February 26, 2019

#5E27962-BG1

NMOCD District 2
Mr. Bratcher
811 South First Street
Artesia, New Mexico 88210

SUBJECT: Site Assessment/Characterization and Closure Sampling Plan for the Santo Nino 29 Fed 4 Release (2RP-5184), Eddy County, New Mexico

Dear Mr. Bratcher:

On behalf of Mewbourne Oil Company, Souder, Miller & Associates (SMA) has prepared this Site Assessment/Characterization and Closure Sampling Plan that describes the remediation of a release of liquids to oil and gas production activities at the Santo Nino Fed 4 site. The site is in Unit N, Section 29, Township 29S, Range 30E, Eddy County, New Mexico, on Federal 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	Santo Nino 29 Fed 4	Company	Mewbourne Oil Company
API Number	30-015-28643	Location	Lat. 32.7130623 Long. -103.9962845
Incident Number	2RP-5184		
Estimated Date of Release	12/24/2018	Date Reported to NMOCD	1/9/2019
Land Owner	Federal	Reported To	NMOCD (via email to Mike Bratcher)
Source of Release	Hole on back of tank		
Released Volume	120bbls	Released Material	Crude Oil
Recovered Volume	90bbls	Net Release	30 bbls
NMOCD Closure Criteria	>100 feet to groundwater		
SMA Response Dates	1/17/19		

1.0 Background

On December 24, 2018, a release was discovered at the Santo Nino 29 Fed 4 site due to hole in the tank. Initial response activities were conducted by Mewbourne contractors, and included source elimination and site security; containment; and site stabilization activities. Figure 1 illustrates the vicinity and site location, Figures 2 and 3 illustrate the release location. The C-141 form is included in Appendix A.

2.0 Site Information and Closure Criteria

The Santo Nino 29 Fed 4 is located approximately 25.36 miles southeast of Artesia, New Mexico on Federal (BLM) land at an elevation of approximately 3,430 feet above mean sea level (amsl).

Based upon U.S. Geological Survey (USGS) & New Mexico Office of the State Engineer (NMOSE) data (Appendix B), depth to groundwater in the area is estimated to be 217 feet below grade surface (bgs). There are no known water sources within ½-mile of the location, according to the NMOSE website (https://gis.ose.state.nm.us/gisapps/ose_pod_locations/; accessed 2/5/2019). The nearest significant watercourse is Walters Lake, located approximately 2.74 miles northeast of the Santo Nino 29 Fed Com #4. Figure 2 illustrates the site with 200 and 300-foot radii to indicate that it does not lie within a sensitive area 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 greater than 100 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 2 demonstrates the Closure Criteria applicable to this location. Pertinent well data is attached in Appendix B.

3.0 Release Characterization Activities and Findings

On January 17, 2019, SMA personnel arrived on site in response to the release associated with Santo Nino 29 Fed 4. SMA performed site delineation activities by collecting soil samples around the release site and throughout the visibly stained area. Soil samples were field-screened for chloride using an electrical conductivity (EC) meter. While sampling, SMA personnel observed pieces of white liner within the excavation area. Further excavation was immediately stopped and Mewbourne contacted Mike Bratcher with NMOCD and set up a meeting before going forward. After record investigation it is believed that a legacy pit closed by Arena Resources and tied to the North Benson Queen Unit #29 was accidently excavated into (A-1 in Figure 3). After the meeting it was determined the best path forward was to line Legacy pit area unearthed by excavation with polyurea liner, backfill, liner then surface soil will be placed on top per ASTM. A berm will be constructed between the two areas to prevent any future unanticipated releases from flowing into the Legacy pit area.

On January 29, 2019, SMA emailed Jim Amos and Deborah McKinney with the Carlsbad BLM office to get concurrence with NMOCDs course of action mentioned above. Concurrence was given by Jim Amos on the same day via email.

A total of ten sample locations (BG, L1, L2, L3, L4, L5, SW1, SW2, SW3, SW4) were investigated using excavated test pits and hand dug boreholes, to depths up to nineteen feet bgs. A minimum of two samples were collected at each sampling location except for location L2 which was in the middle of production pipes. Samples were then field-screened using the methods above. A total of fifteen samples were collected for laboratory analysis for total chloride using EPA Method 300.0; benzene, toluene, ethylbenzene and total xylenes (BTEX) using EPA Method 8021B; and motor, diesel and gasoline range organics (MRO, DRO, and GRO) by EPA Method 8015D. Table 3 itemizes the samples and field-screening results as well as identifying any variances from the typical specification of two samples per boring. Locations for all samples are depicted on Figure 3.

Laboratory samples were collected in accordance with the sampling protocol included in Appendix C. Samples were placed into laboratory supplied glassware, labeled, and maintained on ice until delivery to Hall Environmental Analysis Laboratory in Albuquerque, New Mexico (Appendix D).

4.0 Proposed Remediation Plan

SMA proposes excavation and removal of contaminated soil. The impacted area that occurs off pad around L4 will be excavated to approximately 6 feet bgs, and the area around sample L5 will be excavated to approximately four feet bgs. The area around L1 was initially excavated to two feet bgs where it meets above standards. The area around L3 meets NMOCD standards when sampled at surface. The area around L2 a deferral is being requested. SMA will guide the excavation by collecting composite soil samples for field screening for chloride using an EC meter and for hydrocarbon impacts using a Dexsil® PetroFLAG TPH Analyzer.

The release area will be excavated to the NMOCD Closure Criteria as demonstrated in the attached Table 2. In addition, the top four (4) feet of impacted areas off of the well pad will meet the Reclamation requirement of 19.15.29.13(D)(1).

Confirmation samples will be comprised of 4 representative wall samples, each representing less than 200 ft^2 of exposed excavation and 2 bottom hole samples as shown in the Sample Design Report (Appendix C).

In accordance with 19.15.29.12.B(2), a deferral is being requested in the area represented by L2 due to production pipelines in the area, as remediation in this area could cause safety issues or cause a major facility deconstruction . As described above, the contamination has been delineated and does not cause an imminent risk to human health, the environment, or groundwater.

If this closure sampling plan is approved SMA will give a 48-hr notice to NMOCD, prior to sampling for closure.

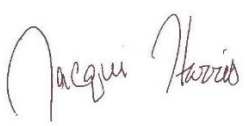
5.0 Scope and Limitations

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 Jacqui Harris at 575-496-0780 or Shawna Chubbuck at 505-325-7535.

Submitted by:
SOUDER, MILLER & ASSOCIATES

Reviewed by:



Jacqui Harris

Shawna Chubbuck

Project Scientist Senior Scientist

ATTACHMENTS:

Figures:

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

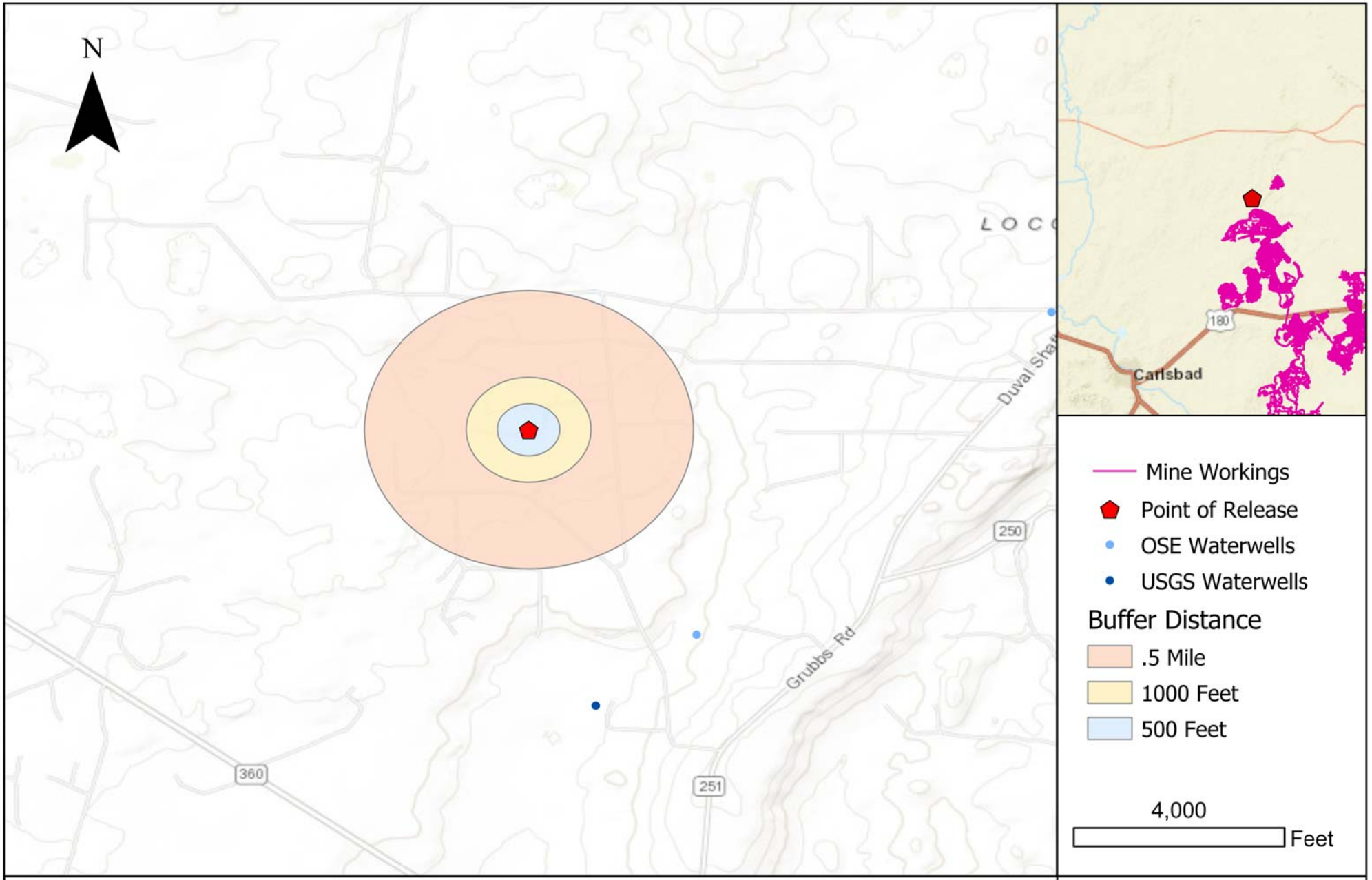
Tables:

