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

State of New Mexico Energy Minerals and Natural **Resources** Department

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

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

Incident ID	
District RP	3RP-13661
Facility ID	
Application ID	

Release Notification

p(S 190395255.2"

Responsible Party

Responsible Party: BP America Production Co.	OGRID: 778	Subsequent: REMEDIATION PLAN
Contact Name: Steve Moskal	Contact Telephone: (505)	330-9179
Contact email: steven.moskal@bpx.com	Incident # (assigned by OCD)	NCS 1528741396
Contact mailing address: 380 Airport Road, Durango CO, 81303		

Location of Release Source

Latitude: 36.902742°

Longitude: -108.008073° (NAD 83 in decimal degrees to 5 decimal places)

Site Name: Mudge B 012R	Site Type: Natural Gas Production Well Pad
Date Release Discovered: September 21, 2018	API#: 30-045-10792

Unit Letter	Section	Township	Range	County
А	17	T31N	R11W	San Juan

Surface Owner: State Federal Tribal Private (Name: _____

Nature and Volume of Release

Materi	al(s) Released (Select all that apply and attach calculations or specific	c justification for the volumes provided below)
Crude Oil	Volume Released (bbls)	Volume Recovered (bbls)
Produced Water	Volume Released (bbls):	Volume Recovered (bbls):
	Is the concentration of dissolved chloride in the produced water >10,000 mg/l?	Yes No
Condensate	Volume Released (bbls): Unknow	Volume Recovered (bbls): <u>0 bbls</u>
Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
Other (describe)	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)
		L

Cause of Release:

Hydrocarbon impacts discovered during the closure of a below grade tank in September of 2015. The site has been delineated via Geoprobe and monitor wells installed. The residual impacts are at depths of 40-43 feet deep. BP proposes to employ soil vapor extraction to remediate the soil and perched groundwater impacts.

NMOCD

OCT 3 0 2018

DISTRICT III



Smith, Cory, EMNRD

From:Smith, Cory, EMNRDSent:Friday, February 8, 2019 2:49 PMTo:Steven Moskal - BP America (steven.moskal@BPX.com)Cc:Fields, Vanessa, EMNRDSubject:Mudge B 12R Incident# ncs1528741396 3RP-13661

Steve,

OCD has reviewed the remediation plan for SVE at the Mudge B #12R and has approved it with the following conditions of approval.

- BP will collect a water sample from the source well, an analysis for General water chemistry to include, TDS, ph, Cation, Anion, Sulfates, Iron and Manganese to rule out any other ground water contaminates that could be present from a historical pit.
- This site will be subject to the requirements of 20.6.2 NMAC and will require at least 8 consecutive guarters for closure.
- BP maybe required to further delineate the ground water plum down gradient of MW-3
- BP has until May 8, 2019 to install and start SVE operations.
- BP maybe required to collected additional closure samples not described in the remediation plan.
- In addition to the Quarterly SVE reports BP will submit an Annual Ground Water Report.

OCD has assigned this site to 3RP-13661 this approved remediation plan will be scanned into the online file as soon as possible. Vanessa Fields will be your primary contact for the remediation of this site.

Cory Smith Environmental Specialist Oil Conservation Division Energy, Minerals, & Natural Resources 1000 Rio Brazos, Aztec, NM 87410 (505)334-6178 ext 115 cory.smith@state.nm.us

Form C-141	State of New Mexico	
Page 2	Oil Conservation Division	District RP
		Facility ID
		Application ID
	T	
Was this a major release as defined by 19.15.29.7(A) NMAC?	If YES, for what reason(s) does the responsible part	y consider this a major release?
🗌 Yes 🖾 No		
If YES, was immediate n N/A	otice given to the OCD? By whom? To whom? Whe	en and by what means (phone, email, etc)?
	Initial Response	se
The responsibl	e party must undertake the following actions immediately unless the	ey could create a safety hazard that would result in injury
\square The source of the rela	ease has been stopped.	
The impacted area ha	as been secured to protect human health and the enviro	onment.
Released materials ha	ave been contained via the use of berms or dikes, abso	rbent pads, or other containment devices.
All free liquids and re	ecoverable materials have been removed and managed	appropriately.
If all the actions describe	d above have not been undertaken, evolain why:	
If all the actions describe	u above nave <u>not</u> been undertaken, explain why.	
Per 19.15.29.8 B. (4) NM has begun, please attach within a lined containmen	IAC the responsible party may commence remediation a narrative of actions to date. If remedial efforts hav nt area (see $19.15.29.11(A)(5)(a)$ NMAC), please attac	immediately after discovery of a release. If remediation we been successfully completed or if the release occurred ch all information needed for closure evaluation.
I hereby certify that the info regulations all operators are public health or the environ failed to adequately investig addition, OCD acceptance o and/or regulations.	rmation given above is true and complete to the best of my l required to report and/or file certain release notifications an ment. The acceptance of a C-141 report by the OCD does no sate and remediate contamination that pose a threat to ground of a C-141 report does not relieve the operator of responsibil	knowledge and understand that pursuant to OCD rules and d perform corrective actions for releases which may endanger ot relieve the operator of liability should their operations have dwater, surface water, human health or the environment. In ity for compliance with any other federal, state, or local laws
Printed Name:	Title:	
Signature:	Date:	
email:	Telephone:	
OCD Only		
Received by:	Date:	

Form C-141 Page 3 State of New Mexico Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

Site Assessment/Characterization

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

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

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

Characterization Report Checklist: Each of the following items must be included in the report.

