



REVIEWED

By Olivia Yu at 10:01 am, Nov 15, 2018

October 29, 2018

Reference No.11183047

Ms. Olivia Yu
Environmental Specialist
New Mexico Oil Conservation Division-Dist. 1
1625 North French Drive
Hobbs, New Mexico 88240

Dear Ms. Yu:

**Re: Site Assessment Report and Closure Request
Phillips66 NM-16 Bettis Road Release
NMOCD #1RP-5184
Lea County, New Mexico**

1RP-5185

On behalf of Phillips 66 Pipeline, LLC (Phillips 66), GHD Services Inc. (GHD) is providing this Site Assessment Report and Closure Request for the above-referenced site. The NM-16 Bettis Road site (hereafter referred to as the "Site") is located on private land within Unit Letter J, Section 9, Township 22S, and Range 37E in Lea County, New Mexico. Geographical coordinates for the Site are 32.40291° North, 103.16432° West (**Figure 1**). The Site consists of a pipeline crossing approximately 0.3 miles west of NM Highway 18 and 150 feet north of Trull Lane (**Figure 2**).

1. Introduction

Site assessment was performed in order to address impacts from a September 4, 2018 release of approximately 25 barrels (bbls) of crude oil from a 6-inch diameter pipeline. Surface staining was observed from a pipeline fly over after inventory data suggested a release may have occurred. Notification of the release via Form C-141 Initial (Attachment 1) was provided to the New Mexico Oil Conservation Division (NMOCD) on September 5, 2018. According to the Form C-141, 5 bbls of crude were recovered. Remediation case number 1RP-5184 has been assigned to the Site by the NMOCD.

2. Regulatory Framework

A well record search on the New Mexico Office of the State Engineer's (NMOSE) online database, identified four wells within a 1,000 meter radius of the Site with listed depths to water averaging 89 ft below ground surface (ft bgs). The list of wells from the NMOSE database is included in Attachment 2. A U.S. Geological Survey topographical map showing no *significant watercourse* as defined in 19.15.17.7 NMAC within ½ mile of the Site is included as Attachment 3. If a 51 ft to 100 ft depth to water beneath the Site is used, as per Table 1 of 19.15.29 NMAC, closure criteria for chloride are 10,000 milligrams per kilogram (mg/kg); 2,500 mg/kg for TPH (total petroleum hydrocarbons); 50 mg/kg for BTEX (benzene, toluene, ethylbenzene and xylenes) and 10 mg/kg for benzene. Table 1 of 19.15.29 NMAC is presented below:



Table 2.1 Table 1: Closure Criteria for Soils Impacted by Release

Depth below bottom of release to ground water less than 10,000 mg/l TDS	Constituent	Method*	Limit**
≤ 50 feet	Chloride***	EPA 300.0	600 mg/kg
	TPH	EPA SW-846 Method 8015M	100 mg/kg
	BTEX	EPA SW-846 Method 8021B or 8260B	50 mg/kg
	Benzene	EPA SW-846 Method 8021B or 8015M	10 mg/kg
51 feet-100 feet	Chloride***	EPA 300.0	10,000 mg/kg
	TPH	EPA SW-846 Method 8015M	2,500 mg/kg
	GRO+DRO	EPA SW-846 Method 8015M	1,000 mg/kg
	BTEX	EPA SW-846 Method 8021B or 8260B	50 mg/kg
	Benzene	EPA SW-846 Method 8021B or 8260B	10 mg/kg
Greater than 100 feet	Chloride***	EPA 300.0	20,000 mg/kg
	TPH	EPA SW-846 Method 8015M	2,500 mg/kg
	GRO+DRO	EPA SW-846 Method 8015M	1,000 mg/kg
	BTEX	EPA SW-846 Method 8021B or 8260B	50 mg/kg
	Benzene	EPA SW-846 Method 8021B or 8015M	10 mg/kg

3. Release Assessment

3.1 Impact Assessment/Soils Excavation

Phillips 66 field personnel were on Site September 5, 2018 to begin removing oil stained soils from the Site. Large excavators and backhoes were used to “chase” the easily visible fresh crude oil in the Site soils. In addition to the 6-inch diameter Phillips 66 crude line, the resulting excavation coincidentally unearthed four additional oil/gas product pipelines, reportedly belonging to Targa Resources (Targa) (see Photo 1). A surface poly flowline and one of the Targa lines directly overlie the Phillips 66 line (see Photo 2). The Targa line overlying the Phillips line was discovered to be leaking directly on to the Phillips 66 line. It was repaired by a Targa crew. Two of the Targa lines in the westernmost portion of the excavation were noted to be heavily corroded and the sources of petroleum hydrocarbon releases. The excavation that is beneath the exposed Phillips pipeline has a maximum north-south dimension of approximately 75 ft long x 20 ft wide. The rectangular shape of the north-south portion of the excavation (Figure 2, foreground) is a result not from fresh crude oil impacted soil excavation but rather to enable replacement of the



compromised Phillips 66 pipeline with a 40 ft long replacement section. The portion beneath the westernmost Targa lines has maximum east-west dimension of 100 ft x 30 ft wide. The nominal depth across the entire excavation is approximately 4 to 5 ft bgs. A secondary trench was dug during the second Site assessment event (see below) in the central portion of the excavation with dimensions of approximately 25 ft x 10 ft x 10 ft deep (see Figure 3). Removed soils are stockpiled on site in a plastic-lined and bermed area. Upon notification of Site closure/no further action by NMOCD, Phillips 66 will haul this material away for off Site disposal in a licensed landfarm facility.

3.2 Assessment/Confirmation Sampling

GHD mobilized to the Site on September 17, 2018 to collect field screening and Site assessment samples from the exposed excavation. Only the north-south portion of the excavation beneath the Phillips 66 pipeline was considered for assessment/closure sampling. Two bottom of excavation samples, BS-1 and BS-2, and two sidewall samples, SW-3 and SW-4, were collected (see Figure 2) and field screened for total petroleum hydrocarbons (TPH) using a Petroflag® Test Kit. A field screening summary is included as Attachment 4.

