PRELIMINARY RESULTS

August 21, 2018 Reference No.11181165

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 and Remediation Summary Report
Phillips66 McGowan Station Crude Release
NMOCD #1RP-5152
Unit Letter J, S35, T17S, R34E
Lea County, New Mexico

On behalf of Phillips 66 Pipeline, LLC (Phillips66), GHD Services Inc. (GHD) is providing this Site Assessment and Remediation Summary letter report for the above-referenced site. The McGowan South State site (hereafter referred to as the "Site") is located on State of New Mexico land within Unit Letter J, Section 35, Township 17S, and Range 34E in Lea County, New Mexico. Geographical coordinates for the Site are 32.7890220° North, 103.5301620° West (**Figure 1**). The Site consists of a pipeline pumping station including a sump and other associated equipment (**Figure 2**).

1. Introduction

Site assessment and concurrent remediation (removal of soils/rock) were performed in order to address impacts from an August 4, 2018 release of approximately 93 barrels (bbls) of crude oil from a crude gathering pipeline system. A drain valve on a sump that collects oil-drains from piping connected to the pipeline system was inadvertently left open, causing the release (see Photo 1). No liquids were recovered. Notification of the release via Form C-141 (Attachment 1) was provided to the New Mexico Oil Conservation Division (NMOCD) on August 8, 2018 and notification made to surface owner, the New Mexico State Land Office (NMSLO), on August 8, 2018. Remediation case number 1RP-5152 was assigned to the Site.

2. Regulatory Framework

In accordance with direction received from Ms. Olivia Yu, NMOCD District 1, in her August 9, 2018 email and subsequent telephone conversation with the GHD Site geologist on August 10, 2018, the Site assessment and remediation work falls under the newly adopted release regulations 19.15.29 NMAC. A depth to water beneath the Site of approximately 120 feet below ground surface (ft bgs) was determined by a well record search on the New Mexico Office of the State Engineer's (OSE) online database (See Attachment 2). According to the OSE database, there are nine wells or water sources within ½ mile of the

site. There is no *significant watercourse* as defined in 19.15.17.7 NMAC within ½ mile of the Site. Based on a >100 foot depth to water beneath the Site, as per Table 1 of 19.15.29 NMAC, closure criteria for chloride are 600 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 g/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. GHD Assessment and Remediation Activities

3.1 Assessment and Remediation

Phillips 66 remediation crews and GHD field personnel were on Site August 6, 2018 to begin removing oil stained soils and assess lateral and vertical extent. The sump area was excavated by hand because of the concentration of subsurface piping and equipment (see Photo 2). Soils were excavated in this area to the top of the below grade sump, equal to a depth of approximately 4 ft bgs. Soils were also excavated laterally in this area to an approximate distance of 12 to 15 ft from sump centerline.

The crude oil release followed the surface gradient in a northerly direction from the sump, stopping at the access road located to the north, approximately 240 feet from the release point (see Photo 3). Six to twelve inches of stained surface soils were removed before a hard caliche layer (cemented calcium carbonate) was encountered. The caliche was impenetrable to trackhoe teeth and a hydraulic rock hammer was therefore employed to break up oil stained caliche.

The excavation of stained soils/rock proceeded north from the release location along the path of the liquid migration observed shortly after the release. Soil/rock removal eastward, beyond the present limits of the excavation, was not possible due to the existence of buried high pressure lines. Phillips66 potholed several locations (see Fig. 2) along the eastern edge to make certain earthmoving equipment did not make contact with the buried lines. Only some "fingers" of staining were visible in the potholes, hydroexcavated to approximately 4 ft bgs (Photo 4), and this pipeline was observed to be essentially the eastern extent of soil impact from the crude release.

Similarly, at the north end of the release footprint, the gravel access road apparently served to halt migration any further north (Photo 5). Approximately 1 ft of the roadway's southern side was excavated until no staining was observed. A laboratory confirmation sample was also collected from the sidewall of the roadway at the excavation's northern edge (see next section for explanation of confirmation sampling).

Periodically during soil/rock removal, samples of bottom material, typically of rock powder, were collected and field screened for total petroleum hydrocarbons (TPH) using a Petroflag® Test Kit. Field screening was used to guide the vertical extent of rock removal. The lateral and vertical extents of excavation were guided by structural limitations (piping/equipment near sump/release point and high pressure pipelines to east), visible staining/olfactory indications and field screening to below 2,500 mg/kg (ppm) as per Table 1 of 19.15.29 NMAC. Field screening results are presented as Attachment 3.

The current excavation, as generally depicted on Figure 2, has dimensions of approximately 260 ft x 30 ft x 4 ft deep. Approximately 1,100 cubic yards (cy) of excavated soil/rock are currently staged on Site in plastic-lined roll off bins and on plastic-lined and bermed stockpiles. Upon notification of Site closure/no further action by NMOCD and NMSLO, Phillips 66 will haul this material away for off Site disposal in a licensed landfarm facility.

3.2 Confirmation Sampling

Confirmation soil samples of excavation sidewall and bottom materials were collected based on a sampling plan described to GHD by NMOCD in a telephone conversation on August 10, 2018. Three excavation bottom samples and seven sidewall soil/rock samples were collected (see Fig. 2) and submitted to Pace Laboratories of Lenexa, KS (Pace) for analyses of BTEX by EPA Method 8260; for GRO, DRO and MRO (gasoline range, diesel range and motor oil range organics-TPH) by EPA Method 8015 and for chloride by EPA Method 300. The sump area was treated as its own rectangular excavation as prescribed by NMOCD and sidewall and bottom samples were collected and submitted to Pace BTEX, TPH and chlorides as described above. The north wall of the sump area, towards the pipeline pump, was

inaccessible because of excessive piping. Some of that area was hand dug, but a soil sample was not collected there.

3.3 Sample Results

Chloride concentrations were below the Table 1 clean up level of 600 mg/kg for all but one tested sample. Sidewall sample SW6 had a concentration of 140 mg/kg, below the Table 1 clean up level for chloride. In the excavated sump area, BTEX constituents were detected in all samples (east, south, West walls wand bottom) except the east wall. Total BTEX in these samples did not exceed the Table 1 clean up level of 50 mg/kg however. Total TPH in the sump area ranged from 79.3 mg/kg (east wall) to 14,966 mg/kg (west wall). The west wall sample and sump bottom sample (2,531 mg/kg) were in excess of the 2,500 mg/kg clean up level. This area has been mostly excavated by hand digging and further digging

In the larger portion of the excavation, BTEX constituents were detected in three samples- SW3, SW6 and the north bottom samples (Bottom N) ranging in concentration for total BTEX of 0.0965 mg/kg (Bottom N) to 817.7 mg/kg (SW3). The SW3 sidewall sample (east wall-see Figure 2) exceeds the total BTEX clean up level of 50 mg/kg. The east wall of the larger excavation cannot be excavated any further due to the buried high pressure lines in this direction.

Only one sample, SW2, located on the north end of the excavation, on the access road (see Figure 2) detected no TPH concentrations. Other total TPH results ranged from 68.6 mg/kg (SW7) to 37,300 (SW3). Two samples, SW3 (37,300 mg/kg) and SW6 (4,207 mg/kg) exceed the Table 1 clean up level of 2,500 mg/kg. Soil laboratory analytical reports are included as Attachment 4 and summarized on Table 1 and Figure 2.

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 93 bbl of crude oil occurred at the Site on August 4, 2018;
- Approximately 1,100 cy of impacted soil/rock were excavated and are stockpiled on site awaiting disposition; the immediate area around the sump/release point has been hand dug to the extent practicable considering piping and equipment;
- Seven sidewall and three bottom confirmation samples were collected from the excavation and three sidewall and one bottom sample were collected from the sump area. Collected samples were individual grab samples and were tested for BTEX constituents, full range TPH and chloride;
- A sidewall sample SW3 collected on the east wall of the excavation exceeded the Table 1 cleanup value of 50 mg/kg BTEX and 2,500 kg/mg total TPH, however, further excavation beyond present efforts is impossible due to high pressure lines next to excavation;

- Sidewall sample SW6 exceed the Table 1 cleanup value of 2,500 kg/mg total TPH. Additional excavation westward from this sample location is warranted to delineate impacts and remediate to below 2,500 mg/kg total TPH;
- Sump west wall sample exceeded the Table 1 cleanup value of 2,500 kg/mg total TPH. Additional hand excavation of the south wall has been conducted since this sample was collected, however, further excavation in this area is not practicable considering piping and equipment.

Based on the results of field and laboratory soil sampling and structural conditions at the Site, GHD proposes the following:

- P66 requests approval to re-sample the SW6 sidewall area confirmation sample via 5-point composite sample and submittal of this re-sample for laboratory analysis of total TPH;
- In accordance with 19.15.29.12.C.(2), request is made to defer remediation and restoration of the eastern boundary of the excavation due to buried pipelines directly adjacent to excavation and deferral of further remediation and restoration is also requested of the sump area due to impinging piping and equipment.

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

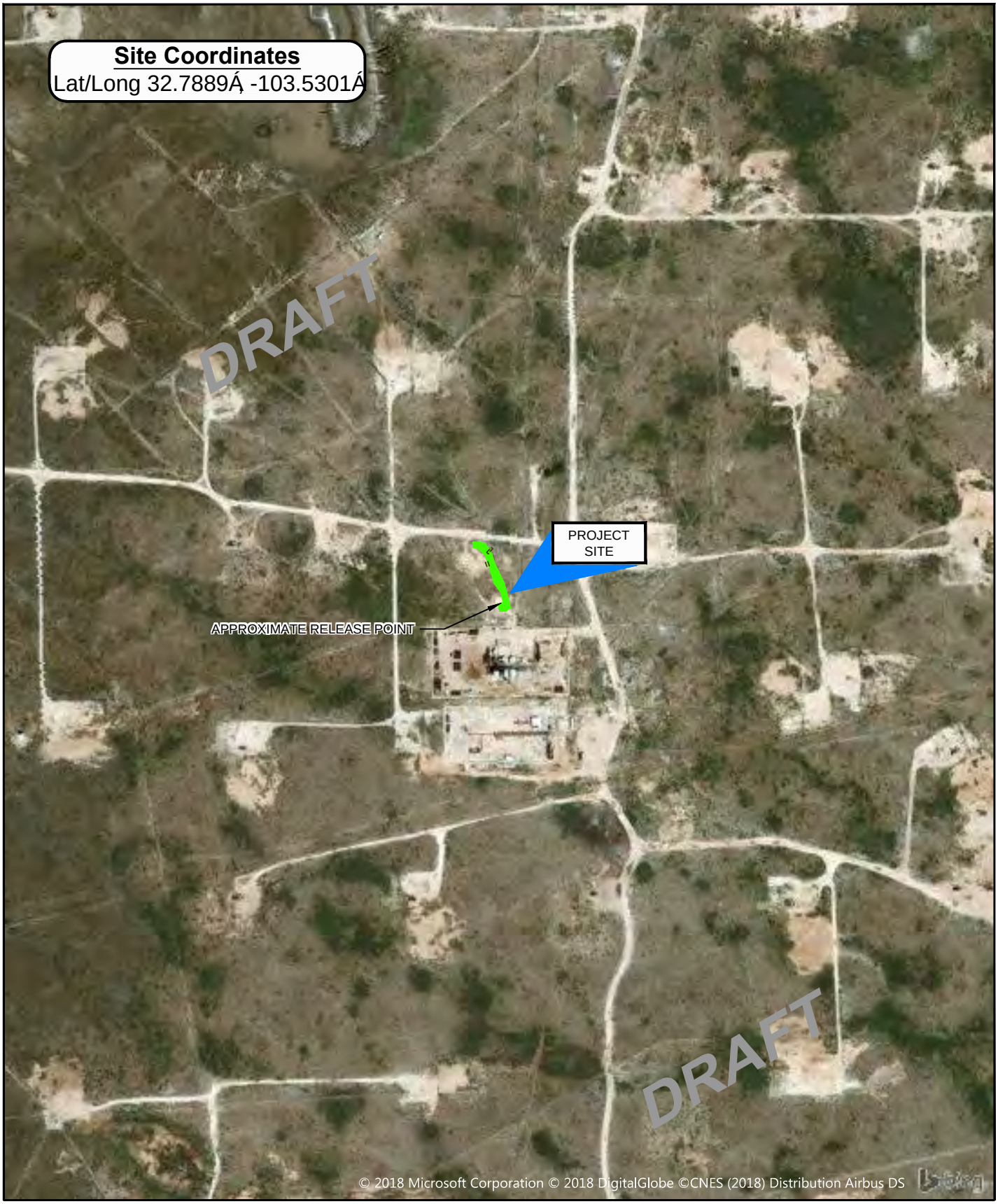
Jeff Walker
Geologist

Christina Ruby
Senior Project Manager

jw/CR/1

Encl. Figure 1
Figure 2
Table 1
Photolog
Attachment 1 – Form C-141
Attachment 2 – OSE Well Report
Attachment 3 – Field Screening Summary
Attachment 4 – Pace Laboratory Report

