



July 30, 2019

2541K-190730-C-1410

Mike Bratcher
Oil Conservation Division, District 2
811 S First Street
Artesia, NM 88210

Jim Amos
Bureau of Land Management, CFO
620 E. Green Street
Carlsbad, NM 88220

Closure Report:

Harvard Federal Tank Battery
RP#: 2RP-5361
DOR: March 30, 2019
GPS: 32.8499 -103.9375
Unit Letter H, Section 11, Township 17 South, Range 30 East
Eddy County, New Mexico

Mr. Bratcher/Mr. Amos,

COG Operating, LLC (COG) is pleased to submit the following closure report in response to a release that occurred at the Harvard Federal Tank Battery. The release was located in Unit Letter H, Section 11, Township 17 South and Range 30 East in Eddy County, New Mexico. More specifically the latitude and longitude for the release are 32.8499 North and -103.9375 West.

BACKGROUND

The release was discovered on March 30, 2019. A C-141 report was submitted to the New Mexico Oil Conservation Division (NMOCD) and the Bureau of Land Management (BLM). The C-141 is presented in Appendix A. The release was caused by a tank overflow while circulating resulting in the release of approximately thirteen (13) barrels (bbls) of oil. A vacuum truck was utilized to recover approximately seven (7) bbls of oil. The release impacted the unlined tank battery, well pad and adjacent pasture.

GROUNDWATER AND REGULATORY FRAMEWORK

According to the United States Geological Survey (USGS) the nearest water well with measurement data (325210103580101) indicates that groundwater in the project vicinity is approximately three-hundred and sixty-one (361) feet below ground surface (BGS). The water well information is shown in Appendix B.

A risk based evaluation and site determinations were performed in accordance to the New Mexico Oil Conservation Division (NMOCD) Rule (Title 19 Chapter 15 Part 29) for releases on oil and gas development and production in New Mexico (effective August 14, 2018). According to the site characterization evaluation, no other receptors (water wells, playas, karst, water course, lake beds or ordinance boundaries) were located within each specific boundaries or distance from the site. The groundwater data and the site characterization evaluation data is summarized in Appendix B. The delineation and closure criteria are listed below:

GENERAL SITE CHARACTERIZATION AND GROUNDWATER:

Site Characterization	Average Groundwater Depth (ft.)
None Located	>100 feet

DELINEATION AND CLOSURE CRITERIA:

Table I Closure Criteria	
Chlorides	20,000 mg/kg
TPH (GRO and DRO and MRO)	2,500 mg/kg
TPH (GRO and DRO)	1,000 mg/kg
Benzene	10 mg/kg
Total BTEX	50 mg/kg

Remedial Actions

- The impacted area inside the berms of the battery was excavated to a depth of one (1) foot BGS.
- The impacted area on the well pad was excavated to a depth of two and one-half (2.5) feet BGS.
- The impacted area in the pasture was excavated to a depth of four (4) feet BGS.
- All of the excavated material was hauled to an NMOCD approved solid waste disposal facility.

- Confirmation soil samples were taken from the bottom and sidewalls of the excavated areas per NMAC 19.15.29.
- Upon receipt of acceptable analytical results from the confirmation soil sampling activities the excavation was backfilled with clean “like” material.

SITE RECLAMATION AND RESTORATION

Per NMED 19.15.29.13 the affected area was backfilled with non-contaminated material with concentrations below 600 mg/kg of chlorides. The surface was left in a rough condition to approximate natural surface deviations. The site will be mechanically seeded with BLM LPC seed mixture and monitored for regrowth.

CLOSURE REQUEST

COG Operating, LLC respectfully requests that the New Mexico Oil Conservation Division and the Bureau of Land Management grant closure approval for the Harvard Federal Tank Battery incident that occurred on March 30, 2019.

Should you have any questions or concerns please do not hesitate to contact me.

