 2:32:47 PM	43618
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	3/13/2019 10:40:13 AM	43605
Surr: BFB	98.8	73.8-119		%Rec	1	3/13/2019 10:40:13 AM	43605

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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: SB3-15
Project: State AA #1
Collection Date: 3/7/2019 3:45:00 PM
Lab ID: 1903466-005 **Matrix:** SOIL **Received Date:** 3/9/2019 10:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	710	60		mg/Kg	20	3/18/2019 11:09:13 AM	43722
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **lrm**	
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	3/12/2019 2:57:59 PM	43618
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	3/12/2019 2:57:59 PM	43618
Surr: DNOP	121	70-130		%Rec	1	3/12/2019 2:57:59 PM	43618
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	3/13/2019 11:03:46 AM	43605
Surr: BFB	98.3	73.8-119		%Rec	1	3/13/2019 11:03:46 AM	43605

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#: **1903466**

25-Mar-19

Client: Souder, Miller & Associates

Project: State AA #1

Sample ID: **MB-43706**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBS**	Batch ID: **43706**	RunNo: **58427**
Prep Date: **3/15/2019**	Analysis Date: **3/15/2019**	SeqNo: **1960621** Units: **mg/Kg**

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

Sample ID: **LCS-43706**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSS**	Batch ID: **43706**	RunNo: **58427**
Prep Date: **3/15/2019**	Analysis Date: **3/15/2019**	SeqNo: **1960622** Units: **mg/Kg**

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

Sample ID: **MB-43722**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBS**	Batch ID: **43722**	RunNo: **58434**
Prep Date: **3/18/2019**	Analysis Date: **3/18/2019**	SeqNo: **1961725** Units: **mg/Kg**

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

Sample ID: **LCS-43722**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSS**	Batch ID: **43722**	RunNo: **58434**
Prep Date: **3/18/2019**	Analysis Date: **3/18/2019**	SeqNo: **1961726** 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			

Sample ID: **MB-43722**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBS**	Batch ID: **43722**	RunNo: **58484**
Prep Date: **3/18/2019**	Analysis Date: **3/19/2019**	SeqNo: **1962996** Units: **mg/Kg**

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

Sample ID: **LCS-43722**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSS**	Batch ID: **43722**	RunNo: **58484**
Prep Date: **3/18/2019**	Analysis Date: **3/19/2019**	SeqNo: **1962997** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	95.6	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#: **1903466**

25-Mar-19

Client: Souder, Miller & Associates

Project: State AA #1

Sample ID: **LCS-43618**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **43618**	RunNo: **58282**
Prep Date: **3/11/2019**	Analysis Date: **3/12/2019**	SeqNo: **1954863** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	60	10	50.00	0	120	63.9	124			
Surr: DNOP	5.9		5.000		118	70	130			

Sample ID: **MB-43618**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **43618**	RunNo: **58282**
Prep Date: **3/11/2019**	Analysis Date: **3/12/2019**	SeqNo: **1954864** 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	9.3		10.00		93.2	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#: **1903466**

25-Mar-19

Client: Souder, Miller & Associates

Project: State AA #1

Sample ID: **MB-43605**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **43605**	RunNo: **58288**
Prep Date: **3/11/2019**	Analysis Date: **3/12/2019**	SeqNo: **1955652** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	960		1000		95.8	73.8	119			

Sample ID: **LCS-43605**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **43605**	RunNo: **58288**
Prep Date: **3/11/2019**	Analysis Date: **3/12/2019**	SeqNo: **1955653** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	25	5.0	25.00	0	101	80.1	123			
Surr: BFB	1100		1000		108	73.8	119			

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: 1903466 RcptNo: 1

Received By: **Anne Thorne** 3/9/2019 10:50:00 AM

Completed By: **Victoria Zellar** 3/11/2019 9:17:21 AM

Reviewed By: DAD 3/11/19

Anne Thorne
Victoria Zellar labeled by
YG 3/11/19

Chain of Custody

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

Log In

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

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

Adjusted? _____

Checked by: YG 3/11/19

Special Handling (if applicable)

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

Person Notified: _____ Date: _____

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

Regarding: _____

Client Instructions: _____

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Yes			

Chain-of-Custody Record

Client: SMA

Mailing Address: 201 S. Malagueno
Carlsbad NM 88221

Phone #: 505-325-7535

email or Fax#: Stephanie.hinds@soudermiller.com

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

Accreditation: ☐ Az Compliance ☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time: ☒ Standard ☐ Rush

Project Name: State AA #1

Project #:

Project Manager: S. Hinds

Sampler: SH

On Ice: ☒ Yes ☐ No

\# of Coolers: 1

Cooler Temp (including CF): 1.0

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www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 1903460	BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	(Cl), F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)						
3-7-19	11:45	soil	BG1-15	(1) 4oz	cool	-001							X									
↓	12:50	↓	SB1-15	↓	↓	-002		X					X									
↓	14:15	↓	SB1-27	↓	↓	-003		X					X									
↓	15:10	↓	SB2-12	↓	↓	-004		X					X									
↓	~~[illegible]~~ 15:45	↓	SB3-15	↓	↓	-005		X					X									

Date	Time	Relinquished by	Received by	Via	Date	Time
3-8-19	12:00	Stephanie Hinds	[signature]		3/8/19	1300
3/8/19	1907	[signature]	[signature]		03/09/19	1050

Remarks: Client: Marathon
Do not run TPH on BG1-15.
Thanks!

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

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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May 02, 2019

Stephanie Hinds

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

RE: State AA 1 OrderNo.: 1904D42

Dear Stephanie Hinds:

Hall Environmental Analysis Laboratory received 5 sample(s) on 4/27/2019 for the analyses presented in the following report.

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

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

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

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order: **1904D42**
Date Reported: **5/2/2019**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Project: State AA 1
Lab Order: 1904D42

Lab ID: 1904D42-001 **Collection Date:** 4/25/2019 11:43:00 AM
Client Sample ID: SB 1-30 **Matrix:** SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	210	60		mg/Kg	20	5/1/2019 2:05:17 PM	44638

Lab ID: 1904D42-002 **Collection Date:** 4/25/2019
Client Sample ID: SB 1-35 **Matrix:** SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	380	60		mg/Kg	20	5/1/2019 2:17:41 PM	44638

Lab ID: 1904D42-003 **Collection Date:** 4/25/2019 1:47:00 PM
Client Sample ID: SB 5-20 **Matrix:** SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	490	60		mg/Kg	20	5/1/2019 2:30:05 PM	44638

Lab ID: 1904D42-004 **Collection Date:** 4/25/2019
Client Sample ID: SB 5-30 **Matrix:** SOIL

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 300.0: ANIONS						Analyst: **MRA**	
Chloride	ND	60		mg/Kg	20	5/1/2019 2:42:29 PM	44638

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

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1904D42**

02-May-19

Client: Souder, Miller & Associates

Project: State AA 1

Sample ID: **MB-44638**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **PBS**	Batch ID: **44638**	RunNo: **59556**							
Prep Date: **5/1/2019**	Analysis Date: **5/1/2019**	SeqNo: **2007895**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: **LCS-44638**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **LCSS**	Batch ID: **44638**	RunNo: **59556**							
Prep Date: **5/1/2019**	Analysis Date: **5/1/2019**	SeqNo: **2007896**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	15	1.5	15.00	0	97.8	90	110			

Qualifiers:

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

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Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: **SMA-CARLSBAD** Work Order Number: **1904D42** RcptNo: **1**

Received By: **Erin Melendrez** **4/27/2019 9:15:00 AM**

Completed By: **Erin Melendrez** **4/27/2019 11:26:31 AM**

Reviewed By: LB 4/29/19

LB: IO 4/29/19

Chain of Custody

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

Log In

3. Was an attempt made to cool the samples? Yes ☑ No ☐ NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C Yes ☑ No ☐ NA ☐
5. Sample(s) in proper container(s)? Yes ☑ No ☐
6. Sufficient sample volume for indicated test(s)? Yes ☑ No ☐
7. Are samples (except VOA and ONG) properly preserved? Yes ☑ No ☐
8. Was preserved 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 ☑

IO 4/29/19

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

Adjusted? ____

Checked by: ____

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 ☐

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	1.6	Good	Yes			

Chain-of-Custody Record

Client: SMA Carlsbad

Mailing Address:

Phone #:

email or Fax#:

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

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time:
☐ Standard ☒ Rush 5 day

Project Name: State AA #1

Project #:

Project Manager: S. Hinds

Sampler: JVH

On Ice: ☒ Yes ☐ No

# of Coolers: 1 (CF = -0.4)

Cooler Temp(including CF): 1.6°C

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 1904D42	BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
4-25-19	11:43	soil	SB1-30	4oz		-001							X			
	11:54		SB1-35			-002							X			
	12:06		SB1-40			-005	Please hold									
	1:47		SB5-20			-003							X			
	2:00		SB5-30			-004							X			

Date	Time	Relinquished by:	Received by:	Via:	Date	Time
4/26/19	1400	Samantha Watson			4/26/19	1000
4/26/19	1900			Courier	4/27/19	0915

Remarks: Marathon

* SB1-40 please hold - may test further after results *

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.