GHD and Phillips 66 returned to the Site on October 10, 2018 to complete the Site assessment/remedial effort begun in September. Two additional bottom samples, BS-6 and BS-7, were collected from the middle portion of the north-south excavated area beneath the Phillips 66 pipeline. The samples were submitted for laboratory analyses. All samples collected were discrete samples collected in “undisturbed” soils several inches in (down) from the exposed surface. All samples were submitted to Cardinal Laboratories of Hobbs, New Mexico for analyses of BTEX by EPA method 8021; for full range TPH by EPA method 8015 and for chloride by method 4500. A summary of sample locations and analytical results is depicted in Figure 2.

3.3 Sample Results

BTEX concentrations from the September 17 and October 10, 2018 sampling events ranged from below the laboratory reporting limit (LRL) to 1.22 mg/kg (BS-2-4). Concentrations of total TPH ranged from below the LRL to 2,247 mg/kg (BS-2-4). Chloride concentrations ranged from 48 to 720 mg/kg. All BTEX, TPH and chloride results were below the Table 1 Closure criteria for these constituents. Soil laboratory analytical reports are included as Attachment 4 and summarized on Table 1.



4. Summary and Recommendations

A summary of the events and findings from the remediation activities performed at the Site are as follows:

- A release of 25 bbls of crude oil occurred at the Site on September 4, 2018; 5 bbls were recovered.
- Phillips 66 removed all visibly impacted soils from the fresh crude oil release and in the process, unearthed several 3rd party petroleum product lines, some of which were also found to have had or were currently releasing products into the subsurface in unknown quantities or duration. The compromised Phillips 66 pipeline was replaced with a 40 ft section of new piping. Impacted soils are stockpiled on site awaiting disposition.
- Phillips 66 consequently conducted Site assessment/closure sampling exclusively in the north-south corridor beneath the Phillips 66 pipeline.
- Assessment/closure samples were collected and field screened for TPH and submitted for laboratory analyses of BTEX, full range TPH and chloride.
- All concentrations of BTEX, TPH and chloride were below the Table 1 closure criteria for these constituents.
- Phillips assessed the reported release as soon as possible after discovery and immediately removed all impacted soils. In chasing the plume of fresh oil stained soils, several leaking pipelines belonging to another producer were unearthed exposing apparent historical petroleum hydrocarbon releases not associated with the September 4, 2018 Phillips 66 release.
- Because the Phillips 66 release was apparently superimposed upon apparent historical releases, delineation/confirmation sampling in excavated areas adjacent to non-Phillips 66 pipelines would prove difficult to accurately assign attribution. For this reason, GHD/Phillips 66 conducted assessment/closure sampling only underneath the Phillips 66 pipeline portion of the excavation. GHD/Phillips 66 believes this portion has been adequately delineated and remediated and that the Site has been returned to its pre-Phillips 66 release condition with respect to being protective of human health and the environment.

Therefore, based on the results of field and laboratory soil sampling and soil removal/remedial efforts to date, GHD requests no further action status and Site closure be granted for this Site.



If you have any questions or comments with regards to this report, please do not hesitate to contact GHD's Albuquerque office at (505) 884-0672.

Sincerely,

GHD

A handwritten signature in blue ink, appearing to read "Jeff Walker".

Jeff Walker
Geologist

A handwritten signature in blue ink, appearing to read "Alan Brandon".

Alan Brandon
Senior Project Manager

JW/ji/1

Encl. Figure 1
 Figure 2
 Table 1
 Photo Log
 Attachment 1 – Form C-141-Initial
 Attachment 2 – OSE Well Report
 Attachment 3 – USGS Water Resources Radius Map
 Attachment 3 – Field Screening Summary
 Attachment 4 – Cardinal Laboratories Report

cc: Aly Batt, Environmental Specialist, Phillips 66

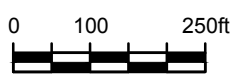
Site Coordinates
Lat/Long 32.4029°, -103.1643°

