AE Order Number Banner

Report Description

This report shows an AE Order Number in Barcode format for purposes of scanning. The Barcode format is Code 39.

App Number: pCS1705534736

3RP - 1043

CONOCOPHILLIPS COMPANY

2/24/2017

3R-1043

COPC
Jicarilla A Ridge
Compressor Station

Initial C-141

Date 2/24/17

(41)

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

State of New Mexico
Energy Minerals and Natural Resources

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

Form C-141
Revised August 8, 2011

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

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company **ConocoPhillips Company**	Contact **Lisa Hunter**
Address **3401 E. 30th St., Farmington, NM 87402**	Telephone No. **505-258-1607**
Facility Name **Jicarilla A Ridge Lateral**	Facility Type **Lateral**

Surface Owner **Jicarilla Tribe**	Mineral Owner **Jicarilla Tribe**	API No. n/a

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
L	**23**	**026N**	**004W**					**Rio Arriba**

Latitude 36.47001 Longitude -107.22734

NATURE OF RELEASE

Type of Release **Production Fluids**	Volume of Release **Unknown**	Volume Recovered **>500 yds Soil / 3,218 lbs hydrocarbon removed via SVE**
Source of Release **Below Grade Tank**	Date and Hour of Occurrence **8/14/2012**	Date and Hour of Discovery **8/14/2012**
Was Immediate Notice Given? ☐ Yes ☐ No ☒ Not Required	If YES, To Whom? **N/A**	
By Whom?	Date and Hour **N/A**	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse. **N/A**	

OIL CONS. DIV DIST. 3

JAN 03 2017

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

Describe Cause of Problem and Remedial Action Taken.* Discovered during Below Grade Tank Closure Activities. The below grade tank sample results were above regulatory standard by USEPA method 418.1 for TPH confirming a release. Excavation was required based on Jicarilla Apache Nation Oil & Gas Administration (JANOGA) soil remediation action levels. The excavation was 25'x38'x15' and 492 yds^3 of soil was transported to a third party land farm. Confirmation sampling occurred and analytical results exceeded the regulatory standards set forth by JANOGA. On November 16, 2012 Dixon Sandoval, JANOGA, approved the proposed soil vapor extraction system work plan as a proactive means of remediation. Approval from Brandon Powell, NMOCD, was received on August 20, 2012 based on pending JANOGA approval

Describe Area Affected and Cleanup Action Taken.* Soil Vapor Extraction system was installed and activated August, 2013 and ran with an approximate 80% run time to May, 2015. A total of 4 passive air inlet wells and 2 extraction wells were installed with at depths of **44ft**. Samples of vapors were collected throughout run time. Post remediation confirmation soil samples were collected July, 2015 (see attached report and lab results) from each boring at similar intervals to 2012 samples. No groundwater was encountered at any time. Comparing samples from 2012, there is a 99.9% reduction of benzene, 99.9% reduction of BTEX, & 89% reduction of TPH concentrations, and 3,218 lbs of hydrocarbons have been removed as well. Two samples, 27-28 ft (SB-3) and 30-31 ft (SB-7) were above JANOGA action levels. **SVE unit turned back on and concentrating air flow to SVE wells. COPC will resample in late Spring/early Summer 2017.**

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

Signature:	OIL CONSERVATION DIVISION
Printed Name: **Lisa Hunter**	Approved by Environmental Specialist:
Title: **Field Environmental Specialist**	Approval Date: 2/24/17 Expiration Date:
E-mail Address: **lisa.hunter@cop.com**	Conditions of Approval: Attached Additional Remediation & Sampling Still Needed. Attached ☒
Date **December 29, 2016** Phone: **505-258-1607**	

* Attach Additional Sheets If Necessary #NSK1306648475

3RP-1043

State of New Mexico
Energy, Minerals and Natural Resources Department

New Mexico Oil Conservation Division approval and conditions listed below are made in accordance with OCD Rule 19.15.5.11

Application Type:

☐ P&A ☐ Drilling/Casing Change ☐ Location Change

☐ Recomplete/DHC (For hydraulic fracturing operations review EPA Underground injection control Guidance #84)

☒ Other: C-141 proposed remediation plan

Conditions of Approval:

COPC submittal of the updated initial C-141 for the Jicarilla A Ridge Compressor Station has been approved with the following conditions of approval.

- COPC will submit Bi-Annual status reports on form C-141 until closure.
- Prior to closure sampling COPC will submit a closure/sampling plan.

If you have any questions, please feel free to contact me at your leisure.

NMOCD Approved by Signature

2/24/17
Date

3RP-1043

1220 South St. Francis Drive • Santa Fe, New Mexico 87505
Phone (505) 476-3441 • Fax (505) 476-3462 • www.emnrd.state.nm.us/ocd

May 3, 2016

Bryce Hammond
Via electronic mail to: brycehammond@jicarillaoga.com
Jicarilla BLM Inspector
Jicarilla Apache Tribe
P O Box 507
Dulce, NM 87528

RE: Request for Site Closure
ConocoPhillips Jicarilla A Ridge Compressor Station
Rio Arriba County, New Mexico

Dear Mr. Hammond:

Animas Environmental Services, LLC (AES), on behalf of Conoco Phillips (COPC) is pleased to provide this letter report summarizing the mass removal of petroleum hydrocarbons from the Jicarilla A Ridge Compressor Station between August 2013 and July 2015 using Soil Vapor Extraction (SVE) technology. In 2012, historic contamination was encountered during below grade tank (BGT) closure activities at the location. Traditional excavation and disposal mitigation methods were terminated after reaching a critical excavation depth.

Further remediation efforts were proposed in a corrective action plan entitled *COPC Jicarilla A Ridge Compressor Station Workplan for Soil Vapor Extraction System* dated *October 25, 2012,* which was submitted to Jicarilla Oil and Gas Administration. Permission to perform installation of this system was granted to COPC and its contractors by the Bureau of Indian Affairs, Jicarilla Agency, in correspondence dated April 8, 2013. Between April and August 2013, the SVE system was installed at the location. The system was made operational on August 21, 2013.

1.0 Site Information

1.1 Location

The Jicarilla A Ridge Compressor Station is located on Jicarilla Apache Tribal Land within NW¼ SW¼, Section 23, T26N, R4W, Rio Arriba County, New Mexico. The release latitude and longitude were recorded as N36.47001 and W107.22734, respectively. A topographic site location map, based on the USGS 7.5-minute Schmitz Ranch, Rio Arriba County, New Mexico, topographic

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Farmington, NM 87401
505-564-2281

1911 Main, Ste 200
Durango, CO
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quadrangle (USGS 1963), is included as Figure 1. An aerial site map illustrating the general site layout and release location is presented as Figure 2.

1.2 Risk Ranking

The Jicarilla A Ridge Compressor Station is located on Jicarilla Apache Nation lands, and soil remediation action levels are determined by the Jicarilla Apache Nation Oil and Gas Administration (JANOGA). JANOGA action levels for soils currently follow the New Mexico Oil Conservation Division (NMOCD) *Guidelines for Remediation of Leaks, Spills, and Releases* (August 1993). Per JANOGA, all locations within Jicarilla Apache Nation lands receive a ranking score of 20 and action levels are as follows:

- 100 parts per million (ppm) volatile organic compounds (VOCs), or 10 mg/kg benzene and 50 mg/kg total benzene, toluene, ethylbenzene, and xylene (BTEX); and
- 100 mg/kg total petroleum hydrocarbons (TPH).

1.3 Surface and Groundwater

Approximately 170 feet to the west of the release area is an unnamed wash within Wild Horse Canyon. Based on elevation, topographic interpretation and previous site reconnaissance activities, depth to groundwater is estimated to be between 50 and 100 feet below ground surface (bgs).

2.0 Discussion and Recommendations

The SVE remediation system was in operation approximately 80 percent of the time between August 2013 and May 2015. Ongoing monitoring and sampling was conducted throughout this time frame and laboratory results suggested remediation activities were effective, and as discussed in the workplan, AES recommended confirmation sampling for site closure. Confirmation soil samples were collected via GeoProbe direct push technology provided by Kyvek Energy Services, Inc., in July 2015. During confirmation sampling, all samples collected were field screened for VOCs. Based on field results, selected samples were submitted for confirmation laboratory analysis. Laboratory samples were also selected for direct comparison to elevated intervals noted during the 2012 soil boring investigation. Laboratory analytical results reported concentrations of benzene and BTEX below laboratory detection limits or well below JANOGA action levels in all samples analyzed in July 2015. However, residual TPH concentrations remained above JANOGA action levels of 100 mg/kg in two zones between two soil borings, SB-3 and SB-7:

- Soil samples from **27 to 28 feet bgs in SB-3** (located on the southwest edge of the previously determined extent of contamination) were above JANOGA action levels,

with 1,380 mg/kg TPH. Note that deeper soil samples from this boring were below laboratory detection limits, indicating that the interval with residual concentrations above action levels is a thin discrete zone and that contaminants have not migrated vertically from this interval.

- Laboratory results from **23 to 31 feet bgs in SB-7** were also reported above JANOGA action levels for TPH, with the highest concentration reported at 30 to 31 feet bgs with 406 mg/kg. All other soil samples below this interval in SB-7 were reported below detection limit.