Scaled site map showing impacted area, surface features, subsurface features, delineation points, and monitoring wells.

Field data

Data table of soil contaminant concentration data

Depth to water determination

Determination of water sources and significant watercourses within ½-mile of the lateral extents of the release

Boring or excavation logs

Photographs including date and GIS information (Investigation performed prior to Spill Rule Update)

Topographic/Aerial maps

Laboratory data including chain of custody

If the site characterization report does not include completed efforts at remediation of the release, the report must include a proposed remediation plan. That plan must include the estimated volume of material to be remediated, the proposed remediation technique, proposed sampling plan and methods, anticipated timelines for beginning and completing the remediation. The closure criteria for a release are contained in Table 1 of 19.15.29.12 NMAC, however, use of the table is modified by site- and release-specific parameters.

Form C-141	State of New Mexico	Incident ID	
Page 4	Oil Conservation Division	District RP	
		Facility ID	
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I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations. Printed Name: Steve Moskal Title: Environmental Coordinator Signature:			
Received by: _	Date:		

Form C 141	State of New Mexico		
	Oil Conservation Divisio	n	Incident ID
Page 5	On Conservation Division	11	District RP
			Facility ID
			Application ID
	Remedi	ation Plan	
Remediation Plan Checklist: Ea	ich of the following items must be	included in the plan.	
 Detailed description of propos Scaled sitemap with GPS coor Estimated volume of material Closure criteria is to Table 1 s Proposed schedule for remedia 	ed remediation technique rdinates showing delineation points to be remediated pecifications subject to 19.15.29.12 ation (note if remediation plan time	s 2(C)(4) NMAC eline is more than 90 days	OCD approval is required)
Deferral Requests Only: Each o	of the following items must be con	firmed as part of any real	uest for deferral of remediation.
	,,	,	
Contamination must be in area deconstruction.	as immediately under or around pro	oduction equipment where	e remediation could cause a major facility
Extents of contamination must	t be fully delineated.		
Contamination does not cause	an imminent risk to human health,	, the environment, or grou	ndwater.
I hereby certify that the informatic rules and regulations all operators which may endanger public health liability should their operations ha surface water, human health or the responsibility for compliance with	on given above is true and complete are required to report and/or file ca or the environment. The acceptant we failed to adequately investigate e environment. In addition, OCD a any other federal, state, or local la	e to the best of my knowle ertain release notifications nee of a C-141 report by th and remediate contaminat acceptance of a C-141 report wws and/or regulations.	edge and understand that pursuant to OCD and perform corrective actions for releases the OCD does not relieve the operator of tion that pose a threat to groundwater, ort does not relieve the operator of
Printed Name: <u>Steve Moskal</u>	Title:	Environmental Coordinato	<u>r</u>
Signature:	Date:	October 26, 2018	
email: <u>steven.moskal@bpx.com</u>	L I	Telephone: <u>(505) 330-91</u>	79
<u>OCD ONLY</u>		1 1	
Received by:		Date: 10/30/14	_
Approved Approved with Attached Conditions of Approval Denied Deferral Approved			
Signature:	product 1	Date: 2/6/19	

Form C-141 Page 6 State of New Mexico Oil Conservation Division

Incident ID	
District RP	
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Closure

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

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

 A scaled site and sampling diagram as described in 19.15.29.11 NMAC

 Photographs of the remediated site prior to backfill or photos of the liner integrity if applicable (Note: appropriate OCD District office must be notified 2 days prior to liner inspection)

 Laboratory analyses of final sampling (Note: appropriate ODC District office must be notified 2 days prior to final sampling (Note: appropriate ODC District office must be notified 2 days prior to final sampling)

 Description of remediation activities

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

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

Printed Name:

Title:

Remediation Plan

BP Remediation Plan Mudge B 12R



- To: Cory Smith (NMOCD) ; Vanessa Fields (NMOCD), Emmanuel Adeloye (BLM)
- From: Steven Moskal (BP)
- CC: Jeff Blagg (Blagg Engineering)

Date: 10/26/2015

Re: Mudge B 12R – Soil vapor extraction remedial plan. API #3004510792, UL-A, S-17, T31N, R11W

The Mudge B 12R 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 Bureau of Land Management (BLM) land located approximately 145 feet east of a small ephemeral stream draining a very steep slope, covered with well-established sage brush.

A historical production pit was identified in September 2015 during a below grade tank (BGT) retrofit. The earthen pit is located below a BGT that was removed and was scheduled to be upgraded from a single wall/single bottom to a double wall/double bottom tank. Since the discovery of the production pit BP has shut in the well and performed site delineation via a Geo-Probe direct push drill rig. During the delineation, BP collected numerous soil samples which were submitted for laboratory analysis. A total of eight borings were advance to between 42 and 44 feet below ground surface. Piezometers were installed in 6 of the 8 borings using 1-inch PVC pipe with hand drill holes measuring 3/23" diameter. The hand drilled sections of pipe were placed in the bottom 4 to 6 feet of the borings. The activities described remained on the active production pad. The BLM has required an archaeological and biological impact study to be performed prior to conducting an off-site investigation.

The site soils consist of loose silty sands that overlie a yellow shalestone with an unknown thickness. A blue sandstone was found in two borings at a depths of 42 to 43 feet below ground surface where refusal occurred. Saturated soils were noted at approximately 40 feet below ground surface in 6 of the 8 borings. The borings demonstrated contamination (based on visual observation and field screening results) ranging from 7.5 feet to 40 feet below ground surface in the immediate vicinity of the production pit. As the borings stepped out of the location of the production pit, the contaminant zone was greatly reduced to a range of 35 feet to 41 feet below ground surface. The contaminant lens is located primarily in the established downgradient direction of the source area, generally to the southeast/south.