BETTIS ROAD

SITE

TRULL LANE

Source: GOOGLE EARTH AERIAL IMAGE DATE NOVEMBER 2017



Coordinate System:
STATE PLANE -
NEW MEXICO EAST



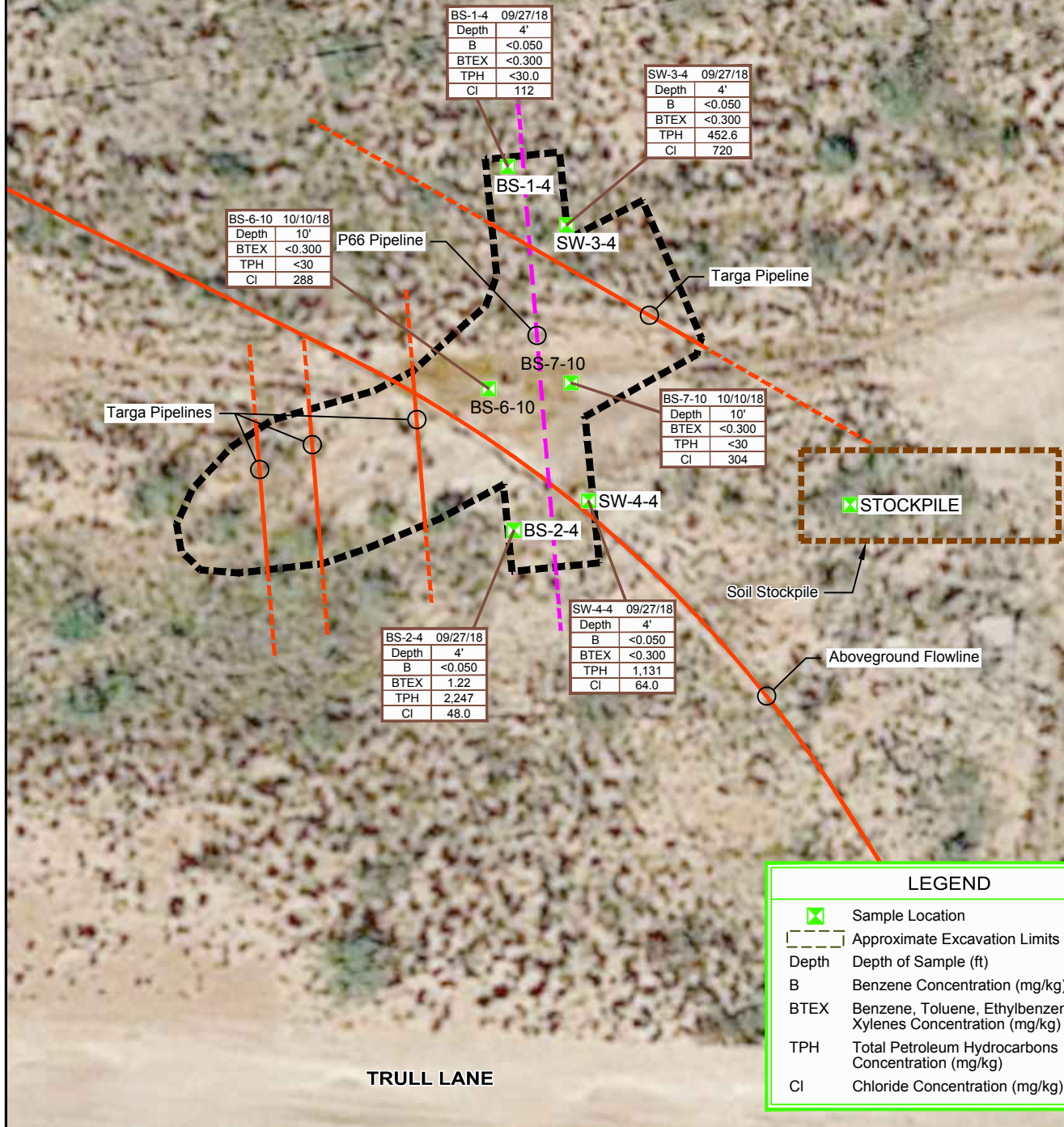
PHILLIPS 66 COMPANY
NM-16/BETTIS ROAD PIPELINE RELEASE
LEA COUNTY, NEW MEXICO

SITE AERIAL PHOTOGRAPH

11183047-00
Oct 26, 2018

FIGURE 1

Site Coordinates
Lat/Long 32.4029°, -103.1643°



Source: GOOGLE EARTH AERIAL IMAGE DATE NOVEMBER 2017

0 10 30ft

Coordinate System:
STATE PLANE -
NEW MEXICO EAST



PHILLIPS 66 COMPANY
NM-16/BETTIS ROAD PIPELINE RELEASE
LEA COUNTY, NEW MEXICO

SAMPLE LOCATION MAP

11183047-00
Oct 25, 2018

FIGURE 2

Table 1

P66 NM-16 Bettis Rd - Summary of Soil Analytical Data

Sample ID	Depth (feet)	Date	Benzene	Toluene	Ethyl-benzene	Xylenes	BTEX	TPH (GRO)	TPH (DRO)	TPH (ORO)	Total TPH	TPH Field Screen	Chloride
BS-1-4	4	9/17/2018	<0.050	<0.050	<0.050	<0.150	<0.300	<0.10	<0.10	<0.10	<0.30	168	112
BS-2-4	4	9/17/2018	<0.050	0.115	<0.050	1.1	1.22	123	1980	144	2247	84	48
SW-3-4	4	9/17/2018	<0.050	<0.050	<0.050	<0.150	<0.300	<0.10	411	41.6	452.6	162	720
SW-4-4	4	9/17/2018	<0.050	<0.050	<0.050	<0.150	<0.300	<50.0	889	242	1131	--	64
BS-6-8	8	10/10/2018	--	--	--	--	--	--	--	--	--	2698	--
BS-6-10	10	10/10/2018	<0.050	<0.050	<0.050	<0.150	<0.300	<0.10	<0.10	<0.10	<30	35	288
BS-7-10	10	10/10/2018	<0.050	<0.050	<0.050	<0.150	<0.300	<0.10	<0.10	<0.10	<30	0	304
NMOCD Table 1 Closure Limits			10	Total BTEX: 50				Total TPH: 2,500					10,000

Notes:

All sample results are in milligrams per kilogram

NMOCD = New Mexico Oil Conservation Division

Table 1 Closure Limits = In accordance with 19.15.29 Release Rule

BTEX = Benzene, Toluene, Ethylbenzene, Xylenes

TPH = Total Petroleum Hydrocarbons

GRO = Gasoline Range Organics

DRO = Diesel Range Organics-C10-C28

MRO = Oil Range Organics-C28-C35



Photo 1: Looking northwest. Exposed 3rd party P66 pipeline lowest of 3 pipelines in background



Photo 2: Surface flowline and repaired Targa pipeline overlying P66 crude pipeline. Rectangular excavated area in foreground not part of fresh crude impact excavation but rather to enable 40 ft P66 pipe joint replacement.



Photo 3: Trench beneath P66 crude line.

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

State of New Mexico
Energy Minerals and Natural
Resources Department

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

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

Incident ID	
District RP	
Facility ID	
Application ID	

Release Notification

Responsible Party

Responsible Party	Phillips 66	OGRID	
Contact Name	Aly Batt	Contact Telephone	832 7653651
Contact email	aly.h.batt@p66.com	Incident # (assigned by OCD)	
Contact mailing address	2331 Citywest Blvd (HQ N870-01) Houston, TX, 77042		

Location of Release Source

Latitude 32.40291 N Longitude -103.16432 W
(NAD 83 in decimal degrees to 5 decimal places)

Site Name		Site Type	pipeline
Date Release Discovered	9-4-2018	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 checked="" type="checkbox"/> Crude Oil	Volume Released (bbls)	25 bbls	Volume Recovered (bbls)	5 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

A line flyer noticed a skin on the ground.

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

Was this a major release as defined by 19.15.29.7(A) NMAC?

☒ Yes ☐ No

If YES, for what reason(s) does the responsible party consider this a major release?