Based on soil confirmation analytical results, the minor residual areas of petroleum hydrocarbon impacted soil are estimated at approximately 80 cubic yards. Note that the original estimated volume of contaminated soils at the site in 2012 (after termination of soil excavation but before startup of the SVE system) was approximately 610 cubic yards.

In comparison to soil sampling conducted in 2012, there has been a 99.9 percent mass reduction of benzene, 99.8 percent reduction of BTEX, and 89 percent reduction of TPH concentrations. In addition, approximately 3,218 pounds of hydrocarbons have been removed from the location as a result of the SVE operations. The amount of residual contaminated soil remaining onsite is estimated to be 13 percent of the originally impacted area.

Note that groundwater was not encountered within any of the soil borings and was not observed in the excavation. Due to the significant source reduction, lack of migration potential, and minimal risk to human health and the environment, AES and COPC request consideration of No Further Action status for the Jicarilla A Ridge Compressor Station. A comprehensive summary of site activities and removal calculations are included in the attached report.

If you have any questions regarding this report or site conditions, please do not hesitate to contact me or Elizabeth McNally at (505) 564-2281.

Sincerely,

Emilee Skyles
Geologist/Project Lead

Elizabeth McNally, P.E.

Attachment:
COPC Jicarilla A Ridge Petroleum Hydrocarbon Removal Calculation Report 012816

Cc: Cordell Tecube
Via electronic mail to: cltecube@yahoo.com
Environmental Protection Office
Jicarilla Apache Tribe
P O Box 507
Dulce, NM 87528

Hobson Sandoval
Via electronic mail to: hsandoval_99@yahoo.com
Environmental Protection Office
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Guillermo DeHerrera
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Jicarilla Oil & Gas Administration
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Kurt Sandoval
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BIA
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Dulce, NM 87528

Cory Smith
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Environmental Specialist
NMOCD
1000 Brazos Road
Aztec, NM 87410

R:\Animas 2000\Dropbox (Animas Environmental)\0000 AES Server Client Projects Dropbox\2016 Client Projects\ConocoPhillips\Jicarilla A Ridge\gc\COPC Jicarilla A Ridge Site Closure Request 050316.docx

January 28, 2016

Lisa Hunter
ConocoPhillips
San Juan Business Unit
(505) 326-9786

RE: Petroleum Hydrocarbon Removal Report
August 2013 to August 2015
Jicarilla A Ridge Compressor Station
Rio Arriba County, New Mexico

Ms. Hunter:

Animas Environmental Services, LLC (AES) is pleased to provide this letter report documenting the total volume of petroleum hydrocarbons removed from the Jicarilla A Ridge Compressor Station between August 2013 and July 2015 using Soil Vapor Extraction (SVE) technology. In 2012, AES discovered an unknown quantity of contamination during below grade tank (BGT) closure activities at the location. Traditional dig and haul mitigation was abandoned after reaching a critical depth and remediation attempts culminated with the installation of a SVE mechanical remediation system. This report includes an overview of site activities in addition to a discussion regarding the efficiency of hydrocarbon removal.

1.0 Site Information

1.1 Location

The Jicarilla A Ridge Compressor Station is located on Jicarilla Apache Tribal Land within NW¼ SW¼, Section 23, T26N, R4W, Rio Arriba County, New Mexico. The release latitude and longitude were recorded as N36.47001 and W107.22734, respectively. A topographic site location map, based on the USGS 7.5-minute Schmitz Ranch, Rio Arriba County, New Mexico, topographic quadrangle (USGS 1963), is included as Figure 1. An aerial site map illustrating the general site layout and release location is presented as Figure 2.

1.2 Risk Ranking

The Jicarilla A Ridge Compressor Station is located on Jicarilla Apache Nation lands, and soil remediation action levels are determined by the Jicarilla Apache Nation Oil and Gas

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Administration (JANOGA). JANOGA action levels for soils currently follow the New Mexico Oil Conservation Division (NMOCD) *Guidelines for Remediation of Leaks, Spills, and Releases* (August 1993). Per JANOGA, all locations within Jicarilla Apache Nation lands receive a ranking score of 20 and action levels are as follows:

- 100 parts per million (ppm) volatile organic compounds (VOCs), or 10 mg/kg benzene and 50 mg/kg total benzene, toluene, ethylbenzene, and xylene (BTEX); and
- 100 mg/kg total petroleum hydrocarbons (TPH).

1.3 Surface and Groundwater

Approximately 170 feet to the west of the release area is an unnamed wash within Wild Horse Canyon. Based on elevation, topographic interpretation and previous site reconnaissance activities, depth to groundwater is estimated to be between 50 and 100 feet below ground surface (bgs).

1.4 Assessment and Mitigation

1.4.1 Assessment

In 2012, AES was contacted to conduct BGT closure sampling. During this sampling event, contaminant concentrations of VOCs, BTEX, and TPH exceeded action levels for BGT closures specified in New Mexico Administrative Code (NMAC) 19.15.17.13E. Based on field and laboratory data, a release was confirmed. Assessment activities included delineation of a recommended excavation area based on field results from four test holes around the release location.

1.4.2 Excavation

During the week of August 12, 2012, COPC contractors excavated approximately 500 to 600 cubic yards of petroleum hydrocarbon impacted soil at the location. Composite samples were collected from the base (SC-1) and walls (SC-2 through SC-5) of the excavation. Excavation extents were approximately 36 feet by 28 feet by 15 feet in depth. At 15 feet bgs, laboratory analytical results for all four walls of the excavation were below JANOGA action levels; conversely, the base of the excavation exceeded JANOGA action levels for total BTEX and TPH. Continued discrete sampling down to 25 feet also returned field and laboratory analytical results above JANOGA action levels.

1.4.3 Geoprobe Investigation

Two additional soil borings were installed, SB-1 (August 17, 2012) and SB-2 (September 5, 2012) in order to determine vertical and potential lateral extent of contamination and further assess potential remediation system possibilities. Soil boring SB-1 was advanced downgradient of the release location and samples were collected from 20 to 50 feet bgs. All samples returned field and analytical results below JANOGA action levels.

Soil boring SB-2 was advanced in the center of the backfilled excavation extents down to 56.5 feet bgs. All soil samples were analyzed for VOC concentrations, and selected samples (45 to 46.5 and 50 to 51.5) were also analyzed for TPH. Field VOC concentrations were elevated (ranging from 280 ppm up to 9,124 ppm) from 15 to 41.5 feet bgs. Both samples analyzed for field TPH were slightly above JANOGA action levels. Laboratory analytical results reported BTEX and total TPH concentrations above JANOGA action levels from 30 to 31.5 feet bgs; however, no samples from the 15 to 30 foot bgs interval were submitted for confirmation laboratory analysis. For a complete description of site activities and recommendations for all work conducted in 2012, please refer to the *COPC Jicarilla A Ridge SVE Workplan* dated October 25, 1012.

1.4.4 Mitigation

Based on field and laboratory analytical results from the excavation and geoprobe investigation, it was determined that there were deep additional zones of contamination below the initial excavation that required mitigation. Because the contamination signature was weighted more towards the lighter hydrocarbons in conjunction with the Class C soil type (gravel, sand, and loamy sand) at the location, a soil vapor extraction (SVE) system was recommended. On August 16, 2013, on behalf of ConocoPhillips (COPC), AES submitted a Notice of Intent letter to Bryce Hammond of Jicarilla Apache Oil and Gas indicating that a SVE remediation unit was to be put into service on August 21, 2013. The Geotech SVE system consisted of a skid-mounted SVE remediation system with an electric vacuum pump and 65 gallon granular activated carbon (GAC) vapor emissions polisher with four passive air inlet wells and two extraction wells (spanning two different depth intervals). The system had an estimated radius of influence of approximately 20 feet assuming an applied vacuum of 40 in-H_2O. The system ran with approximately 80 percent run time from August 21, 2013, to May 21, 2015. Samples were collected throughout the runtime to monitor VOC concentrations and based on laboratory results from vapor sampling conducted on May 21, 2015, AES recommended confirmation geoprobe sampling for site closure.

2.0 Confirmation Soil Sampling Results – July 2015

On July 20, 2015, post remediation sampling was conducted by AES within the extents of the former excavation (at the center and along the perimeter of excavation). Closure soil samples were collected from five soil borings to determine if soil remediation objectives were met through operation of the SVE system. AES collected 34 soil samples from 5 soil borings which were advanced to a maximum depth of 44 feet bgs utilizing a Geoprobe with a hollow stem assembly. Samples from each boring were collected at similar intervals to 2012 samples within the boring, and all soil samples were field screened for VOCs. Selected soil samples were submitted for confirmation laboratory analysis. Soil sample locations are included on Figure 3.

2.1 Field Sampling - Volatile Organic Compounds

A portion of SC-1 was utilized for field screening of VOC vapors with a photo-ionization detector (PID) organic vapor meter (OVM). Before beginning field screening, the PID-OVM was first calibrated with 100 parts per million (ppm) isobutylene gas.