cc: Clint Gill, P66 Environmental Director Midstream



Source: MICROSOFT CORPORATION AND AFFILIATED DATA PROVIDERS

0 200 500ft

Coordinate System:
STATE PLANE -
NEW MEXICO EAST

N

GHD

PHILLIPS 66
MCGOWAN STATION CRUDE OIL RELEASE
BUCKEYE, LEA COUNTY, NEW MEXICO

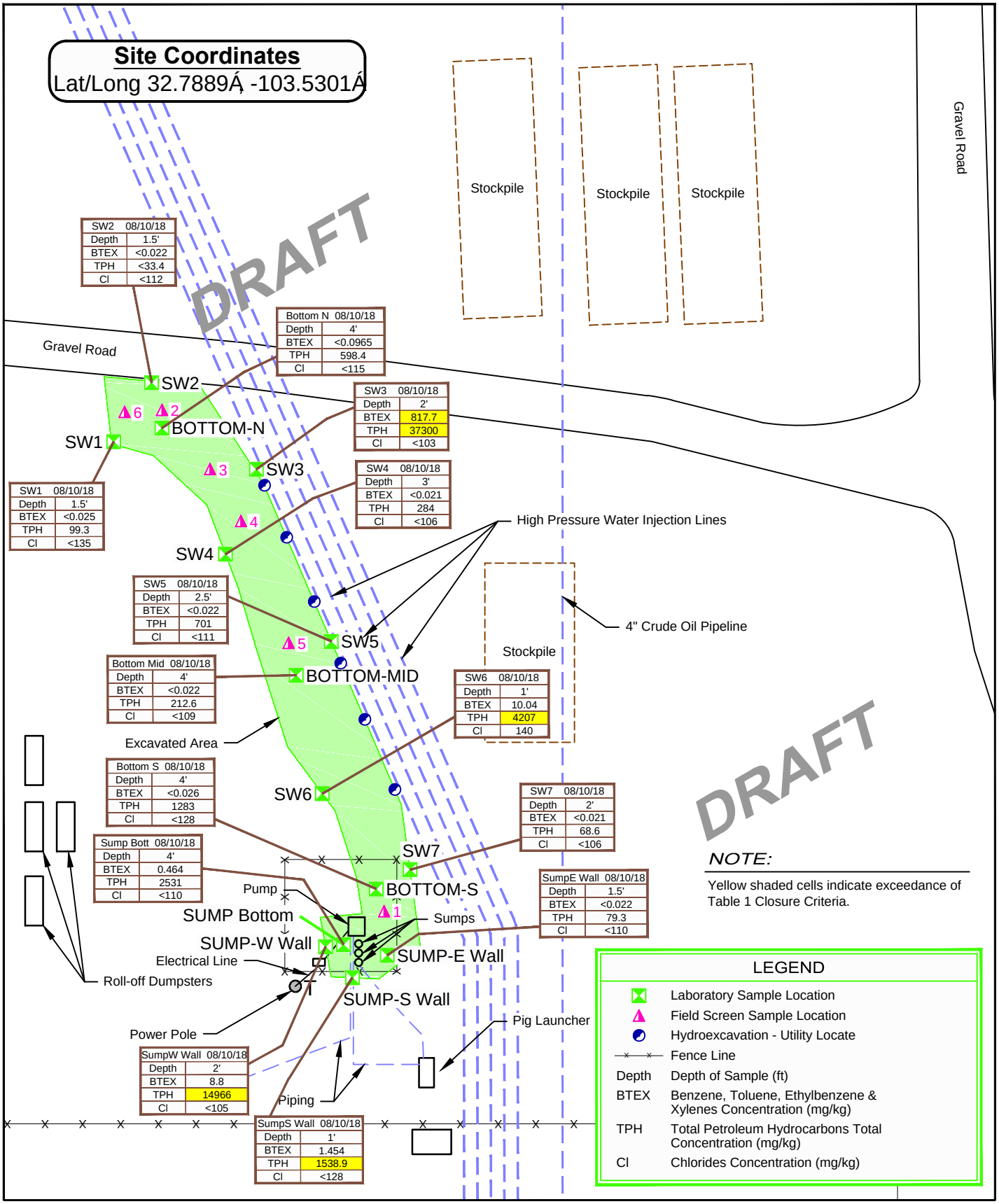
11181165-00

Aug 13, 2018

SITE AERIAL PHOTOGRAPH

FIGURE 2

CAD File: I:\CAD\Files\Eight Digit Job Numbers\1118----\11181165-P66_Buckeye NM\11181165-00(000)GN-DL001.dwg



0 20 60ft

Coordinate System:
STATE PLANE -
NEW MEXICO EAST

PHILLIPS 66
MCGOWAN STATION CRUDE OIL RELEASE
BUCKEYE, LEA COUNTY, NEW MEXICO

SAMPLE LOCATION AND ANALYTICAL RESULTS MAP

11181165-00

Aug 17, 2018

FIGURE 3

CAD File: I:\CAD\Files\Eight Digit Job Numbers\1118----\11181165-P66_Buckeye NM\11181165-00(000)GN-DL001.dwg

Table 1

McGowan South State - Summary of Soil Analytical Data

Sample ID	Depth (feet)	Date	Benzene	Toluene	Ethyl-benzene	Xylenes	BTEX	TPH (GRO)	TPH (DRO)	TPH (ORO)	Total TPH	Chloride
S-11181165-081018-JWSW1	1.5	8/10/2018	<0.0062	<0.0062	<0.0062	<0.0062	<0.025	<12.4	73.7	25.6	99.3	<135
S-11181165-081018-JWSW2	1.5	8/10/2018	<0.0056	<0.0056	<0.0056	<0.0056	<0.022	<11.2	<11.1	<11.1	<33.4	<112
S-11181165-081018-JW-SW3	2	8/10/2018	8.7	241	258	310	**817.7**	5980	23700	7620	**37300**	<103
S-11181165-081018-JW-SW4	3	8/10/2018	<0.0052	<0.0052	<0.0052	<0.0052	<0.021	<10.6	219	65	284	<106
S-11181165-081018-JW-SW5	2.5	8/10/2018	<0.0056	<0.0056	<0.0056	<0.0056	<0.022	<11.1	538	163	701	<111
S-11181165-081018-JW-SW6	1	8/10/2018	0.0201	1.5	3.45	5.07	10.04	552	3010	645	**4207**	140
S-11181165-081018-JW-SW7	2	8/10/2018	<0.0053	<0.0053	<0.0053	<0.0053	<0.021	<10.6	46.5	22.1	68.6	<106
S-11181165-081018-JW-Bottom N	4	8/10/2018	<0.0057	0.0066	0.0337	0.0562	0.0965	12.4	477	109	598.4	<115
S-11181165-081018-JW-Bottom Mid	4	8/10/2018	<0.0054	<0.0054	<0.0054	<0.0054	<0.022	<10.9	163	49.6	212.6	<109
S-11181165-081018-JW-Bottom S	4	8/10/2018	<0.0064	<0.0064	<0.0064	<0.0064	<0.026	<12.9	1030	253	1283	<128
S-11181165-081018-JW-SumpSWall	1	8/10/2018	0.0067	0.495	0.25	0.702	1.454	36.9	1180	322	1538.9	<128
S-11181165-081018-JW-SumpEWall	1.5	8/10/2018	<0.0055	<0.0055	<0.0055	<0.0055	<0.022	<11.0	46.7	32.6	79.3	<110
S-11181165-081018-JW-SumpWWall	2	8/10/2018	0.0205	0.219	2.69	5.87	8.8	316	10900	3750	**14966**	<105
S-11181165-081018-JW-SumpBott	4	8/10/2018	<0.0055	0.0098	0.141	0.313	0.464	254	1660	617	**2531**	<110
NMOCD Table 1 Closure Limits			**10**	**Total BTEX: 50**				**Total TPH: 2,500**				**600**

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 F
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: Crude release at pipeline pumping unit. Looking North. August 4, 2018.

Photo 2: Pumping unit/sump excavation and lateral delineation to east and north. August 10, 2018.

Photo 3: Flow of oil north from release point at sump in background left of pickup trucks. Photo looking south, from access road and northern extent of surface release. August 4, 2018.

Photo 4: Pipeline potholes east of excavation. Photo looking South towards sump/release point. August 10, 2018.

Photo 5: North end of release migration/excavation at north access road. Brown layer is soil. Looking north. August 10, 2018.

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 April 3, 2017

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: Phillips 66 Pipeline, LLC	Contact: Clint Gill
Address: 2331 Citywest Blvd, N870-05 Houston, TX 77042	Telephone No. (832) 765-1495
Facility Name: McGowan South State	Facility Type: Pipeline pump site

Surface Owner: To be determined	Mineral Owner: NA	API No. NA

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County

Latitude 32.7890220 **Longitude** -103.5301620 NAD83

NATURE OF RELEASE

Type of Release: Crude Oil	Volume of Release: 93 bbls	Volume Recovered: 0 bbls liquid; estimate 1,000 cu yds of impacted soil
Source of Release: Sump Overfill	Date and Hour of Occurrence August 4, 2018 @ 8:46 am	Date and Hour of Discovery August 4, 2018 @ 9:46 am
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? Nicole with NMED (505) 827-9329	
By Whom? Aly Batt, Environmental Specialist	Date and Hour: August 4, 2018 at 6:15 pm	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse. N/A	

If a Watercourse was Impacted, Describe Fully.* Not Applicable

Describe Cause of Problem and Remedial Action Taken.*
Response and cleanup efforts are still underway. An investigation will be performed after the spill response is complete. Information will be provided in the subsequent report.

Describe Area Affected and Cleanup Action Taken.*

Soil and rock within and adjacent to the facility. An estimated total surface area of impacted soil is around 7,200 sq ft. We have excavated to an average depth of 10" below surface until we encountered a rock layer. Several locations on the boundaries of the impacted area have been excavated to below the rock. To date, we have not encountered oil impacted soil below the rock layer. Today (Aug. 8th) additional excavations are planned within the rock layer until we do not observe significant oil impacted soil/rock. Near the sump we have excavated to depth of around 3 ft below surface. Additional details will be provided with the final report.

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 Approved by Environmental Specialist:	
Printed Name: D. C. (Clint) Gill, Jr		
Title: Environmental Director	Approval Date:	Expiration Date:
E-mail Address: david.c.gill@p66.com	Conditions of Approval:	Attached ☐
Date: 8/8/2018 Phone: (832) 765-1495		