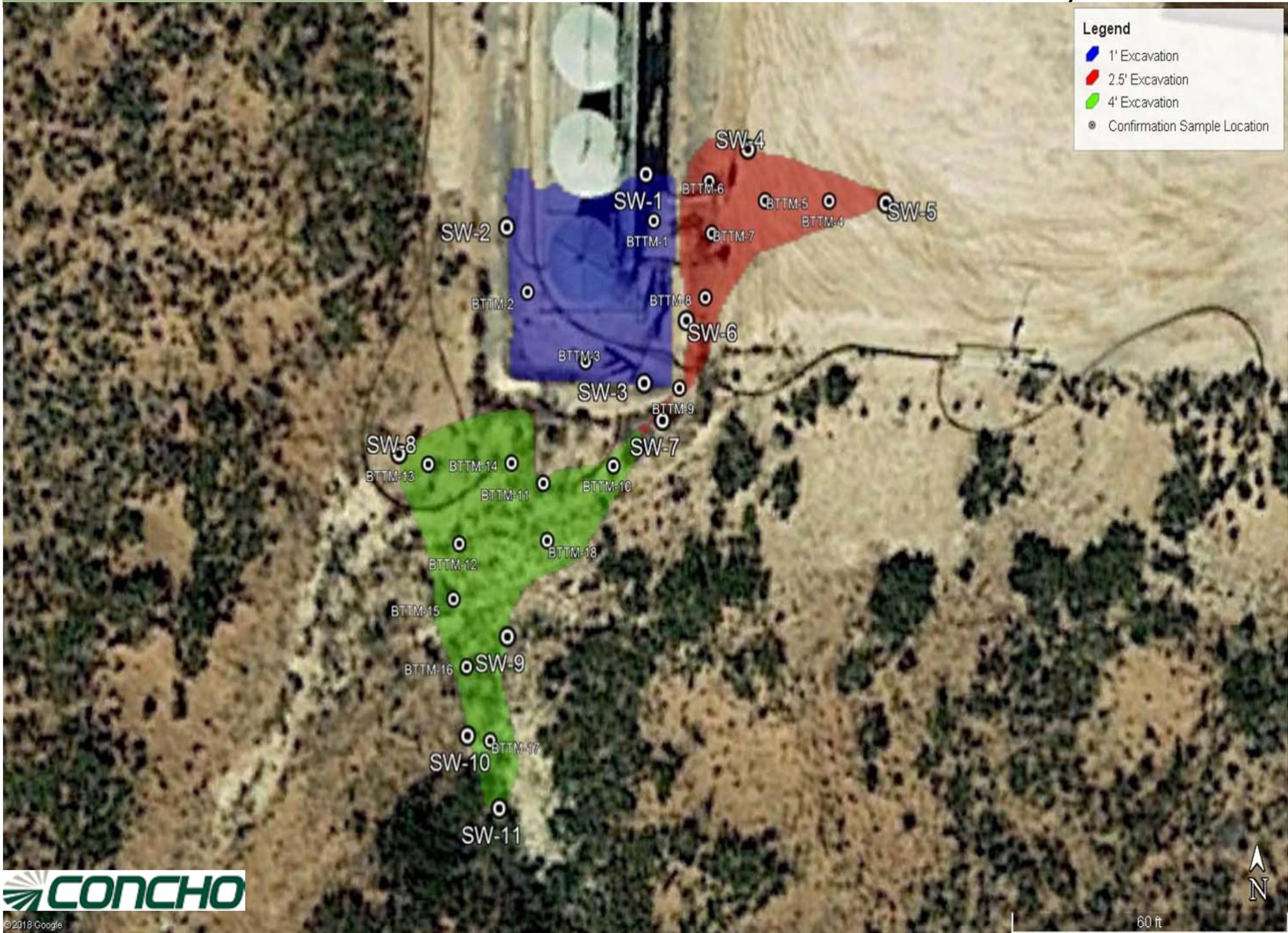
Sincerely,



Sheldon L. Hitchcock
HSE Coordinator
shitchcock@concho.com

FIGURES

Harvard Federal Tank Battery



TABLES

Table 1
COG Operating LLC.
Harvard Federal Tank Battery
Eddy County, New Mexico

Sample ID	Sample Depth (ft)	Sample Date	Soil Status		TPH (mg/kg)							Benzene (mg/kg)	Total BTEX (mg/kg)	Chloride (mg/kg)
			In-Situ	Removed	GRO	DRO	MRO	Total	GRO	DRO	Total			
NMOCDD RRAL Limits (mg/kg)					-			2,500	-			10	50	20,000
SW-1	N/A	5/16/2019		X	<10.0	47.6	<10.0	47.6	<10.0	47.6	47.6	<0.025	<0.15	2,760.0
SW-2	N/A	5/16/2019	X		<10.0	<10.0	<10.0	0.0	<10.0	<10.0	0.0	<0.025	<0.15	48.0
SW-3	N/A	5/16/2019	X		<10.0	<10.0	<10.0	0.0	<10.0	<10.0	0.0	<0.025	<0.15	32.0
SW-4	N/A	5/16/2019		X	<10.0	136.0	<10.0	136.0	<10.0	136.0	136.0	<0.025	<0.15	1,260.0
SW-5	N/A	5/16/2019	X		<10.0	<10.0	<10.0	0.0	<10.0	<10.0	0.0	<0.025	<0.15	<16.0
SW-6	N/A	5/16/2019	X		<10.0	<10.0	<10.0	0.0	<10.0	<10.0	0.0	<0.025	<0.15	160.0
SW-7	N/A	5/16/2019	X		<10.0	<10.0	<10.0	0.0	<10.0	<10.0	0.0	<0.025	<0.15	32.0
SW-8	N/A	5/16/2019	X		<10.0	<10.0	<10.0	0.0	<10.0	<10.0	0.0	<0.025	<0.15	64.0
SW-9	N/A	5/16/2019	X		<10.0	<10.0	<10.0	0.0	<10.0	<10.0	0.0	<0.025	<0.15	256.0
SW-10	N/A	5/16/2019	X		<10.0	<10.0	<10.0	0.0	<10.0	<10.0	0.0	<0.025	<0.15	<16.0
SW-11	N/A	5/16/2019	X		<10.0	<10.0	<10.0	0.0	<10.0	<10.0	0.0	<0.025	<0.15	<16.0
BTTM-1	0.5	5/16/2019		X	<10.0	1200.0	172	1372.0	<10.0	1200.0	1,200.0	<0.025	0.35	64.0
BTTM-2	0.5	5/16/2019		X	134.0	1270.0	167.0	1571.0	134	1270.0	1,404.0	<0.250	19.00	64.0
BTTM-3	0.5	5/16/2019		X	37.8	581.0	28.8	647.6	37.8	581.0	618.8	0.13	7.87	80.0
BTTM-4	2.5	5/16/2019	X		<10.0	<10.0	<10.0	0.0	<10.0	<10.0	0.0	<0.025	<0.150	16.0
BTTM-5	2.5	5/16/2019	X		<10.0	<10.0	<10.0	0.0	<10.0	<10.0	0.0	<0.025	<0.15	32.0
BTTM-6	2.5	5/16/2019	X		<10.0	<10.0	<10.0	0.0	<10.0	<10.0	0.0	<0.025	<0.15	32.0
BTTM-7	2.5	5/16/2019	X		<10.0	<10.0	<10.0	0.0	<10.0	<10.0	0.0	<0.025	<0.15	32.0
BTTM-8	2.5	5/16/2019	X		<10.0	<10.0	<10.0	0.0	<10.0	<10.0	0.0	<0.025	<0.15	16.0
BTTM-9	2.5	5/16/2019	X		<10.0	<10.0	<10.0	0.0	<10.0	<10.0	0.0	<0.025	<0.15	32.0
BTTM-10	4	5/16/2019	X		<10.0	<10.0	<10.0	0.0	<10.0	<10.0	0.0	<0.025	<0.15	32.0
BTTM-11	4	5/16/2019	X		<10.0	<10.0	<10.0	0.0	<10.0	<10.0	0.0	<0.025	<0.15	128.0
BTTM-12	2.5	5/16/2019		X	1,250.0	2,420.0	333.0	4003.0	1250	2420.0	3,670.0	26.5	748.0	64.0
BTTM-13	4	5/16/2019	X		<10.0	<10.0	<10.0	0.0	<10.0	<10.0	0.0	<0.025	<0.15	112.0
BTTM-14	4	5/16/2019	X		<10.0	<10.0	<10.0	0.0	<10.0	<10.0	0.0	<0.025	<0.15	112.0
BTTM-15	2.5	5/16/2019		X	<10.0	1,200.0	292.0	1492.0	<10.0	1200.0	1,200.0	<0.025	<0.150	80.0
BTTM-16	2.5	5/16/2019		X	2,780.0	10,500.0	1,870.0	15150.0	2780	10500.0	13,280.0	2.6	2,019.0	32.0
BTTM-17	4	5/16/2019	X		<10.0	<10.0	<10.0	0.0	<10.0	<10.0	0.0	<0.025	<0.150	32.0
BTTM-18	2.5	5/16/2019		X	1,110.0	7,200.0	1,260.0	9570.0	1110	7200.0	8,310.0	<0.250	37.8	48.0
								0.0	0	0.0	0.0			
SW-1	N/A	7/11/2019	X		#	#	#	#	#	#	#	#	#	80.0
SW-4	N/A	7/11/2019	X		<10.0	<10.0	<10.0	0.0	<10.0	<10.0	0.0	#	#	48.0
BTTM-1	1	7/11/2019	X		<10.0	65.7	18.2	83.9	<10.0	65.7	65.7	#	#	#
BTTM-2	1	7/11/2019	X		<10.0	<10.0	<10.0	0.0	<10.0	<10.0	0.0	#	#	#
BTTM-3	1	7/11/2019	X		<10.0	13.1	<10.0	13.1	<10.0	13.1	13.1	#	#	#
BTTM-12	4	7/11/2019	X		<10.0	46.7	10.1	56.8	<10.0	46.7	46.7	<0.05	<0.300	#
BTTM-15	4	7/11/2019	X		<10.0	<10.0	<10.0	0.0	<10.0	<10.0	0.0	#	#	#
BTTM-16	4	7/11/2019	X		<10.0	59.2	11.9	71.1	<10.0	59.2	59.2	<0.050	<0.300	#
BTTM-18	4	7/11/2019	X		<10.0	<10.0	<10.0	0.0	<10.0	<10.0	0.0	#	#	#

(#) Not Analyzed

APPENDIX A

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

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

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

Incident ID	
District RP	
Facility ID	
Application ID	

Release Notification

Responsible Party

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

Location of Release Source

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

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

Unit Letter	Section	Township	Range	County

Surface Owner: State Federal Tribal Private (Name: _____)

Nature and Volume of Release

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

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

Cause of Release

Incident ID	
District RP	
Facility ID	
Application ID	

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

Initial Response

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

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

Incident ID	
District RP	
Facility ID	
Application ID	

Site Assessment/Characterization

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

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

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

<p><u>Characterization Report Checklist:</u> <i>Each of the following items must be included in the report.</i></p> <ul style="list-style-type: none"> <input type="checkbox"/> Scaled site map showing impacted area, surface features, subsurface features, delineation points, and monitoring wells. <input type="checkbox"/> Field data <input type="checkbox"/> Data table of soil contaminant concentration data <input type="checkbox"/> Depth to water determination <input type="checkbox"/> Determination of water sources and significant watercourses within ½-mile of the lateral extents of the release <input type="checkbox"/> Boring or excavation logs <input type="checkbox"/> Photographs including date and GIS information <input type="checkbox"/> Topographic/Aerial maps <input type="checkbox"/> 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.

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: _____ Title: _____

Signature: Sheldon Nitan Date: _____

email: _____ Telephone: _____

OCD Only

Received by: _____ Date: _____

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: _____ Title: _____

Signature: Sheldon Nitan Date: _____

email: _____ Telephone: _____

OCD Only

Received by: _____ Date: _____

- Approved
 Approved with Attached Conditions of Approval
 Denied
 Deferral Approved

Signature: _____ Date: _____

Incident ID	
District RP	
Facility ID	
Application ID	

Closure

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

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

- A scaled site and sampling diagram as described in 19.15.29.11 NMAC
- Photographs of the remediated site prior to backfill or photos of the liner integrity if applicable (Note: appropriate OCD District office must be notified 2 days prior to liner inspection)
- Laboratory analyses of final sampling (Note: appropriate ODC District office must be notified 2 days prior to final sampling)
- Description of remediation activities

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations. The responsible party acknowledges they must substantially restore, reclaim, and re-vegetate the impacted surface area to the conditions that existed prior to the release or their final land use in accordance with 19.15.29.13 NMAC including notification to the OCD when reclamation and re-vegetation are complete.

Printed Name: _____ Title: _____

Signature: Sheldon Hittman Date: _____

email: _____ Telephone: _____

OCD Only

Received by: _____ Date: _____

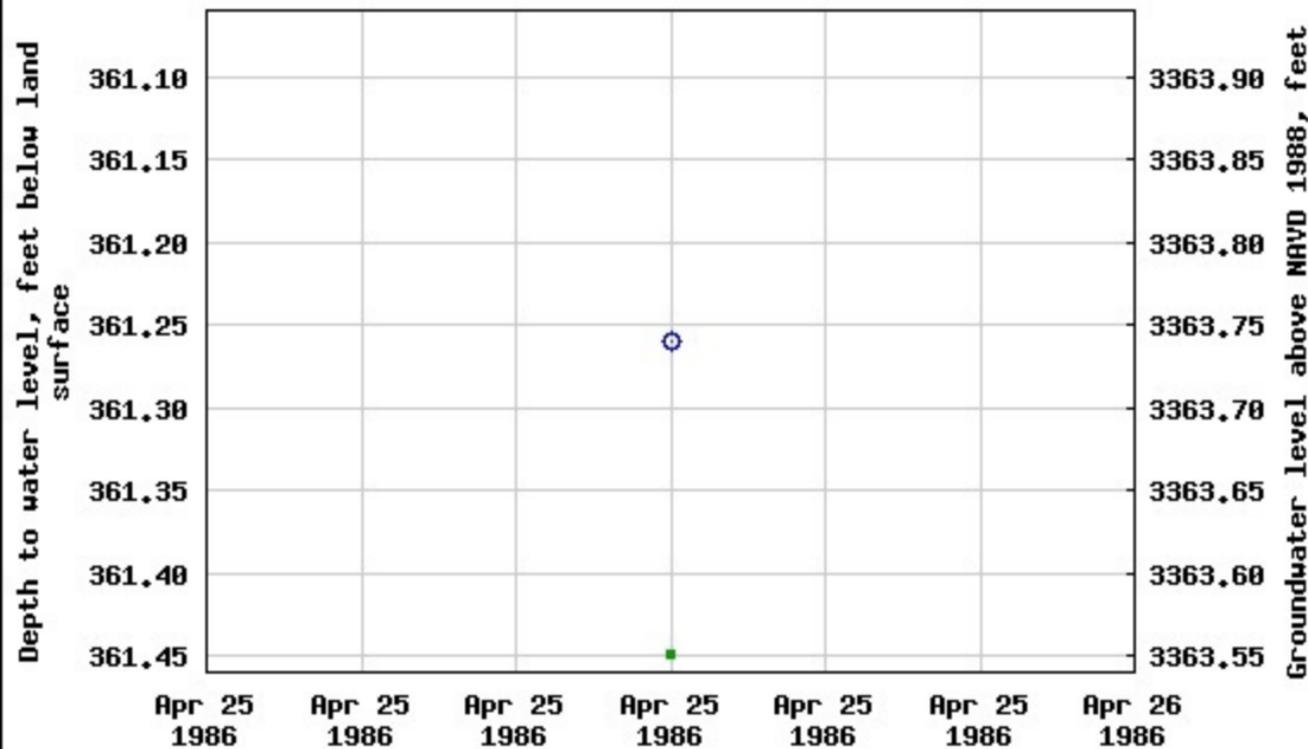
Closure approval by the OCD does not relieve the responsible party of liability should their operations have failed to adequately investigate and remediate contamination that poses a threat to groundwater, surface water, human health, or the environment nor does not relieve the responsible party of compliance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