2.2 Laboratory Analyses

All soil samples collected for laboratory analysis were placed into a new, clean, laboratory-supplied container, which was then labeled, placed on ice, and logged onto a sample chain of custody record. The samples were maintained on ice until delivery to the analytical laboratory, Hall Environmental Analysis Laboratory (Hall), in Albuquerque, New Mexico. All soil samples were laboratory analyzed for:

- BTEX per U.S. Environmental Protection Agency (USEPA) Method 8021B; and
- TPH (as gasoline range organics (GRO) and diesel range organics (DRO)) per USEPA Method 8015.

2.3 Confirmation Field and Laboratory Analytical Results

Field screening readings for VOCs via OVM ranged from 0.0 ppm in SB-3 through SB-7 up to 453 in SB-3. Field sampling results are summarized in Table 1 and presented on Figure 3.

Table 1. Soil Field Screening VOC Results
Jicarilla A Ridge Compressor Closure Sampling, July 2015

Sample ID	Date Sampled	Sample Depth (ft bgs)	VOCs via OVM (ppm)
*JANOGA Action Level**			*100*
SB-3	7/20/15	20	0.0
		24	86.4
		28	**453**
		32	1.2
		36	3.4
		40	3.3
		44	0.7
SB-4	7/20/15	20	0.0
		24	**137**
		28	3.0

Sample ID	Date Sampled	Sample Depth (ft bgs)	VOCs via OVM (ppm)
*JANOGA Action Level**			*100*
		32	0.0
		36	0.0
		40	0.0
		20	0.0
		24	0.0
		28	0.0
SB-5	7/20/15	32	0.0
		36	0.0
		40	0.0
		44	0.0
		20	0.0
		24	0.0
		28	0.0
SB-6	7/20/15	32	0.0
		36	0.0
		40	0.0
		44	0.0
		20	NA
		24	**142**
		28	21.3
		31	**104**
SB-7	7/20/15	32	3.1
		36	0.5
		40	0.1
		44	0.0

*Action level determined by JANOGA (Ref. NMOCD ranking score of 20 per NMOCD Guidelines for Remediation of Leaks, Spills, and Releases (August 1993)).

Laboratory analytical results for benzene were reported below detection limit in all samples submitted. Total BTEX concentrations ranged from less than 0.230 mg/kg in SB-7 up to 0.12 mg/kg in SB-3. Total TPH concentrations were reported at less than 20 mg/kg in SB-3

through SB-7 up to 1,381 mg/kg in SB-3. Laboratory analytical results are summarized in Table 2 and included on Figure 3. The laboratory analytical report is attached.

Table 2. Soil Laboratory Analytical Results – Benzene, Total BTEX, and TPH
Jicarilla A Ridge Compressor Closure Sampling, July 2015

Sample ID	Date Sampled	Depth (ft)	Benzene (mg/kg)	Total BTEX (mg/kg)	TPH – GRO (mg/kg)	TPH – DRO (mg/kg)
*JANOGA Action Level**			*10*	*50*	*100*	
SB-3	7/20/15	27 to 28	<0.047	0.12	**81**	**1,300**
		30 to 31	<0.048	<0.240	<4.8	<9.7
SB-4	7/20/15	30 to 31	<0.048	<0.241	<4.8	<9.7
SB-5	7/20/15	30 to 31	<0.047	<0.236	<4.7	<9.6
SB-6	7/20/15	30 to 31	<0.048	<0.239	<4.8	<9.8
SB-7	7/20/15	23 to 24	<0.046	<0.230	**<4.6**	**210**
		27 to 28	<0.048	<0.239	**<4.8**	**290**
		30 to 31	<0.048	<0.241	**6.1**	**400**
		35 to 36	<0.047	<0.234	<4.7	<9.6
		39 to 40	<0.050	<0.250	<5.0	<9.6
		43 to 44	<0.050	<0.250	<5.0	<9.8

*Action level determined by JANOGA (Ref. NMOCD ranking score of 20 per NMOCD Guidelines for Remediation of Leaks, Spills, and Releases (August 1993)).

3.0 SVE Results and Mass Removal Calculations

During the initial remediation attempts, approximately 500 cubic yards of petroleum hydrocarbon contaminated soils were removed from the location. Based on field and laboratory results from sampling conducted in 2012, an estimated 610 cubic yards of contaminated soils remained in place. In order to evaluate the efficiency of the SVE unit since start-up, a calculation of total petroleum hydrocarbons removed during SVE operation should be evaluated.

3.1 Equations – Petroleum Hydrocarbons Removed

Calculation of the pounds of hydrocarbons removed was evaluated using the following equations:

1. Conversion from VOCs in ppm_v to µg/L was made by:

$$\frac{\mu g}{L} = \frac{ppm_v}{24.055} \times average\ mole\ weight$$

where the average mole weight of extracted VOCs is assumed to be 120 grams

2. Pounds of hydrocarbons removed (lbs/hr) will be calculated by:

$$\frac{lbs}{\Delta t} = \frac{\mu g}{L} \times scfm \times \frac{28.3\ L}{scfm} \times Days\ operational \times \frac{24\ hrs}{1\ day} \times \frac{60\ min}{1\ hr} \times \frac{2.2\ lbs}{1\ kg} \times \frac{1}{10^9}$$

where L = liter, scfm = standard cubic feet per minute

3. Standard cubic feet per minute will be calculated based on the following parameters:

$$scfm = cfm \times \frac{(P + 14.7)}{14.7} \times \frac{530}{(T + 460)}$$

where cfm = cubic feet per minute, P = atmospheric pressure (psi), T = average soil temperature (°F)

3.2 Site Specific Conditions

The Jicarilla A Ridge Compressor Station is located at 6,860 feet above sea level (asl) and has an average air temperature of 50° F based on climate data collected since 1909 at the Chaco Canyon National Monument climate station located approximately 50 miles to the southwest. Based on these data, the atmospheric pressure was determined to be 11.5 pounds per square inch (psi) with an assumed average soil temperature of 50° F. Due to fluctuating site conditions since startup, it is estimated that the unit was 80 percent operational from August 21, 2013, to May 21, 2015.

3.3 Calculations – Petroleum Hydrocarbons Removed

Based on site specific conditions accounted for in the above equations, during the 639 days of SVE operation, the total volume of hydrocarbons removed equals **3,218** pounds.

3.4 Percent reduction of BTEX and TPH

During the September 2012 geoprobe investigation, laboratory analytical results from SB-2 over the 30 to 31.5 feet bgs interval reported BTEX, TPH as GRO, and TPH as DRO concentrations at 193 mg/kg, 2,900 mg/kg, and 780 mg/kg, respectively. In order to

determine the overall percent reduction in contamination between 2012 and 2015, the same 30 to 31.5 feet bgs interval from SB-7 (immediate vicinity of SB-2 and release location) was submitted for laboratory analysis. Laboratory analytical results reported BTEX, TPH as GRO, and TPH as DRO concentrations at less than 0.241 mg/kg, 6.1 mg/kg, and 400 mg/kg, respectively. Ultimately, petroleum hydrocarbon mass removal is calculated at:

- 99.9 percent reduction in BTEX;
- 99.8 percent reduction in TPH as GRO; and
- 48.7 percent reduction in TPH as DRO.

Note that if the total TPH (as GRO and DRO) concentration is considered, the total TPH concentration was reduced by 89 percent as a result of SVE operations.

4.0 Discussion, Conclusions, and Recommendations

Laboratory analytical results reported concentrations of benzene and BTEX below laboratory detection limits or well below JANOGA action levels in all samples analyzed in July 2015. However, total TPH concentrations remained above JANOGA action levels of 100 mg/kg in two zones between two soil borings, SB-3 and SB-7. Soil samples from SB-3 (located on the southwest edge of the previously determined extent of contamination) from 27 to 28 feet bgs are above JANOGA action levels, with 1,380 mg/kg TPH, while deeper soil samples from that boring are below laboratory detection limits. Laboratory results in SB-7 from 23 to 31 feet were above JANOGA action levels, with the highest TPH reported from 30 to 31 feet bgs at 406 mg/kg. All soil samples below this interval were reported below detection limit.

Based on analytical results, the minor residual areas of petroleum hydrocarbon impact total an estimated volume of 80 cubic yards of contaminated soils remaining at the Jicarilla A Ridge Compressor station, compared to 610 cubic yards in 2012 (an 87 percent reduction in the volume of contaminated soils). In comparison to sampling conducted in 2012, there has been a 99.9 percent reduction of benzene, 99.8 percent reduction of BTEX, and 89 percent reduction of TPH concentrations. In addition, 3,218 pounds of hydrocarbons have been removed from the location as a result of the SVE mechanical remediation system. The amount of contaminated soil remaining onsite is estimated to be 13 percent of the original impacted area.

Note that groundwater was not encountered within any of the soil borings and was not observed in the excavation. Due to the lack of risk to human health, reduced migration potential, lack of contamination over the majority of the area, and residual volume, no further action is recommended at the Jicarilla A Ridge. Additional options for an alternative remediation plan for this location is to leave the residual contamination *in situ* and return in three years to conduct additional sampling to monitor natural attenuation.

If you have any questions regarding this report, please do not hesitate to contact me or Elizabeth McNally at (505) 564-2281.

