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 <u>District IV</u> 1220 S. St. Francis Dr., Santa Fe, NM 87505

#### State of New Mexico Energy Minerals and Natural Resources

Oil Conservation Division Santa Fe, NM 87505

Revised August 8, 2011 Submit 1 Copy to appropriate District Office in accordance with 19.15.29 NMAC.

Form C-141

1220 South St. Francis Dr.

			Kei	ease Notific	ation	and Co	orrective A	Ctioi				
					OPE	ERATOR		$\boxtimes$	Subsequer	nt Report		Final Report
Name of Co	mpany: BP				(	Contact: Ste	eve Moskal					
Address: 20			ngton, N	M 87401		Telephone No.: 505-326-9497						
Facility Nat	ne: Mudge	A 002			]	Facility Type: Natural gas well						
Surface Ow	ner: Federa	I		Mineral O	wner: I	Federal			API No	. 30045109	948	
						OF RE						
Unit Letter	1	Township 31N	Range 11W	Feet from the 660	North/ North	South Line	Feet from the 660	East/ East	West Line	County: Sa	an Juan	ı
		Latitud	le36.9	18505°		Longitude	-107.972206	j°		_		
				NAT	URE	OF REL						
Type of Rele						the same of the sa	Release: unknow	the Park Street Control		Recovered: n		1 1105
Source of Re	lease: Unkno	wn – suspec	t earthen p	oit; 95 bbl BGT		Date and F	Iour of Occurrence	æ:	2017	Hour of Dis	covery	April 25,
Was Immedi	ate Notice Gi	ven?				If YES, To	Whom?			aug pli	IDIC	T 3
			Yes	No Not Re	equired				OIL	CONS. DI	סום ע	1. 0
By Whom?	Steve Moskal					Date and H	lour:		Ta.	1	9-9-	118
Was a Water	course Reach					If YES, Vo	Iour: olume Impacting t	the Wat	tercourse.	FD-T	0 7	0 10
		Ц	Yes 🗵	No								
If a Watercon	irse was Impa	acted, Descri	ibe Fully.									
impacts to th	e soil, likely a landfarm trea	associated watment. Due	ith an eart	n Taken.* During then pit. The area sence of a high pr	in the ir	nmediate are	a of the below gra	ade tanl	k was excav	ated with im	pacted	soils
and scope of delineate the in place. The	work, BP ele area in the ve attached rep	ects to further ertical and la port documen	r delineate teral direct ts the acti	ten.* BP partially the impacts to de- tion. The delineat vities and contain hed plan. Also att	etermine tion indicates laborate	future correct cates no threat tory data sup	tive action via dr at to groundwater porting site closu	illing so or surf re. BP	oil borings. ace water, w proposes to	The five soi with minimal use the insta	l borin	gs fully ts remaining
regulations a public health should their	Il operators a or the environ operations had not not a line and a	re required to onment. The ve failed to a dition, NMO	o report an acceptance adequately OCD accep	e is true and comp nd/or file certain re- ce of a C-141 report investigate and re- stance of a C-141	elease no ort by the emediate	otifications as NMOCD m contaminati	nd perform correct arked as "Final R on that pose a three the operator of	etive ac deport" reat to g respons	tions for rele does not rele ground water sibility for co	eases which ieve the oper r, surface wa ompliance w	may er rator of ter, hur vith any	ndanger Tliability man health
Signature:	Mus M	Eu )					OIL CON	SERV	ATION	DIVISIO	N	
Printed Name	e: Steve Mosl	kal			1	Approved by	Environmental S	pecialis	st:	y.	5	>
Title: Field E	nvironmenta	l Coordinato	r		1	Approval Dat	e: Alloll	8	Expiration	Date:		
E-mail Addre	ess: steven.m	oskal@bp.co	om		(	Conditions of Approval: Attached			×			
Date: Februa				: 505-326-9497				>_			/ \	
Attach Addi	tional Sheet	s If Necess	ary			NI	171714V	134	1866	37		

#### Fields, Vanessa, EMNRD

From:

Fields, Vanessa, EMNRD

Sent:

Thursday, February 15, 2018 2:49 PM

To:

'Moskal, Steven'

Smith, Cory, EMNRD

Cc: Subject:

Conditions of Approval Mudge A 002 30-045-10948

#### Good afternoon Steve,

BP's submittal of the Remedial Assessment Report on a Subsequent C-141 received on February 13, 2018 has been approved with the following conditions of approval.

- BP will maintain a SVE runtime greater than or equal to 90% per quarter.
- BP will collect a gas sample and initial and annually thereafter. The gas sample will be analyzed for EPA Method 8260 Full.
- BP will submit to OCD District III a quarterly update report detailing remediation operations the report will include at a minimum.
  - Summary of remediation activity for the quarter
    - o SVE run time
    - SVE mass removal and product recovery

#### Thank you,

Vanessa Fields
Environmental Specialist
Oil Conservation Division
Energy, Minerals, & Natural Resources
1000 Rio Brazos, Aztec, NM 87410
(505)334-6178 ext 119
Cell: (505) 419-0463
vanessa.fields@state.nm.us

#### **BP Remediation Plan**

To:

Cory Smith & Vanessa Fields (NMOCD)

From:

Steve Moskal (BP)

CC:

Blagg Engineering

Date:

2/12/2018

Re:

Mudge A 002 - SVE Plan

API#30-045-10948 (A) S10, T31N, R11W

Dear Mr. Smith, Mrs. Fields,

The Mudge A 002 site is an active natural gas production pad within the San Juan Basin Gas Field in San Juan County, New Mexico. The site is located on land controlled by the Bureau of Land Management drilled by Delhi Oil Corporation in 1950. The ownership of the well has changed several times since it was drilled. The well pad is located in an area primarily used by oil and gas production but also for recreational and livestock grazing. Depth to groundwater is unknown at this time.

#### **BACKGROUND**

Discharge of natural gas liquids from production and process equipment into an earthen pit was highly likely and acceptable industry practice prior to the implementation of the pit rule. During closure of a below grade tank on April 25, 2017, soil impacts were identified. Remediation via soil shredding commenced on May 18, 2017, however due to soil conditions, soil shredding was not a viable remedial solution. The alternative of a dig and haul ensued. Due to the depth, size, nearby pipeline and biological restrictions, BP elected to terminate the excavation activities near the south and east edges of the pad. The excavated area was backfilled, with the western half of the excavated area meeting the NMOCD spill and release guidelines for closure. The east portion of the excavation remains to be delineated.

The remedial excavation measured approximately 58x44' with a total depth of 42' below wellhead surface. The overall excavation, required for proper sloping per engineered design, measured 100x85'. The outer extents of the excavation were limited by identified Brack's Cactus suitable habitat areas to the west, south and east, as well as an Enterprise pipeline, servicing wells operated by others, to the east. The attached data packet provides a field report, figures and laboratory data for reference.

Delineation of off-site impacts that could not be excavated was conducted on August 14 – 16, 2017, a total of five borings were advanced to a depth of 45 feet below surface grade (Figure 3). The boring locations were all between 9' - 12' below original well pad grade, so the total depth of the borings ranged between 54' - 57' below the original well pad elevation. No groundwater was encountered. Four of the five borings were completed as soil vapor extraction (SVE) or chemical injection points in the event that in-situ remediation might be necessary. These completions consisted of either a 5-foot or 10-foot long slotted screened section across the interval with greatest field OVM reading, with a riser extending to about 3 feet above grade. The piping used for completion was a schedule 40 PVC with threaded connections. The annulus of the screened section was sand packed with washed graded silica 10/20 mesh to approximately 2 feet above the top screen slot. Above this a 2 foot section of hydrated bentonite was placed, followed by a cement/bentonite grout mix installed in the annulus from immediately above the bentonite to the ground surface. The completion tops were secured with a steel, lockable well protector cemented into place. Borehole BH-5 was abandoned immediately after drilling by filling the borehole with cuttings to the ground surface since there was no evidence of hydrocarbon impacts in any cuttings or split spoon sample. Boring completions BH-1 through BH-4 were inspected for the presence of water on September 6, 2017. Between 3" and 5" of bentonite hydration water was found to be accumulated in the end caps of BH-1, BH-2 and BH-4. This water was removed on September 7, 2017 using a sponge apparatus placed in a bailer. The boring completions were re-inspected for water on September 8, 2017 and no new water had accumulated in the end caps.

#### **REMEDIATION PLAN**

BP proposes to employ soil vapor extraction (SVE) technology to the existing wells described above. The system will incorporate the following:

- 1) An explosion proof, (Class 1, Div. 1) electrically driven skid mounted SVE pump will be installed on site. This pump will be driven with the largest of one of the following, depending on electric drop capabilities:
  - a. Rotron EN454 (1.5 HP, single phase, 230 volt, 9.5 amp continuous, 48 amp inrush).
  - b. Rotron EN505 (2.0 HP, single phase, 230 volt, 12 amp continuous, 56 amp inrush).

The SVE package will be fitted with a water knockout drum, high water level shutoff, two vacuum gauges, one flow rate gauge and explosion proof starter switch.

- 2) Each of the four (4) air extraction points will be fitted with 2-inch quick-connect fittings.
- 3) A 2-inch diameter PVC pipe and/or flexible hose with quick connect fittings will be connected from the SVE blower to one SVE well at a time. The hose will be long enough to reach any of the four (4) SVE points.
- 4) During operation, the flexible air hose will be moved to other points as deemed necessary by site monitoring:
  - A) Exhaust vapors from the SVE pump will be measured with an organic vapor meter (OVM) on a daily basis for the first 5 days operation, weekly for the first month of operation, and then monthly thereafter.
  - B) Annually, a sample will be collected from the vacuum stream and will be laboratory analyzed for total petroleum hydrocarbons (TPH) by U.S. EPA Method 8015B and volatile hydrocarbons (BTEX) by U.S. EPA Method 8021. The location of the collection point will be determined based on the SVE system setup, but will preferably be upstream of the blower to reduce impacts of heat and turbulence to the air stream.
  - C) When exhaust vapors appear to reach an asymptotic limit, the air injection hose will be moved to various other injection points and exhaust vapors from other unused observation points will be measured with an organic vapor meter (OVM) on a monthly basis.
- 5) When site remediation appears to be complete based on monitoring results from the active remediation system, a test borings will be advanced to a depth of approximately 45-50 feet at locations about 8 feet from the various remediation points. Soil samples will be collected at various depths for laboratory determination of residual hydrocarbons. This testing will include total petroleum hydrocarbons (TPH) by U.S. EPA Method 8015B and volatile hydrocarbons (BTEX) by U.S. EPA Method 8021. Note that the New Mexico Oil Conservation Division (NMOCD), Aztec District Office, will be notified prior to this drilling and sampling so that personnel may be available for witnessing.
- 6) NMOCD will be provided with laboratory test results. Following review of the remediation system monitoring and laboratory test results, either site closure, continued system operation or modifications to the remediation plan will be requested.

## REPORTING

The performance of the SVE system and remediation will be reported bi-annually with field OVM data, estimated run times and system performance, maintenance or changes included. The sampling of the vacuum stream will be reported in an annual report.

A final report will be provided within 60 days of the final closure sampling event.

Regards,

Steve Moskal

BP America Production Co.

Chour My

# Remediation of Hydrocarbon Impacted Soils

Mudge A 2 (A) Sec 10 – T31N – R11W API: 30-045-10948 San Juan County, New Mexico

Prepared for: BP America Production Co. Farmington, New Mexico

Prepared by:
Blagg Engineering, Inc.
P.O. Box 87
Bloomfield, New Mexico 87413
(505)632-1199

September 14 2017

# REMEDIATION OF HYDROCARBON IMPACTED SOILS MUDGE A 2

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#### REMEDIATION OF HYDROCARBON IMPACTED SOILS MUDGE A 2

#### INTRODUCTION

Blagg Engineering Inc. (BEI) has been retained by BP America Production Co. (BP) to monitor, sample and document environmental remediation of hydrocarbon impacts at the Mudge A 2, a natural gas well located in rural San Juan County, New Mexico at (A) Sec. 10 - T31N - R11W (Figure 1). Hydrocarbon impacts at the site were discovered in on April 25, 2017 during routine closure at a 95 barrel below grade tank (BGT). There were no apparent integrity issues with the BGT and the source of impacts appeared to be historical, likely from a prior unlined earthen disposal pit at the same location as the 95 BGT. This was a common practice permitted by both New Mexico Oil Conservation Division (NMOCD) and the U.S. Bureau of Land Management (BLM) until the mid 1990's. During the site remediation no other hydrocarbon impact sources were observed. BP began initial remedial excavations of on-site impacts on May 18, 2017 and completed excavation of accessible impacts on June 12, 2017. Excavations were discontinued at that time due to the depth of the dig (exceeding 38' from original well pad surface) and because the excavation was approaching an active third party high pressure natural gas line that could not be taken out of service. Following backfilling the remedial dig with clean fill, a mobile hollow stem auger environmental drill rig was used to fully delineate impacts that could not be excavated. This drilling was conducted between August 14 - 16, 2017.

The site closure standard ranking was determined as follows:

Depth to Groundwater based on BGT permit research: 50-100 feet (10 points) Distance to water well > 1,000' based on BGT permit research: (0 points) Distance to dry wash < 200' based on site measurements: (10 points)

Total Site Ranking: 20

With a ranking of 20 points, the NMOCD/BLM site the closure standard was established as follows:

Total Petroleum Hydrocarbons (TPH) = 100 mg/Kg (parts per million) Benzene = 10 mg/KgBenzene, Toluene, Ethyl-Benzene and Total Xylenes (BTEX) combined = 50 mg/KgTotal Chlorides = 600 mg/Kg

#### REMEDIATION ACTIVITIES

Site remediation consisted of 2 separate activities: (1) excavation of impacted soils until site closure standards had been achieved, and (2) drilling to delineate impact areas that could not be excavated due to depth and/or pipeline utility issues. The procedures used for these activities are discussed below.

#### Excavation of Impacted Media to Achieve Site Remediation

Removal of hydrocarbon impacted media began on May 18, 2017 using excavators to strip clean, un-impacted soils and excavate impacted soils. The excavated impacted soils were placed on the well pad. A small scale test run was conducted to evaluate the soils for on-site treatment to remove hydrocarbons via shredding and chemical treatment. Based on laboratory test results, it was determined that this site was a poor candidate for on-site treatment and all excavated impacted materials were subsequently transported to a commercial landfarm for final remediation. Remedial excavations progressed from the southeast portion of the well pad, where the original source was discovered, and advanced off-pad towards the southeast. As previously discussed, the excavation was discontinued when a total depth of 38' below original well pad grade was reached and a third party gas pipeline was being encroached.

Closure sampling was progressive as the excavation advanced. Sampling areas were marked out on the excavation walls and base for collection of composites from each area (Figure 2). Sampling was primarily performed using an excavator trackhoe due to the danger of personnel entering the excavation because of the risk of collapsing sidewalls. All closure sampling was witnessed by the NMOCD. Representative composite portions of sample were placed into a gallon sized Ziploc® baggie for field headspace analysis of organic vapors with a calibrated IonScience Tiger model photo-ionization detector (PID) containing a 11.2 eV lamp. Split samples were placed into a 4-ounce laboratory supplied jar with Teflon® lid, labeled and placed on ice in an ice chest for further laboratory testing. The jarred samples were hand delivered to a representative of Hall Environmental Analytical Laboratories for analysis via U.S. EPA Method 8021B (volatile organics limited to benzene, toluene, ethyl benzene and total xylenes), U.S. EPA Method 8015 (gasoline range (GRO), diesel range (DRO) and motor oil range (MRO) organics), and chlorides via U.S. EPA Method 300. A chain-of-custody followed the samples.

Laboratory analytical test reports for the closure sampling is found in Appendix C and a summary of this laboratory data is found in Table 1:





Table 1

Summary Excavation Closure Laboratory Data

Sample ID	Date	TPH Total (mg/Kg)	BTEX Total (mg/Kg)	Benzene (mg/Kg)	Comments
1 – North Wall (8-pt. comp) (6'-19')	5/24/2017	ND	ND	ND	
2 – West Wall (8- pt. comp) (6'-19')	5/24/2017	ND	ND	ND	
3 – SE Corner (3-pt. comp) (10'-16')	5/24/2017	2,655	169.8	3.7	Impacted soils, subsequently excavated.
4 – East Wall, South (5-pt. comp)(12'-25')	5/30/2017	230	4.1	ND	Subsequently excavated.
5 – South Wall, East (5-pt. comp)(12'-25')	5/30/2017	11	ND	ND	
6 – South Wall, West (5-pt. comp)(12'-25')	5/30/2017	590	26.8	ND	Subsequently excavated.
7 – Grab Sample, South Extent, @-40'	6/2/2017	ND	ND	ND	,
8 – Grab Sample, SE Extent, @-42'	6/5/2017	4,310	468	11	Informational Sample. Impacts remain in place.
9 – West Wall (5- pt. comp) (26'-36')	6/9/2017	32	0.26	0.043	
10 – West Base (5-pt. comp @ -38')	6/9/2017	29	0.53	0.041	
11 – South Wall (5- pt. comp) (26'-36')	6/9/2017	18	ND	ND	
12 – NE Base (5-pt. comp @ -37')	6/12/2017	354	19.95	0.19	Impacts remain in place.
13 – North Wall (5- pt. comp) (26'-36')	6/12/2017	20	ND	ND	
NMOCD/BLM Closure Standard		100	50	10	

#### Off-Site Drilling to Delineate Residual Impacts

Delineation of off-site impacts that could not be excavated was conducted using a hollow stem auger drill rig. During this investigation, conducted on August 14 - 16, 2017, a total of five borings were advanced to a depth of 45 feet below surface grade (Figure 3). The boring locations were all between 9' - 12' below original well pad grade, so the total depth of the borings ranged between 54' - 57' below the original well pad elevation. Approximate drilling locations had been pre-determined and well permits were obtained through the New Mexico Office of the State Engineer in the event that groundwater was encountered.

Drilling operations were conducted by Enviro-Drill using a CME-75 drilling unit equipped with 5-foot long augers and sampling conducted with a conventional 24-inchlong x 2-inch diameter split spoon sampler. Split spoon samples were collected every 5 feet. Split samples were described on the drilling logs (Appendix B), then a representative portion was placed into a gallon sized Ziploc® baggie for field headspace analysis of organic vapors as previously described. Samples with the highest OVM reading from each boring were submitted for laboratory testing, as well as the deepest sample obtained.

Although no groundwater was encountered, four of the borings were completed as soil vapor extraction (SVE) or chemical injection points in the event that in-situ remediation might be necessary. These completions consisted of either a 5-foot or 10-foot long slotted screened section across the interval with greatest field OVM reading, with a riser extending to about 3 feet above grade. The piping used for completion was a schedule 40 PVC with threaded connections. The annulus of the screened section was sand packed with washed graded silica 10/20 mesh to approximately 2 feet above the top screen slot. Above this a 2 foot section of hydrated bentonite was placed, followed by a cement/bentonite grout mix installed in the annulus from immediately above the bentonite to the ground surface. The completion tops were secured with a steel, lockable well protector cemented into place.

Borehole BH-5 was abandoned immediately after drilling by filling the borehole with cuttings to the ground surface since there was no evidence of hydrocarbon impacts in any cuttings or split spoon sample.

Boring completions BH-1 through BH-4 were inspected for the presence of water on September 6, 2017. Between 3" and 5" of bentonite hydration water was found to be accumulated in the end caps of BH-1, BH-2 and BH-4. This water was removed on September 7, 2017 using a sponge apparatus placed in a bailer. The boring completions were re-inspected for water on September 8, 2017 and no new water had accumulated in the end caps.

Drill boring soil sample laboratory analytical reports are found in Appendix D and a summary of this laboratory data is presented in Table 2:

Table 2 Summary Drilling Laboratory Data

Sample ID	Date	Field OVM (ppm)	TPH Total (mg/Kg)	BTEX Total (mg/Kg)	Benzene (mg/Kg)	Comments
BH-1 (25'-26')	8/14/2017	1,638	309	1.1	ND	Backfill to about 33' boring depth.
BH-1 (35'-36')	8/14/2017	18.8	ND	0.047	ND	Boring surface grade about 9' below
BH-1 (45'-46')	8/14/2017	3.7	ND	ND	ND	original wellpad grade.
BH-2 (31.5'-32')	8/14/2017	606	14	ND	ND	Boring surface grade about 12' below
BH-2 (35'-36')	8/14/2017	12.2	ND	ND	ND	original wellpad grade.
BH-2 (45'-46')	8/14/2017	2.6	ND	ND	ND	
BH-3 (25'-26')	8/15/2017	224	10	ND	ND	Boring surface grade about 10' below
BH-3 (35'-36')	8/15/2017	16.8	ND	ND	ND	original wellpad grade.
BH-3 (45'-46')	8/15/2017	2.1	ND	ND	ND	
BH-4 (30'-31')	8/16/2017	95	11	ND	ND	Boring surface grade about 11' below
BH-4 (35'-36')	8/16/2017	41	ND	ND	ND	original wellpad grade.
BH-4 (45'-46')	8/16/2017	2.2	ND	ND	ND	
BH-5 (35'-36')	8/16/2017	17.6	ND	ND	ND	Boring surface grade about 12' below
BH-5 (45'-46')	8/16/2017	1.6	ND	ND	ND	original wellpad grade.
NMOCD/BLM Closure Standard			100	50	10	

#### CONCLUSIONS AND RECOMMENDATIONS

- 1) Hydrocarbon impacted soil and at the BP operated Mudge A 2 has been successfully excavated. Excavation sampling and analytical testing has confirmed that 11 of 13 separate sampling zones within the remedial excavation test below site closure standards. The two (2) zones with residual hydrocarbon impacts exceeding site closure standards (Areas 8 and 12) are not indicated to contribute a risk to surface or groundwater. Removal of additional soils in Areas 8 and 12 is not presently feasible due to an active third party high pressure natural gas line.
- Drilling to further delineate in-place impacts has determined that no lateral movement of hydrocarbons exceeding site standards is present. Borings BH-2 through BH-5, outside the remedial excavation, tested residual hydrocarbons at values less than 14 mg/Kg. Boring BH-1, placed within the remedial excavation at the point of greatest residual impacts, found a minimum 10 foot separation between the base of impacts and the base of the boring. The maximum hydrocarbon value tested in BH-1 was 309 mg/Kg.
- 3) Site closure is recommended. The remaining hydrocarbon impacts at the site do not indicate a risk to surface or groundwater.

#### **CLOSURE AND LIMITATIONS**

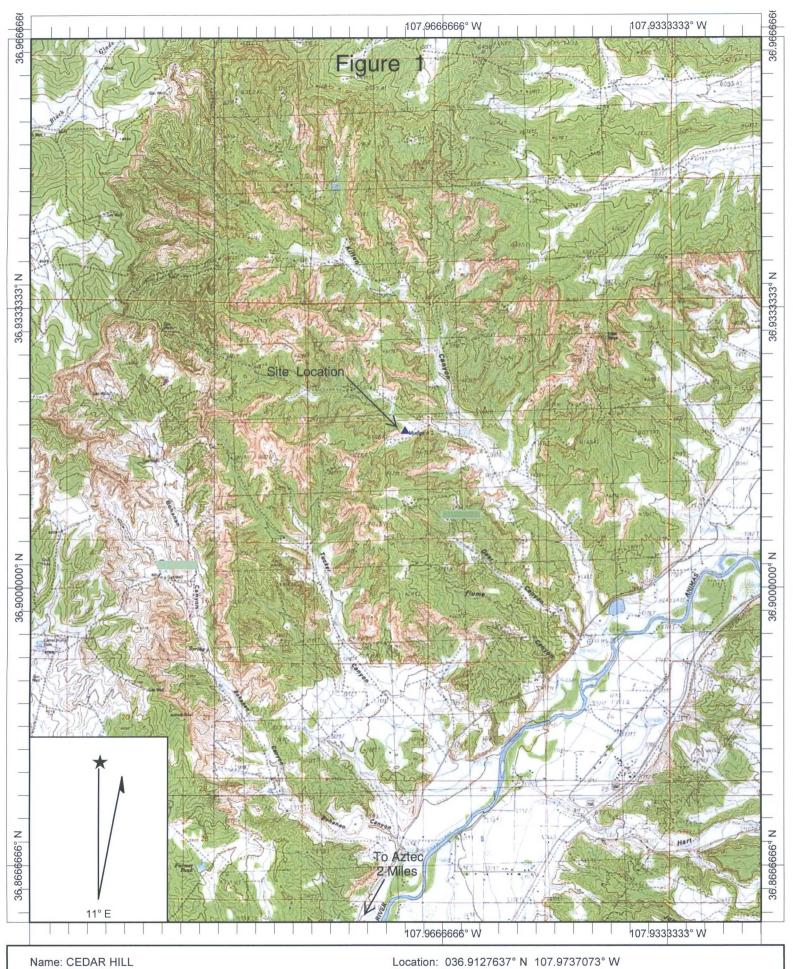
This report has been prepared for the exclusive use of BP America Production Company as it pertains to hydrocarbon impact remediation at the Mudge A 2 in San Juan County, New Mexico. The data presented herein is based on visual observations, subsurface soil conditions encountered at sampling locations and on information reported by analytical laboratory testing of soils. This report does not reflect variations which may exist between sampling locations.

I certify that the work performed by Blagg Engineering, Inc. as described in this report was directed by my supervision, and that I am personally familiar with the remedial actions and the contents of this report.

Submitted by: Blagg Engineering, Inc.

Jeffrey C. Blagg, PE NMPE 11607

# Appendix A Figures



Date: 9/14/2017

Scale: 1 inch equals 4000 feet

Location: 036.9127637° N 107.9737073° W Caption: BP America Mudge A 2

Appendix B

**Drilling Logs** 

	P.O.	BOX		COMF		IG, INC. Page L of L NM 87413
	BORI	ING.	LOG			BORING ID: BH-1
	CLIENT DRILLIN EQUIPM DATE STOTAL I	NG CO VENT UTART: E	NTRACTI	7 DATE	nviro-Drill tem Auge E FINISH: SING TYPE W Well	er - CME 75  1: 9/5/201 DRILLER: A-Kennedy LOGGED BY: JCB  PE & SIZE: 2" PVC SLOT SIZE: 0.010
	DEPTH FEET	TIME	SAMPLE TYPE	FIELD	MW Schematic	SAMPLE DESCRIPTION
	2' 4' 6' 8' 10'	1120	Cuttings		4RWT	START SILLY SAND - BACKFILL - NO/NS
	12' 14' 16' 18'				RISER	
	22'	1203	55000	1638	35. 1//	SAA-EXCEPT HC ODOR Beginny @ 23'
	201		SS-6 Blocus 4BLORUS	309 ppm	1020	Recover 18 - mottled Gray Silty SAND, Strong HC odor Recover 7 - SAA (BACKFILL)
-	34' 36' 38'	1228	\$5 40 Blad	18.8 TPH = ND	DEMT/	Dense Silt Stone, Gray Gran, Hc abor. (Recover 11")
		1245	67 Blan	1 6.5	CLEAN OF O	Recover 13", Danse Silt Stone, Gray Grean, Lile MC OBOR.
,	44' 46' 48' 50'	1335	68 Bia	3.7 STPH = ND	0'0'4	- Recover 16", Blue shalestone, Dry, Lite HC ODOR.
	52' 54' 56' 58'					

BLAGG ENGINEERING, INC. Page 1 of 1	
P.O. BOX 87, BLOOMFIELD, NM 87413	
(505) 632-1199	
BORING LOG BORING ID: BH-2	
PROJECT: Mudge A 2 CLIENT: BP America	_
DRILLING CONTRACTOR: Enviro-Drill	_
EQUIPMENT USED: Hollow Stem Auger	
DATE START: 8/14/2017 DATE FINISH: 3/15/2017 DRILLER: A-Kennedy LOGGED BY: JCB TOTAL DEPTH: 45' CASING TYPE & SIZE: 2" PVC SLOT SIZE: 0.010	_
COMMENTS: SURFACE 12' + Below Well PAD	_
DEPTH TIME SAMPLE FIELD MW SAMPLE DESCRIPTION	
INTERIOR OF THE SCHEMATIC	
2' SHY SAND, NATIVE TAN DOV NO OTHER ILL	
6'	
8'	
10'	
12' 4919 22 BLOWS 1.2 RECOVER 14, lite Drown Silty SAND, NO/NS, Lite Moiston	e
14'	
16' 1426 32 Blows 0.5 & Recover 24, SAA, less Moisture	
RECOVER 22, SAA, Increased Mostine	
22' 1757 36 51 20' 1757 270 1870 1870 1870 1870 1870 1870 1870 18	
26'	
26' 1443 Si Blows 3.1 Recoret 24", SAA Except Bottom 3, Fractured SANDSTONE	2.
30' 20-31 Tite drown Sith clavaraix, NU/NS	muk?
30' 1455 52 BLOWN 30' 312-32: Gray Frectied Strostone, HC abo	R
34' TPH = 34'	
36' 1507 51 Blow 12.2 RECOUNT 24 Dank Brown Green Sha before 1 He HC ONDE	
ND RENT DOWN Sha bestone, Lite HC ODOR	
40 - 1524 70 Blows 3.8 000 00 Recover 20, SAA	
44' cottings Breckfill	
46' 1537 34 Black 2.6 RECOVER 21" SAA	
50'	
52'	
54'	
56'	
58'	

	BI	AGG	EN(	ZINE	ERIN	G, IN	NC. Page 1 of 1
	P.O	. BOX	87, BI	COOME	FIELD, N	IM 874	413
	(50	5) 632	2-1199	)			,
	BOE	RING	LOG				BORING ID: BH-3
	No. of the second		adge A 2				
		ING CO		ΠR: F	nviro-Dril		
	EQUIP	MENT L	JSED: H	ollow S	tem Auge	r c CN	4E 75
	DATE	START: 8	3/15/20	DAT	E FINISH:	8/15/2	2017 DRILLER: A. Kennedy LOGGED BY: JCB
					Below i		E: Z"PVC SLOT SIZE: 0.010
	DEPTH	1				ell pao	Α.
	FEET	TIME	SAMPLE	FIELD	MW Schematic		SAMPLE DESCRIPTION
	2'	0758	CUTTLUGT		1	START	
	4'					Silty !	SAND, NATIVE, TAN, DRY, NO ODOK NO STAIN
	6'						
	8'						
	10'		a V		3		or the root of the second of t
	12'	0810	17310	us 0.0	1 5	recoins	16 sitty sand, Lite Brown, lite Moisture, NO/15
	.14'				\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\		
	16′	0815	30 Biows	0.2	1 8	Recover	24" SAA
	18′				K		
	-50-	0874	35 BLOWS	1.4		Remove	r 18 , SAA
	22′	000-1	BLOWS	10 (	SENT/	1 recovar	
o	26'	0025	72		0		
	58,	0035	72 Block			KECOVER	1-20, Green/Gray Shelestone, Lite HC ODOR
	30'			10 PPM	5 10 Z QUAS		5 N+W
	35,	0845	30000	93	3.12	RECOURT	18, Green Shelestone, Occasional Gray Strenks, V. Lite HC OBOR.
Ì	34'				BENT		V. Lite HC ODOR.
0	36′	0904	72	16.8	6 5 0	2=001015	in " san il o con con be a con little orall
	38′		150005	TPH = ND		NECOVER .	17, SAA, NO GURY STIPPLES, V.V. LITE HC ODOR.
	- 40-		w-1020		GLEAN		4-11-
	42'	0921	BLOWS	4.3	6 WITH	RECOVER	- 16", SAA
	44'		70	ii.	000		
P	46'	0940	BLOW'S	2.1 TPH=	45'	REceiver	14", Blue Shalestone, Dry, No odos/No Staly
-	48′			ND			
-	50′			115-1	D P.	TENER CA	AP @ 30, 5 x 0.010 slotted 30-25; RISER TO
-	. 52'	TD	DRILLED:	45	אוסו מטא	1 "	Surface.
-	54′		.1	Clean	Cuttings	45 -	36
-	56′		H ia	120 SA	ND	31'-	23
ŀ	58'		Ĥ	(ydrat	CUTTINGS BENT ND ND BENT	23 -	21
L			The second liverage and the se	SROUT		vrtace.	

	BLAGG ENGINEERING, INC.  P.O. BOX 87, BLOOMFIELD, NM 87413 (505) 632-1199  BORING LOG  BORING ID: BH-4												
	BOF	RING	LOG	1,-	1- 10	The second second		¥.	BORING ID: BH-4				
		ECT: Mu IT: BP	dge A 2										
	DRILL	ING CO	NTRACT										
	DATE	START: 8	SED: H	7 DAT	FF	HZINI	8/16/2017	Di	RILLERI A. KENWEDY LOGGED BY: JCB				
TOTAL DEPTH: 45 CASING TYPE & SIZE: 2 PVC SLOT SIZE: 0.010													
		NTS: SU	RFACE 11	' I Be	low	well F	ad Grade		*.				
	DEPTH FEET	TIME	SAMPLE TYPE	FIELD	Scl	MW nematic			SAMPLE DESCRIPTION				
-	2′	0810	Cuttings			1	START	Seil:	TAN Silty SAND, lite Moistur, No ODOR				
4	4'								, NO STAIN				
	6' 8'												
	10'				\\								
	12′	0823	50 Biows	0.8		1	17E COVER	14"	SAA				
	14'	-07				Reci							
2	16′	0831	35 Buil	0.9	SER	JEMENT GROUT	RECOVER	18%	SAA				
	-20-				X	CE PE							
	55,	0842	27 Bioc	1.4	1	1 1	RECOVER	14, 5	AA, Increased Moisture				
_	. 24′.					/ ,	ì						
	26′	0852	38 Blous	5.9		BENT	RECOVER	24,	544				
	30,		3		150	. 1							
4	32'	0901	ZO BLOW.		0	: 0 A -	RECOVE	1973	Sity SAND, DARK TAN With Gray Streeting,				
	34′		*	TPH = 11 PPM	0.0.	5401			Lité moistire, HC adois.				
ø		0915	\$ 85 Blau	> 411 TPH =	EX.	all and	RECOURT	22"-:	Brown Siltstone, V. Minor Gray Streets,				
	38′			ND	/1	SENT			Lite moisture, V. mor He opon.				
١	- 40 - 42'	0932	85 Bitus	3.8	0 (	O O O	RECOVER	20%	Gray Green Sittstone, life moistine,				
	44'				0 (	CHAINS &			NO HC Streaking, V.V. Minor HC ODOR.				
æ	46′	0958	1 80 Blace	2.2	5	0 00	RECOVER	187:	BLUE SHALESTONE, LITE MOISTURE, NO HC ODOR OR STAIN				
	48′			TPH = ND		147			NO HC ODOR OR STAIN				
	50' . 52'												
ŀ	. 52 54'												
Ì	56′								•				
	58'												
	DU												

					G, INC. Page <u>i</u> of <u>l</u> M 87413						
		2-1199		11110, 11							
BOR	RING	LOG		-	BORING ID: BH-5						
	T: BP	dge A 2									
DRILL	ING CO	NTRACTI		nviro-Drill							
EQUIP	MENT L	ISED: H	ollow S	tem Auge	01. /2						
TOTAL	DEPTH:	110/201	7 DAT	E FINISH:	8/16/17 DRILLER: A. KENNEW LOGGED BY: JCB  8 SIZE: SLOT SIZE: -						
	OMMENTS: Supple 12 = Below well pad Grade										
DEPTH	PTH THE SAMPLE FIELD MW CAMPLE RECONSTITUTE										
FEET	TIME	TYPE	OVM	Schematic	SAMPLE DESCRIPTION						
2′	1218	CUTTINUS			SITTY SAND, NATIVE, TAN, DRY, NO ODOR NO STAIN						
4′					, , , , , , , , , , , , , , , , , , , ,						
6′					. *						
8′											
10'	1230	25 BLOWS	1.5		RECOVER 14": SAA						
12′		25 (200)	,,,,								
14'	12110				RECOVER 12": SAA						
18'	1240	26 BLOWS	0.6	5-90	NECOVER 12 - SAIA						
				CUTTINGS	*						
-50-	1251	55 Biou	5 0.4	3	RECOVER 24" BROWN SILTY SAUB, LIFE MOISTURE, No ODOR/NO STAW						
24'			,	产	No UDUZ/NO STAIN						
26′	1.303	28 Bious	0.9	3	RECOVET 14" SAA						
28′		у.		3	SAH						
30′		76		Brettous win							
32'	1315	24 Blong	5.1	Shek	RECORT 24 : SAA, Minor increase in Mulsture						
34'				,	,						
36′	1322	148 Blaz	\$ 17.6		RECOVER 20": Green Canan Siltertone like moisting						
38′			TPH = ND		RECOVER 20": Green/Gray Siltstone, lite moisture, No HC ODOR, MINOR Gray Streaking.						
- 40 -	1271	85 BLOW	( 2 2		D=mab 32 = (AA = 1 = 1 = 1)						
42′	1750	# 67 Dran	5 3.2		RECOVET 22: SAA, Except No Gray Streakly						
44′	1357	65 Blac			2						
48'	1000	# 62 NW	TPH =		REcover 19": Blue Shalestone, Dry, No odor No Stain.						
50'			ND		· Stain,						
. 52'	<mark>-</mark>										
54'											
56′					*						
58'											

# Appendix C

# Excavation Closure Laboratory Analytical Data Reports



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

May 26, 2017

Steven Moskal Blagg Engineering P. O. Box 87

Bloomfield, NM 87413 TEL: (505) 632-1199 FAX (505) 632-3903

RE: MUDGE A 2

OrderNo.: 1705C79

#### Dear Steven Moskal:

Hall Environmental Analysis Laboratory received 3 sample(s) on 5/25/2017 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman

Laboratory Manager

andyl

4901 Hawkins NE

Albuquerque, NM 87109

Lab Order 1705C79

Date Reported: 5/26/2017

#### Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Blagg Engineering

Client Sample ID: SE Corner 3-Point

Project: MUDGE A 2

Collection Date: 5/24/2017 3:10:00 PM

Lab ID: 1705C79-001

Matrix: SOIL

Received Date: 5/25/2017 7:10:00 AM

Analyses	Result	PQL (	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst	MRA
Chloride	35	30		mg/Kg	20	5/25/2017 11:25:26 AM	31974
EPA METHOD 8015M/D: DIESEL RAN	GE ORGANICS	3				Analyst	: TOM
Diesel Range Organics (DRO)	160	9.2		mg/Kg	1	5/25/2017 10:07:54 AM	31956
Motor Oil Range Organics (MRO)	95	46		mg/Kg	1	5/25/2017 10:07:54 AM	31956
Surr: DNOP	103	70-130		%Rec	1	5/25/2017 10:07:54 AM	31956
EPA METHOD 8015D: GASOLINE RAN	NGE					Analyst	NSB
Gasoline Range Organics (GRO)	2400	360		mg/Kg	100	5/25/2017 9:57:50 AM	G43065
Surr: BFB	191	54-150	S	%Rec	100	5/25/2017 9:57:50 AM	G43065
EPA METHOD 8021B: VOLATILES						Analyst	NSB
Benzene	3.7	1.8		mg/Kg	100	5/25/2017 9:57:50 AM	B43065
Toluene	3.1	1.8		mg/Kg	100	5/25/2017 9:57:50 AM	B43065
Ethylbenzene	13	3.6		mg/Kg	100	5/25/2017 9:57:50 AM	B43065
Xylenes, Total	150	7.3		mg/Kg	100	5/25/2017 9:57:50 AM	B43065
Surr: 4-Bromofluorobenzene	100	66.6-132		%Rec	100	5/25/2017 9:57:50 AM	B43065

# ID as #3 on Figures and Tables (Subsequently Excavated)

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits Page 1 of 7
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Lab Order 1705C79

Date Reported: 5/26/2017

#### Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Blagg Engineering

Client Sample ID: North Wall 8-Point

Project: MUDGE A 2

**Collection Date:** 5/24/2017 3:21:00 PM

Lab ID: 1705C79-002

Matrix: SOIL

Received Date: 5/25/2017 7:10:00 AM

Analyses	Result	PQL Qua	al Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS					Analyst:	MRA
Chloride	ND	30	mg/Kg	20	5/25/2017 11:37:50 AM	31974
EPA METHOD 8015M/D: DIESEL RANG	E ORGANICS	3			Analyst:	TOM
Diesel Range Organics (DRO)	ND	10	mg/Kg	1	5/25/2017 10:30:06 AM	31956
Motor Oil Range Organics (MRO)	ND	51	mg/Kg	1	5/25/2017 10:30:06 AM	31956
Surr: DNOP	95.7	70-130	%Rec	1	5/25/2017 10:30:06 AM	31956
EPA METHOD 8015D: GASOLINE RAN	GE				Analyst:	NSB
Gasoline Range Organics (GRO)	ND	3.7	mg/Kg	1	5/25/2017 11:36:34 AM	G43065
Surr: BFB	94.8	54-150	%Rec	1	5/25/2017 11:36:34 AM	G43065
EPA METHOD 8021B: VOLATILES					Analyst:	NSB
Benzene	ND	0.018	mg/Kg	1	5/25/2017 11:36:34 AM	B43065
Toluene	ND	0.037	mg/Kg	1	5/25/2017 11:36:34 AM	B43065
Ethylbenzene	ND	0.037	mg/Kg	1	5/25/2017 11:36:34 AM	B43065
Xylenes, Total	ND	0.074	mg/Kg	1	5/25/2017 11:36:34 AM	B43065
Surr: 4-Bromofluorobenzene	93.5	66.6-132	%Rec	1	5/25/2017 11:36:34 AM	B43065

# ID as #1 on Figures and Tables

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

- Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits Page 2 of 7
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Lab Order 1705C79

Date Reported: 5/26/2017

#### Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: West Wall 8-Point

Project: MUDGE A 2

Collection Date: 5/24/2017 3:30:00 PM

Lab ID: 1705C79-003 Matrix: SOIL Received Date: 5/25/2017 7:10:00 AM

Analyses	Result	PQL Qu	al Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS					Analysi	MRA
Chloride	ND	30	mg/Kg	20	5/25/2017 11:50:15 AM	31974
EPA METHOD 8015M/D: DIESEL RANG	GE ORGANICS	S			Analyst	: TOM
Diesel Range Organics (DRO)	16	9.8	mg/Kg	1	5/25/2017 10:52:10 AN	31956
Motor Oil Range Organics (MRO)	ND	49	mg/Kg	1	5/25/2017 10:52:10 AM	31956
Surr: DNOP	101	70-130	%Rec	1	5/25/2017 10:52:10 AM	31956
EPA METHOD 8015D: GASOLINE RAN	IGE				Analyst	: NSB
Gasoline Range Organics (GRO)	ND	21	mg/Kg	5	5/25/2017 12:00:11 PM	G43065
Surr: BFB	127	54-150	%Rec	5	5/25/2017 12:00:11 PM	G43065
EPA METHOD 8021B: VOLATILES					Analyst	: NSB
Benzene	ND	0.11	mg/Kg	5	5/25/2017 12:00:11 PM	B43065
Toluene	ND	0.21	mg/Kg	5	5/25/2017 12:00:11 PM	B43065
Ethylbenzene	ND	0.21	mg/Kg	5	5/25/2017 12:00:11 PM	B43065
Xylenes, Total	ND	0.43	mg/Kg	5	5/25/2017 12:00:11 PM	B43065
Surr: 4-Bromofluorobenzene	97.4	66.6-132	%Rec	5	5/25/2017 12:00:11 PM	B43065