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

Appendices:

Appendix A: Form C141 & Site Assessment
Appendix B: USGS & NMOSE Wells Report
Appendix C: Sample Design Report for Confirmation Samples
Appendix D: Laboratory Analytical Reports

FIGURES



Regional Vicinity & Wellhead Protection Map
Santo Nino 29 Fed #4- Mewbourne

Figure 1

P:\5-Mewbourne 2019 MSA (5E27962)\GIS\ARCGIS\MEWBOURNE_MIT.aprx

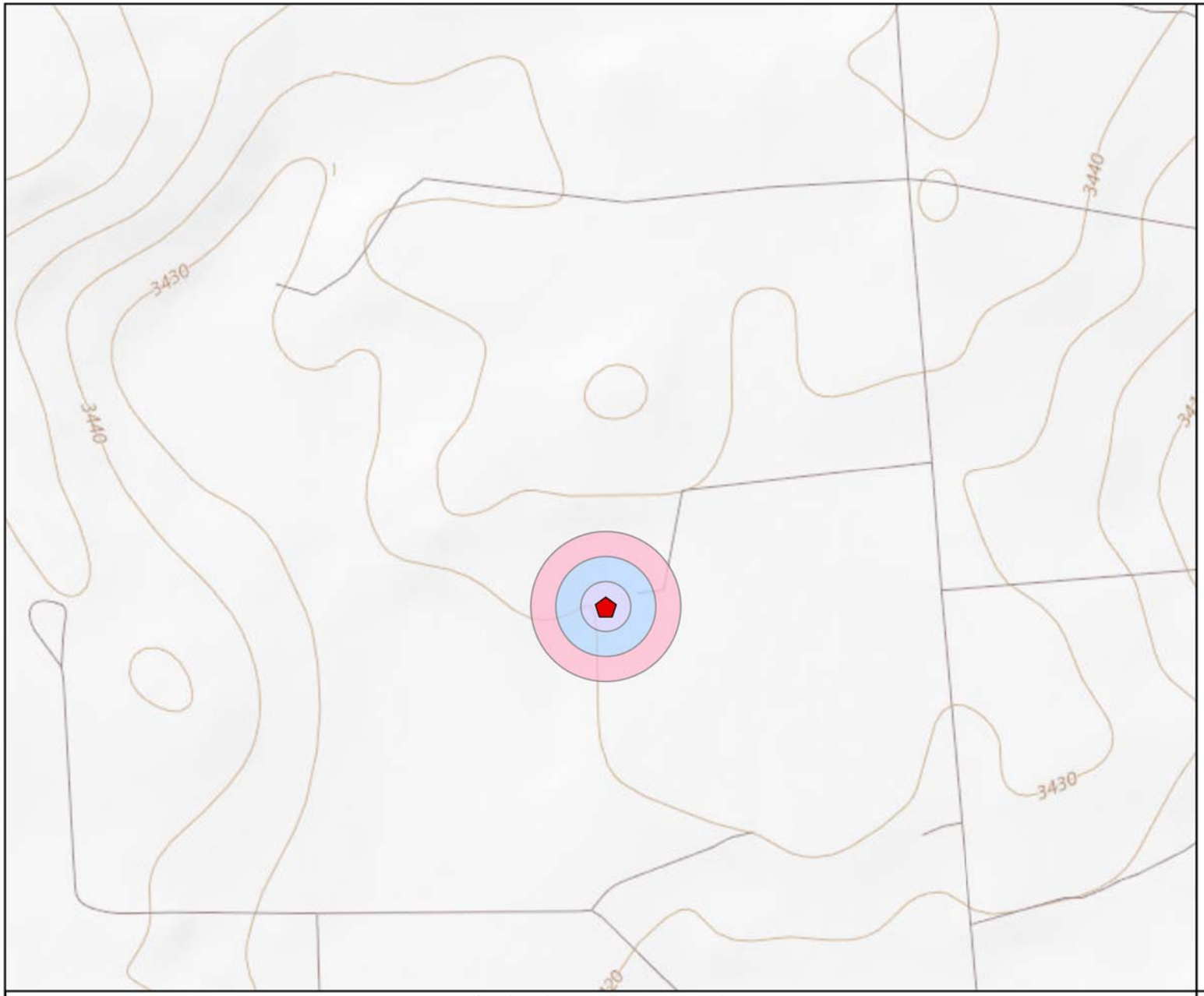
Date Saved: 2/21/2019

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

Drawn	JVH
Date	2/22/2019
Checked	
Approved	

SMA

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



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

925
Feet

Surface Water Protection Map
Santo Nino 29 Fed #4 - Mewbourne
Eddy County , NM

Figure 2

P:\5-Mewbourne 2019 MSA (5E27962)\GIS\ARCGIS\MEWBOURNE_MIT.aprx

Date Saved: 2/21/2019

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

Drawn JVH
Date 2/22/2019
Checked
Approved

201 South Halaguena Street
Carlsbad, New Mexico 88221
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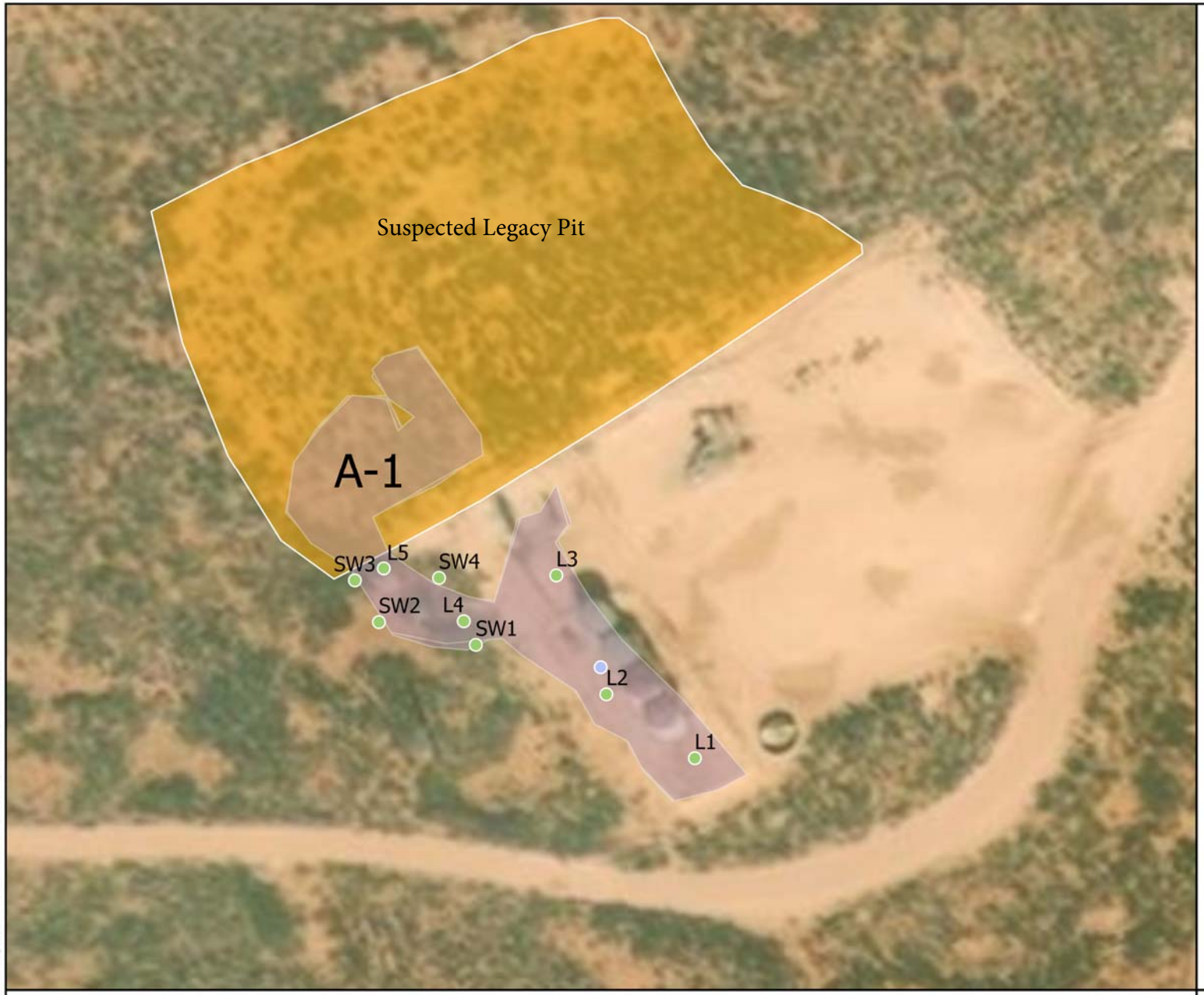