Sincerely,

Emilee Skyles
Geologist/Project Lead

Elizabeth McNally, P.E.

Attachments:

Figure 1. Topographic Site Location Map
Figure 2. Aerial Site Map, May 2015
Figure 3. Geoprobe Sample Locations and Results, July 2015
Figure 4. Geologic Cross Section and TPH Results, July 2015
Hall Analytical Report 1507967

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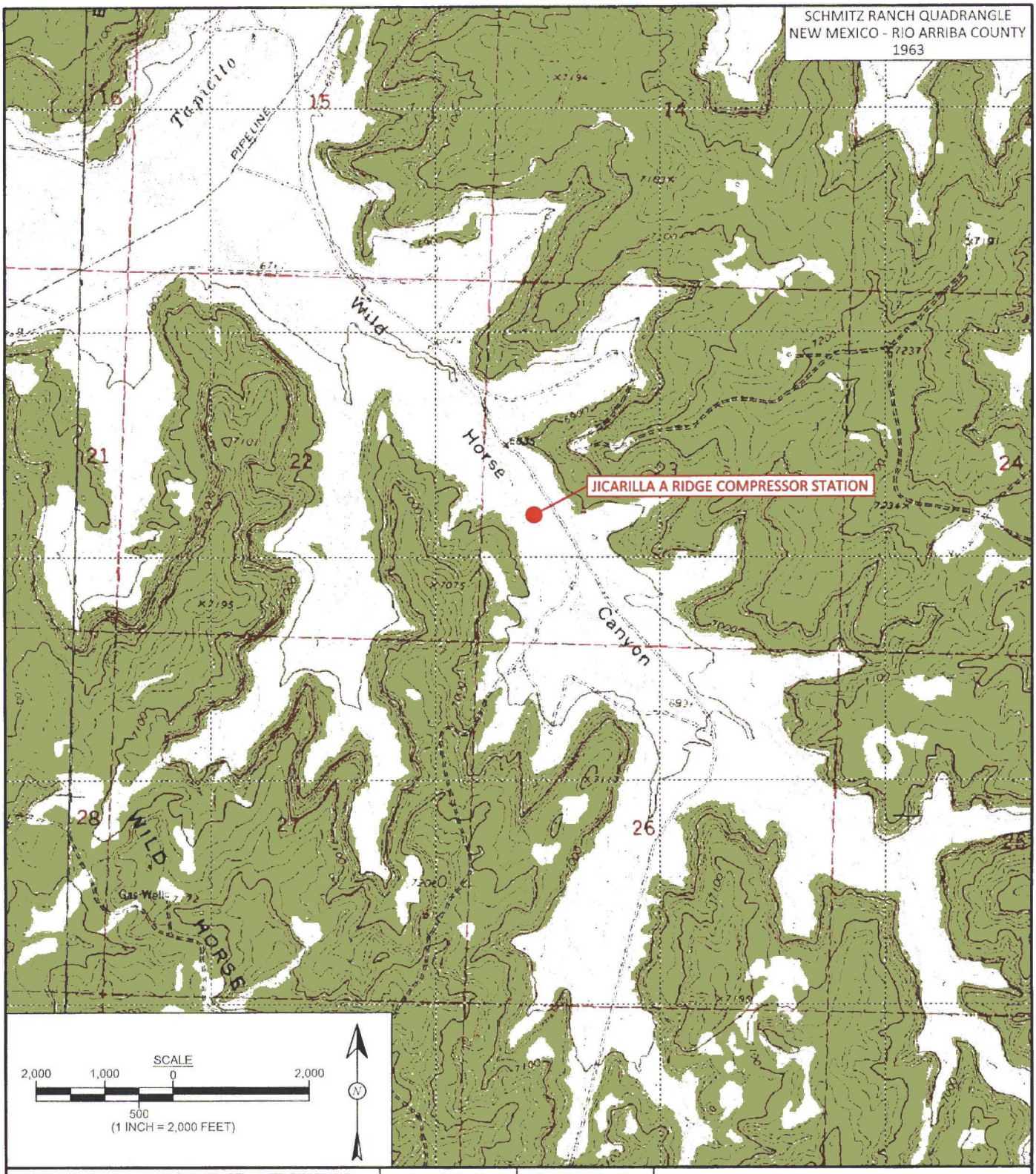
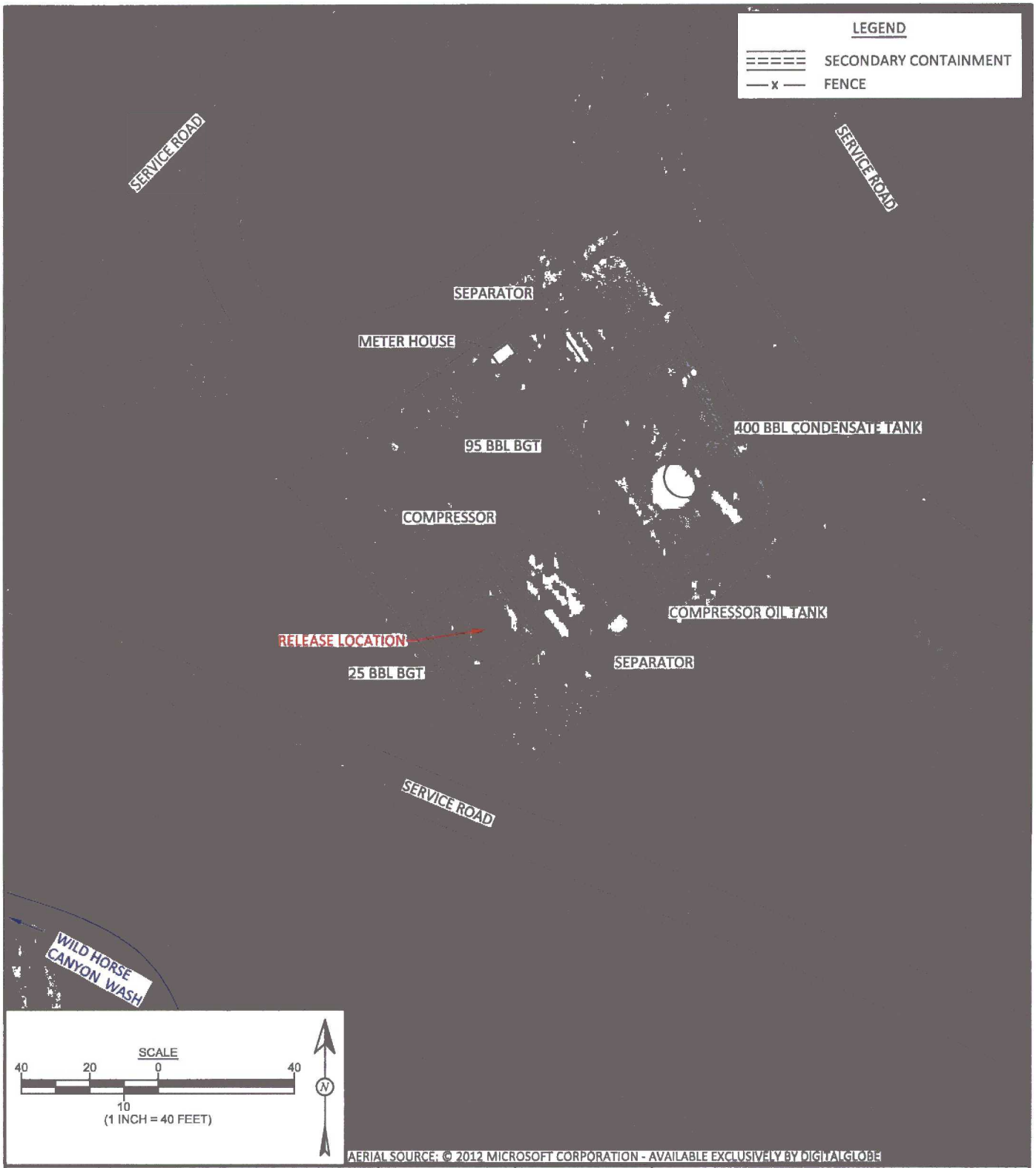


Animas Environmental Services, LLC

DRAWN BY: C. Lameman	**DATE DRAWN:** August 1, 2012
REVISIONS BY: C. Lameman	**DATE REVISED:** October 25, 2012
CHECKED BY: D. Watson	**DATE CHECKED:** October 25, 2012
APPROVED BY: E. McNally	**DATE APPROVED:** October 25, 2012

FIGURE 1

TOPOGRAPHIC SITE LOCATION MAP
ConocoPhillips
JICARILLA A RIDGE COMPRESSOR STATION
RIO ARRIBA COUNTY, NEW MEXICO
NW¼ SW¼, SECTION 23, T26N, R4W
N36.47001, W107.22734