Closure Approved by: _____ Date: _____

Printed Name: _____ Title: _____

APPENDIX B

USGS 325210103580101 16S.30E.33.44233



■ Period of approved data

Legend

OSE PODs

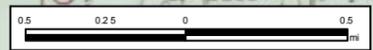
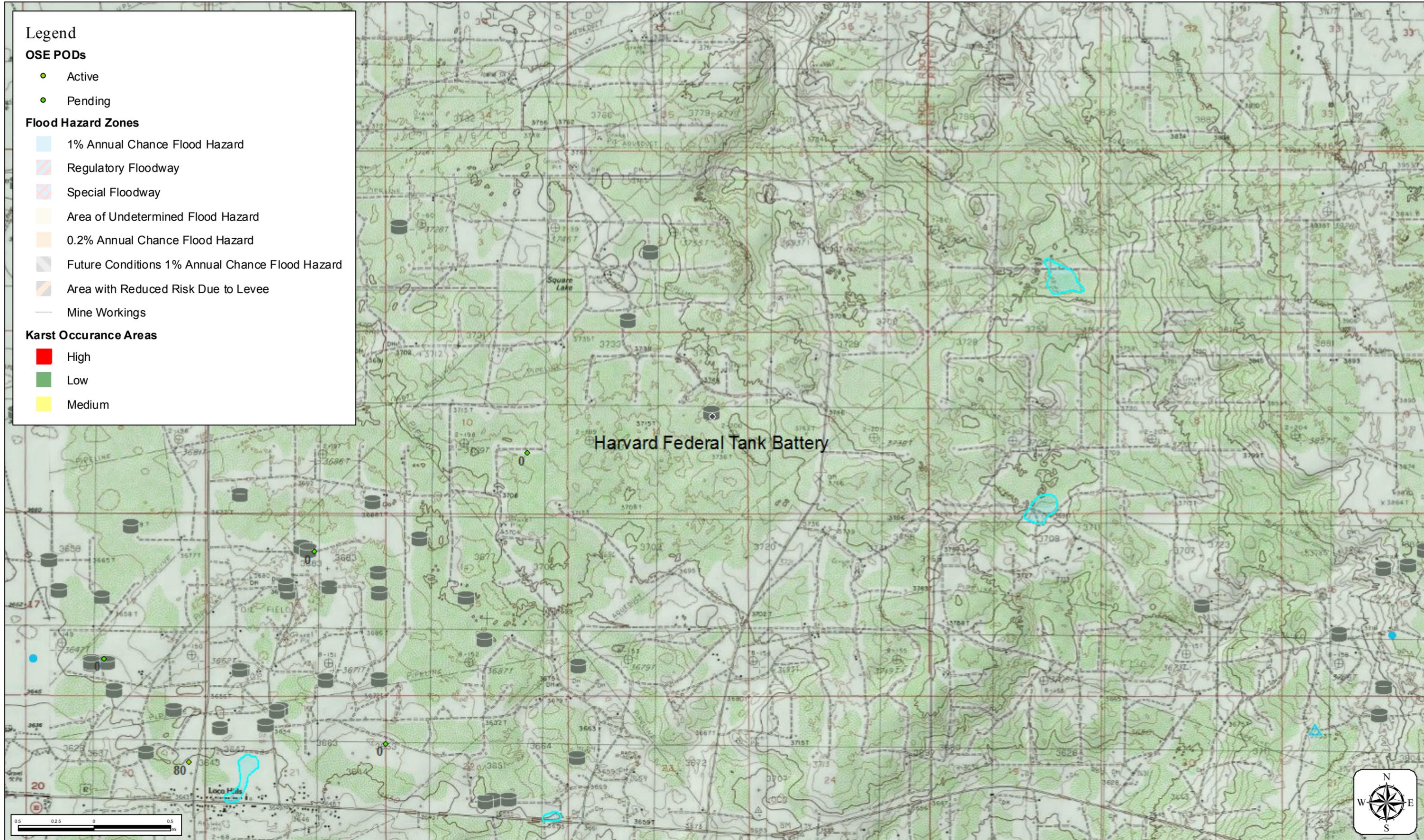
- Active
- Pending

Flood Hazard Zones

- 1% Annual Chance Flood Hazard
- Regulatory Floodway
- Special Floodway
- Area of Undetermined Flood Hazard
- 0.2% Annual Chance Flood Hazard
- Future Conditions 1% Annual Chance Flood Hazard
- Area with Reduced Risk Due to Levee
- Mine Workings

Karst Occurance Areas

- High
- Low
- Medium



APPENDIX C



May 17, 2019

SHELDON HITCHCOCK
COG OPERATING
P. O. BOX 1630
ARTESIA, NM 88210

RE: HARVARD FEDERAL TANK BATTERY

Enclosed are the results of analyses for samples received by the laboratory on 05/16/19 15:40.

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

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

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

Accreditation applies to public drinking water matrices.

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

Sincerely,

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

Celey D. Keene
Lab Director/Quality Manager

Analytical Results For:

 COG OPERATING
 SHELDON HITCHCOCK
 P. O. BOX 1630
 ARTESIA NM, 88210
 Fax To: NONE

Received:	05/16/2019	Sampling Date:	05/16/2019
Reported:	05/17/2019	Sampling Type:	Soil
Project Name:	HARVARD FEDERAL TANK BATTERY	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	COG - EDDY CO NM		

Sample ID: SW - 1 (H901784-01)

BTEX 8260B		mg/kg		Analyzed By: ms						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.025	0.025	05/16/2019	ND	1.82	91.1	2.00	1.47		
Toluene*	<0.025	0.025	05/16/2019	ND	2.03	102	2.00	0.493		
Ethylbenzene*	<0.025	0.025	05/16/2019	ND	2.11	105	2.00	1.05		
Total Xylenes*	<0.075	0.075	05/16/2019	ND	6.56	109	6.00	0.727		
Total BTEX	<0.150	0.150	05/16/2019	ND						

Surrogate: Dibromofluoromethane 98.3 % 90.4-111

Surrogate: Toluene-d8 99.6 % 85.3-114

Surrogate: 4-Bromofluorobenzene 99.0 % 80.1-121

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	2760	16.0	05/17/2019	ND	416	104	400	3.92		

TPH 8015M		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10*	<10.0	10.0	05/17/2019	ND	193	96.6	200	3.48		
DRO >C10-C28*	47.6	10.0	05/17/2019	ND	187	93.5	200	6.10		
EXT DRO >C28-C36	<10.0	10.0	05/17/2019	ND						

Surrogate: 1-Chlorooctane 94.1 % 41-142

Surrogate: 1-Chlorooctadecane 97.2 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 COG OPERATING
 SHELDON HITCHCOCK
 P. O. BOX 1630
 ARTESIA NM, 88210
 Fax To: NONE

Received:	05/16/2019	Sampling Date:	05/16/2019
Reported:	05/17/2019	Sampling Type:	Soil
Project Name:	HARVARD FEDERAL TANK BATTERY	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	COG - EDDY CO NM		

Sample ID: SW - 2 (H901784-02)

BTEX 8260B		mg/kg		Analyzed By: ms						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.025	0.025	05/16/2019	ND	1.82	91.1	2.00	1.47		
Toluene*	<0.025	0.025	05/16/2019	ND	2.03	102	2.00	0.493		
Ethylbenzene*	<0.025	0.025	05/16/2019	ND	2.11	105	2.00	1.05		
Total Xylenes*	<0.075	0.075	05/16/2019	ND	6.56	109	6.00	0.727		
Total BTEX	<0.150	0.150	05/16/2019	ND						

Surrogate: Dibromofluoromethane 98.2 % 90.4-111

Surrogate: Toluene-d8 100 % 85.3-114

Surrogate: 4-Bromofluorobenzene 97.8 % 80.1-121

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	48.0	16.0	05/17/2019	ND	416	104	400	3.92		

TPH 8015M		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10*	<10.0	10.0	05/17/2019	ND	193	96.6	200	3.48		
DRO >C10-C28*	<10.0	10.0	05/17/2019	ND	187	93.5	200	6.10		
EXT DRO >C28-C36	<10.0	10.0	05/17/2019	ND						

Surrogate: 1-Chlorooctane 91.2 % 41-142

Surrogate: 1-Chlorooctadecane 93.6 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 COG OPERATING
 SHELDON HITCHCOCK
 P. O. BOX 1630
 ARTESIA NM, 88210
 Fax To: NONE

Received:	05/16/2019	Sampling Date:	05/16/2019
Reported:	05/17/2019	Sampling Type:	Soil
Project Name:	HARVARD FEDERAL TANK BATTERY	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	COG - EDDY CO NM		

Sample ID: SW - 3 (H901784-03)

BTEX 8260B		mg/kg		Analyzed By: ms						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.025	0.025	05/16/2019	ND	1.82	91.1	2.00	1.47		
Toluene*	<0.025	0.025	05/16/2019	ND	2.03	102	2.00	0.493		
Ethylbenzene*	<0.025	0.025	05/16/2019	ND	2.11	105	2.00	1.05		
Total Xylenes*	<0.075	0.075	05/16/2019	ND	6.56	109	6.00	0.727		
Total BTEX	<0.150	0.150	05/16/2019	ND						

Surrogate: Dibromofluoromethane 99.2 % 90.4-111

Surrogate: Toluene-d8 100 % 85.3-114

Surrogate: 4-Bromofluorobenzene 99.3 % 80.1-121

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	32.0	16.0	05/17/2019	ND	416	104	400	3.92		

TPH 8015M		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10*	<10.0	10.0	05/17/2019	ND	193	96.6	200	3.48		
DRO >C10-C28*	<10.0	10.0	05/17/2019	ND	187	93.5	200	6.10		
EXT DRO >C28-C36	<10.0	10.0	05/17/2019	ND						

Surrogate: 1-Chlorooctane 85.3 % 41-142

Surrogate: 1-Chlorooctadecane 98.1 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 COG OPERATING
 SHELDON HITCHCOCK
 P. O. BOX 1630
 ARTESIA NM, 88210
 Fax To: NONE

Received:	05/16/2019	Sampling Date:	05/16/2019
Reported:	05/17/2019	Sampling Type:	Soil
Project Name:	HARVARD FEDERAL TANK BATTERY	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	COG - EDDY CO NM		

Sample ID: SW - 4 (H901784-04)

BTEX 8260B		mg/kg		Analyzed By: ms						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.025	0.025	05/16/2019	ND	1.82	91.1	2.00	1.47		
Toluene*	<0.025	0.025	05/16/2019	ND	2.03	102	2.00	0.493		
Ethylbenzene*	<0.025	0.025	05/16/2019	ND	2.11	105	2.00	1.05		
Total Xylenes*	<0.075	0.075	05/16/2019	ND	6.56	109	6.00	0.727		
Total BTEX	<0.150	0.150	05/16/2019	ND						

Surrogate: Dibromofluoromethane 99.6 % 90.4-111

Surrogate: Toluene-d8 99.4 % 85.3-114

Surrogate: 4-Bromofluorobenzene 98.4 % 80.1-121

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	1260	16.0	05/17/2019	ND	416	104	400	3.92		

TPH 8015M		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10*	<10.0	10.0	05/16/2019	ND	199	99.5	200	5.22		
DRO >C10-C28*	136	10.0	05/16/2019	ND	202	101	200	13.8		
EXT DRO >C28-C36	<10.0	10.0	05/16/2019	ND						

Surrogate: 1-Chlorooctane 84.3 % 41-142

Surrogate: 1-Chlorooctadecane 93.9 % 37.6-147

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Analytical Results For:

 COG OPERATING
 SHELDON HITCHCOCK
 P. O. BOX 1630
 ARTESIA NM, 88210
 Fax To: NONE

Received:	05/16/2019	Sampling Date:	05/16/2019
Reported:	05/17/2019	Sampling Type:	Soil
Project Name:	HARVARD FEDERAL TANK BATTERY	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	COG - EDDY CO NM		

Sample ID: SW - 5 (H901784-05)

BTEX 8260B		mg/kg		Analyzed By: ms						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.025	0.025	05/16/2019	ND	1.82	91.1	2.00	1.47		
Toluene*	<0.025	0.025	05/16/2019	ND	2.03	102	2.00	0.493		
Ethylbenzene*	<0.025	0.025	05/16/2019	ND	2.11	105	2.00	1.05		
Total Xylenes*	<0.075	0.075	05/16/2019	ND	6.56	109	6.00	0.727		
Total BTEX	<0.150	0.150	05/16/2019	ND						

Surrogate: Dibromofluoromethane 98.9 % 90.4-111

Surrogate: Toluene-d8 101 % 85.3-114

Surrogate: 4-Bromofluorobenzene 99.4 % 80.1-121

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	<16.0	16.0	05/17/2019	ND	416	104	400	3.92		