* Attach Additional Sheets If Necessary

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 64	q 16	q 4	Sec	Twn	Rng	X	Y	Distance
L 07860	L	SRO	182	DEVELOPMENT OIL & GAS, LLC	LE	L 07860			Shallow		1	4	35	17S	34E	637741	3628919*	140
L 02724	L	MIN	2410	INTREPID POTASH-NM, LLC.	LE	L 02724 POD7	R					4	35	17S	34E	637948	3628716*	338
L 05842	L	PRO	0	KERMAC POTASH COMPANY	LE	L 05842			Shallow			4	35	17S	34E	637948	3628716*	338
L 05327	L	PRO	0	PHILLIPS PETROLEUM COMPANY	LE	L 05327					3	4	35	17S	34E	637747	3628515*	339
L 02724	L	MIN	2410	INTREPID POTASH-NM, LLC.	LE	L 02724 POD8			Shallow	4	4	1	35	17S	34E	637432	3629213*	428
					LE	L 02724 S5			Shallow	4	4	1	35	17S	34E	637469	3629262	458
L 02724 A	L	IND	0	NEW MEXICO POTASH CORPORATION	LE	L 02724 S5			Shallow	4	4	1	35	17S	34E	637469	3629262	458
L 06029	L	PRO	0	TEXACO INC	LE	L 06029			Shallow		4	4	35	17S	34E	638150	3628523*	605
L 05788	L	EXP	0	KERMAC POTASH COMPANY	LE	L 05788 POD3			Shallow	2	1	2	02	18S	34E	637854	3628204*	668
L 02722	L	SRO	1569.15	NM COMMISSIONER OF PUB LANDS	LE	L 02722 S			Shallow	3	1	2	02	18S	34E	637654	3628004*	829
L 05574	L	SRO	5	TEXACO INC.	LE	L 02722 S			Shallow	3	1	2	02	18S	34E	637654	3628004*	829
L 05788	L	EXP	0	KERMAC POTASH COMPANY	LE	L 05788 POD14			Shallow	3	1	2	02	18S	34E	637654	3628004*	829
					LE	L 05788 POD18			Shallow	3	1	2	02	18S	34E	637654	3628004*	829
					LE	L 05788 POD21			Shallow	3	1	2	02	18S	34E	637654	3628004*	829
L 00235 B	L	COM	270	ANGELL #2 FAMILY LTD P'SHIP	LE	L 13636 POD1		NON	Shallow	3	3	3	35	17S	34E	636875	3628481	832
L 02499	L	IRR	109.2	PEARCE TRUST	LE	L 13636 POD1		NON	Shallow	3	3	3	35	17S	34E	636875	3628481	832
L 13636	L	COM	0	PEARCE TRUST	LE	L 13636 POD1		NON	Shallow	3	3	3	35	17S	34E	636875	3628481	832
L 13709	L	PRO	0	PEARCE TRUST	LE	L 13636 POD1		NON	Shallow	3	3	3	35	17S	34E	636875	3628481	832
L 13711	L	PRO	0	PEARCE TRUST	LE	L 13636 POD1		NON	Shallow	3	3	3	35	17S	34E	636875	3628481	832
L 13712	L	PRO	0	PEARCE TRUST	LE	L 13636 POD1		NON	Shallow	3	3	3	35	17S	34E	636875	3628481	832
L 05788	L	EXP	0	KERMAC POTASH COMPANY	LE	L 05788 POD15			Shallow	4	2	1	02	18S	34E	637451	3627998*	854
					LE	L 05788 POD4			Shallow	4	2	1	02	18S	34E	637451	3627998*	854
					LE	L 05788			Shallow	4	1	2	02	18S	34E	637854	3628004*	859
					LE	L 05788 POD12			Shallow	4	1	2	02	18S	34E	637854	3628004*	859
					LE	L 05788 POD13			Shallow	4	1	2	02	18S	34E	637854	3628004*	859
L 06031	L	PRO	0	TEXACO INC.	LE	L 06031			Shallow		2	2	02	18S	34E	638158	3628112*	893
L 05039	L	PRO	3	SCHARBAUER CATTLE CO	LE	L 05039			Shallow		1	2	35	17S	34E	637730	3629725*	897
L 05335	L	PRO	0	CONTINENTAL OIL COMPANY	LE	L 05335			Shallow		1	2	35	17S	34E	637730	3629725*	897
L 02724	L	MIN	2410	INTREPID POTASH-NM, LLC.	LE	L 02724 S4			Shallow	3	3	3	36	17S	34E	638451	3628429*	915
L 02724 A	L	IND	0	NEW MEXICO POTASH CORPORATION	LE	L 02724 S4			Shallow	3	3	3	36	17S	34E	638451	3628429*	915
L 02725	L	MIN	0	FARMERS EDUCATIONAL & COOPERATIVE UNION OF AMERICA	LE	L 02724 S4			Shallow	3	3	3	36	17S	34E	638451	3628429*	915
L 07030	L	PRO	0	HONDO DRILLING COMPANY	LE	L 07030					3	2	1	02	18S	34E	637251	3627998*	917
L 02722	L	SRO	1569.15	NM COMMISSIONER OF PUB LANDS	LE	L 02722 S2			Shallow	3	2	2	02	18S	34E	638057	3628011*	926
L 02723	L	MIN	0	FARMERS EDUCATIONAL & COOPERATIVE UNION OF AMERICA	LE	L 02722 S2			Shallow	3	2	2	02	18S	34E	638057	3628011*	926
L 05574	L	SRO	5	TEXACO INC.	LE	L 02722 S2			Shallow	3	2	2	02	18S	34E	638057	3628011*	926
L 05788	L	EXP	0	KERMAC POTASH COMPANY	LE	L 05788 POD2			Shallow	3	2	2	02	18S	34E	638057	3628011*	926
					LE	L 05788 POD5			Shallow	3	2	2	02	18S	34E	638057	3628011*	926
					LE	L 05788 POD8			Shallow	3	2	2	02	18S	34E	638057	3628011*	926
L 06030	L	PRO	0	TEXACO INC	LE	L 06030			Shallow		3	3	36	17S	34E	638552	3628530*	970

Record Count: 39

UTMNAD83 Radius Search (in meters):

Easting (X): 637630 **Northing (Y):** 3628833.47 **Radius:** 1000

Sorted by: Distance

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

Soil Sampling Field Screening Form

Site / Project Name: P66 McGowan South State Project Number: 11181165 Date: 8/8-8/9/2

Sample ID:	Location:	Depth: feet	PetroFlag:
Excavation Bottom-1	South	2	808ppm
Excavation Bottom-2	North	1.5	Out of Range
Excavation Bottom-2R	North (Rerun-5g sample)	1.5	Out of Range
Excavation Bottom-2RR	North (Rerun-1g sample)	1.5	30000?
Excavation Bottom-3	25 ft S of access rd.	3.5	94
Excavation Bottom-4	40 ft S of access rd.	2.5	146
Excavation Bottom-5	95 ft S of access rd.	2.5	1170
Excavation Bottom-6	15 ft S of access rd.	4	2168
Note: Unless indicated, test run with standard 10g sample			

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August 17, 2018

Arthur Greeley
GHD
1755 Wittington Place
Ste 500
Dallas, TX 75234

RE: Project: 11181165 P66 MCGOWAN/BUCKEYE
Pace Project No.: 60277365

Dear Arthur Greeley:
Enclosed are the analytical results for sample(s) received by the laboratory on August 11, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

REV-1, 8/17/18: Sample ID corrections per client request.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Jamie Church
jamie.church@pacelabs.com
314-838-7223
Project Manager

Enclosures

cc: Christina Ruby, GHD Services
Jeffrey Walker, GHD Services, Inc.

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CERTIFICATIONS

Project: 11181165 P66 MCGOWAN/BUCKEYE
Pace Project No.: 60277365

Kansas Certification IDs

9608 Loiret Boulevard, Lenexa, KS 66219
Missouri Certification Number: 10090
WY STR Certification #: 2456.01
Arkansas Certification #: 17-016-0
Illinois Certification #: 200030
Iowa Certification #: 118
Kansas/NELAP Certification #: E-10116
Louisiana Certification #: 03055
Nevada Certification #: KS000212018-1
Oklahoma Certification #: 9205/9935
Texas Certification #: T104704407
Utah Certification #: KS00021
Kansas Field Laboratory Accreditation: # E-92587
Missouri Certification: 10070
Missouri Certification Number: 10090

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SAMPLE SUMMARY

Project: 11181165 P66 MCGOWAN/BUCKEYE
Pace Project No.: 60277365

Lab ID	Sample ID	Matrix	Date Collected	Date Received
60277365001	**S-11181165-081018-JW-SW1**	Solid	08/10/18 13:00	08/11/18 08:20
60277365002	**S-11181165-081018-JW-SW2**	Solid	08/10/18 13:05	08/11/18 08:20
60277365003	**S-11181165-081018-JW-BOTTOM N**	Solid	08/10/18 13:10	08/11/18 08:20
60277365004	**S-11181165-081018-JW-SW3**	Solid	08/10/18 13:15	08/11/18 08:20
60277365005	**S-11181165-081018-JW-SW4**	Solid	08/10/18 13:20	08/11/18 08:20
60277365006	**S-11181165-081018-JW-SW5**	Solid	08/10/18 13:25	08/11/18 08:20
60277365007	**S-11181165-081018-JW-BOTTOM MI**	Solid	08/10/18 13:30	08/11/18 08:20
60277365008	**S-11181165-081018-JW-SW6**	Solid	08/10/18 13:35	08/11/18 08:20
60277365009	**S-11181165-081018-JW-SW7**	Solid	08/10/18 13:40	08/11/18 08:20
60277365010	**S-11181165-081018-JW-BOTTOM S**	Solid	08/10/18 13:45	08/11/18 08:20
60277365011	**S-11181165-081018-JW-SUMP E WA**	Solid	08/10/18 13:48	08/11/18 08:20
60277365012	**S-11181165-081018-JW-SUMP S WA**	Solid	08/10/18 13:51	08/11/18 08:20
60277365013	**S-11181165-081018-JW-SUMP W WA**	Solid	08/10/18 13:54	08/11/18 08:20
60277365014	**S-11181165-081018-JW-SUMP BOTT**	Solid	08/10/18 13:57	08/11/18 08:20

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SAMPLE ANALYTE COUNT

Project: 11181165 P66 MCGOWAN/BUCKEYE
Pace Project No.: 60277365

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
60277365001	**S-11181165-081018-JW-SW1**	EPA 8015B	AJM	4	PASI-K
		EPA 8015B	SRM2	2	PASI-K
		EPA 8260	JTK	7	PASI-K
		ASTM D2974	DWC	1	PASI-K
		EPA 300.0	WNM	1	PASI-K
60277365002	**S-11181165-081018-JW-SW2**	EPA 8015B	AJM	4	PASI-K
		EPA 8015B	SRM2	2	PASI-K
		EPA 8260	JTK	7	PASI-K
		ASTM D2974	DWC	1	PASI-K
		EPA 300.0	WNM	1	PASI-K
60277365003	**S-11181165-081018-JW-BOTTOM N**	EPA 8015B	AJM	4	PASI-K
		EPA 8015B	SRM2	2	PASI-K
		EPA 8260	JTK	7	PASI-K
		ASTM D2974	DWC	1	PASI-K
		EPA 300.0	WNM	1	PASI-K
60277365004	**S-11181165-081018-JW-SW3**	EPA 8015B	AJM	4	PASI-K
		EPA 8015B	SRM2	2	PASI-K
		EPA 8260	JTK	7	PASI-K
		ASTM D2974	DWC	1	PASI-K
		EPA 300.0	WNM	1	PASI-K
60277365005	**S-11181165-081018-JW-SW4**	EPA 8015B	AJM	4	PASI-K
		EPA 8015B	SRM2	2	PASI-K
		EPA 8260	JTK	7	PASI-K
		ASTM D2974	DWC	1	PASI-K
		EPA 300.0	WNM	1	PASI-K
60277365006	**S-11181165-081018-JW-SW5**	EPA 8015B	AJM	4	PASI-K
		EPA 8015B	SRM2	2	PASI-K
		EPA 8260	JTK	7	PASI-K
		ASTM D2974	DWC	1	PASI-K
		EPA 300.0	WNM	1	PASI-K
60277365007	**S-11181165-081018-JW-BOTTOM MI**	EPA 8015B	AJM	4	PASI-K
		EPA 8015B	SRM2	2	PASI-K
		EPA 8260	JTK	7	PASI-K
		ASTM D2974	DWC	1	PASI-K
		EPA 300.0	WNM	1	PASI-K
60277365008	**S-11181165-081018-JW-SW6**	EPA 8015B	AJM	4	PASI-K
		EPA 8015B	SRM2	2	PASI-K

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SAMPLE ANALYTE COUNT

Project: 11181165 P66 MCGOWAN/BUCKEYE
Pace Project No.: 60277365

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 8260	JTK	7	PASI-K
		ASTM D2974	DWC	1	PASI-K
		EPA 300.0	WNM	1	PASI-K
60277365009	**S-11181165-081018-JW-SW7**	EPA 8015B	AJM	4	PASI-K
		EPA 8015B	SRM2	2	PASI-K
		EPA 8260	JTK	7	PASI-K
		ASTM D2974	DWC	1	PASI-K
		EPA 300.0	WNM	1	PASI-K
60277365010	**S-11181165-081018-JW-BOTTOM S**	EPA 8015B	AJM	4	PASI-K
		EPA 8015B	SRM2	2	PASI-K
		EPA 8260	JTK	7	PASI-K
		ASTM D2974	DWC	1	PASI-K
		EPA 300.0	WNM	1	PASI-K
60277365011	**S-11181165-081018-JW-SUMP E WA**	EPA 8015B	AJM	4	PASI-K
		EPA 8015B	SRM2	2	PASI-K
		EPA 8260	JTK	7	PASI-K
		ASTM D2974	DWC	1	PASI-K
		EPA 300.0	WNM	1	PASI-K
60277365012	**S-11181165-081018-JW-SUMP S WA**	EPA 8015B	AJM	4	PASI-K
		EPA 8015B	SRM2	2	PASI-K
		EPA 8260	JTK	7	PASI-K
		ASTM D2974	DWC	1	PASI-K
		EPA 300.0	WNM	1	PASI-K
60277365013	**S-11181165-081018-JW-SUMP W WA**	EPA 8015B	AJM	4	PASI-K
		EPA 8015B	SRM2	2	PASI-K
		EPA 8260	JTK	7	PASI-K
		ASTM D2974	DWC	1	PASI-K
		EPA 300.0	WNM	1	PASI-K
60277365014	**S-11181165-081018-JW-SUMP BOTT**	EPA 8015B	AJM	4	PASI-K
		EPA 8015B	SRM2	2	PASI-K
		EPA 8260	JTK	7	PASI-K
		ASTM D2974	DWC	1	PASI-K
		EPA 300.0	WNM	1	PASI-K

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PROJECT NARRATIVE

Project: 11181165 P66 MCGOWAN/BUCKEYE
Pace Project No.: 60277365

Method: **EPA 8015B**
Description: 8015B Diesel Range Organics
Client: GHD_Phillips 66 New Mexico
Date: August 17, 2018

General Information:
14 samples were analyzed for EPA 8015B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 3546 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Surrogates:
All surrogates were within QC limits with any exceptions noted below.