A total of 16 discrete soil confirmation samples were submitted for laboratory analysis for total petroleum hydrocarbons (TPH) via Method 8015D, for benzene, toluene, ethylbenzene and xylene (BTEX) via Method 8021B and chloride via Method 300.0. Soil samples were collected at the samples interval with the highest field screening result or near the bottom of the boring where the suspected groundwater interface occurred. Laboratory results revealed that total petroleum hydrocarbons (TPH) concentrations were below the NMOCD spill soil remediation guidelines (100 ppm) except in one location found near the suspected center of the production pit (730 ppm TPH); BTEX was below standards in all soil samples collected (<50 combined BTEX/<10 benzene); Chloride was above standards in 4 of the 8 borings with depths of 36 feet or greater.

Development of the piezometers was unsuccessful due to a lack of recharge and high sediment load. The piezometers were surveyed to provide an accurate groundwater gradient trending to the southeast/south.

BP then installed three groundwater monitoring wells (upgradient MW-1, source MW-3 and downgradient MW-2) to identify if groundwater impacts and further delineate the known impacts.

REMEDIATION PLAN

The objectives of this proposed remediation plan is to perform in-situ remediation to effectively address the contaminants at depths of 40 feet or greater.

BP proposes to employ soil vapor extraction (SVE) technology to the determined SVE points or monitoring 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 with an accompanying natural gas powered generator:
 - a. Rotron EN505 (2.0 HP, single phase, 230 volt, 12 amp continuous, 56 amp inrush).

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

- 2) The 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 (3) 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 or adjusted as needed based on system performance.
 - B) Upon start up, a gas sample will be collected from the vacuum stream; thereafter, an annual 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 30-35 feet at locations about 10 feet from the remediation point. Soil samples will be collected at various depths of known contamination intervals 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.

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.

During operation, BP will strive to operate the system continuously, with hopes of achieving 90% or greater run time.

REPORTING

The performance of the SVE system and remediation will be reported quarterly with field OVM data, estimated run times, system performance, mass removal and product recovery and maintenance or changes in the system configuration will be 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,

Chan Mu

Steve Moskal BP America Production Co.

Delineation Information

Mudge B 012R SVE Layout

API #30-045-10792 (A), S-17, T31N, R11W SVE System GPS: 36.902742°, -108.008073° Legend

- 🍰 Enterprise Pipeline
- Monitor Well/SVE Point
- Mudge B 12R Wellhead
 - SVE System

Mudge B 12R Wellhead

MW-1 🛇

SVE Point 1 MW-2

SVE System

MW-3

Google Earth

2018 Goog

					B	AG	GE	NGINEERING INC		
								P.O. BOX 87		
							BLOC	DMFIELD, NM 87413	GP - I	
								(505) 632-1199		
BC)F	RE /	TE	S	Γŀ	HC)LE	E REPORT	BORING # 1	
CL	IEN1	1		BPA	MERIC	APRO	DUCT	ION CO.	PAGE # 1	
LO	CATI	ON NAME	:	MUD	GEB#	12R (API #: 3	3004510792) UNIT A, SEC. 17, T31N, R11W	DATE FINISHED 09/22/15	
EC	EQUIPMENT USED: GEOPROBE 200								OPERATOR KP	
BC	BORING LOCATION: 117 FEET, S40E FROM WELL HEAD (EAST SIDE OF BGT).							LOGGED BY JCB		
DEPTH (FT.)	EPTH INTERVAL SAMPLE SAMPLE INTERVAL (FT.) EPH (mg/Kg) BENZENE (TTME (PPM) (PM) (PM) (PM) (PM) (PM) (PM) (PM								D REMARKS	
2-								SILTY SAND, NON COHESIVE, SLIGHTLY MOIST, F	IRM (0.0 - 32.0 FT. B.G.).	
4-			3-4	0934				DARK YELLOWISH ORANGE, NO STAINING OR APPA DETECTED PHYSICALLY (0.0 - 7.5 FT. B.G.).	RENT HYDROCARBON ODOR	
6-										
8-			<u>7.5 - 8</u>	0937	520					
10 +	SAME AS ABOVE EXCEPT GRAY WITH STRONG A								RENT HYDROCARBON ODOR	
12 -			.11:16.	0340	504			(7.5 - 16.0 FT. B.G.).		
14 -			15 - 16	0948	547					
18-										
20 -			19 - 20	0952	683					
22 -								SAME AS ABOVE EXCEPT GRAY/BLACK LAYERS (16.0	- 27.5 FT. B.G.).	
24 -			23 - 24	1000	612					
26 -										
28 -			<u>27 - 28</u>	1008	673			SAME AS ABOVE EXCEPT DARK YELLOWISH ORANG	E (27.5 - 28.0 FT. B.G.).	
30 +			31 - 32	1014	645			(28.0 - 32.0 FT. B.G.).	(YELLOWISH ORANGE	
32 -					0.0					
36			35 - 36	1027	663	730	ND 40	GRAY TO BLACK MEDIUM COARSE GRAINED SAN SLIGHTLY MOIST, INCREASED MOISTURE AT 40 F	ND, NON COHESIVE, FIRM, T. B.G. (32.0 - 40.0 FT. B.G.).	
38 -										
40 -			39 - 40	1040	659		ND	DARK YELLOWISH ORANGE SILTY SAND, SATUR	ATED (40.0 - 41.0 FT. B.G.).	
42 -			41 - 42	1100	4.5	ND	0.16	DARK YELLOWISH ORANGE SHALESTONE, DRY, ODOR (41.0 - 42.0 FT. B.G.).	NO APPARENT HYDROCARBON	
44 -										
46 -										
48 -		NOTES			TY SAND		- SII	TY SAND (IMPACTED)	- SHALESTONE	
52		HOILO.	OVM	- Org	anic vapo	or meter o	or photoio	nization detector (PID).		
54 -	52 TPH - Total Petroleum Hydrocarbons per US EPA Method 8015B. OVM CALIBRATION 54 BTEX - Benzene, toluene, ethylbenzene, total xylenes per US EPA Method 8021B. Data anyographic									
56 -			ND	- Not	detected	at the La	boratory I	Reporting Limit	Date: 09/22/2015 Time: 0640 Reading 100.0 ppm	
58 -			ppm mg/Kg	- Par g - Milli	is per mil igram per	kilogram			100 ppm calibration gas - isobutylene. RF = 1.00 (RF = response factor).	
60 -			B.G.	- Belo	ow grade.			DRAWING: MUDGE B 12R GP-1 2015-09-22.SKF (DATE: 10/02/2015 DWN BY: NJV	