TPH 8015M		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10*	<10.0	10.0	05/16/2019	ND	199	99.5	200	5.22		
DRO >C10-C28*	<10.0	10.0	05/16/2019	ND	202	101	200	13.8		
EXT DRO >C28-C36	<10.0	10.0	05/16/2019	ND						

Surrogate: 1-Chlorooctane 89.5 % 41-142

Surrogate: 1-Chlorooctadecane 90.4 % 37.6-147

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Analytical Results For:

 COG OPERATING
 SHELDON HITCHCOCK
 P. O. BOX 1630
 ARTESIA NM, 88210
 Fax To: NONE

Received:	05/16/2019	Sampling Date:	05/16/2019
Reported:	05/17/2019	Sampling Type:	Soil
Project Name:	HARVARD FEDERAL TANK BATTERY	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	COG - EDDY CO NM		

Sample ID: SW - 6 (H901784-06)

BTEX 8260B		mg/kg		Analyzed By: ms						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.025	0.025	05/16/2019	ND	1.82	91.1	2.00	1.47		
Toluene*	<0.025	0.025	05/16/2019	ND	2.03	102	2.00	0.493		
Ethylbenzene*	<0.025	0.025	05/16/2019	ND	2.11	105	2.00	1.05		
Total Xylenes*	<0.075	0.075	05/16/2019	ND	6.56	109	6.00	0.727		
Total BTEX	<0.150	0.150	05/16/2019	ND						

Surrogate: Dibromofluoromethane 95.3 % 90.4-111

Surrogate: Toluene-d8 99.7 % 85.3-114

Surrogate: 4-Bromofluorobenzene 98.8 % 80.1-121

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	160	16.0	05/17/2019	ND	416	104	400	3.92		

TPH 8015M		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10*	<10.0	10.0	05/16/2019	ND	199	99.5	200	5.22		
DRO >C10-C28*	<10.0	10.0	05/16/2019	ND	202	101	200	13.8		
EXT DRO >C28-C36	<10.0	10.0	05/16/2019	ND						

Surrogate: 1-Chlorooctane 86.3 % 41-142

Surrogate: 1-Chlorooctadecane 89.0 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 COG OPERATING
 SHELDON HITCHCOCK
 P. O. BOX 1630
 ARTESIA NM, 88210
 Fax To: NONE

Received:	05/16/2019	Sampling Date:	05/16/2019
Reported:	05/17/2019	Sampling Type:	Soil
Project Name:	HARVARD FEDERAL TANK BATTERY	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	COG - EDDY CO NM		

Sample ID: SW - 7 (H901784-07)

BTEX 8260B		mg/kg		Analyzed By: ms						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.025	0.025	05/16/2019	ND	1.82	91.1	2.00	1.47		
Toluene*	<0.025	0.025	05/16/2019	ND	2.03	102	2.00	0.493		
Ethylbenzene*	<0.025	0.025	05/16/2019	ND	2.11	105	2.00	1.05		
Total Xylenes*	<0.075	0.075	05/16/2019	ND	6.56	109	6.00	0.727		
Total BTEX	<0.150	0.150	05/16/2019	ND						

Surrogate: Dibromofluoromethane 98.1 % 90.4-111

Surrogate: Toluene-d8 102 % 85.3-114

Surrogate: 4-Bromofluorobenzene 98.7 % 80.1-121

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	32.0	16.0	05/17/2019	ND	416	104	400	3.92		

TPH 8015M		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10*	<10.0	10.0	05/16/2019	ND	199	99.5	200	5.22		
DRO >C10-C28*	<10.0	10.0	05/16/2019	ND	202	101	200	13.8		
EXT DRO >C28-C36	<10.0	10.0	05/16/2019	ND						

Surrogate: 1-Chlorooctane 90.4 % 41-142

Surrogate: 1-Chlorooctadecane 90.5 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 COG OPERATING
 SHELDON HITCHCOCK
 P. O. BOX 1630
 ARTESIA NM, 88210
 Fax To: NONE

Received:	05/16/2019	Sampling Date:	05/16/2019
Reported:	05/17/2019	Sampling Type:	Soil
Project Name:	HARVARD FEDERAL TANK BATTERY	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	COG - EDDY CO NM		

Sample ID: SW - 8 (H901784-08)

BTEX 8260B		mg/kg		Analyzed By: ms						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.025	0.025	05/16/2019	ND	1.82	91.1	2.00	1.47		
Toluene*	<0.025	0.025	05/16/2019	ND	2.03	102	2.00	0.493		
Ethylbenzene*	<0.025	0.025	05/16/2019	ND	2.11	105	2.00	1.05		
Total Xylenes*	<0.075	0.075	05/16/2019	ND	6.56	109	6.00	0.727		
Total BTEX	<0.150	0.150	05/16/2019	ND						

Surrogate: Dibromofluoromethane 99.7 % 90.4-111

Surrogate: Toluene-d8 98.6 % 85.3-114

Surrogate: 4-Bromofluorobenzene 98.4 % 80.1-121

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	64.0	16.0	05/17/2019	ND	400	100	400	3.92		

TPH 8015M		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10*	<10.0	10.0	05/16/2019	ND	199	99.5	200	5.22		
DRO >C10-C28*	<10.0	10.0	05/16/2019	ND	202	101	200	13.8		
EXT DRO >C28-C36	<10.0	10.0	05/16/2019	ND						

Surrogate: 1-Chlorooctane 89.4 % 41-142

Surrogate: 1-Chlorooctadecane 90.3 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 COG OPERATING
 SHELDON HITCHCOCK
 P. O. BOX 1630
 ARTESIA NM, 88210
 Fax To: NONE

Received:	05/16/2019	Sampling Date:	05/16/2019
Reported:	05/17/2019	Sampling Type:	Soil
Project Name:	HARVARD FEDERAL TANK BATTERY	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	COG - EDDY CO NM		

Sample ID: SW - 9 (H901784-09)

BTEX 8260B		mg/kg		Analyzed By: ms						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.025	0.025	05/16/2019	ND	1.82	91.1	2.00	1.47		
Toluene*	<0.025	0.025	05/16/2019	ND	2.03	102	2.00	0.493		
Ethylbenzene*	<0.025	0.025	05/16/2019	ND	2.11	105	2.00	1.05		
Total Xylenes*	<0.075	0.075	05/16/2019	ND	6.56	109	6.00	0.727		
Total BTEX	<0.150	0.150	05/16/2019	ND						

Surrogate: Dibromofluoromethane 100 % 90.4-111

Surrogate: Toluene-d8 100 % 85.3-114

Surrogate: 4-Bromofluorobenzene 96.5 % 80.1-121

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	256	16.0	05/17/2019	ND	400	100	400	3.92		

TPH 8015M		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10*	<10.0	10.0	05/16/2019	ND	199	99.5	200	5.22		
DRO >C10-C28*	<10.0	10.0	05/16/2019	ND	202	101	200	13.8		
EXT DRO >C28-C36	<10.0	10.0	05/16/2019	ND						

Surrogate: 1-Chlorooctane 93.0 % 41-142

Surrogate: 1-Chlorooctadecane 95.5 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 COG OPERATING
 SHELDON HITCHCOCK
 P. O. BOX 1630
 ARTESIA NM, 88210
 Fax To: NONE

Received:	05/16/2019	Sampling Date:	05/16/2019
Reported:	05/17/2019	Sampling Type:	Soil
Project Name:	HARVARD FEDERAL TANK BATTERY	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	COG - EDDY CO NM		

Sample ID: SW - 10 (H901784-10)

BTEX 8260B		mg/kg		Analyzed By: ms						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.025	0.025	05/16/2019	ND	1.82	91.1	2.00	1.47		
Toluene*	<0.025	0.025	05/16/2019	ND	2.03	102	2.00	0.493		
Ethylbenzene*	<0.025	0.025	05/16/2019	ND	2.11	105	2.00	1.05		
Total Xylenes*	<0.075	0.075	05/16/2019	ND	6.56	109	6.00	0.727		
Total BTEX	<0.150	0.150	05/16/2019	ND						

Surrogate: Dibromofluoromethane 95.6 % 90.4-111

Surrogate: Toluene-d8 100 % 85.3-114

Surrogate: 4-Bromofluorobenzene 101 % 80.1-121

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	<16.0	16.0	05/17/2019	ND	400	100	400	3.92		

TPH 8015M		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10*	<10.0	10.0	05/16/2019	ND	199	99.5	200	5.22		
DRO >C10-C28*	<10.0	10.0	05/16/2019	ND	202	101	200	13.8		
EXT DRO >C28-C36	<10.0	10.0	05/16/2019	ND						

Surrogate: 1-Chlorooctane 82.7 % 41-142

Surrogate: 1-Chlorooctadecane 83.4 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 COG OPERATING
 SHELDON HITCHCOCK
 P. O. BOX 1630
 ARTESIA NM, 88210
 Fax To: NONE

Received:	05/16/2019	Sampling Date:	05/16/2019
Reported:	05/17/2019	Sampling Type:	Soil
Project Name:	HARVARD FEDERAL TANK BATTERY	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	COG - EDDY CO NM		

Sample ID: SW - 11 (H901784-11)

BTEX 8260B		mg/kg		Analyzed By: ms						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.025	0.025	05/16/2019	ND	1.82	91.1	2.00	1.47		
Toluene*	<0.025	0.025	05/16/2019	ND	2.03	102	2.00	0.493		
Ethylbenzene*	<0.025	0.025	05/16/2019	ND	2.11	105	2.00	1.05		
Total Xylenes*	<0.075	0.075	05/16/2019	ND	6.56	109	6.00	0.727		
Total BTEX	<0.150	0.150	05/16/2019	ND						

Surrogate: Dibromofluoromethane 98.0 % 90.4-111

Surrogate: Toluene-d8 100 % 85.3-114

Surrogate: 4-Bromofluorobenzene 100 % 80.1-121

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	<16.0	16.0	05/17/2019	ND	400	100	400	3.92		

TPH 8015M		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10*	<10.0	10.0	05/16/2019	ND	199	99.5	200	5.22		
DRO >C10-C28*	<10.0	10.0	05/16/2019	ND	202	101	200	13.8		
EXT DRO >C28-C36	<10.0	10.0	05/16/2019	ND						

Surrogate: 1-Chlorooctane 92.6 % 41-142

Surrogate: 1-Chlorooctadecane 95.2 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

COG OPERATING
 SHELDON HITCHCOCK
 P. O. BOX 1630
 ARTESIA NM, 88210
 Fax To: NONE

Received:	05/16/2019	Sampling Date:	05/16/2019
Reported:	05/17/2019	Sampling Type:	Soil
Project Name:	HARVARD FEDERAL TANK BATTERY	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	COG - EDDY CO NM		

Sample ID: BTTM - 1 (H901784-12)

BTEX 8260B		mg/kg		Analyzed By: ms						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.025	0.025	05/17/2019	ND	1.82	91.1	2.00	1.47		
Toluene*	<0.025	0.025	05/17/2019	ND	2.03	102	2.00	0.493		
Ethylbenzene*	0.074	0.025	05/17/2019	ND	2.11	105	2.00	1.05		
Total Xylenes*	0.279	0.075	05/17/2019	ND	6.56	109	6.00	0.727		
Total BTEX	0.353	0.150	05/17/2019	ND						