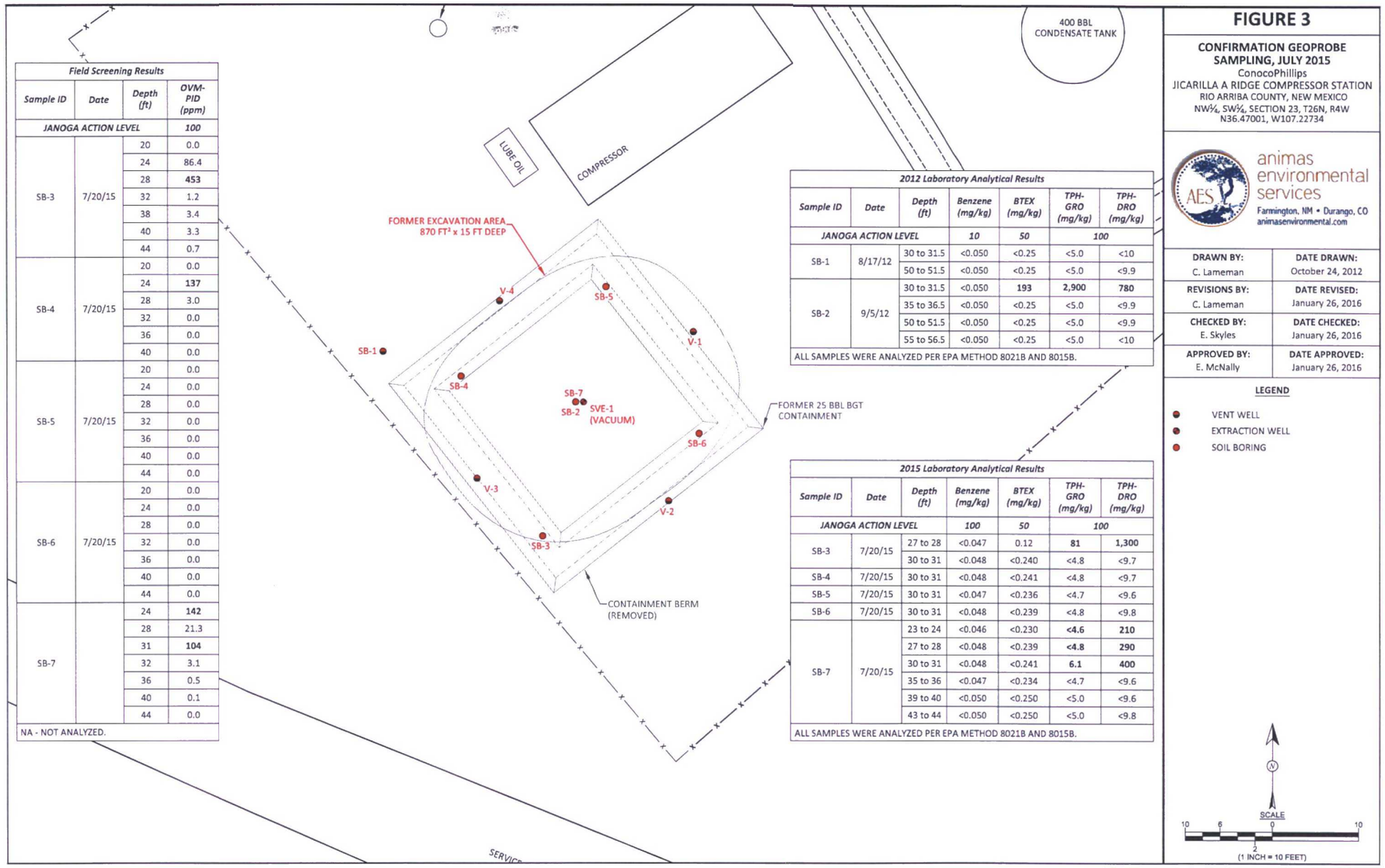


Animas Environmental Services, LLC

DRAWN BY: C. Lameman	**DATE DRAWN:** August 1, 2012	**FIGURE 2**
REVISIONS BY: C. Lameman	**DATE REVISED:** October 25, 2012	**AERIAL SITE MAP** ConocoPhillips JICARILLA A RIDGE COMPRESSOR STATION RIO ARRIBA COUNTY, NEW MEXICO NW¼, SW¼, SECTION 23, T26N, R4W N36.47001, W107.22734
CHECKED BY: D. Watson	**DATE CHECKED:** October 25, 2012	
APPROVED BY: E. McNally	**DATE APPROVED:** October 25, 2012	

FIGURE 3

CONFIRMATION GEOPROBE SAMPLING, JULY 2015
ConocoPhillips
JICARILLA A RIDGE COMPRESSOR STATION
RIO ARRIBA COUNTY, NEW MEXICO
NW¼, SW¼, SECTION 23, T26N, R4W
N36.47001, W107.22734



Field Screening Results

Sample ID	Date	Depth (ft)	OVM-PID (ppm)
JANOGA ACTION LEVEL			100
SB-3	7/20/15	20	0.0
		24	86.4
		28	**453**
		32	1.2
		38	3.4
		40	3.3
		44	0.7
SB-4	7/20/15	20	0.0
		24	**137**
		28	3.0
		32	0.0
		36	0.0
		40	0.0
SB-5	7/20/15	20	0.0
		24	0.0
		28	0.0
		32	0.0
		36	0.0
		40	0.0
		44	0.0
SB-6	7/20/15	20	0.0
		24	0.0
		28	0.0
		32	0.0
		36	0.0
		40	0.0
		44	0.0
SB-7		24	**142**
		28	21.3
		31	**104**
		32	3.1
		36	0.5
		40	0.1
		44	0.0

NA - NOT ANALYZED.

2012 Laboratory Analytical Results

Sample ID	Date	Depth (ft)	Benzene (mg/kg)	BTEX (mg/kg)	TPH-GRO (mg/kg)	TPH-DRO (mg/kg)
JANOGA ACTION LEVEL			10	50	100	
SB-1	8/17/12	30 to 31.5	<0.050	<0.25	<5.0	<10
		50 to 51.5	<0.050	<0.25	<5.0	<9.9
SB-2	9/5/12	30 to 31.5	<0.050	**193**	**2,900**	**780**
		35 to 36.5	<0.050	<0.25	<5.0	<9.9
		50 to 51.5	<0.050	<0.25	<5.0	<9.9
		55 to 56.5	<0.050	<0.25	<5.0	<10

ALL SAMPLES WERE ANALYZED PER EPA METHOD 8021B AND 8015B.

2015 Laboratory Analytical Results

Sample ID	Date	Depth (ft)	Benzene (mg/kg)	BTEX (mg/kg)	TPH-GRO (mg/kg)	TPH-DRO (mg/kg)
JANOGA ACTION LEVEL			100	50	100	
SB-3	7/20/15	27 to 28	<0.047	0.12	**81**	**1,300**
		30 to 31	<0.048	<0.240	<4.8	<9.7
SB-4	7/20/15	30 to 31	<0.048	<0.241	<4.8	<9.7
SB-5	7/20/15	30 to 31	<0.047	<0.236	<4.7	<9.6
SB-6	7/20/15	30 to 31	<0.048	<0.239	<4.8	<9.8
SB-7	7/20/15	23 to 24	<0.046	<0.230	**<4.6**	**210**
		27 to 28	<0.048	<0.239	**<4.8**	**290**
		30 to 31	<0.048	<0.241	**6.1**	**400**
		35 to 36	<0.047	<0.234	<4.7	<9.6
		39 to 40	<0.050	<0.250	<5.0	<9.6
		43 to 44	<0.050	<0.250	<5.0	<9.8

ALL SAMPLES WERE ANALYZED PER EPA METHOD 8021B AND 8015B.

animas environmental services
Farmington, NM • Durango, CO
animasenvironmental.com

DRAWN BY:	DATE DRAWN:
C. Lameman	October 24, 2012
REVISIONS BY:	**DATE REVISED:**
C. Lameman	January 26, 2016
CHECKED BY:	**DATE CHECKED:**
E. Skyles	January 26, 2016
APPROVED BY:	**DATE APPROVED:**
E. McNally	January 26, 2016

LEGEND

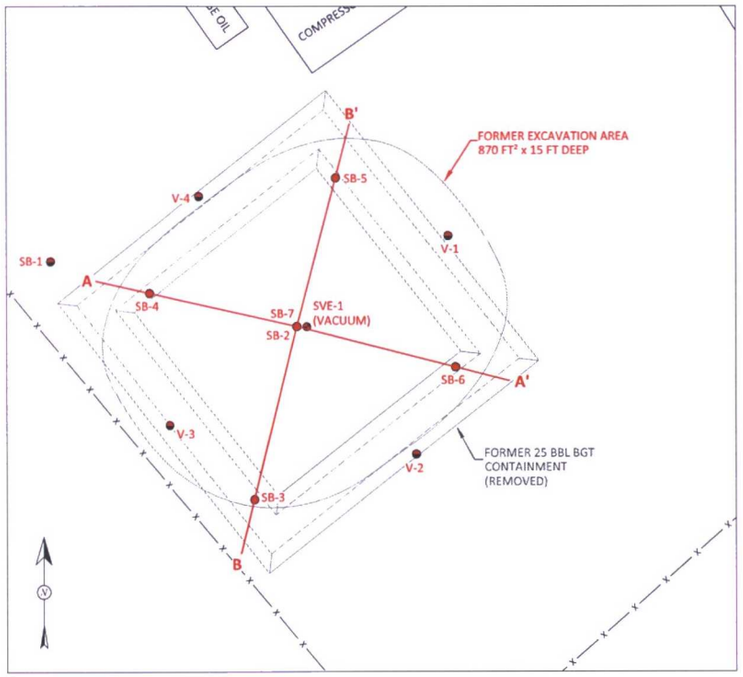
- VENT WELL
- EXTRACTION WELL
- SOIL BORING