QC Batch: 539053

S4: Surrogate recovery not evaluated against control limits due to sample dilution.
- S-11181165-081018-JW-SUMP BOTT (Lab ID: 60277365014)
  - n-Tetracosane (S)
  - p-Terphenyl (S)
- S-11181165-081018-JW-SUMP S WA (Lab ID: 60277365012)
  - n-Tetracosane (S)
  - p-Terphenyl (S)
- S-11181165-081018-JW-SUMP W WA (Lab ID: 60277365013)
  - n-Tetracosane (S)
  - p-Terphenyl (S)
- S-11181165-081018-JW-SW3 (Lab ID: 60277365004)
  - n-Tetracosane (S)
  - p-Terphenyl (S)
- S-11181165-081018-JW-SW6 (Lab ID: 60277365008)
  - n-Tetracosane (S)
  - p-Terphenyl (S)

S5: Surrogate recovery outside control limits due to matrix interferences (not confirmed by re-analysis).
- S-11181165-081018-JW-BOTTOM N (Lab ID: 60277365003)
  - n-Tetracosane (S)
- S-11181165-081018-JW-BOTTOM S (Lab ID: 60277365010)
  - n-Tetracosane (S)
  - p-Terphenyl (S)
- S-11181165-081018-JW-SW4 (Lab ID: 60277365005)
  - n-Tetracosane (S)

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PROJECT NARRATIVE

Project: 11181165 P66 MCGOWAN/BUCKEYE
Pace Project No.: 60277365

Method: **EPA 8015B**
Description: 8015B Diesel Range Organics
Client: GHD_Phillips 66 New Mexico
Date: August 17, 2018

QC Batch: 539053

S5: Surrogate recovery outside control limits due to matrix interferences (not confirmed by re-analysis).

- S-11181165-081018-JW-SW5 (Lab ID: 60277365006)
  - n-Tetracosane (S)
  - p-Terphenyl (S)

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: 11181165 P66 MCGOWAN/BUCKEYE
Pace Project No.: 60277365

Method: **EPA 8015B**
Description: Gasoline Range Organics
Client: GHD_Phillips 66 New Mexico
Date: August 17, 2018

General Information:
14 samples were analyzed for EPA 8015B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 5035A/5030B with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Surrogates:
All surrogates were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

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PROJECT NARRATIVE

Project: 11181165 P66 MCGOWAN/BUCKEYE
Pace Project No.: 60277365

Method: **EPA 8260**
Description: 8260 MSV 5035A VOA
Client: GHD_Phillips 66 New Mexico
Date: August 17, 2018

General Information:
14 samples were analyzed for EPA 8260. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Surrogates:
All surrogates were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 539390

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60277040001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 2209838)
  - Benzene
  - Ethylbenzene
  - Toluene
- MSD (Lab ID: 2209839)
  - Benzene
  - Ethylbenzene
  - Toluene

QC Batch: 539617

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60277516001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 2210766)

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: 11181165 P66 MCGOWAN/BUCKEYE
Pace Project No.: 60277365

Method: **EPA 8260**
Description: 8260 MSV 5035A VOA
Client: GHD_Phillips 66 New Mexico
Date: August 17, 2018

QC Batch: 539617

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60277516001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- Benzene
- Ethylbenzene

R1: RPD value was outside control limits.

- MSD (Lab ID: 2210767)
  - Benzene
  - Ethylbenzene
  - Toluene

QC Batch: 539787

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 60277519001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 2211553)
  - Ethylbenzene
  - Toluene
- MSD (Lab ID: 2211554)
  - Ethylbenzene

Additional Comments:

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PROJECT NARRATIVE

Project: 11181165 P66 MCGOWAN/BUCKEYE
Pace Project No.: 60277365

Method: **EPA 300.0**
Description: 300.0 IC Anions 28 Days
Client: GHD_Phillips 66 New Mexico
Date: August 17, 2018

General Information:
14 samples were analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:
The samples were prepared in accordance with EPA 300.0 with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

Pace Analytical Services, LLC
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ANALYTICAL RESULTS

Project: 11181165 P66 MCGOWAN/BUCKEYE
Pace Project No.: 60277365

Sample: S-11181165-081018-JW-SW1 **Lab ID: 60277365001** Collected: 08/10/18 13:00 Received: 08/11/18 08:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8015B Diesel Range Organics	Analytical Method: EPA 8015B Preparation Method: EPA 3546								
TPH-DRO (C10-C28)	**73.7**	mg/kg	12.2	6.1	1	08/13/18 15:00	08/14/18 21:34		
TPH-ORO (C28-C35)	**25.6**	mg/kg	12.2	6.1	1	08/13/18 15:00	08/14/18 21:34		
Surrogates									
n-Tetracosane (S)	108	%	64-130		1	08/13/18 15:00	08/14/18 21:34	646-31-1	
p-Terphenyl (S)	77	%	58-119		1	08/13/18 15:00	08/14/18 21:34	92-94-4	
Gasoline Range Organics	Analytical Method: EPA 8015B Preparation Method: EPA 5035A/5030B								
TPH-GRO	ND	mg/kg	12.4	6.2	1	08/13/18 13:12	08/16/18 07:52		
Surrogates									
4-Bromofluorobenzene (S)	74	%	72-117		1	08/13/18 13:12	08/16/18 07:52	460-00-4	
8260 MSV 5035A VOA	Analytical Method: EPA 8260								
Benzene	ND	ug/kg	6.2	0.61	1		08/14/18 17:01	71-43-2	
Ethylbenzene	ND	ug/kg	6.2	0.57	1		08/14/18 17:01	100-41-4	
Toluene	ND	ug/kg	6.2	0.43	1		08/14/18 17:01	108-88-3	
Xylene (Total)	ND	ug/kg	6.2	1.4	1		08/14/18 17:01	1330-20-7	
Surrogates									
Toluene-d8 (S)	100	%	78-122		1		08/14/18 17:01	2037-26-5	
4-Bromofluorobenzene (S)	100	%	69-133		1		08/14/18 17:01	460-00-4	
1,2-Dichloroethane-d4 (S)	99	%	80-123		1		08/14/18 17:01	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974								
Percent Moisture	**19.4**	%	0.50	0.50	1		08/13/18 00:00		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Preparation Method: EPA 300.0								
Chloride	ND	mg/kg	135	63.1	10	08/13/18 13:20	08/13/18 14:44	16887-00-6	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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ANALYTICAL RESULTS

Project: 11181165 P66 MCGOWAN/BUCKEYE
Pace Project No.: 60277365

Sample: S-11181165-081018-JW-SW2 **Lab ID: 60277365002** Collected: 08/10/18 13:05 Received: 08/11/18 08:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8015B Diesel Range Organics	Analytical Method: EPA 8015B Preparation Method: EPA 3546								
TPH-DRO (C10-C28)	ND	mg/kg	11.1	5.6	1	08/13/18 15:00	08/14/18 21:42		
TPH-ORO (C28-C35)	ND	mg/kg	11.1	5.6	1	08/13/18 15:00	08/14/18 21:42		
Surrogates									
n-Tetracosane (S)	93	%	64-130		1	08/13/18 15:00	08/14/18 21:42	646-31-1	
p-Terphenyl (S)	73	%	58-119		1	08/13/18 15:00	08/14/18 21:42	92-94-4	
Gasoline Range Organics	Analytical Method: EPA 8015B Preparation Method: EPA 5035A/5030B								
TPH-GRO	ND	mg/kg	11.2	5.6	1	08/13/18 13:12	08/16/18 08:39		
Surrogates									
4-Bromofluorobenzene (S)	80	%	72-117		1	08/13/18 13:12	08/16/18 08:39	460-00-4	
8260 MSV 5035A VOA	Analytical Method: EPA 8260								
Benzene	ND	ug/kg	5.6	0.55	1		08/14/18 17:48	71-43-2	
Ethylbenzene	ND	ug/kg	5.6	0.52	1		08/14/18 17:48	100-41-4	
Toluene	ND	ug/kg	5.6	0.39	1		08/14/18 17:48	108-88-3	
Xylene (Total)	ND	ug/kg	5.6	1.3	1		08/14/18 17:48	1330-20-7	
Surrogates									
Toluene-d8 (S)	99	%	78-122		1		08/14/18 17:48	2037-26-5	
4-Bromofluorobenzene (S)	98	%	69-133		1		08/14/18 17:48	460-00-4	
1,2-Dichloroethane-d4 (S)	98	%	80-123		1		08/14/18 17:48	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974								
Percent Moisture	**10.3**	%	0.50	0.50	1		08/13/18 00:00		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Preparation Method: EPA 300.0								
Chloride	ND	mg/kg	112	52.1	10	08/13/18 13:20	08/13/18 15:27	16887-00-6	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

ANALYTICAL RESULTS

Project: 11181165 P66 MCGOWAN/BUCKEYE
Pace Project No.: 60277365

Sample: S-11181165-081018-JW-BOTTOM N **Lab ID: 60277365003** Collected: 08/10/18 13:10 Received: 08/11/18 08:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8015B Diesel Range Organics	Analytical Method: EPA 8015B Preparation Method: EPA 3546								
TPH-DRO (C10-C28)	**477**	mg/kg	11.2	5.6	1	08/13/18 15:00	08/14/18 22:22		
TPH-ORO (C28-C35)	**109**	mg/kg	11.2	5.6	1	08/13/18 15:00	08/14/18 22:22		
Surrogates									
n-Tetracosane (S)	185	%	64-130		1	08/13/18 15:00	08/14/18 22:22	646-31-1	S5
p-Terphenyl (S)	114	%	58-119		1	08/13/18 15:00	08/14/18 22:22	92-94-4	
Gasoline Range Organics	Analytical Method: EPA 8015B Preparation Method: EPA 5035A/5030B								
TPH-GRO	**12.4**	mg/kg	11.4	5.7	1	08/13/18 13:12	08/16/18 08:54		
Surrogates									
4-Bromofluorobenzene (S)	79	%	72-117		1	08/13/18 13:12	08/16/18 08:54	460-00-4	
8260 MSV 5035A VOA	Analytical Method: EPA 8260								
Benzene	ND	ug/kg	5.7	0.56	1		08/14/18 18:03	71-43-2	
Ethylbenzene	**33.7**	ug/kg	5.7	0.53	1		08/14/18 18:03	100-41-4	
Toluene	**6.6**	ug/kg	5.7	0.40	1		08/14/18 18:03	108-88-3	
Xylene (Total)	**56.2**	ug/kg	5.7	1.3	1		08/14/18 18:03	1330-20-7	
Surrogates									
Toluene-d8 (S)	100	%	78-122		1		08/14/18 18:03	2037-26-5	
4-Bromofluorobenzene (S)	99	%	69-133		1		08/14/18 18:03	460-00-4	
1,2-Dichloroethane-d4 (S)	99	%	80-123		1		08/14/18 18:03	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974								
Percent Moisture	**12.8**	%	0.50	0.50	1		08/13/18 00:00		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Preparation Method: EPA 300.0								
Chloride	ND	mg/kg	115	53.7	10	08/13/18 13:20	08/13/18 15:41	16887-00-6	

REPORT OF LABORATORY ANALYSIS

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(913)599-5665

ANALYTICAL RESULTS

Project: 11181165 P66 MCGOWAN/BUCKEYE
Pace Project No.: 60277365

Sample: S-11181165-081018-JW-SW3 **Lab ID: 60277365004** Collected: 08/10/18 13:15 Received: 08/11/18 08:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8015B Diesel Range Organics	Analytical Method: EPA 8015B Preparation Method: EPA 3546								
TPH-DRO (C10-C28)	**23700**	mg/kg	1040	519	100	08/13/18 15:00	08/14/18 22:38		
TPH-ORO (C28-C35)	**7620**	mg/kg	1040	519	100	08/13/18 15:00	08/14/18 22:38		
Surrogates									
n-Tetracosane (S)	0	%	64-130		100	08/13/18 15:00	08/14/18 22:38	646-31-1	S4
p-Terphenyl (S)	0	%	58-119		100	08/13/18 15:00	08/14/18 22:38	92-94-4	S4
Gasoline Range Organics	Analytical Method: EPA 8015B Preparation Method: EPA 5035A/5030B								
TPH-GRO	**5980**	mg/kg	1040	519	100	08/13/18 13:12	08/16/18 09:09		
Surrogates									
4-Bromofluorobenzene (S)	85	%	72-117		100	08/13/18 13:12	08/16/18 09:09	460-00-4	
8260 MSV 5035A VOA	Analytical Method: EPA 8260								
Benzene	**8770**	ug/kg	263	25.9	50		08/15/18 18:02	71-43-2	
Ethylbenzene	**258000**	ug/kg	5250	485	1000		08/16/18 12:07	100-41-4	
Toluene	**241000**	ug/kg	5250	370	1000		08/16/18 12:07	108-88-3	
Xylene (Total)	**310000**	ug/kg	5250	1200	1000		08/16/18 12:07	1330-20-7	
Surrogates									
Toluene-d8 (S)	104	%	78-122		50		08/15/18 18:02	2037-26-5	
4-Bromofluorobenzene (S)	102	%	69-133		50		08/15/18 18:02	460-00-4	
1,2-Dichloroethane-d4 (S)	94	%	80-123		50		08/15/18 18:02	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974								
Percent Moisture	**4.2**	%	0.50	0.50	1		08/13/18 00:00		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Preparation Method: EPA 300.0								
Chloride	ND	mg/kg	103	48.3	10	08/13/18 13:20	08/13/18 15:55	16887-00-6	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 11181165 P66 MCGOWAN/BUCKEYE
Pace Project No.: 60277365