Surrogate: Dibromofluoromethane 99.0 % 90.4-111
 Surrogate: Toluene-d8 94.2 % 85.3-114
 Surrogate: 4-Bromofluorobenzene 121 % 80.1-121

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	64.0	16.0	05/17/2019	ND	400	100	400	3.92		

TPH 8015M		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10*	<10.0	10.0	05/16/2019	ND	199	99.5	200	5.22		
DRO >C10-C28*	1200	10.0	05/16/2019	ND	202	101	200	13.8		
EXT DRO >C28-C36	172	10.0	05/16/2019	ND						

Surrogate: 1-Chlorooctane 105 % 41-142
 Surrogate: 1-Chlorooctadecane 122 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 COG OPERATING
 SHELDON HITCHCOCK
 P. O. BOX 1630
 ARTESIA NM, 88210
 Fax To: NONE

Received:	05/16/2019	Sampling Date:	05/16/2019
Reported:	05/17/2019	Sampling Type:	Soil
Project Name:	HARVARD FEDERAL TANK BATTERY	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	COG - EDDY CO NM		

Sample ID: BTTM - 2 (H901784-13)

BTEX 8260B		mg/kg		Analyzed By: ms						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.250	0.250	05/17/2019	ND	1.82	91.1	2.00	1.47		
Toluene*	2.41	0.250	05/17/2019	ND	2.03	102	2.00	0.493		
Ethylbenzene*	5.43	0.250	05/17/2019	ND	2.11	105	2.00	1.05		
Total Xylenes*	11.2	0.750	05/17/2019	ND	6.56	109	6.00	0.727		
Total BTEX	19.0	1.50	05/17/2019	ND						

Surrogate: Dibromofluoromethane 98.5 % 90.4-111

Surrogate: Toluene-d8 97.3 % 85.3-114

Surrogate: 4-Bromofluorobenzene 107 % 80.1-121

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	64.0	16.0	05/17/2019	ND	400	100	400	3.92		

TPH 8015M		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10*	134	10.0	05/16/2019	ND	199	99.5	200	5.22		
DRO >C10-C28*	1270	10.0	05/16/2019	ND	202	101	200	13.8		
EXT DRO >C28-C36	167	10.0	05/16/2019	ND						

Surrogate: 1-Chlorooctane 123 % 41-142

Surrogate: 1-Chlorooctadecane 123 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 COG OPERATING
 SHELDON HITCHCOCK
 P. O. BOX 1630
 ARTESIA NM, 88210
 Fax To: NONE

Received:	05/16/2019	Sampling Date:	05/16/2019
Reported:	05/17/2019	Sampling Type:	Soil
Project Name:	HARVARD FEDERAL TANK BATTERY	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	COG - EDDY CO NM		

Sample ID: BTTM - 3 (H901784-14)

BTEX 8260B		mg/kg		Analyzed By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	0.127	0.025	05/17/2019	ND	1.82	91.1	2.00	1.47	
Toluene*	1.20	0.025	05/17/2019	ND	2.03	102	2.00	0.493	
Ethylbenzene*	2.73	0.025	05/17/2019	ND	2.11	105	2.00	1.05	
Total Xylenes*	3.81	0.075	05/17/2019	ND	6.56	109	6.00	0.727	
Total BTEX	7.87	0.150	05/17/2019	ND					

Surrogate: Dibromofluoromethane 100 % 90.4-111

Surrogate: Toluene-d8 103 % 85.3-114

Surrogate: 4-Bromofluorobenzene 114 % 80.1-121

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	80.0	16.0	05/17/2019	ND	400	100	400	3.92	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	37.8	10.0	05/17/2019	ND	199	99.5	200	5.22	
DRO >C10-C28*	581	10.0	05/17/2019	ND	202	101	200	13.8	
EXT DRO >C28-C36	28.8	10.0	05/17/2019	ND					

Surrogate: 1-Chlorooctane 117 % 41-142

Surrogate: 1-Chlorooctadecane 113 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 COG OPERATING
 SHELDON HITCHCOCK
 P. O. BOX 1630
 ARTESIA NM, 88210
 Fax To: NONE

Received:	05/16/2019	Sampling Date:	05/16/2019
Reported:	05/17/2019	Sampling Type:	Soil
Project Name:	HARVARD FEDERAL TANK BATTERY	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	COG - EDDY CO NM		

Sample ID: BTTM - 4 (H901784-15)

BTEX 8260B		mg/kg		Analyzed By: ms						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.025	0.025	05/17/2019	ND	1.82	91.1	2.00	1.47		
Toluene*	<0.025	0.025	05/17/2019	ND	2.03	102	2.00	0.493		
Ethylbenzene*	<0.025	0.025	05/17/2019	ND	2.11	105	2.00	1.05		
Total Xylenes*	<0.075	0.075	05/17/2019	ND	6.56	109	6.00	0.727		
Total BTEX	<0.150	0.150	05/17/2019	ND						

Surrogate: Dibromofluoromethane 98.6 % 90.4-111

Surrogate: Toluene-d8 95.4 % 85.3-114

Surrogate: 4-Bromofluorobenzene 101 % 80.1-121

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	16.0	16.0	05/17/2019	ND	400	100	400	3.92		

TPH 8015M		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10*	<10.0	10.0	05/17/2019	ND	199	99.5	200	5.22		
DRO >C10-C28*	<10.0	10.0	05/17/2019	ND	202	101	200	13.8		
EXT DRO >C28-C36	<10.0	10.0	05/17/2019	ND						

Surrogate: 1-Chlorooctane 88.4 % 41-142

Surrogate: 1-Chlorooctadecane 93.6 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 COG OPERATING
 SHELDON HITCHCOCK
 P. O. BOX 1630
 ARTESIA NM, 88210
 Fax To: NONE

Received:	05/16/2019	Sampling Date:	05/16/2019
Reported:	05/17/2019	Sampling Type:	Soil
Project Name:	HARVARD FEDERAL TANK BATTERY	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	COG - EDDY CO NM		

Sample ID: BTTM - 5 (H901784-16)

BTEX 8260B		mg/kg		Analyzed By: ms						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.025	0.025	05/17/2019	ND	1.82	91.1	2.00	1.47		
Toluene*	<0.025	0.025	05/17/2019	ND	2.03	102	2.00	0.493		
Ethylbenzene*	<0.025	0.025	05/17/2019	ND	2.11	105	2.00	1.05		
Total Xylenes*	<0.075	0.075	05/17/2019	ND	6.56	109	6.00	0.727		
Total BTEX	<0.150	0.150	05/17/2019	ND						

Surrogate: Dibromofluoromethane 97.2 % 90.4-111

Surrogate: Toluene-d8 99.5 % 85.3-114

Surrogate: 4-Bromofluorobenzene 99.7 % 80.1-121

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	32.0	16.0	05/17/2019	ND	400	100	400	3.92		

TPH 8015M		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10*	<10.0	10.0	05/17/2019	ND	199	99.5	200	5.22		
DRO >C10-C28*	<10.0	10.0	05/17/2019	ND	202	101	200	13.8		
EXT DRO >C28-C36	<10.0	10.0	05/17/2019	ND						

Surrogate: 1-Chlorooctane 92.4 % 41-142

Surrogate: 1-Chlorooctadecane 95.9 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 COG OPERATING
 SHELDON HITCHCOCK
 P. O. BOX 1630
 ARTESIA NM, 88210
 Fax To: NONE

Received:	05/16/2019	Sampling Date:	05/16/2019
Reported:	05/17/2019	Sampling Type:	Soil
Project Name:	HARVARD FEDERAL TANK BATTERY	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	COG - EDDY CO NM		

Sample ID: BTTM - 6 (H901784-17)

BTEX 8260B		mg/kg		Analyzed By: ms						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.025	0.025	05/17/2019	ND	1.82	91.1	2.00	1.47		
Toluene*	<0.025	0.025	05/17/2019	ND	2.03	102	2.00	0.493		
Ethylbenzene*	<0.025	0.025	05/17/2019	ND	2.11	105	2.00	1.05		
Total Xylenes*	<0.075	0.075	05/17/2019	ND	6.56	109	6.00	0.727		
Total BTEX	<0.150	0.150	05/17/2019	ND						

Surrogate: Dibromofluoromethane 97.6 % 90.4-111

Surrogate: Toluene-d8 100 % 85.3-114

Surrogate: 4-Bromofluorobenzene 99.5 % 80.1-121

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	32.0	16.0	05/17/2019	ND	400	100	400	3.92		

TPH 8015M		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10*	<10.0	10.0	05/17/2019	ND	199	99.5	200	5.22		
DRO >C10-C28*	<10.0	10.0	05/17/2019	ND	202	101	200	13.8		
EXT DRO >C28-C36	<10.0	10.0	05/17/2019	ND						

Surrogate: 1-Chlorooctane 93.2 % 41-142

Surrogate: 1-Chlorooctadecane 97.2 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 COG OPERATING
 SHELDON HITCHCOCK
 P. O. BOX 1630
 ARTESIA NM, 88210
 Fax To: NONE

Received:	05/16/2019	Sampling Date:	05/16/2019
Reported:	05/17/2019	Sampling Type:	Soil
Project Name:	HARVARD FEDERAL TANK BATTERY	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	COG - EDDY CO NM		

Sample ID: BTTM - 7 (H901784-18)

BTEX 8260B		mg/kg		Analyzed By: ms						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.025	0.025	05/17/2019	ND	1.82	91.1	2.00	1.47		
Toluene*	<0.025	0.025	05/17/2019	ND	2.03	102	2.00	0.493		
Ethylbenzene*	<0.025	0.025	05/17/2019	ND	2.11	105	2.00	1.05		
Total Xylenes*	<0.075	0.075	05/17/2019	ND	6.56	109	6.00	0.727		
Total BTEX	<0.150	0.150	05/17/2019	ND						

Surrogate: Dibromofluoromethane 97.0 % 90.4-111

Surrogate: Toluene-d8 100 % 85.3-114

Surrogate: 4-Bromofluorobenzene 98.0 % 80.1-121

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	32.0	16.0	05/17/2019	ND	400	100	400	3.92		

TPH 8015M		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10*	<10.0	10.0	05/17/2019	ND	199	99.5	200	5.22		
DRO >C10-C28*	<10.0	10.0	05/17/2019	ND	202	101	200	13.8		
EXT DRO >C28-C36	<10.0	10.0	05/17/2019	ND						

Surrogate: 1-Chlorooctane 91.8 % 41-142

Surrogate: 1-Chlorooctadecane 96.3 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 COG OPERATING
 SHELDON HITCHCOCK
 P. O. BOX 1630
 ARTESIA NM, 88210
 Fax To: NONE

Received:	05/16/2019	Sampling Date:	05/16/2019
Reported:	05/17/2019	Sampling Type:	Soil
Project Name:	HARVARD FEDERAL TANK BATTERY	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	COG - EDDY CO NM		