Collector Data

- Point of Release
- Release Area
- Sample Locations

N

0.02 Miles

Site and Sample location Map
Mewbourne-Santo Nino 29 Fed #4
Unit Letter-N, Sect. 29, T18S, R30E. Eddy County New Mexico

Figure 3

C:\Users\jvh.SMA\Documents\ArcGIS\Projects\Santo Nino 29 Fed 4\Santo Nino 29 Fed 4.aprx

Date Saved: 2/21/2019

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

Drawn JVH
Date 2/26/2019
Checked
Approved

SMA

201 South Halaguena Street
Carlsbad, New Mexico 88221
(575) 689.7040
Serving the Southwest & Rocky Mountains

TABLES

Site Information (19.15.29.11.A(2, 3, and 4) NMAC)		Source/Notes
Depth to Groundwater (feet bgs)	~150'	
Hortizontal Distance From All Water Sources Within 1/2 Mile (ft)	NA	None within 0.5 miles.
Hortizontal Distance to Nearest Significant Watercourse (ft)	14,467.2'	2.74 miles NE of the location is "Walters Lake"

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

Sample ID	Sample Date	Depth (feet bgs)	Proposed Action/ Action Taken	BTEX mg/Kg	Benzene mg/Kg	GRO mg/Kg	DRO mg/Kg	MRO mg/Kg	**Total TPH** mg/Kg	Cl- mg/Kg
NMOCD Closure Criteria				50	10	1000			2500	20,000
BG Surface	1/17/2019	2'-3'	Sampled	--	--	--	--	--	--	<60
L1	1/17/2019	2	Sampled	--	--	--	--	--	--	--
		4	Sampled	<0.225	<0.025	<5.0	<10	<50	<65	900
		5	Sampled	--	--	--	--	--	--	--
		7.5	Sampled	<0.225	<0.025	<5.0	<10	<50	<65	2600
		9	Sampled	--	--	--	--	--	--	--
		12	Sampled	--	--	--	--	--	--	--
		16	Sampled	<0.225	<0.025	<5.0	<10	<50	<65	2300
		19	Sampled	--	--	--	--	--	--	--
L2	1/17/2019	4.5	Sampled	60.63	0.63	950	9500	5100	15550	560
L3	1/17/2019	1.5	Sampled	--	--	--	--	--	--	--
		2	Sampled	--	--	--	--	--	--	--
		3.5	Sampled	<0.225	<0.025	<5.0	<10	<50	<65	1700
		5	Sampled	<0.225	<0.025	<5.0	<10	<50	<65	280
L4	1/17/2019	4	Sampled	0.69	<0.025	16	1600	1100	2716	110
		5	Sampled	--	--	--	--	--	--	--
		6	Sampled	<0.225	<0.025	<5.0	<10	<50	<65	820
		8	Sampled	--	--	--	--	--	--	--
		10	Sampled	--	--	--	--	--	--	--
		12	Sampled	<0.225	<0.025	<5.0	<10	<50	<65	740
L5	1/17/2019	3	Sampled	--	--	--	--	--	--	--
		4	Sampled	<0.225	<0.025	<5.0	<10	<50	<65	<60
		5	Sampled	--	--	--	--	--	--	--
		6	Sampled	<0.225	<0.025	<5.0	<10	<50	<65	<60
SW1	1/17/2019	0-4'	Sampled	<0.225	<0.025	<5.0	12	<50	12	<60
SW2	1/17/2019	0-2'	Sampled	<0.225	<0.025	<5.0	24	<50	24	<60
SW3	1/17/2019	0-1'	Sampled	<0.225	<0.025	<5.0	<10	<50	<65	140
SW4	1/17/2019	0-1'	Sampled	<0.225	<0.025	<5.0	160	140	300	380

"--" = Not Analyzed

* = per Reclamation Standard (19.15.29.13.D(1) NMAC)

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	NAB1901731305
District RP	2RP-5184
Facility ID	
Application ID	pAB1901730590

Release Notification

Responsible Party

Responsible Party: Mewbourne Oil Company	OGRID: 14744
Contact Name: Zack Thomas	Contact Telephone: 575-602-2188
Contact email: zthomas@mewbourne.com	Incident # *(assigned by OCD)* NAB1901731305
Contact mailing address: P.O. Box 5270, Hobbs, New Mexico 88240	

Location of Release Source

Latitude 32.7130623 Longitude -103.9962845
(NAD 83 in decimal degrees to 5 decimal places)

Site Name: Santo Nino 29 Fed Com #4	Site Type: Producing Oil Well
Date Release Discovered: 12-24-18	API# *(if applicable): 30-015-28643*

Unit Letter	Section	Township	Range	County
N	29	18S	30E	Eddy

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

Nature and Volume of Release

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

☒ Crude Oil	Volume Released (bbls) 120 bbls	Volume Recovered (bbls) 90 bbls
☐ Produced Water	Volume Released (bbls)	Volume Recovered (bbls)
	Is the concentration of dissolved chloride in the produced water >10,000 mg/l?	☐ Yes ☐ No
☐ Condensate	Volume Released (bbls)	Volume Recovered (bbls)
☐ Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
☐ Other (describe)	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)

Cause of Release
A swedge on the back of an oil tank developed a hole causing oil to drain out into the secondary containment and pasture area Northwest of battery.

State of New Mexico
Oil Conservation Division

Incident ID	NAB1901731305
District RP	2RP-5184
Facility ID	
Application ID	pAB1901730590

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 25 bbls.

If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)?
Several phone calls and voicemails were made to various district 2 environmental specialists which of whom no longer work there.
Per phone conversation with Mr. Zack Thomas 1/17/2019: "The immediate notice was given on the same day as the event occurred, 12/25/2018." AB

Initial Response

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

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

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

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

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

Printed Name: Zack Thomas Title: Environmental Representative

Signature: Z. Thomas Date: 1-9-19

email: zthomas@mewbourne.com Telephone: 575-602-2188

OCD Only

Received by: Amalia Barrameda Date: 1/17/2019

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

Site Assessment/Characterization

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

What is the shallowest depth to groundwater beneath the area affected by the release?	~217 (ft bgs)
Did this release impact groundwater or surface water?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	☐ Yes ☒ No
Are the lateral extents of the release within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	☐ Yes ☒ No
Are the lateral extents of the release within 500 horizontal feet of a spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes?	☐ Yes ☒ No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	☐ Yes ☒ No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of a wetland?	☐ Yes ☒ No
Are the lateral extents of the release overlying a subsurface mine?	☐ Yes ☒ No
Are the lateral extents of the release overlying an unstable area such as karst geology?	☐ Yes ☒ No
Are the lateral extents of the release within a 100-year floodplain?	☐ Yes ☒ No
Did the release impact areas **not** on an exploration, development, production, or storage site?	☒ Yes ☐ No

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

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

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

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

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

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

Printed Name: Zack Thomas Title: Environmental Rep

Signature: Z. Thomas Date: 2-26-19

email: zthomas@mewbourne.com Telephone: 575-393-5905

OCD Only

Received by: Date:

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

Remediation Plan

Remediation Plan Checklist: ***Each of the following items must be included in the plan.***

☒ Detailed description of proposed remediation technique
☒ Scaled sitemap with GPS coordinates showing delineation points
☒ Estimated volume of material to be remediated
☒ Closure criteria is to Table 1 specifications subject to 19.15.29.12(C)(4) NMAC
☒ Proposed schedule for remediation (note if remediation plan timeline is more than 90 days OCD approval is required)

Deferral Requests Only: ***Each of the following items must be confirmed as part of any request for deferral of remediation.***

☒ Contamination must be in areas immediately under or around production equipment where remediation could cause a major facility deconstruction.

☒ Extents of contamination must be fully delineated.

☒ Contamination does not cause an imminent risk to human health, the environment, or groundwater.