Sample: S-11181165-081018-JW-SW4 **Lab ID: 60277365005** Collected: 08/10/18 13:20 Received: 08/11/18 08:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8015B Diesel Range Organics	Analytical Method: EPA 8015B Preparation Method: EPA 3546								
TPH-DRO (C10-C28)	**219**	mg/kg	10.2	5.1	1	08/13/18 15:00	08/14/18 22:46		
TPH-ORO (C28-C35)	**65.0**	mg/kg	10.2	5.1	1	08/13/18 15:00	08/14/18 22:46		
Surrogates									
n-Tetracosane (S)	136	%	64-130		1	08/13/18 15:00	08/14/18 22:46	646-31-1	S5
p-Terphenyl (S)	80	%	58-119		1	08/13/18 15:00	08/14/18 22:46	92-94-4	
Gasoline Range Organics	Analytical Method: EPA 8015B Preparation Method: EPA 5035A/5030B								
TPH-GRO	ND	mg/kg	10.6	5.3	1	08/13/18 13:12	08/16/18 09:24		
Surrogates									
4-Bromofluorobenzene (S)	77	%	72-117		1	08/13/18 13:12	08/16/18 09:24	460-00-4	
8260 MSV 5035A VOA	Analytical Method: EPA 8260								
Benzene	ND	ug/kg	5.2	0.52	1		08/15/18 18:17	71-43-2	
Ethylbenzene	ND	ug/kg	5.2	0.48	1		08/15/18 18:17	100-41-4	
Toluene	ND	ug/kg	5.2	0.37	1		08/15/18 18:17	108-88-3	
Xylene (Total)	ND	ug/kg	5.2	1.2	1		08/15/18 18:17	1330-20-7	
Surrogates									
Toluene-d8 (S)	100	%	78-122		1		08/15/18 18:17	2037-26-5	
4-Bromofluorobenzene (S)	98	%	69-133		1		08/15/18 18:17	460-00-4	
1,2-Dichloroethane-d4 (S)	95	%	80-123		1		08/15/18 18:17	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974								
Percent Moisture	**5.2**	%	0.50	0.50	1		08/13/18 00:00		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Preparation Method: EPA 300.0								
Chloride	ND	mg/kg	106	49.6	10	08/13/18 13:20	08/13/18 16:10	16887-00-6	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 11181165 P66 MCGOWAN/BUCKEYE
Pace Project No.: 60277365

Sample: S-11181165-081018-JW-SW5 **Lab ID: 60277365006** Collected: 08/10/18 13:25 Received: 08/11/18 08:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8015B Diesel Range Organics	Analytical Method: EPA 8015B Preparation Method: EPA 3546								
TPH-DRO (C10-C28)	**538**	mg/kg	11.0	5.5	1	08/13/18 15:00	08/14/18 22:54		
TPH-ORO (C28-C35)	**163**	mg/kg	11.0	5.5	1	08/13/18 15:00	08/14/18 22:54		
Surrogates									
n-Tetracosane (S)	223	%	64-130		1	08/13/18 15:00	08/14/18 22:54	646-31-1	S5
p-Terphenyl (S)	150	%	58-119		1	08/13/18 15:00	08/14/18 22:54	92-94-4	S5
Gasoline Range Organics	Analytical Method: EPA 8015B Preparation Method: EPA 5035A/5030B								
TPH-GRO	ND	mg/kg	11.1	5.6	1	08/13/18 13:12	08/16/18 10:11		
Surrogates									
4-Bromofluorobenzene (S)	77	%	72-117		1	08/13/18 13:12	08/16/18 10:11	460-00-4	
8260 MSV 5035A VOA	Analytical Method: EPA 8260								
Benzene	ND	ug/kg	5.6	0.55	1		08/14/18 19:52	71-43-2	
Ethylbenzene	ND	ug/kg	5.6	0.52	1		08/14/18 19:52	100-41-4	
Toluene	ND	ug/kg	5.6	0.39	1		08/14/18 19:52	108-88-3	
Xylene (Total)	ND	ug/kg	5.6	1.3	1		08/14/18 19:52	1330-20-7	
Surrogates									
Toluene-d8 (S)	99	%	78-122		1		08/14/18 19:52	2037-26-5	
4-Bromofluorobenzene (S)	100	%	69-133		1		08/14/18 19:52	460-00-4	
1,2-Dichloroethane-d4 (S)	99	%	80-123		1		08/14/18 19:52	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974								
Percent Moisture	**10.9**	%	0.50	0.50	1		08/13/18 00:00		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Preparation Method: EPA 300.0								
Chloride	ND	mg/kg	111	51.9	10	08/13/18 13:20	08/13/18 16:24	16887-00-6	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 11181165 P66 MCGOWAN/BUCKEYE
Pace Project No.: 60277365

Sample: S-11181165-081018-JW-BOTTOM MI **Lab ID: 60277365007** Collected: 08/10/18 13:30 Received: 08/11/18 08:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8015B Diesel Range Organics	Analytical Method: EPA 8015B Preparation Method: EPA 3546								
TPH-DRO (C10-C28)	**163**	mg/kg	10.5	5.3	1	08/13/18 15:00	08/14/18 23:02		
TPH-ORO (C28-C35)	**49.6**	mg/kg	10.5	5.3	1	08/13/18 15:00	08/14/18 23:02		
Surrogates									
n-Tetracosane (S)	125	%	64-130		1	08/13/18 15:00	08/14/18 23:02	646-31-1	
p-Terphenyl (S)	79	%	58-119		1	08/13/18 15:00	08/14/18 23:02	92-94-4	
Gasoline Range Organics	Analytical Method: EPA 8015B Preparation Method: EPA 5035A/5030B								
TPH-GRO	ND	mg/kg	10.9	5.5	1	08/13/18 13:12	08/16/18 10:26		
Surrogates									
4-Bromofluorobenzene (S)	76	%	72-117		1	08/13/18 13:12	08/16/18 10:26	460-00-4	
8260 MSV 5035A VOA	Analytical Method: EPA 8260								
Benzene	ND	ug/kg	5.4	0.54	1		08/14/18 20:07	71-43-2	
Ethylbenzene	ND	ug/kg	5.4	0.50	1		08/14/18 20:07	100-41-4	
Toluene	ND	ug/kg	5.4	0.38	1		08/14/18 20:07	108-88-3	
Xylene (Total)	ND	ug/kg	5.4	1.2	1		08/14/18 20:07	1330-20-7	
Surrogates									
Toluene-d8 (S)	99	%	78-122		1		08/14/18 20:07	2037-26-5	
4-Bromofluorobenzene (S)	99	%	69-133		1		08/14/18 20:07	460-00-4	
1,2-Dichloroethane-d4 (S)	99	%	80-123		1		08/14/18 20:07	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974								
Percent Moisture	**8.4**	%	0.50	0.50	1		08/13/18 00:00		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Preparation Method: EPA 300.0								
Chloride	ND	mg/kg	109	50.7	10	08/13/18 13:20	08/13/18 16:38	16887-00-6	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 11181165 P66 MCGOWAN/BUCKEYE
Pace Project No.: 60277365

Sample: S-11181165-081018-JW-SW6 **Lab ID: 60277365008** Collected: 08/10/18 13:35 Received: 08/11/18 08:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8015B Diesel Range Organics	Analytical Method: EPA 8015B Preparation Method: EPA 3546								
TPH-DRO (C10-C28)	**3010**	mg/kg	100	50.2	10	08/13/18 15:00	08/15/18 13:20		
TPH-ORO (C28-C35)	**645**	mg/kg	100	50.2	10	08/13/18 15:00	08/15/18 13:20		
Surrogates									
n-Tetracosane (S)	0	%	64-130		10	08/13/18 15:00	08/15/18 13:20	646-31-1	S4
p-Terphenyl (S)	0	%	58-119		10	08/13/18 15:00	08/15/18 13:20	92-94-4	S4
Gasoline Range Organics	Analytical Method: EPA 8015B Preparation Method: EPA 5035A/5030B								
TPH-GRO	**552**	mg/kg	104	52.0	10	08/13/18 13:12	08/16/18 10:41		
Surrogates									
4-Bromofluorobenzene (S)	84	%	72-117		10	08/13/18 13:12	08/16/18 10:41	460-00-4	
8260 MSV 5035A VOA	Analytical Method: EPA 8260								
Benzene	**20.1**	ug/kg	5.2	0.52	1		08/14/18 20:23	71-43-2	
Ethylbenzene	**3450**	ug/kg	261	24.1	50		08/15/18 18:33	100-41-4	
Toluene	**1500**	ug/kg	261	18.4	50		08/15/18 18:33	108-88-3	
Xylene (Total)	**5070**	ug/kg	261	59.5	50		08/15/18 18:33	1330-20-7	
Surrogates									
Toluene-d8 (S)	102	%	78-122		1		08/14/18 20:23	2037-26-5	
4-Bromofluorobenzene (S)	103	%	69-133		1		08/14/18 20:23	460-00-4	
1,2-Dichloroethane-d4 (S)	99	%	80-123		1		08/14/18 20:23	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974								
Percent Moisture	**4.7**	%	0.50	0.50	1		08/13/18 00:00		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Preparation Method: EPA 300.0								
Chloride	**140**	mg/kg	105	49.0	10	08/13/18 13:20	08/13/18 17:21	16887-00-6	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 11181165 P66 MCGOWAN/BUCKEYE
Pace Project No.: 60277365

Sample: S-11181165-081018-JW-SW7 **Lab ID: 60277365009** Collected: 08/10/18 13:40 Received: 08/11/18 08:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8015B Diesel Range Organics	Analytical Method: EPA 8015B Preparation Method: EPA 3546								
TPH-DRO (C10-C28)	**46.5**	mg/kg	10.5	5.3	1	08/13/18 15:00	08/15/18 13:28		
TPH-ORO (C28-C35)	**22.1**	mg/kg	10.5	5.3	1	08/13/18 15:00	08/15/18 13:28		
Surrogates									
n-Tetracosane (S)	118	%	64-130		1	08/13/18 15:00	08/15/18 13:28	646-31-1	
p-Terphenyl (S)	85	%	58-119		1	08/13/18 15:00	08/15/18 13:28	92-94-4	
Gasoline Range Organics	Analytical Method: EPA 8015B Preparation Method: EPA 5035A/5030B								
TPH-GRO	ND	mg/kg	10.6	5.3	1	08/13/18 13:12	08/16/18 10:57		
Surrogates									
4-Bromofluorobenzene (S)	77	%	72-117		1	08/13/18 13:12	08/16/18 10:57	460-00-4	
8260 MSV 5035A VOA	Analytical Method: EPA 8260								
Benzene	ND	ug/kg	5.3	0.52	1		08/14/18 20:39	71-43-2	
Ethylbenzene	ND	ug/kg	5.3	0.49	1		08/14/18 20:39	100-41-4	
Toluene	ND	ug/kg	5.3	0.37	1		08/14/18 20:39	108-88-3	
Xylene (Total)	ND	ug/kg	5.3	1.2	1		08/14/18 20:39	1330-20-7	
Surrogates									
Toluene-d8 (S)	99	%	78-122		1		08/14/18 20:39	2037-26-5	
4-Bromofluorobenzene (S)	102	%	69-133		1		08/14/18 20:39	460-00-4	
1,2-Dichloroethane-d4 (S)	96	%	80-123		1		08/14/18 20:39	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974								
Percent Moisture	**6.1**	%	0.50	0.50	1		08/13/18 00:00		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Preparation Method: EPA 300.0								
Chloride	ND	mg/kg	106	49.4	10	08/13/18 13:20	08/13/18 17:35	16887-00-6	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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ANALYTICAL RESULTS

Project: 11181165 P66 MCGOWAN/BUCKEYE
Pace Project No.: 60277365

Sample: S-11181165-081018-JW-BOTTOM S **Lab ID: 60277365010** Collected: 08/10/18 13:45 Received: 08/11/18 08:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8015B Diesel Range Organics	Analytical Method: EPA 8015B Preparation Method: EPA 3546								
TPH-DRO (C10-C28)	**1030**	mg/kg	12.6	6.3	1	08/13/18 15:00	08/14/18 23:42		
TPH-ORO (C28-C35)	**253**	mg/kg	12.6	6.3	1	08/13/18 15:00	08/14/18 23:42		
Surrogates									
n-Tetracosane (S)	271	%	64-130		1	08/13/18 15:00	08/14/18 23:42	646-31-1	S5
p-Terphenyl (S)	214	%	58-119		1	08/13/18 15:00	08/14/18 23:42	92-94-4	S5
Gasoline Range Organics	Analytical Method: EPA 8015B Preparation Method: EPA 5035A/5030B								
TPH-GRO	ND	mg/kg	12.9	6.5	1	08/13/18 13:12	08/16/18 11:12		
Surrogates									
4-Bromofluorobenzene (S)	76	%	72-117		1	08/13/18 13:12	08/16/18 11:12	460-00-4	
8260 MSV 5035A VOA	Analytical Method: EPA 8260								
Benzene	ND	ug/kg	6.4	0.63	1		08/14/18 20:54	71-43-2	
Ethylbenzene	ND	ug/kg	6.4	0.59	1		08/14/18 20:54	100-41-4	
Toluene	ND	ug/kg	6.4	0.45	1		08/14/18 20:54	108-88-3	
Xylene (Total)	ND	ug/kg	6.4	1.5	1		08/14/18 20:54	1330-20-7	
Surrogates									
Toluene-d8 (S)	101	%	78-122		1		08/14/18 20:54	2037-26-5	
4-Bromofluorobenzene (S)	101	%	69-133		1		08/14/18 20:54	460-00-4	
1,2-Dichloroethane-d4 (S)	93	%	80-123		1		08/14/18 20:54	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974								
Percent Moisture	**22.2**	%	0.50	0.50	1		08/13/18 00:00		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Preparation Method: EPA 300.0								
Chloride	ND	mg/kg	128	59.8	10	08/13/18 13:20	08/13/18 17:49	16887-00-6	