Sample ID: BTTM - 8 (H901784-19)

BTEX 8260B		mg/kg		Analyzed By: ms						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.025	0.025	05/17/2019	ND	1.82	91.1	2.00	1.47		
Toluene*	<0.025	0.025	05/17/2019	ND	2.03	102	2.00	0.493		
Ethylbenzene*	<0.025	0.025	05/17/2019	ND	2.11	105	2.00	1.05		
Total Xylenes*	<0.075	0.075	05/17/2019	ND	6.56	109	6.00	0.727		
Total BTEX	<0.150	0.150	05/17/2019	ND						

Surrogate: Dibromofluoromethane 97.7 % 90.4-111

Surrogate: Toluene-d8 100 % 85.3-114

Surrogate: 4-Bromofluorobenzene 101 % 80.1-121

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	16.0	16.0	05/17/2019	ND	400	100	400	3.92		

TPH 8015M		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10*	<10.0	10.0	05/17/2019	ND	199	99.5	200	5.22		
DRO >C10-C28*	<10.0	10.0	05/17/2019	ND	202	101	200	13.8		
EXT DRO >C28-C36	<10.0	10.0	05/17/2019	ND						

Surrogate: 1-Chlorooctane 87.6 % 41-142

Surrogate: 1-Chlorooctadecane 93.6 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 COG OPERATING
 SHELDON HITCHCOCK
 P. O. BOX 1630
 ARTESIA NM, 88210
 Fax To: NONE

Received:	05/16/2019	Sampling Date:	05/16/2019
Reported:	05/17/2019	Sampling Type:	Soil
Project Name:	HARVARD FEDERAL TANK BATTERY	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	COG - EDDY CO NM		

Sample ID: BTTM - 9 (H901784-20)

BTEX 8260B		mg/kg		Analyzed By: ms						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.025	0.025	05/17/2019	ND	1.82	91.1	2.00	1.47		
Toluene*	<0.025	0.025	05/17/2019	ND	2.03	102	2.00	0.493		
Ethylbenzene*	<0.025	0.025	05/17/2019	ND	2.11	105	2.00	1.05		
Total Xylenes*	<0.075	0.075	05/17/2019	ND	6.56	109	6.00	0.727		
Total BTEX	<0.150	0.150	05/17/2019	ND						

Surrogate: Dibromofluoromethane 98.8 % 90.4-111

Surrogate: Toluene-d8 101 % 85.3-114

Surrogate: 4-Bromofluorobenzene 99.9 % 80.1-121

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	32.0	16.0	05/17/2019	ND	400	100	400	3.92		

TPH 8015M		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10*	<10.0	10.0	05/17/2019	ND	199	99.5	200	5.22		
DRO >C10-C28*	<10.0	10.0	05/17/2019	ND	202	101	200	13.8		
EXT DRO >C28-C36	<10.0	10.0	05/17/2019	ND						

Surrogate: 1-Chlorooctane 89.9 % 41-142

Surrogate: 1-Chlorooctadecane 98.0 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 COG OPERATING
 SHELDON HITCHCOCK
 P. O. BOX 1630
 ARTESIA NM, 88210
 Fax To: NONE

Received:	05/16/2019	Sampling Date:	05/16/2019
Reported:	05/17/2019	Sampling Type:	Soil
Project Name:	HARVARD FEDERAL TANK BATTERY	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	COG - EDDY CO NM		

Sample ID: BTTM - 10 (H901784-21)

BTEX 8260B		mg/kg		Analyzed By: ms						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.025	0.025	05/17/2019	ND	1.87	93.5	2.00	0.000536		
Toluene*	<0.025	0.025	05/17/2019	ND	2.05	102	2.00	1.57		
Ethylbenzene*	<0.025	0.025	05/17/2019	ND	2.11	105	2.00	1.74		
Total Xylenes*	<0.075	0.075	05/17/2019	ND	6.67	111	6.00	1.77		
Total BTEX	<0.150	0.150	05/17/2019	ND						

Surrogate: Dibromofluoromethane 99.4 % 90.4-111

Surrogate: Toluene-d8 99.8 % 85.3-114

Surrogate: 4-Bromofluorobenzene 96.7 % 80.1-121

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	32.0	16.0	05/17/2019	ND	400	100	400	3.92		

TPH 8015M		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10*	<10.0	10.0	05/17/2019	ND	199	99.5	200	5.22		
DRO >C10-C28*	<10.0	10.0	05/17/2019	ND	202	101	200	13.8		
EXT DRO >C28-C36	<10.0	10.0	05/17/2019	ND						

Surrogate: 1-Chlorooctane 87.7 % 41-142

Surrogate: 1-Chlorooctadecane 93.2 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 COG OPERATING
 SHELDON HITCHCOCK
 P. O. BOX 1630
 ARTESIA NM, 88210
 Fax To: NONE

Received:	05/16/2019	Sampling Date:	05/16/2019
Reported:	05/17/2019	Sampling Type:	Soil
Project Name:	HARVARD FEDERAL TANK BATTERY	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	COG - EDDY CO NM		

Sample ID: BTTM - 11 (H901784-22)

BTEX 8260B		mg/kg		Analyzed By: ms						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.025	0.025	05/17/2019	ND	1.87	93.5	2.00	0.000536		
Toluene*	<0.025	0.025	05/17/2019	ND	2.05	102	2.00	1.57		
Ethylbenzene*	<0.025	0.025	05/17/2019	ND	2.11	105	2.00	1.74		
Total Xylenes*	<0.075	0.075	05/17/2019	ND	6.67	111	6.00	1.77		
Total BTEX	<0.150	0.150	05/17/2019	ND						

Surrogate: Dibromofluoromethane 95.9 % 90.4-111

Surrogate: Toluene-d8 98.9 % 85.3-114

Surrogate: 4-Bromofluorobenzene 98.2 % 80.1-121

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	128	16.0	05/17/2019	ND	400	100	400	3.92		

TPH 8015M		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10*	<10.0	10.0	05/17/2019	ND	199	99.5	200	5.22		
DRO >C10-C28*	<10.0	10.0	05/17/2019	ND	202	101	200	13.8		
EXT DRO >C28-C36	<10.0	10.0	05/17/2019	ND						

Surrogate: 1-Chlorooctane 84.4 % 41-142

Surrogate: 1-Chlorooctadecane 88.0 % 37.6-147

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Analytical Results For:

 COG OPERATING
 SHELDON HITCHCOCK
 P. O. BOX 1630
 ARTESIA NM, 88210
 Fax To: NONE

Received:	05/16/2019	Sampling Date:	05/16/2019
Reported:	05/17/2019	Sampling Type:	Soil
Project Name:	HARVARD FEDERAL TANK BATTERY	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	COG - EDDY CO NM		

Sample ID: BTTM - 12 (H901784-23)

BTEX 8260B		mg/kg		Analyzed By: ms						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	26.5	2.50	05/17/2019	ND	1.87	93.5	2.00	0.000536		
Toluene*	287	2.50	05/17/2019	ND	2.05	102	2.00	1.57		
Ethylbenzene*	198	2.50	05/17/2019	ND	2.11	105	2.00	1.74		
Total Xylenes*	236	7.50	05/17/2019	ND	6.67	111	6.00	1.77		
Total BTEX	748	15.0	05/17/2019	ND						

Surrogate: Dibromofluoromethane 103 % 90.4-111

Surrogate: Toluene-d8 100 % 85.3-114

Surrogate: 4-Bromofluorobenzene 106 % 80.1-121

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	64.0	16.0	05/17/2019	ND	400	100	400	3.92		

TPH 8015M		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10*	1250	10.0	05/17/2019	ND	199	99.5	200	5.22		
DRO >C10-C28*	2420	10.0	05/17/2019	ND	202	101	200	13.8		
EXT DRO >C28-C36	333	10.0	05/17/2019	ND						

Surrogate: 1-Chlorooctane 70.4 % 41-142

Surrogate: 1-Chlorooctadecane 96.5 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 COG OPERATING
 SHELDON HITCHCOCK
 P. O. BOX 1630
 ARTESIA NM, 88210
 Fax To: NONE

Received:	05/16/2019	Sampling Date:	05/16/2019
Reported:	05/17/2019	Sampling Type:	Soil
Project Name:	HARVARD FEDERAL TANK BATTERY	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	COG - EDDY CO NM		

Sample ID: BTTM - 13 (H901784-24)

BTEX 8260B		mg/kg		Analyzed By: ms						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.025	0.025	05/17/2019	ND	1.87	93.5	2.00	0.000536		
Toluene*	0.079	0.025	05/17/2019	ND	2.05	102	2.00	1.57		
Ethylbenzene*	0.026	0.025	05/17/2019	ND	2.11	105	2.00	1.74		
Total Xylenes*	<0.075	0.075	05/17/2019	ND	6.67	111	6.00	1.77		
Total BTEX	<0.150	0.150	05/17/2019	ND						

Surrogate: Dibromofluoromethane 98.6 % 90.4-111

Surrogate: Toluene-d8 98.6 % 85.3-114

Surrogate: 4-Bromofluorobenzene 100 % 80.1-121

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	112	16.0	05/17/2019	ND	400	100	400	3.92		

TPH 8015M		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10*	<10.0	10.0	05/16/2019	ND	190	95.0	200	5.37		
DRO >C10-C28*	<10.0	10.0	05/16/2019	ND	179	89.3	200	6.29		
EXT DRO >C28-C36	<10.0	10.0	05/16/2019	ND						

Surrogate: 1-Chlorooctane 95.1 % 41-142

Surrogate: 1-Chlorooctadecane 100 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 COG OPERATING
 SHELDON HITCHCOCK
 P. O. BOX 1630
 ARTESIA NM, 88210
 Fax To: NONE

Received:	05/16/2019	Sampling Date:	05/16/2019
Reported:	05/17/2019	Sampling Type:	Soil
Project Name:	HARVARD FEDERAL TANK BATTERY	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	COG - EDDY CO NM		

Sample ID: BTTM - 14 (H901784-25)

BTEX 8260B		mg/kg		Analyzed By: ms						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.025	0.025	05/17/2019	ND	1.87	93.5	2.00	0.000536		
Toluene*	<0.025	0.025	05/17/2019	ND	2.05	102	2.00	1.57		
Ethylbenzene*	<0.025	0.025	05/17/2019	ND	2.11	105	2.00	1.74		
Total Xylenes*	<0.075	0.075	05/17/2019	ND	6.67	111	6.00	1.77		
Total BTEX	<0.150	0.150	05/17/2019	ND						

Surrogate: Dibromofluoromethane 97.3 % 90.4-111

Surrogate: Toluene-d8 100 % 85.3-114

Surrogate: 4-Bromofluorobenzene 99.4 % 80.1-121

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	112	16.0	05/17/2019	ND	400	100	400	3.92		