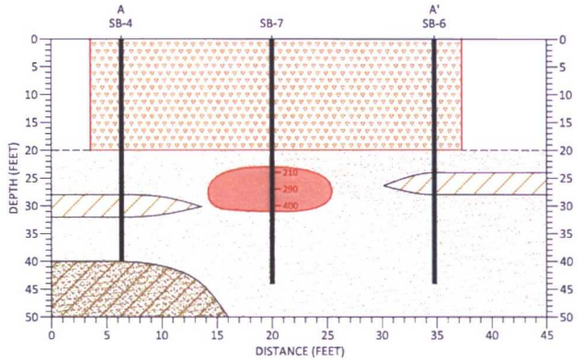
SCALE
10 5 0 10
2
(1 INCH = 10 FEET)

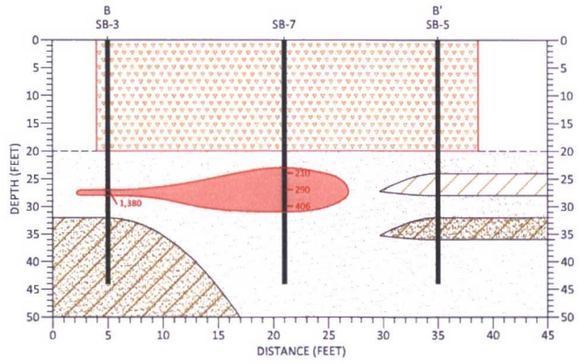
FIGURE 4

GEOLOGIC CROSS SECTION AND TPH RESULTS, JULY 2015

ConocoPhillips
JICARILLA A RIDGE COMPRESSOR STATION
RIO ARRIBA COUNTY, NEW MEXICO
NW¼, SW¼, SECTION 23, T26N, R4W
N36.47001, W107.22734







animas environmental services
Farmington, NM • Durango, CO
animasenvironmental.com

DRAWN BY: C. Lameman	**DATE DRAWN:** August 7, 2015
REVISIONS BY: C. Lameman	**DATE REVISED:** August 7, 2015
CHECKED BY: E. Skyles	**DATE CHECKED:** August 7, 2015
APPROVED BY: E. McNally	**DATE APPROVED:** August 7, 2015

LEGEND

- VENT WELL
- EXTRACTION WELL
- SOIL BORING
- BACKFILL
- WELL GRADED SANDS
- SANDY CLAY
- CLAY
- 80 YD³ RESIDUAL CONTAMINATION

NOTE: TPH RESULTS WERE ANALYZED PER USEPA METHOD 8015D AND REPORTED AS mg/kg.

SCALE
10 6 0 10
2
(1 INCH = 10 FEET)

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

July 28, 2015

Emilee Skyles
Animas Environmental
604 Pinon Street
Farmington, NM 87401
TEL: (505) 564-2281
FAX

RE: CoPC Jicarilla A Ridge OrderNo.: 1507967

Dear Emilee Skyles:

Hall Environmental Analysis Laboratory received 11 sample(s) on 7/22/2015 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 qualifers 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 #NM0190

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1507967**
Date Reported: **7/28/2015**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Animas Environmental
Project: CoPC Jicarilla A Ridge
Lab ID: 1507967-001 **Matrix:** SOIL

Client Sample ID: SB-3 27 to 28'
Collection Date: 7/20/2015 9:20:00 AM
Received Date: 7/22/2015 7:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **KJH**	
Diesel Range Organics (DRO)	1300	95		mg/Kg	10	7/27/2015 1:41:05 PM	20424
Surr: DNOP	0	57.9-140	S	%REC	10	7/27/2015 1:41:05 PM	20424
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	81	4.7		mg/Kg	1	7/23/2015 5:14:58 PM	20385
Surr: BFB	804	75.4-113	S	%REC	1	7/23/2015 5:14:58 PM	20385
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.047		mg/Kg	1	7/23/2015 5:14:58 PM	20385
Toluene	ND	0.047		mg/Kg	1	7/23/2015 5:14:58 PM	20385
Ethylbenzene	ND	0.047		mg/Kg	1	7/23/2015 5:14:58 PM	20385
Xylenes, Total	0.12	0.094		mg/Kg	1	7/23/2015 5:14:58 PM	20385
Surr: 4-Bromofluorobenzene	145	80-120	S	%REC	1	7/23/2015 5:14:58 PM	20385

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
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Animas Environmental
Project: CoPC Jicarilla A Ridge
Lab ID: 1507967-002 **Matrix:** SOIL

Client Sample ID: SB-3 30 to 31'
Collection Date: 7/20/2015 9:26:00 AM
Received Date: 7/22/2015 7:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **JME**	
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	7/23/2015 5:59:27 PM	20378
Surr: DNOP	112	57.9-140		%REC	1	7/23/2015 5:59:27 PM	20378
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	7/23/2015 7:38:25 PM	20385
Surr: BFB	85.4	75.4-113		%REC	1	7/23/2015 7:38:25 PM	20385
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.048		mg/Kg	1	7/23/2015 7:38:25 PM	20385
Toluene	ND	0.048		mg/Kg	1	7/23/2015 7:38:25 PM	20385
Ethylbenzene	ND	0.048		mg/Kg	1	7/23/2015 7:38:25 PM	20385
Xylenes, Total	ND	0.096		mg/Kg	1	7/23/2015 7:38:25 PM	20385
Surr: 4-Bromofluorobenzene	86.9	80-120		%REC	1	7/23/2015 7:38:25 PM	20385

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
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Animas Environmental
Project: CoPC Jicarilla A Ridge
Lab ID: 1507967-003 **Matrix:** SOIL

Client Sample ID: SB-4 30 to 31'
Collection Date: 7/20/2015 10:47:00 AM
Received Date: 7/22/2015 7:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **JME**	
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	7/23/2015 1:28:42 PM	20378
Surr: DNOP	112	57.9-140		%REC	1	7/23/2015 1:28:42 PM	20378
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	7/23/2015 8:07:07 PM	20385
Surr: BFB	84.5	75.4-113		%REC	1	7/23/2015 8:07:07 PM	20385
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.048		mg/Kg	1	7/23/2015 8:07:07 PM	20385
Toluene	ND	0.048		mg/Kg	1	7/23/2015 8:07:07 PM	20385
Ethylbenzene	ND	0.048		mg/Kg	1	7/23/2015 8:07:07 PM	20385
Xylenes, Total	ND	0.097		mg/Kg	1	7/23/2015 8:07:07 PM	20385
Surr: 4-Bromofluorobenzene	85.4	80-120		%REC	1	7/23/2015 8:07:07 PM	20385

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
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Animas Environmental
Project: CoPC Jicarilla A Ridge
Lab ID: 1507967-004 **Matrix:** SOIL

Client Sample ID: SB-5 30 to 31'
Collection Date: 7/20/2015 11:44:00 AM
Received Date: 7/22/2015 7:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **JME**	
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	7/23/2015 1:55:45 PM	20378
Surr: DNOP	118	57.9-140		%REC	1	7/23/2015 1:55:45 PM	20378
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	7/23/2015 8:35:49 PM	20385
Surr: BFB	86.1	75.4-113		%REC	1	7/23/2015 8:35:49 PM	20385
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.047		mg/Kg	1	7/23/2015 8:35:49 PM	20385
Toluene	ND	0.047		mg/Kg	1	7/23/2015 8:35:49 PM	20385
Ethylbenzene	ND	0.047		mg/Kg	1	7/23/2015 8:35:49 PM	20385
Xylenes, Total	ND	0.095		mg/Kg	1	7/23/2015 8:35:49 PM	20385
Surr: 4-Bromofluorobenzene	88.6	80-120		%REC	1	7/23/2015 8:35:49 PM	20385

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
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Animas Environmental
Project: CoPC Jicarilla A Ridge
Lab ID: 1507967-005 **Matrix:** SOIL

Client Sample ID: SB-6 30 to 31'
Collection Date: 7/20/2015 1:20:00 PM
Received Date: 7/22/2015 7:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **JME**	
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	7/23/2015 2:22:59 PM	20378
Surr: DNOP	116	57.9-140		%REC	1	7/23/2015 2:22:59 PM	20378
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	7/23/2015 9:04:34 PM	20385
Surr: BFB	85.1	75.4-113		%REC	1	7/23/2015 9:04:34 PM	20385
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.048		mg/Kg	1	7/23/2015 9:04:34 PM	20385
Toluene	ND	0.048		mg/Kg	1	7/23/2015 9:04:34 PM	20385
Ethylbenzene	ND	0.048		mg/Kg	1	7/23/2015 9:04:34 PM	20385
Xylenes, Total	ND	0.095		mg/Kg	1	7/23/2015 9:04:34 PM	20385
Surr: 4-Bromofluorobenzene	86.1	80-120		%REC	1	7/23/2015 9:04:34 PM	20385