BLAGG ENGINEERING, INC. P.O. BOX 87 BLOOMFIELD, NM 87413 (505) 632-1199 GP - 2 BORRE / TEST HOLE REPORT BP AMERICA PRODUCTION CO. BORING #	-									
PO. BOX 87 BLOOMPIELD, NM 87413 (505) 632-1199 BORRE / TEST HOLEST HOLE REPORT CLIENT: LOCATION NAME: BPAMERICA PRODUCTION CO. LINTA SEC. 17, T31N, RTIVI CONTRACTOR COLIPMENT USED. BPAMERICA PRODUCTION CO. LINTE SEC. 17, T31N, RTIVI CONTRACTOR COLIPMENT USED. BPAMERICA PRODUCTION CO. LINTE SEC. 17, T31N, RTIVI CONTRACTOR COLIPMENT USED. BPAMERICA PRODUCTION CO. LINTE SEC. 17, T31N, RTIVI CONTRACTOR COLIPMENT USED. BPAMERICA PRODUCTION CO. LINTE SEC. 17, T31N, RTIVI CONTRACTOR COLIPMENT USED. BPAMERICA PRODUCTION CO. LINTE SEC. 17, T31N, RTIVI CONTRACTOR COLIPMENT USED. BPAMERICA PRODUCTION CO. LINTE SEC. 17, T31N, RTIVI CONTRACTOR COLIPMENT USED. BPAMERICA PRODUCTION CO. LINTE SEC. 17, T31N, RTIVI CONTRACTOR COLIPMENT USED. BPAMERICA PRODUCTION CO. LINTE SEC. 17, T31N, RTIVI CONTRACTOR COLIPMENT USED. BPAMERICA PRODUCTION CO. LINTE SEC. 17, T31N, RTIVI CONTRACTOR COLIPMENT USED. BPAMERICA PRODUCTION CO. LINTE SEC. 17, T31N, RTIVI CONTRACTOR COLIPMENT USED. BPAMERICA PRODUCTION CO. LINTE SEC. 17, T31N, RTIVI CONTRACTOR CONTRACTOR COLIPMENT USED. BPAMERICA PRODUCTION CO. LINTE SEC. 17, T31N, RTIVI CONTRACTOR CONT						B	LAG	GE	NGINEERING, INC.	
BLOOMFIELD, NM 87413 (505) 632-1199 CP - 2 BORRE / TEST HOLE REPORT BORNO #									P.O. BOX 87	
BORRE / TESST HOLE REPORT BORNO #								BLOO	OMFIELD, NM 87413	GP - Z
BORRE / TEST HOLE REPORT CLIENT: LOCATION NAME: CONTRACTOR: EQUIPMENT USED: BORING LOCATION: MUDGE B# 12R. (API# 3004510782). UNITA: SEC. 17, T31N, R11W CONTRACTOR: EQUIPMENT USED: BORING LOCATION: MUDGE B# 12R. (API# 3004510782). UNITA: SEC. 17, T31N, R11W CONTRACTOR: EQUIPMENT USED: BORING LOCATION: MUDGE B# 12R. (API# 3004510782). UNITA: SEC. 17, T31N, R11W CONTRACTOR: EQUIPMENT USED: BORING LOCATION: MUDGE B# 12R. (API# 3004510782). UNITA: SEC. 17, T31N, R11W CONTRACTOR: EQUIPMENT USED: BORING LOCATION: MUDGE B# 12R. (API# 3004510782). UNITA: SEC. 17, T31N, R11W CONTRACTOR: EQUIPMENT USED: BORING LOCATION: MUDGE B# 12R. (API# 3004510782). UNITA: SEC. 17, T31N, R11W CONTRACTOR: EQUIPMENT USED: BORING LOCATION: MUDGE B# 12R. (API# 3004510782). UNITA: SEC. 17, T31N, R11W CONTRACTOR: EQUIPMENT USED: BORING LOCATION: MUDGE B# 12R. (API# 3004510782). UNITA: SEC. 17, T31N, R11W CONTRACTOR: EQUIPMENT USED: BORING LOCATION: MUDGE B# 12R. (API# 3004510782). MUDGE B# 12R. (API# 3004510782). UNITA: SEC. 17, T31N, R11W CONTRACTOR: EQUIPMENT USED: BORING LOCATION: MUDGE B# 12R. (API# 3004510782). MUDGE B# 12R. (API# 3004510782). MUDGE B# 12R. (API# 3004510782). MUDGE B# 12R. (API# 3004510782). DARK YELLOWISH GRANGE BLITY SAND, NON COHESINE, SLIGHTLY MOIST, FIRM, NO APPARENT HYDROCARBON ODOR DETECTED (A.O. 8.0 FT. B.G.). 20 21 22 22 23 24 24 25 25 30 30 30 30 30 40 40 40 40 40 40 40 40 40 40 40 40 40									(505) 632-1199	
BORE / TEST HOLE REPORT DUM DUM <th< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>1</td></th<>										1
CLIENT: BP AMERICA PRODUCTION CO. PAGE #	BC)F	RE /	TF	S	Γŀ	HC) F	F REPORT	BORING #