REPORT OF LABORATORY ANALYSIS

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(913)599-5665

ANALYTICAL RESULTS

Project: 11181165 P66 MCGOWAN/BUCKEYE
Pace Project No.: 60277365

Sample: S-11181165-081018-JW-SUMP E WA **Lab ID: 60277365011** Collected: 08/10/18 13:48 Received: 08/11/18 08:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8015B Diesel Range Organics	Analytical Method: EPA 8015B Preparation Method: EPA 3546								
TPH-DRO (C10-C28)	**46.7**	mg/kg	10.4	5.2	1	08/13/18 15:00	08/14/18 23:50		
TPH-ORO (C28-C35)	**32.6**	mg/kg	10.4	5.2	1	08/13/18 15:00	08/14/18 23:50		
Surrogates									
n-Tetracosane (S)	115	%	64-130		1	08/13/18 15:00	08/14/18 23:50	646-31-1	
p-Terphenyl (S)	88	%	58-119		1	08/13/18 15:00	08/14/18 23:50	92-94-4	
Gasoline Range Organics	Analytical Method: EPA 8015B Preparation Method: EPA 5035A/5030B								
TPH-GRO	ND	mg/kg	11.0	5.5	1	08/13/18 13:12	08/16/18 11:28		
Surrogates									
4-Bromofluorobenzene (S)	76	%	72-117		1	08/13/18 13:12	08/16/18 11:28	460-00-4	
8260 MSV 5035A VOA	Analytical Method: EPA 8260								
Benzene	ND	ug/kg	5.5	0.54	1		08/14/18 21:10	71-43-2	
Ethylbenzene	ND	ug/kg	5.5	0.51	1		08/14/18 21:10	100-41-4	
Toluene	ND	ug/kg	5.5	0.39	1		08/14/18 21:10	108-88-3	
Xylene (Total)	ND	ug/kg	5.5	1.3	1		08/14/18 21:10	1330-20-7	
Surrogates									
Toluene-d8 (S)	99	%	78-122		1		08/14/18 21:10	2037-26-5	
4-Bromofluorobenzene (S)	99	%	69-133		1		08/14/18 21:10	460-00-4	
1,2-Dichloroethane-d4 (S)	99	%	80-123		1		08/14/18 21:10	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974								
Percent Moisture	**9.2**	%	0.50	0.50	1		08/13/18 00:00		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Preparation Method: EPA 300.0								
Chloride	ND	mg/kg	110	51.5	10	08/13/18 13:20	08/13/18 18:18	16887-00-6	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 11181165 P66 MCGOWAN/BUCKEYE
Pace Project No.: 60277365

Sample: S-11181165-081018-JW-SUMP S WA **Lab ID: 60277365012** Collected: 08/10/18 13:51 Received: 08/11/18 08:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8015B Diesel Range Organics	Analytical Method: EPA 8015B Preparation Method: EPA 3546								
TPH-DRO (C10-C28)	**1180**	mg/kg	115	57.7	10	08/13/18 15:00	08/15/18 00:06		
TPH-ORO (C28-C35)	**322**	mg/kg	115	57.7	10	08/13/18 15:00	08/15/18 00:06		
Surrogates									
n-Tetracosane (S)	0	%	64-130		10	08/13/18 15:00	08/15/18 00:06	646-31-1	S4
p-Terphenyl (S)	0	%	58-119		10	08/13/18 15:00	08/15/18 00:06	92-94-4	S4
Gasoline Range Organics	Analytical Method: EPA 8015B Preparation Method: EPA 5035A/5030B								
TPH-GRO	**36.9**	mg/kg	11.9	6.0	1	08/13/18 13:12	08/16/18 11:44		
Surrogates									
4-Bromofluorobenzene (S)	81	%	72-117		1	08/13/18 13:12	08/16/18 11:44	460-00-4	
8260 MSV 5035A VOA	Analytical Method: EPA 8260								
Benzene	**6.7**	ug/kg	5.9	0.58	1		08/14/18 21:25	71-43-2	
Ethylbenzene	**495**	ug/kg	295	27.3	50		08/15/18 18:48	100-41-4	
Toluene	**250J**	ug/kg	295	20.8	50		08/15/18 18:48	108-88-3	
Xylene (Total)	**702**	ug/kg	295	67.3	50		08/15/18 18:48	1330-20-7	
Surrogates									
Toluene-d8 (S)	102	%	78-122		1		08/14/18 21:25	2037-26-5	
4-Bromofluorobenzene (S)	98	%	69-133		1		08/14/18 21:25	460-00-4	
1,2-Dichloroethane-d4 (S)	96	%	80-123		1		08/14/18 21:25	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974								
Percent Moisture	**15.8**	%	0.50	0.50	1		08/13/18 00:00		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Preparation Method: EPA 300.0								
Chloride	ND	mg/kg	120	55.9	10	08/13/18 13:20	08/13/18 18:32	16887-00-6	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 11181165 P66 MCGOWAN/BUCKEYE
Pace Project No.: 60277365

Sample: S-11181165-081018-JW-SUMP W WA **Lab ID: 60277365013** Collected: 08/10/18 13:54 Received: 08/11/18 08:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8015B Diesel Range Organics	Analytical Method: EPA 8015B Preparation Method: EPA 3546								
TPH-DRO (C10-C28)	**10900**	mg/kg	1010	507	100	08/13/18 15:00	08/15/18 00:22		
TPH-ORO (C28-C35)	**3750**	mg/kg	1010	507	100	08/13/18 15:00	08/15/18 00:22		
Surrogates									
n-Tetracosane (S)	0	%	64-130		100	08/13/18 15:00	08/15/18 00:22	646-31-1	S4
p-Terphenyl (S)	0	%	58-119		100	08/13/18 15:00	08/15/18 00:22	92-94-4	S4
Gasoline Range Organics	Analytical Method: EPA 8015B Preparation Method: EPA 5035A/5030B								
TPH-GRO	**316**	mg/kg	52.6	26.3	5	08/13/18 13:12	08/16/18 11:59		
Surrogates									
4-Bromofluorobenzene (S)	78	%	72-117		5	08/13/18 13:12	08/16/18 11:59	460-00-4	
8260 MSV 5035A VOA	Analytical Method: EPA 8260								
Benzene	**20.5**	ug/kg	5.2	0.52	1		08/14/18 21:41	71-43-2	
Ethylbenzene	**2690**	ug/kg	260	24.0	50		08/15/18 19:04	100-41-4	
Toluene	**219**	ug/kg	5.2	0.37	1		08/14/18 21:41	108-88-3	
Xylene (Total)	**5870**	ug/kg	260	59.3	50		08/15/18 19:04	1330-20-7	
Surrogates									
Toluene-d8 (S)	108	%	78-122		1		08/14/18 21:41	2037-26-5	
4-Bromofluorobenzene (S)	119	%	69-133		1		08/14/18 21:41	460-00-4	
1,2-Dichloroethane-d4 (S)	103	%	80-123		1		08/14/18 21:41	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974								
Percent Moisture	**4.3**	%	0.50	0.50	1		08/13/18 00:00		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Preparation Method: EPA 300.0								
Chloride	ND	mg/kg	105	49.2	10	08/13/18 13:20	08/13/18 18:46	16887-00-6	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 11181165 P66 MCGOWAN/BUCKEYE
Pace Project No.: 60277365

Sample: S-11181165-081018-JW-SUMP BOTT **Lab ID: 60277365014** Collected: 08/10/18 13:57 Received: 08/11/18 08:20 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8015B Diesel Range Organics	Analytical Method: EPA 8015B Preparation Method: EPA 3546								
TPH-DRO (C10-C28)	**1660**	mg/kg	107	53.3	10	08/13/18 15:00	08/15/18 00:54		
TPH-ORO (C28-C35)	**617**	mg/kg	107	53.3	10	08/13/18 15:00	08/15/18 00:54		
Surrogates									
n-Tetracosane (S)	0	%	64-130		10	08/13/18 15:00	08/15/18 00:54	646-31-1	S4
p-Terphenyl (S)	0	%	58-119		10	08/13/18 15:00	08/15/18 00:54	92-94-4	S4
Gasoline Range Organics	Analytical Method: EPA 8015B Preparation Method: EPA 5035A/5030B								
TPH-GRO	**254**	mg/kg	54.8	27.4	5	08/13/18 13:12	08/16/18 12:46		
Surrogates									
4-Bromofluorobenzene (S)	80	%	72-117		5	08/13/18 13:12	08/16/18 12:46	460-00-4	
8260 MSV 5035A VOA	Analytical Method: EPA 8260								
Benzene	ND	ug/kg	5.5	0.54	1		08/15/18 19:19	71-43-2	
Ethylbenzene	**141**	ug/kg	5.5	0.51	1		08/15/18 19:19	100-41-4	
Toluene	**9.8**	ug/kg	5.5	0.39	1		08/15/18 19:19	108-88-3	
Xylene (Total)	**313**	ug/kg	5.5	1.3	1		08/15/18 19:19	1330-20-7	
Surrogates									
Toluene-d8 (S)	104	%	78-122		1		08/15/18 19:19	2037-26-5	
4-Bromofluorobenzene (S)	104	%	69-133		1		08/15/18 19:19	460-00-4	
1,2-Dichloroethane-d4 (S)	97	%	80-123		1		08/15/18 19:19	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974								
Percent Moisture	**9.1**	%	0.50	0.50	1		08/13/18 00:00		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0 Preparation Method: EPA 300.0								
Chloride	ND	mg/kg	110	51.3	10	08/13/18 13:20	08/13/18 19:01	16887-00-6	

REPORT OF LABORATORY ANALYSIS

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(913)599-5665

QUALITY CONTROL DATA

Project: 11181165 P66 MCGOWAN/BUCKEYE
Pace Project No.: 60277365

QC Batch: 539091 Analysis Method: EPA 8015B
QC Batch Method: EPA 5035A/5030B Analysis Description: Gasoline Range Organics
Associated Lab Samples: 60277365001, 60277365002, 60277365003, 60277365004, 60277365005, 60277365006, 60277365007, 60277365008, 60277365009, 60277365010, 60277365011, 60277365012, 60277365013, 60277365014

METHOD BLANK: 2208874 Matrix: Solid
Associated Lab Samples: 60277365001, 60277365002, 60277365003, 60277365004, 60277365005, 60277365006, 60277365007, 60277365008, 60277365009, 60277365010, 60277365011, 60277365012, 60277365013, 60277365014

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
TPH-GRO	mg/kg	ND	10.0	5.0	08/15/18 15:45	
4-Bromofluorobenzene (S)	%	76	72-117		08/15/18 15:45	

LABORATORY CONTROL SAMPLE: 2208875

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
TPH-GRO	mg/kg	50	54.7	109	85-129	
4-Bromofluorobenzene (S)	%			81	72-117	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2208876 2208877

Parameter	Units	60277365001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
TPH-GRO	mg/kg	ND	62	62	64.4	65.6	99	101	81-127	2	10	
4-Bromofluorobenzene (S)	%						74	80	72-117			

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 11181165 P66 MCGOWAN/BUCKEYE
Pace Project No.: 60277365

QC Batch: 539355 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV 5035A Volatile Organics
Associated Lab Samples: 60277365001, 60277365002, 60277365003

METHOD BLANK: 2209653 Matrix: Solid
Associated Lab Samples: 60277365001, 60277365002, 60277365003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Benzene	ug/kg	ND	5.0	0.49	08/14/18 11:55	
Ethylbenzene	ug/kg	ND	5.0	0.46	08/14/18 11:55	
Toluene	ug/kg	ND	5.0	0.35	08/14/18 11:55	
Xylene (Total)	ug/kg	ND	5.0	1.1	08/14/18 11:55	
1,2-Dichloroethane-d4 (S)	%	96	80-123		08/14/18 11:55	
4-Bromofluorobenzene (S)	%	99	69-133		08/14/18 11:55	
Toluene-d8 (S)	%	101	78-122		08/14/18 11:55	

LABORATORY CONTROL SAMPLE: 2209654

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/kg	100	98.5	99	77-122	
Ethylbenzene	ug/kg	100	103	103	74-126	
Toluene	ug/kg	100	104	104	73-122	
Xylene (Total)	ug/kg	300	289	96	75-123	
1,2-Dichloroethane-d4 (S)	%			96	80-123	
4-Bromofluorobenzene (S)	%			102	69-133	
Toluene-d8 (S)	%			100	78-122	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2209655 2209656

Parameter	Units	60277365001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Benzene	ug/kg	ND	124	123	97.1	108	78	88	51-124	11	28	
Ethylbenzene	ug/kg	ND	124	123	88.9	102	69	80	38-131	13	32	
Toluene	ug/kg	ND	124	123	98.0	110	79	89	40-129	11	30	
Xylene (Total)	ug/kg	ND	372	370	252	276	68	75	32-133	9	43	
1,2-Dichloroethane-d4 (S)	%						99	98	80-123			
4-Bromofluorobenzene (S)	%						100	100	69-133			
Toluene-d8 (S)	%						98	99	78-122			