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: Zack Thomas Title: Environmental Rep

Signature: Z. Thomas Date: 2-26-19

email: zthomas@mewbourne.com Telephone: 575-393-5905

OCD Only

Received by: _____ Date: _____

☐ Approved ☐ Approved with Attached Conditions of Approval ☐ Denied ☐ Deferral Approved

Signature: _____ Date: _____

APPENDIX B

USGS & NMOSE WELLS REPORT

National Water Information System: Web Interface

Click to hideNews Bulletins

- Introducing The Next Generation of USGS Water Data for the Nation
- Full News

Groundwater levels for the Nation

Search Results -- 1 sites found

site_no list =

- 324154103593301

Minimum number of levels = 1

Save file of selected sites to local disk for future upload

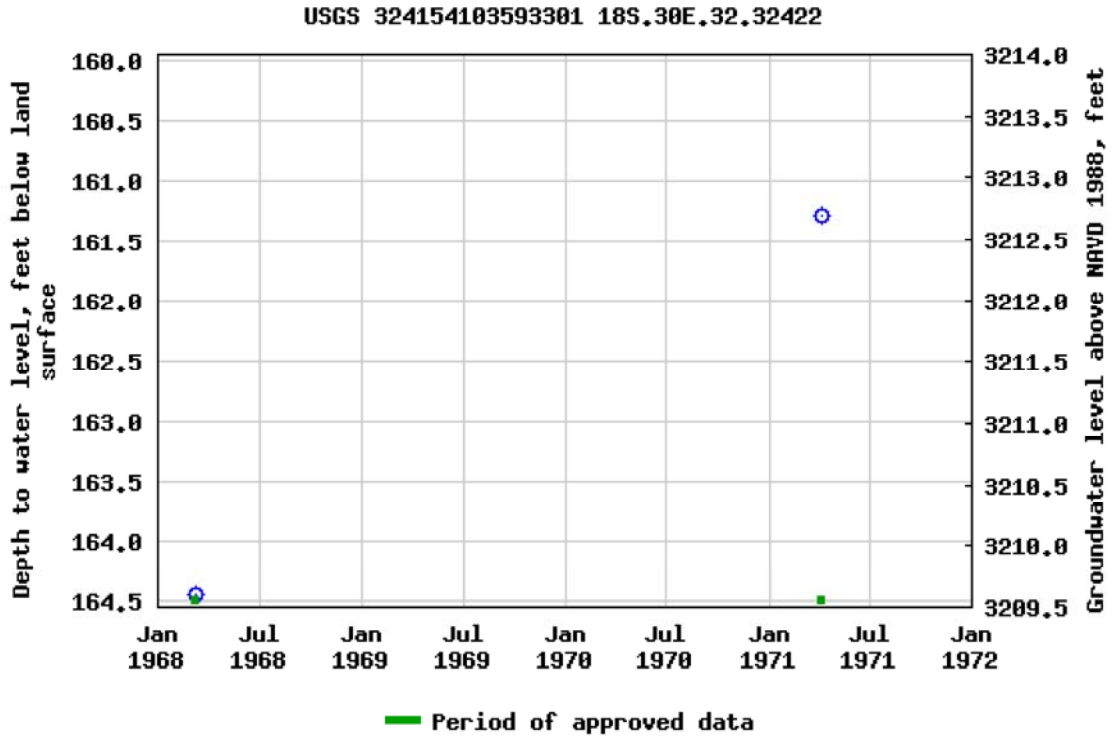
USGS 324154103593301 18S.30E.32.32422

Available data for this site Groundwater: Field measurements | GO

Eddy County, New Mexico
Hydrologic Unit Code --
Latitude 32°41'54", Longitude 103°59'33" NAD27
Land-surface elevation 3,374 feet above NAVD88
This well is completed in the Chinle Formation (231CHNL) local aquifer.

Output formats

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



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

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

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

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

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

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

POD Number	POD Sub-basin Code	County	Q 64	Q 16	Q 4	Sec	Tws	Rng	X	Y	Distance	Depth Well	Depth Water	Water Column
CP 00819 POD1	CP	LE	2	4	32	18S	30E		594878	3618720*	1450	150		

Average Depth to Water: --

Minimum Depth: --

Maximum Depth: --

Record Count: 1

UTMNAD83 Radius Search (in meters):

Easting (X): 594067.21 **Northing (Y):** 3619923 **Radius:** 2000

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

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

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

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

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest)

(NAD83 UTM in meters)

(In feet)

POD Number	Code	POD Sub-basin	County	Q 64	Q 16	Q 4	Sec	Tws	Rng	X	Y	Distance	Depth Well	Depth Water	Water Column
CP 00819 POD1		CP	LE	2	4		32	18S	30E	594878	3618720*	1450	150		
CP 00853 POD1	O	CP	ED	2	4		28	18S	30E	596472	3620340*	2440	350		
CP 00582 POD1		CP	ED				24	18S	29E	591048	3622096*	3719	150		

Average Depth to Water: --

Minimum Depth: --

Maximum Depth: --

Record Count: 3

UTMNAD83 Radius Search (in meters):

Easting (X): 594067.21 **Northing (Y):** 3619923 **Radius:** 5000

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

APPENDIX C

SAMPLE DESIGN REPORT FOR CONFIRMATION SAMPLES

VSP Sample Design Report for Using Stratified Sampling to Estimate the Population Mean

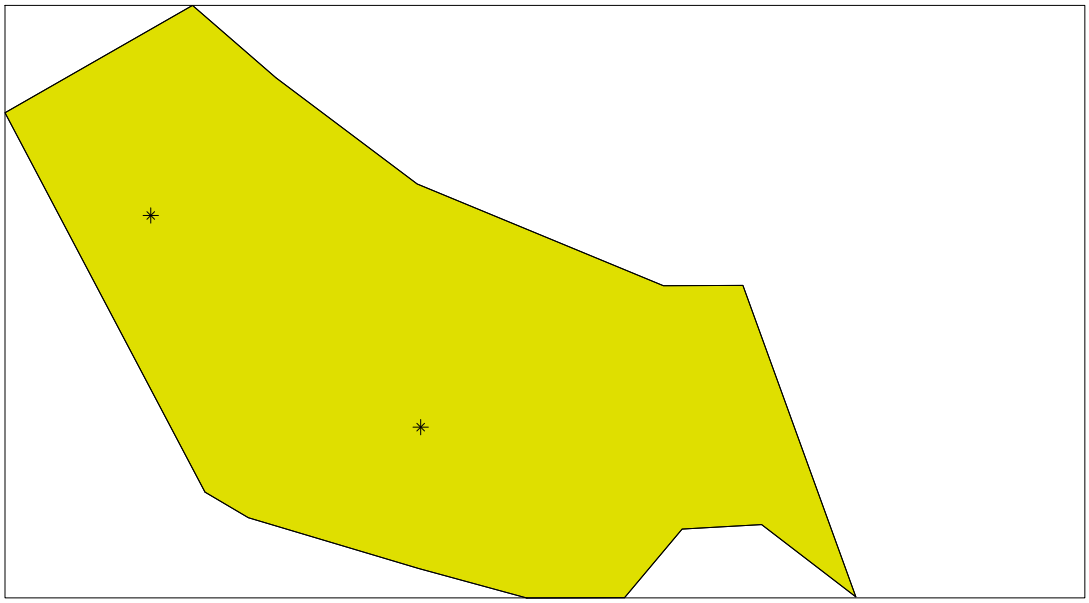
Summary

This report summarizes the stratified sampling design used, associated statistical assumptions, as well as general guidelines for conducting post-sampling data analysis. Sampling plan components presented here include how many sampling locations to choose and where within the sampling area to collect those samples. The type of medium to sample (i.e., soil, groundwater, etc.) and how to analyze the samples (in-situ, fixed laboratory, etc.) are addressed in other sections of the sampling plan. It is important to note that the decision for sample size calculation is determined for the combined strata, rather than any individual strata.

The following table summarizes the mean stratified sampling design developed. A figure that shows sampling locations in the field and a table that lists sampling location coordinates are also provided below.

SUMMARY OF SAMPLING DESIGN	
Primary Objective of Design	Estimate the population mean of all strata combined
Criteria for Determining Total Number of Samples	Achieve pre-specified precision of the estimated mean for specified stratum costs, but no restriction on total costs
Sample Placement (Location) in the Field	Systematic sampling with a random start location within each stratum
Formula for calculating number of sampling locations	From Gilbert (1987, page 51)
Method for calculating number of sampling locations in each stratum	Optimal Allocation
Calculated total number of samples	2
Stratum 1	2 [b]
Total area of all strata	371.45 m^2

[a] Including measurement analyses and fixed overhead costs. See the Cost of Sampling section for an explanation of the costs presented here.
[b] The actual number of samples placed in the sample area may differ from the calculated number because of grid edge effects.



Area: Area 1										
X Coord	**Y Coord**	**Z Coord**	**Label**	**Value**	**Type**	**Historical**	**Surface**	**LX**	**LY**	**Sample Area**
196554.0610	189966.2846	0.0000			Systematic		Floor	196555.0610	189967.2846	
196547.2050	189971.6605	0.6000			Systematic		Ceiling	196548.2050	189972.6605	

Primary Sampling Objective
The primary purpose of sampling at this site is to estimate the mean for the entire site, i.e., for all strata combined, such that the estimated mean has the minimum possible standard deviation under the condition that the sampling and measurement costs cannot exceed a specified amount. Preexisting information was used to divide the site into 1 non-overlapping strata that were expected to be more homogeneous internally than for the entire site (all strata combined). The expected variability of values within each stratum was estimated or approximated, and the stratum weights, W_h, were determined so that the total number of samples could be allocated appropriately among the strata.