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
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Animas Environmental
Project: CoPC Jicarilla A Ridge
Lab ID: 1507967-006 **Matrix:** SOIL

Client Sample ID: SB-7 23 to 24'
Collection Date: 7/20/2015 2:27:00 PM
Received Date: 7/22/2015 7:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **KJH**	
Diesel Range Organics (DRO)	210	9.8		mg/Kg	1	7/27/2015 10:58:55 AM	20424
Surr: DNOP	120	57.9-140		%REC	1	7/27/2015 10:58:55 AM	20424
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	7/23/2015 9:33:16 PM	20385
Surr: BFB	84.2	75.4-113		%REC	1	7/23/2015 9:33:16 PM	20385
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.046		mg/Kg	1	7/23/2015 9:33:16 PM	20385
Toluene	ND	0.046		mg/Kg	1	7/23/2015 9:33:16 PM	20385
Ethylbenzene	ND	0.046		mg/Kg	1	7/23/2015 9:33:16 PM	20385
Xylenes, Total	ND	0.092		mg/Kg	1	7/23/2015 9:33:16 PM	20385
Surr: 4-Bromofluorobenzene	84.2	80-120		%REC	1	7/23/2015 9:33:16 PM	20385

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
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Animas Environmental
Project: CoPC Jicarilla A Ridge
Lab ID: 1507967-007 **Matrix:** SOIL

Client Sample ID: SB-7 27 to 28'
Collection Date: 7/20/2015 2:28:00 PM
Received Date: 7/22/2015 7:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **KJH**	
Diesel Range Organics (DRO)	290	9.9		mg/Kg	1	7/27/2015 11:53:04 AM	20424
Surr: DNOP	120	57.9-140		%REC	1	7/27/2015 11:53:04 AM	20424
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	7/23/2015 10:01:55 PM	20385
Surr: BFB	88.2	75.4-113		%REC	1	7/23/2015 10:01:55 PM	20385
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.048		mg/Kg	1	7/23/2015 10:01:55 PM	20385
Toluene	ND	0.048		mg/Kg	1	7/23/2015 10:01:55 PM	20385
Ethylbenzene	ND	0.048		mg/Kg	1	7/23/2015 10:01:55 PM	20385
Xylenes, Total	ND	0.095		mg/Kg	1	7/23/2015 10:01:55 PM	20385
Surr: 4-Bromofluorobenzene	88.8	80-120		%REC	1	7/23/2015 10:01:55 PM	20385

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
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Animas Environmental
Project: CoPC Jicarilla A Ridge
Lab ID: 1507967-008 **Matrix:** SOIL

Client Sample ID: SB-7 30 to 31'
Collection Date: 7/20/2015 2:29:00 PM
Received Date: 7/22/2015 7:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **KJH**	
Diesel Range Organics (DRO)	400	9.5		mg/Kg	1	7/27/2015 12:47:05 PM	20424
Surr: DNOP	124	57.9-140		%REC	1	7/27/2015 12:47:05 PM	20424
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	6.1	4.8		mg/Kg	1	7/23/2015 10:30:36 PM	20385
Surr: BFB	126	75.4-113	S	%REC	1	7/23/2015 10:30:36 PM	20385
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.048		mg/Kg	1	7/23/2015 10:30:36 PM	20385
Toluene	ND	0.048		mg/Kg	1	7/23/2015 10:30:36 PM	20385
Ethylbenzene	ND	0.048		mg/Kg	1	7/23/2015 10:30:36 PM	20385
Xylenes, Total	ND	0.097		mg/Kg	1	7/23/2015 10:30:36 PM	20385
Surr: 4-Bromofluorobenzene	91.8	80-120		%REC	1	7/23/2015 10:30:36 PM	20385

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
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Animas Environmental
Project: CoPC Jicarilla A Ridge
Lab ID: 1507967-009 **Matrix:** SOIL

Client Sample ID: SB-7 35 to 36'
Collection Date: 7/20/2015 2:31:00 PM
Received Date: 7/22/2015 7:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **JME**	
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	7/23/2015 4:38:18 PM	20378
Surr: DNOP	123	57.9-140		%REC	1	7/23/2015 4:38:18 PM	20378
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	7/23/2015 10:59:13 PM	20385
Surr: BFB	87.4	75.4-113		%REC	1	7/23/2015 10:59:13 PM	20385
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.047		mg/Kg	1	7/23/2015 10:59:13 PM	20385
Toluene	ND	0.047		mg/Kg	1	7/23/2015 10:59:13 PM	20385
Ethylbenzene	ND	0.047		mg/Kg	1	7/23/2015 10:59:13 PM	20385
Xylenes, Total	ND	0.093		mg/Kg	1	7/23/2015 10:59:13 PM	20385
Surr: 4-Bromofluorobenzene	88.9	80-120		%REC	1	7/23/2015 10:59:13 PM	20385

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
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Animas Environmental
Project: CoPC Jicarilla A Ridge
Lab ID: 1507967-010 **Matrix:** SOIL

Client Sample ID: SB-7 39 to 40'
Collection Date: 7/20/2015 2:35:00 PM
Received Date: 7/22/2015 7:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **KJH**	
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	7/27/2015 10:42:39 PM	20406
Surr: DNOP	92.0	57.9-140		%REC	1	7/27/2015 10:42:39 PM	20406
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	7/24/2015 6:23:05 PM	20408
Surr: BFB	88.7	75.4-113		%REC	1	7/24/2015 6:23:05 PM	20408
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.050		mg/Kg	1	7/24/2015 6:23:05 PM	20408
Toluene	ND	0.050		mg/Kg	1	7/24/2015 6:23:05 PM	20408
Ethylbenzene	ND	0.050		mg/Kg	1	7/24/2015 6:23:05 PM	20408
Xylenes, Total	ND	0.10		mg/Kg	1	7/24/2015 6:23:05 PM	20408
Surr: 4-Bromofluorobenzene	92.3	80-120		%REC	1	7/24/2015 6:23:05 PM	20408

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
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Animas Environmental
Project: CoPC Jicarilla A Ridge
Lab ID: 1507967-011 **Matrix:** SOIL

Client Sample ID: SB-7 43 to 44'
Collection Date: 7/20/2015 2:37:00 PM
Received Date: 7/22/2015 7:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **KJH**	
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	7/27/2015 11:04:00 PM	20406
Surr: DNOP	95.6	57.9-140		%REC	1	7/27/2015 11:04:00 PM	20406
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	7/25/2015 3:28:16 AM	20408
Surr: BFB	87.5	75.4-113		%REC	1	7/25/2015 3:28:16 AM	20408
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.050		mg/Kg	1	7/25/2015 3:28:16 AM	20408
Toluene	ND	0.050		mg/Kg	1	7/25/2015 3:28:16 AM	20408
Ethylbenzene	ND	0.050		mg/Kg	1	7/25/2015 3:28:16 AM	20408
Xylenes, Total	ND	0.10		mg/Kg	1	7/25/2015 3:28:16 AM	20408
Surr: 4-Bromofluorobenzene	90.6	80-120		%REC	1	7/25/2015 3:28:16 AM	20408

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
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1507967**

28-Jul-15

Client: Animas Environmental
Project: CoPC Jicarilla A Ridge

Sample ID **MB-20378**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **20378**	RunNo: **27701**
Prep Date: **7/22/2015**	Analysis Date: **7/23/2015**	SeqNo: **833319** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Surr: DNOP	11		10.00		109	57.9	140			

Sample ID **LCS-20378**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **20378**	RunNo: **27701**
Prep Date: **7/22/2015**	Analysis Date: **7/23/2015**	SeqNo: **833320** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	71	10	50.00	0	143	57.4	139			S
Surr: DNOP	7.3		5.000		147	57.9	140			S

Sample ID **MB-20424**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **20424**	RunNo: **27764**
Prep Date: **7/24/2015**	Analysis Date: **7/27/2015**	SeqNo: **834737** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Surr: DNOP	11		10.00		107	57.9	140			

Sample ID **LCS-20424**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **20424**	RunNo: **27764**
Prep Date: **7/24/2015**	Analysis Date: **7/27/2015**	SeqNo: **834738** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	50	10	50.00	0	101	57.4	139			
Surr: DNOP	5.1		5.000		102	57.9	140			

Sample ID **MB-20406**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **20406**	RunNo: **27765**
Prep Date: **7/23/2015**	Analysis Date: **7/27/2015**	SeqNo: **835536** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Surr: DNOP	12		10.00		118	57.9	140			

Sample ID **LCS-20406**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **20406**	RunNo: **27765**
Prep Date: **7/23/2015**	Analysis Date: **7/27/2015**	SeqNo: **835538** Units: **mg/Kg**

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

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
- R RPD outside accepted recovery limits
- RL Reporting Detection Limit
- S % Recovery outside of range due to dilution or matrix

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1507967**

28-Jul-15

Client: Animas Environmental

Project: CoPC Jicarilla A Ridge

Sample ID **LCS-20406**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**	
Client ID: **LCSS**	Batch ID: **20406**	RunNo: **27765**	
Prep Date: **7/23/2015**	Analysis Date: **7/27/2015**	SeqNo: **835538**	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	101	57.4	139			
Surr: DNOP	5.3		5.000		105	57.9	140			