•

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

an email was sent ~~to~~ to Ms Yu (OCD) on September 5, 2018.

Initial Response

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

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

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

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

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

Printed Name:

Aly Batt

Title:

Env specialist

Signature:



Date:

9/7/2018

email:

aly.h.batt@p66.com

Telephone:

832 7653651

OCD Only

Received by:

Date:



New Mexico Office of the State Engineer

Active & Inactive Points of Diversion

(with Ownership Information)

(acre ft per annum)										(R=POD has been replaced and no longer serves this file, C=the file is closed)		(quarters are 1=NW 2=NE 3=SW 4=SE) (quarters are smallest to largest)					(NAD83 UTM in meters)		
WR File Nbr	Sub basin	Use	Diversion	Owner	County	POD Number	Code	Grant	Source	q	q	q	4	Sec	Tws	Rng	X	Y	Distance
CP 00756	CP	DOL		3 CHARLIE BETTIS	LE	CP 00756			Shallow	2	2	4	09	22S	37E		672999	3586863*	<div></div> 457
CP 00871	CP	DOM		3 BARBARA TRULL	LE	CP 00871			Shallow		3		09	22S	37E		671902	3586541*	<div></div> 738
CP 00699	CP	DOM		3 MARTIN CARRASCO	LE	CP 00699			Shallow	1	1	1	15	22S	37E		673215	3586066*	<div></div> 770
CP 00674	CP	DOM		3 WARREN HUGHES	LE	CP 00674			Shallow		1	1	15	22S	37E		673316	3585967*	<div></div> 911
CP 00684	CP	MUL		3 WARREN HUGHES	LE	CP 00684			Shallow		1	1	15	22S	37E		673316	3585967*	<div></div> 911

Record Count: 5

UTMNAD83 Radius Search (in meters):

Easting (X): 672639.95 Northing (Y): 3586578.95 Radius: 1000

Sorted by: Distance

*UTM location was derived from PLSS - see Help

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

9/7/18 11:14 AM

ACTIVE & INACTIVE POINTS OF DIVERSION

Soil Sampling Field Screening Form

Site / Project Name: NM-16 Bettis Road

Project Number: 11181914

Date: 9/17 and 10/10/2018

Sample ID:	Date:	Depth:	PID:	PetroFlag:	Chlorides:
BS-1	9/17/2018	4		168	
BS-2	9/17/2018	4		84	
SW-3	9/17/2018	4		162	
BS-6	10/10/2018	10		35	
BS-7	10/10/2018	10		0	

NOTES:

September 27, 2018

JEFF WALKER

GHD SERVICES, INC.

6121 INDIAN SCHOOL RD, NE STE. 200

ALBUQUERQUE, NM 87110

RE: P66 NM16 BETTIS RD

Enclosed are the results of analyses for samples received by the laboratory on 09/17/18 17:20.

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/ga/lab_accred_certif.html.

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

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

Cardinal Laboratories is accredited through the State of New Mexico Environment Department for:

Method SM 9223-B	Total Coliform and E. coli (Colilert MMO-MUG)
Method EPA 524.2	Regulated VOCs and Total Trihalomethanes (TTHM)
Method EPA 552.2	Total Haloacetic Acids (HAA-5)

Accreditation applies to public drinking water matrices for State of Colorado and New Mexico.

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,



Celey D. Keene

Lab Director/Quality Manager

Analytical Results For:

GHD SERVICES, INC.
6121 INDIAN SCHOOL RD, NE STE. 200
ALBUQUERQUE NM, 87110

Project: P66 NM16 BETTIS RD
Project Number: 11183047-RS00
Project Manager: JEFF WALKER
Fax To:

Reported:
27-Sep-18 14:31

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BS - 1 - 4'	H802611-01	Soil	17-Sep-18 14:27	17-Sep-18 17:20
BS - 2 - 4'	H802611-02	Soil	17-Sep-18 14:15	17-Sep-18 17:20
SW - 3 - 4'	H802611-03	Soil	17-Sep-18 15:22	17-Sep-18 17:20
SW - 4 - 4'	H802611-04	Soil	17-Sep-18 15:31	17-Sep-18 17:20
S - 5 - 0'	H802611-05	Soil	17-Sep-18 15:00	17-Sep-18 17:20

Cardinal Laboratories

*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence or any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

GHD SERVICES, INC.
6121 INDIAN SCHOOL RD, NE STE. 200
ALBUQUERQUE NM, 87110

Project: P66 NM16 BETTIS RD
Project Number: 11183047-RS00
Project Manager: JEFF WALKER
Fax To:

Reported:
27-Sep-18 14:31

BS - 1 - 4' H802611-01 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories

Inorganic Compounds

Chloride	112		16.0	mg/kg	4	8091810	AC	18-Sep-18	4500-Cl-B	
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050		0.050	mg/kg	50	8091803	ms	18-Sep-18	8021B	
Toluene*	<0.050		0.050	mg/kg	50	8091803	ms	18-Sep-18	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	8091803	ms	18-Sep-18	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	8091803	ms	18-Sep-18	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	8091803	ms	18-Sep-18	8021B	

Surrogate: 4-Bromofluorobenzene (PID)			90.7 %		69.8-142	8091803	ms	18-Sep-18	8021B	
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Petroleum Hydrocarbons by GC FID

GRO C6-C10*	<10.0		10.0	mg/kg	1	8091804	MS	18-Sep-18	8015B	
DRO >C10-C28*	<10.0		10.0	mg/kg	1	8091804	MS	18-Sep-18	8015B	
EXT DRO >C28-C36	<10.0		10.0	mg/kg	1	8091804	MS	18-Sep-18	8015B	

Surrogate: 1-Chlorooctane			115 %		41-142	8091804	MS	18-Sep-18	8015B	
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Surrogate: 1-Chlorooctadecane			107 %		37.6-147	8091804	MS	18-Sep-18	8015B	
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Cardinal Laboratories

*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence or any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damage including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