Number of Total Samples: Calculation Equation and Inputs
The total number of samples is computed to achieve the pre-specified precision of the estimated population mean for specified stratum costs, but no restriction on total costs. *Note that the calculation is for the total number of samples, i.e., for combined strata, rather than individual strata.*

The formula used to calculate the total number of samples is:

$$n = \frac{\left(\sum_{h=1}^{L} W_h S_h \sqrt{c_h}\right)\sum_{h=1}^{L} \frac{W_h S_h}{\sqrt{c_h}}}{V + \frac{1}{N}\sum_{h=1}^{L} W_h S_h^{\,2}}$$

where
L is the number of strata, $h=1,2,...,L$,
S_h is the estimated standard deviation of the measured values in stratum h,
$W_h = N_h / N$ is the weight associated with stratum h,
N_h is the total number of possible sampling locations (units) in stratum h,
N is the total number of possible units in all strata combined, $N = \sum_{h=1}^{L} N_h$
V is the pre-specified variance or precision, and
c_h is the cost of collecting and measuring a sample in stratum h.

The values of these inputs that result in the calculated number of sampling locations are:

Parameter	Stratum
	1
S_h	0.21
W_h	167.925

Parameter	Input Value
V	0.0225

Allocation of Samples to Strata
The total number of samples is allocated to the individual strata on an optimal basis using the formula:

$$n_h = n \frac{N_h \sigma_h / \sqrt{c_h}}{\sum_{h=1}^{L} N_h \sigma_h / \sqrt{c_h}}$$

where

n_h is the number of samples allocated to stratum h,
L is the number of strata,
N_h is the total number of units in stratum h,
σ_h is the true population standard deviation for stratum h,
c_h is the cost per population unit in stratum h.

n is the total number of units sampled in all strata, $n = \sum_{h=1}^{L} n_h$

Using this formula, the number of samples allocated to each stratum is:

Stratum	Number of Samples
1	2
Total Samples	2

Method for Determining Sampling Locations

Five methods for determining sample locations are provided in VSP: 1) simple random sampling, 2) random sampling within grids, 3) systematic sampling with a random start, 4) systematic sampling with a fixed start and 5) adaptive grid sampling. One may use a different method for each stratum, based on the conceptual site model and decision to be made for a given stratum. For this site, sample locations were chosen using a systematic grid in each stratum.

Locating the sample points over a systematic grid with a random start ensures a uniform spatial coverage of each stratum and the entire site. Statistical analyses of systematically collected data may be acceptable for making decisions. One disadvantage of collecting samples on a systematic grid is that spatial variability or patterns of data may not be discovered if the grid spacing is large relative to the spatial patterns. Also, if a spatial pattern of population values corresponds to the systematic spacing of sample locations, then the estimated mean may be very biased.

Statistical Assumptions

The assumptions associated with the formulas for computing the number of samples are:

1. The estimated stratum standard deviations, s_h, are reasonable and representative of the stratum populations being sampled.
2. The sampling locations are selected using simple random sampling.
3. The stratum costs, C_h, and the fixed cost C_0, are accurate.

The first and third assumptions will be assessed in a post data collection analysis. The second assumption, although not strictly valid because systematic grid sampling was used rather than simple random sampling, is not expected to significantly affect conclusions of the study because (1) the gridded sample locations were selected based on a random start and (2) any patterns of contamination in the field that may exist are not expected to coincide with the regularity of the grid sampling pattern.

Recommended Data Analysis Activities

Post data collection activities generally follow those outlined in EPA's Guidance for Data Quality Assessment (EPA, 2000). The data analysts will become familiar with the context of the problem and goals for data collection and assessment. The data will be verified and validated before being subjected to statistical or other analyses. Graphical and analytical tools will be used to verify to the extent possible the assumptions of any statistical analyses that are performed as well as to achieve a general understanding of the data. The data will be assessed to determine whether they are adequate in both quality and quantity to support the primary objective of sampling.

Estimates for the mean and standard deviation of the population values will be calculated using the formulas appropriate for stratified sampling; these formulas are found in EPA QA/G-5S (EPA, 2001). Results of the exploratory and quantitative assessments of the data will be reported, along with conclusions that may be supported by them.

APPENDIX D

LABORATORY ANALYTICAL REPORTS

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

February 01, 2019

Austin Weyant

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

RE: Santo Nino 29 Fed 4 OrderNo.: 1901991

Dear Austin Weyant:

Hall Environmental Analysis Laboratory received 16 sample(s) on 1/25/2019 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

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller & Associates
Client Sample ID: SW 2
Project: Santo Nino 29 Fed 4
Collection Date: 1/17/2019 4:40:00 PM
Lab ID: 1901991-001 **Matrix:** SOIL **Received Date:** 1/25/2019 8:45:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **smb**	
Chloride	ND	60		mg/Kg	20	1/29/2019 1:40:55 PM	42859
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **lrm**	
Diesel Range Organics (DRO)	24	9.9		mg/Kg	1	1/29/2019 11:25:48 AM	42832
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	1/29/2019 11:25:48 AM	42832
Surr: DNOP	94.6	50.6-138		%Rec	1	1/29/2019 11:25:48 AM	42832
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	1/28/2019 5:43:34 PM	42821
Surr: BFB	96.3	73.8-119		%Rec	1	1/28/2019 5:43:34 PM	42821
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.023		mg/Kg	1	1/28/2019 5:43:34 PM	42821
Toluene	ND	0.047		mg/Kg	1	1/28/2019 5:43:34 PM	42821
Ethylbenzene	ND	0.047		mg/Kg	1	1/28/2019 5:43:34 PM	42821
Xylenes, Total	ND	0.093		mg/Kg	1	1/28/2019 5:43:34 PM	42821
Surr: 4-Bromofluorobenzene	100	80-120		%Rec	1	1/28/2019 5:43:34 PM	42821

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: SW 3
Project: Santo Nino 29 Fed 4
Collection Date: 1/17/2019 4:50:00 PM
Lab ID: 1901991-002 **Matrix:** SOIL **Received Date:** 1/25/2019 8:45:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **smb**	
Chloride	140	60		mg/Kg	20	1/29/2019 2:18:08 PM	42859
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **lrm**	
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	1/29/2019 12:31:51 PM	42832
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	1/29/2019 12:31:51 PM	42832
Surr: DNOP	90.0	50.6-138		%Rec	1	1/29/2019 12:31:51 PM	42832
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	1/28/2019 6:06:27 PM	42821
Surr: BFB	92.4	73.8-119		%Rec	1	1/28/2019 6:06:27 PM	42821
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.024		mg/Kg	1	1/28/2019 6:06:27 PM	42821
Toluene	ND	0.048		mg/Kg	1	1/28/2019 6:06:27 PM	42821
Ethylbenzene	ND	0.048		mg/Kg	1	1/28/2019 6:06:27 PM	42821
Xylenes, Total	ND	0.096		mg/Kg	1	1/28/2019 6:06:27 PM	42821
Surr: 4-Bromofluorobenzene	97.3	80-120		%Rec	1	1/28/2019 6:06:27 PM	42821

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: SW 4
Project: Santo Nino 29 Fed 4
Collection Date: 1/17/2019 5:00:00 PM
Lab ID: 1901991-003 **Matrix:** SOIL **Received Date:** 1/25/2019 8:45:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **smb**	
Chloride	380	60		mg/Kg	20	1/29/2019 2:30:33 PM	42859
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **lrm**	
Diesel Range Organics (DRO)	160	9.5		mg/Kg	1	1/29/2019 12:53:52 PM	42832
Motor Oil Range Organics (MRO)	140	48		mg/Kg	1	1/29/2019 12:53:52 PM	42832
Surr: DNOP	97.9	50.6-138		%Rec	1	1/29/2019 12:53:52 PM	42832
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/28/2019 6:29:13 PM	42821
Surr: BFB	97.8	73.8-119		%Rec	1	1/28/2019 6:29:13 PM	42821
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.025		mg/Kg	1	1/28/2019 6:29:13 PM	42821
Toluene	ND	0.049		mg/Kg	1	1/28/2019 6:29:13 PM	42821
Ethylbenzene	ND	0.049		mg/Kg	1	1/28/2019 6:29:13 PM	42821
Xylenes, Total	ND	0.098		mg/Kg	1	1/28/2019 6:29:13 PM	42821
Surr: 4-Bromofluorobenzene	103	80-120		%Rec	1	1/28/2019 6:29:13 PM	42821

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: BG-3'
Project: Santo Nino 29 Fed 4
Collection Date: 1/17/2019 12:35:00 PM
Lab ID: 1901991-004
Matrix: SOIL
Received Date: 1/25/2019 8:45:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **smb**	
Chloride	ND	60		mg/Kg	20	1/29/2019 2:42:57 PM	42859