CLENT: BP ANDERICA P KOUCU [UN CO: Date Started Date Started LOCATION NAME: CONTRACTOR: BL/GE BHOINEERING, INC. /KYVEK ENERGY SERVICES, INC. DATE STARTED Da2216. CONTRACTOR: BL/GE BHOINEERING, INC. /KYVEK ENERGY SERVICES, INC. DATE STARTED Da2216. DBORING LOCATION: 149 FEET, SZE FROM WELL HEAD (SOUTHEAST SIDE OF BGT). DATE STARTED Da2216. DEPTH If UTHOLOGY Immunity Immunity Immunity Immunity Immunity 0 If STARTED DATE STARTED DATE STARTED DATE STARTED DATE STARTED 0 GEOPRODE 200 Immunity <										PAGE # 2
DOLATION BLAGG ENGINEERING, INC. DATE FINISHED DATE FINISHED DATE FINISHED EQUIPMENT USED: GEOPROBE 200 OPERATOR	C				RP A	MERIC	12R	API# :	ION CO. 3004510792) UNITA SEC 17 T31N R11W	DATE STARTED 09/22/15
EQUIPMENT USED: BORING LOCATION: GEORROBE 200 143 FEET, 522E FROM WELL HEAD (SOUTHEAST SIDE OF BGT). OPERATOR	C	ONTE	RACTOR:	•	BLAG	G ENGI	NEERING	G, INC. /	KYVEK ENERGY SERVICES, INC.	DATE FINISHED 09/22/15
DORING LOCATION: 143 FEET, 522E FROM WELL HEAD (SOUTHEAST SIDE OF BGT). LOCGED BY LCB DEPTH is UTHOLOGY Marker Marker Marker Marker Marker FIELD CLASSIFICATION AND REMARKS 2 3.3.4.1137 0.0 FIELD CLASSIFICATION AND CONSINCE, SLIGHTLY MOIST, FRM, MO APPARENT HYDROCARBON ODOR DETECTED (0.0.4.0F.B.G.). APPARENT HYDROCARBON ODOR DETECTED (0.0.4.0F.B.G.). 10 11.112 1140 0.0 DARK YELLOWISH ORANGE SILTY SAND, NON CONESIVE, SLIGHTLY MOIST, FRM, NO APPARENT HYDROCARBON ODOR DETECTED (0.0.4.0F.B.G.). 10 11.112 1144 0.0 DARK YELLOWISH ORANGE SILTY SAND, NON CONESIVE, SLIGHTLY MOIST, FRM, NO APPARENT HYDROCARBON ODOR DETECTED (0.02.0 FT. B.G.). 20 115.20 1149 0.0 DARK YELLOWISH ORANGE SILTY SAND, NON CONESIVE, SLIGHTLY MOIST, FRM, MO APPARENT HYDROCARBON ODOR DETECTED (0.0 - 2.0 FT. B.G.). 20 115.20 1158 0.0 DARK YELLOWISH ORANGE MEDIUM COARSE GRAINED SAND, NON COHESIVE, SLIGHTLY MOIST, FRM, MO APPARENT HYDROCARBON ODOR (50.0 - 30.0 FT. B.G.). 31 122 131.32 1213 4.4 DARK YELLOWISH ORANGE MEDIUM COARSE GRAINED SAND, NON COHESIVE, SLIGHTLY MOIST, HYDROCARBON ODOR (50.0 - 30.0 FT. B.G.). 32	E	QUIPI	MENT USE	D:	GEOP	ROBE 2	00	OPERATOR KP		
DEPTH (PT) MINERAL MITERANAL Marke Ministric Ministri Ministric Ministric Ministric Ministri Ministric Ministric Minist	BORING LOCATION: 143 FEET, S22E FROM WELL HEAD (SOUTHEAST SI							L HEAD (SOUTHEAST SIDE OF BGT).	LOGGED BY JCB	
2 3::::::::::::::::::::::::::::::::::::	DEPTH (FT.)	EPTH TTIME INTERVAL SAMPLE TIME TIME FIELD OVM (ppm) TPH (mg/Kg) BENZENE (mg/Kg) GROUND SURFACE							DREMARKS	
4	2-								DARK YELLOWISH ORANGE SILTY SAND, NON CO	DHESIVE, SLIGHTLY MOIST,
6 0 0 0 10 12 11:1:32 11:4 0.0 12 11:1:32 11:4 0.0 14 16:2:36 11:4 0.0 14 16:2:36 11:4 0.0 14 16:2:36 11:4 0.0 18 19:20 11:5 0.0 20 19:20 11:5 0.0 21 22:2 23:2:32 12:0 1.1 30 31:32 12:1 4.4 1.4 36 36:37 12:2 79 ND ND 30 33:32 12:30 18 10:0 0.00 RGRAY SLLY SAND, NON COHESINE, SLIGHTLY MOIST, HYDROCARBON ODOR (35.0-30.0 FT. BG.). 30 31:32 12:1 1.4 0.0 0.00 RGRAY SLLY MOIST, MINOR PEBBLES BETWEEN 16:0-2:0.0 S.0. FT. BG.). 31:32 12:3 1.4 0.0 0.00 RGRAY SLLY MOIST, MINOR PEBBLES BETWEEN 24'-28' B.G. (2:0 - 3:0. FT. B.G.). 40 -33:1:32 12:1 ND ND ND </td <td>4-</td> <td></td> <td></td> <td>3-4</td> <td>1137</td> <td>0.0</td> <td></td> <td></td> <td>FIRM, NO APPARENT HYDROCARBON ODOR DET</td> <td>ECTED (0.0 - 4.0 FT. B.G.).</td>	4-			3-4	1137	0.0			FIRM, NO APPARENT HYDROCARBON ODOR DET	ECTED (0.0 - 4.0 FT. B.G.).