GHD SERVICES, INC.
6121 INDIAN SCHOOL RD, NE STE. 200
ALBUQUERQUE NM, 87110

Project: P66 NM16 BETTIS RD
Project Number: 11183047-RS00
Project Manager: JEFF WALKER
Fax To:

Reported:
27-Sep-18 14:31

BS - 2 - 4'
H802611-02 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories

Inorganic Compounds

Chloride	48.0		16.0	mg/kg	4	8091810	AC	18-Sep-18	4500-Cl-B	
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050		0.050	mg/kg	50	8091803	ms	18-Sep-18	8021B	
Toluene*	0.115		0.050	mg/kg	50	8091803	ms	18-Sep-18	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	8091803	ms	18-Sep-18	8021B	
Total Xylenes*	1.10		0.150	mg/kg	50	8091803	ms	18-Sep-18	8021B	
Total BTEX	1.22		0.300	mg/kg	50	8091803	ms	18-Sep-18	8021B	

Surrogate: 4-Bromofluorobenzene (PID) 130 % 69.8-142 8091803 ms 18-Sep-18 8021B

Petroleum Hydrocarbons by GC FID

S-06

GRO C6-C10*	123		50.0	mg/kg	5	8091804	MS	18-Sep-18	8015B	
DRO >C10-C28*	1980		50.0	mg/kg	5	8091804	MS	18-Sep-18	8015B	
EXT DRO >C28-C36	144		50.0	mg/kg	5	8091804	MS	18-Sep-18	8015B	

Surrogate: 1-Chlorooctane 140 % 41-142 8091804 MS 18-Sep-18 8015B

Surrogate: 1-Chlorooctadecane 187 % 37.6-147 8091804 MS 18-Sep-18 8015B

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

GHD SERVICES, INC.
6121 INDIAN SCHOOL RD, NE STE. 200
ALBUQUERQUE NM, 87110

Project: P66 NM16 BETTIS RD
Project Number: 11183047-RS00
Project Manager: JEFF WALKER
Fax To:

Reported:
27-Sep-18 14:31

SW - 3 - 4' H802611-03 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories

Inorganic Compounds

Chloride	720		16.0	mg/kg	4	8091810	AC	18-Sep-18	4500-Cl-B	
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050		0.050	mg/kg	50	8091803	ms	18-Sep-18	8021B	
Toluene*	<0.050		0.050	mg/kg	50	8091803	ms	18-Sep-18	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	8091803	ms	18-Sep-18	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	8091803	ms	18-Sep-18	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	8091803	ms	18-Sep-18	8021B	

Surrogate: 4-Bromofluorobenzene (PID)			91.8 %		69.8-142	8091803	ms	18-Sep-18	8021B	
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Petroleum Hydrocarbons by GC FID

GRO C6-C10*	<10.0		10.0	mg/kg	1	8091804	MS	19-Sep-18	8015B	
DRO >C10-C28*	411		10.0	mg/kg	1	8091804	MS	19-Sep-18	8015B	
EXT DRO >C28-C36	41.6		10.0	mg/kg	1	8091804	MS	19-Sep-18	8015B	

Surrogate: 1-Chlorooctane			129 %		41-142	8091804	MS	19-Sep-18	8015B	
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Surrogate: 1-Chlorooctadecane			143 %		37.6-147	8091804	MS	19-Sep-18	8015B	
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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

GHD SERVICES, INC.
6121 INDIAN SCHOOL RD, NE STE. 200
ALBUQUERQUE NM, 87110

Project: P66 NM16 BETTIS RD
Project Number: 11183047-RS00
Project Manager: JEFF WALKER
Fax To:

Reported:
27-Sep-18 14:31

SW - 4 - 4'
H802611-04 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories

Inorganic Compounds

Chloride	64.0		16.0	mg/kg	4	8091810	AC	18-Sep-18	4500-Cl-B	
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Volatile Organic Compounds by EPA Method 8021

Benzene*	<0.050		0.050	mg/kg	50	8091803	ms	18-Sep-18	8021B	
Toluene*	<0.050		0.050	mg/kg	50	8091803	ms	18-Sep-18	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	8091803	ms	18-Sep-18	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	8091803	ms	18-Sep-18	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	8091803	ms	18-Sep-18	8021B	

Surrogate: 4-Bromofluorobenzene (PID) 91.1 % 69.8-142 8091803 ms 18-Sep-18 8021B

Petroleum Hydrocarbons by GC FID

S-06

GRO C6-C10*	<50.0		50.0	mg/kg	5	8091804	MS	19-Sep-18	8015B	
DRO >C10-C28*	889		50.0	mg/kg	5	8091804	MS	19-Sep-18	8015B	
EXT DRO >C28-C36	242		50.0	mg/kg	5	8091804	MS	19-Sep-18	8015B	

Surrogate: 1-Chlorooctane 129 % 41-142 8091804 MS 19-Sep-18 8015B

Surrogate: 1-Chlorooctadecane 165 % 37.6-147 8091804 MS 19-Sep-18 8015B

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

GHD SERVICES, INC.
6121 INDIAN SCHOOL RD, NE STE. 200
ALBUQUERQUE NM, 87110

Project: P66 NM16 BETTIS RD
Project Number: 11183047-RS00
Project Manager: JEFF WALKER
Fax To:

Reported:
27-Sep-18 14:31

S - 5 - 0' H802611-05 (Soil)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Cardinal Laboratories

TCLP Volatile Organic Compounds by GCMS

Benzene*	0.0252	0.0147	0.0500	mg/L	100	8092402	ms	24-Sep-18	1311/8260B	J
Surrogate: Dibromofluoromethane			106 %	92.9-119		8092402	ms	24-Sep-18	1311/8260B	
Surrogate: Toluene-d8			95.2 %	86-108		8092402	ms	24-Sep-18	1311/8260B	
Surrogate: 4-Bromofluorobenzene			95.3 %	81.7-121		8092402	ms	24-Sep-18	1311/8260B	