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: L1-4'
Project: Santo Nino 29 Fed 4
Collection Date: 1/17/2019 4:00:00 PM
Lab ID: 1901991-005 **Matrix:** SOIL **Received Date:** 1/25/2019 8:45:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **smb**	
Chloride	900	60		mg/Kg	20	1/29/2019 2:55:22 PM	42859
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **lrm**	
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	1/29/2019 1:15:56 PM	42832
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	1/29/2019 1:15:56 PM	42832
Surr: DNOP	100	50.6-138		%Rec	1	1/29/2019 1:15:56 PM	42832
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	1/28/2019 6:51:48 PM	42821
Surr: BFB	99.4	73.8-119		%Rec	1	1/28/2019 6:51:48 PM	42821
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.024		mg/Kg	1	1/28/2019 6:51:48 PM	42821
Toluene	ND	0.048		mg/Kg	1	1/28/2019 6:51:48 PM	42821
Ethylbenzene	ND	0.048		mg/Kg	1	1/28/2019 6:51:48 PM	42821
Xylenes, Total	ND	0.095		mg/Kg	1	1/28/2019 6:51:48 PM	42821
Surr: 4-Bromofluorobenzene	105	80-120		%Rec	1	1/28/2019 6:51:48 PM	42821

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: L1-7.5'
Project: Santo Nino 29 Fed 4
Collection Date: 1/17/2019 4:30:00 PM
Lab ID: 1901991-006 **Matrix:** SOIL **Received Date:** 1/25/2019 8:45:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **smb**	
Chloride	2600	150		mg/Kg	50	1/30/2019 6:10:21 PM	42859
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **lrm**	
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	1/29/2019 1:37:53 PM	42832
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	1/29/2019 1:37:53 PM	42832
Surr: DNOP	91.7	50.6-138		%Rec	1	1/29/2019 1:37:53 PM	42832
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	1/28/2019 7:14:38 PM	42821
Surr: BFB	97.5	73.8-119		%Rec	1	1/28/2019 7:14:38 PM	42821
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.025		mg/Kg	1	1/28/2019 7:14:38 PM	42821
Toluene	ND	0.050		mg/Kg	1	1/28/2019 7:14:38 PM	42821
Ethylbenzene	ND	0.050		mg/Kg	1	1/28/2019 7:14:38 PM	42821
Xylenes, Total	ND	0.10		mg/Kg	1	1/28/2019 7:14:38 PM	42821
Surr: 4-Bromofluorobenzene	102	80-120		%Rec	1	1/28/2019 7:14:38 PM	42821

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: L1-16'
Project: Santo Nino 29 Fed 4
Collection Date: 1/17/2019 4:45:00 PM
Lab ID: 1901991-007 **Matrix:** SOIL **Received Date:** 1/25/2019 8:45:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **smb**	
Chloride	2300	150		mg/Kg	50	2/1/2019 4:06:59 AM	42885
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **lrm**	
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	1/29/2019 2:00:01 PM	42832
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	1/29/2019 2:00:01 PM	42832
Surr: DNOP	91.2	50.6-138		%Rec	1	1/29/2019 2:00:01 PM	42832
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	1/28/2019 7:37:26 PM	42821
Surr: BFB	98.7	73.8-119		%Rec	1	1/28/2019 7:37:26 PM	42821
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.024		mg/Kg	1	1/28/2019 7:37:26 PM	42821
Toluene	ND	0.048		mg/Kg	1	1/28/2019 7:37:26 PM	42821
Ethylbenzene	ND	0.048		mg/Kg	1	1/28/2019 7:37:26 PM	42821
Xylenes, Total	ND	0.095		mg/Kg	1	1/28/2019 7:37:26 PM	42821
Surr: 4-Bromofluorobenzene	103	80-120		%Rec	1	1/28/2019 7:37:26 PM	42821

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: L2-4.5'
Project: Santo Nino 29 Fed 4
Collection Date: 1/17/2019 3:00:00 PM
Lab ID: 1901991-008 **Matrix:** SOIL
Received Date: 1/25/2019 8:45:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **smb**	
Chloride	560	60		mg/Kg	20	1/30/2019 2:27:01 PM	42885
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **lrm**	
Diesel Range Organics (DRO)	9500	97		mg/Kg	10	1/29/2019 2:21:53 PM	42832
Motor Oil Range Organics (MRO)	5100	480		mg/Kg	10	1/29/2019 2:21:53 PM	42832
Surr: DNOP	0	50.6-138	S	%Rec	10	1/29/2019 2:21:53 PM	42832
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	950	93		mg/Kg	20	1/28/2019 12:58:07 PM	42823
Surr: BFB	314	73.8-119	S	%Rec	20	1/28/2019 12:58:07 PM	42823
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	0.63	0.47		mg/Kg	20	1/28/2019 12:58:07 PM	42823
Toluene	14	0.93		mg/Kg	20	1/28/2019 12:58:07 PM	42823
Ethylbenzene	8.0	0.93		mg/Kg	20	1/28/2019 12:58:07 PM	42823
Xylenes, Total	38	1.9		mg/Kg	20	1/28/2019 12:58:07 PM	42823
Surr: 4-Bromofluorobenzene	123	80-120	S	%Rec	20	1/28/2019 12:58:07 PM	42823

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: L3-3.5'
Project: Santo Nino 29 Fed 4
Collection Date: 1/17/2019 2:00:00 PM
Lab ID: 1901991-009 **Matrix:** SOIL **Received Date:** 1/25/2019 8:45:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **smb**	
Chloride	1700	60		mg/Kg	20	1/30/2019 3:04:15 PM	42885
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **lrm**	
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	1/29/2019 3:27:56 PM	42832
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	1/29/2019 3:27:56 PM	42832
Surr: DNOP	95.0	50.6-138		%Rec	1	1/29/2019 3:27:56 PM	42832
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	1/28/2019 1:44:47 PM	42823
Surr: BFB	96.5	73.8-119		%Rec	1	1/28/2019 1:44:47 PM	42823
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.023		mg/Kg	1	1/28/2019 1:44:47 PM	42823
Toluene	ND	0.047		mg/Kg	1	1/28/2019 1:44:47 PM	42823
Ethylbenzene	ND	0.047		mg/Kg	1	1/28/2019 1:44:47 PM	42823
Xylenes, Total	ND	0.093		mg/Kg	1	1/28/2019 1:44:47 PM	42823
Surr: 4-Bromofluorobenzene	94.8	80-120		%Rec	1	1/28/2019 1:44:47 PM	42823

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: L3-5'
Project: Santo Nino 29 Fed 4
Collection Date: 1/17/2019 2:20:00 PM
Lab ID: 1901991-010 **Matrix:** SOIL **Received Date:** 1/25/2019 8:45:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **smb**	
Chloride	280	60		mg/Kg	20	1/30/2019 3:16:40 PM	42885
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **lrm**	
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	1/29/2019 3:49:53 PM	42832
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	1/29/2019 3:49:53 PM	42832
Surr: DNOP	93.4	50.6-138		%Rec	1	1/29/2019 3:49:53 PM	42832
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/28/2019 2:55:22 PM	42823
Surr: BFB	94.1	73.8-119		%Rec	1	1/28/2019 2:55:22 PM	42823
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.024		mg/Kg	1	1/28/2019 2:55:22 PM	42823
Toluene	ND	0.049		mg/Kg	1	1/28/2019 2:55:22 PM	42823
Ethylbenzene	ND	0.049		mg/Kg	1	1/28/2019 2:55:22 PM	42823
Xylenes, Total	ND	0.097		mg/Kg	1	1/28/2019 2:55:22 PM	42823
Surr: 4-Bromofluorobenzene	92.5	80-120		%Rec	1	1/28/2019 2:55:22 PM	42823

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: L4-4'
Project: Santo Nino 29 Fed 4
Collection Date: 1/17/2019 12:30:00 PM
Lab ID: 1901991-011 **Matrix:** SOIL **Received Date:** 1/25/2019 8:45:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **smb**	
Chloride	110	60		mg/Kg	20	1/30/2019 3:29:04 PM	42885
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **lrm**	
Diesel Range Organics (DRO)	1600	99		mg/Kg	10	1/30/2019 9:24:20 AM	42832
Motor Oil Range Organics (MRO)	1100	490		mg/Kg	10	1/30/2019 9:24:20 AM	42832
Surr: DNOP	0	50.6-138	S	%Rec	10	1/30/2019 9:24:20 AM	42832
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	16	4.8		mg/Kg	1	1/28/2019 3:18:59 PM	42823
Surr: BFB	187	73.8-119	S	%Rec	1	1/28/2019 3:18:59 PM	42823
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.024		mg/Kg	1	1/28/2019 3:18:59 PM	42823
Toluene	0.13	0.048		mg/Kg	1	1/28/2019 3:18:59 PM	42823
Ethylbenzene	0.13	0.048		mg/Kg	1	1/28/2019 3:18:59 PM	42823
Xylenes, Total	0.43	0.097		mg/Kg	1	1/28/2019 3:18:59 PM	42823
Surr: 4-Bromofluorobenzene	99.8	80-120		%Rec	1	1/28/2019 3:18:59 PM	42823