TPH 8015M		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10*	<10.0	10.0	05/16/2019	ND	190	95.0	200	5.37		
DRO >C10-C28*	<10.0	10.0	05/16/2019	ND	179	89.3	200	6.29		
EXT DRO >C28-C36	<10.0	10.0	05/16/2019	ND						

Surrogate: 1-Chlorooctane 94.6 % 41-142

Surrogate: 1-Chlorooctadecane 99.5 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 COG OPERATING
 SHELDON HITCHCOCK
 P. O. BOX 1630
 ARTESIA NM, 88210
 Fax To: NONE

Received:	05/16/2019	Sampling Date:	05/16/2019
Reported:	05/17/2019	Sampling Type:	Soil
Project Name:	HARVARD FEDERAL TANK BATTERY	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	COG - EDDY CO NM		

Sample ID: BTTM - 15 (H901784-26)

BTEX 8260B		mg/kg		Analyzed By: ms						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.025	0.025	05/17/2019	ND	1.87	93.5	2.00	0.000536		
Toluene*	0.049	0.025	05/17/2019	ND	2.05	102	2.00	1.57		
Ethylbenzene*	<0.025	0.025	05/17/2019	ND	2.11	105	2.00	1.74		
Total Xylenes*	<0.075	0.075	05/17/2019	ND	6.67	111	6.00	1.77		
Total BTEX	<0.150	0.150	05/17/2019	ND						

Surrogate: Dibromofluoromethane 97.8 % 90.4-111

Surrogate: Toluene-d8 99.6 % 85.3-114

Surrogate: 4-Bromofluorobenzene 99.2 % 80.1-121

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	80.0	16.0	05/17/2019	ND	400	100	400	3.92		

TPH 8015M		mg/kg		Analyzed By: MS							S-04
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier		
GRO C6-C10*	<10.0	10.0	05/16/2019	ND	190	95.0	200	5.37			
DRO >C10-C28*	1200	10.0	05/16/2019	ND	179	89.3	200	6.29			
EXT DRO >C28-C36	292	10.0	05/16/2019	ND							

Surrogate: 1-Chlorooctane 95.7 % 41-142

Surrogate: 1-Chlorooctadecane 154 % 37.6-147

Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 COG OPERATING
 SHELDON HITCHCOCK
 P. O. BOX 1630
 ARTESIA NM, 88210
 Fax To: NONE

Received:	05/16/2019	Sampling Date:	05/16/2019
Reported:	05/17/2019	Sampling Type:	Soil
Project Name:	HARVARD FEDERAL TANK BATTERY	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	COG - EDDY CO NM		

Sample ID: BTTM - 16 (H901784-27)

BTEX 8260B		mg/kg		Analyzed By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	2.55	0.500	05/17/2019	ND	1.87	93.5	2.00	0.000536	
Toluene*	53.4	0.500	05/17/2019	ND	2.05	102	2.00	1.57	
Ethylbenzene*	64.9	0.500	05/17/2019	ND	2.11	105	2.00	1.74	
Total Xylenes*	88.6	1.50	05/17/2019	ND	6.67	111	6.00	1.77	
Total BTEX	209	3.00	05/17/2019	ND					

Surrogate: Dibromofluoromethane 103 % 90.4-111

Surrogate: Toluene-d8 101 % 85.3-114

Surrogate: 4-Bromofluorobenzene 107 % 80.1-121

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	32.0	16.0	05/17/2019	ND	400	100	400	3.92	

TPH 8015M		mg/kg		Analyzed By: MS						S-06
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10*	2780	50.0	05/16/2019	ND	190	95.0	200	5.37		
DRO >C10-C28*	10500	50.0	05/16/2019	ND	179	89.3	200	6.29		
EXT DRO >C28-C36	1870	50.0	05/16/2019	ND						

Surrogate: 1-Chlorooctane 323 % 41-142

Surrogate: 1-Chlorooctadecane 436 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 COG OPERATING
 SHELDON HITCHCOCK
 P. O. BOX 1630
 ARTESIA NM, 88210
 Fax To: NONE

Received:	05/16/2019	Sampling Date:	05/16/2019
Reported:	05/17/2019	Sampling Type:	Soil
Project Name:	HARVARD FEDERAL TANK BATTERY	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	COG - EDDY CO NM		

Sample ID: BTTM - 17 (H901784-28)

BTEX 8260B		mg/kg		Analyzed By: ms						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.025	0.025	05/17/2019	ND	1.87	93.5	2.00	0.000536		
Toluene*	<0.025	0.025	05/17/2019	ND	2.05	102	2.00	1.57		
Ethylbenzene*	<0.025	0.025	05/17/2019	ND	2.11	105	2.00	1.74		
Total Xylenes*	<0.075	0.075	05/17/2019	ND	6.67	111	6.00	1.77		
Total BTEX	<0.150	0.150	05/17/2019	ND						

Surrogate: Dibromofluoromethane 96.4 % 90.4-111

Surrogate: Toluene-d8 97.5 % 85.3-114

Surrogate: 4-Bromofluorobenzene 97.7 % 80.1-121

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	32.0	16.0	05/17/2019	ND	400	100	400	3.92		

TPH 8015M		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10*	<10.0	10.0	05/16/2019	ND	190	95.0	200	5.37		
DRO >C10-C28*	<10.0	10.0	05/16/2019	ND	179	89.3	200	6.29		
EXT DRO >C28-C36	<10.0	10.0	05/16/2019	ND						

Surrogate: 1-Chlorooctane 87.1 % 41-142

Surrogate: 1-Chlorooctadecane 91.6 % 37.6-147

Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

COG OPERATING
 SHELDON HITCHCOCK
 P. O. BOX 1630
 ARTESIA NM, 88210
 Fax To: NONE

Received:	05/16/2019	Sampling Date:	05/16/2019
Reported:	05/17/2019	Sampling Type:	Soil
Project Name:	HARVARD FEDERAL TANK BATTERY	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	COG - EDDY CO NM		

Sample ID: BTTM - 18 (H901784-29)

BTEX 8260B		mg/kg		Analyzed By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.250	0.250	05/17/2019	ND	1.87	93.5	2.00	0.000536	
Toluene*	1.36	0.250	05/17/2019	ND	2.05	102	2.00	1.57	
Ethylbenzene*	1.79	0.250	05/17/2019	ND	2.11	105	2.00	1.74	
Total Xylenes*	34.6	0.750	05/17/2019	ND	6.67	111	6.00	1.77	
Total BTEX	37.8	1.50	05/17/2019	ND					

Surrogate: Dibromofluoromethane 99.5 % 90.4-111
 Surrogate: Toluene-d8 100 % 85.3-114
 Surrogate: 4-Bromofluorobenzene 109 % 80.1-121

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	48.0	16.0	05/17/2019	ND	400	100	400	3.92	

TPH 8015M		mg/kg		Analyzed By: MS						S-06
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10*	1110	50.0	05/16/2019	ND	190	95.0	200	5.37		
DRO >C10-C28*	7200	50.0	05/16/2019	ND	179	89.3	200	6.29		
EXT DRO >C28-C36	1260	50.0	05/16/2019	ND						

Surrogate: 1-Chlorooctane 255 % 41-142
 Surrogate: 1-Chlorooctadecane 361 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager

Notes and Definitions

- S-06 The recovery of this surrogate is outside control limits due to sample dilution required from high analyte concentration and/or matrix interference's.
- S-04 The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
- ND Analyte NOT DETECTED at or above the reporting limit
- RPD Relative Percent Difference
- ** Samples not received at proper temperature of 6°C or below.
- *** Insufficient time to reach temperature.
- Chloride by SM4500Cl-B does not require samples be received at or below 6°C
Samples reported on an as received basis (wet) unless otherwise noted on report



Celey D. Keene, Lab Director/Quality Manager

Analysis Request of Chain of Custody Record



One Concho Center/600 Illinois Avenue/Midland, Texas Tel (432) 683-7443

Client Name: COG-Artesia Site Manager: Sheldon Hitchcock

Project Name: Harvard Federal Tank Battery

Project Location: (county, state) Eddy, NM Project #:

Invoice to: Sheldon Hitchcock

Receiving Laboratory: Cardinal Sampler Name: Sheldon Hitchcock

Comments: Rush

LAB # (LAB USE ONLY)	SAMPLE IDENTIFICATION	SAMPLING		MATRIX		PRESERVATIVE METHOD		# CONTAINERS	(G)rab/(C)omposit			
		YEAR: 2014	DATE	TIME	WATER	SOIL	HCL			HNO ₃	ICE	
11	SL-11		5/14	1:50	X				1	X	X	X
12	Bttm-1			2:00					1	X	X	X
13	Bttm-2			2:05					1	X	X	X
14	Bttm-3			2:10					1	X	X	X
15	Bttm-4			2:15					1	X	X	X
16	Bttm-5			2:20					1	X	X	X
17	Bttm-6			2:25					1	X	X	X
18	Bttm-7			2:30					1	X	X	X
19	Bttm-8			2:35					1	X	X	X
20	Bttm-9			2:40					1	X	X	X

Relinquished by: *Sheldon Hitchcock* Date: _____ Time: _____

Relinquished by: *Shadi Henderson* Date: 5/16/14 Time: 15:40

Received by: _____ Date: _____ Time: _____

Received by: _____ Date: _____ Time: _____

ANALYSIS REQUEST (Circle or Specify Method No.)

TPH 8015M (GRO - DRO - MRO)

BTEX 8021B

Chloride

LAB USE ONLY

Sample Temperature: 41.2 / #97

REMARKS:

RUSH: Same Day 24 hr 48 hr 72 hr

Rush Charges Authorized

Special Report Limits or TRRP Report

(Circle) HAND DELIVERED FEDEX UPS Tracking #:

ORIGINAL COPY

Analysis Request of Custody Record



One Concho Center/600 Illinois Avenue/Midland, Texas Tel (432) 683-7443

Client Name: COG-Artesia Site Manager: Sheldon Hitchcock

Project Name: Hayward Federal Tank Battery

Project Location: (county, state) Elder, NM Project #:

Invoice to: Sheldon Hitchcock

Receiving Laboratory: Carding 91 Sampler Name: Sheldon Hitchcock

Comments: Risk

LAB # (LAB USE ONLY)	SAMPLE IDENTIFICATION	SAMPLING		MATRIX		PRESERVATIVE METHOD		# CONTAINERS	(G)rab/(C)omposit
		YEAR: 2014	DATE	TIME	WATER	SOIL	HCL		
21	Bttm-10		5/16	2:45	X			X	
22	Bttm-11			2:50					
23	Bttm-12			2:55					
24	Bttm-13			3:00					
25	Bttm-14			3:05					
26	Bttm-15			3:10					
27	Bttm-16			3:15					
28	Bttm-17			3:20					
29	Bttm-18			3:25					

Relinquished by: *Sheldon Hitchcock* Date: _____ Time: _____ Received by: *Sheldon Hitchcock* Date: 5/16/19 Time: 15:40

Relinquished by: _____ Date: _____ Time: _____ Received by: _____ Date: _____ Time: _____

ANALYSIS REQUEST (Circle or Specify Method No.)