# ID as #2 on Figures and Tables

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

- Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits Page 3 of 7
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

### Hall Environmental Analysis Laboratory, Inc.

WO#:

1705C79

26-May-17

Client:

Blagg Engineering

Project:

MUDGE A 2

Sample ID MB-31974

SampType: MBLK

TestCode: EPA Method 300.0: Anions

LowLimit

Client ID:

Prep Date:

**PBS** 

Batch ID: 31974

RunNo: 43067

%REC

Units: mg/Kg

HighLimit

Analyte

5/25/2017

Analysis Date: 5/25/2017

SeqNo: 1355858

%RPD **RPDLimit**  Qual

Chloride

Result PQL ND

1.5

TestCode: EPA Method 300.0: Anions

Sample ID LCS-31974

SampType: LCS

RunNo: 43067

HighLimit

Client ID: Prep Date: 5/25/2017

LCSS

Batch ID: 31974

SeqNo: 1355859

Units: mg/Kg

Analysis Date: 5/25/2017

SPK value SPK Ref Val

SPK value SPK Ref Val

%REC 0

93.8

**RPDLimit** 

Qual

Analyte Chloride

14

15.00

90

110

Qualifiers:

Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

R RPD outside accepted recovery limits

% Recovery outside of range due to dilution or matrix

В Analyte detected in the associated Method Blank

Value above quantitation range

Analyte detected below quantitation limits

P Sample pH Not In Range

RL Reporting Detection Limit

Sample container temperature is out of limit as specified

Page 4 of 7

### Hall Environmental Analysis Laboratory, Inc.

WO#: 1705C79 26-May-17

Client:

Blagg Engineering

Project:

Prep Date:

MUDGE A 2

Sample ID	LCS-31943
Client ID:	LCSS

SampType: LCS

TestCode: EPA Method 8015M/D: Diesel Range Organics RunNo: 43051

Batch ID: 31943 Analysis Date: 5/25/2017

SampType: MBLK

SeqNo: 1354741 Units: %Rec

SPK value SPK Ref Val %REC Analyte Result LowLimit

HighLimit %RPD **RPDLimit** 

Surr: DNOP

5/24/2017

4.8

95.2 5.000 TestCode: EPA Method 8015M/D: Diesel Range Organics

70 130

Sample ID MB-31943 Client ID: PBS

Batch ID: 31943

RunNo: 43051

Prep Date: 5/24/2017

Analysis Date: 5/25/2017

SeqNo: 1354742

Units: %Rec

**RPDLimit** Qual

Qual

Surr: DNOP

Analyte

Result PQL 9.6

SPK value SPK Ref Val 10.00

%REC LowLimit 96.1

HighLimit 70 130 %RPD

Sample ID LCS-31956

SampType: LCS

TestCode: EPA Method 8015M/D: Diesel Range Organics

%RPD

LCSS Client ID:

Batch ID: 31956

RunNo: 43052

Units: mg/Kg

130

Prep Date: 5/25/2017 Analyte

Analysis Date: 5/25/2017 POI

SeqNo: 1354925

LowLimit

LowLimit

73.2

70

Diesel Range Organics (DRO)

Sample ID MB-31956

PBS

Result 46

Result

ND

ND

8.1

SPK value SPK Ref Val 50.00

0 91.1 85.7

%REC

HighLimit 114 **RPDLimit** Qual

Surr: DNOP

4.3

5.000 SampType: MBLK

10

TestCode: EPA Method 8015M/D: Diesel Range Organics

Client ID: Prep Date:

5/25/2017

Batch ID: 31956 Analysis Date: 5/25/2017 RunNo: 43052 SeqNo: 1354926

%REC

Units: mg/Kg

HighLimit

Analyte Motor Oil Range Organics (MRO)

Diesel Range Organics (DRO)

PQL 10 50

10.00

SPK value SPK Ref Val

**RPDLimit** Qual

Surr: DNOP

SampType: LCS

81.3

70

130

%RPD

Sample ID LCS-31932

Batch ID: 31932

TestCode: EPA Method 8015M/D: Diesel Range Organics

RunNo: 43051

Analyte Surr: DNOP

Client ID:

Prep Date:

5/24/2017

5/24/2017

LCSS

Analysis Date: 5/25/2017 Result POL

4.5

9.4

SPK value SPK Ref Val

SeqNo: 1355829

LowLimit

70

70

Units: %Rec HighLimit

**RPDLimit** 

Qual

Sample ID MB-31932

SampType: MBLK

5.000

10.00

%REC 89.3

130 TestCode: EPA Method 8015M/D: Diesel Range Organics

%RPD

Client ID: PBS

Batch ID: 31932 Analysis Date:

5/25/2017

RunNo: 43051 SeqNo: 1355830

Units: %Rec

130

Surr: DNOP

Prep Date:

Analyte

PQL SPK value SPK Ref Val %REC Result

LowLimit

94.4

HighLimit

%RPD **RPDLimit** 

Qual

# Qualifiers:

Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

Η Holding times for preparation or analysis exceeded

Not Detected at the Reporting Limit ND

R RPD outside accepted recovery limits S % Recovery outside of range due to dilution or matrix B Analyte detected in the associated Method Blank

E Value above quantitation range

J Analyte detected below quantitation limits Page 5 of 7

p Sample pH Not In Range

RL Reporting Detection Limit Sample container temperature is out of limit as specified

## Hall Environmental Analysis Laboratory, Inc.

WO#:

1705C79

26-May-17

Client:

Blagg Engineering

Project:

MUDGE A 2

Sample ID RB

SampType: MBLK

TestCode: EPA Method 8015D: Gasoline Range

Client ID:

Batch ID: **G43065** 

**PQL** 

5.0

RunNo: 43065

%REC

LowLimit

HighLimit

Prep Date:

Analysis Date: 5/25/2017

SeqNo: 1355625

Units: mg/Kg

Qual

Analyte Gasoline Range Organics (GRO)

ND 920

Result

1000

SPK value SPK Ref Val

92.3

54

%RPD

**RPDLimit** 

Surr: BFB

Sample ID 2.5UG GRO LCS

SampType: LCS

TestCode: EPA Method 8015D: Gasoline Range

0

150

Client ID: LCSS

Batch ID: **G43065** 

RunNo: 43065

SeqNo: 1355626

Units: mg/Kg

Analyte

Prep Date:

Analysis Date: 5/25/2017 Result PQL

SPK value SPK Ref Val 25.00

%REC LowLimit 104

HighLimit 76.4

%RPD **RPDLimit** 

Qual

Gasoline Range Organics (GRO) Surr: BFB

26 1000 5.0 1000

103

54

125 150

#### Qualifiers:

D

ND

- Value exceeds Maximum Contaminant Level.
- Sample Diluted Due to Matrix H Holding times for preparation or analysis exceeded
- Not Detected at the Reporting Limit R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- Analyte detected in the associated Method Blank
- E
- J
- Sample pH Not In Range
- Reporting Detection Limit RL
- Sample container temperature is out of limit as specified

Value above quantitation range

Analyte detected below quantitation limits

Page 6 of 7

## Hall Environmental Analysis Laboratory, Inc.

Client: Blagg Engineering
Project: MUDGE A 2

Sample ID RB	SampT	Tes								
Client ID: PBS	Batch	ID: <b>B4</b>	ID: <b>B43065</b> RunNo: <b>43065</b>							
Prep Date:	Analysis D	ate: 5/	25/2017	8	SeqNo: 1	355634	Units: mg/K	g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.91		1.000		90.7	66.6	132			

Sample ID 100NG BTEX LC	Samp	Гуре: LC	s	Tes	TestCode: EPA Method 8021B: Volatiles							
Client ID: LCSS	LCSS Batch ID: B43065					RunNo: 43065						
Prep Date:	Analysis [	Analysis Date: 5/25/2017 SeqNo: 1355635 Units: mg/Kg										
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual		
Benzene	0.85	0.025	1.000	0	85.3	80	120					
Toluene	0.90	0.050	1.000	0	89.6	80	120					
Ethylbenzene	0.92	0.050	1.000	0	92.0	80	120					
Xylenes, Total	2.8	0.10	3.000	0	93.6	80	120					
Surr: 4-Bromofluorobenzene	0.94		1.000		93.9	66.6	132					

#### Qualifiers:

- Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Page 7 of 7

WO#:

1705C79

26-May-17



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

# Sample Log-In Check List

Client Name:	BLAGG	Work Order Number:	1705C79		RcptNo:	1
Received By:	Anne Thorne	5/25/2017 7:10:00 AM		anne Ham	_	
Completed By:	Anne Thorne	5/25/2017 7:58:21 AM		Am Il-		
Reviewed By:	No	8/26/17		Come Ji		
Chain of Cus	tody					,
1. Custody sea	is intact on sample bottles?		Yes	No 🗆	Not Present 🗹	
2. Is Chain of C	Custody complete?		Yes 🗹	No 🗌	Not Present	
3. How was the	e sample delivered?		Courier			
Log In						
4. Was an atte	mpt made to cool the samples	?	Yes 🗹	No 🗆	NA 🗆	
5. Were all sam	nples received at a temperatur	e of >0° C to 6.0°C	Yes 🗹	No 🗆	NA 🗆	
6. Sample(s) in	n proper container(s)?		Yes 🗹	No 🗆		
7. Sufficient sar	mple volume for indicated test	(s)?	Yes 🗸	No 🗆		
8. Are samples	(except VOA and ONG) prope	orly preserved?	Yes 🗹	No 🗆		
9. Was preserve	rative added to bottles?		Yes	No 🗹	NA 🗆	
10.VOA vials ha	ive zero headspace?		Yes	No 🗆	No VOA Vials   ✓	
11. Were any sa	ample containers received brok	en?	Yes	No 🗹	# of preserved	,
12. Does paperw	vork match bottle labels?		Yes 🗹	No 🗆	bottles checked for pH:	
(Note discrep	pancies on chain of custody)				201 700	>12 unless noted)
	correctly identified on Chain o	f Custody?	Yes 🗸	No 🗌	Adjusted?	
	at analyses were requested?		Yes 🗹	No 🗆	Checked by:	
	fing times able to be met? customer for authorization.)		Yes 🗹	No L	Checked by.	
Consider Hond	#					
	ling (if applicable)					
	otified of all discrepancies with	- The same of the	Yes	No 🗆	NA 🗹	I
	Notified:	Date			_	
By Who	Mary and the same of the same	Via:	eMail	Phone Fax	☐ In Person	
Regard Client I	nstructions:	AMARINEN AND AND AND AND AND AND AND AND AND AN	LE EXCLESSED ASSES		SUB-BAZZES An Analos SE Standard Sub-MCMCS Adversaria del	
17. Additional re	marks:					I
18. Cooler Infor	rmation					
Cooler No	Temp °C   Condition   S		eal Date	Signed By		
1	1.0 Good Ye	S				

Chain-of-Custody Record  Client: BP America		Turn-Around	Time:	SAME DAY				ь	IΔ	ш	E	NV	TE	20	NI	ИF	NT	ΔI			
Client:	BP A	Menica		□ Standard	Rush		HALL ENVIRONMENTAL ANALYSIS LABORATORY														
	Blagg	Engli	seerly Inc-	Project Name:			www.hallenvironmental.com														
Mailing	Address		7	MUDGE A 2				49	01 H	awki								109			
			,	Project #:		1111															
Phone	#: (50	5) 320	- 1193				Tel. 505-345-3975 Fax 505-345-4107  Analysis Request														
email or Fax#:				Project Mana	ger:		$\widehat{}$	ly)	Ô					(4)					$\top$	T	$\Box$
QA/QC Package:				STEV	E Moskac	,	021	IS OF	MF			(S)		PS'1	B's						
Star			□ Level 4 (Full Validation)				8) 8,	(Ga	DRO / MRO)			SIM		В,	2 PC						
Accred		- OII		Sampler: 2			TMB's (8021)	TPH (Gas only)	-	£	=	270		NO	808						z
□ NEL		□ Otne	r	On Ice: Sample Temp		⊡ No d	1	+	3RC	418	504	2 8%	S	Ş	es/		OA)	N			ō
	(Type) _			Aros 251/7	etatute.	(60	#	BTEX + MTBE	TPH 8015B (GRO	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F,CI,NO3,NO2,PO4,SO4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	CHOCINE			Air Bubbles (Y or N)
Date	Time	Matrix	Sample Request ID	Container	Preservative	HEAL No.	+ 4	+ >	801	(Met	(Me	8 (8)	481	IS (F	Pes	8	(Sel	7			lqqr
Dato	1	Madix	Campio request ib	Type and #	Туре	n,	BTEX + WIL	Ě	PH	FH	DB	AH.	CR/	noin	081	260	270				ir B
9/2y/1	100	۷.,	(5 . 3 0 +	Meathet		1705079		<u>m</u>		-	Ш	_	œ	<	80	80	00	.,	+	+	X
1 <u>917</u>		SOIL	SE Corner 3-Powt	400×1	CEDL	701	X	_	X						_			X	+	+	+
+	1521	1	NORTH Wall 8- POINT			702	X		X									X	+	+	+
	1530	1	WEST Wall 8-POWT			763	X		X	$\Box$					_			X	+	+	$\dashv$
																			+	$\bot$	Н
							_												+	_	Ш
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Date:		Relinquish	d by:	Received by:	.1.	Date Time	Ren	nark	s: B	CL	BP				Coo	alt.	5	fere	M	loska	(
Date:	Time:	Relinquish	ed by	Received by:	Licety	Date Time	١,	1D a		1175							_				
Cl.	/A.	Tellinguisii	1   1	/ D!	1	05/201/7	l u	155	6	eme	<b>L</b> + 2	7	1-	-00	216	3 M	- E	· . {c	984	l	
7/24/17	11804	IM	mitted to Hall Environmental may be subc	entracted to other of	credited leboratoric	- 0710	, possi	Mite	Anve	th cont	tracto	d dete	will be	n oloss	ly not	atod e-	the	nel di	al manará		
	ii necessary,	samples sub	milled to hall Environmental may be subc	onliacted to other at		. The serves as nuttee of the	, hossi	omity.	ruly St	20-001	aciel	a udid	will LA	- Gedi	iy not	ated Of		anyuc	п төрөгі.	{	



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

June 01, 2017

Steven Moskal Blagg Engineering P. O. Box 87 Bloomfield, NM 87413

TEL: (505) 632-1199 FAX (505) 632-3903

RE: MUDGE A #2

OrderNo.: 1705E89

Dear Steven Moskal:

Hall Environmental Analysis Laboratory received 3 sample(s) on 5/31/2017 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to <a href="www.hallenvironmental.com">www.hallenvironmental.com</a> or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

Lab Order 1705E89 Date Reported: 6/1/2017

#### Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Blagg Engineering

Client Sample ID: East Wall S End 5-pt

Collection Date: 5/30/2017 2:08:00 PM

Project: MUDGE A #2 Lab ID: 1705E89-001 Matrix: SOIL Received Date: 5/31/2017 7:15:00 AM

Analyses	Result	PQL (	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst	MRA
Chloride	330	30		mg/Kg	20	5/31/2017 11:11:03 AM	32038
EPA METHOD 8015M/D: DIESEL RANG	E ORGANICS	3				Analyst	TOM
Diesel Range Organics (DRO)	120	9.6		mg/Kg	1	5/31/2017 10:51:53 AM	32035
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	5/31/2017 10:51:53 AM	32035
Surr: DNOP	96.9	70-130		%Rec	1	5/31/2017 10:51:53 AM	32035
EPA METHOD 8015D: GASOLINE RAN	GE					Analyst	RAA
Gasoline Range Organics (GRO)	110	17		mg/Kg	5	5/31/2017 11:48:53 AM	R43151
Surr: BFB	311	54-150	S	%Rec	5	5/31/2017 11:48:53 AM	R43151
EPA METHOD 8021B: VOLATILES						Analyst	RAA
Benzene	ND	0.084		mg/Kg	5	5/31/2017 11:48:53 AM	B43151
Toluene	0.30	0.17		mg/Kg	5	5/31/2017 11:48:53 AM	B43151
Ethylbenzene	ND	0.17		mg/Kg	5	5/31/2017 11:48:53 AM	B43151
Xylenes, Total	3.8	0.34		mg/Kg	5	5/31/2017 11:48:53 AM	B43151
Surr: 4-Bromofluorobenzene	125	66.6-132		%Rec	5	5/31/2017 11:48:53 AM	B43151

# ID as #4 on Figures and Tables (Subsequently Excavated)

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

- Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- RPD outside accepted recovery limits
- % Recovery outside of range due to dilution or matrix
- Analyte detected in the associated Method Blank
- Value above quantitation range
- Analyte detected below quantitation limits Page 1 of 7 J
- P Sample pH Not In Range
- RL Reporting Detection Limit
- Sample container temperature is out of limit as specified

#### Lab Order 1705E89

Date Reported: 6/1/2017

#### Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Blagg Engineering

Client Sample ID: South Wall E End 5-pt

Project: MUDGE A #2 Collection Date: 5/30/2017 2:11:00 PM

Lab ID: 1705E89-002 Matrix: SOIL

Received Date: 5/31/2017 7:15:00 AM

Analyses	Result	PQL Qu	al Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS					Analyst:	MRA
Chloride	390	30	mg/Kg	20	5/31/2017 11:23:28 AM	32038
EPA METHOD 8015M/D: DIESEL RANGE	ORGANIC	S			Analyst:	TOM
Diesel Range Organics (DRO)	11	10	mg/Kg	1	5/31/2017 11:13:51 AM	32035
Motor Oil Range Organics (MRO)	ND	51	mg/Kg	1	5/31/2017 11:13:51 AM	32035
Surr: DNOP	98.1	70-130	%Rec	1	5/31/2017 11:13:51 AM	32035
EPA METHOD 8015D: GASOLINE RANG	E				Analyst:	RAA
Gasoline Range Organics (GRO)	ND	16	mg/Kg	5	5/31/2017 12:12:49 PM	R43151
Surr: BFB	103	54-150	%Rec	5	5/31/2017 12:12:49 PM	R43151
EPA METHOD 8021B: VOLATILES					Analyst:	RAA
Benzene	ND	0.080	mg/Kg	5	5/31/2017 12:12:49 PM	B43151
Toluene	ND	0.16	mg/Kg	5	5/31/2017 12:12:49 PM	B43151
Ethylbenzene	ND	0.16	mg/Kg	5	5/31/2017 12:12:49 PM	B43151
Xylenes, Total	ND	0.32	mg/Kg	5	5/31/2017 12:12:49 PM	B43151
Surr: 4-Bromofluorobenzene	113	66.6-132	%Rec	5	5/31/2017 12:12:49 PM	B43151

# ID as #5 on Figures and Tables

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

- Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- % Recovery outside of range due to dilution or matrix
- Analyte detected in the associated Method Blank
- Value above quantitation range
- Analyte detected below quantitation limits Page 2 of 7 J
- P Sample pH Not In Range
- RL Reporting Detection Limit
- Sample container temperature is out of limit as specified

# Hall Environmental Analysis Laboratory, Inc.

Date Reported: 6/1/2017

**CLIENT:** Blagg Engineering

Client Sample ID: South Wall W End 5-pt

Project: MUDGE A #2

**Collection Date:** 5/30/2017 2:15:00 PM

Lab ID: 1705E89-003

Matrix: SOIL

Received Date: 5/31/2017 7:15:00 AM

Analyses	Result	PQL (	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst	MRA
Chloride	270	30		mg/Kg	20	5/31/2017 11:35:52 AM	32038
EPA METHOD 8015M/D: DIESEL RANGE	ORGANICS	8				Analyst	TOM
Diesel Range Organics (DRO)	210	9.8		mg/Kg	1	5/31/2017 11:35:51 AM	32035
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	5/31/2017 11:35:51 AM	32035
Surr: DNOP	103	70-130		%Rec	1	5/31/2017 11:35:51 AM	32035
EPA METHOD 8015D: GASOLINE RANG	E					Analyst	RAA
Gasoline Range Organics (GRO)	380	66		mg/Kg	20	5/31/2017 12:36:43 PM	R43151
Surr: BFB	199	54-150	S	%Rec	20	5/31/2017 12:36:43 PM	R43151
EPA METHOD 8021B: VOLATILES						Analyst	RAA
Benzene	ND	0.33		mg/Kg	20	5/31/2017 12:36:43 PM	B43151
Toluene	3.0	0.66		mg/Kg	20	5/31/2017 12:36:43 PM	B43151
Ethylbenzene	1.8	0.66		mg/Kg	20	5/31/2017 12:36:43 PM	B43151
Xylenes, Total	22	1.3		mg/Kg	20	5/31/2017 12:36:43 PM	B43151
Surr: 4-Bromofluorobenzene	118	66.6-132		%Rec	20	5/31/2017 12:36:43 PM	B43151

# ID as #6 on Figures and Tables (Subsequently Excavated)

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

- Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits Page 3 of 7
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

# Hall Environmental Analysis Laboratory, Inc.

WO#:

1705E89

01-Jun-17

Client:

Blagg Engineering

Project:

MUDGE A #2

Sample ID MB-32038

SampType: mblk

TestCode: EPA Method 300.0: Anions

LowLimit

Client ID:

**PBS** 

Batch ID: 32038

RunNo: 43159

%REC

Prep Date: 5/31/2017

SeqNo: 1359147

Units: mg/Kg

HighLimit

Analyte

Analysis Date: 5/31/2017

**RPDLimit** 

Qual

Chloride

Result PQL ND 1.5

SampType: Ics

TestCode: EPA Method 300.0: Anions

%RPD

Sample ID LCS-32038

LCSS

Batch ID: 32038

RunNo: 43159

Client ID: Prep Date: 5/31/2017

Analysis Date: 5/31/2017

SeqNo: 1359148

Units: mg/Kg

PQL

SPK value SPK Ref Val %REC 15.00

92.7

%RPD

HighLimit

Chloride

SPK value SPK Ref Val

**RPDLimit** 

Qual

Analyte

14

1.5

0

90

110

# Qualifiers:

R

- Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- Η Holding times for preparation or analysis exceeded
- Not Detected at the Reporting Limit ND

RPD outside accepted recovery limits

- % Recovery outside of range due to dilution or matrix
- В Analyte detected in the associated Method Blank
- E Value above quantitation range

Reporting Detection Limit

- J Analyte detected below quantitation limits
- P Sample pH Not In Range

RL

Sample container temperature is out of limit as specified

Page 4 of 7

# Hall Environmental Analysis Laboratory, Inc.

WO#:

1705E89

01-Jun-17

Client:

Blagg Engineering

Project:

MUDGE A #2

Sample ID LCS-32035	SampTy	pe: LC	CS TestCode: EPA Method 8015M/D: Diesel Range Organics									
Client ID: LCSS	Batch	ID: <b>32</b> 0	035	R	RunNo: 4	3153						
Prep Date: 5/31/2017	Analysis Da	ite: <b>5/</b> 3	31/2017	S	SeqNo: 1	358341	Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual		
Diesel Range Organics (DRO)	42	10	50.00	0 84.2 73.2 114								
Surr: DNOP	42		5,000		85.0	70	130					

Sample ID MB-32035	SampT	ype: ME	BLK	TestCode: EPA Method 8015M/D: Diesel Range Organics							
Client ID: PBS	Batch	ID: 32	035	F	RunNo: 4	3153					
Prep Date: 5/31/2017	Analysis D	ate: 5/	31/2017	S	SeqNo: 1	358342	Units: mg/K	g			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Diesel Range Organics (DRO)	ND	10									
Motor Oil Range Organics (MRO)	ND	50									
Surr: DNOP	9.1		10.00		91.1	70	130				

#### Qualifiers:

- Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- Holding times for preparation or analysis exceeded H
- ND Not Detected at the Reporting Limit
- RPD outside accepted recovery limits R
- % Recovery outside of range due to dilution or matrix
- В Analyte detected in the associated Method Blank
- E
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- Sample container temperature is out of limit as specified

Value above quantitation range

Page 5 of 7

# Hall Environmental Analysis Laboratory, Inc.

WO#:

1705E89

01-Jun-17

Client:

Blagg Engineering

Project:

MUDGE A #2

Sample ID 2.5UG GRO LCS	SampTy	pe: LC	S	Test	Code: El	PA Method	8015D: Gaso	line Rang	е			
Client ID: LCSS	Batch	ID: R4	3151	R	unNo: 4	3151						
Prep Date:	Analysis Date: 5/31/2017			S	eqNo: 1	359038	Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual		
Gasoline Range Organics (GRO)	24	5.0	25.00	0	95.0	76.4	125					
Surr: BFB	1100		1000		107	54	150					

Sample ID RB	SampT	ype: ME	BLK	Test	Code: El	PA Method	8015D: Gaso	line Rang	е			
Client ID: PBS	Batch	ID: R4	3151	R	tunNo: 4	3151						
Prep Date:	Analysis D	Analysis Date: 5/31/2017			eqNo: 1	359039	Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual		
Gasoline Range Organics (GRO)	ND	5.0										
Surr: BFB	920		1000		92.2	54	150					

#### Qualifiers:

\* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

R RPD outside accepted recovery limits

S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank

E Value above quantitation range

J Analyte detected below quantitation limits

Page 6 of 7

P Sample pH Not In Range

RL Reporting Detection Limit

W Sample container temperature is out of limit as specified

# Hall Environmental Analysis Laboratory, Inc.

WO#:

1705E89

01-Jun-17

Client: Project:

Blagg Engineering MUDGE A #2

Sample ID 100NG BTEX LC	SampT	ype: LC	S	Tes	tCode: El	tiles				
Client ID: LCSS	Batch	n ID: <b>B4</b>	3151	F	RunNo: 4	3151				
Prep Date:	Analysis D	ate: 5/	31/2017	8	SeqNo: 1	359043	Units: mg/k	(g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.0	0.025	1.000	0	104	80	120			
Toluene	1.0	0.050	1.000	0	105	80	120			
Ethylbenzene	1.1	0.050	1.000	0	105	80	120			
Xylenes, Total	3.2	0.10	3.000	0	107	80	120			
Surr: 4-Bromofluorobenzene	1.1		1.000		114	66.6	132			

Sample ID RB	SampT	уре: МЕ	BLK	Tes	tCode: E	PA Method	8021B: Volat	tiles		
Client ID: PBS	Batch	n ID: <b>B4</b>	3151	F	RunNo: 4	3151				
Prep Date:	Analysis D	ate: 5/	31/2017	8	SeqNo: 1	359046	Units: mg/K	(g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	1.1		1.000		112	66.6	132			

#### Qualifiers:

\* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

R RPD outside accepted recovery limits

S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank

E Value above quantitation range

J Analyte detected below quantitation limits

III IIIIIIIS

P Sample pH Not In Range

RL Reporting Detection Limit

W Sample container temperature is out of limit as specified

Page 7 of 7



Hall Environmental Analysis Laboratory 4901 Hawkins NE Albuquerque, NM 87109

TEL: 505-345-3975 FAX: 505-345-4107 Website: www.hallenvironmental.com

# Sample Log-In Check List

Client Name:	BLAGG	Work Order N	umber: 1705E89		RcptNo: 1
Received By:	Anne Thorne	5/31/2017 7:15:	00 AM	aone Am	
Completed By:	Anne Thorne	5/31/2017 7:49:	02 AM	aone II-	
Reviewed By:	No	5/31/17		Come Stran	
,	V	P(* ((* )			
Chain of Cus	tody				
1, Custody sea	als intact on sample	bottles?	Yes	No 🗌	Not Present ✓
2. Is Chain of C	Custody complete?		Yes 🗹	No .	Not Present
3. How was the	e sample delivered?		Courier		
Log In					
4. Was an atte	empt made to cool th	ne samples?	Yes 🗹	No 🗆	NA 🗆
5. Were all san	nples received at a	temperature of >0° C to 6.0°	C Yes ✓	No 🗆	na 🗆
6. Sample(s) in	n proper container(s	)?	Yes 🗹	No 🗆	
7. Sufficient sa	mple volume for ind	licated test(s)?	Yes 🗹	No 🗆	
8. Are samples	(except VOA and C	ONG) properly preserved?	Yes 🗸	No 🗆	
9. Was preserv	ative added to bottle	es?	Yes	No 🗹	NA 🗆
10. VOA vials ha	ave zero headspace	?	Yes	No 🗌	No VOA Vials
11. Were any sa	ample containers re	ceived broken?	Yes	No 🗹	# of preserved
					bottles checked
7	vork match bottle lai pancies on chain of		Yes 🗸	No L	for pH: (<2 or >12 unless noted)
		on Chain of Custody?	Yes 🗸	No 🗆	Adjusted?
	at analyses were re	-	Yes 🗹	No 🗆	
15. Were all hold	ding times able to be	e met?	Yes 🗹	No 🗆	Checked by:
(If no, notify	customer for author	ization.)		-	
Special Hand	ling (if applical	h/e)			
		ancies with this order?	Yes	No 🗆	NA 🗹
Person	Notified:	1	Date		
By Wh	om:	Manual Commence of the Commenc	/ia: eMail P	hone  Fax	In Person
Regard	ding:				AMERICA CANDINA DA CAN
Client i	Instructions:		300000000000000000000000000000000000000		
17. Additional re	emarks:				
18. Cooler Info	1 .		. (		
Cooler No		dition Seal Intact Seal N Yes	lo Seal Date	Signed By	
l' 	1.3 Good				

Client:	BP A	imenso	stody Record	□ Standard Project Name  Project #:	Rush					A \ awkir		LY aller	SI:	S L ment erqu	tal.co	BO om M 87	<b>RA</b>	NTA	
Phone #	1: (50	5)3	20-1183										lysis						
email or				Project Mana			0	(ylu	RO)				(%)	00			4 - 1		
QA/QC F	_		☐ Level 4 (Full Validation)		EVE MO		TMB's (8021)	(Gas c	30 / M		Ollifor	CIMIC	PO4,S	PCB's					
Accredit □ NEL/		□ Othe	er		I- BLAG XYes	□ No	100	+ TPH (Gas only)	30 / DE	18.1)	04.1)	0210	3,NO2	1 8082		(A)			S L
□ EDD  Date	(Type) _ Time	Matrix	Sample Request ID	Sample Temp ACC 151/17 Container Type and # MoH Kds	Preservative Type	3 HEAL NO. 1705E89	BTEX + MTBE	BTEX + MTBE	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	RCRA 8 Metals	Anions (F,CI,NO3,NO2,PO4,SO4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	CHORIDE		Air Bubbles (Y or N)
130/7	1408	SOIL	EASTWELL-S. END 5-pt	40221		701	X		X								X		
i	1411	1	South wall- E. Ens 5-pt		1	702	X		X								X		
-	1415	(	Southwill-W-Eus 5-pt			7603	×		×								×		
	A4-																		
Date:	1620	Relinguish Relinguish	1 Blogg	Received by:	len so	Date Time US/3///7 Date Time			V	ib:	VHIS	ON	EVR	M				ve v	ustel 4



Hall Environmental Analysis Laboratory 4901 Hawkins NE Albuquerque, NM 87109 TEL: 505-345-3975 FAX: 505-345-4107

Website: www.hallenvironmental.com

June 06, 2017

Steven Moskal Blagg Engineering P. O. Box 87 Bloomfield, NM 87413

TEL: (505) 632-1199 FAX (505) 632-3903

RE: MUDGE A 2 OrderNo.: 1706155

#### Dear Steven Moskal:

Hall Environmental Analysis Laboratory received 1 sample(s) on 6/5/2017 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to <a href="www.hallenvironmental.com">www.hallenvironmental.com</a> or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman

Laboratory Manager

andyl

4901 Hawkins NE

Albuquerque, NM 87109

#### Lab Order 1706155

Date Reported: 6/6/2017

#### Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering Client Sample ID: GRAB @ 40'

 Project:
 MUDGE A 2
 Collection Date: 6/2/2017 2:38:00 PM

 Lab ID:
 1706155-001
 Matrix:
 SOIL
 Received Date: 6/5/2017 7:30:00 AM

Analyses	Result	PQL Qu	al Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANG	GE ORGANIC	S			Analyst	TOM
Diesel Range Organics (DRO)	ND	9.5	mg/Kg	1	6/5/2017 9:11:35 AM	32097
Motor Oil Range Organics (MRO)	ND	47	mg/Kg	1	6/5/2017 9:11:35 AM	32097
Surr: DNOP	85.2	70-130	%Rec	1	6/5/2017 9:11:35 AM	32097
EPA METHOD 8015D: GASOLINE RAN	IGE				Analyst	NSB
Gasoline Range Organics (GRO)	ND	3.6	mg/Kg	1	6/5/2017 12:39:20 PM	32090
Surr: BFB	102	54-150	%Rec	1	6/5/2017 12:39:20 PM	32090
EPA METHOD 8021B: VOLATILES					Analyst	NSB
Benzene	ND	0.018	mg/Kg	1	6/5/2017 12:39:20 PM	32090
Toluene	ND	0.036	mg/Kg	1	6/5/2017 12:39:20 PM	32090
Ethylbenzene	ND	0.036	mg/Kg	1	6/5/2017 12:39:20 PM	32090
Xylenes, Total	ND	0.072	mg/Kg	1	6/5/2017 12:39:20 PM	32090
Surr: 4-Bromofluorobenzene	123	66.6-132	%Rec	1	6/5/2017 12:39:20 PM	32090

# ID as #7 on Figures and Tables

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

- Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits Page 1 of 4
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

# Hall Environmental Analysis Laboratory, Inc.

WO#:

1706155

06-Jun-17

Client:

Blagg Engineering

Project:

MUDGE A 2

Sample ID LCS-32097	SampT	ype: LC	S	Test	Code: El	PA Method	8015M/D: Di	esel Rang	e Organics			
Client ID: LCSS	Batch	ID: 320	097	R	lunNo: 4	3241						
Prep Date: 6/5/2017	Analysis Da	ate: 6/	5/2017	S	eqNo: 1	361182	Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual		
Diesel Range Organics (DRO)	43	10	50.00	0	86.7	73.2	114					
Surr: DNOP	3.6		5.000		72.5	70	130					

Sample ID MB-32097	SampT	ype: ME	BLK	Tes	tCode: El	PA Method	8015M/D: Die	esel Rang	e Organics	
Client ID: PBS	Batch	ID: 32	097	F	RunNo: 4	3241				
Prep Date: 6/5/2017	Analysis D	ate: 6/	5/2017	8	SeqNo: 1	361183	Units: mg/K	(g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	8.5		10.00		85.0	70	130			

#### Qualifiers:

\* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

R RPD outside accepted recovery limits

S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank

E Value above quantitation range

J Analyte detected below quantitation limits

P Sample pH Not In Range

RL Reporting Detection Limit

W Sample container temperature is out of limit as specified

Page 2 of 4

#### Hall Environmental Analysis Laboratory, Inc.

WO#:

1706155 06-Jun-17

Client:

Blagg Engineering

Project:

MUDGE A 2

Sample ID MB-32090

SampType: MBLK

TestCode: EPA Method 8015D: Gasoline Range

LowLimit

LowLimit

Client ID:

**PBS** 

Batch ID: 32090

RunNo: 43255

Prep Date:

SeqNo: 1361956

%REC

Analyte

6/2/2017

Analysis Date: 6/5/2017 PQL

Units: mg/Kg

**RPDLimit** 

Gasoline Range Organics (GRO)

5.0

SPK value SPK Ref Val 1000

SPK value SPK Ref Val

102

HighLimit 150 %RPD

Qual

Surr: BFB

1000

Result

ND

SampType: LCS

RunNo: 43255

TestCode: EPA Method 8015D: Gasoline Range

Client ID: LCSS

6/2/2017

Sample ID LCS-32090

Batch ID: 32090

PQL

5.0

Analysis Date: 6/5/2017

SeqNo: 1361957

%REC

54

HighLimit

Units: mg/Kg

150

%RPD

**RPDLimit** Qual

Gasoline Range Organics (GRO) Surr: BFB

Prep Date:

Result 1100

25.00 1000

93.0 108

54

#### Qualifiers:

- Value exceeds Maximum Contaminant Level.
- Sample Diluted Due to Matrix D
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- % Recovery outside of range due to dilution or matrix
- В Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit Sample container temperature is out of limit as specified

Page 3 of 4

# Hall Environmental Analysis Laboratory, Inc.

WO#:

1706155

06-Jun-17

Client: Project: Blagg Engineering

Sample ID MB-32090

**PBS** 

MUDGE A 2

SampType: MBLK Batch ID: 32090

0.025

0.050

0.050

0.10

TestCode: EPA Method 8021B: Volatiles

RunNo: 43255

Analysis Date: 6/5/2017

Units: mg/Kg

Analyte

Client ID:

Prep Date:

6/2/2017

Result PQL

ND

ND

ND

ND

1.3

1.0

1.0

1.0

3.1

1.3

SeqNo: 1361976

SPK value SPK Ref Val %REC LowLimit

HighLimit

%RPD

%RPD

**RPDLimit** 

**RPDLimit** 

Qual

Qual

Benzene Toluene Ethylbenzene

Xylenes, Total Surr: 4-Bromofluorobenzene

LCSS

Sample ID LCS-32090

Surr: 4-Bromofluorobenzene

SampType: LCS Batch ID: 32090

RunNo: 43255

126

SeqNo: 1361977

TestCode: EPA Method 8021B: Volatiles

66.6

Units: mg/Kg

132

Analyte Benzene Toluene Ethylbenzene

Xylenes, Total

Client ID:

Prep Date:

6/2/2017

Analysis Date: 6/5/2017 Result PQL

0.025

0.050

0.050

0.10

SPK value SPK Ref Val 1.000

1.000

1.000

3.000

1.000

1.000

%REC HighLimit LowLimit 0 99.8 80 120 0 99.9 80 120 0 101 80 120 0

120 102 80 126 66.6 132

#### Qualifiers:

Value exceeds Maximum Contaminant Level.

Sample Diluted Due to Matrix D

Holding times for preparation or analysis exceeded H

Not Detected at the Reporting Limit ND

R RPD outside accepted recovery limits

% Recovery outside of range due to dilution or matrix S

Analyte detected in the associated Method Blank В

E Value above quantitation range

J Analyte detected below quantitation limits

P Sample pH Not In Range

RL Reporting Detection Limit

Sample container temperature is out of limit as specified

Page 4 of 4



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

# Sample Log-In Check List

Client Name: BLAGG	Work Order Num	ber: 1706155		RcptNo: 1
Received By: Anne Thorne	6/5/2017 7:30:00 A	M	anne Am	
Completed By: Anne Thorne	6/5/2017 7:52:43 A	M	ann Il-	
	1 -1 -		Clore Stan	
Reviewed By:	013117			
Chain of Custody				
1. Custody seals intact on sam	ple bottles?	Yes	No 🗆	Not Present ✓
2. Is Chain of Custody complete	e?	Yes 🗹	No 🗌	Not Present
3. How was the sample delivered	ed?	Courier		
Log In				
4. Was an attempt made to con	of the samples?	Yes 🗹	No 🗌	NA 🗆
5. Were all samples received a	t a temperature of >0° C to 6.0°C	Yes 🗹	No 🗆	NA 🗆
6. Sample(s) in proper contained	er(s)?	Yes 🗹	No 🗌	
7. Sufficient sample volume for	indicated test(s)?	Yes 🗸	No 🗆	
8. Are samples (except VOA ar	nd ONG) properly preserved?	Yes 🗹	No 🗌	
9. Was preservative added to b	ottles?	Yes	No 🗹	NA 🗆
10. VOA vials have zero headspo	ace?	Yes	No 🗆	No VOA Vials
11. Were any sample containers	received broken?	Yes	No 🗹	# of propoped
			_ :	# of preserved bottles checked
<ol><li>Does paperwork match bottle (Note discrepancies on chain</li></ol>		Yes 🗹	No 🔲 .	for pH: (<2 or >12 unless noted)
13. Are matrices correctly identifi		Yes 🗸	No 🗆 :	Adjusted?
14. Is it clear what analyses were	·	Yes 🗸	No 🗆	
15. Were all holding times able to		Yes 🗸	No 🗆	Checked by:
(If no, notify customer for aut	horization.)			
Special Handling (if applie	cahle)			
16. Was client notified of all disci		Yes	No 🗆	NA 🗹
Person Notified:	THE TAXABLE AND ADDRESS OF THE PROPERTY OF THE			
By Whom:	Date Via:	,	hone Fax	☐ In Person
Regarding:	V IG.	Gividit r	TIONE T TAX	
Client Instructions:	SHARPANIN SHARLASHAR SHARLASHAR SHARLASHAR SHARLASHAR SHARLASHAR	Hadaa oo Maddaddada Adaa Ahaaa ahaa dada CaCCAAA	THE CANADAS STANKEN ST	SALSHAN AUSANE AND SALSHAN AND AND AND AND AND AND AND AND AND A
17. Additional remarks:		•		
18. Cooler Information Cooler No Temp °C	Condition   Seal Intact   Seal No	Seal Date	Signed By	
	condition Seal Intact   Seal No	Sear Date	Signed By	

17297 Date:	Date:								12/2017	Date	□ EDD (Type)	□ NELAP	Accreditation	Standard	QA/QC Packago:	email or Fax#	Phone #:		Mailing	-	Client	C
1915 1.181.1	Time:								1438	Time	(Type)	AP.	ation	dard	ackago:	Fax#	* (50S		Mailing Address:	SAGE	BP A	hain
Resignished by:	Relinquished by								Soil	Matrix		□ Other				,				ENGIN	AMERKA	of-Cu
enquished by:	77/								GRAS @ 40'	Sample Request ID				☐ Level 4 (Full Validation)			320-1183			BLAGG ENGINEERING		Chain-of-Custody Record
Received by:	Received by:								1×407	Container Type and #  Mod kt	Sample Temperature:	On loe:	Sampler: J		STEVE	Project Manager:		Project #:	100	Project Name:	□ Standard	Turn-Around Time:
Shepet	,								COOL	Preservative Type	100	XYes	JEFF BANG		EVE MOSTAL	ger			MUDGE 14 X	) )	Rush	Time:
Date Time	Date Time								102	1706/55	.0	□ No			7				8	J	041	MAME
	Ren								×	BTEX + 🕅	IBE	主	MB	's (8	3021	1)	4					
≥8m	Remarks			$\sqcup$	_	_			20	BTEX + M	1000		257.7	7117	1000	-17		Tel	490			
VID:			-		-	-			×		-	-	-	RO	/ MF	(O)		Tel. 505-345-3975	4901 Hawkins NE			
ET.				$\vdash$	+	+	+-	_	+	TPH (Meth	-	-	-					-345	wkin	×	≥ :	E
, E	83		-	$\vdash$	+	+	+		-	PAH's (831				SIM	Sì	-7		3975	NE	ww.h	A	
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12 83	6									8081 Pesti	cide	s/8	3082	2 PC	B's	or L	Analysis Request	505-	erqu	ment	SE	
3	CONTRACT :									8260B (VC	A)						uest	345-	œ Z	al.co	≥ 6	Š
Ü										8270 (Sem	i-VC	A)						Fax 505-345-4107	Albuquerque, NM 87109	Ĕ	ŏ ₹	2
FLEMENT: L1-0018M-E:10984	STEVE		$\vdash$			-	+	_	-										109		R	ENVIDONMENTAL
130		+	+		+	+	-		+												7	1
	Masky	++	+	-	_	+	+	_	-												ANALYSIS LABORATORY	2
	4.7								1								THE REAL PROPERTY.				4	

Air Bubbles (Y or N)

# **DRY**

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



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

OrderNo.: 1706219

June 07, 2017

Steven Moskal

Blagg Engineering

P. O. Box 87

Bloomfield, NM 87413

TEL: (505) 632-1199 FAX (505) 632-3903

RE: MUDGE A 2

Dear Steven Moskal:

Hall Environmental Analysis Laboratory received 1 sample(s) on 6/6/2017 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to <a href="www.hallenvironmental.com">www.hallenvironmental.com</a> or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman

Laboratory Manager

andyl

4901 Hawkins NE

Albuquerque, NM 87109

#### Lab Order 1706219

Date Reported: 6/7/2017

# Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: GRAB @ 42'

**Project:** MUDGE A 2

Collection Date: 6/5/2017 4:31:00 PM

Lab ID: 1706219-001

Matrix: SOIL

Received Date: 6/6/2017 7:15:00 AM

Analyses	Result	PQL (	Qual U	Inits	DF Date Analyze	ed	Batch
EPA METHOD 300.0: ANIONS						Analyst:	MRA
Chloride	510	30	r	mg/Kg	20 6/6/2017 12:01	1:16 PM	32133
EPA METHOD 8015M/D: DIESEL RANGE	ORGANICS	3				Analyst:	TOM
Diesel Range Organics (DRO)	210	9.6	r	mg/Kg	1 6/6/2017 9:10:	01 AM	32126
Motor Oil Range Organics (MRO)	ND	48	r	mg/Kg	1 6/6/2017 9:10:	01 AM	32126
Surr: DNOP	90.9	70-130	9	%Rec	1 6/6/2017 9:10:	01 AM	32126
EPA METHOD 8015D: GASOLINE RANG	E					Analyst:	NSB
Gasoline Range Organics (GRO)	4100	190	r	mg/Kg	50 6/6/2017 11:27	7:39 AM	32111
Surr: BFB	345	54-150	S	%Rec	50 6/6/2017 11:27	7:39 AM	32111
EPA METHOD 8021B: VOLATILES						Analyst:	NSB
Benzene	11	0.95	r	mg/Kg	50 6/6/2017 11:27	7:39 AM	32111
Toluene	100	1.9	r	mg/Kg	50 6/6/2017 11:27	7:39 AM	32111
Ethylbenzene	27	1.9	r	mg/Kg	50 6/6/2017 11:27	7:39 AM	32111
Xylenes, Total	330	3.8	r	mg/Kg	50 6/6/2017 11:27	7:39 AM	32111
Surr: 4-Bromofluorobenzene	140	66.6-132	S	%Rec	50 6/6/2017 11:27	7:39 AM	32111

# ID as #8 on Figures and Tables

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

- Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits Page 1 of 5
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

# Hall Environmental Analysis Laboratory, Inc.

WO#:

1706219

07-Jun-17

Client:

Blagg Engineering

Project:

MUDGE A 2

Sample ID MB-32133

SampType: mblk

Analysis Date: 6/6/2017

TestCode: EPA Method 300.0: Anions

Client ID:

Prep Date:

PBS

6/6/2017

Batch ID: 32133

SeqNo: 1363498

RunNo: 43284

Units: mg/Kg

Analyte Chloride

Result

PQL

SPK value SPK Ref Val %REC

LowLimit HighLimit

%RPD **RPDLimit**  Qual

ND

Sample ID LCS-32133

Client ID: LCSS

SampType: Ics

Batch ID: 32133

PQL

1.5

1.5

TestCode: EPA Method 300.0: Anions

RunNo: 43284 SeqNo: 1363499

Units: mg/Kg

Analyte

Prep Date: 6/6/2017

Analysis Date: 6/6/2017

SPK value SPK Ref Val

%REC

HighLimit

%RPD **RPDLimit**  Qual

Chloride

14

15.00

0

96.4

90

110

**Oualifiers:** 

Value exceeds Maximum Contaminant Level.

Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

RPD outside accepted recovery limits

S % Recovery outside of range due to dilution or matrix В Analyte detected in the associated Method Blank

E Value above quantitation range

J Analyte detected below quantitation limits

P Sample pH Not In Range

Reporting Detection Limit

Sample container temperature is out of limit as specified

Page 2 of 5

# Hall Environmental Analysis Laboratory, Inc.

WO#:

1706219

07-Jun-17

Client:

Blagg Engineering

**Project:** 

MUDGE A 2

Sample ID LCS-32126	SampT	pe: LC	S	Tes	tCode: El	PA Method	8015M/D: Die	esel Range	e Organics	
Client ID: LCSS	Batch	ID: 32	126	R	RunNo: 4	3268				
Prep Date: 6/6/2017	Analysis Da	ate: 6/	6/2017	S	SeqNo: 1	362102	Units: mg/K	(g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	43	10	50.00	0	85.6	73.2	114			
Surr. DNOD	3.6		5 000		72.0	70	130			

Sample ID MB-32126	SampT	уре: МЕ	BLK	Tes	tCode: El	PA Method	8015M/D: Di	esel Rang	e Organics	
Client ID: PBS	Batch	ID: 32	126	F	RunNo: 4	3268				
Prep Date: 6/6/2017	Analysis D	ate: 6/	6/2017	S	SeqNo: 1	362103	Units: mg/k	(g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	9.6		10.00		96.4	70	130			

#### Qualifiers:

Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

R RPD outside accepted recovery limits

S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank

E Value above quantitation range

J Analyte detected below quantitation limits

P Sample pH Not In Range

RL Reporting Detection Limit

W Sample container temperature is out of limit as specified

Page 3 of 5

# Hall Environmental Analysis Laboratory, Inc.

WO#:

1706219

07-Jun-17

Client: Project: Blagg Engineering MUDGE A 2

Sample ID MB-32111

SampType: MBLK

TestCode: EPA Method 8015D: Gasoline Range

Client ID:

**PBS** 

Batch ID: 32111

RunNo: 43287

Prep Date: 6/5/2017

Analysis Date: 6/6/2017

SeqNo: 1363134

%REC

Units: mg/Kg

Analyte

PQL

5.0

HighLimit

Qual

Gasoline Range Organics (GRO) Surr: BFB

ND 990

Result

1000

99.2

LowLimit

LowLimit

54

150

%RPD **RPDLimit** 

Sample ID LCS-32111

SampType: LCS

Analysis Date: 6/6/2017

PQL

5.0

TestCode: EPA Method 8015D: Gasoline Range

Client ID:

Prep Date:

LCSS

6/5/2017

Batch ID: 32111

SPK value SPK Ref Val

RunNo: 43287 SeqNo: 1363135

Units: mg/Kg

%RPD

Analyte Gasoline Range Organics (GRO) Surr: BFB

Result 26

1100

SPK value SPK Ref Val 25.00 1000

105 111

%REC

0

76.4 54

HighLimit 125 150 **RPDLimit** 

Qual

Qualifiers:

Value exceeds Maximum Contaminant Level.

Sample Diluted Due to Matrix D

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

R RPD outside accepted recovery limits

% Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank

E Value above quantitation range

J Analyte detected below quantitation limits

Sample pH Not In Range

RL Reporting Detection Limit

Sample container temperature is out of limit as specified

Page 4 of 5

# Hall Environmental Analysis Laboratory, Inc.

WO#:

1706219

07-Jun-17

Client:

Blagg Engineering

Project:

MUDGE A 2

Sample ID MB-32111	SampT	ype: ME	BLK	Tes	tCode: El	PA Method	8021B: Volat	tiles		
Client ID: PBS	Batch	ID: 32	111	F	RunNo: 4	3287				
Prep Date: 6/5/2017	Analysis D	ate: 6/	6/2017	5	SeqNo: 1	363144	Units: mg/K	g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	1.2		1.000		124	66.6	132			
Sample ID LCS-32111	SampT	ype: LC	s	Tes	tCode: El	PA Method	8021B: Volat	iles		
Client ID: LCSS	Ratch	ID: 32	111	F	ZunNo: 4	3287				

Sample ID LCS-32111	SampT	ype: LC	S	Test	tCode: El	PA Method	8021B: Vola	tiles		
Client ID: LCSS	Batch	1D: 32	111	R	RunNo: 4	3287				
Prep Date: 6/5/2017	Analysis D	ate: 6/	6/2017	S	SeqNo: 1	363145	Units: mg/k	(g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.0	0.025	1.000	0	102	80	120			
Toluene	1.0	0.050	1.000	0	104	80	120			
Ethylbenzene	1.1	0.050	1.000	0	105	80	120			
Xylenes, Total	3.2	0.10	3.000	0	108	80	120			
Surr: 4-Bromofluorobenzene	1.3		1.000		128	66.6	132			

#### Qualifiers:

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Page 5 of 5



#### Hall Environmental Analysis Laboratory 4901 Hawkins NE Albuquerque, NM 87109 TEL: 505-345-3975 FAX: 505-345-4107

# Sample Log-In Check List

LABORATORY	Website	; www.hallenviro	nmental.com			
Client Name: BLAGG	Work Order	Number: 17062	219		RcptNo:	1
Received By: Anne Thorn	ne 6/6/2017 7:15	:00 AM	ann	Ham.		
Completed By: Anne Thorn		:30 AM	ann	Show		
Reviewed By:	6/6/17					
Chain of Custody						
1. Custody seals intact on sa	mple bottles?	Yes	□ No		t Present 🗹	
2. Is Chain of Custody compl	ete?	Yes	<b>✓</b> No	☐ No	t Present 🔲	
3. How was the sample delive	ered?	Cour	ier			
<u>Log In</u>						
4. Was an attempt made to o	cool the samples?	Yes	✓ No		NA 🗆	
5. Were all samples received	at a temperature of >0° C to 6.0	)°C Yes	<b>⊘</b> No		NA 🗆	
6. Sample(s) in proper conta	iner(s)?	Yes	<b>✓</b> No			
7. Sufficient sample volume f	or indicated test(s)?	Yes	<b>☑</b> No			
8. Are samples (except VOA	and ONG) properly preserved?	Yes				
9. Was preservative added to	bottles?	Yes	☐ No	$\checkmark$	NA L	
10.VOA vials have zero heads	space?	Yes	☐ No	□ No V	∕OA Vials 🗹	
11. Were any sample contained	ers received broken?	Yes	No		preserved	
12. Does paperwork match both		Yes	<b>✓</b> No			-10 -1
(Note discrepancies on cha 13. Are matrices correctly iden		Yes	✓ No	$\Box$	Adjusted?	>12 unless noted)
14. Is it clear what analyses we		Yes	₩ No		-	
15. Were all holding times able (If no, notify customer for a	to be met?		✓ No		Checked by:	
Special Handling (if app	licable)					
16. Was client notified of all dis	screpancies with this order?	Yes	No		NA 🗹	
Person Notified:	\$15,500 Extraction (\$15,500 Extraction (\$15,50	Date		ndan-matar		
By Whom:	dada Maria da cara cara cara cara cara cara cara	Via: eMa	il Phone	Fax In	Person	
Regarding:		COLCAGE TAMALES AT LANGE BALL	APT-1412-WHAT-1-1-11-11-11-11-11-11-11-11-11-11-11-1			
Client Instructions:						
17. Additional remarks:						
18. <u>Cooler Information</u> Cooler No Temp °C	Condition   Seal Intact   Sea	I No   Seal Da	ite Signed i	Bv		
1 1.0	Good Yes					

Date:	Date	Accreditati	QA/QC Packs	Phone #: email or F		Mailing	Client	
	Time	Accreditation  □ NELAP  □ EDD (Type)	QA/QC Package:	Phone #: (SOS) email or Fax#:		Bu Albo Mailing Address:	BP A	Chain
	Matrix	□ Other	.,		1	EN	Client BP AMOUNEA	of-C
I Degg	Sample Request ID	er	☐ Level 4 (Full Validation)	500-UBS		Engladering	4	Chain-of-Custody Record
Received by:	Container Type and #  ///Con/Ld	Sampler: J- Ru On Ice: XYes Sample Temperature:	STE	Project Manager:	Project #:	A Muse	Standard	Turn-Around Time:
	Preservative Type	Yes perature:	STEVE MORAL	ager		NOTE A	Rush	Time:
Date Time  Date Time  Control  Date  Date	HEAL NO	O No	chr.			2	11	SAME
2	BTEX AN	TBE - FMB	s (8021)					-
Remarks: 6	BTEX + M	TBE + TPH	(Gas on	ly)	Te	490		
	-	GRO/DI	RO/MR	(0)	1. 50:	31 1		
	TPH (Meth	Mil-E-		- 8	345	wkin	>:	E
7 - 8	EDB (Meth	100	CIMO	-	Tel. 505-345-3975	www.h	Z	2
8 3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	RCRA 8 M	10 or 8270 S	olivio)	Ana	0,	, 01	7!	
256		CI,NO <sub>3</sub> ,NO <sub>2</sub>	PO4,SO	llysis	Fax	nonive	IS.	Ž
D GONDACT  WHINGUENCY  OOLBM-E	7.75.574.30	cides / 8082		Analysis Request	Fax 505-345-4107	www.hallenvironmental.com	S	
0.50	8260B (VO	A)		lues	345	tal.co	≥ 6	Š
2 2	8270 (Sem	i-VOA)			4107	om M 87	ö	2
BP Govant : 5th	X CHUR	LIDE			7	109	NALYSIS LABORATORY	ENVIDONMENTAL
2147							-	
							7:	Z

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



Hall Environmental Analysis Laboratory 4901 Hawkins NE

Albuquerque, NM 87109

TEL: 505-345-3975 FAX: 505-345-4107 Website: www.hallenvironmental.com

June 19, 2017

Steven Moskal

Blagg Engineering

P. O. Box 87

Bloomfield, NM 87413

TEL: (505) 632-1199 FAX (505) 632-3903

RE: Mudge A 2

OrderNo.: 1706575

Dear Steven Moskal:

Hall Environmental Analysis Laboratory received 3 sample(s) on 6/10/2017 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to <a href="www.hallenvironmental.com">www.hallenvironmental.com</a> or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman

Laboratory Manager

andyl

4901 Hawkins NE

Albuquerque, NM 87109

Lab Order 1706575

Date Reported: 6/19/2017

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Blagg Engineering

Client Sample ID: West Wall (26'-36') 5-pt

Project:

Mudge A 2

**Collection Date:** 6/9/2017 3:54:00 PM

Lab ID: 1706575-001

Matrix: SOIL

Received Date: 6/10/2017 11:15:00 AM

Analyses	Result	PQL Qu	al Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS					Analyst	MRA
Chloride	45	30	mg/Kg	20	6/17/2017 8:56:00 PM	32341
EPA METHOD 8015M/D: DIESEL RANG	E ORGANICS	S			Analyst	TOM
Diesel Range Organics (DRO)	32	9.3	mg/Kg	1	6/14/2017 9:36:20 PM	32258
Motor Oil Range Organics (MRO)	ND	46	mg/Kg	1	6/14/2017 9:36:20 PM	32258
Surr: DNOP	100	70-130	%Rec	1	6/14/2017 9:36:20 PM	32258
EPA METHOD 8015D: GASOLINE RANG	GE				Analyst	NSB
Gasoline Range Organics (GRO)	ND	4.7	mg/Kg	1	6/14/2017 8:57:29 PM	32244
Surr: BFB	134	54-150	%Rec	1	6/14/2017 8:57:29 PM	32244
EPA METHOD 8021B: VOLATILES					Analyst	NSB
Benzene	0.043	0.023	mg/Kg	1	6/14/2017 8:57:29 PM	32244
Toluene	ND	0.047	mg/Kg	1	6/14/2017 8:57:29 PM	32244
Ethylbenzene	0.050	0.047	mg/Kg	1	6/14/2017 8:57:29 PM	32244
Xylenes, Total	0.17	0.094	mg/Kg	1	6/14/2017 8:57:29 PM	32244
Surr: 4-Bromofluorobenzene	110	66.6-132	%Rec	1	6/14/2017 8:57:29 PM	32244

# ID as #9 on Figures and Tables

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

- Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- RL Reporting Detection Limit

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits Page 1 of 7
- P Sample pH Not In Range
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix

Lab Order 1706575

Date Reported: 6/19/2017

# Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: West Base (38') 5-pt

Project: Mudge A 2

Collection Date: 6/9/2017 3:47:00 PM

Lab ID: 1706575-002 Matrix: SOIL Received Date: 6/10/2017 11:15:00 AM

Analyses	Result	PQL Qu	al Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS					Analyst	MRA
Chloride	44	30	mg/Kg	20	6/17/2017 9:08:24 PM	32341
EPA METHOD 8015M/D: DIESEL RAN	GE ORGANICS	3			Analyst	TOM
Diesel Range Organics (DRO)	24	9.8	mg/Kg	1	6/14/2017 10:04:56 PM	32258
Motor Oil Range Organics (MRO)	ND	49	mg/Kg	1	6/14/2017 10:04:56 PM	32258
Surr: DNOP	97.3	70-130	%Rec	1	6/14/2017 10:04:56 PM	32258
EPA METHOD 8015D: GASOLINE RAM	IGE				Analyst	NSB
Gasoline Range Organics (GRO)	5.0	4.9	mg/Kg	1	6/14/2017 9:21:16 PM	32244
Surr: BFB	146	54-150	%Rec	1	6/14/2017 9:21:16 PM	32244
EPA METHOD 8021B: VOLATILES					Analyst	NSB
Benzene	0.041	0.024	mg/Kg	1	6/14/2017 9:21:16 PM	32244
Toluene	ND	0.049	mg/Kg	1	6/14/2017 9:21:16 PM	32244
Ethylbenzene	0.091	0.049	mg/Kg	1	6/14/2017 9:21:16 PM	32244
Xylenes, Total	0.40	0.098	mg/Kg	1	6/14/2017 9:21:16 PM	32244
Surr: 4-Bromofluorobenzene	112	66.6-132	%Rec	1	6/14/2017 9:21:16 PM	32244

# ID as #10 on Figures and Tables

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- RL Reporting Detection Limit

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits Page 2 of 7
- P Sample pH Not In Range
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix

Lab Order 1706575

Date Reported: 6/19/2017

# Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering Client Sample ID: South Wall (26'-36') 5-pt

 Project:
 Mudge A 2
 Collection Date: 6/9/2017 3:33:00 PM

 Lab ID:
 1706575-003
 Matrix:
 SOIL
 Received Date: 6/10/2017 11:15:00 AM

Analyses	Result	PQL Qu	al Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS					Analyst:	MRA
Chloride	600	30	mg/Kg	20	6/17/2017 9:20:48 PM	32341
EPA METHOD 8015M/D: DIESEL RAN	GE ORGANICS	S			Analyst:	TOM
Diesel Range Organics (DRO)	18	9.5	mg/Kg	1	6/14/2017 10:33:49 PM	32258
Motor Oil Range Organics (MRO)	ND	48	mg/Kg	1	6/14/2017 10:33:49 PM	32258
Surr: DNOP	95.9	70-130	%Rec	1	6/14/2017 10:33:49 PM	32258
EPA METHOD 8015D: GASOLINE RAM	IGE				Analyst:	NSB
Gasoline Range Organics (GRO)	ND	4.6	mg/Kg	1	6/14/2017 9:44:50 PM	32244
Surr: BFB	120	54-150	%Rec	1	6/14/2017 9:44:50 PM	32244
EPA METHOD 8021B: VOLATILES					Analyst:	NSB
Benzene	ND	0.023	mg/Kg	1	6/14/2017 9:44:50 PM	32244
Toluene	ND	0.046	mg/Kg	1	6/14/2017 9:44:50 PM	32244
Ethylbenzene	ND	0.046	mg/Kg	1	6/14/2017 9:44:50 PM	32244
Xylenes, Total	ND	0.093	mg/Kg	1	6/14/2017 9:44:50 PM	32244
Surr: 4-Bromofluorobenzene	112	66.6-132	%Rec	1	6/14/2017 9:44:50 PM	32244

# ID as #11 on Figures and Tables

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

- Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- RL Reporting Detection Limit

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits Page 3 of 7
- P Sample pH Not In Range
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix

# Hall Environmental Analysis Laboratory, Inc.

WO#:

1706575

19-Jun-17

Client:

Blagg Engineering

Project:

Mudge A 2

Sample ID MB-32341

SampType: mblk

TestCode: EPA Method 300.0: Anions

LowLimit

Client ID:

PBS

Batch ID: 32341

RunNo: 43585

Prep Date: 6/17/2017

Analysis Date: 6/17/2017

SeqNo: 1372898

Units: mg/Kg

HighLimit

%RPD **RPDLimit** 

Qual

Analyte Chloride

Result ND

PQL 1.5

Sample ID LCS-32341 LCSS

SampType: Ics Batch ID: 32341 TestCode: EPA Method 300.0: Anions

RunNo: 43585

Client ID:

Prep Date: 6/17/2017

Analysis Date: 6/17/2017

SeqNo: 1372899

Units: mg/Kg

%RPD **RPDLimit** 

Qual

Analyte

SPK value SPK Ref Val %REC PQL

0

SPK value SPK Ref Val %REC

93.5

90

Chloride

14

1.5 15.00

HighLimit 110

#### Qualifiers:

- Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- Holding times for preparation or analysis exceeded H
- Not Detected at the Reporting Limit ND
- Practical Quanitative Limit **PQL**
- Reporting Detection Limit

- В Analyte detected in the associated Method Blank
- E Value above quantitation range

P

- J Analyte detected below quantitation limits
  - Sample pH Not In Range
- R RPD outside accepted recovery limits % Recovery outside of range due to dilution or matrix
- Page 4 of 7

# Hall Environmental Analysis Laboratory, Inc.

WO#: 1706575

19-Jun-17

Client:

Blagg Engineering

Project: Mudge A	A 2									
Sample ID MB-32258	SampType: MBLK	TestCode: EPA Method	8015M/D: Diesel Range O	rganics						
Client ID: PBS	Batch ID: 32258	atch ID: 32258 RunNo: 43496								
Prep Date: 6/13/2017	Analysis Date: 6/14/2017	SeqNo: 1369816	Units: mg/Kg							
Analyte	Result PQL SPK value	SPK Ref Val %REC LowLimit	HighLimit %RPD R	PDLimit Qual						
Diesel Range Organics (DRO)	ND 10									
Motor Oil Range Organics (MRO)	ND 50									
Surr: DNOP	10 10.00	104 70	130							
Sample ID LCS-32258	SampType: LCS	TestCode: EPA Method	8015M/D: Diesel Range O	rganics						
Client ID: LCSS	Batch ID: 32258	RunNo: 43496								
Prep Date: 6/13/2017	Analysis Date: 6/14/2017	SeqNo: 1370823	Units: mg/Kg							
Analyte	Result PQL SPK value	SPK Ref Val %REC LowLimit	HighLimit %RPD R	PDLimit Qual						
Diesel Range Organics (DRO)	54 10 50.00	0 109 73.2	114							
Surr: DNOP	4.9 5.000	98.7 70	130							
Sample ID LCS-32292	SampType: LCS	TestCode: EPA Method	8015M/D: Diesel Range O	rganics						
Client ID: LCSS	Batch ID: 32292	RunNo: 43528								
Prep Date: 6/14/2017	Analysis Date: 6/15/2017	SeqNo: 1372096	Units: %Rec							
Analyte	Result PQL SPK value	SPK Ref Val %REC LowLimit	HighLimit %RPD R	PDLimit Qual						
Surr: DNOP	4.1 5.000	81.4 70	130							
Sample ID MB-32292	SampType: MBLK	TestCode: EPA Method	8015M/D: Diesel Range O	rganics						
Client ID: PBS	Batch ID: 32292	RunNo: 43528								
Prep Date: 6/14/2017	Analysis Date: 6/15/2017	SeqNo: 1372097	Units: %Rec							
Analyte	Result PQL SPK value	SPK Ref Val %REC LowLimit	HighLimit %RPD R	PDLimit Qual						
Surr: DNOP	8.7 10.00	87.4 70	130							

#### Qualifiers:

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- RL Reporting Detection Limit

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix

Page 5 of 7

# Hall Environmental Analysis Laboratory, Inc.

WO#:

1706575

19-Jun-17

Client:

Blagg Engineering

Project:

Mudge A 2

Sample ID MB-32244	SampType	SampType: MBLK TestCode: EPA Method 8015D: Gasoline Range									
Client ID: PBS	Batch ID	Batch ID: 32244 RunNo: 43491									
Prep Date: 6/13/2017	Analysis Date	e: 6/14/2017	,	Se	eqNo: 1	370036	Units: mg/K	g			
Analyte	Result F	PQL SPK v	alue SI	PK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Gasoline Range Organics (GRO)	ND	5.0									
Surr: BFB	1100	1	000		110	54	150				
Sample ID LCS-32244	SampType	e: LCS		TestC	Code: EF	PA Method	8015D: Gaso	line Rang	е		
Client ID: LCSS	Batch ID	32244		Ru	ınNo: 43	3491					

Sample ID LCS-32244	Samp Type. I	_03	rest	Code. El	PA Wethod	outob. Gaso	line Kang	3	
Client ID: LCSS	Batch ID: 3	32244	R	unNo: 4	3491				
Prep Date: 6/13/2017	Analysis Date:	6/14/2017	S	eqNo: 1	370037	Units: mg/K	g		
Analyte	Result PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	<b>RPDLimit</b>	Qual
Gasoline Range Organics (GRO)	25 5.	0 25.00	0	98.8	76.4	125			
Surr: BFB	1200	1000		119	54	150			

#### Qualifiers:

Value exceeds Maximum Contaminant Level.

Sample Diluted Due to Matrix D

H Holding times for preparation or analysis exceeded

Not Detected at the Reporting Limit ND

PQL Practical Quanitative Limit

Reporting Detection Limit

Analyte detected in the associated Method Blank В

E Value above quantitation range

J Analyte detected below quantitation limits

Sample pH Not In Range

P

R RPD outside accepted recovery limits

% Recovery outside of range due to dilution or matrix

Page 6 of 7

# Hall Environmental Analysis Laboratory, Inc.

WO#:

1706575

19-Jun-17

Client:

Blagg Engineering

Project:

Mudge A 2

Sample ID MB-32244	SampType: MBLK TestCode: EPA Method 8						8021B: Volat	tiles				
Client ID: PBS	Batch	Batch ID: 32244 RunNo: 43491										
Prep Date: 6/13/2017	Analysis D	ate: 6/	14/2017	S	SeqNo: 1	370062	Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual		
Benzene	ND	0.025										
Toluene	ND	0.050										
Ethylbenzene	ND	0.050										
Xylenes, Total	ND	0.10										
Surr: 4-Bromofluorobenzene	1.1		1.000		108	66.6	132					

Sample ID LCS-32244	SampType: LCS TestCode: EPA Method 8021B: Volatiles									
Client ID: LCSS	Batcl	n ID: 32	244	F	RunNo: 4	3491				
Prep Date: 6/13/2017	Analysis D	Analysis Date: 6/14/2017 SeqNo: 1370063 Units: mg/Kg								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.0	0.025	1.000	0	99.6	80	120			
Toluene	1.0	0.050	1.000	0	99.8	80	120			
Ethylbenzene	0.98	0.050	1.000	0	97.8	80	120			
Xylenes, Total	2.9	0.10	3.000	0	97.2	80	120			
Surr: 4-Bromofluorobenzene	1.1		1.000		111	66.6	132			

#### Qualifiers:

\* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

PQL Practical Quanitative Limit

RL Reporting Detection Limit

B Analyte detected in the associated Method Blank

E Value above quantitation range

J Analyte detected below quantitation limits

P Sample pH Not In Range

R RPD outside accepted recovery limits

S % Recovery outside of range due to dilution or matrix

Page 7 of 7



Hall Environmental Analysis Laboratory 4901 Hawkins NE Albuquerque, NM 87109

TEL: 505-345-3975 FAX: 505-345-4107 Website: www.hallenvironmental.com

# Sample Log-In Check List

Client Name: BLAGG	Work Order Num	ber: 1706575		RcptNo:	1
Received By: Andy Freeman	6/10/2017 11:15:00	) AM	andyl		
Completed By: Ashley Gallegos	6/12/2017 11:39:32	2 AM	A		
Reviewed By:	6112117		•		
Chain of Custody				_	
1. Custody seals intact on sample bottles?		Yes	No 🗆	Not Present	
2. Is Chain of Custody complete?		Yes 🗹	No 🗌	Not Present	
3. How was the sample delivered?		Courier			
Log In					
4. Was an attempt made to cool the samp	les?	Yes 🗹	No 🗆	NA 🗆	
5. Were all samples received at a tempera	ture of >0° C to 6.0°C	Yes 🗹	No 🗆	NA 🗆	
6. Sample(s) in proper container(s)?		Yes 🗹	No 🗆		
7. Sufficient sample volume for indicated to	est(s)?	Yes 🗹	No 🗆		
8. Are samples (except VOA and ONG) pro	operly preserved?	Yes 🗹	No 🗆		
9. Was preservative added to bottles?		Yes	No 🗹	NA 🗆	
10.VOA vials have zero headspace?		Yes 🗌	No 🗆	No VOA Vials	
11. Were any sample containers received b	roken?	Yes	No 🗹	# of preserved	
12. Does paperwork match bottle labels?		Yes 🗹	No 🗆	bottles checked for pH:	
(Note discrepancies on chain of custody			м. П	(<2 or Adjusted?	>12 unless noted)
13. Are matrices correctly identified on Chair		Yes ✓	No 🗆		
<ul><li>14. Is it clear what analyses were requested</li><li>15. Were all holding times able to be met?</li></ul>	r	Yes 🗹	No 🗆	Checked by:	
(If no, notify customer for authorization.)		163			
Special Handling (if applicable)					
16. Was client notified of all discrepancies w	rith this order?	Yes 🗆	No 🗆	NA 🗹	
Person Notified:	Date	9	AT DESCRIPTION STATES OF THE PARTY OF THE PA		
By Whom:	Via	eMail F	Phone Fax	☐ In Person	
Regarding:				A STATE OF THE STA	
Client Instructions:					
17. Additional remarks:			,		
18. Cooler Information	Can Intent   Can No	Seel Data	Signed D.	I	
Cooler No Temp °C Condition  1 2.8 Good	Seal Intact   Seal No Yes	Seal Date	Signed By		

C	hain-	of-Cu	stody Record	Turn-Around	Time:	SAME & b/12	1						_		-						
Client:	BP Am	ERICA		Standard		DAK Standard TAT			H										NT		
F	LAGG E	WHUEE	RNG INC	Project Name							0.000	v.hal	group.	100		1201					
Mailing	Address			Muse	EA 2	2		49	01 H			VE -						109			
				Project #:						5-34					Services.		4107				
Phone:	#: (509	) 3ZO	- 1183												-	uest					
email o				Project Mana	ger:		_	<u>Ş</u>	(0)					25						T	
QA/QC	Package: dard		☐ Level 4 (Full Validation)	STEVE	MOSKAL		\$ (8021	(Gas only)	DRO / MRO)			SIMS)		PO4,S	PCB's						
Accred				Sampler: JE	FF BLAGE		H	TPH	/ DF	÷	=	70 8		02	3082						2
□ NEL		□ Othe	er	On Ice:		□ No	H	+	(GRO / I	418.	504	r 82	us	O	1 S		(A)				0
□ EDD	(Type)_			Sample Tem	perature: 2-9		Ħ	TBE	B (G	pou	por	10 0	etal	C,N	cide	(A)	N-ic	M			8
Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.	BTEX + MIBE + IME'S (8021)	BTEX + MTBE	TPH 8015B	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F,CI,NO3,NO2,PO4,SO4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	CHLORIDE			Air Bubbles (Y or N)
9/2017	1554	SOIL	west wall (26-36') \$=	402×1	COOL	-001	X		X						-			X			
1	1547	9	WEST BOSE (38') 5-PT		1	-002	1		1									1			
	1533		South Well (26 -36') 50	1	1	-003												1			
																			+	_	
															7				+	+	
																			+	+	+
Date;	Time: (730) Time:	Relinquish Relinquish	Blogg	Received by:	4	Date Time 6/10/17 1/15  Date Time			١		V	HUX			L			984	tve 1	Mosk	AL



Hall Environmental Analysis Laboratory 4901 Hawkins NE Albuquerque, NM 87109 TEL: 505-345-3975 FAX: 505-345-4107

Website: www.hallenvironmental.com

OrderNo.: 1706650

June 21, 2017

Steven Moskal Blagg Engineering P. O. Box 87 Bloomfield, NM 87413

TEL: (505) 632-1199 FAX (505) 632-3903

RE: Mudge A 2

Dear Steven Moskal:

Hall Environmental Analysis Laboratory received 2 sample(s) on 6/13/2017 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to <a href="www.hallenvironmental.com">www.hallenvironmental.com</a> or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman

Laboratory Manager

andyl

4901 Hawkins NE

Albuquerque, NM 87109

Lab Order 1706650

Date Reported: 6/21/2017

#### Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Blagg Engineering

1706650-001

Project: Mudge A 2

Lab ID:

Client Sample ID: NE BASE 5-pt @ 37'

Collection Date: 6/12/2017 10:16:00 AM

Received Date: 6/13/2017 7:55:00 AM

Analyses	Result	PQL (	Qual 1	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst	MRA
Chloride	74	30		mg/Kg	20	6/20/2017 3:51:18 PM	32385
EPA METHOD 8015M/D: DIESEL RAN	GE ORGANICS	3				Analyst	TOM
Diesel Range Organics (DRO)	89	9.9		mg/Kg	1	6/14/2017 11:59:55 PM	32258
Motor Oil Range Organics (MRO)	65	50		mg/Kg	1	6/14/2017 11:59:55 PM	32258
Surr: DNOP	97.1	70-130		%Rec	1	6/14/2017 11:59:55 PM	32258
EPA METHOD 8015D: GASOLINE RAM	NGE					Analyst	NSB
Gasoline Range Organics (GRO)	200	24		mg/Kg	5	6/15/2017 11:18:36 PM	32257
Surr: BFB	296	54-150	S	%Rec	5	6/15/2017 11:18:36 PM	32257
EPA METHOD 8021B: VOLATILES						Analyst	NSB
Benzene	0.19	0.12		mg/Kg	5	6/14/2017 5:47:27 PM	32257
Toluene	0.56	0.24		mg/Kg	5	6/14/2017 5:47:27 PM	32257
Ethylbenzene	1.2	0.24		mg/Kg	5	6/14/2017 5:47:27 PM	32257
Xylenes, Total	18	0.48		mg/Kg	5	6/15/2017 11:18:36 PM	32257
Surr: 4-Bromofluorobenzene	132	66.6-132		%Rec	5	6/14/2017 5:47:27 PM	32257

Matrix: SOIL

# ID as #12 on Figures and Tables

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

- Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits Page 1 of 6
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

#### Lab Order 1706650

Date Reported: 6/21/2017

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Blagg Engineering

Client Sample ID: N. Wall 5-pt (26'-36')

Project: Mudge A 2

Collection Date: 6/12/2017 10:24:00 AM

Lab ID:

1706650-002

Matrix: SOIL

Received Date: 6/13/2017 7:55:00 AM

Analyses	Result	PQL Qu	al Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS					Analyst	MRA
Chloride	410	30	mg/Kg	20	6/20/2017 4:03:43 PM	32385
EPA METHOD 8015M/D: DIESEL RANG	E ORGANICS	3			Analyst	TOM
Diesel Range Organics (DRO)	20	10	mg/Kg	1	6/15/2017 12:28:15 AM	32258
Motor Oil Range Organics (MRO)	ND	50	mg/Kg	1	6/15/2017 12:28:15 AM	32258
Surr: DNOP	94.3	70-130	%Rec	1	6/15/2017 12:28:15 AM	32258
EPA METHOD 8015D: GASOLINE RANG	SE				Analyst:	NSB
Gasoline Range Organics (GRO)	ND	4.7	mg/Kg	1	6/16/2017 12:06:20 AM	32257
Surr: BFB	116	54-150	%Rec	1	6/16/2017 12:06:20 AM	32257
EPA METHOD 8021B: VOLATILES					Analyst:	NSB
Benzene	ND	0.024	mg/Kg	1	6/14/2017 6:35:26 PM	32257
Toluene	ND	0.047	mg/Kg	1	6/14/2017 6:35:26 PM	32257
Ethylbenzene	ND	0.047	mg/Kg	1	6/14/2017 6:35:26 PM	32257
Xylenes, Total	ND	0.095	mg/Kg	1	6/14/2017 6:35:26 PM	32257
Surr: 4-Bromofluorobenzene	118	66.6-132	%Rec	1	6/14/2017 6:35:26 PM	32257

# ID as #13 on Figures and Tables

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

- Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- S % Recovery outside of range due to dilution or matrix
- Analyte detected in the associated Method Blank
- E Value above quantitation range
- Analyte detected below quantitation limits Page 2 of 6 J
- Sample pH Not In Range
- RL Reporting Detection Limit
- Sample container temperature is out of limit as specified

### Hall Environmental Analysis Laboratory, Inc.

WO#:

1706650

21-Jun-17

Client:

Blagg Engineering

Project:

Mudge A 2

Sample ID MB-32385

SampType: mblk

TestCode: EPA Method 300.0: Anions

Client ID:

**PBS** 

Batch ID: 32385

RunNo: 43638

Prep Date:

Analysis Date: 6/20/2017

SeqNo: 1375850

%REC LowLimit

Units: mg/Kg

HighLimit

Analyte

6/20/2017

PQL

%RPD **RPDLimit**  Qual

Chloride

Client ID:

ND 1.5

Sample ID LCS-32385 LCSS

SampType: Ics Batch ID: 32385

14

Result

TestCode: EPA Method 300.0: Anions RunNo: 43638

Prep Date:

6/20/2017

Analysis Date: 6/20/2017

SeqNo: 1375851

Units: mg/Kg

HighLimit %RPD **RPDLimit** 

Qual

Result

SPK value SPK Ref Val PQL

SPK value SPK Ref Val

%REC 94.4

0

Analyte Chloride

1.5

15.00

90

110

#### Qualifiers:

- Value exceeds Maximum Contaminant Level.
- Sample Diluted Due to Matrix
- Holding times for preparation or analysis exceeded H
- Not Detected at the Reporting Limit ND
- Practical Quanitative Limit **PQL**
- % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- Reporting Detection Limit
- Sample container temperature is out of limit as specified

Page 3 of 6

### Hall Environmental Analysis Laboratory, Inc.

WO#:

1706650

21-Jun-17

Client:

Blagg Engineering

Project:

Mudge A 2

Project: Mudge A	1 2									
Sample ID MB-32258	SampTy	pe: ME	BLK	Tes	tCode: EF	PA Method	8015M/D: Die	esel Rang	e Organics	
Client ID: PBS	Batch	ID: 322	258	F	RunNo: 43	3496				
Prep Date: 6/13/2017	Analysis Da	ite: 6/	14/2017	8	SeqNo: 13	369816	Units: mg/K	(g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	10		10.00		104	70	130			
Sample ID LCS-32258	SampTy	pe: LC	s	Tes	Code: EF	PA Method	8015M/D: Die	esel Rang	e Organics	
Client ID: LCSS	Batch	ID: 322	258	F	unNo: 43	3496				
Prep Date: 6/13/2017	Analysis Da	ite: 6/	14/2017	S	SeqNo: 13	370823	Units: mg/K	(g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	54	10	50.00	0	109	73.2	114			
Surr: DNOP	4.9		5.000		98.7	70	130			

#### Qualifiers:

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits

Page 4 of 6

- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

### Hall Environmental Analysis Laboratory, Inc.

WO#:

1706650

21-Jun-17

Client:

Blagg Engineering

Project:

Mudge A 2

Sample ID MB-32257	SampT	ype: ME	BLK	Tes	tCode: El	PA Method	8015D: Gaso	line Rang	е	
Client ID: PBS	Batch	ID: 32	257	F	RunNo: 4	3490				
Prep Date: 6/13/2017	Analysis D	ate: 6/	14/2017	5	SeqNo: 1	370009	Units: mg/K	(g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	960		1000		95.9	54	150			
Sample ID I CS-32257	SamnT	vne: I C	s	Tes	tCode: FI	PA Method	8015D: Gaso	line Rang	ρ.	