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: L4-6'
Project: Santo Nino 29 Fed 4
Collection Date: 1/17/2019 12:35:00 PM
Lab ID: 1901991-012 **Matrix:** SOIL **Received Date:** 1/25/2019 8:45:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **smb**	
Chloride	820	60		mg/Kg	20	1/30/2019 3:41:28 PM	42885
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **lrm**	
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	1/29/2019 4:55:54 PM	42832
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	1/29/2019 4:55:54 PM	42832
Surr: DNOP	95.1	50.6-138		%Rec	1	1/29/2019 4:55:54 PM	42832
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	1/28/2019 4:06:16 PM	42823
Surr: BFB	90.9	73.8-119		%Rec	1	1/28/2019 4:06:16 PM	42823
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.024		mg/Kg	1	1/28/2019 4:06:16 PM	42823
Toluene	ND	0.048		mg/Kg	1	1/28/2019 4:06:16 PM	42823
Ethylbenzene	ND	0.048		mg/Kg	1	1/28/2019 4:06:16 PM	42823
Xylenes, Total	ND	0.096		mg/Kg	1	1/28/2019 4:06:16 PM	42823
Surr: 4-Bromofluorobenzene	88.5	80-120		%Rec	1	1/28/2019 4:06:16 PM	42823

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: L4-12'
Project: Santo Nino 29 Fed 4
Collection Date: 1/17/2019 12:45:00 PM
Lab ID: 1901991-013 **Matrix:** SOIL
Received Date: 1/25/2019 8:45:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **smb**	
Chloride	740	60		mg/Kg	20	1/30/2019 3:53:53 PM	42885
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **lrm**	
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	1/29/2019 5:17:50 PM	42832
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	1/29/2019 5:17:50 PM	42832
Surr: DNOP	106	50.6-138		%Rec	1	1/29/2019 5:17:50 PM	42832
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	1/28/2019 4:53:22 PM	42823
Surr: BFB	93.0	73.8-119		%Rec	1	1/28/2019 4:53:22 PM	42823
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.024		mg/Kg	1	1/28/2019 4:53:22 PM	42823
Toluene	ND	0.048		mg/Kg	1	1/28/2019 4:53:22 PM	42823
Ethylbenzene	ND	0.048		mg/Kg	1	1/28/2019 4:53:22 PM	42823
Xylenes, Total	ND	0.096		mg/Kg	1	1/28/2019 4:53:22 PM	42823
Surr: 4-Bromofluorobenzene	92.8	80-120		%Rec	1	1/28/2019 4:53:22 PM	42823

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: L5-4'
Project: Santo Nino 29 Fed 4
Collection Date: 1/17/2019 2:10:00 PM
Lab ID: 1901991-014 **Matrix:** SOIL **Received Date:** 1/25/2019 8:45:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **smb**	
Chloride	ND	60		mg/Kg	20	1/30/2019 4:06:17 PM	42885
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **lrm**	
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	1/29/2019 5:39:49 PM	42832
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	1/29/2019 5:39:49 PM	42832
Surr: DNOP	96.9	50.6-138		%Rec	1	1/29/2019 5:39:49 PM	42832
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	1/28/2019 5:40:24 PM	42823
Surr: BFB	94.6	73.8-119		%Rec	1	1/28/2019 5:40:24 PM	42823
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.024		mg/Kg	1	1/28/2019 5:40:24 PM	42823
Toluene	ND	0.047		mg/Kg	1	1/28/2019 5:40:24 PM	42823
Ethylbenzene	ND	0.047		mg/Kg	1	1/28/2019 5:40:24 PM	42823
Xylenes, Total	ND	0.095		mg/Kg	1	1/28/2019 5:40:24 PM	42823
Surr: 4-Bromofluorobenzene	93.4	80-120		%Rec	1	1/28/2019 5:40:24 PM	42823

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: L5-6'
Project: Santo Nino 29 Fed 4
Collection Date: 1/17/2019 2:20:00 PM
Lab ID: 1901991-015 **Matrix:** SOIL **Received Date:** 1/25/2019 8:45:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **smb**	
Chloride	ND	60		mg/Kg	20	1/30/2019 4:18:41 PM	42885
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **lrm**	
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	1/29/2019 6:01:40 PM	42832
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	1/29/2019 6:01:40 PM	42832
Surr: DNOP	97.0	50.6-138		%Rec	1	1/29/2019 6:01:40 PM	42832
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/28/2019 7:37:59 PM	42823
Surr: BFB	93.7	73.8-119		%Rec	1	1/28/2019 7:37:59 PM	42823
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.024		mg/Kg	1	1/28/2019 7:37:59 PM	42823
Toluene	ND	0.049		mg/Kg	1	1/28/2019 7:37:59 PM	42823
Ethylbenzene	ND	0.049		mg/Kg	1	1/28/2019 7:37:59 PM	42823
Xylenes, Total	ND	0.098		mg/Kg	1	1/28/2019 7:37:59 PM	42823
Surr: 4-Bromofluorobenzene	93.1	80-120		%Rec	1	1/28/2019 7:37:59 PM	42823

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: SW1
Project: Santo Nino 29 Fed 4
Collection Date: 1/17/2019 4:30:00 PM
Lab ID: 1901991-016 **Matrix:** SOIL **Received Date:** 1/25/2019 8:45:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst: **smb**	
Chloride	ND	60		mg/Kg	20	1/30/2019 4:55:54 PM	42885
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **lrm**	
Diesel Range Organics (DRO)	12	9.4		mg/Kg	1	1/29/2019 6:23:30 PM	42832
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	1/29/2019 6:23:30 PM	42832
Surr: DNOP	99.9	50.6-138		%Rec	1	1/29/2019 6:23:30 PM	42832
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	1/28/2019 8:01:37 PM	42823
Surr: BFB	92.9	73.8-119		%Rec	1	1/28/2019 8:01:37 PM	42823
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.024		mg/Kg	1	1/28/2019 8:01:37 PM	42823
Toluene	ND	0.049		mg/Kg	1	1/28/2019 8:01:37 PM	42823
Ethylbenzene	ND	0.049		mg/Kg	1	1/28/2019 8:01:37 PM	42823
Xylenes, Total	ND	0.097		mg/Kg	1	1/28/2019 8:01:37 PM	42823
Surr: 4-Bromofluorobenzene	92.6	80-120		%Rec	1	1/28/2019 8:01:37 PM	42823

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#: **1901991**

01-Feb-19

Client: Souder, Miller & Associates

Project: Santo Nino 29 Fed 4

Sample ID	**MB-42859**	SampType:	**MBLK**	TestCode:	**EPA Method 300.0: Anions**					
Client ID:	**PBS**	Batch ID:	**42859**	RunNo:	**57344**					
Prep Date:	**1/29/2019**	Analysis Date:	**1/29/2019**	SeqNo:	**1918616**	Units:	**mg/Kg**			

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

Sample ID	**LCS-42859**	SampType:	**LCS**	TestCode:	**EPA Method 300.0: Anions**					
Client ID:	**LCSS**	Batch ID:	**42859**	RunNo:	**57344**					
Prep Date:	**1/29/2019**	Analysis Date:	**1/29/2019**	SeqNo:	**1918617**	Units:	**mg/Kg**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	94.7	90	110			

Sample ID	**MB-42885**	SampType:	**MBLK**	TestCode:	**EPA Method 300.0: Anions**					
Client ID:	**PBS**	Batch ID:	**42885**	RunNo:	**57374**					
Prep Date:	**1/30/2019**	Analysis Date:	**1/30/2019**	SeqNo:	**1919631**	Units:	**mg/Kg**			

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

Sample ID	**LCS-42885**	SampType:	**LCS**	TestCode:	**EPA Method 300.0: Anions**					
Client ID:	**LCSS**	Batch ID:	**42885**	RunNo:	**57374**					
Prep Date:	**1/30/2019**	Analysis Date:	**1/30/2019**	SeqNo:	**1919632**	Units:	**mg/Kg**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	94.1	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#: **1901991**

01-Feb-19

Client: Souder, Miller & Associates

Project: Santo Nino 29 Fed 4

Sample ID	**MB-42832**	SampType:	**MBLK**	TestCode:	**EPA Method 8015M/D: Diesel Range Organics**					
Client ID:	**PBS**	Batch ID:	**42832**	RunNo:	**57320**					
Prep Date:	**1/28/2019**	Analysis Date:	**1/29/2019**	SeqNo:	**1917584**	Units:	**mg/Kg**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	11		10.00		107	50.6	138			

Sample ID	**1901991-001AMS**	SampType:	**MS**	TestCode:	**EPA Method 8015M/D: Diesel Range Organics**					
Client ID:	**SW 2**	Batch ID:	**42832**	RunNo:	**57320**					
Prep Date:	**1/28/2019**	Analysis Date:	**1/29/2019**	SeqNo:	**1917651**	Units:	**mg/Kg**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	130	9.6	48.22	24.12	213	53.5	126			S
Surr: DNOP	4.9		4.822		101	50.6	138			