8 7.6.8 1140 0.0 10 12 11.32 1144 0.0 12 11.32 1144 0.0 0.0 14 15.36 1149 0.0 0.0 18 19.20 1158 0.0 0.0 20 22 23.24 120 0.0 24 23.24 120 0.0 0.0 26 27.28 120 1.1 0.0 30 31.32 121 4.4 0.0 30 31.32 121 4.4 0.0 31.32 121 1.4 0.0 0.0 32 31.32 121 1.4 0.0 34 34 34 35.37 1222 79 ND ND 33 34 12 12 ND <	6-								DARK YELLOWISH BROWN SILTY CLAY, COHESIV	E, SLIGHTLY MOIST, FIRM,
10 11 <td< td=""><td>8-</td><td></td><td></td><td>7.5 - 8</td><td>1140</td><td>0.0</td><td></td><td></td><td>NO APPARENT HYDROCARBON ODOR DETECTED</td><td>) (4.0 - 8.0 F I. B.G.).</td></td<>	8-			7.5 - 8	1140	0.0			NO APPARENT HYDROCARBON ODOR DETECTED) (4.0 - 8.0 F I. B.G.).
12 11 <td< td=""><td>10 -</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>	10 -									
14 16 <td< td=""><td>12-</td><td></td><td></td><td>11 - 12</td><td>1144</td><td>0.0</td><td></td><td></td><td></td><td></td></td<>	12-			11 - 12	1144	0.0				
16 16 149 0.0 18 19 20 19 20 19 20 21 20 22 24 22 22 24 22 22 24 22 22 24 22 22 24 22 22 24 22 22 24 22 22 24 22 22 24 22 22 24 22 22 24 22 22 24 22 22 24 22 22 24 22 22 24 22 22 24 22 22 24 22 22 24 22 23 23 23 23 23 23 23 23 23 23 23 23 23 24 44 24	14 -									
18 19:20 1158 0.0 0.0 22 24 22:24 22:24 22:24 22:24 22:24 22:24 22:24 22:24 22:24 22:24 22:24 22:24 22:24 22:24 22:24 22:22 12:04 0.0 </td <td>16-</td> <td></td> <td></td> <td>15 - 16</td> <td>1149</td> <td>0.0</td> <td></td> <td>B.G., NO APPARENT HYDRO-</td>	16-			15 - 16	1149	0.0		B.G., NO APPARENT HYDRO-		
20 19-20 1158 0.0 22 24 23-24 1204 0.0 26 27-28 1209 1.1 DARK YELLOWISH ORANGE MEDIUM COARSE GRAINED SAND, NON COHESIVE, FIRM, SLIGHTLY MOIST, MINOR PEBBLES BETWEEN 24-28' B.G. (23.0 - 36.0 FT. BELOW GRADE). 30 31-32 1213 4.4 SAME AS ABOVE EXCEPT LIGHT GRAY, HYDROCARBON ODOR (35.0 - 36.0 FT. B.G.). 34 36 36-37 1222 79 ND ND 36 36-37 1222 79 ND ND GRAY SILTY SAND, NON COHESIVE, FIRM, SLIGHTLY MOIST, HYDROCARBON ODOR (35.0 - 36.0 FT. B.G.). 40 41-42 1.2 ND ND ND DARK YELLOWISH ORANGE SILT, COHESIVE, FIRM, MOIST TO WET, NO 44 44 44 44 44 44 44 44 44 44 1.2 ND ND ND DARK YELLOWISH ORANGE SHALESTONE, SLIGHTLY MOIST TO WET, NO 44 44 44 44 44 44 44 44 50 6 SAND. - SILTY SAND. - SILT - SILTY CLAY. - SHALESTONE. 52 FTH Total	18-								CARBON ODOR DETECTED (8.0 - 23.0 FT. B.G.).	
22 23 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	20 -			19 - 20	1158	0.0				
24 23 = 24 1204 0.0 26 27 = 28 1209 1.1 30 31 = 32 1213 4.4 34 36 36 = 37 1222 79 ND ND 38 36 = 37 1222 79 ND ND ND GRAY SILTY SAND, NON COHESIVE, FIRM, SLIGHTLY MOIST, MYDROCARBON ODOR (35.0 - 36.0 FT. B.G.). 38 39 1230 188 ND ND ND 40 41 = 42 124 1.2 ND ND ND ND 44 <	22 -									