Sample ID LCS-32257	Samply	pe: LC	5	res	tCode: E	PA Method	8015D: Gaso	line Rang	е	
Client ID: LCSS	Batch	ID: <b>32</b>	257	F	RunNo: 4	3490				
Prep Date: 6/13/2017	Analysis Da	te: 6/	14/2017	8	SeqNo: 1	370010	Units: mg/K	g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	25	5.0	25.00	0	100	76.4	125			
Surr: BFB	1000		1000		103	54	150			

### Qualifiers:

\* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

PQL Practical Quanitative Limit

S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank

E Value above quantitation range

J Analyte detected below quantitation limits

P Sample pH Not In Range

RL Reporting Detection Limit

W Sample container temperature is out of limit as specified

Page 5 of 6

### Hall Environmental Analysis Laboratory, Inc.

WO#:

1706650

21-Jun-17

Client:

Blagg Engineering

Project:

Mudge A 2

Sample ID MB-32257	SampT	ype: ME	BLK	Tes	tCode: El	PA Method	8021B: Volat	tiles		
Client ID: PBS	Batch	n ID: 32	257	F	RunNo: 4	3490				
Prep Date: 6/13/2017	Analysis D	ate: 6/	14/2017	8	SeqNo: 1	370018	Units: mg/K	g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	1.2		1.000		123	66.6	132			

Sample ID LCS-32257	SampT	ype: LC	s	Tes	tCode: El	PA Method	8021B: Volat	tiles		
Client ID: LCSS	Batch	ID: 32	257	R	RunNo: 4	3490				
Prep Date: 6/13/2017	Analysis D	ate: 6/	14/2017	S	SeqNo: 1	370019	Units: mg/K	(g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	<b>RPDLimit</b>	Qual
Benzene	1.0	0.025	1.000	0	105	80	120			
Toluene	1.1	0.050	1.000	0	106	80	120			
Ethylbenzene	1.1	0.050	1.000	0	106	80	120			
Xylenes, Total	3.2	0.10	3.000	0	108	80	120			
Surr: 4-Bromofluorobenzene	1.2		1.000		125	66.6	132			

#### Qualifiers:

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Page 6 of 6



Hall Environmental Analysis Laboratory 4901 Hawkins NE Albuquerque, NM 87109 TEL: 505-345-3975 FAX: 505-345-4107

Website: www.hallenvironmental.com

# Sample Log-In Check List

Client Name:	BLAGG	Work Order Number:	1706650		RcptNo:	1
	_			2 11		
Received By:	Anne Thorne	6/13/2017 7:55:00 AM		ann Sham		
Completed By:	Sophia Campuzano	6/13/2017 11:16:14 AM	I	joshi jagar -		
Reviewed By:	ENM	06/13/17				
Chain of Cus	<u>tody</u>			_	_	
1. Custody sea	ls intact on sample bottles?		Yes	No 🗆	Not Present	
2. Is Chain of C	Custody complete?		Yes 🗸	No 🗆	Not Present	
3. How was the	sample delivered?		Courier			
Log In						
4. Was an atte	mpt made to cool the samples	?	Yes 🗹	No 🗆	NA 🗆	
5. Were all san	nples received at a temperatur	e of >0° C to 6.0°C	Yes 🗹	No 🗆	NA 🗆	
6. Sample(s) in	n proper container(s)?		Yes 🗸	No 🗆		
our pie(e) ii	, proper container(c).					
7. Sufficient sai	mple volume for indicated test	(s)?	Yes 🗹	No L		
8. Are samples	(except VOA and ONG) prope	erly preserved?	Yes 🗸	No 🗆	_	
<ol><li>Was preserv</li></ol>	vative added to bottles?		Yes	No 🗸	NA 📙	
10.VOA vials ha	ave zero headspace?		Yes	No 🗆	No VOA Vials	
11. Were any sa	ample containers received brok	en?	Yes 🗌	No 🗸	# of preserved	
12 Dogg papage	work match bottle labels?		Yes 🗸	No 🗆	bottles checked for pH:	
	pancies on chain of custody)		res 💌	140		r >12 unless noted)
	correctly identified on Chain of	f Custody?	Yes 🗸	No 🗆	Adjusted?	
14. Is it clear wh	at analyses were requested?		Yes 🗸	No 🗌		
	ding times able to be met?		Yes 🗹	No 🗆	Checked by:	
(If no, notify	customer for authorization.)					
Special Hand	ling (if applicable)					
16. Was client no	otified of all discrepancies with	this order?	Yes	No 🗆	NA 🗹	_
Person	Notified:	Date	Control of the State of the Sta	SACREMENT AND DESCRIPTION OF THE PARTY OF TH		
By Wh	om:	Via: [	eMail	Phone Fax	In Person	i
Regard	ding:	AND THE CONTRACT OF THE CONTRA	Charles Market M		STATE OF THE PARTY AND ADDRESS OF THE PARTY AND ADDRESS OF THE PARTY.	:
Client I	Instructions:	A CONTRACTOR OF THE PARTY OF TH		COLUMN TO SERVICE SERV		
17. Additional re	emarks:					-
18. Cooler Info	rmation					
Cooler No		Seal Intact   Seal No   S	Seal Date	Signed By		
1	1.0 Good Ye	· ·				

	hain	of-Cu	stody Record	Turn-Around	Time:		HALL ENVIRONMENTAL														
Client:	BP AV	MERICA		X Standard	☐ Rush		-	200										RA			
			erne Inc.	Project Name	):				TY .							al.co					
Mailing	Address	C140170	SKIPS INC.	MUDG	EA2			40	01 1	lawki								100			
				Project #:			-			)5-34				100			4107				
Phone	#: (50	320	- 1197						31, 00	33-34	10-03				-	uest				303	
	r Fax#:	7 000	1105	Project Mana	ger:			(2)	0										-	T	
QA/QC	Package:			5	EVE MOSI	KAL	021	son	DRO / MRO			(5)		SC.	B's						
Star	ndard		☐ Level 4 (Full Validation)	J.,			s (8	(Ga	30/			SIIMS		PO,	2 PC						
Accred				Sampler:	JEFF Bi	A64	HATE	+ TPH (Gas only)	10	÷.	=	270		NOZ	808						5
O NEL		□ Othe	er	On Ice:	Yes	□ No	1 17	+	SRO	418	504	N 82	S	S.	/ 86		OA)				ō
□ EDL	(Type)	Г		Sample Tem	perature:	1-0	一臣	ITBE	9 (0	pou	Pod	10	heta	5	icide	(AC	Ni-V	1			5
Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.	BTEX + MTBE + TMB's (8021)	BTEX + MTBE	TPH 8015B (GRO /	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F,CI,NO <sub>3</sub> ,NO <sub>2</sub> ,PO <sub>4</sub> ,SO <sub>4</sub> )	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	CHUKIDE			Air Bubbles (Y or N)
1417	OIL	SOIL	NE BASE 5-pt @ 37	402=1	COOL	-001	X		X									X	$\top$	$\top$	
TI.	1024	11	N. Wall 5-pt (26-36")	11	(1-	-002	X		X									X	$\perp$		
							+						_					+	+	+	+
																				$\pm$	$\forall$
							+											-	+	+	$\mathbb{H}$
																				$\pm$	$\pm$
																		-	+	+	+
																- 1				1	
														1			- 4				
Date:	Time: 1119	Relinquish	U Blogg	Received by:	Jalo	Date Time -6/12/17   119	Rer	nark	7	IL ID:		lixo.	NE			ACT	51	TEVE	Mos	KAL	
Date:	Time: 18/7	RetiMquish		Received by	1. 11.	04/13/17	u	<b>IBS</b>	ĒŒ	ME	7:	L	1-0	01	8M	-E	: 10	098	4		

# Appendix D

# Drill Boring Laboratory Analytical Data Reports



Hall Environmental Analysis Laboratory 4901 Hawkins NE

Albuquerque, NM 87109

TEL: 505-345-3975 FAX: 505-345-4107 Website: www.hallenvironmental.com

August 27, 2017

Steve Moskal Blagg Engineering

P. O. Box 87 Bloomfield, NM 87413

TEL: (505) 632-1199 FAX (505) 632-3903

RE: Mudge A 2

OrderNo.: 1708A09

#### Dear Steve Moskal:

Hall Environmental Analysis Laboratory received 9 sample(s) on 8/16/2017 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to <a href="www.hallenvironmental.com">www.hallenvironmental.com</a> or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

### Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Blagg Engineering

**Client Sample ID:** BH-1 (25'-26')

Project: Mudge A 2 Collection Date: 8/14/2017 12:03:00 PM

Lab ID: 1708A09-001 Matrix: SOIL

Received Date: 8/16/2017 7:15:00 AM

Analyses	Result	PQL (	Qual U	nits	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst	MRA
Chloride	330	30	n	ng/Kg	20	8/24/2017 1:14:23 PM	33539
EPA METHOD 8015M/D: DIESEL RANGE	ORGANIC	3				Analyst	TOM
Diesel Range Organics (DRO)	120	9.8	n	ng/Kg	1	8/21/2017 10:59:53 PM	33448
Motor Oil Range Organics (MRO)	110	49	n	ng/Kg	1	8/21/2017 10:59:53 PM	33448
Surr: DNOP	97.6	70-130	9/	%Rec	1	8/21/2017 10:59:53 PM	33448
EPA METHOD 8015D: GASOLINE RANG	E					Analyst	NSB
Gasoline Range Organics (GRO)	79	24	n	ng/Kg	5	8/18/2017 11:53:49 PM	33432
Surr: BFB	167	54-150	S %	%Rec	5	8/18/2017 11:53:49 PM	33432
EPA METHOD 8021B: VOLATILES						Analyst	NSB
Benzene	ND	0.12	n	ng/Kg	5	8/18/2017 11:53:49 PM	33432
Toluene	ND	0.24	n	ng/Kg	5	8/18/2017 11:53:49 PM	33432
Ethylbenzene	ND	0.24	n	ng/Kg	5	8/18/2017 11:53:49 PM	33432
Xylenes, Total	1.1	0.49	n	ng/Kg	5	8/18/2017 11:53:49 PM	33432
Surr: 4-Bromofluorobenzene	111	66.6-132	9/	%Rec	5	8/18/2017 11:53:49 PM	33432

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

- Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- % Recovery outside of range due to dilution or matrix
- В Analyte detected in the associated Method Blank
- E Value above quantitation range
- Analyte detected below quantitation limits Page 1 of 13
- P Sample pH Not In Range
- RL Reporting Detection Limit
- Sample container temperature is out of limit as specified

Lab Order 1708A09

Date Reported: 8/27/2017

### Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Blagg Engineering

**Client Sample ID:** BH-1 (35'-36')

Project: Mudge A 2

Collection Date: 8/14/2017 12:28:00 PM

Lab ID: 1708A09-002 Matrix: SOIL

Received Date: 8/16/2017 7:15:00 AM

Analyses	Result	PQL Qu	al Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS					Analyst	MRA
Chloride	50	30	mg/Kg	20	8/24/2017 1:26:47 PM	33539
EPA METHOD 8015M/D: DIESEL RAN	GE ORGANIC	S			Analyst	TOM
Diesel Range Organics (DRO)	ND	9.4	mg/Kg	1	8/21/2017 11:22:17 PM	33448
Motor Oil Range Organics (MRO)	ND	47	mg/Kg	1	8/21/2017 11:22:17 PM	33448
Surr: DNOP	88.8	70-130	%Rec	1	8/21/2017 11:22:17 PM	33448
EPA METHOD 8015D: GASOLINE RAM	NGE				Analyst	NSB
Gasoline Range Organics (GRO)	ND	4.6	mg/Kg	1	8/21/2017 2:36:06 PM	33432
Surr: BFB	92.0	54-150	%Rec	1	8/21/2017 2:36:06 PM	33432
EPA METHOD 8021B: VOLATILES					Analyst:	NSB
Benzene	ND	0.023	mg/Kg	1	8/21/2017 2:36:06 PM	33432
Toluene	ND	0.046	mg/Kg	1	8/21/2017 2:36:06 PM	33432
Ethylbenzene	0.047	0.046	mg/Kg	1	8/21/2017 2:36:06 PM	33432
Xylenes, Total	ND	0.093	mg/Kg	1	8/21/2017 2:36:06 PM	33432
Surr: 4-Bromofluorobenzene	104	66.6-132	%Rec	1	8/21/2017 2:36:06 PM	33432

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

- Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
  - % Recovery outside of range due to dilution or matrix
- Analyte detected in the associated Method Blank
- E Value above quantitation range
- Analyte detected below quantitation limits Page 2 of 13 J
- P Sample pH Not In Range
- RL Reporting Detection Limit
- Sample container temperature is out of limit as specified

Lab Order 1708A09

Date Reported: 8/27/2017

### Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Blagg Engineering

Project: Mudge A 2

Lab ID: 1708A09-003 Client Sample ID: BH-1 (45'-46')

Collection Date: 8/14/2017 1:35:00 PM

Received Date: 8/16/2017 7:15:00 AM

Analyses	Result	PQL Qu	al Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS					Analyst	MRA
Chloride	ND	30	mg/Kg	20	8/24/2017 2:28:49 PM	33539
EPA METHOD 8015M/D: DIESEL RANG	GE ORGANIC	S			Analyst	TOM
Diesel Range Organics (DRO)	ND	9.2	mg/Kg	1	8/21/2017 11:44:24 PM	33448
Motor Oil Range Organics (MRO)	ND	46	mg/Kg	1	8/21/2017 11:44:24 PM	33448
Surr: DNOP	83.8	70-130	%Rec	1	8/21/2017 11:44:24 PM	33448
EPA METHOD 8015D: GASOLINE RAN	IGE				Analyst	NSB
Gasoline Range Organics (GRO)	ND	4.8	mg/Kg	1	8/19/2017 12:40:47 AM	33432
Surr: BFB	89.2	54-150	%Rec	1	8/19/2017 12:40:47 AM	33432
EPA METHOD 8021B: VOLATILES					Analyst	NSB
Benzene	ND	0.024	mg/Kg	1	8/19/2017 12:40:47 AM	33432
Toluene	ND	0.048	mg/Kg	1	8/19/2017 12:40:47 AM	33432
Ethylbenzene	ND	0.048	mg/Kg	1	8/19/2017 12:40:47 AM	33432
Xylenes, Total	ND	0.096	mg/Kg	1	8/19/2017 12:40:47 AM	33432
Surr: 4-Bromofluorobenzene	102	66.6-132	%Rec	1	8/19/2017 12:40:47 AM	33432

Matrix: SOIL

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

- Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- Analyte detected below quantitation limits Page 3 of 13 J
- Sample pH Not In Range
- RL Reporting Detection Limit
- Sample container temperature is out of limit as specified

Lab Order 1708A09

Date Reported: 8/27/2017

### Hall Environmental Analysis Laboratory, Inc.

Client Sample ID: BH-2 (31.5'-32')

**CLIENT:** Blagg Engineering Collection Date: 8/14/2017 2:55:00 PM Project: Mudge A 2

Lab ID: 1708A09-004 Matrix: SOIL Received Date: 8/16/2017 7:15:00 AM

Analyses	Result	PQL Qu	al Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS					Analyst	MRA
Chloride	54	30	mg/Kg	20	8/24/2017 2:41:14 PM	33539
EPA METHOD 8015M/D: DIESEL RANG	E ORGANICS	3			Analyst	TOM
Diesel Range Organics (DRO)	14	9.3	mg/Kg	1	8/22/2017 12:06:37 AM	33448
Motor Oil Range Organics (MRO)	ND	47	mg/Kg	1	8/22/2017 12:06:37 AM	33448
Surr: DNOP	90.6	70-130	%Rec	1	8/22/2017 12:06:37 AM	33448
EPA METHOD 8015D: GASOLINE RAN	GE				Analyst:	NSB
Gasoline Range Organics (GRO)	ND	4.7	mg/Kg	1	8/21/2017 2:59:49 PM	33432
Surr: BFB	99.5	54-150	%Rec	1	8/21/2017 2:59:49 PM	33432
EPA METHOD 8021B: VOLATILES					Analyst:	NSB
Benzene	ND	0.023	mg/Kg	1	8/21/2017 2:59:49 PM	33432
Toluene	ND	0.047	mg/Kg	1	8/21/2017 2:59:49 PM	33432
Ethylbenzene	ND	0.047	mg/Kg	1	8/21/2017 2:59:49 PM	33432
Xylenes, Total	ND	0.094	mg/Kg	1	8/21/2017 2:59:49 PM	33432
Surr: 4-Bromofluorobenzene	104	66.6-132	%Rec	1	8/21/2017 2:59:49 PM	33432

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

- Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- Analyte detected below quantitation limits Page 4 of 13
- P Sample pH Not In Range
- RL Reporting Detection Limit
- Sample container temperature is out of limit as specified

### Lab Order 1708A09

Date Reported: 8/27/2017

### Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Blagg Engineering

Lab ID:

Project: Mudge A 2

1=00.100.00

**Client Sample ID:** BH-2 (35'-36')

**Collection Date: 8/14/2017 3:07:00 PM** 

1708A09-005 Matrix: SOIL Received Date: 8/16/2017 7:15:00 AM

Analyses	Result	PQL Qu	al Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS					Analyst	MRA
Chloride	150	30	mg/Kg	20	8/24/2017 2:53:39 PM	33539
EPA METHOD 8015M/D: DIESEL RANGE	ORGANIC	S			Analyst	: TOM
Diesel Range Organics (DRO)	ND	9.4	mg/Kg	1	8/22/2017 12:28:57 AM	33448
Motor Oil Range Organics (MRO)	ND	47	mg/Kg	1	8/22/2017 12:28:57 AM	33448
Surr: DNOP	91.6	70-130	%Rec	1	8/22/2017 12:28:57 AM	33448
EPA METHOD 8015D: GASOLINE RANG	E				Analyst	NSB
Gasoline Range Organics (GRO)	ND	4.6	mg/Kg	1	8/21/2017 3:23:36 PM	33432
Surr: BFB	92.1	54-150	%Rec	1	8/21/2017 3:23:36 PM	33432
EPA METHOD 8021B: VOLATILES					Analyst	NSB
Benzene	ND	0.023	mg/Kg	1	8/21/2017 3:23:36 PM	33432
Toluene	ND	0.046	mg/Kg	1	8/21/2017 3:23:36 PM	33432
Ethylbenzene	ND	0.046	mg/Kg	1	8/21/2017 3:23:36 PM	33432
Xylenes, Total	ND	0.092	mg/Kg	1	8/21/2017 3:23:36 PM	33432
Surr: 4-Bromofluorobenzene	105	66.6-132	%Rec	1	8/21/2017 3:23:36 PM	33432

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

- Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits Page 5 of 13
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Lab Order 1708A09

Date Reported: 8/27/2017

### Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: BH-2 (45'-46')

Project: Mudge A 2

Collection Date: 8/14/2017 3:37:00 PM

Lab ID: 1708A09-006

Matrix: SOIL

Received Date: 8/16/2017 7:15:00 AM

Analyses	Result	PQL Qu	al Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS					Analyst	MRA
Chloride	34	30	mg/Kg	20	8/24/2017 3:06:04 PM	33539
EPA METHOD 8015M/D: DIESEL RANG	E ORGANICS	S			Analyst:	TOM
Diesel Range Organics (DRO)	ND	9.5	mg/Kg	1	8/22/2017 12:51:15 AM	33448
Motor Oil Range Organics (MRO)	ND	48	mg/Kg	1	8/22/2017 12:51:15 AM	33448
Surr: DNOP	92.8	70-130	%Rec	1	8/22/2017 12:51:15 AM	33448
EPA METHOD 8015D: GASOLINE RANGE	GE				Analyst:	NSB
Gasoline Range Organics (GRO)	ND	4.9	mg/Kg	1	8/19/2017 1:51:45 AM	33432
Surr: BFB	88.5	54-150	%Rec	1	8/19/2017 1:51:45 AM	33432
EPA METHOD 8021B: VOLATILES					Analyst:	NSB
Benzene	ND	0.025	mg/Kg	1	8/19/2017 1:51:45 AM	33432
Toluene	ND	0.049	mg/Kg	1	8/19/2017 1:51:45 AM	33432
Ethylbenzene	ND	0.049	mg/Kg	1	8/19/2017 1:51:45 AM	33432
Xylenes, Total	ND	0.098	mg/Kg	1	8/19/2017 1:51:45 AM	33432
Surr: 4-Bromofluorobenzene	101	66.6-132	%Rec	1	8/19/2017 1:51:45 AM	33432

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits Page 6 of 13
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Lab Order 1708A09

Date Reported: 8/27/2017

### Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Blagg Engineering

Client Sample ID: BH-3 (25'-26')

Mudge A 2 Project:

Collection Date: 8/15/2017 8:35:00 AM

Lab ID: 1708A09-007 Matrix: SOIL

Received Date: 8/16/2017 7:15:00 AM

Analyses	Result	PQL Qu	al Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS					Analyst	MRA
Chloride	370	30	mg/Kg	20	8/24/2017 3:18:28 PM	33539
EPA METHOD 8015M/D: DIESEL RANGE	ORGANIC	S			Analyst	TOM
Diesel Range Organics (DRO)	10	9.7	mg/Kg	1	8/22/2017 1:35:57 AM	33448
Motor Oil Range Organics (MRO)	ND	49	mg/Kg	1	8/22/2017 1:35:57 AM	33448
Surr: DNOP	93.5	70-130	%Rec	1	8/22/2017 1:35:57 AM	33448
EPA METHOD 8015D: GASOLINE RANG	E				Analyst	NSB
Gasoline Range Organics (GRO)	ND	4.7	mg/Kg	1	8/21/2017 5:21:57 PM	33432
Surr: BFB	124	54-150	%Rec	1	8/21/2017 5:21:57 PM	33432
EPA METHOD 8021B: VOLATILES					Analyst	NSB
Benzene	ND	0.024	mg/Kg	1	8/21/2017 5:21:57 PM	33432
Toluene	ND	0.047	mg/Kg	1	8/21/2017 5:21:57 PM	33432
Ethylbenzene	ND	0.047	mg/Kg	1	8/21/2017 5:21:57 PM	33432
Xylenes, Total	ND	0.095	mg/Kg	1	8/21/2017 5:21:57 PM	33432
Surr: 4-Bromofluorobenzene	106	66.6-132	%Rec	1	8/21/2017 5:21:57 PM	33432

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

- Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- Analyte detected below quantitation limits Page 7 of 13 J
- Sample pH Not In Range
- RL Reporting Detection Limit
- Sample container temperature is out of limit as specified

Lab Order 1708A09

Date Reported: 8/27/2017

### Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Blagg Engineering

Client Sample ID: BH-3 (35'-36')

Mudge A 2 Project:

Collection Date: 8/15/2017 9:04:00 AM

Lab ID: 1708A09-008 Matrix: SOIL

Received Date: 8/16/2017 7:15:00 AM

Analyses	Result	PQL Qu	al Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS					Analyst	MRA
Chloride	490	30	mg/Kg	20	8/24/2017 3:30:52 PM	33539
EPA METHOD 8015M/D: DIESEL RANG	GE ORGANICS	3			Analyst	TOM
Diesel Range Organics (DRO)	ND	9.4	mg/Kg	1	8/22/2017 1:58:12 AM	33448
Motor Oil Range Organics (MRO)	ND	47	mg/Kg	1	8/22/2017 1:58:12 AM	33448
Surr: DNOP	101	70-130	%Rec	1	8/22/2017 1:58:12 AM	33448
EPA METHOD 8015D: GASOLINE RAN	IGE				Analyst	NSB
Gasoline Range Organics (GRO)	ND	4.8	mg/Kg	1	8/19/2017 2:39:02 AM	33432
Surr: BFB	88.9	54-150	%Rec	1	8/19/2017 2:39:02 AM	33432
<b>EPA METHOD 8021B: VOLATILES</b>					Analyst	NSB
Benzene	ND	0.024	mg/Kg	1	8/19/2017 2:39:02 AM	33432
Toluene	ND	0.048	mg/Kg	1	8/19/2017 2:39:02 AM	33432
Ethylbenzene	ND	0.048	mg/Kg	1	8/19/2017 2:39:02 AM	33432
Xylenes, Total	ND	0.096	mg/Kg	1	8/19/2017 2:39:02 AM	33432
Surr: 4-Bromofluorobenzene	101	66.6-132	%Rec	1	8/19/2017 2:39:02 AM	33432

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

- Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- Analyte detected below quantitation limits Page 8 of 13 J
- P Sample pH Not In Range
- RL Reporting Detection Limit
- Sample container temperature is out of limit as specified

Lab Order 1708A09

Date Reported: 8/27/2017

### Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Blagg Engineering

Client Sample ID: BH-3 (45'-46')

Project: Mudge A 2

**Collection Date:** 8/15/2017 9:40:00 AM

**Lab ID:** 1708A09-009

Matrix: SOIL

Received Date: 8/16/2017 7:15:00 AM

Analyses	Result	PQL Qu	al Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS					Analyst	MRA
Chloride	460	30	mg/Kg	20	8/24/2017 3:43:17 PM	33539
EPA METHOD 8015M/D: DIESEL RANGE	ORGANIC	3			Analyst	TOM
Diesel Range Organics (DRO)	ND	9.8	mg/Kg	1	8/22/2017 2:20:33 AM	33448
Motor Oil Range Organics (MRO)	ND	49	mg/Kg	1	8/22/2017 2:20:33 AM	33448
Surr: DNOP	94.4	70-130	%Rec	1	8/22/2017 2:20:33 AM	33448
EPA METHOD 8015D: GASOLINE RANG	E				Analyst	NSB
Gasoline Range Organics (GRO)	ND	4.8	mg/Kg	1	8/19/2017 3:02:41 AM	33432
Surr: BFB	89.2	54-150	%Rec	1	8/19/2017 3:02:41 AM	33432
EPA METHOD 8021B: VOLATILES					Analyst	NSB
Benzene	ND	0.024	mg/Kg	1	8/19/2017 3:02:41 AM	33432
Toluene	ND	0.048	mg/Kg	1	8/19/2017 3:02:41 AM	33432
Ethylbenzene	ND	0.048	mg/Kg	1	8/19/2017 3:02:41 AM	33432
Xylenes, Total	ND	0.097	mg/Kg	1	8/19/2017 3:02:41 AM	33432
Surr: 4-Bromofluorobenzene	100	66.6-132	%Rec	1	8/19/2017 3:02:41 AM	33432

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits Page 9 of 13
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

### Hall Environmental Analysis Laboratory, Inc.

WO#: 1708A09

27-Aug-17

Client:

Blagg Engineering

Project:

Mudge A 2

Sample ID MB-33539

SampType: mblk

TestCode: EPA Method 300.0: Anions

Client ID:

PBS

Batch ID: 33539

RunNo: 45189

Prep Date:

8/24/2017

Analysis Date: 8/24/2017

SeqNo: 1432108

Units: mg/Kg HighLimit

%RPD **RPDLimit**  Qual

Analyte Chloride

PQL Result ND 1.5

Sample ID LCS-33539 LCSS

SampType: Ics Batch ID: 33539

RunNo: 45189

Client ID: Prep Date:

8/24/2017

SeqNo: 1432109

Units: mg/Kg

Analysis Date: 8/24/2017

SPK value SPK Ref Val

PQL

Chloride

14

TestCode: EPA Method 300.0: Anions

%RPD

Qual

0

SPK value SPK Ref Val %REC LowLimit

110

**RPDLimit** 

Analyte

1.5

%REC 94.3

LowLimit 90 HighLimit

Result

15.00

Qualifiers:

Value exceeds Maximum Contaminant Level.

Sample Diluted Due to Matrix D

Η Holding times for preparation or analysis exceeded

Not Detected at the Reporting Limit ND Practical Quanitative Limit **PQL** 

% Recovery outside of range due to dilution or matrix

Analyte detected in the associated Method Blank В

Sample container temperature is out of limit as specified

E Value above quantitation range

Analyte detected below quantitation limits Sample pH Not In Range

RL Reporting Detection Limit

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### Hall Environmental Analysis Laboratory, Inc.

WO#: 1

1708A09

27-Aug-17

Client:

Blagg Engineering

**Project:** 

Mudge A 2

Sample ID LCS-33448	SampTyp	e: LC	S	Test	Code: E	PA Method	8015M/D: Di	esel Rang	e Organics	
Client ID: LCSS	Batch I	D: 334	148	R	lunNo: 4	5117				
Prep Date: 8/18/2017	Analysis Dat	e: 8/	21/2017	S	eqNo: 1	428776	Units: mg/k	(g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	50	10	50.00	0	101	73.2	114			
Surr: DNOP	3.9		5.000		77.7	70	130			

Sample ID MB-33448	SampT	ype: ME	BLK	Tes	tCode: El	PA Method	8015M/D: Die	esel Range	e Organics	
Client ID: PBS	Batch	ID: 33	448	R	RunNo: 4	5117				
Prep Date: 8/18/2017	Analysis D	ate: 8/	21/2017	S	SeqNo: 1	428777	Units: mg/K	(g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	<b>RPDLimit</b>	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	8.4		10.00		84.0	70	130			

#### Qualifiers:

\* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

PQL Practical Quanitative Limit

S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank

E Value above quantitation range

J Analyte detected below quantitation limits

Sample pH Not In Range

RL Reporting Detection Limit

W Sample container temperature is out of limit as specified

Page 11 of 13

### Hall Environmental Analysis Laboratory, Inc.

WO#:

1708A09

27-Aug-17

Client:

Blagg Engineering

Project:

Mudge A 2

Sample ID MB-33432	SampT	ype: ME	BLK	Test	Code: El	PA Method	8015D: Gaso	line Rang	е		
Client ID: PBS	Batch	ID: 33	432	R	unNo: 4	5053					
Prep Date: 8/17/2017	Analysis Date: 8/18/2017 SeqNo: 1427097 Units: mg/Kg										
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Gasoline Range Organics (GRO)	ND	5.0									
Surr: BFB	900		1000		89.8	54	150				

Sample ID LCS-33432	SampTy	pe: LC	S	Test	TestCode: EPA Method 8015D: Gasoline Range							
Client ID: LCSS	Batch	ID: 334	132	R	tunNo: 4	5053						
Prep Date: 8/17/2017	Analysis Da	Analysis Date: 8/18/2017 SeqNo: 1427098 Units: mg/Kg										
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	<b>RPDLimit</b>	Qual		
Gasoline Range Organics (GRO)	24	5.0	25.00	0	96.9	76.4	125					
Surr: BFB	980		1000		97.8	54	150					

#### Qualifiers:

\* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

PQL Practical Quanitative Limit

S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank

E Value above quantitation range

J Analyte detected below quantitation limits

P Sample pH Not In Range

RL Reporting Detection Limit

W Sample container temperature is out of limit as specified

Page 12 of 13

### Hall Environmental Analysis Laboratory, Inc.

WO#:

1708A09

27-Aug-17

Client:

Blagg Engineering

Project:

Mudge A 2

Sample ID MB-33432	SampT	Гуре: МЕ	BLK	Tes	tCode: El	PA Method	8021B: Volat	iles		
Client ID: PBS	Batch	h ID: 33	432	F	RunNo: 4	5053				
Prep Date: 8/17/2017	Analysis Date: 8/18/2017 SeqNo: 1427128 Units: mg/Kg									
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND 0.10									
Surr: 4-Bromofluorobenzene	1.0		1.000		103	66.6	132			

Sample ID LCS-33432	SampType: LCS TestCode: EPA Method 8021B: Volatiles										
Client ID: LCSS	Batch	n ID: 33	432	F	RunNo: 4	5053					
Prep Date: 8/17/2017	Analysis D	ate: 8/	18/2017	8	SeqNo: 1	427129	Units: mg/K	(g			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Benzene	0.95	0.025	1.000	0	95.3	80	120				
Toluene	0.93	0.050	1.000	0	92.8	80	120				
Ethylbenzene	0.94	0.050	1.000	0	93.6	80	120				
Xylenes, Total	2.8 0.10 3.000 0 94.7 80 120										
Surr: 4-Bromofluorobenzene	1.0		1.000		104	66.6	132				

#### Qualifiers:

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Page 13 of 13



Hall Environmental Analysis Laboratory 4901 Hawkins NE Albuquerque, NM 87109 TEL: 505-345-3975 FAX: 505-345-4107

Website: www.hallenvironmental.com

Sample Log-In Check List

BLAGG Work Order Number: 1708A09 RcptNo: 1 Client Name: Received By: 8/16/2017 7:15:00 AM Anne Thorne 8/16/2017 3:34:13 PM Completed By: **Ashley Gallegos** 8/17/17 Reviewed By: Chain of Custody No 🗌 Yes Not Present 1. Custody seals intact on sample bottles? No 🔲 Not Present Yes 🗸 2. Is Chain of Custody complete? 3. How was the sample delivered? Courier Log In No 🗌 NA 🗌 Yes 🗹 4. Was an attempt made to cool the samples? No 🗆 NA 🔲 5. Were all samples received at a temperature of >0° C to 6.0°C Yes V Yes 🗸 No 🗌 6. Sample(s) in proper container(s)? Yes 🗸 No 🗌 7. Sufficient sample volume for indicated test(s)? No 🗌 Yes 🗸 8. Are samples (except VOA and ONG) properly preserved? Yes No V NA 🗍 9. Was preservative added to bottles? No 🗌 Yes No VOA Vials 10. VOA vials have zero headspace? Yes No 🗸 11. Were any sample containers received broken? # of preserved bottles checked Yes V No 🗆 for pH: 12. Does paperwork match bottle labels? (<2 or >12 unless noted) (Note discrepancies on chain of custody) No 🗌 Adjusted? 13. Are matrices correctly identified on Chain of Custody? Yes V No 🗌 Yes 🗹 14. Is it clear what analyses were requested? Yes 🗹 No 🗌 Checked by: 15. Were all holding times able to be met? (If no, notify customer for authorization.) Special Handling (if applicable) Yes No 🗌 16. Was client notified of all discrepancies with this order? NA 🗸 Person Notified: Date By Whom: Regarding: Client Instructions: 17. Additional remarks: 18. Cooler Information Cooler No Temp °C Condition Seal Intact Seal No Seal Date Good Yes

C	hain-	of-Cu	stody Record	Turn-Around	Time:		HALL ENVIRONMENTA						- 4 1	i							
Client.			ERWS INC.	Standard Project Name						A	N		Y	SIS	5 L	A	30		ATC		
Mailing	Address	-NOWE	DIMP INC.	Mu	DGE A .	2		49	01 H			VE -						1109			
				Project #:					1. 50								-410				
Phone !	#: (50	5) 32	0-1183	1				E S				THE OWNER OF THE OWNER, THE OWNER		-		ues	-		126		
email or	Fax#:			Project Mana	iger:			nly)	30)					(%)					$\Box$	T	
QA/QC F	Package: dard		□ Level 4 (Full Validation)	STE	VE MOSKA	L	TMB's (8021)	TPH (Gas only)	RO / MI			SIMS)		,PO4,S	2 PCB's						
Accredi  □ NEL		□ Othe	PF	Sampler: J On Ice:	EFF BLALL	□ No	TAMB	+ TPH	0/O	18.1)	504.1)	8270		3.NO2	/ 808		(V				S Z
□ EDD	(Type)			Sample Tem	perature:	.0.	1 #	MTBE.	(0)	bd 4	g po	ō	etals	N.	ides	4	-V0	W			2
Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1708 AOS	BTEX + MERE	BTEX + MT	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method	PAH's (8310	RCRA 8 Metals	Anions (F,CI,NO3.NO2,PO4,SO4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	CHLOKIDE			Air Bubbles (Y or N)
14/2017	1203	SOIL	BH-1 (25-26')	402 ×1	COOL	-001	X		X									×			
	1228	i	BH-1 (35-36')	1	1	-002	1		1									i			
	1335		BH-1 (45'-46')			-003															
	1455		BH-2 (312-32)			-004															
	1507		BH-2 (35'-36')			-005															
	1537		BH-2 (45-46)			-000															
3/5/2017	0835		BH-3(25'-26')			-007															
	0904		BH-3(35-36)			-008															
	0940	1	BH-3(45'-46')			-009	1		1									1		_	
Slisty Date:		Relynquish	1 Sleegy ed by:	Received by:	twat	8/15/17 /50 S Date Time		mark:	V	ID:	. 1	41>	(Ou	EVI	RM			7EVE	E Ma	SKA	_
8/15/17	1804	Mills	the Walte	1	bu 1	08/16/17							_								

Lab Order 1708B02

Date Reported: 8/27/2017

### Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Blagg Engineering

Client Sample ID: BH-5 (45'-46')

Project: Mudge A 2

Collection Date: 8/16/2017 1:52:00 PM

Lab ID: 1708B02-005

Matrix: SOIL

Received Date: 8/17/2017 7:10:00 AM

Analyses	Result	PQL Qu	al Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS					Analyst	MRA
Chloride	87	30	mg/Kg	20	8/24/2017 5:10:09 PM	33539
EPA METHOD 8015M/D: DIESEL RANGI	E ORGANIC:	S			Analyst	TOM
Diesel Range Organics (DRO)	ND	10	mg/Kg	1	8/21/2017 10:54:16 PM	33453
Motor Oil Range Organics (MRO)	ND	50	mg/Kg	1	8/21/2017 10:54:16 PM	33453
Surr: DNOP	73.5	70-130	%Rec	1	8/21/2017 10:54:16 PM	33453
EPA METHOD 8015D: GASOLINE RANG	E				Analyst	NSB
Gasoline Range Organics (GRO)	ND	4.9	mg/Kg	1	8/21/2017 8:18:13 PM	33452
Surr: BFB	74.0	54-150	%Rec	1	8/21/2017 8:18:13 PM	33452
EPA METHOD 8021B: VOLATILES					Analyst	NSB
Benzene	ND	0.025	mg/Kg	1	8/21/2017 8:18:13 PM	33452
Toluene	ND	0.049	mg/Kg	1	8/21/2017 8:18:13 PM	33452
Ethylbenzene	ND	0.049	mg/Kg	1	8/21/2017 8:18:13 PM	33452
Xylenes, Total	ND	0.098	mg/Kg	1	8/21/2017 8:18:13 PM	33452
Surr: 4-Bromofluorobenzene	105	66.6-132	%Rec	1	8/21/2017 8:18:13 PM	33452

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

- Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- Analyte detected below quantitation limits Page 5 of 9 J
- Sample pH Not In Range
- RL Reporting Detection Limit
- Sample container temperature is out of limit as specified

### Hall Environmental Analysis Laboratory, Inc.

WO#:

1708B02

27-Aug-17

Client:

Blagg Engineering

Project:

Mudge A 2

Sample ID MB-33539

SampType: mblk

TestCode: EPA Method 300.0: Anions

Client ID:

**PBS** 

Batch ID: 33539

RunNo: 45189

Prep Date: 8/24/2017

Analysis Date: 8/24/2017

PQL

1.5

SeqNo: 1432108

Units: mg/Kg

Analyte

Result

PQL

SPK value SPK Ref Val %REC LowLimit HighLimit

%RPD **RPDLimit**  Qual

Chloride

ND 1.5

Sample ID LCS-33539 LCSS

SampType: Ics Batch ID: 33539 TestCode: EPA Method 300.0: Anions

RunNo: 45189

Client ID: Prep Date:

8/24/2017

Analysis Date: 8/24/2017

SeqNo: 1432109

Units: mg/Kg

HighLimit %RPD

**RPDLimit** Qual

SPK value SPK Ref Val %REC 15.00

94.3

0

Analyte Chloride

14

LowLimit 90

110

#### Qualifiers:

Value exceeds Maximum Contaminant Level.

Sample Diluted Due to Matrix D

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

Practical Quanitative Limit **PQL** 

% Recovery outside of range due to dilution or matrix

Analyte detected in the associated Method Blank В

E Value above quantitation range

J Analyte detected below quantitation limits Page 6 of 9

Sample pH Not In Range

RL Reporting Detection Limit

Sample container temperature is out of limit as specified

### Hall Environmental Analysis Laboratory, Inc.

WO#:

1708B02

27-Aug-17

Client:

Blagg Engineering

**Project:** 

Mudge A 2

Sample ID LCS-33453	SampTyp	oe: LC	S	Test	Code: El	PA Method	8015M/D: Die	esel Range	e Organics	
Client ID: LCSS	Batch I	D: <b>33</b> 4	153	R	tunNo: 4	5091				
Prep Date: 8/18/2017	Analysis Dat	te: 8/2	21/2017	S	eqNo: 1	428105	Units: mg/K	(g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	52	10	50.00	0	105	73.2	114			
Surr: DNOP	3.9		5.000		78.1	70	130			

Sample ID MB-33453	SampT	ype: ME	BLK	Tes	tCode: E	PA Method	8015M/D: Di	esel Rang	e Organics	
Client ID: PBS	Batch	ID: 33	453	F	RunNo: 4	5091				
Prep Date: 8/18/2017	Analysis D	ate: 8/	21/2017	S	SeqNo: 1	428106	Units: mg/K	(g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	7.3		10.00		73.0	70	130			

#### Qualifiers:

Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

PQL Practical Quanitative Limit

S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank

E Value above quantitation range

J Analyte detected below quantitation limits

Page 7 of 9

P Sample pH Not In Range

RL Reporting Detection Limit

W Sample container temperature is out of limit as specified

### Hall Environmental Analysis Laboratory, Inc.

WO#:

1708B02

27-Aug-17

Client:

Blagg Engineering

Project:

Mudge A 2

Sample ID MB-33452	SampTy	/pe: <b>ME</b>	BLK	Tes	Code: El	PA Method	8015D: Gaso	line Rang	е	
Client ID: PBS	Batch	ID: 334	452	R	RunNo: 4	5097				
Prep Date: 8/18/2017	Analysis Da	ate: 8/	21/2017	S	SeqNo: 1	428026	Units: mg/K	(g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	<b>RPDLimit</b>	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	840		1000		84.3	54	150			
0 1 15 1 00 00 10	o =		_	_			00450			

Sample ID LCS-33452	SampT	npType: LCS TestCode: EPA Method 8015D: Gasoline Range							е	
Client ID: LCSS	Batch	ID: 334	452	RunNo: 45097						
Prep Date: 8/18/2017	Analysis D	ate: 8/	21/2017	S	eqNo: 1	428027	Units: mg/K	g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	23	5.0	25.00	0	93.0	76.4	125			
Surr: BFB	920		1000		92.2	54	150			

#### Qualifiers:

\* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

PQL Practical Quanitative Limit

S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank

E Value above quantitation range

J Analyte detected below quantitation limits

P Sample pH Not In Range

RL Reporting Detection Limit

W Sample container temperature is out of limit as specified

Page 8 of 9

### Hall Environmental Analysis Laboratory, Inc.

WO#:

1708B02

27-Aug-17

Client:

Blagg Engineering

Project:

Mudge A 2

Sample ID MB-33452	SampT	ype: ME	BLK	Tes	tCode: El	PA Method	8021B: Volat	iles					
Client ID: PBS	Batch	ID: 33	452	F	RunNo: 4	5097							
Prep Date: 8/18/2017	Analysis D	ate: 8/	21/2017	8	SeqNo: 1	428054	Units: mg/Kg						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual			
Benzene	ND	0.025											
Toluene	ND	0.050											
Ethylbenzene	ND	0.050											
Xylenes, Total	ND	0.10											
Surr: 4-Bromofluorobenzene	1.2		1.000		119	66.6	132						

Sample ID LCS-33452	SampT	ype: LC	s	Tes	tCode: El	PA Method	8021B: Vola	tiles		
Client ID: LCSS	Batch	1D: 33	452	F	RunNo: 45097					
Prep Date: 8/18/2017	Analysis D	ate: 8/	21/2017	S	SeqNo: 1	428055	Units: mg/K	(g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.1	0.025	1.000	0	109	80	120			
Toluene	1.1	0.050	1.000	0	108	80	120			
Ethylbenzene	1.1	0.050	1.000	0	107	80	120			
Xylenes, Total	3.3	0.10	3.000	0	108	80	120			
Surr: 4-Bromofluorobenzene	1.2		1.000		123	66.6	132			

#### Qualifiers:

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
  - iimits

Page 9 of 9

- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified



Hall Environmental Analysis Laboratory 4901 Hawkins NE Albuguergue, NM 87109

TEL: 505-345-3975 FAX: 505-345-4107 Website: www.hallenvironmental.com

# Sample Log-In Check List

Client Name: BLAGG	Work Order Number:	1708B02		RcptNo: 1	
Received By: Anne Thorne  Completed By: Ashley Gallegos  Reviewed By:	8/17/2017 7:10:00 AM 8/17/2017 3:17:26 PM 8/18/17-		Ann Am	-	
Chain of Custody					
1. Custody seals intact on sample bottles?		Yes 🗌	No 🗆	Not Present	
2. Is Chain of Custody complete?		Yes 🗹	No 🗆	Not Present	
3. How was the sample delivered?		Courier			
Log In					
4. Was an attempt made to cool the sample	8?	Yes 🗹	No 🗆	NA 🗆	
5. Were all samples received at a temperatu	re of >0° C to 6.0°C	Yes 🗹	No 🗆	NA 🗆	
6. Sample(s) in proper container(s)?		Yes 🗹	No 🗆		
7. Sufficient sample volume for indicated test	l(s)?	Yes 🗹	No 🗆		
8, Are samples (except VOA and ONG) prop	erly preserved?	Yes 🗹	No 🗆		
9. Was preservative added to bottles?		Yes	No 🗹	NA 🗆	
10.VOA vials have zero headspace?		Yes 🗹	No 🗆	No VOA Vials	
11. Were any sample containers received bro	ken?	Yes	No 🗹	# of preserved	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)		Yes 🗹	No 🗆	bottles checked for pH: (<2 or >	12 unless noted)
13, Are matrices correctly identified on Chain	of Custody?	Yes 🗸	No 🗆	Adjusted?	
14, Is it clear what analyses were requested?		Yes 🗹	No 🗆	225	
<ol> <li>Were all holding times able to be met? (If no, notify customer for authorization.)</li> </ol>		Yes 🗹	No 🗌	Checked by:	
Special Handling (if applicable)					
16, Was client notified of all discrepancies with	h this order?	Yes 🗆	No 🗆	NA 🗹	
Person Notified:  By Whom:  Regarding:  Client Instructions:	Date Via:	eMail [	Phone   Fax	☐ In Person	
17. Additional remarks:					
18. Cooler Information Cooler No Temp C Condition  1 1.0 Good Y	Seal Intact   Seal No   5	Seal Date	Signed By		

C	hain-	of-Cu	stody Record	Turn-Around	Time:					Н	IAI		F	W.	TE	0	NIR	AF	NT	AI	
Client:	BP Ame	RICA		Standard			HALL ENVIRONMEN ANALYSIS LABORAT www.hallenvironmental.com						7								
	BLAGO !	NOWEE	RING INC.	Project Name	ii Vose A	2			4.7	,	www	v.hal	env	ironn	nent	al.co	m				
Mailing	Address	:			NOE A	2		490	01 H	awki	ns N	IE -	Alb	uque	erque	e, Ni	M 87	109			
	-/-			Project #:			Tel. 505-345-3975 Fax 505-345-4107 Analysis Request							No. of Con-							
		5) 324	D-1183					0				А			Req	uest				10	
	r Fax#:			Project Mana			21)	only	MRC					SO	co Co						
Star	Package:		□ Level 4 (Full Validation)	STE	BTEX + MTBE + TPH (Gas only)  TPH 8015B (GRO / DRO / MRO)  TPH 8015B (GRO / DRO / MRO)  TPH (Method 504.1)  EDB (Method 504.1)  PAH's (8310 or 8270 SIMS)  RCRA 8 Metals  Anions (F.CI,NO <sub>3</sub> ,NO <sub>2</sub> ,PO <sub>4</sub> ,SO <sub>4</sub> )  8270 (Semi-VOA)				0			IMS)		04,	PCE						
Accred			· · · · · · · · · · · · · · · · · · ·	Sampler: J					1) PH (1) 10R (1) 10 S (1) 10								2				
□ NEL		□ Othe	r	On loe:					1 loe: X Yes No + + 1 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8				GRO GRO 1418. 1504. NO <sub>3.</sub> [				OA)			Or N	
	(Type)	Î		Sample Tem	perature:	1-0		ITBE	B (G	pou	hod	100	/leta	5	licide	(AC	ni-V	IA)			λ) se
Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.	BTEX + M	BTEX + N	TPH 8015	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or	RCRA 8 Metals	Anions (F.	3081 Pest	8260B (VOA)	8270 (Semi-VOA)	CHORUDE			Air Bubbles (Y or N)
Proport	0901	SOIL	BH-4 (30'-31')	402 ×1	COOL	-001	X		X						-		-	X			
İ	0915	i	BH-4 (35-36)	1		-002	1		1									1			
	0958	1	BH-4 (45-46)			-003	1														
	1322		BH-5 (35-36)			-00A															
	1352		BH-5 (45'-46')		1	- 005	1		1									1	-	-	$\Box$
									- 1										1	+	
																			#	+	
Date: 8/4/47 Date: 8/4/17	Time: 1502 Time:	Relinquish	1 Blogg	Received by:	ulaejen	Date Time 9/19/2017 150 Z Date Time 58/17/17			V	BUL B	VH	1-0	NEW COC	RM LBM					Mask	CAL	

## Remediation of Hydrocarbon Impacted Soils

Mudge A 2 (A) Sec 10 – T31N – R11W API: 30-045-10948 San Juan County, New Mexico

Prepared for: BP America Production Co. Farmington, New Mexico

Prepared by:
Blagg Engineering, Inc.
P.O. Box 87
Bloomfield, New Mexico 87413
(505)632-1199

September 14 2017

### REMEDIATION OF HYDROCARBON IMPACTED SOILS MUDGE A 2

### TABLE OF CONTENTS

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Remediation Activities	2
Conclusions and Recommendations	5
Closure and Limitations	6
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Figure 3: Drill Boring Locations  Appendix B: Drilling Logs	
Appendix C: Excavation Closure - Laboratory Analytical Data Reports	
Appendix D: Drill Boring – Laboratory Analytical Data Reports	

### REMEDIATION OF HYDROCARBON IMPACTED SOILS MUDGE A 2

#### INTRODUCTION

Blagg Engineering Inc. (BEI) has been retained by BP America Production Co. (BP) to monitor, sample and document environmental remediation of hydrocarbon impacts at the Mudge A 2, a natural gas well located in rural San Juan County, New Mexico at (A) Sec. 10 - T31N - R11W (Figure 1). Hydrocarbon impacts at the site were discovered in on April 25, 2017 during routine closure at a 95 barrel below grade tank (BGT). There were no apparent integrity issues with the BGT and the source of impacts appeared to be historical, likely from a prior unlined earthen disposal pit at the same location as the 95 BGT. This was a common practice permitted by both New Mexico Oil Conservation Division (NMOCD) and the U.S. Bureau of Land Management (BLM) until the mid 1990's. During the site remediation no other hydrocarbon impact sources were observed. BP began initial remedial excavations of on-site impacts on May 18, 2017 and completed excavation of accessible impacts on June 12, 2017. Excavations were discontinued at that time due to the depth of the dig (exceeding 38' from original well pad surface) and because the excavation was approaching an active third party high pressure natural gas line that could not be taken out of service. Following backfilling the remedial dig with clean fill, a mobile hollow stem auger environmental drill rig was used to fully delineate impacts that could not be excavated. This drilling was conducted between August 14 - 16, 2017.