Petroleum Hydrocarbons by GC FID

S-06

GRO C6-C10*	3610		50.0	mg/kg	5	8091905	MS	20-Sep-18	8015B	QM-07
DRO >C10-C28*	19100		50.0	mg/kg	5	8091905	MS	20-Sep-18	8015B	QM-07
EXT DRO >C28-C36	3080		50.0	mg/kg	5	8091905	MS	20-Sep-18	8015B	
Surrogate: 1-Chlorooctane			342 %	41-142		8091905	MS	20-Sep-18	8015B	
Surrogate: 1-Chlorooctadecane			809 %	37.6-147		8091905	MS	20-Sep-18	8015B	

Green Analytical Laboratories

TCLP Metals by ICP (1311)

Arsenic	<0.500		0.500	mg/L	5	B809171	AES	25-Sep-18	EPA200.7/13 11	
Barium	0.651		0.250	mg/L	5	B809171	AES	25-Sep-18	EPA200.7/13 11	
Cadmium	<0.250		0.250	mg/L	5	B809171	AES	25-Sep-18	EPA200.7/13 11	
Chromium	<0.250		0.250	mg/L	5	B809171	AES	25-Sep-18	EPA200.7/13 11	
Lead	<0.500		0.500	mg/L	5	B809171	AES	25-Sep-18	EPA200.7/13 11	
Selenium	<0.500		0.500	mg/L	5	B809171	AES	25-Sep-18	EPA200.7/13 11	
Silver	<0.250		0.250	mg/L	5	B809171	AES	25-Sep-18	EPA200.7/13 11	

TCLP Mercury by CVAA

Mercury	<0.0002		0.0002	mg/L	1	B809172	AES	25-Sep-18	EPA245.1	
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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:GHD SERVICES, INC.
6121 INDIAN SCHOOL RD, NE STE. 200
ALBUQUERQUE NM, 87110Project: P66 NM16 BETTIS RD
Project Number: 11183047-RS00
Project Manager: JEFF WALKER
Fax To:Reported:
27-Sep-18 14:31**S - 5 - 0'****H802611-05 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

GHD SERVICES, INC.
6121 INDIAN SCHOOL RD, NE STE. 200
ALBUQUERQUE NM, 87110

Project: P66 NM16 BETTIS RD
Project Number: 11183047-RS00
Project Manager: JEFF WALKER
Fax To:

Reported:
27-Sep-18 14:31

Inorganic Compounds - Quality Control

Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Notes
Batch 8091810 - General Prep - Wet Chem									
Blank (8091810-BLK1)				Prepared & Analyzed: 18-Sep-18					
Chloride	ND	16.0	mg/kg						
LCS (8091810-BS1)				Prepared & Analyzed: 18-Sep-18					
Chloride	416	16.0	mg/kg	400		104	80-120		
LCS Dup (8091810-BSD1)				Prepared & Analyzed: 18-Sep-18					
Chloride	432	16.0	mg/kg	400		108	80-120	3.77	20

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

GHD SERVICES, INC.
6121 INDIAN SCHOOL RD, NE STE. 200
ALBUQUERQUE NM, 87110

Project: P66 NM16 BETTIS RD
Project Number: 11183047-RS00
Project Manager: JEFF WALKER
Fax To:

Reported:
27-Sep-18 14:31

TCLP Volatile Organic Compounds by GCMS - Quality Control

Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 8092402 - Volatiles

Blank (8092402-BLK1)

Prepared & Analyzed: 24-Sep-18

Benzene	ND	0.000500	mg/L							
Surrogate: Dibromofluoromethane	0.0106		mg/L	0.0100		106	92.9-119			
Surrogate: Toluene-d8	0.00984		mg/L	0.0100		98.4	86-108			
Surrogate: 4-Bromofluorobenzene	0.00969		mg/L	0.0100		96.9	81.7-121			

LCS (8092402-BS1)

Prepared & Analyzed: 24-Sep-18

Benzene	0.0197	0.000500	mg/L	0.0200		98.6	80.5-129			
Surrogate: Dibromofluoromethane	0.0108		mg/L	0.0100		108	92.9-119			
Surrogate: Toluene-d8	0.00957		mg/L	0.0100		95.7	86-108			
Surrogate: 4-Bromofluorobenzene	0.0101		mg/L	0.0100		101	81.7-121			

LCS Dup (8092402-BSD1)

Prepared & Analyzed: 24-Sep-18

Benzene	0.0206	0.000500	mg/L	0.0200		103	80.5-129	4.27	6.66	
Surrogate: Dibromofluoromethane	0.0108		mg/L	0.0100		108	92.9-119			
Surrogate: Toluene-d8	0.00989		mg/L	0.0100		98.9	86-108			
Surrogate: 4-Bromofluorobenzene	0.00994		mg/L	0.0100		99.4	81.7-121			

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

GHD SERVICES, INC.
6121 INDIAN SCHOOL RD, NE STE. 200
ALBUQUERQUE NM, 87110

Project: P66 NM16 BETTIS RD
Project Number: 11183047-RS00
Project Manager: JEFF WALKER
Fax To:

Reported:
27-Sep-18 14:31

Volatile Organic Compounds by EPA Method 8021 - Quality Control

Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 8091803 - Volatiles

Blank (8091803-BLK1)

Prepared & Analyzed: 18-Sep-18

Benzene	ND	0.050	mg/kg							
Toluene	ND	0.050	mg/kg							
Ethylbenzene	ND	0.050	mg/kg							
Total Xylenes	ND	0.150	mg/kg							
Total BTEX	ND	0.300	mg/kg							
Surrogate: 4-Bromofluorobenzene (PID)	0.0895		mg/kg	0.100		89.5	69.8-142			

LCS (8091803-BS1)

Prepared & Analyzed: 18-Sep-18

Benzene	2.03	0.050	mg/kg	2.00		101	74.5-124			
Toluene	1.97	0.050	mg/kg	2.00		98.3	78.8-122			
Ethylbenzene	1.96	0.050	mg/kg	2.00		97.9	78.6-122			
Total Xylenes	5.95	0.150	mg/kg	6.00		99.1	79.7-123			
Surrogate: 4-Bromofluorobenzene (PID)	0.0885		mg/kg	0.100		88.5	69.8-142			