26 27.28 1209 1.1 DARK YELLOWISH ORANGE MEDIUM COARSE GRAINED SAND, NON COHESIVE, FIRM, SLIGHTLY MOIST, MINOR PEBBLES BETWEEN 24-28' B.G. (23.0 - 36.0 FT. BELOW GRADE). 30 31.32 1213 4.4 DARK YELLOWISH ORANGE MEDIUM COARSE GRAINED SAND, NON COHESIVE, FIRM, SLIGHTLY MOIST, MINOR PEBBLES BETWEEN 24-28' B.G. (23.0 - 36.0 FT. B.G.). 34 36 36.37 1222 79 ND ND 38 39 1230 188 SAME AS ABOVE EXCEPT LIGHT GRAY, HYDROCARBON ODOR (35.0 - 36.0 FT. B.G.). 40 41.42 12 ND ND ND GRAY SILTY SAND, NON COHESIVE, FIRM, SLIGHTLY MOIST, HYDROCARBON ODOR (35.0 - 36.0 FT. B.G.). 40 41.42 12 ND ND ND DARK YELLOWISH ORANGE SILT, COHESIVE, FIRM, MOIST TO WET, NO 44 42 41.42 12 ND ND DARK YELLOWISH ORANGE SHLESTONE, SLIGHTLY MOIST TO WET, NO 44 44 44 - - SLTY SAND. - SILT - SLGHTLY MOIST TO DRY, NO 450 - SAND. - SILT, SLGHTLY MOIST TO DRY, NO - SHAE STORE, SLIGHTLY MOIST TO DRY, NO - 52 OVM Organic vapor meter or p	24 -			<u>23 - 24</u>	1204	0.0				
28 27.223 1209 1.1 DARK YELLOWISH ORANGE MEDIUM COARSE GRAINED SAND, NON COHESIVE, FIRM, SLIGHTLY MOIST, MINOR PEBBLES BETWEEN 24'-28' B.G. (23.0 - 36.0 FT. BIG). 30 32 31.32 1213 4.4 36 36 - 37 1222 79 ND ND 38 39 1230 188 SAME AS ABOVE EXCEPT LIGHT GRAY, HYDROCARBON ODOR (35.0 - 36.0 FT. B.G). 40 41 - 42 1230 188 ND ND ND 42 41 - 42 1240 1.2 ND ND ND DARK YELLOWISH ORANGE SILT, COHESIVE, FIRM, SLIGHTLY MOIST, HYDROCARBON ODOR (35.0 - 36.0 FT. B.G). 44 44 1240 1.2 ND ND DARK YELLOWISH ORANGE SILT, COHESIVE, FIRM, MOIST TO WET, NO APPARENT HYDROCARBON ODOR (35.0 - 36.0 FT. B.G). 46 48 0DOR (36.0 - 39.5 FT. B.G). DARK YELLOWISH ORANGE SHALESTONE, SLIGHTLY MOIST TO WET, NO APPARENT HYDROCARBON ODOR (42.0 - 44.0 FT. B.G). 50 OVM Organic vapor meter or photoionization detector (PID). - SHALESTONE. - SHALESTONE. 52 OVM Organic vapor meter or photoionization detector (PID). - SHALESTONE. - SHALESTONE. 54 Borzene, toluene, ettylberzene, tolal sylen	26 -				1000					
30 31-32 1213 4.4 A4 36 36-37 1222 79 ND ND SAME AS ABOVE EXCEPT LIGHT GRAY, HYDROCARBON ODOR (35.0 - 36.0 FT. B.G.). 38 39 1230 188 GRAY SILTY SAND, NON COHESIVE, FIRM, SLIGHTLY MOIST, HYDROCARBON ODOR (36.0 - 39.5 FT. B.G.). 40 41-92 1.2 ND ND ND DARK YELLOWISH ORANCE SILT, COHESIVE, FIRM, MOIST TO WET, NO 42 41-92 1.2 ND ND DARK YELLOWISH ORANCE SILT, COHESIVE, FIRM, MOIST TO WET, NO 44 44 44 44 44 44 44 44 46 45 0 ND ND DARK YELLOWISH ORANCE SILT, COHESIVE, FIRM, MOIST TO WET, NO 46 48 0 0 0 APPARENT HYDROCARBON ODOR (39.5 - 42.0 FT. B.G.). 50 0 0 1.2 ND ND APPARENT HYDROCARBON ODOR (42.0 - 44.0 FT. B.G.). 51 0 0 0 - SILTY SAND. - SILT - SILTY CLAY. - SHALESTONE. 52 0 0 - SILTY SAND. - SILT SILTY SAND. - SILTY CLAY. - SHALESTONE.	28 -			<u>.27 - 28</u>	1209	1.1			DARK YELLOWISH ORANGE MEDIUM COARSE GF FIRM, SLIGHTLY MOIST, MINOR PEBBLES BETWEI	RAINED SAND, NON COHESIVE, EN 24'-28' B.G. (23.0 - 36.0 FT.
32 34 36 36 - 37 1222 79 ND ND ND ND ND ND RAX SABOVE EXCEPT LIGHT GRAY, HYDROCARBON ODOR (35.0 - 36.0 FT. B.G.). 38 38 39 1230 188 ND ND ND GRAY SILTY SAND, NON COHESIVE, FIRM, SLIGHTLY MOIST, HYDROCARBON ODOR (36.0 - 39.5 FT. B.G.). 40 41 - 42 1240 1.2 ND SAME AS ABOVE EXCEPT LIGHT GRAY, HYDROCARBON ODOR (39.	30 -			24 20	4040				BELOW GRADE).	
34 36 36 36 37 1222 79 ND GRAY SILTY SAND, NON COHESIVE, FIRM, SLIGHTLY MOIST, HYDROCARBON 40 41 41 41 42 41 42 1230 188 ND SAME AS ABOVE EXCEPT LIGHT GRAY, HYDROCARBON ODOR (39.5 -	32 -			<u>-31 - 34</u>	1213	4.4				