TPH 8015M (GRO - DRO - MRO)

BTEX 8021B

Chloride

LAB USE ONLY

Sample Temperature: 4.10 / #97

REMARKS:

RUSH: Same Day 24 hr 48 hr 72 hr

Rush Charges Authorized

Special Report Limits or TRRP Report

(Circle) HAND DELIVERED FEDEX UPS Tracking # _____

ORIGINAL COPY



July 16, 2019

DAKOTA NEEL
COG OPERATING
P. O. BOX 1630
ARTESIA, NM 88210

RE: HARVARD FEDERAL TANK BATTERY

Enclosed are the results of analyses for samples received by the laboratory on 07/12/19 12:24.

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

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

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

Accreditation applies to public drinking water matrices.

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

Sincerely,

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

Celey D. Keene
Lab Director/Quality Manager

Analytical Results For:

 COG OPERATING
 DAKOTA NEEL
 P. O. BOX 1630
 ARTESIA NM, 88210
 Fax To: NONE

Received:	07/12/2019	Sampling Date:	07/11/2019
Reported:	07/16/2019	Sampling Type:	Soil
Project Name:	HARVARD FEDERAL TANK BATTERY	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	COG - EDDY CO NM		

Sample ID: SW - 1 (H902405-01)

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	80.0	16.0	07/15/2019	ND	432	108	400	0.00	

Sample ID: SW - 4 (H902405-02)

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	48.0	16.0	07/15/2019	ND	416	104	400	3.77	
TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	07/15/2019	ND	188	94.1	200	2.24	
DRO >C10-C28*	<10.0	10.0	07/15/2019	ND	182	91.1	200	2.90	
EXT DRO >C28-C36	<10.0	10.0	07/15/2019	ND					

Surrogate: 1-Chlorooctane 74.3 % 41-142

Surrogate: 1-Chlorooctadecane 71.6 % 37.6-147

Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 COG OPERATING
 DAKOTA NEEL
 P. O. BOX 1630
 ARTESIA NM, 88210
 Fax To: NONE

Received:	07/12/2019	Sampling Date:	07/11/2019
Reported:	07/16/2019	Sampling Type:	Soil
Project Name:	HARVARD FEDERAL TANK BATTERY	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	COG - EDDY CO NM		

Sample ID: BTM - 1 (H902405-03)

TPH 8015M	mg/kg	Analyzed By: MS							
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	07/15/2019	ND	188	94.1	200	2.24	
DRO >C10-C28*	65.7	10.0	07/15/2019	ND	182	91.1	200	2.90	
EXT DRO >C28-C36	18.2	10.0	07/15/2019	ND					
<hr/>									
Surrogate: 1-Chlorooctane	78.9 %	41-142							
Surrogate: 1-Chlorooctadecane	83.7 %	37.6-147							

Sample ID: BTM - 2 (H902405-04)

TPH 8015M	mg/kg	Analyzed By: MS							
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	07/15/2019	ND	188	94.1	200	2.24	
DRO >C10-C28*	<10.0	10.0	07/15/2019	ND	182	91.1	200	2.90	
EXT DRO >C28-C36	<10.0	10.0	07/15/2019	ND					
<hr/>									
Surrogate: 1-Chlorooctane	75.1 %	41-142							
Surrogate: 1-Chlorooctadecane	74.2 %	37.6-147							

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 COG OPERATING
 DAKOTA NEEL
 P. O. BOX 1630
 ARTESIA NM, 88210
 Fax To: NONE

Received:	07/12/2019	Sampling Date:	07/11/2019
Reported:	07/16/2019	Sampling Type:	Soil
Project Name:	HARVARD FEDERAL TANK BATTERY	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	COG - EDDY CO NM		

Sample ID: BTTM - 3 (H902405-05)

TPH 8015M	mg/kg	Analyzed By: MS							
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	07/15/2019	ND	188	94.1	200	2.24	
DRO >C10-C28*	13.1	10.0	07/15/2019	ND	182	91.1	200	2.90	
EXT DRO >C28-C36	<10.0	10.0	07/15/2019	ND					

Surrogate: 1-Chlorooctane 72.5 % 41-142

Surrogate: 1-Chlorooctadecane 73.7 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 COG OPERATING
 DAKOTA NEEL
 P. O. BOX 1630
 ARTESIA NM, 88210
 Fax To: NONE

Received:	07/12/2019	Sampling Date:	07/11/2019
Reported:	07/16/2019	Sampling Type:	Soil
Project Name:	HARVARD FEDERAL TANK BATTERY	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	COG - EDDY CO NM		

Sample ID: BTTM - 12 (H902405-06)

BTEX 8021B		mg/kg		Analyzed By: ms						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	07/12/2019	ND	1.84	91.9	2.00	0.387		
Toluene*	<0.050	0.050	07/12/2019	ND	1.81	90.5	2.00	1.25		
Ethylbenzene*	<0.050	0.050	07/12/2019	ND	1.72	86.0	2.00	0.792		
Total Xylenes*	<0.150	0.150	07/12/2019	ND	5.22	87.0	6.00	0.490		
Total BTEX	<0.300	0.300	07/12/2019	ND						

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

TPH 8015M		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10*	<10.0	10.0	07/15/2019	ND	188	94.1	200	2.24		
DRO >C10-C28*	46.7	10.0	07/15/2019	ND	182	91.1	200	2.90		
EXT DRO >C28-C36	10.1	10.0	07/15/2019	ND						

Surrogate: 1-Chlorooctane 78.3 % 41-142

Surrogate: 1-Chlorooctadecane 80.4 % 37.6-147

Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 COG OPERATING
 DAKOTA NEEL
 P. O. BOX 1630
 ARTESIA NM, 88210
 Fax To: NONE

Received:	07/12/2019	Sampling Date:	07/11/2019
Reported:	07/16/2019	Sampling Type:	Soil
Project Name:	HARVARD FEDERAL TANK BATTERY	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	COG - EDDY CO NM		

Sample ID: BTTM - 15 (H902405-07)

TPH 8015M	mg/kg	Analyzed By: MS							
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	07/15/2019	ND	188	94.1	200	2.24	
DRO >C10-C28*	<10.0	10.0	07/15/2019	ND	182	91.1	200	2.90	
EXT DRO >C28-C36	<10.0	10.0	07/15/2019	ND					
<hr/>									
Surrogate: 1-Chlorooctane	74.6 %	41-142							
Surrogate: 1-Chlorooctadecane	72.7 %	37.6-147							

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*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 COG OPERATING
 DAKOTA NEEL
 P. O. BOX 1630
 ARTESIA NM, 88210
 Fax To: NONE

Received:	07/12/2019	Sampling Date:	07/11/2019
Reported:	07/16/2019	Sampling Type:	Soil
Project Name:	HARVARD FEDERAL TANK BATTERY	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	COG - EDDY CO NM		

Sample ID: BTTM - 16 (H902405-08)

BTEX 8021B		mg/kg		Analyzed By: ms						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	07/12/2019	ND	1.84	91.9	2.00	0.387		
Toluene*	<0.050	0.050	07/12/2019	ND	1.81	90.5	2.00	1.25		
Ethylbenzene*	<0.050	0.050	07/12/2019	ND	1.72	86.0	2.00	0.792		
Total Xylenes*	<0.150	0.150	07/12/2019	ND	5.22	87.0	6.00	0.490		
Total BTEX	<0.300	0.300	07/12/2019	ND						

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

TPH 8015M		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10*	<10.0	10.0	07/15/2019	ND	188	94.1	200	2.24		
DRO >C10-C28*	59.2	10.0	07/15/2019	ND	182	91.1	200	2.90		
EXT DRO >C28-C36	11.9	10.0	07/15/2019	ND						

Surrogate: 1-Chlorooctane 76.9 % 41-142

Surrogate: 1-Chlorooctadecane 79.9 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 COG OPERATING
 DAKOTA NEEL
 P. O. BOX 1630
 ARTESIA NM, 88210
 Fax To: NONE

Received:	07/12/2019	Sampling Date:	07/11/2019
Reported:	07/16/2019	Sampling Type:	Soil
Project Name:	HARVARD FEDERAL TANK BATTERY	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	COG - EDDY CO NM		

Sample ID: BTM - 18 (H902405-09)

TPH 8015M	mg/kg	Analyzed By: MS							
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	07/15/2019	ND	188	94.1	200	2.24	
DRO >C10-C28*	<10.0	10.0	07/15/2019	ND	182	91.1	200	2.90	
EXT DRO >C28-C36	<10.0	10.0	07/15/2019	ND					
<hr/>									
<i>Surrogate: 1-Chlorooctane</i>	<i>76.4 %</i>	<i>41-142</i>							
<i>Surrogate: 1-Chlorooctadecane</i>	<i>75.0 %</i>	<i>37.6-147</i>							

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Celey D. Keene, Lab Director/Quality Manager

Notes and Definitions

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



Celey D. Keene, Lab Director/Quality Manager



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

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Company Name: COG Operating LLC	P.O. #:	ANALYSIS REQUEST
Project Manager: Dakota Neel	Company: COG Operating LLC	
Address: 2208 West Main	Attn: Robert McNeill	
City: Artesia	Address: 600 W Illinois	
Phone #: (575) 746-2010	City: Midland	
Fax #:	State: TX Zip: 79701	
Project #:	Phone #: (432) 221-0388	
Project Name: HARVARD ESOSRAL TANK BATTERY	Fax #:	
Project Location:		
Sampler Name: Dakota Neel		

Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX						PRESERV.			DATE	TIME	ANALYSIS REQUEST		
				GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :	ACID/BASE:	ICE / COOL	OTHER :			BTEX	TPH	Chloride
HP01405	SW-1	✓	1									7-11-19	11:30				
	SW-2	✓	1										11:35				
	BSTM-1	✓	1										11:40				
	BSTM-2	✓	1										11:45				
	BSTM-3	✓	1										11:50				
	BSTM-12	✓	1										11:55				
	BSTM-15	✓	1										12:00				
	BSTM-16	✓	1										12:05				
	BSTM-18	✓	1										12:15				

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Relinquished By: [Signature] **Date:** 7-12-19

Relinquished By: [Signature] **Date:** 7-12-19

Received By: [Signature] **Date:** 7-12-19

Received By: [Signature] **Date:** 7-12-19

Delivered By: (Circle One)

Sampler - UPS - Bus - Other: 2.9e / #97

Sample Condition

Cool Intact

Yes Yes

No No

CHECKED BY: [Signature]

5. Please fax written changes to 575-393-2476

APPENDIX D

SW

W

NW

210

240

270

300

330

☉ 269°W (T) ☉ 32°49.106', -104°0.959' ±213.3ft ▲ 3613ft



COG Operating LLC

HARVARD FEDERAL
TANK BATTERY

SE/4 NE/4, SEC. 11-T17S-R30E

EDDY COUNTY LC-029338B

16 May 2019, 13:03:09





☉ 261°W (T) ● 32°50.979', -103°56.260' ±44231.2ft ▲ 3745ft



16 May 2019, 14:12:21