The site closure standard ranking was determined as follows:

Depth to Groundwater based on BGT permit research: 50-100 feet (10 points) Distance to water well > 1,000' based on BGT permit research: (0 points) Distance to dry wash < 200' based on site measurements: (10 points)

Total Site Ranking: 20

With a ranking of 20 points, the NMOCD/BLM site the closure standard was established as follows:

Total Petroleum Hydrocarbons (TPH) = 100 mg/Kg (parts per million)
Benzene = 10 mg/Kg
Benzene, Toluene, Ethyl-Benzene and Total Xylenes (BTEX) combined = 50 mg/Kg
Total Chlorides = 600 mg/Kg

#### REMEDIATION ACTIVITIES

Site remediation consisted of 2 separate activities: (1) excavation of impacted soils until site closure standards had been achieved, and (2) drilling to delineate impact areas that could not be excavated due to depth and/or pipeline utility issues. The procedures used for these activities are discussed below.

#### Excavation of Impacted Media to Achieve Site Remediation

Removal of hydrocarbon impacted media began on May 18, 2017 using excavators to strip clean, un-impacted soils and excavate impacted soils. The excavated impacted soils were placed on the well pad. A small scale test run was conducted to evaluate the soils for on-site treatment to remove hydrocarbons via shredding and chemical treatment. Based on laboratory test results, it was determined that this site was a poor candidate for on-site treatment and all excavated impacted materials were subsequently transported to a commercial landfarm for final remediation. Remedial excavations progressed from the southeast portion of the well pad, where the original source was discovered, and advanced off-pad towards the southeast. As previously discussed, the excavation was discontinued when a total depth of 38' below original well pad grade was reached and a third party gas pipeline was being encroached.

Closure sampling was progressive as the excavation advanced. Sampling areas were marked out on the excavation walls and base for collection of composites from each area (Figure 2). Sampling was primarily performed using an excavator trackhoe due to the danger of personnel entering the excavation because of the risk of collapsing sidewalls. All closure sampling was witnessed by the NMOCD. Representative composite portions of sample were placed into a gallon sized Ziploc® baggie for field headspace analysis of organic vapors with a calibrated IonScience Tiger model photo-ionization detector (PID) containing a 11.2 eV lamp. Split samples were placed into a 4-ounce laboratory supplied jar with Teflon® lid, labeled and placed on ice in an ice chest for further laboratory testing. The jarred samples were hand delivered to a representative of Hall Environmental Analytical Laboratories for analysis via U.S. EPA Method 8021B (volatile organics limited to benzene, toluene, ethyl benzene and total xylenes), U.S. EPA Method 8015 (gasoline range (GRO), diesel range (DRO) and motor oil range (MRO) organics), and chlorides via U.S. EPA Method 300. A chain-of-custody followed the samples.

Laboratory analytical test reports for the closure sampling is found in Appendix C and a summary of this laboratory data is found in Table 1:

Table 1

Summary Excavation Closure Laboratory Data

		TPH Total	BTEX	Benzene	
Sample ID	Date	(mg/Kg)	Total (mg/Kg)	(mg/Kg)	Comments
1 – North Wall					
(8-pt. comp) (6'-19')	5/24/2017	ND	ND	ND	
2 – West Wall (8- pt. comp) (6'-19')	5/24/2017	ND	ND	ND	
3 – SE Corner (3-pt. comp) (10'-16')	5/24/2017	2,655	169.8	3.7	Impacted soils, subsequently excavated.
4 – East Wall, South (5-pt. comp)(12'-25')	5/30/2017	230	4.1	ND	Subsequently excavated.
5 – South Wall, East (5-pt. comp)(12'-25')	5/30/2017	11	ND	ND	,
6 – South Wall, West (5-pt. comp)(12'-25')	5/30/2017	590	26.8	ND	Subsequently excavated.
7 – Grab Sample, South Extent, @-40'	6/2/2017	ND	ND	ND	
8 – Grab Sample, SE Extent, @-42'	6/5/2017	4,310	468	11	Informational Sample. Impacts remain in place.
9 – West Wall (5- pt. comp) (26'-36')	6/9/2017	32	0.26	0.043	
10 – West Base (5-pt. comp @ -38')	6/9/2017	29	0.53	0.041	
11 – South Wall (5- pt. comp) (26'-36')	6/9/2017	18	ND	ND	
12 – NE Base (5-pt. comp @ -37')	6/12/2017	354	19.95	0.19	Impacts remain in place.
13 – North Wall (5- pt. comp) (26'-36')	6/12/2017	20	ND	ND	
NMOCD/BLM Closure Standard		100	50	10	

#### Off-Site Drilling to Delineate Residual Impacts

Delineation of off-site impacts that could not be excavated was conducted using a hollow stem auger drill rig. During this investigation, conducted on August 14 - 16, 2017, a total of five borings were advanced to a depth of 45 feet below surface grade (Figure 3). The boring locations were all between 9' - 12' below original well pad grade, so the total depth of the borings ranged between 54' - 57' below the original well pad elevation. Approximate drilling locations had been pre-determined and well permits were obtained through the New Mexico Office of the State Engineer in the event that groundwater was encountered.

Drilling operations were conducted by Enviro-Drill using a CME-75 drilling unit equipped with 5-foot long augers and sampling conducted with a conventional 24-inchlong x 2-inch diameter split spoon sampler. Split spoon samples were collected every 5 feet. Split samples were described on the drilling logs (Appendix B), then a representative portion was placed into a gallon sized Ziploc® baggie for field headspace analysis of organic vapors as previously described. Samples with the highest OVM reading from each boring were submitted for laboratory testing, as well as the deepest sample obtained.

Although no groundwater was encountered, four of the borings were completed as soil vapor extraction (SVE) or chemical injection points in the event that in-situ remediation might be necessary. These completions consisted of either a 5-foot or 10-foot long slotted screened section across the interval with greatest field OVM reading, with a riser extending to about 3 feet above grade. The piping used for completion was a schedule 40 PVC with threaded connections. The annulus of the screened section was sand packed with washed graded silica 10/20 mesh to approximately 2 feet above the top screen slot. Above this a 2 foot section of hydrated bentonite was placed, followed by a cement/bentonite grout mix installed in the annulus from immediately above the bentonite to the ground surface. The completion tops were secured with a steel, lockable well protector cemented into place.

Borehole BH-5 was abandoned immediately after drilling by filling the borehole with cuttings to the ground surface since there was no evidence of hydrocarbon impacts in any cuttings or split spoon sample.

Boring completions BH-1 through BH-4 were inspected for the presence of water on September 6, 2017. Between 3" and 5" of bentonite hydration water was found to be accumulated in the end caps of BH-1, BH-2 and BH-4. This water was removed on September 7, 2017 using a sponge apparatus placed in a bailer. The boring completions were re-inspected for water on September 8, 2017 and no new water had accumulated in the end caps.

Drill boring soil sample laboratory analytical reports are found in Appendix D and a summary of this laboratory data is presented in Table 2:

Table 2 Summary Drilling Laboratory Data

Sample ID	Date	Field OVM (ppm)	TPH Total (mg/Kg)	BTEX Total (mg/Kg)	Benzene (mg/Kg)	Comments
BH-1 (25'-26')	8/14/2017	1,638	309	1.1	ND	Backfill to about 33' boring depth.
BH-1 (35'-36')	8/14/2017	18.8	ND	0.047	ND	Boring surface grade about 9' below
BH-1 (45'-46')	8/14/2017	3.7	ND	ND	ND	original wellpad grade.
BH-2 (31.5'-32')	8/14/2017	606	14	ND	ND	Boring surface grade about 12' below
BH-2 (35'-36')	8/14/2017	12.2	ND	ND	ND	original wellpad grade.
BH-2 (45'-46')	8/14/2017	2.6	ND	ND	ND	
BH-3 (25'-26')	8/15/2017	224	10	ND	ND	Boring surface grade about 10' below
BH-3 (35'-36')	8/15/2017	16.8	ND	ND	ND	original wellpad grade.
BH-3 (45'-46')	8/15/2017	2.1	ND	ND	ND	
BH-4 (30'-31')	8/16/2017	95	11	ND	ND	Boring surface grade about 11' below
BH-4 (35'-36')	8/16/2017	41	ND	ND	ND	original wellpad grade.
BH-4 (45'-46')	8/16/2017	2.2	ND	ND	ND	
BH-5 (35'-36')	8/16/2017	17.6	ND	ND	ND	Boring surface grade about 12' below
BH-5 (45'-46')	8/16/2017	1.6	ND	ND	ND	original wellpad grade.
NMOCD/BLM Closure Standard			100	50	10	

#### **CONCLUSIONS AND RECOMMENDATIONS**

- 1) Hydrocarbon impacted soil and at the BP operated Mudge A 2 has been successfully excavated. Excavation sampling and analytical testing has confirmed that 11 of 13 separate sampling zones within the remedial excavation test below site closure standards. The two (2) zones with residual hydrocarbon impacts exceeding site closure standards (Areas 8 and 12) are not indicated to contribute a risk to surface or groundwater. Removal of additional soils in Areas 8 and 12 is not presently feasible due to an active third party high pressure natural gas line.
- Drilling to further delineate in-place impacts has determined that no lateral movement of hydrocarbons exceeding site standards is present. Borings BH-2 through BH-5, outside the remedial excavation, tested residual hydrocarbons at values less than 14 mg/Kg. Boring BH-1, placed within the remedial excavation at the point of greatest residual impacts, found a minimum 10 foot separation between the base of impacts and the base of the boring. The maximum hydrocarbon value tested in BH-1 was 309 mg/Kg.
- 3) Site closure is recommended. The remaining hydrocarbon impacts at the site do not indicate a risk to surface or groundwater.

#### **CLOSURE AND LIMITATIONS**

This report has been prepared for the exclusive use of BP America Production Company as it pertains to hydrocarbon impact remediation at the Mudge A 2 in San Juan County, New Mexico. The data presented herein is based on visual observations, subsurface soil conditions encountered at sampling locations and on information reported by analytical laboratory testing of soils. This report does not reflect variations which may exist between sampling locations.

I certify that the work performed by Blagg Engineering, Inc. as described in this report was directed by my supervision, and that I am personally familiar with the remedial actions and the contents of this report.

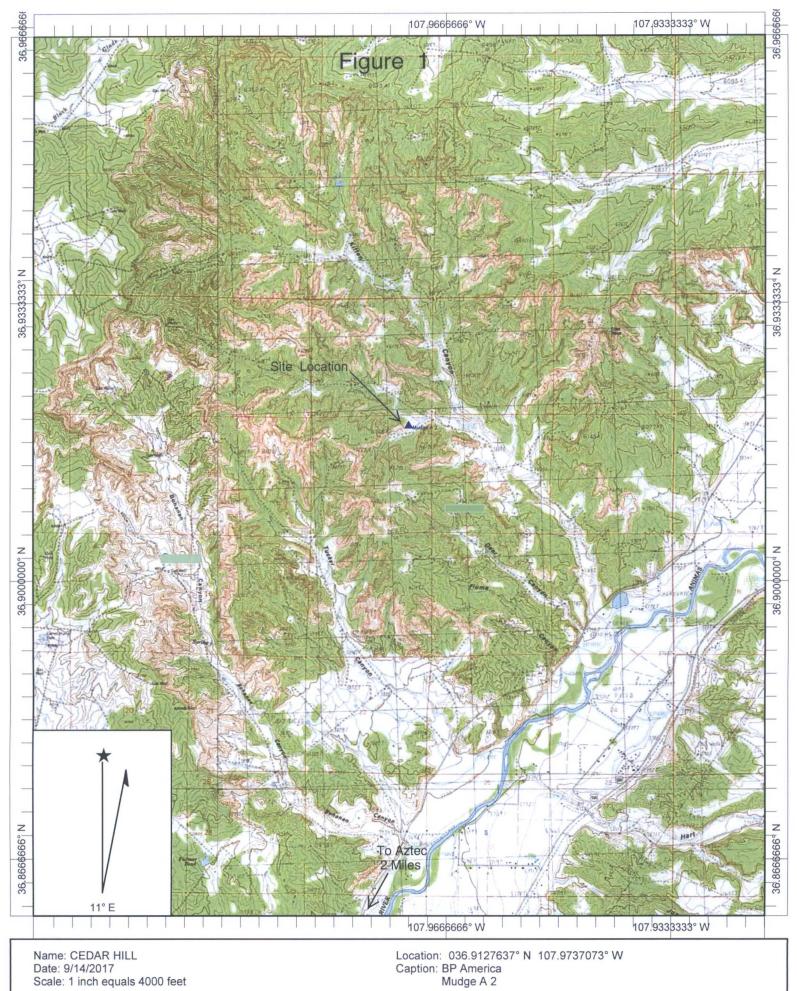
Submitted by: Blagg Engineering, Inc.

Jeffrey C Blagg, PE DN: cn=Jeffrey C Blagg, PE, o, ou, email=jeffcblagg@aol.com, c=US

Digitally signed by Jeffrey C Blagg, PE Date: 2017.09.14 13:05:07 -06'00'

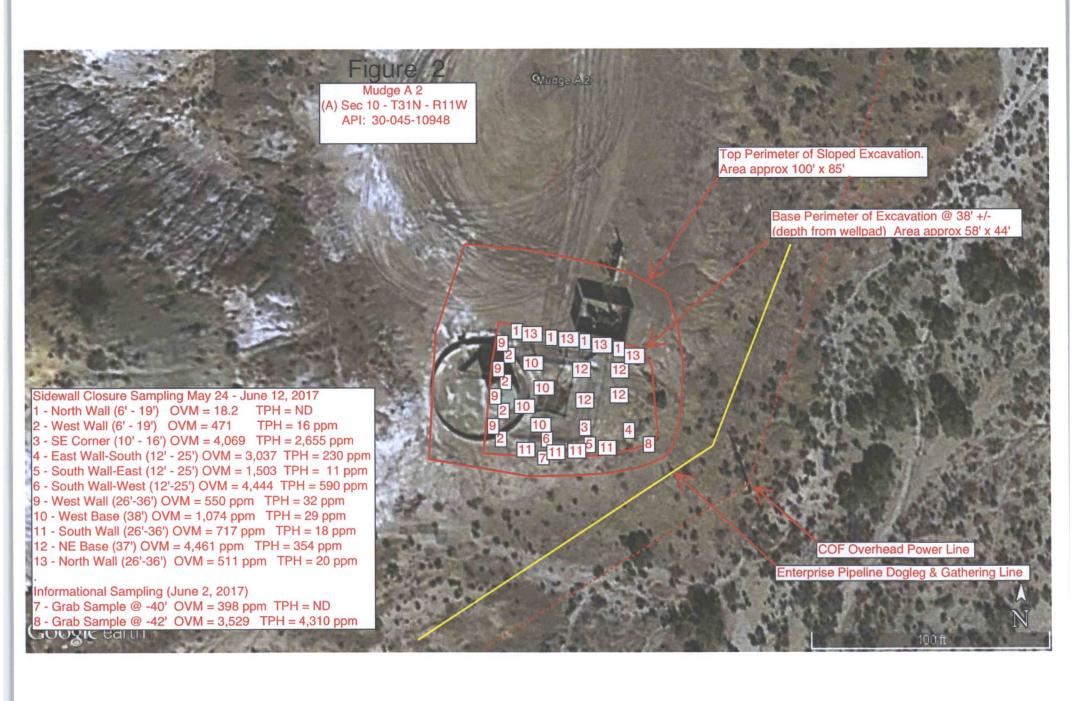
Jeffrey C. Blagg, PE NMPE 11607

# Appendix A Figures



Name: CEDAR HILL Date: 9/14/2017

Scale: 1 inch equals 4000 feet





Appendix B

Drilling Logs

P.0	. BOX		LOOMF		G, INC. Page L of L IM 87413
BOF	RING	LOG			BORING ID: BH-1
PROJE	ECT: Mu	dge A 2	7-7-6		
CLIEN	IT; BP	America			
				nviro-Dril	r - CME 75
DATE	START: 2	3/14/20	7 DAT	E FINISH:	3/15/2017 DRILLER: A-Kennedy LOGGED BY: JCB
					B/15/2017 DRILLER: A-Kennedy LOGGED BY: JCB E & SIZE: 2" Prc SLOT SIZE: 0.010
COMME	NTS: SUM	ACE 9 ±	= Belo	av well i	PAD
DEPTH FEET	TIME	SAMPLE TYPE	FIELD	MW Schematic	SAMPLE DESCRIPTION
5,	1120	Cuttings		1	START
4'					SILTY SAND - BACKFILL - NO/NS
6'					
8'				11/2/	
10'				1387	
12'				1 1 1 . 1	
14'				CEMENT	
16'	La Company			W	. )
18'				RISE	
-20-					
22'	*			3 EN//	<b>↓</b>
26'	. ~ _				SAA-Except HC o'DOR Beginny @ 23
28′	1203	SS-6 Block	1638	3 3 3 3 3	Recover 18 - mottled Gray Silty SAND, Strong HC odar
30′			309 ppm	00 SA	
32'	1212	4 BLOKUS	260	0 0,0	Recover 7'- SAA (BACKFILL)
34'				9=	
36'	1228	35 HO Blac	18.8		Danse Silt Stone, Gray Gran, Hc abor. (Recover 11")
38′		DIW.	TPH = ND	BENT	Land of the country of the country of
40-		m-&		/////	
42'	1245	67 Blay	n 6.5	CLEAN SO	Recover 13", Danse sitt stone, Gray Grean, Life HC OBOR.
44'				A CUMPUS S	
46′	1335	68 Bio	STPH =	The same of the sa	Recover 16", Blue Shalestone, Dry, Lite HC ODOR.
48′			ND		
50′					
. 52'					
54'					
56' 58'					
60					

BLAGG ENGINEERING, INC. Page I of I P.O. BOX 87, BLOOMFIELD, NM 87413 (505) 632 - 1199BORING ID: BH-2 BORING LOG PROJECT: Mudge A 2 CLIENT: BP America DRILLING CONTRACTOR: \_ Enviro-Drill DATE START: 8/14/2017 DATE FINISH: 8/15/2017 DRILLER: A- Kennedy LOGGED BY: JCB TOTAL DEPTH: 45' CASING TYPE & SIZE: 2" PUC SLOT SIZE: 0.010 COMMENTS: SURFACE 12 + Below Well PAD DEPTH SAMPLE FIELD TYPE OVM MW TIME SAMPLE DESCRIPTION Schematic 1411 CUTTINGS 2' Silty SAND, NATIVE, TAN, DRY, NO ODOR NO STAIN 4' 6' 8' 10' REcover 14", lite brown silty SAND, NO/NS, Lite Moisture 1419 22 Biows 12' 1.2 14' 16' Recover 24, SAA, less moisture 32 Blows 0.5 18' RECOVER 22, SAA, Increased Mosture 1434 36 Blans 30.6 24' 26' 51 BLOWS 3.1 RECOVET 24", SAA EXCEPT BOHOM 3 "Fractured SANDSTONE. 28' Recover 24 312-32: Gray Frectured Sandstone, HC ODOR + Stain 1455 52 BLOWS 32' 34' 1507 51 Blows 36' RECOUNTY DANK Brown Green Shalpstone, Lite HC ODOR. 38' 40 1524 70 Blows 3.8 000 00 Recover 20, SAA 42' 44' - cuttings Brickfill 46' 1537 34 Black RECOVER 21" SAA 7.6 TPH= 48' 50' 52' 54' 56'

Page 1 of 1 BLAGG ENGINEERING, INC. P.O. BOX 87, BLOOMFIELD, NM 87413 (505) 632-1199BORING ID: BH-3 BORING LOG PROJECT: Mudge A 2 CLIENT: BP America DRILLING CONTRACTOR: Enviro-Drill EQUIPMENT USED: Hollow Stem Auger - CME 75 DATE START: 8/15/2017 DATE FINISH: 9/15/2017 DRILLER: A. Kennedy LOGGED BY: JCB TOTAL DEPTH: 45' CASING TYPE & SIZE: 2"PVC SLOT SIZE: 0.010 COMMENTS: SURFACE 10' + Below well pack. DEPTH SAMPLE FIELD TIME SAMPLE DESCRIPTION Schematic 0758 CUTTUGS START silty SAND, NATIVE, TAN, DEV, NO ODOK NO STAIN 4' 6' 8' 10' 0810 17 Blows 0.0 Recover 16 sifty SAND LIFE Brown, life Moisture, NO/155 12' 14' 16' Recover 24" SAA 0815 30 Biows 0.2 18' 0824 BLOWS Recover 19, SAA 104 24' 0835 72 224 Black TPH= REcover 20", Green/Gray Shelestone, Lite HC ODOR 26' 58' RECOVER 18, Green Shelestone, Occasional Gray Strenks, V. Lite HC OBOR. 30' 0845 3000 32' 34' RECOVER 17, SAA, NO Gray Streeks, V.V. Lite HC ODOR. 36' 0904 16.8 38' GLEAN 40 4.3 EUTHUES RECOVER 16", SAA

REcover 14", Blue Shalestone, Dry, No odor/No Stain

RUN POINTED END CAP @ 30, 5 x 0.010 stotled 30-25; Riser to

Clean cuttings 45-35 Hydrated BENT 35-31 1920 SAND 31-23 Hydrated BENT 23-21 GROUT 21'- Surface.

Hydrated BENT

10/20 SAND

45'

0921 13005

0940 BLOWS

TD

DRILLED: 45

42' 44'

46'

48' 50'

52'

54'

56'

P.O. BOX 87, BLOOMFIELD, NM 87413 (505) 632-1199BORING LOG BORING ID: BH-4 PROJECT: Mudge A 2 CLIENT: BP America DRILLING CONTRACTOR: Enviro-Drill EQUIPMENT USED: Hollow Stem Auger DATE START: 8/16/2017 DATE FINISH: 8/16/2017 DRILLER: A. KENWEDY LOGGED BY: JCB CASING TYPE & SIZE: 2" PVC SLOT SIZE: 0.010 45' TOTAL DEPTH: COMMENTS: SURFACE II' = Below well Fad Grade. DEPTH SAMPLE FIELD TIME SAMPLE DESCRIPTION FEET OVM Schematic 0810 START Cuttings NATIVE Soil: TAN Silty SAND, lite Moistur, No odor NO STAIN 4' 6' 8' 10' RECOVET 14 SAA 0823 50 Bious 0.8 12' RECOVER 18" SAA 14' 16' 0831 35 3600 0,9 18' RECOVER 14", S.A.A., Increased MOISTURE 0842 27 Box 1.4 24' 26' REcover 24 SAA 0852 38 Blows 5.9 58' 30' RECOVER 19 : Sity SAND, DARK TAN With Gray Streeting, 0901 20 Blows 95 32' Lite moistire, HC adoir. 34' 11 PPM 0915 85BLOWS 41 RECover 22": Brown Siltstone, V. Milnor Gray Streets, 38' Lite moistone, V. whom He opose. 40 CLEM & RECOVER 20: Gray/Green Sittstone, life moistine 0932 185 Bus 8.8 42' NO HC Streaking, V.V. Minor HC ODOR. 44' 0958 \$808Lack 2.2 RECOVER 18": BLUE SHALESTONE, LITE MOISTURE, NO HC ODOR OR STAIN 46' TPH = 48' 50' 52' 54' 56'

Page \_ l of \_ l

BLAGG ENGINEERING, INC.

Page i of 1 BLAGG ENGINEERING, INC. P.O. BOX 87, BLOOMFIELD, NM 87413 (505) 632-1199BORING ID: BH-5 BORING LOG PROJECT: Mudge A 2 CLIENT: BP America DRILLING CONTRACTOR: Enviro-Drill EQUIPMENT USED: Hollow Stem Auger DATE START: 8/16/2017 DATE FINISH: 8/16/17 DRILLER: A. KENNEW LOGGED BY: JCB TOTAL DEPTH: 45 \_ CASING TYPE & SIZE: \_ SLOT SIZE: COMMENTS: SURFACE 12 + Below well pad Grade DEPTH FEET SAMPLE FIELD TIME -SAMPLE DESCRIPTION Schematic START 1218 CUTTINGS SITY SAND, NATIVE, TAN, DRY, NO ODOR NO STAIN 4' 6' 8' 10' 1230 25 BLOWS RECOVER 14": SAA 1.5 12' 14' RECOVER 12": SAA 16' 1240 26 BLOWS 0.6 BACTFILES WITH CUTTINGS 18' RECOVER 24" BROWN SILTY SAND, LITE MOISTURE, NO ODOR/NO STAN 1251 55 Biois 22' 24' 1.303 ZB Bions RECOVET 14": SAA 26' 0,9 28' 30' RECOVER 24 : SAA, Minor increase in Mulsture 1315 24 Blow 5.1 32' 34' RECOVER 20": Green Gray Siltstone, life moistne, No HC ODOR, Minor Gray Streaking 1322 48 Black 17.6 36' 38' 40 RECOURT 22: SAA, Except No Gray Streakly 1338 85 BLOWS 3.2 42' 44' 1352 \$65 Black 1.6 TPH= REcover 19": Blue Shalestone, Dry, No odor 46' 48' No Stain. 50' 52' 54' 56'

# Appendix C

# Excavation Closure Laboratory Analytical Data Reports



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

May 26, 2017

Steven Moskal Blagg Engineering P. O. Box 87 Bloomfield, NM 87413

TEL: (505) 632-1199 FAX (505) 632-3903

RE: MUDGE A 2 OrderNo.: 1705C79

#### Dear Steven Moskal:

Hall Environmental Analysis Laboratory received 3 sample(s) on 5/25/2017 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to <a href="www.hallenvironmental.com">www.hallenvironmental.com</a> or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman

Laboratory Manager

andyl

4901 Hawkins NE

Albuquerque, NM 87109

#### Lab Order 1705C79

Date Reported: 5/26/2017

## Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Blagg Engineering

Client Sample ID: SE Corner 3-Point

**Project:** MUDGE A 2

Collection Date: 5/24/2017 3:10:00 PM

Lab ID: 1705C79-001

Matrix: SOIL

Received Date: 5/25/2017 7:10:00 AM

Analyses	Result	PQL (	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst	MRA
Chloride	35	30		mg/Kg	20	5/25/2017 11:25:26 AM	31974
EPA METHOD 8015M/D: DIESEL RAN	GE ORGANIC	S				Analyst	TOM
Diesel Range Organics (DRO)	160	9.2		mg/Kg	1	5/25/2017 10:07:54 AM	31956
Motor Oil Range Organics (MRO)	95	46		mg/Kg	1	5/25/2017 10:07:54 AM	31956
Surr: DNOP	103	70-130		%Rec	1	5/25/2017 10:07:54 AM	31956
EPA METHOD 8015D: GASOLINE RAN	NGE					Analyst	NSB
Gasoline Range Organics (GRO)	2400	360		mg/Kg	100	5/25/2017 9:57:50 AM	G43065
Surr: BFB	191	54-150	S	%Rec	100	5/25/2017 9:57:50 AM	G43065
EPA METHOD 8021B: VOLATILES						Analyst	NSB
Benzene	3.7	1.8		mg/Kg	100	5/25/2017 9:57:50 AM	B43065
Toluene	3.1	1.8		mg/Kg	100	5/25/2017 9:57:50 AM	B43065
Ethylbenzene	13	3.6		mg/Kg	100	5/25/2017 9:57:50 AM	B43065
Xylenes, Total	150	7.3		mg/Kg	100	5/25/2017 9:57:50 AM	B43065
Surr: 4-Bromofluorobenzene	100	66.6-132		%Rec	100	5/25/2017 9:57:50 AM	B43065

# ID as #3 on Figures and Tables (Subsequently Excavated)

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

- Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits Page 1 of 7
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Lab Order 1705C79

Date Reported: 5/26/2017

## Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Blagg Engineering

Client Sample ID: North Wall 8-Point

Project: MUDGE A 2

Collection Date: 5/24/2017 3:21:00 PM

Lab ID: 1705C79-002

Matrix: SOIL

Received Date: 5/25/2017 7:10:00 AM

Analyses	Result	PQL Qu	al Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS					Analyst	MRA
Chloride	ND	30	mg/Kg	20	5/25/2017 11:37:50 AM	31974
EPA METHOD 8015M/D: DIESEL RANG	E ORGANICS	S			Analyst	TOM
Diesel Range Organics (DRO)	ND	10	mg/Kg	1	5/25/2017 10:30:06 AM	31956
Motor Oil Range Organics (MRO)	ND	51	mg/Kg	1	5/25/2017 10:30:06 AM	31956
Surr: DNOP	95.7	70-130	%Rec	1	5/25/2017 10:30:06 AM	31956
EPA METHOD 8015D: GASOLINE RAN	GE				Analyst	NSB
Gasoline Range Organics (GRO)	ND	3.7	mg/Kg	1	5/25/2017 11:36:34 AM	G43065
Surr: BFB	94.8	54-150	%Rec	1	5/25/2017 11:36:34 AM	G43065
EPA METHOD 8021B: VOLATILES					Analyst	NSB
Benzene	ND	0.018	mg/Kg	1	5/25/2017 11:36:34 AM	B43065
Toluene	ND	0.037	mg/Kg	1	5/25/2017 11:36:34 AM	B43065
Ethylbenzene	ND	0.037	mg/Kg	1	5/25/2017 11:36:34 AM	B43065
Xylenes, Total	ND	0.074	mg/Kg	1	5/25/2017 11:36:34 AM	B43065
Surr: 4-Bromofluorobenzene	93.5	66.6-132	%Rec	1	5/25/2017 11:36:34 AM	B43065

# ID as #1 on Figures and Tables

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

- Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits Page 2 of 7
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Collection Date: 5/24/2017 3:30:00 PM

## Lab Order 1705C79

Date Reported: 5/26/2017

## Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Blagg Engineering Client Sample ID: West Wall 8-Point

Project: MUDGE A 2 Lab ID: 1705C79-003 Received Date: 5/25/2017 7:10:00 AM Matrix: SOIL

Analyses	Result	PQL Qua	ıl Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS					Analyst	MRA
Chloride	ND	30	mg/Kg	20	5/25/2017 11:50:15 AM	31974
EPA METHOD 8015M/D: DIESEL RANGI	E ORGANICS	3			Analyst	TOM
Diesel Range Organics (DRO)	16	9.8	mg/Kg	1	5/25/2017 10:52:10 AM	31956
Motor Oil Range Organics (MRO)	ND	49	mg/Kg	1	5/25/2017 10:52:10 AM	31956
Surr: DNOP	101	70-130	%Rec	1	5/25/2017 10:52:10 AM	31956
EPA METHOD 8015D: GASOLINE RANG	E				Analyst	NSB
Gasoline Range Organics (GRO)	ND	21	mg/Kg	5	5/25/2017 12:00:11 PM	G43065
Surr: BFB	127	54-150	%Rec	5	5/25/2017 12:00:11 PM	G43065
EPA METHOD 8021B: VOLATILES					Analyst	NSB
Benzene	ND	0.11	mg/Kg	5	5/25/2017 12:00:11 PM	B43065
Toluene	ND	0.21	mg/Kg	5	5/25/2017 12:00:11 PM	B43065
Ethylbenzene	ND	0.21	mg/Kg	5	5/25/2017 12:00:11 PM	B43065
Xylenes, Total	ND	0.43	mg/Kg	5	5/25/2017 12:00:11 PM	B43065
Surr: 4-Bromofluorobenzene	97.4	66.6-132	%Rec	5	5/25/2017 12:00:11 PM	B43065

# ID as #2 on Figures and Tables

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

- Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- % Recovery outside of range due to dilution or matrix
- Analyte detected in the associated Method Blank
- Value above quantitation range
- Analyte detected below quantitation limits Page 3 of 7 J
- Sample pH Not In Range
- RL Reporting Detection Limit
- Sample container temperature is out of limit as specified

## Hall Environmental Analysis Laboratory, Inc.

WO#:

1705C79

26-May-17

Client:

Blagg Engineering

Project:

MUDGE A 2

Sample ID MB-31974

SampType: MBLK

TestCode: EPA Method 300.0: Anions

Client ID:

**PBS** 

Batch ID: 31974

RunNo: 43067

Prep Date: 5/25/2017

Analysis Date: 5/25/2017

SeqNo: 1355858

Units: mg/Kg

**RPDLimit** 

Qual

Analyte Chloride

Result PQL SPK value SPK Ref Val %REC

LowLimit

HighLimit

%RPD

%RPD

ND

1.5

SampType: LCS

TestCode: EPA Method 300.0: Anions

Client ID: LCSS

Sample ID LCS-31974

Batch ID: 31974

RunNo: 43067

Prep Date: 5/25/2017

Analysis Date: 5/25/2017

1.5

SeqNo: 1355859

Units: mg/Kg HighLimit

Qual

**RPDLimit** 

Analyte Chloride

PQL

14

15.00

SPK value SPK Ref Val

%REC 93.8

0

90 110

#### Qualifiers:

- Value exceeds Maximum Contaminant Level.
- Sample Diluted Due to Matrix D
- Η Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- % Recovery outside of range due to dilution or matrix
- Analyte detected in the associated Method Blank В
- E Value above quantitation range
- J
- P Sample pH Not In Range
- RL Reporting Detection Limit Sample container temperature is out of limit as specified

Analyte detected below quantitation limits

Page 4 of 7

### Hall Environmental Analysis Laboratory, Inc.

Client: Blagg Engineering Project: MUDGE A 2 Sample ID LCS-31943 SampType: LCS TestCode: EPA Method 8015M/D: Diesel Range Organics Batch ID: 31943 Client ID: LCSS RunNo: 43051 Prep Date: 5/24/2017 Analysis Date: 5/25/2017 SeqNo: 1354741 Units: %Rec SPK value SPK Ref Val %REC %RPD **RPDLimit** Qual Result POL HighLimit Analyte LowLimit Surr: DNOP 4.8 5.000 95 2 70 130 TestCode: EPA Method 8015M/D: Diesel Range Organics Sample ID MB-31943 SampType: MBLK Client ID: **PBS** Batch ID: 31943 RunNo: 43051 Prep Date: 5/24/2017 Analysis Date: 5/25/2017 SegNo: 1354742 Units: %Rec Result SPK value SPK Ref Val %REC HighLimit %RPD **RPDLimit** Qual Analyte PQL LowLimit Surr: DNOP 9.6 10.00 96.1 70 130 TestCode: EPA Method 8015M/D: Diesel Range Organics Sample ID LCS-31956 SampType: LCS Client ID: LCSS Batch ID: 31956 RunNo: 43052 Prep Date: 5/25/2017 Analysis Date: 5/25/2017 SeqNo: 1354925 Units: mg/Kg SPK value SPK Ref Val %REC %RPD **RPDLimit** Result PQL LowLimit HighLimit Qual Analyte Diesel Range Organics (DRO) 46 10 50.00 91.1 73.2 114 Surr: DNOP 4.3 5.000 85.7 70 130 TestCode: EPA Method 8015M/D: Diesel Range Organics Sample ID MB-31956 SampType: MBLK Client ID: **PBS** Batch ID: 31956 RunNo: 43052 Prep Date: 5/25/2017 Analysis Date: 5/25/2017 SeqNo: 1354926 Units: mg/Kg Analyte Result PQL SPK value SPK Ref Val %REC LowLimit HighLimit %RPD **RPDLimit** Qual Diesel Range Organics (DRO) ND 10 Motor Oil Range Organics (MRO) ND 50 Surr: DNOP 8.1 10.00 813 70 130 Sample ID LCS-31932 SampType: LCS TestCode: EPA Method 8015M/D: Diesel Range Organics Client ID: LCSS Batch ID: 31932 RunNo: 43051 Prep Date: 5/24/2017 Analysis Date: 5/25/2017 SeqNo: 1355829 Units: %Rec %REC Result SPK value SPK Ref Val %RPD **RPDLimit** Analyte HighLimit Qual I owl imit Surr: DNOP 4.5 5.000 89.3 70 130 Sample ID MB-31932 SampType: MBLK TestCode: EPA Method 8015M/D: Diesel Range Organics Client ID: PBS Batch ID: 31932 RunNo: 43051

#### Qualifiers:

Prep Date:

Surr: DNOP

Analyte

\* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

5/24/2017

H Holding times for preparation or analysis exceeded

Analysis Date: 5/25/2017

PQL

SPK value SPK Ref Val

10.00

Result

9.4

ND Not Detected at the Reporting Limit

R RPD outside accepted recovery limits

S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank

I owl imit

70

E Value above quantitation range

J Analyte detected below quantitation limits

SeqNo: 1355830

%REC

94.4

Units: %Rec

130

%RPD

HighLimit

P Sample pH Not In Range

RL Reporting Detection Limit

W Sample container temperature is out of limit as specified

Page 5 of 7

Qual

**RPDLimit** 

WO#:

1705C79

26-May-17

## Hall Environmental Analysis Laboratory, Inc.

WO#:

1705C79

26-May-17

Client:

Blagg Engineering

Project:

MUDGE A 2

Sample ID RB

SampType: MBLK

TestCode: EPA Method 8015D: Gasoline Range

Client ID:

Batch ID: G43065

RunNo: 43065

HighLimit

Prep Date:

Analysis Date: 5/25/2017

SeqNo: 1355625

Units: mg/Kg

Analyte

SPK value SPK Ref Val %REC Result PQL

**RPDLimit** 

Qual

Gasoline Range Organics (GRO) Surr: BFB

ND 920

1000

92.3

150

Sample ID 2.5UG GRO LCS

SampType: LCS

RunNo: 43065

%REC

TestCode: EPA Method 8015D: Gasoline Range

LowLimit

54

LowLimit

Client ID: Prep Date:

LCSS

Batch ID: G43065

5.0

SeqNo: 1355626

Units: mg/Kg

%RPD

Analyte Gasoline Range Organics (GRO) Analysis Date: 5/25/2017 Result PQL

SPK value SPK Ref Val 0

104

76.4 125 %RPD **RPDLimit** 

Qual

Surr: BFB

26 1000 25.00 1000

103

HighLimit

54 150

#### Qualifiers:

- Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- Holding times for preparation or analysis exceeded H
- Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- % Recovery outside of range due to dilution or matrix S
- В Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- Sample container temperature is out of limit as specified

Page 6 of 7

# Hall Environmental Analysis Laboratory, Inc.

WO#:

1705C79

26-May-17

Client: Project:

Blagg Engineering MUDGE A 2

Sample ID RB	SampT	уре: МЕ	BLK	Tes	tCode: El	PA Method	8021B: Volat	tiles		
Client ID: PBS	Batch	n ID: <b>B4</b>	3065	F	RunNo: 4	3065				
Prep Date:	Analysis D	ate: 5/	25/2017	S	SeqNo: 1	355634	Units: mg/K	g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.91		1.000		90.7	66.6	132			

Sample ID 100NG BTEX LC	S Samp	Гуре: LC	s	Tes	tCode: El	PA Method	8021B: Vola	tiles		
Client ID: LCSS	Batc	h ID: B4	3065	F	RunNo: 4	3065				
Prep Date:	Analysis [	Date: 5/	25/2017	8	SeqNo: 1	355635	Units: mg/K	g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.85	0.025	1.000	0	85.3	80	120			
Toluene	0.90	0.050	1.000	0	89.6	80	120			
Ethylbenzene	0.92	0.050	1.000	0	92.0	80	120			
Xylenes, Total	2.8	0.10	3.000	0	93.6	80	120			
Surr: 4-Bromofluorobenzene	0.94		1.000		93.9	66.6	132			

#### Qualifiers:

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits

Page 7 of 7

- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified



Hall Environmental Analysis Laboratory 4901 Hawkins NE Albuquerque, NM 87109 TEL: 505-345-3975 FAX: 505-345-4107

Website: www.hallenvironmental.com

Sample Log-In Check List

RcptNo: 1 Client Name: BLAGG Work Order Number: 1705C79 ame Ilm 5/25/2017 7:10:00 AM Received By: Anne Thome an Im 5/25/2017 7:58:21 AM **Anne Thorne** Completed By: 5/25/17 Reviewed By: Chain of Custody 1. Custody seals intact on sample bottles? Yes No 🗌 Not Present No 🗌 Yes 🗸 Not Present 2. is Chain of Custody complete? 3 How was the sample delivered? Courier Log In NA 🗍 No Yes V 4. Was an attempt made to cool the samples? NA 🗌 5. Were all samples received at a temperature of >0° C to 6.0°C Yes 🗸 No 🗌 No 🗌 6. Sample(s) in proper container(s)? Yes V No 🗌 Yes V 7. Sufficient sample volume for indicated test(s)? 8. Are samples (except VOA and ONG) properly preserved? Yes V No 🗆 No 🗸 Yes NA 🗆 9. Was preservative added to bottles? No 🗌 No VOA Vials Yes 🗌 10. VOA vials have zero headspace? Yes No 🗸 11. Were any sample containers received broken? # of preserved bottles checked No 🗌 for pH: Yes V 12. Does paperwork match bottle labels? (<2 or >12 unless noted) (Note discrepancies on chain of custody) Adjusted? Yes 🗸 No \_ 13. Are matrices correctly identified on Chain of Custody? Yes 🗸 No 🗌 14. Is it clear what analyses were requested? Yes 🗸 Checked by: No 🗌 15. Were all holding times able to be met? (If no, notify customer for authorization.) Special Handling (if applicable) 16. Was client notified of all discrepancies with this order? Yes NA V No 🔲 Person Notified: Date By Whom: Via: eMail Phone Fax In Person Regarding: Client Instructions: 17. Additional remarks: 18. Cooler Information Cooler No Temp °C Condition | Seal Intact | Seal No | Seal Date 1.0 Good Yes

Client: Mailing	BP A Blagg Address	Merica Engli	neerly Inc	Standard Project Name Project #:	<b>⊠</b> Rush					A	www ins N	AL v.hal NE - 975	lenv Alb	rironi	menterque	tal.co	BO om M 87 -410	7109	NT		
email or	-	9,000	110-	Project Mana	ger:			( <u>y</u> )	0										T		
QA/QC F	Package: dard		☐ Level 4 (Full Validation)		E Moskac		TMB's (8021)	TPH (Gas only)	DRO / MRO)			SIMS)		PO4,SC	PCB's						
Accredi	AP	□ Othe	er	On Ice:		□ No.	TAB	+	(GRO / DF	418.1)	504.1)	8270	Ø	O3,NO2	s / 8082		(AC	w			or N)
□ EDD Date	(Type) _	Matrix	Sample Request ID	Sample Tem  Aco   ZSI/I Container Type and #  Mod   K-1	The second point is a second point in the seco	HEAL-NO.	BTEX + WITE	BTEX + MTBE	TPH 8015B (G	TPH (Method	EDB (Method 504.1)	PAH's (8310 or	RCRA 8 Metals	Anions (F,CI,NO3,NO2,PO4,SO4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	CHOCIDE			Air Bubbles (Y or N)
124/1	1510	SOIL	SE Corner 3-Pout	1	CEDL	701	X		X									X			
	1521	1	NORTH Wall 8- POINT			702	X		X									X			
1	1530	1	WEST Wall 8 - POWT			763	X		X									X			
																				<u>+</u>	
											-								+	+	
Date: Date: Sbylo	Time:	Relinquish	& Blogg	Received by:	Lock In Ir	Date Time 5/24/17 1648 Date Time US/27/7			1	1175	V	HIX		EVA	24				098		ā (
F .11.	necessary,	samples sub	mitted to Hall Environmental may be subc			es. This serves as notice of this	possi	bility.	Any su	ub-con	tracte	d data	will b	e clear	ly note	ated or	n the a	analytic	al repor	t.	