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 11181165 P66 MCGOWAN/BUCKEYE
Pace Project No.: 60277365

QC Batch: 539390 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV 5035A Volatile Organics
Associated Lab Samples: 60277365006, 60277365007, 60277365008, 60277365009, 60277365010, 60277365011, 60277365012, 60277365013

METHOD BLANK: 2209836 Matrix: Solid
Associated Lab Samples: 60277365006, 60277365007, 60277365008, 60277365009, 60277365010, 60277365011, 60277365012, 60277365013

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Benzene	ug/kg	ND	5.0	0.49	08/14/18 18:50	
Ethylbenzene	ug/kg	ND	5.0	0.46	08/14/18 18:50	
Toluene	ug/kg	ND	5.0	0.35	08/14/18 18:50	
Xylene (Total)	ug/kg	5.2	5.0	1.1	08/14/18 18:50	
1,2-Dichloroethane-d4 (S)	%	95	80-123		08/14/18 18:50	
4-Bromofluorobenzene (S)	%	100	69-133		08/14/18 18:50	
Toluene-d8 (S)	%	100	78-122		08/14/18 18:50	

LABORATORY CONTROL SAMPLE: 2209837

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/kg	100	95.9	96	77-122	
Ethylbenzene	ug/kg	100	106	106	74-126	
Toluene	ug/kg	100	111	111	73-122	
Xylene (Total)	ug/kg	300	288	96	75-123	
1,2-Dichloroethane-d4 (S)	%			93	80-123	
4-Bromofluorobenzene (S)	%			101	69-133	
Toluene-d8 (S)	%			99	78-122	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2209838 2209839

Parameter	Units	60277040001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Benzene	ug/kg	ND	103	102	45.6	51.5	44	50	51-124	12	28	M1
Ethylbenzene	ug/kg	ND	103	102	18.0	22.4	16	20	38-131	22	32	M1
Toluene	ug/kg	ND	103	102	34.1	39.4	29	34	40-129	14	30	M1
Xylene (Total)	ug/kg	ND	309	307	48.5	62.3	16	20	32-133	25	43	MS
1,2-Dichloroethane-d4 (S)	%						107	102	80-123			
4-Bromofluorobenzene (S)	%						119	118	69-133			
Toluene-d8 (S)	%						103	104	78-122			

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 11181165 P66 MCGOWAN/BUCKEYE
Pace Project No.: 60277365

QC Batch: 539617 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV 5035A Volatile Organics
Associated Lab Samples: 60277365004, 60277365005, 60277365008, 60277365012, 60277365013, 60277365014

METHOD BLANK: 2210764 Matrix: Solid
Associated Lab Samples: 60277365004, 60277365005, 60277365008, 60277365012, 60277365013, 60277365014

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Benzene	ug/kg	ND	5.0	0.49	08/15/18 11:57	
Ethylbenzene	ug/kg	ND	5.0	0.46	08/15/18 11:57	
Toluene	ug/kg	ND	5.0	0.35	08/15/18 11:57	
Xylene (Total)	ug/kg	ND	5.0	1.1	08/15/18 11:57	
1,2-Dichloroethane-d4 (S)	%	94	80-123		08/15/18 11:57	
4-Bromofluorobenzene (S)	%	101	69-133		08/15/18 11:57	
Toluene-d8 (S)	%	100	78-122		08/15/18 11:57	

LABORATORY CONTROL SAMPLE: 2210765

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/kg	100	96.8	97	77-122	
Ethylbenzene	ug/kg	100	100	100	74-126	
Toluene	ug/kg	100	103	103	73-122	
Xylene (Total)	ug/kg	300	284	95	75-123	
1,2-Dichloroethane-d4 (S)	%			93	80-123	
4-Bromofluorobenzene (S)	%			100	69-133	
Toluene-d8 (S)	%			100	78-122	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2210766 2210767

Parameter	Units	60277516001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Benzene	ug/kg	ND	117	119	56.5	89.0	48	75	51-124	45	28	M1,R1
Ethylbenzene	ug/kg	ND	117	119	41.1	73.0	35	61	38-131	56	32	M1,R1
Toluene	ug/kg	ND	117	119	49.7	82.6	42	70	40-129	50	30	R1
Xylene (Total)	ug/kg	ND	351	356	115	194	33	54	32-133	51	43	MS,RS
1,2-Dichloroethane-d4 (S)	%						98	97	80-123			
4-Bromofluorobenzene (S)	%						102	102	69-133			
Toluene-d8 (S)	%						98	99	78-122			

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 11181165 P66 MCGOWAN/BUCKEYE
Pace Project No.: 60277365

QC Batch: 539787 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV 5035A Volatile Organics
Associated Lab Samples: 60277365004

METHOD BLANK: 2211551 Matrix: Solid
Associated Lab Samples: 60277365004

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Ethylbenzene	ug/kg	ND	5.0	0.46	08/16/18 11:52	
Toluene	ug/kg	ND	5.0	0.35	08/16/18 11:52	
Xylene (Total)	ug/kg	ND	5.0	1.1	08/16/18 11:52	
1,2-Dichloroethane-d4 (S)	%	92	80-123		08/16/18 11:52	
4-Bromofluorobenzene (S)	%	102	69-133		08/16/18 11:52	
Toluene-d8 (S)	%	103	78-122		08/16/18 11:52	

LABORATORY CONTROL SAMPLE: 2211552

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Ethylbenzene	ug/kg	100	104	104	74-126	
Toluene	ug/kg	100	109	109	73-122	
Xylene (Total)	ug/kg	300	292	97	75-123	
1,2-Dichloroethane-d4 (S)	%			90	80-123	
4-Bromofluorobenzene (S)	%			104	69-133	
Toluene-d8 (S)	%			102	78-122	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2211553 2211554

Parameter	Units	60277519001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Ethylbenzene	ug/kg	ND	99.6	99.4	30.4	36.6	29	35	38-131	18	32	M1
Toluene	ug/kg	ND	99.6	99.4	41.2	47.5	38	44	40-129	14	30	M1
Xylene (Total)	ug/kg	0.0075 mg/kg	299	298	87.1	101	27	31	32-133	15	43	MS
1,2-Dichloroethane-d4 (S)	%						95	95	80-123			
4-Bromofluorobenzene (S)	%						109	108	69-133			
Toluene-d8 (S)	%						103	104	78-122			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
9608 Loiret Blvd.
Lenexa, KS 66219
(913)599-5665

QUALITY CONTROL DATA

Project: 11181165 P66 MCGOWAN/BUCKEYE
Pace Project No.: 60277365

QC Batch: 539053 Analysis Method: EPA 8015B
QC Batch Method: EPA 3546 Analysis Description: EPA 8015B
Associated Lab Samples: 60277365001, 60277365002, 60277365003, 60277365004, 60277365005, 60277365006, 60277365007, 60277365008, 60277365009, 60277365010, 60277365011, 60277365012, 60277365013, 60277365014

METHOD BLANK: 2208779 Matrix: Solid
Associated Lab Samples: 60277365001, 60277365002, 60277365003, 60277365004, 60277365005, 60277365006, 60277365007, 60277365008, 60277365009, 60277365010, 60277365011, 60277365012, 60277365013, 60277365014

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
TPH-DRO (C10-C28)	mg/kg	ND	9.9	5.0	08/14/18 20:46	
TPH-ORO (C28-C35)	mg/kg	ND	9.9	5.0	08/14/18 20:46	
n-Tetracosane (S)	%	93	64-130		08/14/18 20:46	
p-Terphenyl (S)	%	76	58-119		08/14/18 20:46	

LABORATORY CONTROL SAMPLE: 2208780

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
TPH-DRO (C10-C28)	mg/kg	81.4	72.4	89	74-122	
n-Tetracosane (S)	%			97	64-130	
p-Terphenyl (S)	%			79	58-119	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2208781 2208782

Parameter	Units	60277365002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
TPH-DRO (C10-C28)	mg/kg	ND	87.7	90	77.6	79.1	84	84	11-160	2	31	
n-Tetracosane (S)	%						95	96	64-130			
p-Terphenyl (S)	%						85	83	58-119			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 11181165 P66 MCGOWAN/BUCKEYE
Pace Project No.: 60277365

QC Batch: 539093 Analysis Method: ASTM D2974
QC Batch Method: ASTM D2974 Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 60277365001, 60277365002, 60277365003, 60277365004, 60277365005, 60277365006, 60277365007, 60277365008, 60277365009, 60277365010, 60277365011, 60277365012, 60277365013, 60277365014

METHOD BLANK: 2208881 Matrix: Solid
Associated Lab Samples: 60277365001, 60277365002, 60277365003, 60277365004, 60277365005, 60277365006, 60277365007, 60277365008, 60277365009, 60277365010, 60277365011, 60277365012, 60277365013, 60277365014

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Percent Moisture	%	ND	0.50	0.50	08/13/18 00:00	

SAMPLE DUPLICATE: 2208882

Parameter	Units	60276524001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	18.4	19.1	4	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 11181165 P66 MCGOWAN/BUCKEYE
Pace Project No.: 60277365

QC Batch: 539055 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 60277365001, 60277365002, 60277365003, 60277365004, 60277365005, 60277365006, 60277365007, 60277365008, 60277365009, 60277365010, 60277365011, 60277365012, 60277365013, 60277365014

METHOD BLANK: 2208787 Matrix: Solid
Associated Lab Samples: 60277365001, 60277365002, 60277365003, 60277365004, 60277365005, 60277365006, 60277365007, 60277365008, 60277365009, 60277365010, 60277365011, 60277365012, 60277365013, 60277365014

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Chloride	mg/kg	ND	100	46.7	08/13/18 12:14	

LABORATORY CONTROL SAMPLE: 2208788

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/kg	500	483	97	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2208789 2208790

Parameter	Units	60277365001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/kg	ND	616	619	593	601	88	89	80-120	1	15	

MATRIX SPIKE SAMPLE: 2208791

Parameter	Units	60277365010 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chloride	mg/kg	ND	643	608	95	80-120	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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(913)599-5665

QUALIFIERS

Project: 11181165 P66 MCGOWAN/BUCKEYE
Pace Project No.: 60277365

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-K	Pace Analytical Services - Kansas City

ANALYTE QUALIFIERS

M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
MS	Analyte recovery in the matrix spike was outside QC limits for one or more of the constituent analytes used in the calculated result.
R1	RPD value was outside control limits.
RS	The RPD value in one of the constituent analytes was outside the control limits.
S4	Surrogate recovery not evaluated against control limits due to sample dilution.
S5	Surrogate recovery outside control limits due to matrix interferences (not confirmed by re-analysis).

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 11181165 P66 MCGOWAN/BUCKEYE
Pace Project No.: 60277365

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60277365001	**S-11181165-081018-JW-SW1**	EPA 3546	539053	EPA 8015B	539441
60277365002	**S-11181165-081018-JW-SW2**	EPA 3546	539053	EPA 8015B	539441
60277365003	**S-11181165-081018-JW-BOTTOM N**	EPA 3546	539053	EPA 8015B	539441
60277365004	**S-11181165-081018-JW-SW3**	EPA 3546	539053	EPA 8015B	539441
60277365005	**S-11181165-081018-JW-SW4**	EPA 3546	539053	EPA 8015B	539441
60277365006	**S-11181165-081018-JW-SW5**	EPA 3546	539053	EPA 8015B	539441
60277365007	**S-11181165-081018-JW-BOTTOM MI**	EPA 3546	539053	EPA 8015B	539441
60277365008	**S-11181165-081018-JW-SW6**	EPA 3546	539053	EPA 8015B	539441
60277365009	**S-11181165-081018-JW-SW7**	EPA 3546	539053	EPA 8015B	539441
60277365010	**S-11181165-081018-JW-BOTTOM S**	EPA 3546	539053	EPA 8015B	539441
60277365011	**S-11181165-081018-JW-SUMP E WA**	EPA 3546	539053	EPA 8015B	539441
60277365012	**S-11181165-081018-JW-SUMP S WA**	EPA 3546	539053	EPA 8015B	539441
60277365013	**S-11181165-081018-JW-SUMP W WA**	EPA 3546	539053	EPA 8015B	539441
60277365014	**S-11181165-081018-JW-SUMP BOTT**	EPA 3546	539053	EPA 8015B	539441
60277365001	**S-11181165-081018-JW-SW1**	EPA 5035A/5030B	539091	EPA 8015B	539427
60277365002	**S-11181165-081018-JW-SW2**	EPA 5035A/5030B	539091	EPA 8015B	539427
60277365003	**S-11181165-081018-JW-BOTTOM N**	EPA 5035A/5030B	539091	EPA 8015B	539427
60277365004	**S-11181165-081018-JW-SW3**	EPA 5035A/5030B	539091	EPA 8015B	539427
60277365005	**S-11181165-081018-JW-SW4**	EPA 5035A/5030B	539091	EPA 8015B	539427
60277365006	**S-11181165-081018-JW-SW5**	EPA 5035A/5030B	539091	EPA 8015B	539427
60277365007	**S-11181165-081018-JW-BOTTOM MI**	EPA 5035A/5030B	539091	EPA 8015B	539427
60277365008	**S-11181165-081018-JW-SW6**	EPA 5035A/5030B	539091	EPA 8015B	539427
60277365009	**S-11181165-081018-JW-SW7**	EPA 5035A/5030B	539091	EPA 8015B	539427
60277365010	**S-11181165-081018-JW-BOTTOM S**	EPA 5035A/5030B	539091	EPA 8015B	539427
60277365011	**S-11181165-081018-JW-SUMP E WA**	EPA 5035A/5030B	539091	EPA 8015B	539427
60277365012	**S-11181165-081018-JW-SUMP S WA**	EPA 5035A/5030B	539091	EPA 8015B	539427
60277365013	**S-11181165-081018-JW-SUMP W WA**	EPA 5035A/5030B	539091	EPA 8015B	539427
60277365014	**S-11181165-081018-JW-SUMP BOTT**	EPA 5035A/5030B	539091	EPA 8015B	539427
60277365001	**S-11181165-081018-JW-SW1**	EPA 8260	539355		
60277365002	**S-11181165-081018-JW-SW2**	EPA 8260	539355		
60277365003	**S-11181165-081018-JW-BOTTOM N**	EPA 8260	539355		
60277365004	**S-11181165-081018-JW-SW3**	EPA 8260	539617		
60277365004	**S-11181165-081018-JW-SW3**	EPA 8260	539787		
60277365005	**S-11181165-081018-JW-SW4**	EPA 8260	539617		
60277365006	**S-11181165-081018-JW-SW5**	EPA 8260	539390		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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(913)599-5665