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
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1507967**

28-Jul-15

Client: Animas Environmental
Project: CoPC Jicarilla A Ridge

Sample ID **MB-20385**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **20385**	RunNo: **27716**
Prep Date: **7/22/2015**	Analysis Date: **7/23/2015**	SeqNo: **833100** 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	870		1000		86.8	75.4	113			

Sample ID **LCS-20385**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **20385**	RunNo: **27716**
Prep Date: **7/22/2015**	Analysis Date: **7/23/2015**	SeqNo: **833101** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	24	5.0	25.00	0	95.3	79.6	122			
Surr: BFB	910		1000		91.4	75.4	113			

Sample ID **MB-20408**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **20408**	RunNo: **27749**
Prep Date: **7/23/2015**	Analysis Date: **7/24/2015**	SeqNo: **834250** 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	880		1000		87.9	75.4	113			

Sample ID **LCS-20408**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **20408**	RunNo: **27749**
Prep Date: **7/23/2015**	Analysis Date: **7/24/2015**	SeqNo: **834251** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	23	5.0	25.00	0	92.5	79.6	122			
Surr: BFB	960		1000		95.7	75.4	113			

Sample ID **1507967-010AMS**	SampType: **MS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **SB-7 39 to 40'**	Batch ID: **20408**	RunNo: **27749**
Prep Date: **7/23/2015**	Analysis Date: **7/24/2015**	SeqNo: **834253** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	27	5.0	24.93	0	106	62.5	151			
Surr: BFB	960		997.0		96.6	75.4	113			

Sample ID **1507967-010AMSD**	SampType: **MSD**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **SB-7 39 to 40'**	Batch ID: **20408**	RunNo: **27749**
Prep Date: **7/23/2015**	Analysis Date: **7/24/2015**	SeqNo: **834254** Units: **mg/Kg**

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

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
- R RPD outside accepted recovery limits
- RL Reporting Detection Limit
- S % Recovery outside of range due to dilution or matrix

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1507967**

28-Jul-15

Client: Animas Environmental

Project: CoPC Jicarilla A Ridge

Sample ID	**1507967-010AMSD**	SampType:	**MSD**	TestCode:	**EPA Method 8015D: Gasoline Range**
Client ID:	**SB-7 39 to 40'**	Batch ID:	**20408**	RunNo:	**27749**
Prep Date:	**7/23/2015**	Analysis Date:	**7/24/2015**	SeqNo:	**834254**
Units:	**mg/Kg**				

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	25	5.0	24.93	0	99.6	62.5	151	6.56	22.1	
Surr: BFB	960		997.0		96.5	75.4	113	0	0	

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
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1507967**

28-Jul-15

Client: Animas Environmental
Project: CoPC Jicarilla A Ridge

Sample ID **MB-20385**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS**	Batch ID: **20385**	RunNo: **27716**
Prep Date: **7/22/2015**	Analysis Date: **7/23/2015**	SeqNo: **833126** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.050								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.92		1.000		91.9	80	120			

Sample ID **LCS-20385**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS**	Batch ID: **20385**	RunNo: **27716**
Prep Date: **7/22/2015**	Analysis Date: **7/23/2015**	SeqNo: **833127** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.0	0.050	1.000	0	101	76.6	128			
Toluene	1.0	0.050	1.000	0	99.9	75	124			
Ethylbenzene	1.1	0.050	1.000	0	107	79.5	126			
Xylenes, Total	3.3	0.10	3.000	0	110	78.8	124			
Surr: 4-Bromofluorobenzene	1.0		1.000		101	80	120			

Sample ID **MB-20408**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS**	Batch ID: **20408**	RunNo: **27749**
Prep Date: **7/23/2015**	Analysis Date: **7/24/2015**	SeqNo: **834297** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.050								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.94		1.000		93.7	80	120			

Sample ID **LCS-20408**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS**	Batch ID: **20408**	RunNo: **27749**
Prep Date: **7/23/2015**	Analysis Date: **7/24/2015**	SeqNo: **834298** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.1	0.050	1.000	0	110	76.6	128			
Toluene	1.0	0.050	1.000	0	102	75	124			
Ethylbenzene	1.0	0.050	1.000	0	105	79.5	126			
Xylenes, Total	3.2	0.10	3.000	0	106	78.8	124			
Surr: 4-Bromofluorobenzene	1.0		1.000		101	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
- R RPD outside accepted recovery limits
- RL Reporting Detection Limit
- S % Recovery outside of range due to dilution or matrix

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1507967**

28-Jul-15

Client: Animas Environmental

Project: CoPC Jicarilla A Ridge

Sample ID **1507967-011AMS**	SampType: **MS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **SB-7 43 to 44'**	Batch ID: **20408**	RunNo: **27749**
Prep Date: **7/23/2015**	Analysis Date: **7/24/2015**	SeqNo: **834301** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.1	0.048	0.9597	0	120	69.6	136			
Toluene	1.1	0.048	0.9597	0	112	76.2	134			
Ethylbenzene	1.1	0.048	0.9597	0	118	75.8	137			
Xylenes, Total	3.4	0.096	2.879	0	118	78.9	133			
Surr: 4-Bromofluorobenzene	0.99		0.9597		103	80	120			

Sample ID **1507967-011AMSD**	SampType: **MSD**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **SB-7 43 to 44'**	Batch ID: **20408**	RunNo: **27749**
Prep Date: **7/23/2015**	Analysis Date: **7/24/2015**	SeqNo: **834302** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.2	0.049	0.9794	0	119	69.6	136	1.55	20	
Toluene	1.1	0.049	0.9794	0	111	76.2	134	1.87	20	
Ethylbenzene	1.2	0.049	0.9794	0	119	75.8	137	2.90	20	
Xylenes, Total	3.5	0.098	2.938	0	119	78.9	133	2.55	20	
Surr: 4-Bromofluorobenzene	1.0		0.9794		103	80	120	0	0	

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
- R RPD outside accepted recovery limits
- RL Reporting Detection Limit
- S % Recovery outside of range due to dilution or matrix

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: Animas Environmental Work Order Number: 1507967 RcptNo: 1

Received by/date: 07/22/15

Logged By: Lindsay Mangin 7/22/2015 7:00:00 AM

Completed By: Lindsay Mangin 7/22/2015 8:47:53 AM

Reviewed By: LS 07/22/15

Chain of Custody

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

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	# of preserved bottles checked for pH: (<2 or >12 unless noted)
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	Adjusted?
14. Is it clear what analyses were requested?	Yes ☑	No ☐	
15. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	Checked by:

Special Handling (if applicable)

16. 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: _____

17. Additional remarks:

18. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.9	Good	Yes			

Chain-of-Custody Record

Client: Animas Environmental Services, LLC

Mailing Address: 604 W. Piñon St.
Farmington, NM 87401

Phone #: 505-564-2281

email or Fax#:

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

Accreditation
☐ NELAP ☐ Other _____

☐ EDD (Type) _____

Turn-Around Time:
☑ Standard ☐ Rush _____

Project Name: COPC Jicarilla A Ridge

Project #:

Project Manager: E. Skyles

Sampler: ES / DD

On Ice: ☑ Yes ☐ No

Sample Temperature: 1.9

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

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

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1507967	BTEX + ~~MTBE~~ + ~~TMB's~~ (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / ~~MRO~~)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)					Air Bubbles (Y or N)
7/20/15	9:20	Soil	SB-3 27 to 28'	1-4oz	Cool	-001	✓		✓													
7/20/15	9:26	Soil	SB-3 30 to 31'	1-4oz	cool	-002	✓		✓													
7/20/15	10:47	Soil	SB-4 30 to 31'	1-4oz	cool	-003	✓		✓													
7/20/15	11:44	Soil	SB-5 30 to 31'	1-4oz	cool	-004	✓		✓													
7/20/15	13:20	Soil	SB-6 30 to 31'	1-4oz	cool	-005	✓		✓													
7/20/15	14:23	Soil	SB-7 23 to 24'	1-4oz	cool	-006	✓		✓													
7/20/15	14:28	Soil	SB-7 27 to 28'	1-4oz	cool	-007	✓		✓													
7/20/15	1429	Soil	SB-7 30 to 31'	1-4oz	cool	-008	✓		✓													
7/20/15	1431	Soil	SB-7 35 to 36'	1-4oz	cool	-009	✓		✓													
7/20/15	1435	Soil	SB-7 39 to 40'	1-4oz	cool	-010	✓		✓													
7/20/15	1437	Soil	SB-7 43 to 44'	1-4oz	Cool	-011	✓		✓													

Date:	Time:	Relinquished by:	Received by:	Date	Time
7/21/15	1734		Christine Walters	7/21/15	1734
Date:	Time:	Relinquished by:	Received by:	Date	Time
7/21/15	1830	Christine Walters		07/22/15	0700

Remarks: Bill to Conoco Phillips
WO #: 208678123 AREA: 26
SUPER: Vance Roberts (Bobby Heinen)
USER: MCINNSK ORDERED BY: LISA HUNTER

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.