Hall Environmental Analysis Laboratory 4901 Hawkins NE Albuquerque, NM 87109

TEL: 505-345-3975 FAX: 505-345-4107 Website: www.hallenvironmental.com

June 01, 2017

Steven Moskal Blagg Engineering P. O. Box 87 Bloomfield, NM 87413

TEL: (505) 632-1199 FAX (505) 632-3903

RE: MUDGE A #2

OrderNo.: 1705E89

Dear Steven Moskal:

Hall Environmental Analysis Laboratory received 3 sample(s) on 5/31/2017 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to <a href="www.hallenvironmental.com">www.hallenvironmental.com</a> or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

# Hall Environmental Analysis Laboratory, Inc.

Date Reported: 6/1/2017

**CLIENT:** Blagg Engineering

1705E89-001

Client Sample ID: East Wall S End 5-pt

**Project:** MUDGE A #2

Lab ID:

Collection Date: 5/30/2017 2:08:00 PM Received Date: 5/31/2017 7:15:00 AM

Analyses	Result	PQL (	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst	MRA
Chloride	330	30		mg/Kg	20	5/31/2017 11:11:03 AM	32038
EPA METHOD 8015M/D: DIESEL RAN	GE ORGANIC	S				Analyst	TOM
Diesel Range Organics (DRO)	120	9.6		mg/Kg	1	5/31/2017 10:51:53 AM	32035
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	5/31/2017 10:51:53 AM	32035
Surr: DNOP	96.9	70-130		%Rec	1	5/31/2017 10:51:53 AM	32035
EPA METHOD 8015D: GASOLINE RAM	NGE					Analyst	RAA
Gasoline Range Organics (GRO)	110	17		mg/Kg	5	5/31/2017 11:48:53 AM	R43151
Surr: BFB	311	54-150	S	%Rec	5	5/31/2017 11:48:53 AM	R43151
EPA METHOD 8021B: VOLATILES						Analyst	RAA
Benzene	ND	0.084		mg/Kg	5	5/31/2017 11:48:53 AM	B43151
Toluene	0.30	0.17		mg/Kg	5	5/31/2017 11:48:53 AM	B43151
Ethylbenzene	ND	0.17		mg/Kg	5	5/31/2017 11:48:53 AM	B43151
Xylenes, Total	3.8	0.34		mg/Kg	5	5/31/2017 11:48:53 AM	B43151
Surr: 4-Bromofluorobenzene	125	66.6-132		%Rec	5	5/31/2017 11:48:53 AM	B43151

Matrix: SOIL

# ID as #4 on Figures and Tables (Subsequently Excavated)

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits Page 1 of 7
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

#### Lab Order 1705E89

Date Reported: 6/1/2017

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: South Wall E End 5-pt

Project: MUDGE A #2

Collection Date: 5/30/2017 2:11:00 PM

Lab ID: 1705E89-002 Matrix: SOIL Received Date: 5/31/2017 7:15:00 AM

Analyses	Result	PQL Qu	al Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS					Analyst:	MRA
Chloride	390	30	mg/Kg	20	5/31/2017 11:23:28 AM	32038
EPA METHOD 8015M/D: DIESEL RANG	GE ORGANICS	3			Analyst:	TOM
Diesel Range Organics (DRO)	11	10	mg/Kg	1	5/31/2017 11:13:51 AM	32035
Motor Oil Range Organics (MRO)	ND	51	mg/Kg	1	5/31/2017 11:13:51 AM	32035
Surr: DNOP	98.1	70-130	%Rec	1	5/31/2017 11:13:51 AM	32035
EPA METHOD 8015D: GASOLINE RAN	NGE				Analyst:	RAA
Gasoline Range Organics (GRO)	ND	16	mg/Kg	5	5/31/2017 12:12:49 PM	R43151
Surr: BFB	103	54-150	%Rec	5	5/31/2017 12:12:49 PM	R43151
EPA METHOD 8021B: VOLATILES					Analyst:	RAA
Benzene	ND	0.080	mg/Kg	5	5/31/2017 12:12:49 PM	B43151
Toluene	ND	0.16	mg/Kg	5	5/31/2017 12:12:49 PM	B43151
Ethylbenzene	ND	0.16	mg/Kg	5	5/31/2017 12:12:49 PM	B43151
Xylenes, Total	ND	0.32	mg/Kg	5	5/31/2017 12:12:49 PM	B43151
Surr: 4-Bromofluorobenzene	113	66.6-132	%Rec	5	5/31/2017 12:12:49 PM	B43151

# ID as #5 on Figures and Tables

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits Page 2 of 7
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

## Hall Environmental Analysis Laboratory, Inc.

Date Reported: 6/1/2017

**CLIENT:** Blagg Engineering

1705E89-003

Client Sample ID: South Wall W End 5-pt

**Project:** MUDGE A #2

Lab ID:

Collection Date: 5/30/2017 2:15:00 PM Received Date: 5/31/2017 7:15:00 AM

Analyses	Result	PQL (	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst	MRA
Chloride	270	30		mg/Kg	20	5/31/2017 11:35:52 AM	32038
EPA METHOD 8015M/D: DIESEL RANGI	E ORGANICS	S				Analyst	TOM
Diesel Range Organics (DRO)	210	9.8		mg/Kg	1	5/31/2017 11:35:51 AM	32035
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	5/31/2017 11:35:51 AM	32035
Surr: DNOP	103	70-130		%Rec	1	5/31/2017 11:35:51 AM	32035
EPA METHOD 8015D: GASOLINE RANG	SE .					Analyst	RAA
Gasoline Range Organics (GRO)	380	66		mg/Kg	20	5/31/2017 12:36:43 PM	R43151
Surr: BFB	199	54-150	S	%Rec	20	5/31/2017 12:36:43 PM	R43151
EPA METHOD 8021B: VOLATILES						Analyst	RAA
Benzene	ND	0.33		mg/Kg	20	5/31/2017 12:36:43 PM	B43151
Toluene	3.0	0.66		mg/Kg	20	5/31/2017 12:36:43 PM	B43151
Ethylbenzene	1.8	0.66		mg/Kg	20	5/31/2017 12:36:43 PM	B43151
Xylenes, Total	22	1.3		mg/Kg	20	5/31/2017 12:36:43 PM	B43151
Surr: 4-Bromofluorobenzene	118	66.6-132		%Rec	20	5/31/2017 12:36:43 PM	B43151

Matrix: SOIL

# ID as #6 on Figures and Tables (Subsequently Excavated)

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

- Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits Page 3 of 7
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

## Hall Environmental Analysis Laboratory, Inc.

WO#:

1705E89

01-Jun-17

Client:

Blagg Engineering

Project:

MUDGE A #2

Sample ID MB-32038

SampType: mblk

TestCode: EPA Method 300.0: Anions

LowLimit

Client ID:

**PBS** 

Batch ID: 32038

RunNo: 43159

Prep Date: 5/31/2017

Analysis Date: 5/31/2017

SeqNo: 1359147

Units: mg/Kg

Analyte Chloride

Result PQL ND 1.5 SPK value SPK Ref Val %REC

HighLimit

%RPD **RPDLimit**  Qual

Sample ID LCS-32038

SampType: Ics Batch ID: 32038

RunNo: 43159

TestCode: EPA Method 300.0: Anions

Prep Date: 5/31/2017

Analysis Date: 5/31/2017

SeqNo: 1359148

Units: mg/Kg

Analyte

Client ID:

PQL

SPK value SPK Ref Val %REC

92.7

%RPD

**RPDLimit** 

1.5

15.00

Qual

Chloride

LCSS

14

0

90

HighLimit 110

**Oualifiers:** 

Value exceeds Maximum Contaminant Level.

Sample Diluted Due to Matrix

Η Holding times for preparation or analysis exceeded

Not Detected at the Reporting Limit ND

R RPD outside accepted recovery limits

% Recovery outside of range due to dilution or matrix

В Analyte detected in the associated Method Blank

E Value above quantitation range

J Analyte detected below quantitation limits

P Sample pH Not In Range

Reporting Detection Limit

Sample container temperature is out of limit as specified

Page 4 of 7

# Hall Environmental Analysis Laboratory, Inc.

WO#:

1705E89

01-Jun-17

Client:

Blagg Engineering

**Project:** 

MUDGE A #2

Sample ID LCS-32035	SampType	: LCS	Tes	tCode: E	PA Method	8015M/D: Di	esel Rang	e Organics	
Client ID: LCSS	Batch ID:	32035	R	RunNo: 4	3153				
Prep Date: 5/31/2017	Analysis Date:	5/31/2017	S	SeqNo: 1	358341	Units: mg/k	ζg		
Analyte	Result P	QL SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	42	10 50.00	0	84.2	73.2	114			
Surr: DNOP	4.2	5.000		85.0	70	130			

Sample ID MB-32035	SampT	ype: ME	BLK	Tes	TestCode: EPA Method 8015M/D: Diesel Range Organics						
Client ID: PBS	Batch	ID: 32	035	F	RunNo: 4	3153					
Prep Date: 5/31/2017	Analysis D	ate: 5/	31/2017	8	SeqNo: 1	358342	Units: mg/K	(g			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Diesel Range Organics (DRO)	ND	10									
Motor Oil Range Organics (MRO)	ND	50									
Surr: DNOP	9.1		10.00		91.1	70	130				

#### Qualifiers:

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits

Page 5 of 7

- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

# Hall Environmental Analysis Laboratory, Inc.

WO#:

1705E89

01-Jun-17

Client:

Blagg Engineering

Project:

MUDGE A #2

Sample ID 2.5UG GRO LCS	SampT	ype: LC	S	TestCode: EPA Method 8015D: Gasoline Range							
Client ID: LCSS	Batch	ID: R4	3151	RunNo: 43151							
Prep Date:	Analysis D	ate: 5/	31/2017	SeqNo: 1359038			Units: mg/Kg				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Gasoline Range Organics (GRO)	24	5.0	25.00	0	95.0	76.4	125	_			
Surr: BFB	1100		1000		107	54	150				

Sample ID RB	SampT	ype: ME	BLK	Tes	tCode: El	PA Method	8015D: Gaso	oline Rang	е	
Client ID: PBS	Batch	1D: <b>R4</b>	3151	F	RunNo: 4	3151				
Prep Date:	Analysis D	ate: 5/	31/2017	S	SeqNo: 1	359039	Units: mg/k	(g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	920		1000	•	92.2	54	150			

Qualifiers:

Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

R RPD outside accepted recovery limits

S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank

E Value above quantitation range

J Analyte detected below quantitation limits

P Sample pH Not In Range

RL Reporting Detection Limit

W Sample container temperature is out of limit as specified

Page 6 of 7

# Hall Environmental Analysis Laboratory, Inc.

WO#:

1705E89

01-Jun-17

Client: Project:

Blagg Engineering MUDGE A #2

Sample ID 100NG BTEX LCS	SampT	ype: LC	S	Tes	tCode: E	PA Method	8021B: Vola	tiles		
Client ID: LCSS	Batch	Batch ID: <b>B43151</b> RunNo: <b>43151</b>								
Prep Date:	Analysis D	ate: 5/	31/2017	8	SeqNo: 1	359043	Units: mg/k	(g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.0	0.025	1.000	0	104	80	120			
Toluene	1.0	0.050	1.000	0	105	80	120			
Ethylbenzene	1.1	0.050	1.000	0	105	80	120			
Xylenes, Total	3.2	0.10	3.000	0	107	80	120			
Surr: 4-Bromofluorobenzene	1.1		1.000		114	66.6	132			
Sample ID RB	SampT	vpe: ME	BLK	Tes	tCode: E	PA Method	8021B: Vola	tiles		

Sample ID RB	SampT	уре: МЕ	BLK	Tes	tCode: E	PA Method	8021B: Volat	iles		
Client ID: PBS	Batch	n ID: B4	3151	F	RunNo: 4	3151				
Prep Date:	Analysis D	ate: 5/	31/2017	S	SeqNo: 1	359046	Units: mg/K	g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	1.1		1.000		112	66.6	132			

#### Qualifiers:

\* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

R RPD outside accepted recovery limits

S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank

E Value above quantitation range

J Analyte detected below quantitation limits

P Sample pH Not In Range

RL Reporting Detection Limit

W Sample container temperature is out of limit as specified

Page 7 of 7



#### Hall Environmental Analysis Laboratory 4901 Hawkins NE Albuquerque, NM 87109

TEL: 505-345-3975 FAX: 505-345-4107 Website: www.hallenvironmental.com

# Sample Log-In Check List

Client Name:	BLAGG	Work Order Number:	1705E89		RcptNo:	1
Received By:	Anne Thorne	5/31/2017 7:15:00 AM		aone Am	_	
Completed By:	Anne Thorne	5/31/2017 7:49:02 AM		anne Am		
Reviewed By:	p-	5/31/17		Cana Jim		
	V	-( (, ,				
Chain of Cus	tody					
1. Custody sea	ils intact on sample bottles?		Yes	No 🗌	Not Present	
2. Is Chain of C	Custody complete?		Yes 🗹	No 🗔	Not Present	
3. How was the	e sample delivered?		Courier			
Log In						
4. Was an atte	empt made to cool the samples	?	Yes 🗹	No 🗆	NA 🗆	
5. Were all san	nples received at a temperatur	e of >0° C to 6.0°C	Yes 🗹	No 🗆	NA 🗆	
6. Sample(s) in	n proper container(s)?		Yes 🗹	No 🗆		
7. Sufficient sa	mple volume for indicated test	(s)?	Yes 🗹	No 🗌		
8. Are samples	(except VOA and ONG) prope	erly preserved?	Yes 🗸	No 🗆		
9. Was preserv	vative added to bottles?		Yes 🗌	No 🗹	NA 🗆	
10. VOA vials ha	ave zero headspace?		Yes 🗌	No 🗌	No VOA Vials ✓	
11. Were any sa	ample containers received bro	ken?	Yes	No 🗹	# of preserved	
					bottles checked	
	vork match bottle labels? pancies on chain of custody)		Yes 🗹	No L	for pH:	or >12 unless noted)
	correctly identified on Chain of	of Custody?	Yes 🗸	No 🗆	Adjusted?	
	at analyses were requested?		Yes 🗹	No 🗆		
	ding times able to be met?		Yes 🗹	No 🗌	Checked by:	
(If no, notify	customer for authorization.)					
Special Hand	lling (if applicable)					
	otifled of all discrepancies with	this order?	Yes 🗌	No 🗆	NA 🗸	
Person	Notified:	Date				
By Wh	om:	Via:	eMail [	Phone Fax	☐ In Person	
Regard	ding:				TERREPRESANTATION AND AND TO THE AND	
Client i	Instructions:	A. A. C.	AN ARMILLA STACE A STANKE AND A STANKE SHOW	RALANCE (SOLITA EL DIRECTOR SANCA (COLLA ) ROSA (COLLA ) R	AND A COMPANY OF THE PROPERTY	
17. Additional re	emarks:					
18. Cooler Info						
Cooler No			Seal Date	Signed By		
1	1.3 Good Y	es			 	

Client:	BP A	imensic 6 Enc	gineery		Rush			490	01 H	A		LY allen	SIS viron	S L	AE tal.co	30 om	RA	NTA		
Dhoon f	. 150	-12	zo- 1183	Project #:			100	Te	1. 50	5-345	-397		Fax ysis	Statement or widow			7	100	115	
email or	-	3)00	00 1103	Project Mana	ger:			( <u>/</u>	0					Iteq	ucs			100		
QA/QC F			☐ Level 4 (Full Validation)	STI	EVE MO		s (8021	TPH (Gas only)	30 / MR		CIMC		PO4,SC	PCB's						
Accredit	AP	□ Othe	er		Yes	□ No	TAMB	+	RO / DF	(18.1)	04.1)		O <sub>3</sub> ,NO <sub>2</sub> ,	s / 8082		(AC	1.1			or N)
□ EDD  Date	(Type) _	Matrix	Sample Request ID	ATUC131/17	Preservative Type		BTEX + MEBE + TMB's (8021)	BTEX + MTBE	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	RCRA 8 Metals	Anions (F,CI,NO3,NO2,PO4,SO4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	CHORINE			Air Bubbles (Y or N)
12/17	1408			40221		70	X		X								X			_
	1411	1	Sathwell-E. Ers 5-pt		1	702	X		X								X			
	1415	(	Southwell-W-En 5-pt			-543	×		×								×			_
Date:	1620	Relinquish	1 Blogg	Received by:	Jun 1	Date Time US/3/1/7 Date Time	1			4	· Barre	10 mg		1000				ue v 1981	Mister	- -



Hall Environmental Analysis Laboratory 4901 Hawkins NE

Albuquerque, NM 87109

TEL: 505-345-3975 FAX: 505-345-4107 Website: www.hallenvironmental.com

June 06, 2017

Steven Moskal Blagg Engineering P. O. Box 87

Bloomfield, NM 87413 TEL: (505) 632-1199 FAX (505) 632-3903

RE: MUDGE A 2 OrderNo.: 1706155

#### Dear Steven Moskal:

Hall Environmental Analysis Laboratory received 1 sample(s) on 6/5/2017 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to <a href="www.hallenvironmental.com">www.hallenvironmental.com</a> or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman

Laboratory Manager

andyl

4901 Hawkins NE

Albuquerque, NM 87109

## Lab Order 1706155

Date Reported: 6/6/2017

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering Client Sample ID: GRAB @ 40'

 Project:
 MUDGE A 2
 Collection Date: 6/2/2017 2:38:00 PM

 Lab ID:
 1706155-001
 Matrix: SOIL
 Received Date: 6/5/2017 7:30:00 AM

Analyses	Result	PQL Qu	al Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANG	GE ORGANIC	S			Analyst	том
Diesel Range Organics (DRO)	ND	9.5	mg/Kg	1	6/5/2017 9:11:35 AM	32097
Motor Oil Range Organics (MRO)	ND	47	mg/Kg	1	6/5/2017 9:11:35 AM	32097
Surr: DNOP	85.2	70-130	%Rec	1	6/5/2017 9:11:35 AM	32097
EPA METHOD 8015D: GASOLINE RAN	IGE				Analyst	NSB
Gasoline Range Organics (GRO)	ND	3.6	mg/Kg	1	6/5/2017 12:39:20 PM	32090
Surr: BFB	102	54-150	%Rec	1	6/5/2017 12:39:20 PM	32090
EPA METHOD 8021B: VOLATILES					Analyst	NSB
Benzene	ND	0.018	mg/Kg	1	6/5/2017 12:39:20 PM	32090
Toluene	ND	0.036	mg/Kg	1	6/5/2017 12:39:20 PM	32090
Ethylbenzene	ND	0.036	mg/Kg	1	6/5/2017 12:39:20 PM	32090
Xylenes, Total	ND	0.072	mg/Kg	1	6/5/2017 12:39:20 PM	32090
Surr: 4-Bromofluorobenzene	123	66.6-132	%Rec	1	6/5/2017 12:39:20 PM	32090

# ID as #7 on Figures and Tables

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

- Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits Page 1 of 4
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

# Hall Environmental Analysis Laboratory, Inc.

WO#:

1706155

06-Jun-17

Client:

Blagg Engineering

Project:

MUDGE A 2

Sample ID LCS-32097	SampTy	pe: LC	S	Test	tCode: El	PA Method	8015M/D: Di	esel Rang	e Organics	
Client ID: LCSS	Batch	ID: 320	097	R	RunNo: 4	3241				
Prep Date: 6/5/2017	Analysis Da	te: 6/	5/2017	S	SeqNo: 1	361182	Units: mg/k	(g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	43	10	50.00	0	86.7	73.2	114			
Surr: DNOP	3.6		5.000		72.5	70	130			

Sample ID MB-32097	SampT	уре: МЕ	BLK	Tes	tCode: E	PA Method	8015M/D: Die	esel Rang	e Organics	
Client ID: PBS	Batch	1D: 32	097	F	RunNo: 4	3241				
Prep Date: 6/5/2017	Analysis D	ate: 6/	5/2017	S	SeqNo: 1	361183	Units: mg/K	(g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	8.5		10.00		85.0	70	130			

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- Page 2 of 4

- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

### Hall Environmental Analysis Laboratory, Inc.

WO#:

1706155

06-Jun-17

Client:

Blagg Engineering

Project:

MUDGE A 2

Sample ID MB-32090	SampT	ype: ME	BLK	Test	Code: El	PA Method	8015D: Gaso	line Rang	е	
Client ID: PBS	Batch	1D: 32	090	R	unNo: 4	3255				
Prep Date: 6/2/2017	Analysis D	ate: 6/	5/2017	S	eqNo: 1	361956	Units: mg/k	(g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	1000		1000		102	54	150			

Sample ID LCS-32090	SampTy	pe: LC	s	Test	Code: E	PA Method	8015D: Gaso	line Rang	е	
Client ID: LCSS	Batch	ID: 320	090	R	lunNo: 4	3255				
Prep Date: 6/2/2017	Analysis Da	ate: 6/	5/2017	S	eqNo: 1	361957	Units: mg/K	g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	23	5.0	25.00	0	93.0	76.4	125			
Surr: BFB	1100		1000		108	54	150			

#### Qualifiers:

Value exceeds Maximum Contaminant Level.

Sample Diluted Due to Matrix

Holding times for preparation or analysis exceeded H

ND Not Detected at the Reporting Limit

R RPD outside accepted recovery limits

% Recovery outside of range due to dilution or matrix

Analyte detected in the associated Method Blank

E Value above quantitation range

J Analyte detected below quantitation limits

P Sample pH Not In Range

RL Reporting Detection Limit

Sample container temperature is out of limit as specified

Page 3 of 4

### Hall Environmental Analysis Laboratory, Inc.

WO#:

1706155

06-Jun-17

Client:

Blagg Engineering

Project:

MUDGE A 2

Sample ID MB-32090	SampT	ype: ME	BLK	Tes						
Client ID: PBS	Batch	1D: 32	090	F	RunNo: 43255					
Prep Date: 6/2/2017	Analysis D	ate: 6/	5/2017	S	SeqNo: 1	361976	Units: mg/K	(g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	1.3		1.000		126	66.6	132			

Sample ID LCS-32090	SampT	ype: LC	S	Tes	8021B: Vola	tiles				
Client ID: LCSS	Batch	1D: 32	090	R						
Prep Date: 6/2/2017	Analysis D	ate: 6/	5/2017	S	SeqNo: 1	361977	Units: mg/K	(g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	<b>RPDLimit</b>	Qual
Benzene	1.0	0.025	1.000	0	99.8	80	120			
Toluene	1.0	0.050	1.000	0	99.9	80	120			
Ethylbenzene	1.0	0.050	1.000	0	101	80	120			
Xylenes, Total	3.1	0.10	3.000	0	102	80	120			
Surr: 4-Bromofluorobenzene	1.3		1.000		126	66.6	132			

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- Page 4 of 4

- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified



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

### Sample Log-In Check List

Client Name: BLAGG	Work Order Numb	per: 1706155		RcptNo: 1
Received By: Anne Thorne	6/5/2017 7:30:00 A	M	anne Am	
Completed By: Anne Thome	6/5/2017 7:52:43 Al	М	anne Am	
Reviewed By: A	618117		and from	
100	01-11			
Chain of Custody				
1. Custody seals intact on sam	ple bottles?	Yes	No 🗆	Not Present 🗹
2. Is Chain of Custody complete	e?	Yes 🗹	No 🗌	Not Present
3. How was the sample delivered	ed?	Courier		
<u>Log In</u>				
4. Was an attempt made to coo	of the samples?	Yes 🗹	No 🗌	na 🗆
5. Were all samples received a	t a temperature of >0° C to 6.0°C	Yes 🗹	No 🗆	NA 🗆
6. Sample(s) in proper contained	er(s)?	Yes 🗹	No 🗆	
7. Sufficient sample volume for	indicated test(s)?	Yes 🔽	No 🗆	
8. Are samples (except VOA ar	nd ONG) properly preserved?	Yes 🗹	No 🗆	
9. Was preservative added to b	ottles?	Yes	No 🗹	NA 🗆
10. VOA vials have zero headsp	ace?	Yes	No 🗆	No VOA Vials ✓
11. Were any sample containers	received broken?	Yes	No 🗹	# of preserved
10 5	- labata0	V	No 🗆	bottles checked for pH:
<ol><li>Does paperwork match bottle (Note discrepancies on chair</li></ol>		Yes 🗹	NO	(<2 or >12 unless noted)
13. Are matrices correctly identifi		Yes 🗹	No 🗆	Adjusted?
14. Is it clear what analyses were	e requested?	Yes 🗹	No 🗌	
15. Were all holding times able to (If no, notify customer for aut		Yes 🗹	No 🗆	Checked by:
	,			
Special Handling (if applied	cable)			
16. Was client notified of all disc	repancies with this order?	Yes	No 🗆	NA 🗹
Person Notified:	Date			
By Whom:	Via:	eMail	Phone Fax	In Person
Regarding:	2004-04-04-04-04-04-04-04-04-04-04-04-04-	*********************	AND ALBERT WATER AND A STREET	COLUMN TO THE PROPERTY OF THE
Client Instructions:				
17. Additional remarks:				
18. Cooler Information	[ ]			
	Condition   Seal Intact   Seal No   Seal No	Seal Date	Signed By	
li 1.0 d			:	

Client:	BP A	MERKA	stody Record	Turn-Around	Rush	SAME DAY					ALL								AL	
Maillan	SLAG6	ENGIN	DERNG	Project Name	DGE A	2	-			w	ww.ha	llen	rironi	ment	tal.co	mc				
Mailing	Address	:		Project #:	DGC /7	2		490	01 Ha	awkin	NE .	- Alt	ouque	erqu	e, N	M 87	109			
Phone #	1 15	2013	20-1183	Project #.				Те	1. 505	5-345	-3975	-	ax ysis		-	4107				2
email or		35) 3	20-1103	Project Mana	ager:			3	0			- Tital	THE RESERVE	neu	ues		1		7	
QA/QC F	ackage:		☐ Level 4 (Full Validation)		EVE MOSK	CAL	s (8021)	(Gas on	SO / MR		SIMS)		PO <sub>4</sub> ,SO	PCB's						
Accredit	AP	□ Othe	ır	On Ice:	EFF BAG Kyes	□ No	WIBE = IMB's (8021)	+ TPH	RO / DE	118.1)		vs.	O3,NO2,	s / 8082		(A)				or N)
□ EDD	(Type)	T	I	Sample Tem	perature:	O		TBE	B (G	por .	100	Aetal	C.N	icide	(A)	ni-VC				≥ (≺
Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL NO.	BTEX + 🔯	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	PAH's (8310 or 8270	RCRA 8 Metals	Anions (F,CI,NO3,NO2,PO4,SO4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)				Air Bubbles (Y or N)
12/2017	1438	SOIL	GRAB @ 40'	402×1	COOL	201	X		X											
										+	-						+	+	+	_
										1								$\perp$		
										1								$\pm$		
									-	+	+	-					$\dashv$	+	+	
										$\downarrow$								$\pm$	$\pm$	
-				-			_		-	+	+	-	_					+	++	Ц
										+	3					$\Box$		+	++	$\dashv$
Date: 6/4/2017 Date:	Time: 1847 Time:	Relinquish	Blogg	Received by: Received by:	Wate	Date Time	1		VI		ZP VHIX : L		EVR	M					×K4L	
e 4 17 #	1915 necessary.	samples sub	mitted to Hall Environmental may be sub	contracted to other a	who	es. This serves as notice of this	possi	bility.	Any sut	b-contra	cted data	a will b	e dear	ly note	ated or	n the ar	nalytica	t report.		



Hall Environmental Analysis Laboratory 4901 Hawkins NE

Albuquerque, NM 87109 TEL: 505-345-3975 FAX: 505-345-4107

Website: www.hallenvironmental.com

June 07, 2017

Steven Moskal Blagg Engineering

P. O. Box 87

Bloomfield, NM 87413

TEL: (505) 632-1199 FAX (505) 632-3903

RE: MUDGE A 2

OrderNo.: 1706219

#### Dear Steven Moskal:

Hall Environmental Analysis Laboratory received 1 sample(s) on 6/6/2017 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to <a href="www.hallenvironmental.com">www.hallenvironmental.com</a> or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman

Laboratory Manager

andyl

4901 Hawkins NE

Albuquerque, NM 87109

Lab Order 1706219

Date Reported: 6/7/2017

### Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering Client Sample ID: GRAB @ 42'

 Project:
 MUDGE A 2
 Collection Date: 6/5/2017 4:31:00 PM

 Lab ID:
 1706219-001
 Matrix:
 SOIL
 Received Date: 6/6/2017 7:15:00 AM

Analyses	Result	PQL (	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst	MRA
Chloride	510	30		mg/Kg	20	6/6/2017 12:01:16 PM	32133
EPA METHOD 8015M/D: DIESEL RANG	E ORGANICS	3				Analyst	TOM
Diesel Range Organics (DRO)	210	9.6		mg/Kg	1	6/6/2017 9:10:01 AM	32126
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	6/6/2017 9:10:01 AM	32126
Surr: DNOP	90.9	70-130		%Rec	1	6/6/2017 9:10:01 AM	32126
EPA METHOD 8015D: GASOLINE RANG	GE					Analyst	NSB
Gasoline Range Organics (GRO)	4100	190		mg/Kg	50	6/6/2017 11:27:39 AM	32111
Surr: BFB	345	54-150	S	%Rec	50	6/6/2017 11:27:39 AM	32111
EPA METHOD 8021B: VOLATILES						Analyst	NSB
Benzene	11	0.95		mg/Kg	50	6/6/2017 11:27:39 AM	32111
Toluene	100	1.9		mg/Kg	50	6/6/2017 11:27:39 AM	32111
Ethylbenzene	27	1.9		mg/Kg	50	6/6/2017 11:27:39 AM	32111
Xylenes, Total	330	3.8		mg/Kg	50	6/6/2017 11:27:39 AM	32111
Surr: 4-Bromofluorobenzene	140	66.6-132	S	%Rec	50	6/6/2017 11:27:39 AM	32111

# ID as #8 on Figures and Tables

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits Page 1 of 5
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

### Hall Environmental Analysis Laboratory, Inc.

WO#: 1706219

07-Jun-17

Client:

Blagg Engineering

Project:

MUDGE A 2

Sample ID MB-32133

SampType: mblk

TestCode: EPA Method 300.0: Anions

LowLimit

Client ID:

**PBS** 

Batch ID: 32133

RunNo: 43284

Analysis Date: 6/6/2017

HighLimit

6/6/2017 Analyte Result

PQL

SeqNo: 1363498 %REC

Units: mg/Kg

%RPD **RPDLimit**  Qual

Chloride

Prep Date:

ND 1.5

SampType: Ics

RunNo: 43284

TestCode: EPA Method 300.0: Anions

Client ID:

Sample ID LCS-32133

LCSS

Batch ID: 32133

SeqNo: 1363499

Units: mg/Kg

%RPD

6/6/2017

Analysis Date: 6/6/2017

SPK value SPK Ref Val

%REC

Page 2 of 5

Qual

1.5

0

110

Chloride

Analyte

Prep Date:

14

SPK value SPK Ref Val

96.4

**RPDLimit** 

15.00

90

HighLimit

Qualifiers:

S

Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

% Recovery outside of range due to dilution or matrix

ND Not Detected at the Reporting Limit R RPD outside accepted recovery limits В Analyte detected in the associated Method Blank

E

J Analyte detected below quantitation limits P Sample pH Not In Range

RL Reporting Detection Limit Sample container temperature is out of limit as specified

Value above quantitation range

### Hall Environmental Analysis Laboratory, Inc.

WO#:

1706219

07-Jun-17

Client:

Blagg Engineering

Project:

MUDGE A 2

Sample ID	LCS-32126
Client ID:	1000

SampType: LCS

TestCode: EPA Method 8015M/D: Diesel Range Organics

73.2

Client ID:

Batch ID: 32126

RunNo: 43268

0

%RPD

%RPD

Prep Date: 6/6/2017

Analysis Date: 6/6/2017

SeqNo: 1362102

Units: mg/Kg

Analyte

Result PQL

Diesel Range Organics (DRO)

43 10 3.6

SPK value SPK Ref Val %REC LowLimit

HighLimit

**RPDLimit** Qual

Surr: DNOP

5.000

SPK value SPK Ref Val

50.00

72.9

85.6

114 70 130

Sample ID MB-32126 Client ID: PBS

SampType: MBLK Batch ID: 32126 TestCode: EPA Method 8015M/D: Diesel Range Organics RunNo: 43268

%REC

Prep Date: 6/6/2017 Analysis Date: 6/6/2017

SeqNo: 1362103

Units: mg/Kg

HighLimit

**RPDLimit** Qual

Analyte Diesel Range Organics (DRO) Motor Oil Range Organics (MRO)

Surr: DNOP

Result PQL ND 10 ND 50 9.6

10.00

96.4

70

LowLimit

130

#### Qualifiers:

Value exceeds Maximum Contaminant Level.

Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

Not Detected at the Reporting Limit ND

RPD outside accepted recovery limits

S % Recovery outside of range due to dilution or matrix В Analyte detected in the associated Method Blank

E Value above quantitation range

J Analyte detected below quantitation limits

P Sample pH Not In Range

Reporting Detection Limit

Sample container temperature is out of limit as specified

Page 3 of 5

### Hall Environmental Analysis Laboratory, Inc.

WO#:

1706219

07-Jun-17

Client:

Blagg Engineering

Project:

MUDGE A 2

Sample ID MB-32111	SampT	ype: ME	BLK	TestCode: EPA Method 8015D: Gasoline Range							
Client ID: PBS	Batch	n ID: 32	111	R	RunNo: 4	3287					
Prep Date: 6/5/2017	Analysis D	ate: 6/	6/2017	7 SeqNo: <b>1363134</b> Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Gasoline Range Organics (GRO)	ND	5.0									
Surr: BFB	990		1000		99.2	54	150				

Sample ID LCS-32111	SampT	ype: LC	S	TestCode: EPA Method 8015D: Gasoline Range							
Client ID: LCSS	Batch	Batch ID: 32111 RunNo: 43287									
Prep Date: 6/5/2017	Analysis D	ate: 6/	6/2017	S	eqNo: 1	363135	Units: mg/K	g			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Gasoline Range Organics (GRO)	26	5.0	25.00	0	105	76.4	125				
Surr: BFB	1100		1000		111	54	150				

#### Qualifiers:

\* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

R RPD outside accepted recovery limits

S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank

E Value above quantitation range

J Analyte detected below quantitation limits

P Sample pH Not In Range

RL Reporting Detection Limit

W Sample container temperature is out of limit as specified

Page 4 of 5

### Hall Environmental Analysis Laboratory, Inc.

WO#:

1706219

07-Jun-17

Client: Project:

Blagg Engineering MUDGE A 2

Sample ID MB-32111	SampT	ype: ME	BLK	TestCode: EPA Method 8021B: Volatiles						
Client ID: PBS	Batch	n ID: 32	111	R	RunNo: 4	3287				
Prep Date: 6/5/2017	Analysis D	ate: 6/	6/2017	S	SeqNo: 1	363144	Units: mg/K	g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	1.2		1.000		124	66.6	132			

Sample ID LCS-32111	SampT	ype: LC	s	Tes	8021B: Volat	tiles						
Client ID: LCSS	Batch	n ID: 32	111	R								
Prep Date: 6/5/2017	Analysis D	ate: 6/	6/2017	S	SeqNo: 1	363145	Units: mg/Kg					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual		
Benzene	1.0	0.025	1.000	0	102	80	120					
Toluene	1.0	0.050	1.000	0	104	80	120					
Ethylbenzene	1.1	0.050	1.000	0	105	80	120					
Xylenes, Total	3.2	0.10	3.000	0	108	80	120					
Surr: 4-Bromofluorobenzene	1.3		1.000		128	66.6	132					

#### Qualifiers:

\* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

R RPD outside accepted recovery limits

S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank

E Value above quantitation range

J Analyte detected below quantitation limits

P Sample pH Not In Range

RL Reporting Detection Limit

W Sample container temperature is out of limit as specified

Page 5 of 5



#### Hall Environmental Analysis Laboratory 4901 Hawkins NE Albuquerque, NM 87109 TEL: 505-345-3975 FAX: 505-345-4107

We b site: www.hallenvironmental.com

### Sample Log-In Check List

						Name of the last o
Client Name:	BLAGG	Work Order Number	: 1706219		RcptNo:	1
Received By:	Anne Thorne	6/6/2017 7:15:00 AM		aone Am	_	
Completed By:	Anne Thorne	6/6/2017 7:31:30 AM		Aone Sham	_	
Reviewed By:	Re	6/6/17		and from		
Chain of Custo	ody					
1. Custody seals	intact on sample bottles?		Yes	No 🗌	Not Present	
2. Is Chain of Cu	stody complete?		Yes 🗹	No 🗌	Not Present	
3. How was the s	sample delivered?		Courier			
Log In						
4. Was an attern	pt made to cool the sample	es?	Yes 🗹	No 🗆	NA 🗆	
5. Were all samp	oles received at a temperat	ure of >0° C to 6.0°C	Yes 🗹	No 🗆	NA 🗆	
6. Sample(s) in p	proper container(s)?		Yes 🗹	No 🗆		
7. Sufficient sam	ple volume for indicated te	st(s)?	Yes 🗹	No 🗆		
8. Are samples (	except VOA and ONG) pro	perly preserved?	Yes 🗸	No 🗌		
9. Was preserval	tive added to bottles?		Yes	No 🗹	NA 🗆	
10.VOA vials have	e zero headspace?		Yes	No 🗆	No VOA Vials	
11. Were any sam	nple containers received br	oken?	Yes	No 🗹	# of preserved	
40				🗖	bottles checked	
	rk match bottle labels? Incles on chain of custody)		Yes 🗸	No 🗀	for pH: (<2 o	r >12 unless noted)
	correctly identified on Chair	of Custody?	Yes 🗸	No 🗆	Adjusted?	
	analyses were requested?	-	Yes 🗹	No 🗆		
	ng times able to be met?		Yes 🗸	No 🗌	Checked by:	
(If no, notify cu	ustomer for authorization.)					
Special Handli	ng (if applicable)					
	ified of all discrepancies w	th this order?	Yes	No 🗌	NA 🗹	
Person N	Notified:	Date		Percental de de la constante de		
By Whor	n: [	Via:	eMail F	Phone  Fax	☐ In Person	í
Regardin	When it is in the second second	\$100 and \$100 at \$100	USCANO MARCOLLEGICA COMPANIONAL CONTRACTOR C	MATERIAL AND	CALCULATION AND THE STATE OF TH	v v
Client Ins	structions:					-
17. Additional rem	narks:					
18. Cooler Inform	1 1			ű.		
Cooler No	Temp °C Condition		Seal Date	Signed By		
1	1.0 Good	Yes		I		

Client:	BP A	menico	stody Record	Turn-Around Time: SAME DAY  Standard Krush Project Name:															NT		
Mailing	Address	, Eng,	incering		16E A	2	"			1	www	ı.hal	lenv	iron	nent	al.co	m				
				Project #:			-			awki 5-34					100	e, N 345					
Phone #	#: (So	5) 3	20-1183						1, 50	10-04	0-38			-		uest					
email or	Fax#:	•		Project Mana	iger:			nly)	30)				E .	(%)	11 11 11						
QA/QC F	Package: dard		☐ Level 4 (Full Validation)		VE MOSK		-HMB's (8021)	TPH (Gas only)	DRO / MRO			SIMS)		PO4,S	PCB's						
Accredit	100	□ Othe	r	Sampler: 7	- BLA61	<b>-</b>	HMB	TPH	-	3.1)	£.	270 8		NO2	8082						Î
□ EDD	4.00	u one		On ice: Sample Tem	Yes perature: /	No.	14	+ 1	GRC	1418	1 50	or 8	als	NO3	les /		VOA	DE			Yor
Date	Time	Matrix	Sample Request ID	Moulum	Preservative Type		BTEX CANTBE	BTEX + MTBE	TPH 8015B (GRO	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F,CI,NO3,NO2,PO4,SO4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	CHURAD			Air Bubbles (Y or N)
15/17	1631	Soil	GRAB & 42'	40221	COUL	201	X	_	×						~		-	X			
														6							
	-						+												-	+	+
Date: 05/17	Time: 1744 Time: 1830	Relinquishe Relinquishe	1 6 legg	Received by:	1-6	Date Time  Left 1744  Date Time  Local 7  Unit 5	-	WB	ا : کځ	SID L	-1	V - C	11x	181	EVA M.	E	: 2	214			ta (



Hall Environmental Analysis Laboratory 4901 Hawkins NE Albuquerque, NM 87109 TEL: 505-345-3975 FAX: 505-345-4107

Website: www.hallenvironmental.com

June 19, 2017

Steven Moskal Blagg Engineering P. O. Box 87 Bloomfield, NM 87413

TEL: (505) 632-1199 FAX (505) 632-3903

RE: Mudge A 2

OrderNo.: 1706575

Dear Steven Moskal:

Hall Environmental Analysis Laboratory received 3 sample(s) on 6/10/2017 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to <a href="www.hallenvironmental.com">www.hallenvironmental.com</a> or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman

Laboratory Manager

andyl

4901 Hawkins NE

Albuquerque, NM 87109

Lab Order 1706575

Date Reported: 6/19/2017

### Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: West Wall (26'-36') 5-pt

Project: Mudge A 2

Collection Date: 6/9/2017 3:54:00 PM

Lab ID: 1706575-001 Matrix: SOIL Received Date: 6/10/2017 11:15:00 AM

Analyses	Result	PQL Qu	al Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS					Analyst	MRA
Chloride	45	30	mg/Kg	20	6/17/2017 8:56:00 PM	32341
EPA METHOD 8015M/D: DIESEL RANG	SE ORGANICS	S			Analyst	TOM
Diesel Range Organics (DRO)	32	9.3	mg/Kg	1	6/14/2017 9:36:20 PM	32258
Motor Oil Range Organics (MRO)	ND	46	mg/Kg	1	6/14/2017 9:36:20 PM	32258
Surr: DNOP	100	70-130	%Rec	1	6/14/2017 9:36:20 PM	32258
EPA METHOD 8015D: GASOLINE RAN	GE				Analyst	NSB
Gasoline Range Organics (GRO)	ND	4.7	mg/Kg	1	6/14/2017 8:57:29 PM	32244
Surr: BFB	134	54-150	%Rec	1	6/14/2017 8:57:29 PM	32244
EPA METHOD 8021B: VOLATILES					Analyst	NSB
Benzene	0.043	0.023	mg/Kg	1	6/14/2017 8:57:29 PM	32244
Toluene	ND	0.047	mg/Kg	1	6/14/2017 8:57:29 PM	32244
Ethylbenzene	0.050	0.047	mg/Kg	1	6/14/2017 8:57:29 PM	32244
Xylenes, Total	0.17	0.094	mg/Kg	1	6/14/2017 8:57:29 PM	32244
Surr: 4-Bromofluorobenzene	110	66.6-132	%Rec	1	6/14/2017 8:57:29 PM	32244

# ID as #9 on Figures and Tables

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

- Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- RL Reporting Detection Limit

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits Page 1 of 7
- P Sample pH Not In Range
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix

Lab Order 1706575

Date Reported: 6/19/2017

### Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Project: Mudge A 2

Lab ID: 1706575-002

Client Sample ID: West Base (38') 5-pt

Collection Date: 6/9/2017 3:47:00 PM

Received Date: 6/10/2017 11:15:00 AM

Analyses	Result	PQL Qu	al Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS					Analyst	MRA
Chloride	44	30	mg/Kg	20	6/17/2017 9:08:24 PM	32341
EPA METHOD 8015M/D: DIESEL RANG	E ORGANICS	3			Analyst	TOM
Diesel Range Organics (DRO)	24	9.8	mg/Kg	1	6/14/2017 10:04:56 PM	32258
Motor Oil Range Organics (MRO)	ND	49	mg/Kg	1	6/14/2017 10:04:56 PM	32258
Surr: DNOP	97.3	70-130	%Rec	1	6/14/2017 10:04:56 PM	32258
EPA METHOD 8015D: GASOLINE RAN	GE				Analyst	NSB
Gasoline Range Organics (GRO)	5.0	4.9	mg/Kg	1	6/14/2017 9:21:16 PM	32244
Surr: BFB	146	54-150	%Rec	1	6/14/2017 9:21:16 PM	32244
EPA METHOD 8021B: VOLATILES					Analyst	NSB
Benzene	0.041	0.024	mg/Kg	1	6/14/2017 9:21:16 PM	32244
Toluene	ND	0.049	mg/Kg	1	6/14/2017 9:21:16 PM	32244
Ethylbenzene	0.091	0.049	mg/Kg	1	6/14/2017 9:21:16 PM	32244
Xylenes, Total	0.40	0.098	mg/Kg	1	6/14/2017 9:21:16 PM	32244
Surr: 4-Bromofluorobenzene	112	66.6-132	%Rec	1	6/14/2017 9:21:16 PM	32244

Matrix: SOIL

# ID as #10 on Figures and Tables

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

- Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- RL Reporting Detection Limit

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits Page 2 of 7
- P Sample pH Not In Range
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix

#### Lab Order 1706575

Date Reported: 6/19/2017

### Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: South Wall (26'-36') 5-pt

Project: Mudge A 2

Collection Date: 6/9/2017 3:33:00 PM

 Project:
 Mudge A 2
 Collection Date: 6/9/2017 3:33:00 PM

 Lab ID:
 1706575-003
 Matrix:
 SOIL
 Received Date: 6/10/2017 11:15:00 AM

Analyses	Result	PQL Qua	al Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS					Analyst	MRA
Chloride	600	30	mg/Kg	20	6/17/2017 9:20:48 PM	32341
EPA METHOD 8015M/D: DIESEL RANGE	ORGANICS	3			Analyst	TOM
Diesel Range Organics (DRO)	18	9.5	mg/Kg	1	6/14/2017 10:33:49 PM	32258
Motor Oil Range Organics (MRO)	ND	48	mg/Kg	1	6/14/2017 10:33:49 PM	32258
Surr: DNOP	95.9	70-130	%Rec	1	6/14/2017 10:33:49 PM	32258
EPA METHOD 8015D: GASOLINE RANG	E				Analyst	: NSB
Gasoline Range Organics (GRO)	ND	4.6	mg/Kg	1	6/14/2017 9:44:50 PM	32244
Surr: BFB	120	54-150	%Rec	1	6/14/2017 9:44:50 PM	32244
EPA METHOD 8021B: VOLATILES					Analyst	NSB
Benzene	ND	0.023	mg/Kg	1	6/14/2017 9:44:50 PM	32244
Toluene	ND	0.046	mg/Kg	1	6/14/2017 9:44:50 PM	32244
Ethylbenzene	ND	0.046	mg/Kg	1	6/14/2017 9:44:50 PM	32244
Xylenes, Total	ND	0.093	mg/Kg	1	6/14/2017 9:44:50 PM	32244
Surr: 4-Bromofluorobenzene	112	66.6-132	%Rec	1	6/14/2017 9:44:50 PM	32244

# ID as #11 on Figures and Tables

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

- Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- RL Reporting Detection Limit

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- Analyte detected below quantitation limits Page 3 of 7
- P Sample pH Not In Range
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix

### Hall Environmental Analysis Laboratory, Inc.

WO#:

1706575

19-Jun-17

Client:

Blagg Engineering

Project:

Mudge A 2

Sample ID MB-32341

SampType: mblk

TestCode: EPA Method 300.0: Anions

Client ID:

PBS

Batch ID: 32341

RunNo: 43585

Prep Date: 6/17/2017

Result

Units: mg/Kg

Analyte

Analysis Date: 6/17/2017

SeqNo: 1372898

HighLimit

**RPDLimit** Qual

Chloride

ND 1.5

Sample ID LCS-32341

SampType: Ics

PQL

PQL

TestCode: EPA Method 300.0: Anions

%RPD

Client ID: LCSS

Batch ID: 32341

RunNo: 43585

Prep Date: 6/17/2017

Analysis Date: 6/17/2017

SeqNo: 1372899

Units: mg/Kg

SPK value SPK Ref Val %REC

HighLimit

Qual

14

0

SPK value SPK Ref Val %REC LowLimit

**RPDLimit** 

Analyte

Result

%RPD

Chloride

15.00

93.5

LowLimit 90

1.5

110

Qualifiers:

D

ND Not Detected at the Reporting Limit

Value exceeds Maximum Contaminant Level.

Sample Diluted Due to Matrix H Holding times for preparation or analysis exceeded

Practical Quanitative Limit **PQL** 

Reporting Detection Limit

Analyte detected in the associated Method Blank B

E Value above quantitation range J Analyte detected below quantitation limits

Sample pH Not In Range

R RPD outside accepted recovery limits

% Recovery outside of range due to dilution or matrix

Page 4 of 7

### Hall Environmental Analysis Laboratory, Inc.

WO#: 1706575

19-Jun-17

Client:

Blagg Engineering

Project: Mudge	A 2		
Sample ID MB-32258	SampType: MBLK	TestCode: EPA Method 8015M/	D: Diesel Range Organics
Client ID: PBS	Batch ID: 32258	RunNo: 43496	
Prep Date: 6/13/2017	Analysis Date: 6/14/2017	SeqNo: <b>1369816</b> Units:	mg/Kg
Analyte	Result PQL SPK value	SPK Ref Val %REC LowLimit HighL	imit %RPD RPDLimit Qual
Diesel Range Organics (DRO)	ND 10		
Motor Oil Range Organics (MRO)	ND 50		
Surr: DNOP	10 10.00	104 70	130
Sample ID LCS-32258	SampType: LCS	TestCode: EPA Method 8015M/	D: Diesel Range Organics
Client ID: LCSS	Batch ID: 32258	RunNo: 43496	
Prep Date: 6/13/2017	Analysis Date: 6/14/2017	SeqNo: <b>1370823</b> Units:	mg/Kg
Analyte	Result PQL SPK value	SPK Ref Val %REC LowLimit HighL	imit %RPD RPDLimit Qual
Diesel Range Organics (DRO)	54 10 50.00	0 109 73.2	114
Surr: DNOP	4.9 5.000	98.7 70	130
Sample ID LCS-32292	SampType: LCS	TestCode: EPA Method 8015M/	D: Diesel Range Organics
Client ID: LCSS	Batch ID: 32292	RunNo: 43528	
Prep Date: 6/14/2017	Analysis Date: 6/15/2017	SeqNo: <b>1372096</b> Units:	%Rec
Analyte	Result PQL SPK value	SPK Ref Val %REC LowLimit HighL	imit %RPD RPDLimit Qual
Surr: DNOP	4.1 5.000	81.4 70	130
Sample ID MB-32292	SampType: MBLK	TestCode: EPA Method 8015M/	D: Diesel Range Organics
Client ID: PBS	Batch ID: 32292	RunNo: 43528	
Prep Date: 6/14/2017	Analysis Date: 6/15/2017	SeqNo: <b>1372097</b> Units:	%Rec
Analyte	Result PQL SPK value	SPK Ref Val %REC LowLimit HighL	imit %RPD RPDLimit Qual
Surr: DNOP	8.7 10.00	87.4 70	130

#### Qualifiers:

- Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- RL Reporting Detection Limit

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix

Page 5 of 7

### Hall Environmental Analysis Laboratory, Inc.

WO#:

1706575

19-Jun-17

Client:

Blagg Engineering

Project:

Mudge A 2

Sample ID MB-32244	SampType: MI	BLK	Test	Code: EF	PA Method	8015D: Gaso	line Rang	е				
Client ID: PBS	Batch ID: 32	244	R	unNo: 43	3491							
Prep Date: 6/13/2017	Analysis Date: 6/	nalysis Date: 6/14/2017 SeqNo: 1370036 Units: mg/Kg										
Analyte	Result PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual			
Gasoline Range Organics (GRO)	ND 5.0											
Surr: BFB	1100	1000		110	54	150						
Sample ID LCS-32244	SampType: LC	SampType: LCS TestCode: EPA Method 8015D: Gasoline Range										
Client ID: LCSS	Batch ID: 32	244	R	unNo: 4:	3491							

Client ID: LCSS	Batch	ID: 322	244	R	RunNo: 4	3491				
Prep Date: 6/13/2017	Analysis Da	ite: 6/	14/2017	S	SeqNo: 1	370037	Units: mg/K	g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	25	5.0	25.00	0	98.8	76.4	125			
Surr: BFB	1200		1000		119	54	150			

#### Qualifiers:

\* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

PQL Practical Quanitative Limit

RL Reporting Detection Limit

B Analyte detected in the associated Method Blank

E Value above quantitation range

J Analyte detected below quantitation limits

P Sample pH Not In Range

R RPD outside accepted recovery limits

S % Recovery outside of range due to dilution or matrix

Page 6 of 7

### Hall Environmental Analysis Laboratory, Inc.

WO#:

1706575

19-Jun-17

Client:

Blagg Engineering

Project:

Mudge A 2

Sample ID MB-32244	SampT	ype: ME	BLK	TestCode: EPA Method 8021B: Volatiles									
Client ID: PBS	Batch	1D: 32	244	R	RunNo: 4	3491							
Prep Date: 6/13/2017	Analysis D	(g											
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual			
Benzene	ND	0.025											
Toluene	ND	0.050											
Ethylbenzene	ND	0.050											
Xylenes, Total	ND	0.10											
Surr: 4-Bromofluorobenzene	1.1		1.000		108	66.6	132						

Sample ID LCS-32244	SampT	ype: LC	S	Tes	tCode: El	tiles				
Client ID: LCSS	Batch	ID: 32	244	F	RunNo: 4	3491				
Prep Date: 6/13/2017	Analysis D	ate: 6/	(g							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.0	0.025	1.000	0	99.6	80	120			
Toluene	1.0	0.050	1.000	0	99.8	80	120			
Ethylbenzene	0.98	0.050	1.000	0	97.8	80	120			
Xylenes, Total	2.9 0.10 3.00			0	97.2	80	120			
Surr: 4-Bromofluorobenzene	1.1		1.000		111	66.6	132			

#### Qualifiers:

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- RL Reporting Detection Limit

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- R RPD outside accepted recovery limits
- S % Recovery outside of range due to dilution or matrix

Page 7 of 7



Hall Environmental Analysis Laboratory 4901 Hawkins NE Albuquerque, NM 87109 TEL: 505-345-3975 FAX: 505-345-4107

Website: www.hallenvironmental.com

### Sample Log-In Check List

Client Name:	BLAGG	Work Order Num	ber: 1706575		RcptNo:	1
Received By:	Andy Freeman	6/10/2017 11:15:00	AM	andyl		
Completed By:	Ashley Gallegos	6/12/2017 11:39:32	AM	A		
Reviewed By:	NL	6112117		V		
Chain of Cus	tody					
1. Custody sea	als intact on sample bottle	5?	Yes	No 🗌	Not Present 🗹	
2. Is Chain of C	Custody complete?		Yes 🗸	No 🗌	Not Present	
3. How was the	e sample delivered?		Courier			
Log In						
4. Was an atte	empt made to cool the sa	mples?	Yes 🗹	No 🗆	NA 🗆	
5. Were all san	nples received at a temper	erature of >0° C to 6.0°C	Yes 🗹	No 🗆	NA 🗆	
6. Sample(s) in	n proper container(s)?		Yes 🗹	No 🗌		
7. Sufficient sa	mple volume for indicate	d test(s)?	Yes 🗹	No 🗆		
8. Are samples	(except VOA and ONG)	properly preserved?	Yes 🗹	No 🗌		
9. Was preserv	vative added to bottles?		Yes	No 🗹	NA 🗆	
10.VOA vials ha	ave zero headspace?		Yes 🗌	No 🗆	No VOA Vials	
11. Were any sa	ample containers receive	d broken?	Yes	No 🗹	# of preserved	
	vork match bottle labels? pancies on chain of custo	dv)	Yes 🗹	No 🗆	for pH:	>12 unless noted)
	correctly identified on Ci		Yes 🗸	No 🗌	Adjusted?	,
	at analyses were reques		Yes 🗹	No 🗆		
	ding times able to be met customer for authorization		Yes 🗹	No 🗆	Checked by:	
Special Hand	lling (if applicable)					
	otified of all discrepancie	s with this order?	Yes 🗌	No 🗆	NA 🗹	
Person	Notified:	Date		CALL AND ACCOUNTS OF THE PARTY		
By Wh	om:	Via:	eMail [	Phone Fax	In Person	
Regard	ding:			THE RESIDENCE OF THE PROPERTY		
Client I	Instructions:		STATE OF THE PARTY	PARKINATIVATA MILITATI ETATA TAKUMINIA A FIFTA A KA		
17. Additional re	emarks:					
18. Cooler Info  Cooler No		Nes   Seal Intact   Seal No	Seal Date	Signed By		

C	hain-	of-Cu	stody Record	Turn-Around	Time:	SAME & 6/12	1	A.					_					-			
Client:	BP AM	ERICA		Standard		SAME of 6/12 DAY Standard TAT		336	H			7				A STATE OF			NT		
P	AN F	N. 1551	RNG INC	Project Name			1					v.hal						-		-	-
Mailing	Address	:	300	Muse	EA 2			40	04 11								M 87	7100			
-				Project #:										وفاأن زر	our sites						
Phone i	+ 1500	5) 320	- 1193				1	10	el. 50	3-34	10-3					ues	-410 t			E F	136
email or		) 500	1100	Project Mana	ger:			2	0												
Same and the	Package:		,	1	7		021)	s on	MR					SO.	B's						
XStan			☐ Level 4 (Full Validation)	STEVE	e Moskal		s (8)	(Gas	0			SIMS)		PO,	PC						
Accredi				Sampler: JE	FF BLAGE		B	H	/ DF	F	1	70 S		₹0°2,	3082						=
□ NEL		□ Othe	er	On Ice:	A CONTRACTOR OF THE PARTY OF TH	□ No	F	+	RO	118	504	r 82	w	03	8/8		(A)				0
□ EDD	(Type)_			Sample Tem	perature: 2-8		쌢	TBE	3 (G	po	po	00	etal	Z	cide	8	)-i	M			2
Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.	BTEX + MIBE = IME's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270	RCRA 8 Metals	Anions (F,CI,NO3,NO2,PO4,SO4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	CHLORIDE			Air Bubbles (Y or N)
6/9/2017	1554	SOIL	west wall (26-36) 50	402 x1	COOL	-001	X		X									X			
1	1547	1	WEST BOSE (38') 5-PT	1	1	-002	1		1									1			
	1533		South Well (26 -36") 50			-003												1			
											,								+	_	_
																			_	1	_
																			$\perp$	$\pm$	
																	,		+	+	+
																-			1	1	
Date: Date: Date:	Time: 1730 Time:	Relinquish HH Relinquish	Blogg	Received by:	4	Date Time				100:	V	HUX			1			5784	eve i	Mosk	AL



Hall Environmental Analysis Laboratory 4901 Hawkins NE Albuquerque, NM 87109 TEL: 505-345-3975 FAX: 505-345-4107

Website: www.hallenvironmental.com

OrderNo.: 1706650

June 21, 2017

Steven Moskal Blagg Engineering P. O. Box 87

Bloomfield, NM 87413 TEL: (505) 632-1199 FAX (505) 632-3903

RE: Mudge A 2

Dear Steven Moskal:

Hall Environmental Analysis Laboratory received 2 sample(s) on 6/13/2017 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to <a href="www.hallenvironmental.com">www.hallenvironmental.com</a> or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman

Laboratory Manager

andyl

4901 Hawkins NE

Albuquerque, NM 87109

#### Lab Order 1706650

Date Reported: 6/21/2017

### Hall Environmental Analysis Laboratory, Inc.

Client Sample ID: NE BASE 5-pt @ 37' **CLIENT:** Blagg Engineering

Collection Date: 6/12/2017 10:16:00 AM Mudge A 2 Project: 1706650-001 Matrix: SOIL Received Date: 6/13/2017 7:55:00 AM Lab ID:

Result PQL Qual Units **DF** Date Analyzed Batch Analyses **EPA METHOD 300.0: ANIONS** Analyst: MRA 6/20/2017 3:51:18 PM Chloride 74 30 mg/Kg **EPA METHOD 8015M/D: DIESEL RANGE ORGANICS** Analyst: TOM 6/14/2017 11:59:55 PM 32258 Diesel Range Organics (DRO) 9.9 mg/Kg 6/14/2017 11:59:55 PM 32258 Motor Oil Range Organics (MRO) 65 50 mg/Kg 1 Surr: DNOP %Rec 6/14/2017 11:59:55 PM 32258 97.1 70-130 **EPA METHOD 8015D: GASOLINE RANGE** Analyst: NSB Gasoline Range Organics (GRO) 6/15/2017 11:18:36 PM 32257 200 24 mg/Kg 5 Surr: BFB 296 54-150 S %Rec 6/15/2017 11:18:36 PM 32257 **EPA METHOD 8021B: VOLATILES** Analyst: NSB 6/14/2017 5:47:27 PM Benzene 0 19 0.12 32257 mg/Kg Toluene 0.56 0.24 mg/Kg 5 6/14/2017 5:47:27 PM 32257 Ethylbenzene 1.2 0.24 mg/Kg 5 6/14/2017 5:47:27 PM 0.48 Xylenes, Total 18 mg/Kg 6/15/2017 11:18:36 PM 32257 Surr: 4-Bromofluorobenzene 132 66.6-132 %Rec 6/14/2017 5:47:27 PM 32257

# ID as #12 on Figures and Tables

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

- Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- % Recovery outside of range due to dilution or matrix
- Analyte detected in the associated Method Blank
- E Value above quantitation range
- Analyte detected below quantitation limits Page 1 of 6 T
- P Sample pH Not In Range
- Reporting Detection Limit RL
- Sample container temperature is out of limit as specified

#### Lab Order 1706650

Date Reported: 6/21/2017

### Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Blagg Engineering

Client Sample ID: N. Wall 5-pt (26'-36')

Project: Mudge A 2

Collection Date: 6/12/2017 10:24:00 AM

Lab ID: 1706650-002

Matrix: SOIL

Received Date: 6/13/2017 7:55:00 AM

Analyses	Result	PQL Qu	al Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS					Analyst:	MRA
Chloride	410	30	mg/Kg	20	6/20/2017 4:03:43 PM	32385
EPA METHOD 8015M/D: DIESEL RANG	SE ORGANICS	3			Analyst:	TOM
Diesel Range Organics (DRO)	20	10	mg/Kg	1	6/15/2017 12:28:15 AM	32258
Motor Oil Range Organics (MRO)	ND	50	mg/Kg	1	6/15/2017 12:28:15 AM	32258
Surr: DNOP	94.3	70-130	%Rec	1	6/15/2017 12:28:15 AM	32258
EPA METHOD 8015D: GASOLINE RAN	GE				Analyst:	NSB
Gasoline Range Organics (GRO)	ND	4.7	mg/Kg	1	6/16/2017 12:06:20 AM	32257
Surr: BFB	116	54-150	%Rec	1	6/16/2017 12:06:20 AM	32257
EPA METHOD 8021B: VOLATILES					Analyst:	NSB
Benzene	ND	0.024	mg/Kg	1	6/14/2017 6:35:26 PM	32257
Toluene	ND	0.047	mg/Kg	1	6/14/2017 6:35:26 PM	32257
Ethylbenzene	ND	0.047	mg/Kg	1	6/14/2017 6:35:26 PM	32257
Xylenes, Total	ND	0.095	mg/Kg	1	6/14/2017 6:35:26 PM	32257
Surr: 4-Bromofluorobenzene	118	66.6-132	%Rec	1	6/14/2017 6:35:26 PM	32257

# ID as #13 on Figures and Tables

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

- Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits Page 2 of 6
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

### Hall Environmental Analysis Laboratory, Inc.

WO#:

1706650 21-Jun-17

Client:

Blagg Engineering

Project:

Mudge A 2

Sample ID MB-32385

SampType: mblk

TestCode: EPA Method 300.0: Anions

LowLimit

Client ID:

PBS

Batch ID: 32385

RunNo: 43638

SPK value SPK Ref Val %REC

Prep Date: 6/20/2017

Analysis Date: 6/20/2017

SeqNo: 1375850

Units: mg/Kg

Analyte

Client ID:

HighLimit

**RPDLimit** 

Qual

Chloride

Result PQL ND

Sample ID LCS-32385

LCSS

SampType: Ics Batch ID: 32385 TestCode: EPA Method 300.0: Anions

RunNo: 43638

Prep Date: 6/20/2017

Analysis Date: 6/20/2017

SeqNo: 1375851

Units: mg/Kg

HighLimit %RPD

%RPD

**RPDLimit** Qual

PQL

15.00

SPK value SPK Ref Val %REC

Chloride

0

94.4

Analyte

14

1.5

90

110

#### Qualifiers:

- Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- Not Detected at the Reporting Limit ND
- Practical Quanitative Limit
- % Recovery outside of range due to dilution or matrix
- В Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- Reporting Detection Limit
- Sample container temperature is out of limit as specified

Page 3 of 6

### Hall Environmental Analysis Laboratory, Inc.

54

4.9

10

50.00

5.000

WO#:

1706650

21-Jun-17

Client:

Blagg Engineering

**Project:** 

Diesel Range Organics (DRO)

Surr: DNOP

Mudge A 2

Troject. Widage								
Sample ID MB-32258	SampTyp	e: MBLK	Test	tCode: EPA Metho	d 8015M/D: Die	sel Rang	e Organics	
Client ID: PBS	Batch II	D: <b>32258</b>	R	RunNo: <b>43496</b>				
Prep Date: 6/13/2017	Analysis Date	e: <b>6/14/2017</b>	S	SeqNo: <b>1369816</b>	Units: mg/K	g		
Analyte	Result	PQL SPK value	SPK Ref Val	%REC LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10						
Motor Oil Range Organics (MRO)	ND	50						
Surr: DNOP	10	10.00		104 70	130			
Sample ID LCS-32258	SampTyp	e: LCS	Test	tCode: EPA Metho	d 8015M/D: Die	sel Rang	e Organics	
Client ID: LCSS	Batch II	D: <b>32258</b>	R	RunNo: <b>43496</b>				
Prep Date: 6/13/2017	Analysis Date	e: <b>6/14/2017</b>	S	SeqNo: 1370823	Units: mg/K	g		
Analyte	Result	PQL SPK value	SPK Ref Val	%REC LowLimit	HighLimit	%RPD	<b>RPDLimit</b>	Qual

0

109

98.7

73.2

70

114

130

#### Qualifiers:

Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

PQL Practical Quanitative Limit

S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank

E Value above quantitation range

J Analyte detected below quantitation limits

Page 4 of 6

P Sample pH Not In Range

RL Reporting Detection Limit

W Sample container temperature is out of limit as specified

### Hall Environmental Analysis Laboratory, Inc.

WO#:

1706650

21-Jun-17

Client:

Blagg Engineering

Project:

Mudge A 2

Sample ID MB-32257	SampT	SampType: MBLK			TestCode: EPA Method 8015D: Gasoline Range						
Client ID: PBS	Batch	ID: 32	257	R	tunNo: 4	3490					
Prep Date: 6/13/2017	Analysis D	ate: 6/	14/2017	S	eqNo: 1	370009	Units: mg/k	(g			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Gasoline Range Organics (GRO)	ND	5.0									
Surr: BFB	960		1000		95.9	54	150				

Sample ID LCS-32257	SampType: LCS			TestCode: EPA Method 8015D: Gasoline Range						
Client ID: LCSS	Batch	ID: 32	257	R	unNo: 4	3490				
Prep Date: 6/13/2017	Analysis D	ate: 6/	14/2017	S	eqNo: 1	370010	Units: mg/F	ζg		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	25	5.0	25.00	0	100	76.4	125			
Surr: BFB	1000		1000		103	54	150			

### Qualifiers:

\* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

PQL Practical Quanitative Limit

S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank

E Value above quantitation range

J Analyte detected below quantitation limits

P Sample pH Not In Range

RL Reporting Detection Limit

W Sample container temperature is out of limit as specified

Page 5 of 6

### Hall Environmental Analysis Laboratory, Inc.

WO#:

1706650

21-Jun-17

Client:

Blagg Engineering

Project:

Mudge A 2

Sample ID MB-32257	SampT	уре: МЕ	BLK	Tes	TestCode: EPA Method 8021B: Volatiles						
Client ID: PBS	Batch	n ID: 32	257	F	RunNo: 4	3490					
Prep Date: 6/13/2017	Analysis D	Date: 6/	14/2017	S	SeqNo: 1	370018	Units: mg/K	g			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Benzene	ND	0.025									
Toluene	ND	0.050									
Ethylbenzene	ND	0.050									
Xylenes, Total	ND	0.10									
Surr: 4-Bromofluorobenzene	1.2		1.000		123	66.6	132				

Sample ID LCS-32257	SampType: LCS TestCode: EPA Method 8021B: Volatiles									
Client ID: LCSS	Batch	ID: 32	257	RunNo: 43490						
Prep Date: 6/13/2017	Pate: 6/13/2017 Analysis Date: 6/14/2017 SeqNo: 1370019 Units: mg/Kg									
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.0	0.025	1.000	0	105	80	120			
Toluene	1.1	0.050	1.000	0	106	80	120			
Ethylbenzene	1.1	0.050	1.000	0	106	80	120			
Xylenes, Total	3.2	0.10	3.000	0	108	80	120			
Surr: 4-Bromofluorobenzene	1.2		1.000		125	66.6	132			

#### Qualifiers:

Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

PQL Practical Quanitative Limit

S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank

E Value above quantitation range

J Analyte detected below quantitation limits

P Sample pH Not In Range

RL Reporting Detection Limit

W Sample container temperature is out of limit as specified

Page 6 of 6



#### Hall Environmental Analysis Laboratory 4901 Hawkins NE Albuquerque, NM 87109 TEL: 505-345-3975 FAX: 505-345-4107

Website: www.hallenvironmental.com

### Sample Log-In Check List

Client Name:	BLAGG	Work Order N	umber: 1706650		RcptNo:	1
Olicit Name.	DEAGG	WORK Order N	umber. 1700090		Acpuvo.	
Received By:	Anne Thorne	6/13/2017 7:55:	00 AM	ann Ilm		
Completed By:	Sophia Campuza			inghii jayar -		
	ENM	- 1		Colore John -		
Reviewed By:	Cisisi	06/13/17				
Chain of Cus	tody					
	als intact on sample t	pottles?	Yes	No 🗌	Not Present	
	Custody complete?		Yes 🗹	No 🗆	Not Present	
	e sample delivered?		Courier			
Log In						
	empt made to cool th	e samoles?	Yes 🗸	No 🗌	NA 🗆	
5. Were all san	mples received at a to	emperature of >0° C to 6.0°	C Yes ✓	No 🗌	NA 🗆	
6. Sample(s) in	n proper container(s)	?	Yes 🗹	No 🗌		
7. Sufficient sa	mple volume for indi	cated test(s)?	Yes 🗸	No 🗌		
		NG) properly preserved?	Yes 🗸	No 🗆		
9. Was preserv	vative added to bottle	s?	Yes	No 🗸	NA 🗆	
10 VOA vials ha	ave zero headspace?	,	Yes 🗌	No 🗆	No VOA Vials ✓	
	ample containers rec		Yes 🗆	No 🗸		
, , , , ,	•				# of preserved bottles checked	
12. Does paperv	work match bottle lab	els?	Yes 🗹	No 🗌	for pH:	
	pancies on chain of o				(<2 or Adjusted?	>12 unless noted)
		on Chain of Custody?	Yes 🗹	No 🗆	Adjusted F	
	at analyses were rec		Yes ✓ Yes ✓	No 🗌	Checked by:	
	ding times able to be customer for authoria		Yes 💌	NO L	Official by.	
Special Hand	lling (if applicab	le)				
16. Was client n	otified of all discrepa	ncies with this order?	Yes	No 🗆	NA 🗹	
Persor	Notified:		Date	CAR THE STATE OF T		
By Wh	iom:	\	/ia: BeMail Ph	one Fax	☐ In Person	
Regard	ding:	MANDONALIS INCOMENDARIS CALLES TO THE CONTRACT OF THE CONTRACT	The state of the s			
Client	Instructions:	MATACONERIO DE MANTE A MATERIA PROPERTO PER OPERANDA MATERIA POR CONTRACTOR DE LA CONTRACTO	N. M. M. M. A. A. A. M. M. A. M. A. M.		MANAGAM MANAGAM ANA ANA ANA ANA ANA ANA ANA ANA ANA A	
17. Additional re	emarks:					
18. Cooler Info	rmation					
Cooler No		dition   Seal Intact   Seal N	lo Seal Date S	Signed By		
l <sup>1</sup>	1.0 Good	Yes				
Page 1 of	f1	· ·				<u></u>

C	hain	-of-Cu	stody Record	Turn-Around	Time:			HALL ENVIRONMENTA														
Client:	BP AV	MERICA		X Standard	☐ Rush	ì				H			100	THE DESIGNATION OF THE PERSON				Carlo and Carlo	NE RA			
			ERNE INC.	Project Name	):					4			v.hal	167.79	19,000							
Mailing	Address	LAGINE	SHING INC.	MUDG	E A 2	,			40	01 H			V.Hall						100			
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Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEALN		BTEX + TATBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270	RCRA 8 Metals	Anions (F,CI,NO <sub>3</sub> ,NO <sub>2</sub> ,PO <sub>4</sub> ,SO <sub>4</sub> )	8081 Pesticides / 8082 PCB's	8250B (VOA)	8270 (Semi-VOA)	CHUKIDE			Air Bubbles (Y or N)
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-		samples sub	emitted to Hall Environmental may be sub	contracted to other a	coredited laboratori	es. This serves as r	atice of the	s possi	bilty.	Any s	ıb-con	tracte	d data	wil be	clear	ly note	ated or	n the a	nalytica	sl repor	rt.	

# Appendix D

# Drill Boring Laboratory Analytical Data Reports



Hall Environmental Analysis Laboratory 4901 Hawkins NE

Albuquerque, NM 87109

TEL: 505-345-3975 FAX: 505-345-4107 Website: www.hallenvironmental.com

August 27, 2017

Steve Moskal

Blagg Engineering

P. O. Box 87

Bloomfield, NM 87413

TEL: (505) 632-1199

FAX (505) 632-3903

RE: Mudge A 2

OrderNo.: 1708A09

Dear Steve Moskal:

Hall Environmental Analysis Laboratory received 9 sample(s) on 8/16/2017 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to <a href="www.hallenvironmental.com">www.hallenvironmental.com</a> or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman

Laboratory Manager

andyl

4901 Hawkins NE

Albuquerque, NM 87109

#### Lab Order 1708A09

Date Reported: 8/27/2017

### Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering Client Sample ID: BH-1 (25'-26')

Project: Mudge A 2 Collection Date: 8/14/2017 12:03:00 PM Lab ID: 1708A09-001 Matrix: SOIL Received Date: 8/16/2017 7:15:00 AM

Analyses	Result	PQL (	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS						Analyst	MRA
Chloride	330	30		mg/Kg	20	8/24/2017 1:14:23 PM	33539
EPA METHOD 8015M/D: DIESEL RAN	GE ORGANIC	s				Analyst	TOM
Diesel Range Organics (DRO)	120	9.8		mg/Kg	1	8/21/2017 10:59:53 PM	33448
Motor Oil Range Organics (MRO)	110	49		mg/Kg	1	8/21/2017 10:59:53 PM	33448
Surr: DNOP	97.6	70-130		%Rec	1	8/21/2017 10:59:53 PM	33448
<b>EPA METHOD 8015D: GASOLINE RAI</b>	NGE					Analyst	NSB
Gasoline Range Organics (GRO)	79	24		mg/Kg	5	8/18/2017 11:53:49 PM	33432
Surr: BFB	167	54-150	S	%Rec	5	8/18/2017 11:53:49 PM	33432
EPA METHOD 8021B: VOLATILES						Analyst	NSB
Benzene	ND	0.12		mg/Kg	5	8/18/2017 11:53:49 PM	33432
Toluene	ND	0.24		mg/Kg	5	8/18/2017 11:53:49 PM	33432
Ethylbenzene	ND	0.24		mg/Kg	5	8/18/2017 11:53:49 PM	33432
Xylenes, Total	1.1	0.49		mg/Kg	5	8/18/2017 11:53:49 PM	33432
Surr: 4-Bromofluorobenzene	111	66.6-132		%Rec	5	8/18/2017 11:53:49 PM	33432

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

- Value exceeds Maximum Contaminant Level.
- Sample Diluted Due to Matrix
- Н Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- % Recovery outside of range due to dilution or matrix
- В Analyte detected in the associated Method Blank
- Ε Value above quantitation range
- Analyte detected below quantitation limits Page 1 of 13 J
- P Sample pH Not In Range
- Reporting Detection Limit RL
- Sample container temperature is out of limit as specified

Lab Order 1708A09

Date Reported: 8/27/2017

### Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Blagg Engineering

Client Sample ID: BH-1 (35'-36')

Project: Mudge A 2

Collection Date: 8/14/2017 12:28:00 PM

Lab ID: 1708A09-002

Matrix: SOIL

Received Date: 8/16/2017 7:15:00 AM

Analyses	Result	PQL Qu	al Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS					Analyst	MRA
Chloride	50	30	mg/Kg	20	8/24/2017 1:26:47 PM	33539
EPA METHOD 8015M/D: DIESEL RANG	E ORGANIC	S			Analyst	TOM
Diesel Range Organics (DRO)	ND	9.4	mg/Kg	1	8/21/2017 11:22:17 PM	33448
Motor Oil Range Organics (MRO)	ND	47	mg/Kg	1	8/21/2017 11:22:17 PM	33448
Surr: DNOP	88.8	70-130	%Rec	1	8/21/2017 11:22:17 PM	33448
EPA METHOD 8015D: GASOLINE RAN	GE				Analyst	NSB
Gasoline Range Organics (GRO)	ND	4.6	mg/Kg	1	8/21/2017 2:36:06 PM	33432
Surr: BFB	92.0	54-150	%Rec	1	8/21/2017 2:36:06 PM	33432
EPA METHOD 8021B: VOLATILES					Analyst:	NSB
Benzene	ND	0.023	mg/Kg	1	8/21/2017 2:36:06 PM	33432
Toluene	ND	0.046	mg/Kg	1	8/21/2017 2:36:06 PM	33432
Ethylbenzene	0.047	0.046	mg/Kg	1	8/21/2017 2:36:06 PM	33432
Xylenes, Total	ND	0.093	mg/Kg	1	8/21/2017 2:36:06 PM	33432
Surr: 4-Bromofluorobenzene	104	66.6-132	%Rec	1	8/21/2017 2:36:06 PM	33432

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

- Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits Page 2 of 13
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

#### Lab Order 1708A09

Date Reported: 8/27/2017

### Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Blagg Engineering

Client Sample ID: BH-1 (45'-46')

Project: Mudge A 2

Collection Date: 8/14/2017 1:35:00 PM

**Lab ID:** 1708A09-003

Matrix: SOIL

Received Date: 8/16/2017 7:15:00 AM

Analyses	Result	PQL Qu	al Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS					Analyst	MRA
Chloride	ND	30	mg/Kg	20	8/24/2017 2:28:49 PM	33539
EPA METHOD 8015M/D: DIESEL RANG	E ORGANICS	3			Analyst	TOM
Diesel Range Organics (DRO)	ND	9.2	mg/Kg	1	8/21/2017 11:44:24 PM	33448
Motor Oil Range Organics (MRO)	ND	46	mg/Kg	1	8/21/2017 11:44:24 PM	33448
Surr: DNOP	83.8	70-130	%Rec	1	8/21/2017 11:44:24 PM	33448
EPA METHOD 8015D: GASOLINE RAN	GE				Analyst	NSB
Gasoline Range Organics (GRO)	ND	4.8	mg/Kg	1	8/19/2017 12:40:47 AM	33432
Surr: BFB	89.2	54-150	%Rec	1	8/19/2017 12:40:47 AM	33432
EPA METHOD 8021B: VOLATILES					Analyst	NSB
Benzene	ND	0.024	mg/Kg	1	8/19/2017 12:40:47 AM	33432
Toluene	ND	0.048	mg/Kg	1	8/19/2017 12:40:47 AM	33432
Ethylbenzene	ND	0.048	mg/Kg	1	8/19/2017 12:40:47 AM	33432
Xylenes, Total	ND	0.096	mg/Kg	1	8/19/2017 12:40:47 AM	33432
Surr: 4-Bromofluorobenzene	102	66.6-132	%Rec	1	8/19/2017 12:40:47 AM	33432

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits Page 3 of 13
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Lab Order 1708A09

Date Reported: 8/27/2017

### Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering

Client Sample ID: BH-2 (31.5'-32')

Mudge A 2 Project:

Collection Date: 8/14/2017 2:55:00 PM

Lab ID: 1708A09-004

Matrix: SOIL

Received Date: 8/16/2017 7:15:00 AM

Analyses	Result	PQL Qu	al Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS					Analyst	MRA
Chloride	54	30	mg/Kg	20	8/24/2017 2:41:14 PM	33539
EPA METHOD 8015M/D: DIESEL RAN	GE ORGANICS	S			Analyst	TOM
Diesel Range Organics (DRO)	14	9.3	mg/Kg	1	8/22/2017 12:06:37 AM	33448
Motor Oil Range Organics (MRO)	ND	47	mg/Kg	1	8/22/2017 12:06:37 AM	33448
Surr: DNOP	90.6	70-130	%Rec	1	8/22/2017 12:06:37 AM	33448
EPA METHOD 8015D: GASOLINE RAN	NGE				Analyst	NSB
Gasoline Range Organics (GRO)	ND	4.7	mg/Kg	1	8/21/2017 2:59:49 PM	33432
Surr: BFB	99.5	54-150	%Rec	1	8/21/2017 2:59:49 PM	33432
EPA METHOD 8021B: VOLATILES					Analyst	NSB
Benzene	ND	0.023	mg/Kg	1	8/21/2017 2:59:49 PM	33432
Toluene	ND	0.047	mg/Kg	1	8/21/2017 2:59:49 PM	33432
Ethylbenzene	ND	0.047	mg/Kg	1	8/21/2017 2:59:49 PM	33432
Xylenes, Total	ND	0.094	mg/Kg	1	8/21/2017 2:59:49 PM	33432
Surr: 4-Bromofluorobenzene	104	66.6-132	%Rec	1	8/21/2017 2:59:49 PM	33432