Sample ID	**LCS-42832**	SampType:	**LCS**	TestCode:	**EPA Method 8015M/D: Diesel Range Organics**					
Client ID:	**LCSS**	Batch ID:	**42832**	RunNo:	**57320**					
Prep Date:	**1/28/2019**	Analysis Date:	**1/29/2019**	SeqNo:	**1917652**	Units:	**mg/Kg**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	51	10	50.00	0	102	63.9	124			
Surr: DNOP	4.8		5.000		97.0	50.6	138			

Sample ID	**1901991-001AMSD**	SampType:	**MSD**	TestCode:	**EPA Method 8015M/D: Diesel Range Organics**					
Client ID:	**SW 2**	Batch ID:	**42832**	RunNo:	**57320**					
Prep Date:	**1/28/2019**	Analysis Date:	**1/29/2019**	SeqNo:	**1917749**	Units:	**mg/Kg**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	130	9.6	48.22	24.12	215	53.5	126	0.445	21.7	S
Surr: DNOP	4.6		4.822		95.1	50.6	138	0	0	

Qualifiers:

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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#: **1901991**

01-Feb-19

Client: Souder, Miller & Associates

Project: Santo Nino 29 Fed 4

Sample ID	**MB-42823**	SampType:	**MBLK**	TestCode:	**EPA Method 8015D: Gasoline Range**					
Client ID:	**PBS**	Batch ID:	**42823**	RunNo:	**57296**					
Prep Date:	**1/25/2019**	Analysis Date:	**1/28/2019**	SeqNo:	**1917158**	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	970		1000		96.9	73.8	119			

Sample ID	**LCS-42823**	SampType:	**LCS**	TestCode:	**EPA Method 8015D: Gasoline Range**					
Client ID:	**LCSS**	Batch ID:	**42823**	RunNo:	**57296**					
Prep Date:	**1/25/2019**	Analysis Date:	**1/28/2019**	SeqNo:	**1917159**	Units:	**mg/Kg**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	27	5.0	25.00	0	110	80.1	123			
Surr: BFB	1100		1000		107	73.8	119			

Sample ID	**MB-42821**	SampType:	**MBLK**	TestCode:	**EPA Method 8015D: Gasoline Range**					
Client ID:	**PBS**	Batch ID:	**42821**	RunNo:	**57297**					
Prep Date:	**1/25/2019**	Analysis Date:	**1/28/2019**	SeqNo:	**1917198**	Units:	**mg/Kg**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	910		1000		90.8	73.8	119			

Sample ID	**LCS-42821**	SampType:	**LCS**	TestCode:	**EPA Method 8015D: Gasoline Range**					
Client ID:	**LCSS**	Batch ID:	**42821**	RunNo:	**57297**					
Prep Date:	**1/25/2019**	Analysis Date:	**1/28/2019**	SeqNo:	**1917199**	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	99.3	80.1	123			
Surr: BFB	1100		1000		109	73.8	119			

Qualifiers:

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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#: **1901991**

01-Feb-19

Client: Souder, Miller & Associates

Project: Santo Nino 29 Fed 4

Sample ID	**MB-42823**	SampType:	**MBLK**	TestCode:	**EPA Method 8021B: Volatiles**
Client ID:	**PBS**	Batch ID:	**42823**	RunNo:	**57296**
Prep Date:	**1/25/2019**	Analysis Date:	**1/28/2019**	SeqNo:	**1917177** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.94		1.000		94.4	80	120			

Sample ID	**LCS-42823**	SampType:	**LCS**	TestCode:	**EPA Method 8021B: Volatiles**
Client ID:	**LCSS**	Batch ID:	**42823**	RunNo:	**57296**
Prep Date:	**1/25/2019**	Analysis Date:	**1/28/2019**	SeqNo:	**1917178** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.91	0.025	1.000	0	91.0	80	120			
Toluene	0.94	0.050	1.000	0	94.4	80	120			
Ethylbenzene	0.95	0.050	1.000	0	95.0	80	120			
Xylenes, Total	2.9	0.10	3.000	0	96.3	80	120			
Surr: 4-Bromofluorobenzene	0.93		1.000		93.3	80	120			

Sample ID	**1901991-009AMS**	SampType:	**MS**	TestCode:	**EPA Method 8021B: Volatiles**
Client ID:	**L3-3.5'**	Batch ID:	**42823**	RunNo:	**57296**
Prep Date:	**1/25/2019**	Analysis Date:	**1/28/2019**	SeqNo:	**1917181** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.78	0.024	0.9662	0	80.7	63.9	127			
Toluene	0.84	0.048	0.9662	0	87.0	69.9	131			
Ethylbenzene	0.87	0.048	0.9662	0	89.6	71	132			
Xylenes, Total	2.6	0.097	2.899	0	91.0	71.8	131			
Surr: 4-Bromofluorobenzene	0.93		0.9662		96.7	80	120			

Sample ID	**1901991-009AMSD**	SampType:	**MSD**	TestCode:	**EPA Method 8021B: Volatiles**
Client ID:	**L3-3.5'**	Batch ID:	**42823**	RunNo:	**57296**
Prep Date:	**1/25/2019**	Analysis Date:	**1/28/2019**	SeqNo:	**1917182** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.82	0.024	0.9785	0	83.8	63.9	127	4.97	20	
Toluene	0.85	0.049	0.9785	0	86.8	69.9	131	1.02	20	
Ethylbenzene	0.87	0.049	0.9785	0	88.6	71	132	0.175	20	
Xylenes, Total	2.6	0.098	2.935	0	89.4	71.8	131	0.536	20	
Surr: 4-Bromofluorobenzene	0.93		0.9785		94.7	80	120	0	0	

Qualifiers:

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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
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QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1901991**

01-Feb-19

Client: Souder, Miller & Associates

Project: Santo Nino 29 Fed 4

Sample ID	**MB-42821**	SampType:	**MBLK**	TestCode:	**EPA Method 8021B: Volatiles**					
Client ID:	**PBS**	Batch ID:	**42821**	RunNo:	**57297**					
Prep Date:	**1/25/2019**	Analysis Date:	**1/28/2019**	SeqNo:	**1917225**	Units:	**mg/Kg**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	1.0		1.000		100	80	120			

Sample ID	**LCS-42821**	SampType:	**LCS**	TestCode:	**EPA Method 8021B: Volatiles**					
Client ID:	**LCSS**	Batch ID:	**42821**	RunNo:	**57297**					
Prep Date:	**1/25/2019**	Analysis Date:	**1/28/2019**	SeqNo:	**1917226**	Units:	**mg/Kg**			

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.85	0.025	1.000	0	85.4	80	120			
Toluene	0.98	0.050	1.000	0	98.1	80	120			
Ethylbenzene	1.0	0.050	1.000	0	102	80	120			
Xylenes, Total	3.1	0.10	3.000	0	104	80	120			
Surr: 4-Bromofluorobenzene	1.1		1.000		107	80	120			

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
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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: 1901991 RcptNo: 1

Received By: **Desiree Dominguez** 1/25/2019 8:45:00 AM

Completed By: **Erin Melendrez** 1/25/2019 10:42:36 AM

Reviewed By: 1/25/19

LB: TWM 1-25-19

Chain of Custody

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

Log In

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

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

Adjusted? _____

Checked by: _____

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	0.1	Good	Yes			
2	0.5	Good	Yes			

Chain-of-Custody Record

Client: Newbourne

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: Santa Nino 29 Fed 4

Project #:

Project Manager: Austin Weyant

Sampler: LCM/MRS

On Ice: ☑ Yes ☐ No

# of Coolers: 2

Cooler Temp(including CF): 0.1°C 0.5°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. 1901991	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)
1/17/19	4:40	soil	SW 2	4 oz		-001										
	4:50		SW 3			-002										
	~~5:00~~		SW 4			-003										
	12:35		BG - 3'			-004							X			
↓	3:15	↓	EB													

Date: 1.24.19 Time: 11:30 Relinquished by: Samantha Watson

Received by: Via: Date: 1/24/19 Time: 1430

Date: 1/24/19 Time: 1900 Relinquished by:

Received by: Via: Courier Date: 1/25/19 Time: 8:45

Remarks: Bill Direct to Zack Thomas

1 of 2

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

Chain-of-Custody Record

Client: Newfield

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: Santa Nino 29 Fed 4

Project #:

Project Manager: Austin Weyant

Sampler: LCM / MRS

On Ice: ☑ Yes ☐ No

# of Coolers: 2

Cooler Temp(Including CF): 0.1°C 0.5°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. 1901991	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)
1/17/19	4:00	soil	L1 - 4'	4oz		-005										
	4:30		L1 - 7.5'			-006										
	4:45		L1 - 16'			-007										
	3:00		L2 - 4.5'			-008										
	2:00		L3 - 3.5'			-009										
	2:20		L3 - 5'			-010										
	12:30		L4 - 4'			-011										
	12:35		L4 - 6'			-012										
	12:45		L4 - 12'			-013										
	2:10		L5 - 4'			-014										
	2:20		L5 - 6'			-015										
	4:30		SW1			-016										

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
1/24	10:15	Samantha Watson			1/24/19	1430
1/24/19	1900			Courier	1/25/19	8:45

Remarks: Bill direct to Zack Thom

2 of 2

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.