LCS Dup (8091803-BSD1)

Prepared & Analyzed: 18-Sep-18

Benzene	2.08	0.050	mg/kg	2.00		104	74.5-124	2.80	15.2	
Toluene	2.01	0.050	mg/kg	2.00		100	78.8-122	2.01	15.1	
Ethylbenzene	2.00	0.050	mg/kg	2.00		100	78.6-122	2.26	15.4	
Total Xylenes	6.10	0.150	mg/kg	6.00		102	79.7-123	2.52	15.2	
Surrogate: 4-Bromofluorobenzene (PID)	0.0888		mg/kg	0.100		88.8	69.8-142			

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

GHD SERVICES, INC.
6121 INDIAN SCHOOL RD, NE STE. 200
ALBUQUERQUE NM, 87110

Project: P66 NM16 BETTIS RD
Project Number: 11183047-RS00
Project Manager: JEFF WALKER
Fax To:

Reported:
27-Sep-18 14:31

Petroleum Hydrocarbons by GC FID - Quality Control

Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 8091804 - General Prep - Organics

Blank (8091804-BLK1)

Prepared & Analyzed: 18-Sep-18

GRO C6-C10	ND	10.0	mg/kg							
DRO >C10-C28	ND	10.0	mg/kg							
EXT DRO >C28-C36	ND	10.0	mg/kg							
Total TPH C6-C28	ND	10.0	mg/kg							
Surrogate: 1-Chlorooctane	66.8		mg/kg	50.0		134	41-142			
Surrogate: 1-Chlorooctadecane	66.5		mg/kg	50.0		133	37.6-147			

LCS (8091804-BS1)

Prepared & Analyzed: 18-Sep-18

GRO C6-C10	216	10.0	mg/kg	200		108	76.5-133			
DRO >C10-C28	225	10.0	mg/kg	200		113	72.9-138			
Total TPH C6-C28	441	10.0	mg/kg	400		110	78-132			
Surrogate: 1-Chlorooctane	68.9		mg/kg	50.0		138	41-142			
Surrogate: 1-Chlorooctadecane	69.3		mg/kg	50.0		139	37.6-147			

LCS Dup (8091804-BSD1)

Prepared & Analyzed: 18-Sep-18

GRO C6-C10	220	10.0	mg/kg	200		110	76.5-133	2.10	20.6	
DRO >C10-C28	217	10.0	mg/kg	200		108	72.9-138	3.75	20.6	
Total TPH C6-C28	437	10.0	mg/kg	400		109	78-132	0.847	18	
Surrogate: 1-Chlorooctane	69.8		mg/kg	50.0		140	41-142			
Surrogate: 1-Chlorooctadecane	69.5		mg/kg	50.0		139	37.6-147			

Batch 8091905 - General Prep - Organics

Blank (8091905-BLK1)

Prepared & Analyzed: 19-Sep-18

GRO C6-C10	ND	10.0	mg/kg							
DRO >C10-C28	ND	10.0	mg/kg							
EXT DRO >C28-C36	ND	10.0	mg/kg							
Total TPH C6-C28	ND	10.0	mg/kg							
Surrogate: 1-Chlorooctane	46.4		mg/kg	50.0		92.7	41-142			
Surrogate: 1-Chlorooctadecane	48.0		mg/kg	50.0		96.0	37.6-147			

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

GHD SERVICES, INC.
6121 INDIAN SCHOOL RD, NE STE. 200
ALBUQUERQUE NM, 87110

Project: P66 NM16 BETTIS RD
Project Number: 11183047-RS00
Project Manager: JEFF WALKER
Fax To:

Reported:
27-Sep-18 14:31

Petroleum Hydrocarbons by GC FID - Quality Control

Cardinal Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch 8091905 - General Prep - Organics

LCS (8091905-BS1)

Prepared & Analyzed: 19-Sep-18

GRO C6-C10	221	10.0	mg/kg	200		110	76.5-133			
DRO >C10-C28	199	10.0	mg/kg	200		99.4	72.9-138			
Total TPH C6-C28	420	10.0	mg/kg	400		105	78-132			
Surrogate: 1-Chlorooctane	47.4		mg/kg	50.0		94.9	41-142			
Surrogate: 1-Chlorooctadecane	49.4		mg/kg	50.0		98.8	37.6-147			

LCS Dup (8091905-BS1)

Prepared & Analyzed: 19-Sep-18

GRO C6-C10	227	10.0	mg/kg	200		113	76.5-133	2.59	20.6	
DRO >C10-C28	203	10.0	mg/kg	200		102	72.9-138	2.29	20.6	
Total TPH C6-C28	430	10.0	mg/kg	400		108	78-132	2.45	18	
Surrogate: 1-Chlorooctane	47.7		mg/kg	50.0		95.4	41-142			
Surrogate: 1-Chlorooctadecane	49.5		mg/kg	50.0		99.0	37.6-147			

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Analytical Results For:

GHD SERVICES, INC.
6121 INDIAN SCHOOL RD, NE STE. 200
ALBUQUERQUE NM, 87110

Project: P66 NM16 BETTIS RD
Project Number: 11183047-RS00
Project Manager: JEFF WALKER
Fax To:

Reported:
27-Sep-18 14:31

TCLP Metals by ICP (1311) - Quality Control

Green Analytical Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B809171 - EPA 1311

Blank (B809171-BLK1)

Prepared: 24-Sep-18 Analyzed: 25-Sep-18

Chromium	ND	0.250	mg/L							
Silver	ND	0.250	mg/L							
Barium	ND	0.250	mg/L							
Selenium	ND	0.500	mg/L							
Lead	ND	0.500	mg/L							
Cadmium	ND	0.250	mg/L							
Arsenic	ND	0.500	mg/L							

LCS (B809171-BS1)