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

- Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- Holding times for preparation or analysis exceeded Н
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- % Recovery outside of range due to dilution or matrix
- Analyte detected in the associated Method Blank
- Е Value above quantitation range
- Analyte detected below quantitation limits Page 4 of 13
- P Sample pH Not In Range
- Reporting Detection Limit
- Sample container temperature is out of limit as specified

#### Lab Order 1708A09

Date Reported: 8/27/2017

### Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Blagg Engineering

Client Sample ID: BH-2 (35'-36')

Project: Mudge A 2

Collection Date: 8/14/2017 3:07:00 PM

Lab ID: 1708A09-005

Matrix: SOIL

Received Date: 8/16/2017 7:15:00 AM

Analyses	Result	PQL Qu	al Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS					Analyst	MRA
Chloride	150	30	mg/Kg	20	8/24/2017 2:53:39 PM	33539
EPA METHOD 8015M/D: DIESEL RAN	GE ORGANICS	S			Analyst	: TOM
Diesel Range Organics (DRO)	ND	9.4	mg/Kg	1	8/22/2017 12:28:57 AM	33448
Motor Oil Range Organics (MRO)	ND	47	mg/Kg	1	8/22/2017 12:28:57 AM	33448
Surr: DNOP	91.6	70-130	%Rec	1	8/22/2017 12:28:57 AM	33448
EPA METHOD 8015D: GASOLINE RAI	NGE				Analyst	NSB
Gasoline Range Organics (GRO)	ND	4.6	mg/Kg	1	8/21/2017 3:23:36 PM	33432
Surr: BFB	92.1	54-150	%Rec	1	8/21/2017 3:23:36 PM	33432
EPA METHOD 8021B: VOLATILES					Analyst	NSB
Benzene	ND	0.023	mg/Kg	1	8/21/2017 3:23:36 PM	33432
Toluene	ND	0.046	mg/Kg	1	8/21/2017 3:23:36 PM	33432
Ethylbenzene	ND	0.046	mg/Kg	1	8/21/2017 3:23:36 PM	33432
Xylenes, Total	ND	0.092	mg/Kg	1	8/21/2017 3:23:36 PM	33432
Surr: 4-Bromofluorobenzene	105	66.6-132	%Rec	1	8/21/2017 3:23:36 PM	33432

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits Page 5 of 13
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Lab Order 1708A09

Date Reported: 8/27/2017

### Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Blagg Engineering

**Client Sample ID:** BH-2 (45'-46')

Project: Mudge A 2

Collection Date: 8/14/2017 3:37:00 PM

Lab ID: 1708A09-006

Matrix: SOIL

Received Date: 8/16/2017 7:15:00 AM

Analyses	Result	PQL Qu	al Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS					Analyst	MRA
Chloride	34	30	mg/Kg	20	8/24/2017 3:06:04 PM	33539
EPA METHOD 8015M/D: DIESEL RANG	E ORGANIC	S			Analyst	TOM
Diesel Range Organics (DRO)	ND	9.5	mg/Kg	1	8/22/2017 12:51:15 AM	33448
Motor Oil Range Organics (MRO)	ND	48	mg/Kg	1	8/22/2017 12:51:15 AM	33448
Surr: DNOP	92.8	70-130	%Rec	1	8/22/2017 12:51:15 AM	33448
EPA METHOD 8015D: GASOLINE RAN	GE				Analyst:	NSB
Gasoline Range Organics (GRO)	ND	4.9	mg/Kg	1	8/19/2017 1:51:45 AM	33432
Surr: BFB	88.5	54-150	%Rec	1	8/19/2017 1:51:45 AM	33432
EPA METHOD 8021B: VOLATILES					Analyst:	NSB
Benzene	ND	0.025	mg/Kg	1	8/19/2017 1:51:45 AM	33432
Toluene	ND	0.049	mg/Kg	1	8/19/2017 1:51:45 AM	33432
Ethylbenzene	ND	0.049	mg/Kg	1	8/19/2017 1:51:45 AM	33432
Xylenes, Total	ND	0.098	mg/Kg	1	8/19/2017 1:51:45 AM	33432
Surr: 4-Bromofluorobenzene	101	66.6-132	%Rec	1	8/19/2017 1:51:45 AM	33432

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits Page 6 of 13
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

### Hall Environmental Analysis Laboratory, Inc.

Client Sample ID: BH-3 (25'-26')

Project: Mudge A 2 Collection Date: 8/15/2017 8:35:00 AM

Lab ID: 1708A09-007

CLIENT: Blagg Engineering

Matrix: SOIL

Received Date: 8/16/2017 7:15:00 AM

Analyses	Result	PQL Qu	al Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS					Analyst	MRA
Chloride	370	30	mg/Kg	20	8/24/2017 3:18:28 PM	33539
EPA METHOD 8015M/D: DIESEL RANGE	ORGANIC	S			Analyst	TOM
Diesel Range Organics (DRO)	10	9.7	mg/Kg	1	8/22/2017 1:35:57 AM	33448
Motor Oil Range Organics (MRO)	ND	49	mg/Kg	1	8/22/2017 1:35:57 AM	33448
Surr: DNOP	93.5	70-130	%Rec	1	8/22/2017 1:35:57 AM	33448
EPA METHOD 8015D: GASOLINE RANG	E				Analyst	NSB
Gasoline Range Organics (GRO)	ND	4.7	mg/Kg	1	8/21/2017 5:21:57 PM	33432
Surr: BFB	124	54-150	%Rec	1	8/21/2017 5:21:57 PM	33432
EPA METHOD 8021B: VOLATILES					Analyst	NSB
Benzene	ND	0.024	mg/Kg	1	8/21/2017 5:21:57 PM	33432
Toluene	ND	0.047	mg/Kg	1	8/21/2017 5:21:57 PM	33432
Ethylbenzene	ND	0.047	mg/Kg	1	8/21/2017 5:21:57 PM	33432
Xylenes, Total	ND	0.095	mg/Kg	1	8/21/2017 5:21:57 PM	33432
Surr: 4-Bromofluorobenzene	106	66.6-132	%Rec	1	8/21/2017 5:21:57 PM	33432

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

- Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- S % Recovery outside of range due to dilution or matrix
- Analyte detected in the associated Method Blank
- E Value above quantitation range
- Analyte detected below quantitation limits Page 7 of 13 I
- Sample pH Not In Range
- RL Reporting Detection Limit
- Sample container temperature is out of limit as specified

### Lab Order 1708A09

Date Reported: 8/27/2017

### Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Blagg Engineering

Client Sample ID: BH-3 (35'-36')

Project: Mudge A 2 Collection Date: 8/15/2017 9:04:00 AM

1708A09-008 Lab ID:

Matrix: SOIL

Received Date: 8/16/2017 7:15:00 AM

Analyses	Result	PQL Qu	al Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS					Analyst	MRA
Chloride	490	30	mg/Kg	20	8/24/2017 3:30:52 PM	33539
EPA METHOD 8015M/D: DIESEL RANGE	ORGANICS	3			Analyst	: TOM
Diesel Range Organics (DRO)	ND	9.4	mg/Kg	1	8/22/2017 1:58:12 AM	33448
Motor Oil Range Organics (MRO)	ND	47	mg/Kg	1	8/22/2017 1:58:12 AM	33448
Surr: DNOP	101	70-130	%Rec	1	8/22/2017 1:58:12 AM	33448
EPA METHOD 8015D: GASOLINE RANG	iΕ				Analyst	NSB
Gasoline Range Organics (GRO)	ND	4.8	mg/Kg	1	8/19/2017 2:39:02 AM	33432
Surr: BFB	88.9	54-150	%Rec	1	8/19/2017 2:39:02 AM	33432
EPA METHOD 8021B: VOLATILES					Analyst	NSB
Benzene	ND	0.024	mg/Kg	1	8/19/2017 2:39:02 AM	33432
Toluene	ND	0.048	mg/Kg	1	8/19/2017 2:39:02 AM	33432
Ethylbenzene	ND	0.048	mg/Kg	1	8/19/2017 2:39:02 AM	33432
Xylenes, Total	ND	0.096	mg/Kg	1	8/19/2017 2:39:02 AM	33432
Surr: 4-Bromofluorobenzene	101	66.6-132	%Rec	1	8/19/2017 2:39:02 AM	33432

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

- Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- Analyte detected below quantitation limits Page 8 of 13
- Sample pH Not In Range P
- RL Reporting Detection Limit
- Sample container temperature is out of limit as specified

Lab Order 1708A09

Date Reported: 8/27/2017

### Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Blagg Engineering

Client Sample ID: BH-3 (45'-46')

Project: Mudge A 2

Collection Date: 8/15/2017 9:40:00 AM

Lab ID: 1708A09-009

Matrix: SOIL

Received Date: 8/16/2017 7:15:00 AM

Analyses	Result	PQL Qu	al Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS					Analyst	MRA
Chloride	460	30	mg/Kg	20	8/24/2017 3:43:17 PM	33539
EPA METHOD 8015M/D: DIESEL RANG	E ORGANICS	3			Analyst	TOM
Diesel Range Organics (DRO)	ND	9.8	mg/Kg	1	8/22/2017 2:20:33 AM	33448
Motor Oil Range Organics (MRO)	ND	49	mg/Kg	1	8/22/2017 2:20:33 AM	33448
Surr: DNOP	94.4	70-130	%Rec	1	8/22/2017 2:20:33 AM	33448
EPA METHOD 8015D: GASOLINE RANG	SE				Analyst	NSB
Gasoline Range Organics (GRO)	ND	4.8	mg/Kg	1	8/19/2017 3:02:41 AM	33432
Surr: BFB	89.2	54-150	%Rec	1	8/19/2017 3:02:41 AM	33432
EPA METHOD 8021B: VOLATILES					Analyst	NSB
Benzene	ND	0.024	mg/Kg	1	8/19/2017 3:02:41 AM	33432
Toluene	ND	0.048	mg/Kg	1	8/19/2017 3:02:41 AM	33432
Ethylbenzene	ND	0.048	mg/Kg	1	8/19/2017 3:02:41 AM	33432
Xylenes, Total	ND	0.097	mg/Kg	1	8/19/2017 3:02:41 AM	33432
Surr: 4-Bromofluorobenzene	100	66.6-132	%Rec	1	8/19/2017 3:02:41 AM	33432

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits Page 9 of 13
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

### Hall Environmental Analysis Laboratory, Inc.

WO#:

1708A09

27-Aug-17

Client:

Blagg Engineering

Project:

Mudge A 2

Sample ID MB-33539

SampType: mblk

TestCode: EPA Method 300.0: Anions

Client ID:

**PBS** 

Batch ID: 33539

RunNo: 45189

Prep Date: 8/24/2017

Sample ID LCS-33539

Analysis Date: 8/24/2017

SeqNo: 1432108

Units: mg/Kg

HighLimit

Analyte

**RPDLimit** 

Qual

Chloride

Result PQL ND 1.5

SampType: Ics

TestCode: EPA Method 300.0: Anions

LowLimit

Client ID:

LCSS

Batch ID: 33539

RunNo: 45189

Prep Date: 8/24/2017

Analysis Date: 8/24/2017

SeqNo: 1432109

Units: mg/Kg

%RPD **RPDLimit** 

Qual

SPK value SPK Ref Val %REC

90

Chloride

Analyte

1.5

HighLimit

%RPD

Page 10 of 13

14

15.00

0

SPK value SPK Ref Val %REC

94.3

110

#### Qualifiers:

- Value exceeds Maximum Contaminant Level.
- Sample Diluted Due to Matrix
- Holding times for preparation or analysis exceeded H
- Not Detected at the Reporting Limit ND
- Practical Quanitative Limit
- % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
  - Sample pH Not In Range
- RL Reporting Detection Limit

P

Sample container temperature is out of limit as specified

### Hall Environmental Analysis Laboratory, Inc.

WO#:

1708A09

27-Aug-17

Client:

Blagg Engineering

Project:

Mudge A 2

Sample ID LCS-33448	SampType: I	.cs	TestCode: EPA Method 8015M/D: Diesel Range Organics						
Client ID: LCSS	Batch ID: 3	3448	F	RunNo: 4	5117				
Prep Date: 8/18/2017	Analysis Date:	8/21/2017	S	SeqNo: 1	428776	Units: mg/F	(g		
Analyte	Result PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	50 1	0 50.00	0	101	73.2	114			
Surr: DNOP	3.9	5.000		77.7	70	130			

Sample ID MB-33448	SampT	ype: ME	BLK	Tes	TestCode: EPA Method 8015M/D: Diesel Range Organics					
Client ID: PBS	Batch	ID: 33	448	R	RunNo: 4	5117				
Prep Date: 8/18/2017	Analysis D	ate: 8/	21/2017	S	SeqNo: 1	428777	Units: mg/K	(g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	8.4		10.00		84.0	70	130			

- Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- Page 11 of 13

- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

## Hall Environmental Analysis Laboratory, Inc.

WO#:

1708A09

27-Aug-17

Client:

Blagg Engineering

Project:

Mudge A 2

Sample ID	MB-33432
Client ID:	PBS

Prep Date: 8/17/2017

SampType: MBLK

TestCode: EPA Method 8015D: Gasoline Range

Batch ID: 33432 RunNo: 45053

Analysis Date: 8/18/2017 SeqNo: 1427097 Units: mg/Kg

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

Gasoline Range Organics (GRO) ND 5.0

Surr: BFB 900 1000 89.8 54 150

Sample ID LCS-33432	SampT	ype: LC	S	Test	TestCode: EPA Method 8015D: Gasoline Range					
Client ID: LCSS	Batch	ID: 334	432	R	RunNo: 45053					
Prep Date: 8/17/2017	Analysis D	ate: 8/	18/2017	SeqNo: <b>1427098</b>			Units: mg/k	(g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	24	5.0	25.00	0	96.9	76.4	125			
Surr: BFB	980		1000		97.8	54	150			

### Qualifiers:

\* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

PQL Practical Quanitative Limit

S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank

E Value above quantitation range

J Analyte detected below quantitation limits

P Sample pH Not In Range

RL Reporting Detection Limit

W Sample container temperature is out of limit as specified

Page 12 of 13

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1708A09

27-Aug-17

Client:

Blagg Engineering

Project:

Mudge A 2

Sample ID MB-33432	SampT	уре: МЕ	BLK	Tes	TestCode: EPA Method 8021B: Volatiles					
Client ID: PBS	Batch ID: 33432			F	RunNo: 45053					
Prep Date: 8/17/2017	Analysis D	ate: 8/	18/2017	S	SeqNo: 1	427128	Units: mg/K	g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	1.0		1.000		103	66.6	132			

Sample ID LCS-33432	SampT	ype: LC	S	Test	tCode: El	8021B: Vola	tiles			
Client ID: LCSS	Batch	1D: 33	432	R	RunNo: 4	5053				
Prep Date: 8/17/2017	Analysis D	ate: 8/	18/2017	S	SeqNo: 1	427129	Units: mg/K			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.95	0.025	1.000	0	95.3	80	120			
Toluene	0.93	0.050	1.000	0	92.8	80	120			
Ethylbenzene	0.94	0.050	1.000	0	93.6	80	120			
Xylenes, Total	2.8	0.10	3.000	0	94.7	80	120			
Surr: 4-Bromofluorobenzene	1.0		1.000		104	66.6	132			

### Qualifiers:

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Page 13 of 13



Hall Environmental Analysis Laboratory 4901 Hawkins NE Albuquerque, NM 87109 TEL: 505-345-3975 FAX: 505-345-4107

Sample Log-In Check List

Website: www.hallenvironmental.com RcptNo: 1 **BLAGG** Work Order Number: 1708A09 Client Name: 8/16/2017 7:15:00 AM Received By: Anne Thorne Completed By: **Ashley Gallegos** 8/16/2017 3:34:13 PM 8/17/17 Reviewed By: Chain of Custody Yes No 🗌 Not Present 1. Custody seals intact on sample bottles? No 🗌 Yes 🗸 Not Present 2. Is Chain of Custody complete? 3. How was the sample delivered? Courier Log In No 🗔 NA 🗌 Yes 🗸 4. Was an attempt made to cool the samples? No 🗆 NA 🔲 5. Were all samples received at a temperature of >0° C to 6.0°C Yes V No 🗌 Yes V 6. Sample(s) in proper container(s)? No [ Yes V 7. Sufficient sample volume for indicated test(s)? Yes 🗸 No 🗆 8. Are samples (except VOA and ONG) properly preserved? No 🗹 NA 🗌 Yes 9. Was preservative added to bottles? No 🗌 No VOA Vials V Yes 10. VOA vials have zero headspace? Yes No V 11. Were any sample containers received broken? # of preserved bottles checked No 🗆 for pH: Yes 🗸 12. Does paperwork match bottle labels? (<2 or >12 unless noted) (Note discrepancies on chain of custody) Adjusted? Yes V No 🗆 13. Are matrices correctly identified on Chain of Custody? No 🗆 Yes 🗸 14. Is it clear what analyses were requested? Checked by: 15. Were all holding times able to be met? Yes 🗸 No 🗌 (If no, notify customer for authorization.) Special Handling (if applicable) 16. Was client notified of all discrepancies with this order? Yes No 🗌 NA 🗸 Person Notified: Date By Whom: eMail Phone Fax In Person Regarding: Client Instructions: 17. Additional remarks: 18. Cooler Information Cooler No Temp °C Condition Seal Intact Seal No Seal Date

hain-	of-Cu	ustody Record	Turn-Around	Time:		HALL ENVIRONMENT						- 4 1								
BP A	MERICA ENGINE	EERING INC.	Project Name	9:																
Address:			T MU	DGE A.	2		49	01 H									109			
			Project #:			1							-							
#: (50	5) 32	0-1183	1			100	Fee.					_	_	_	_	_				
			Project Mana	iger:			(ylu	30)				4-	04)	-			-			$\top$
		□ Level 4 (Full Validation)	STE	VE MOSKA	4	's (8021	(Gas or	RO / ME			SIMS)		PO4,SC	2 PCB's						
AP	□ Othe	er	Sampler: JEFF BLALL On Ice: X Yes □ No				E + TPH	RO/D	118.1)	504.1)	8270	r)	O3.NO	s / 808;		\V(				or N)
(Type)		1	Sample Tem	perature:	.6	4 #	TBE	3 (G	po 7	po	0 01	etals	Z,	cide	(A)	i-VC	M			2
Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1708 A09	BTEX + 体	BTEX + M	<b>TPH 8015</b>	TPH (Meth	EDB (Meth	PAH's (83	RCRA 8 M	Anions (F.	8081 Pesti	8260B (VC	8270 (Sem	CHLOK			Air Bubbles (Y or N)
1203	SOIL	BH-1 (25-26')	400 ×1	COOL	-001	X		X									X			
1228	1	1	1	1	-002	1		1									i			
1335					-003															
1455					-004															
7.1					-005							ji L								
1537		BH-2 (45'-46')			-000															
0835					-007															
					-008															
0940	1	BH-3(45-46)			-009	1		1											$\dashv$	
																			$\Rightarrow$	
(thise-	2	H Slegy	Received by:	twar )	Date Time 8/15/17 /50 S Date Time 18/16/17			V.	ID:	. V	41)		EVI	RM					SKA	
	#: (50: #: (50: #: (50: #: (50: #: (50: #: Package: dard itation AP (Type) Time 1203 1228 1335 1455 1507 1537 0835 0904 0940	BP America Biasc Enschult Address:  #: (505) 32 r Fax#: Package: Idard Itation AP Other Ot	#: (505) 320-1183  r Fax#:  Package:  dard	BP Americal   Standard   Project Name   Multiple   Project Name   Multiple   Project Name   Multiple   Project Name   Multiple   Project Manages   Standard   Level 4 (Full Validation)   Sampler: Jon Ice:   On Ice:	BP AMERICA  BLACG ENGINEERING INC.  Address:  #: (505) 320-1183  r Fax#:  Project Manager:  Project Manager:  STEVE MOSKA  Con Ice:  Time Matrix Sample Request ID  Time Matrix Sample Request ID  1203 501L BH-1 (25-26)  1228 BH-1 (35-36)  1335 BH-1 (45-46)  1455 BH-2 (312-32)  1507 BH-2 (35-36)  1537 BH-2 (45-46)  0904 BH-3 (35-36)  0940 BH-3 (45-46)  On Ice:  Time:  Received by:  Time:  Time:  Received by:  Time:  Time:  Received by:  Time:  Time:  Received by:  Time:  Time:  Time:  Time:  Time:  Time:  Time:  Time:  Received by:  Time:  Time	BP America   Rush   Project Name:   MUDGE   A 2	BP America   Brainguished by:   Brainguished by:	BP AWSRICA	BP AMERICA	BP America	BP Americal   BP Americal	BP Americal   BP Americal	Standard	Standard	BP AWARICA   Rush   Project Name:	Standard	Standard	Standard	Standard	Standard



Hall Environmental Analysis Laboratory 4901 Hawkins NE Albuquerque, NM 87109 TEL: 505-345-3975 FAX: 505-345-4107

EL: 303-343-39/3 FAX: 303-343-410/ Website: www.hallenvironmental.com

August 27, 2017

Steve Moskal Blagg Engineering P. O. Box 87

Bloomfield, NM 87413 TEL: (505) 632-1199 FAX (505) 632-3903

RE: Mudge A 2

OrderNo.: 1708B02

Dear Steve Moskal:

Hall Environmental Analysis Laboratory received 5 sample(s) on 8/17/2017 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to <a href="www.hallenvironmental.com">www.hallenvironmental.com</a> or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

Andy Freeman

Laboratory Manager

andyl

4901 Hawkins NE

Albuquerque, NM 87109

Lab Order 1708B02

Date Reported: 8/27/2017

### Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Blagg Engineering

Client Sample ID: BH-4 (30'-31')

Project: Mudge A 2

Collection Date: 8/16/2017 9:01:00 AM

Lab ID: 1708B02-001

Matrix: SOIL

Received Date: 8/17/2017 7:10:00 AM

Analyses	Result	PQL Qu	al Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS					Analyst	MRA
Chloride	120	30	mg/Kg	20	8/24/2017 3:55:42 PM	33539
EPA METHOD 8015M/D: DIESEL RANGE	ORGANIC	S			Analyst	: TOM
Diesel Range Organics (DRO)	11	9.6	mg/Kg	1	8/22/2017 10:48:32 AM	33453
Motor Oil Range Organics (MRO)	ND	48	mg/Kg	1	8/22/2017 10:48:32 AM	33453
Surr: DNOP	91.2	70-130	%Rec	1	8/22/2017 10:48:32 AM	33453
EPA METHOD 8015D: GASOLINE RANG	E				Analyst	NSB
Gasoline Range Organics (GRO)	ND	4.9	mg/Kg	1	8/21/2017 6:42:41 PM	33452
Surr: BFB	77.0	54-150	%Rec	1	8/21/2017 6:42:41 PM	33452
EPA METHOD 8021B: VOLATILES					Analyst	NSB
Benzene	ND	0.025	mg/Kg	1	8/21/2017 6:42:41 PM	33452
Toluene	ND	0.049	mg/Kg	1	8/21/2017 6:42:41 PM	33452
Ethylbenzene	ND	0.049	mg/Kg	1	8/21/2017 6:42:41 PM	33452
Xylenes, Total	ND	0.098	mg/Kg	1	8/21/2017 6:42:41 PM	33452
Surr: 4-Bromofluorobenzene	108	66.6-132	%Rec	1	8/21/2017 6:42:41 PM	33452

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

- Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits Page 1 of 9
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

#### Lab Order 1708B02

Date Reported: 8/27/2017

### Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Blagg Engineering

**Client Sample ID: BH-4 (35'-36')** 

Project: Mudge A 2

Collection Date: 8/16/2017 9:15:00 AM

Lab ID: 1708B02-002

Matrix: SOIL

Received Date: 8/17/2017 7:10:00 AM

Analyses	Result	PQL Qu	al Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS					Analyst	MRA
Chloride	110	30	mg/Kg	20	8/24/2017 4:32:55 PM	33539
EPA METHOD 8015M/D: DIESEL RAN	GE ORGANIC	S			Analyst	: TOM
Diesel Range Organics (DRO)	ND	9.6	mg/Kg	1	8/21/2017 9:28:35 PM	33453
Motor Oil Range Organics (MRO)	ND	48	mg/Kg	1	8/21/2017 9:28:35 PM	33453
Surr: DNOP	73.5	70-130	%Rec	1	8/21/2017 9:28:35 PM	33453
EPA METHOD 8015D: GASOLINE RAI	NGE				Analyst	: NSB
Gasoline Range Organics (GRO)	ND	4.9	mg/Kg	1	8/21/2017 7:06:34 PM	33452
Surr: BFB	76.7	54-150	%Rec	1	8/21/2017 7:06:34 PM	33452
EPA METHOD 8021B: VOLATILES					Analyst	: NSB
Benzene	ND	0.025	mg/Kg	1	8/21/2017 7:06:34 PM	33452
Toluene	ND	0.049	mg/Kg	1	8/21/2017 7:06:34 PM	33452
Ethylbenzene	ND	0.049	mg/Kg	1	8/21/2017 7:06:34 PM	33452
Xylenes, Total	ND	0.099	mg/Kg	1	8/21/2017 7:06:34 PM	33452
Surr: 4-Bromofluorobenzene	108	66.6-132	%Rec	1	8/21/2017 7:06:34 PM	33452

#### Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits Page 2 of 9
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Lab Order 1708B02

Date Reported: 8/27/2017

### Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Blagg Engineering

Client Sample ID: BH-4 (45'-46')

Project: Mudge A 2

Collection Date: 8/16/2017 9:58:00 AM

Lab ID: 1708B02-003

Matrix: SOIL

Received Date: 8/17/2017 7:10:00 AM

Analyses	Result	PQL Qu	al Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS					Analyst	MRA
Chloride	120	30	mg/Kg	20	8/24/2017 4:45:20 PM	33539
EPA METHOD 8015M/D: DIESEL RAN	GE ORGANIC	S			Analyst	TOM
Diesel Range Organics (DRO)	ND	9.3	mg/Kg	1	8/21/2017 9:57:07 PM	33453
Motor Oil Range Organics (MRO)	ND	46	mg/Kg	1	8/21/2017 9:57:07 PM	33453
Surr: DNOP	77.4	70-130	%Rec	1	8/21/2017 9:57:07 PM	33453
EPA METHOD 8015D: GASOLINE RAM	NGE				Analyst	NSB
Gasoline Range Organics (GRO)	ND	4.9	mg/Kg	1	8/21/2017 7:30:26 PM	33452
Surr: BFB	75.4	54-150	%Rec	1	8/21/2017 7:30:26 PM	33452
EPA METHOD 8021B: VOLATILES					Analyst	NSB
Benzene	ND	0.025	mg/Kg	1	8/21/2017 7:30:26 PM	33452
Toluene	ND	0.049	mg/Kg	1	8/21/2017 7:30:26 PM	33452
Ethylbenzene	ND	0.049	mg/Kg	1	8/21/2017 7:30:26 PM	33452
Xylenes, Total	ND	0.098	mg/Kg	1	8/21/2017 7:30:26 PM	33452
Surr: 4-Bromofluorobenzene	107	66.6-132	%Rec	1	8/21/2017 7:30:26 PM	33452

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

- Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits Page 3 of 9
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

#### Lab Order 1708B02

Date Reported: 8/27/2017

### Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Blagg Engineering

Client Sample ID: BH-5 (35'-36')

Mudge A 2 Project:

Collection Date: 8/16/2017 1:22:00 PM

Lab ID: 1708B02-004

Matrix: SOIL

Received Date: 8/17/2017 7:10:00 AM

Analyses	Result	PQL Qua	al Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS					Analyst	MRA
Chloride	430	30	mg/Kg	20	8/24/2017 4:57:44 PM	33539
EPA METHOD 8015M/D: DIESEL RANGE	ORGANICS	8			Analyst	TOM
Diesel Range Organics (DRO)	ND	9.3	mg/Kg	1	8/21/2017 10:25:41 PM	33453
Motor Oil Range Organics (MRO)	ND	47	mg/Kg	1	8/21/2017 10:25:41 PM	33453
Surr: DNOP	71.4	70-130	%Rec	1	8/21/2017 10:25:41 PM	33453
EPA METHOD 8015D: GASOLINE RANG	E				Analyst	NSB
Gasoline Range Organics (GRO)	ND	4.8	mg/Kg	1	8/21/2017 7:54:18 PM	33452
Surr: BFB	75.8	54-150	%Rec	1	8/21/2017 7:54:18 PM	33452
EPA METHOD 8021B: VOLATILES					Analyst	NSB
Benzene	ND	0.024	mg/Kg	1	8/21/2017 7:54:18 PM	33452
Toluene	ND	0.048	mg/Kg	1	8/21/2017 7:54:18 PM	33452
Ethylbenzene	ND	0.048	mg/Kg	1	8/21/2017 7:54:18 PM	33452
Xylenes, Total	ND	0.095	mg/Kg	1	8/21/2017 7:54:18 PM	33452
Surr: 4-Bromofluorobenzene	109	66.6-132	%Rec	1	8/21/2017 7:54:18 PM	33452

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

- Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- % Recovery outside of range due to dilution or matrix
- Analyte detected in the associated Method Blank
- Value above quantitation range E
- Analyte detected below quantitation limits Page 4 of 9 J
- Sample pH Not In Range
- RL Reporting Detection Limit
- Sample container temperature is out of limit as specified

Lab Order 1708B02

Date Reported: 8/27/2017

### Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Blagg Engineering

Client Sample ID: BH-5 (45'-46')

Project: Mudge A 2

Collection Date: 8/16/2017 1:52:00 PM

Lab ID: 1708B02-005

Matrix: SOIL

Received Date: 8/17/2017 7:10:00 AM

Analyses	Result	PQL Qua	l Units	DF	Date Analyzed	Batch
EPA METHOD 300.0: ANIONS					Analyst	MRA
Chloride	87	30	mg/Kg	20	8/24/2017 5:10:09 PM	33539
EPA METHOD 8015M/D: DIESEL RANGE	ORGANICS	3			Analyst	TOM
Diesel Range Organics (DRO)	ND	10	mg/Kg	1	8/21/2017 10:54:16 PM	33453
Motor Oil Range Organics (MRO)	ND	50	mg/Kg	1	8/21/2017 10:54:16 PM	33453
Surr: DNOP	73.5	70-130	%Rec	1	8/21/2017 10:54:16 PM	33453
EPA METHOD 8015D: GASOLINE RANG	E				Analyst	NSB
Gasoline Range Organics (GRO)	ND	4.9	mg/Kg	1	8/21/2017 8:18:13 PM	33452
Surr: BFB	74.0	54-150	%Rec	1	8/21/2017 8:18:13 PM	33452
EPA METHOD 8021B: VOLATILES					Analyst	NSB
Benzene	ND	0.025	mg/Kg	1	8/21/2017 8:18:13 PM	33452
Toluene	ND	0.049	mg/Kg	1	8/21/2017 8:18:13 PM	33452
Ethylbenzene	ND	0.049	mg/Kg	1	8/21/2017 8:18:13 PM	33452
Xylenes, Total	ND	0.098	mg/Kg	1	8/21/2017 8:18:13 PM	33452
Surr: 4-Bromofluorobenzene	105	66.6-132	%Rec	1	8/21/2017 8:18:13 PM	33452

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

- Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quanitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits Page 5 of 9
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

### Hall Environmental Analysis Laboratory, Inc.

WO#:

1708B02

27-Aug-17

Client:

Blagg Engineering

Project:

Mudge A 2

Sample ID MB-33539

SampType: mblk

TestCode: EPA Method 300.0: Anions

**PBS** 

Batch ID: 33539

RunNo: 45189

Client ID: Prep Date:

Analyte

8/24/2017

Analysis Date: 8/24/2017

SeqNo: 1432108

Units: mg/Kg

HighLimit

Result PQL 1.5

ND

TestCode: EPA Method 300.0: Anions

**RPDLimit** 

Qual

Chloride

Sample ID LCS-33539

LCSS

SampType: Ics Batch ID: 33539

SPK value SPK Ref Val %REC LowLimit

RunNo: 45189

Client ID: Prep Date:

8/24/2017

Analysis Date: 8/24/2017

SeqNo: 1432109

Units: mg/Kg

%RPD **RPDLimit** 

Qual

PQL SPK value SPK Ref Val

94.3

90

Analyte

Result

1.5

%REC

HighLimit

%RPD

Page 6 of 9

Chloride

0

110

14

15.00

LowLimit

#### Qualifiers:

H

**PQL** 

- Value exceeds Maximum Contaminant Level.
- Sample Diluted Due to Matrix D
- ND Not Detected at the Reporting Limit Practical Quanitative Limit
- % Recovery outside of range due to dilution or matrix

Holding times for preparation or analysis exceeded

- Analyte detected in the associated Method Blank В
- E Value above quantitation range
- P Sample pH Not In Range
- RL Reporting Detection Limit
  - Sample container temperature is out of limit as specified

J Analyte detected below quantitation limits

### Hall Environmental Analysis Laboratory, Inc.

WO#:

1708B02

27-Aug-17

Client:

Blagg Engineering

Project:

Mudge A 2

Sample ID	LCS-33453

SampType: LCS

TestCode: EPA Method 8015M/D: Diesel Range Organics

LowLimit

LowLimit

73.2

70

Client ID:

LCSS

Batch ID: 33453

10

RunNo: 45091

%REC

105

78.1

%RPD

%RPD

Prep Date: 8/18/2017

Analysis Date: 8/21/2017

SeqNo: 1428105

Units: mg/Kg

114

130

Analyte

Result PQL

HighLimit

Qual

Diesel Range Organics (DRO)	
Surr: DNOP	

Sample ID MB-33453

SampType: MBLK

TestCode: EPA Method 8015M/D: Diesel Range Organics

Client ID:

PBS

Batch ID: 33453

RunNo: 45091

**RPDLimit** 

Prep Date: 8/18/2017 Analysis Date: 8/21/2017

7.3

52

3.9

SeqNo: 1428106

Units: mg/Kg

HighLimit

**RPDLimit** Qual

Analyte Diesel Range Organics (DRO) Result ND 10 ND 50

SPK value SPK Ref Val %REC

SPK Ref Val

Motor Oil Range Organics (MRO) Surr: DNOP

10.00

SPK value

50.00

5.000

73.0

70 130

#### Qualifiers:

- Value exceeds Maximum Contaminant Level.
- Sample Diluted Due to Matrix D
- Holding times for preparation or analysis exceeded Η
- ND Not Detected at the Reporting Limit
- Practical Quanitative Limit PQL
- % Recovery outside of range due to dilution or matrix
- Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- Sample pH Not In Range
- Reporting Detection Limit RL
- Sample container temperature is out of limit as specified

Page 7 of 9

### Hall Environmental Analysis Laboratory, Inc.

WO#:

1708B02

27-Aug-17

Client:

Blagg Engineering

Project:

Mudge A 2

Sample ID MB-33452	SampT	SampType: MBLK			tCode: El	PA Method	8015D: Gaso	line Rang	е	
Client ID: PBS	Batch	1D: 334	452	R	lunNo: 4	5097				
Prep Date: 8/18/2017	Analysis D	ate: 8/	21/2017	S	eqNo: 1	428026	Units: mg/K	g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	840		1000		84.3	54	150			

Sample ID LCS-33452	SampTy	pe: LC	S	Test	tCode: E	PA Method	8015D: Gaso	line Rang	е	
Client ID: LCSS	Batch	ID: 334	152	R	RunNo: 4	5097				
Prep Date: 8/18/2017	Analysis Da	ate: 8/	21/2017	S	SeqNo: 1	428027	Units: mg/K	g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	23	5.0	25.00	0	93.0	76.4	125			
Surr: BFB	920		1000		92.2	54	150			

#### Qualifiers:

Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

PQL Practical Quanitative Limit

S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank

E Value above quantitation range

J Analyte detected below quantitation limits

Page 8 of 9

P Sample pH Not In Range

RL Reporting Detection Limit

W Sample container temperature is out of limit as specified

## Hall Environmental Analysis Laboratory, Inc.

1.1

1.1

1.1

3.3

1.2

0.025

0.050

0.050

0.10

WO#:

1708B02

27-Aug-17

Client:

Blagg Engineering

Project:

Analyte

Benzene

Toluene

Ethylbenzene

Xylenes, Total

Surr: 4-Bromofluorobenzene

Mudge A 2

Sample ID MB-33452	SampType: MBLK			Tes							
Client ID: PBS	Batch ID: 33452			F	RunNo: 45097						
Prep Date: 8/18/2017	Analysis [	Date: 8/	21/2017	5	SeqNo: 1	428054	Units: mg/K	(g			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Benzene	ND	0.025									
Toluene	ND	0.050									
Ethylbenzene	ND	0.050									
Xylenes, Total	ND	0.10									
Surr: 4-Bromofluorobenzene	1.2		1.000		119	66.6	132				
Sample ID LCS-33452	SampT	ype: LC	S	Tes	tCode: El	PA Method	8021B: Volat	iles			
Client ID: LCSS	Batch	h ID: 334	452	F	RunNo: 4	5097					
Prep Date: 8/18/2017	Analysis D	Date: 8/	21/2017	8	SeqNo: 1	428055	Units: mg/K	g			

0

0

0

0

%REC

109

108

107

108

123

LowLimit

80

80

80

80

66.6

HighLimit

120

120

120

120

132

%RPD

**RPDLimit** 

Qual

SPK value SPK Ref Val

1.000

1.000

1.000

3.000

1.000

0	u	a	li	fi	e	rs

\* Value exceeds Maximum Contaminant Level.

D Sample Diluted Due to Matrix

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

PQL Practical Quanitative Limit

S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank

E Value above quantitation range

J Analyte detected below quantitation limits

P Sample pH Not In Range

RL Reporting Detection Limit

W Sample container temperature is out of limit as specified

Page 9 of 9



Hall Environmental Analysis Laboratory 4901 Hawkins NE Albuguerque, NM 87109

TEL: 505-345-3975 FAX: 505-345-4107 Website: www.hallenvironmental.com

# Albuquerque, NM 87109 Sample Log-In Check List

Client Name:	BLAGG	Work Order Number:	1708B02		RcptNo:	1
Received By: Completed By: Reviewed By:	Anne Thorne Ashley Gallegos	8/17/2017 7:10:00 AM 8/17/2017 3:17:26 PM 8/18/17		Ann Ham	-	
Chain of Cus	stody					
1. Custody sea	Yes 🗌	No 🗆	Not Present			
2. Is Chain of (	Custody complete?	Yes 🗹	No 🗆	Not Present		
3. How was the	Courier					
Log In						
4. Was an atte	Yes 🗸	No 🗆	NA 🗆			
5. Were all sar	Yes 🗹	No 🗆	NA 🗆			
6. Sample(s) i	Yes 🗹	No 🗆				
7. Sufficient sa	imple volume for indicated test	(s)?	Yes 🗹	No 🗆		
8, Are samples	(except VOA and ONG) prope	Yes 🗹	No 🗌			
9. Was presen	vative added to bottles?	Yes 🗌	No 🗹	NA 🗆		
10.VOA vials h	ave zero headspace?	Yes 🗹	No 🗆	No VOA Vials		
11, Were any s	ample containers received brok	Yes 🗆	No 🗹	# of preserved bottles checked		
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)			Yes 🗹	No 🗆	for pH:	r >12 unless noted)
The state of the s	s correctly identified on Chain of	Yes 🗸	No 🗆	Adjusted?		
14, Is it clear wh	nat analyses were requested?	Yes 🗹	No 🗆			
15. Were all holding times able to be met?  (If no, notify customer for authorization.)			Yes 🔽	No 🗆	Checked by:	
Special Hand	fling (if applicable)					
	notified of all discrepancies with	this order?	Yes 🗆	No 🗆	NA 🗹	
Person	n Notified:	Date				
By Wh	nom:	Via:	eMail	Phone Fax	In Person	
Regarding:				-		
Client	Instructions:					
17. Additional r	emarks:					-
18. Cooler Info	ormation					
Cooler N	o Temp C Condition S	eal intact   Seal No   S	Seal Date	Signed By		
1	1.0 Good Ye	-8				

Chain-of-Custody Record		Turn-Around Time:  Standard □ Rush  Project Name:									_				B. I S.			A 1			
Client: BP AMERICA					HALL ENVIRONMENTAL ANALYSIS LABORATORY www.hallenvironmental.com 4901 Hawkins NE - Albuquerque, NM 87109																
BLAGG ENGWEERING INC. Mailing Address:																					
		MUSSE A 2																			
			Project #:		Tel. 505-345-3975 Fax 505-345-4107																
Phone #: (505) 320 - 1183										_	_	400		uest	7.0		30				
email or Fax#:		Project Mana	ger:		_	(K)	9		П			3	7		-	1,	T	T	$\Box$		
QA/QC Package:  Standard   Level 4 (Full Validation)			STEVE MOSKAL			's (8021	(Gas or	30 / MF			SIMS)		PO4,SC	PCB's							
Accreditation		Sampler: JEFF BLAGE		A	PH	IQ/	=	=	70		02	308						9			
□ NELAP □ Other		On loe: X Yes II No		H	7	380	418	504	r 82	S	Õ	38/		OA)				or			
□ EDD	(Type)		I	Sample Tem	perature:	1-0	H	ITBE	B ((	poq	Pod	9	Neta	ਹੁੰ	icid	(AC	V-in	W			() Si
Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.	BTEX + MHBE + IMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270	RCRA 8 Metals	Anions (F,CI,NO <sub>3</sub> ,NO <sub>2</sub> ,PO <sub>4</sub> ,SO <sub>4</sub> )	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	CHORUDE			Air Bubbles (Y or N)
1/2/2017	0901	SOIL	BH-4 (30'-31')	402×1	COOL	-001	X		X									X			
i	0915	1	BH-4 (35-36-)	1	1	-002	1		1												
	0958		BH-4 (45-46')			-003	1														
	1322		BH-5 (35'-36')			-004			1									1			
	1352		BH-5 (45'-46')		1	- 005	1		1		-							1	$\Box$	$\perp$	T
																				$\pm$	
											+							20		+	+
																				+	12
-											-	, -							+	+	+-
Date:	Time: 1502 Time:	Relinquish	Blogg	Received by:	Maeje	Date Time 9/19/2017 150 Z Date Time 68/17/17		Remarks: Bul BP CONDERS: STEVE MOKAL  VID: VHOKONEVRM  WBS ELEMENT: L1-0018M-E:10984													
8/10/17	1835 f necessary,		Metu Walls mitted to Hall Environmental may be sub	contracted to other a	coredited laboratorie	0710	possi	ibility.	Any st	ib-cont	racted	data i	will be	dear	y nota	ated or	the a	nallytic	al repor	t.	