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 11181165 P66 MCGOWAN/BUCKEYE
Pace Project No.: 60277365

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60277365007	S-11181165-081018-JW-BOTTOMMI	EPA 8260	539390		
60277365008	S-11181165-081018-JW-SW6	EPA 8260	539390		
60277365008	S-11181165-081018-JW-SW6	EPA 8260	539617		
60277365009	S-11181165-081018-JW-SW7	EPA 8260	539390		
60277365010	S-11181165-081018-JW-BOTTOMS	EPA 8260	539390		
60277365011	S-11181165-081018-JW-SUMP EWA	EPA 8260	539390		
60277365012	S-11181165-081018-JW-SUMP SWA	EPA 8260	539390		
60277365012	S-11181165-081018-JW-SUMP SWA	EPA 8260	539617		
60277365013	S-11181165-081018-JW-SUMP WWA	EPA 8260	539390		
60277365013	S-11181165-081018-JW-SUMP WWA	EPA 8260	539617		
60277365014	S-11181165-081018-JW-SUMP BOTT	EPA 8260	539617		
60277365001	S-11181165-081018-JW-SW1	ASTM D2974	539093		
60277365002	S-11181165-081018-JW-SW2	ASTM D2974	539093		
60277365003	S-11181165-081018-JW-BOTTOMN	ASTM D2974	539093		
60277365004	S-11181165-081018-JW-SW3	ASTM D2974	539093		
60277365005	S-11181165-081018-JW-SW4	ASTM D2974	539093		
60277365006	S-11181165-081018-JW-SW5	ASTM D2974	539093		
60277365007	S-11181165-081018-JW-BOTTOMMI	ASTM D2974	539093		
60277365008	S-11181165-081018-JW-SW6	ASTM D2974	539093		
60277365009	S-11181165-081018-JW-SW7	ASTM D2974	539093		
60277365010	S-11181165-081018-JW-BOTTOMS	ASTM D2974	539093		
60277365011	S-11181165-081018-JW-SUMP EWA	ASTM D2974	539093		
60277365012	S-11181165-081018-JW-SUMP SWA	ASTM D2974	539093		
60277365013	S-11181165-081018-JW-SUMP WWA	ASTM D2974	539093		
60277365014	S-11181165-081018-JW-SUMP BOTT	ASTM D2974	539093		
60277365001	S-11181165-081018-JW-SW1	EPA 300.0	539055	EPA 300.0	539103
60277365002	S-11181165-081018-JW-SW2	EPA 300.0	539055	EPA 300.0	539103
60277365003	S-11181165-081018-JW-BOTTOMN	EPA 300.0	539055	EPA 300.0	539103
60277365004	S-11181165-081018-JW-SW3	EPA 300.0	539055	EPA 300.0	539103
60277365005	S-11181165-081018-JW-SW4	EPA 300.0	539055	EPA 300.0	539103
60277365006	S-11181165-081018-JW-SW5	EPA 300.0	539055	EPA 300.0	539103
60277365007	S-11181165-081018-JW-BOTTOMMI	EPA 300.0	539055	EPA 300.0	539103
60277365008	S-11181165-081018-JW-SW6	EPA 300.0	539055	EPA 300.0	539103

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 11181165 P66 MCGOWAN/BUCKEYE
Pace Project No.: 60277365

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
60277365009	**S-11181165-081018-JW-SW7**	EPA 300.0	539055	EPA 300.0	539103
60277365010	**S-11181165-081018-JW-BOTTOMS**	EPA 300.0	539055	EPA 300.0	539103
60277365011	**S-11181165-081018-JW-SUMP EWA**	EPA 300.0	539055	EPA 300.0	539103
60277365012	**S-11181165-081018-JW-SUMP SWA**	EPA 300.0	539055	EPA 300.0	539103
60277365013	**S-11181165-081018-JW-SUMP WWA**	EPA 300.0	539055	EPA 300.0	539103
60277365014	**S-11181165-081018-JW-SUMP BOTT**	EPA 300.0	539055	EPA 300.0	539103

Pace Analytical
www.pacelabs.com

Sample Condition Upon Receipt
ESI Tech Spec Client

WO# : 60277365

60277365

Client Name: GHD 866

Courier: FedEx ☑ UPS ☐ VIA ☐ Clay ☐ PEX ☐ ECI ☐ Pace ☐ Xroads ☐ Client ☐ Other ☐

Tracking #: 7822 5128 5938 Pace Shipping Label Used? Yes ☐ No ☑

Custody Seal on Cooler/Box Present: Yes ☐ No ☑ Seals intact: Yes ☑ No ☐

Packing Material: Bubble Wrap ☐ Bubble Bags ☐ Foam ☐ None ☐ Other ☑

Thermometer Used: T298 **Type of Ice:** (Wet) Blue None

Cooler Temperature (°C): **As-read** 0.5 **Corr. Factor** +1.1 **Corrected** 1.6

Date and initials of person examining contents: SDG 8-11-18

Temperature should be above freezing to 6°C

Chain of Custody present:	☑Yes ☐No ☐N/A	
Chain of Custody relinquished:	☑Yes ☐No ☐N/A	
Samples arrived within holding time:	☑Yes ☐No ☐N/A	
Short Hold Time analyses (<72hr):	☐Yes ☑No ☐N/A	
Rush Turn Around Time requested:	☑Yes ☐No ☐N/A	3 DAY
Sufficient volume:	☑Yes ☐No ☐N/A	
Correct containers used:	☑Yes ☐No ☐N/A	
Pace containers used:	☑Yes ☐No ☐N/A	
Containers intact:	☑Yes ☐No ☐N/A	
Unpreserved 5035A / TX1005/1006 soils frozen in 48hrs?	☐Yes ☐No ☑N/A	
Filtered volume received for dissolved tests?	☐Yes ☐No ☑N/A	
Sample labels match COC: Date / time / ID / analyses	☑Yes ☐No ☐N/A	
Samples contain multiple phases? Matrix: SL	☐Yes ☐No ☑N/A	
Containers requiring pH preservation in compliance? (HNO_3, H_2SO_4, HCl<2; NaOH>9 Sulfide, NaOH>10 Cyanide) (Exceptions: VOA, Micro, O&G, KS TPH, OK-DRO)	☐Yes ☐No ☑N/A	List sample IDs, volumes, lot #'s of preservative and the date/time added.
Cyanide water sample checks: Lead acetate strip turns dark? (Record only)	☐Yes ☐No	
Potassium iodide test strip turns blue/purple? (Preserve)	☐Yes ☐No	
Trip Blank present:	☑Yes ☐No ☐N/A	
Headspace in VOA vials (>6mm):	☐Yes ☑No ☐N/A	
Samples from USDA Regulated Area: State:	☐Yes ☐No ☑N/A	
Additional labels attached to 5035A / TX1005 vials in the field?	☐Yes ☐No ☑N/A	

Client Notification/ Resolution: Copy COC to Client? Y / N Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Jann Church 8/13/18

Project Manager Review: _____ Date: _____

Temp Log: Record start and finish times when unpacking cooler, if >20 min, recheck sample temps.

Start: 0855	Start:
End: 0906	End:
Temp: 1.6	Temp:

CHAIN OF CUSTODY RECORD

COC NO.: 55511

Address: Albuquerque jeff.walker@ghd.com PAGE 1 OF 2
Phone: 505-377-3920 Fax:

Project No/ Phase/Task Code: 11181165	Laboratory Name: Pace	Lab Location: Lenexa, KS	SSOW ID:
Project Name: PLG McGowan / Buckeye	Lab Contact:		Cooler No:
Project Location: Lea Cnty, NM			Carrier: FedEx
GHD Chemistry Contact:			Airbill No:
Sampler(s): J Walker			Total # of Containers: 24

Item	Sample Identification (Containers for each sample may be combined on one line)	Date (mm/dd/yy)	Time (hh:mm)	Matrix Code (see back of COC)	Grab (G) or Comp (C)	Filtered (Y/N)	BTEX/GRO 8260	DRO/MRO 8015	Chloride 300										Total Containers/sample	MS/MSD Request	Comments/ Special Instructions:
	PRESERVATION - (SEE BACK OF COC FOR ABBREVIATIONS)																	8-11-18				60277705
1	S-11181165-081018-JW-SW1	8/10/18	1300	SO	G	-	X	X	X									WGFU(2)	2		001
2	S-11181165-081018-JW-SW2		1305				X	X	X										2		002
3	S-11181165-081018-JW-BottomN		1310				X	X	X										2		003
4	S-11181165-081018-JW-SW3		1315				X	X	X										2		004
5	S-11181165-081018-JW-SW4		1320				X	X	X										2		005
6	S-11181165-081018-JW-SW5		1325				X	X	X										2		006
7	S-11181165-081018-JW-BottomMid		1330				X	X	X										2		007
8	S-11181165-081018-JW-SW6		1335				X	X	X										2		008
9	S-11181165-081018-JW-SW7		1340				X	X	X										2		009
10	S-11181165-081018-JW-BottomS		1345				X	X	X										2		010
11	S-11181165-081018-JW-SumpEWall		1348				X	X	X										2		11
12	S-11181165-081018-JW-SumpSWall	↓	1351	↓	↓		X	X	X									↓	2		012

TAT Required in business days (use separate COCs for different TATs):
☐ 1 Day ☐ 2 Days ☒ 3 Days ☐ 1 Week ☐ 2 Week ☐ Other:

Notes/ Special Requirements:

Relinquished By	Company	Date	Time	Received By	Company	Date	Time
1. J Walker	GHD	8/10/18	1652	1. PACE	PACE	8-11-18	0820
2.				2.			
3.				3.			

THE CHAIN OF CUSTODY IS A LEGAL DOCUMENT – ALL FIELDS MUST BE COMPLETED ACCURATELY

Distribution: WHITE – Fully Executed Copy (CRA) YELLOW – Receiving Laboratory Copy PINK – Shipper GOLDENROD – Sampling Crew

CHAIN OF CUSTODY RECORD

COC NO.: 55583

Address: Albuquerque jeff.walker@ghd.com PAGE 2 OF 2
Phone: Fax:

Project No/ Phase/Task Code: 11181165	Laboratory Name: Pace	Lab Location: Lenexa, KS	SSOW ID:
Project Name: PGG McGowan	Lab Contact:		Cooler No:
Project Location:			Carrier: FedEx
GHD Chemistry Contact:			Airbill No:
Sampler(s):			Total # of Containers: 4

Item	Sample Identification (Containers for each sample may be combined on one line)	Date (mm/dd/yy)	Time (hh:mm)	Matrix Code (see back of COC)	Grab (G) or Comp (C)	Filtered (Y/N)	BTEX/GRO 8260	DRO/MRO 8015	Chloride										Total Containers/sample	MS/MSD Request	Comments/ Special Instructions:
	PRESERVATION - (SEE BACK OF COC FOR ABBREVIATIONS)																				60277365
13	S-11181165-081018-SW-SumpWall	8/10/18	1354	SO	G	-	X	X	X				WG;FU(2)						2		013
14	S-11181165-081018-SW-SumpBottom	↓	1357	SO	G	-	X	X	X				↓						2		014
3													DGMH(3)(TB)								015
4																					
5																					
6																					
7																					
8																					
9																					
10																					
11																					
12																					

TAT Required in business days (use separate COCs for different TATs):
☐ 1 Day ☐ 2 Days ☒ 3 Days ☐ 1 Week ☐ 2 Week ☐ Other:

Notes/ Special Requirements:

	Relinquished By	Company	Date	Time	Received By	Company	Date	Time
1.		GHD	8/10/18	1652		PACE	8-11-18	0820
2.								
3.								

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GHD Form: COC-10B (20110804)