Prepared: 24-Sep-18 Analyzed: 25-Sep-18

Silver	0.488	0.250	mg/L	0.500		97.6	85-115			
Selenium	39.9	0.500	mg/L	40.0		99.8	85-115			
Lead	9.73	0.500	mg/L	10.0		97.3	85-115			
Chromium	10.1	0.250	mg/L	10.0		101	85-115			
Arsenic	20.9	0.500	mg/L	20.0		105	85-115			
Cadmium	9.89	0.250	mg/L	10.0		98.9	85-115			
Barium	9.81	0.250	mg/L	10.0		98.1	85-115			

LCS Dup (B809171-BSD1)

Prepared: 24-Sep-18 Analyzed: 25-Sep-18

Arsenic	20.8	0.500	mg/L	20.0		104	85-115	0.649	20	
Lead	9.43	0.500	mg/L	10.0		94.3	85-115	3.07	20	
Selenium	38.6	0.500	mg/L	40.0		96.6	85-115	3.31	20	
Cadmium	9.69	0.250	mg/L	10.0		96.9	85-115	2.01	20	
Silver	0.487	0.250	mg/L	0.500		97.4	85-115	0.239	20	
Barium	9.67	0.250	mg/L	10.0		96.7	85-115	1.49	20	
Chromium	9.88	0.250	mg/L	10.0		98.8	85-115	1.79	20	

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 GHD SERVICES, INC.
 6121 INDIAN SCHOOL RD, NE STE. 200
 ALBUQUERQUE NM, 87110

 Project: P66 NM16 BETTIS RD
 Project Number: 11183047-RS00
 Project Manager: JEFF WALKER
 Fax To:

 Reported:
 27-Sep-18 14:31

TCLP Mercury by CVAA - Quality Control
Green Analytical Laboratories

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Notes
Batch B809172 - EPA 245.1/7470									
Blank (B809172-BLK1)				Prepared: 24-Sep-18 Analyzed: 25-Sep-18					
Mercury	ND	0.0002	mg/L						
LCS (B809172-BS1)				Prepared: 24-Sep-18 Analyzed: 25-Sep-18					
Mercury	0.0054	0.0002	mg/L	0.00500		109 85-115			
LCS Dup (B809172-BSD1)				Prepared: 24-Sep-18 Analyzed: 25-Sep-18					
Mercury	0.0053	0.0002	mg/L	0.00500		106 85-115	2.40	20	

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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.
QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag).
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

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Celey D. Keene, Lab Director/Quality Manager

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

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October 16, 2018

JEFF WALKER

GHD SERVICES, INC.

6121 INDIAN SCHOOL RD, NE STE. 200

ALBUQUERQUE, NM 87110

RE: P66 NM16

Enclosed are the results of analyses for samples received by the laboratory on 10/10/18 16:42.

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,



Celey D. Keene

Lab Director/Quality Manager

Analytical Results For:

GHD SERVICES, INC.
JEFF WALKER
6121 INDIAN SCHOOL RD, NE STE. 200
ALBUQUERQUE NM, 87110
Fax To:

Received: 10/10/2018
Reported: 10/16/2018
Project Name: P66 NM16
Project Number: 11183047
Project Location: LEA COUNTY, NM

Sampling Date: 10/10/2018
Sampling Type: Soil
Sampling Condition: ** (See Notes)
Sample Received By: Tamara Oldaker

Sample ID: BS - 6 - 10' (H802893-01)

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	10/11/2018	ND	2.08	104	2.00	0.394	
Toluene*	<0.050	0.050	10/11/2018	ND	2.05	103	2.00	0.223	
Ethylbenzene*	<0.050	0.050	10/11/2018	ND	2.08	104	2.00	0.0577	
Total Xylenes*	<0.150	0.150	10/11/2018	ND	5.99	99.8	6.00	0.0492	
Total BTEX	<0.300	0.300	10/11/2018	ND					

Surrogate: 4-Bromofluorobenzene (PID) 111 % 69.8-142

Chloride, SM4500Cl-B		mg/kg		Analyzed By: HM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	288	16.0	10/11/2018	ND	448	112	400	3.64		

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	10/15/2018	ND	214	107	200	10.3	
DRO >C10-C28*	<10.0	10.0	10/15/2018	ND	212	106	200	8.11	
EXT DRO >C28-C36	<10.0	10.0	10/15/2018	ND					

Surrogate: 1-Chlorooctane 87.9 % 41-142

Surrogate: 1-Chlorooctadecane 82.3 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 GHD SERVICES, INC.
 JEFF WALKER
 6121 INDIAN SCHOOL RD, NE STE. 200
 ALBUQUERQUE NM, 87110
 Fax To:

 Received: 10/10/2018
 Reported: 10/16/2018
 Project Name: P66 NM16
 Project Number: 11183047
 Project Location: LEA COUNTY, NM

 Sampling Date: 10/10/2018
 Sampling Type: Soil
 Sampling Condition: ** (See Notes)
 Sample Received By: Tamara Oldaker

Sample ID: BS - 7 - 10' (H802893-02)

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	10/11/2018	ND	2.08	104	2.00	0.394	
Toluene*	<0.050	0.050	10/11/2018	ND	2.05	103	2.00	0.223	
Ethylbenzene*	<0.050	0.050	10/11/2018	ND	2.08	104	2.00	0.0577	
Total Xylenes*	<0.150	0.150	10/11/2018	ND	5.99	99.8	6.00	0.0492	
Total BTEx	<0.300	0.300	10/11/2018	ND					

Surrogate: 4-Bromofluorobenzene (PID) 106 % 69.8-142

Chloride, SM4500Cl-B		mg/kg		Analyzed By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	304	16.0	10/11/2018	ND	448	112	400	3.64	

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	10/11/2018	ND	214	107	200	10.3	
DRO >C10-C28*	<10.0	10.0	10/11/2018	ND	212	106	200	8.11	
EXT DRO >C28-C36	<10.0	10.0	10/11/2018	ND					

Surrogate: 1-Chlorooctane 92.9 % 41-142

Surrogate: 1-Chlorooctadecane 89.0 % 37.6-147

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* = Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Notes and Definitions

QR-03	The RPD value for the sample duplicate or MS/MSD was outside of QC acceptance limits due to matrix interference. QC batch accepted based on LCS and/or LCSD recovery and/or RPD values.
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

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