36 36-37 1222 79 ND ND ND GRAY SILTY SAND, NON COHESIVE, FIRM, SLIGHTLY MOIST, HYDROCARBON 40 41-32 1230 188 ND ND ND ND GRAY SILTY SAND, NON COHESIVE, FIRM, SLIGHTLY MOIST, HYDROCARBON 42 41-32 1240 1.2 ND ND ND ND NPARENT HYDROCARBON ODOR (39.5 - 42.0 FT. B.G.). 0ARK YELLOWISH ORANGE SILT, COHESIVE, FIRM, MOIST TO WET, NO APPARENT HYDROCARBON ODOR (39.5 - 42.0 FT. B.G.). DARK YELLOWISH ORANGE SHALESTONE, SLIGHTLY MOIST TO DRY, NO 46 48 NOTES: - SAND. - SILTY SAND. - SILT. - SILTY CLAY. - SHALESTONE. 50 OVM - Organic vapor meter or photoionization detector (PID). - SILTY - SILTY CLAY. - SHALESTONE. 52 - Stat Petroleum Hydrocarbons per US EPA Method 8015B. BTEX - Benzene, toluene, ethylbenzene, total sylenes per US EPA Method 8021B. Date: 09/22/2015 Time: 0640 54 - ND - Not detected at the Laboratory Reporting Limit ppm - Parts per million. 100 ppm calibration gas - isobutylene. 58 - Below grade. - Below grade. - Below grade. - SILTY CLAY. - SHALEST	34 -								SAME AS ABOVE EXCEPT LIGHT GRAY HYDROCARBO	ON ODOR (35.0 - 36.0 FT B.G.)
40 39 1230 188 ND APARENT HYDROCARBON ODOR (39.5 - 42.0 FT. B.G.). 44<	30 -			36 - 37	1222	79	ND	ND	GRAY SILTY SAND, NON COHESIVE, FIRM, SLIGHT	TLY MOIST, HYDROCARBON
42 41-92 1240 1.2 ND ND ND APPARENT HYDROCARBON ODOR (39.5 - 42.0 FT. B.G.). 44 <td< td=""><td>10</td><td></td><td></td><td>39</td><td>1230</td><td>188</td><td></td><td></td><td>ODOR (36.0 - 39.5 FT. B.G.).</td><td></td></td<>	10			39	1230	188			ODOR (36.0 - 39.5 FT. B.G.).	
44 44 44 44 46 46 48 50 - SAND. - SILTY SAND. 52 - SAND. - SILTY SAND. 52 - Stand Petroleum Hydrocarbons per US EPA Method 8015B. 54 BTEX Benzene, toluene, ethylbenzene, total xylenes per US EPA Method 8021B. 56 ND - Not detected at the Laboratory Reporting Limit ppm - Parts per million. mg/Kg - Milligram per kilogram. B.G. - Below grade.	42 -			41 - 42	1240	1.2	ND	ND	APPARENT HYDROCARBON ODOR (39.5 - 42.0 FT.	M, MOIST TO WEI, NO B.G.).
46 48 50 50 52 54 54 56 58 mg/Kg Milligram per kilogram. B.G. Below grade.	44 -							ND	DARK YELLOWISH ORANGE SHALESTONE, SLIGH	TILY MOIST TO DRY, NO
48 - SAND. - SILTY SAND. - SILTY CLAY. - SHALESTONE. 50 - OVM - Organic vapor meter or photoionization detector (PID). - SILTY - SHALESTONE. 54 - TPH - Total Petroleum Hydrocarbons per US EPA Method 8015B. - OVM CALIBRATION 56 BTEX - Benzene, toluene, ethylbenzene, total xylenes per US EPA Method 8021B. Date: 09/22/2015 Time: 0640 56 - Ppm - Parts per million. - N00 ppm calibration gas - isobutylene. 58 - Below grade. - Below grade. - -	46 -								J AFFARENT HTUROCARBON ODOR (42.0 - 44.0 FT.	B.G.).
50 - SAND. - SILTY SAND. - SILT. - SILTY CLAY. - SHALESTONE. 52 - Organic vapor meter or photoionization detector (PID). - TPH - Total Petroleum Hydrocarbons per US EPA Method 8015B. - SHALESTONE. 54 - Senzene, toluene, ethylbenzene, total xylenes per US EPA Method 8021B. - SHALESTONE. 56 - Not detected at the Laboratory Reporting Limit - Detected at the Laboratory Reporting Limit 58 - Milligram per kilogram. - Milligram per kilogram. - SHOL (RF = response factor).	48 -									
52 OVM - Organic vapor meter or photoionization detector (PID). TPH - Total Petroleum Hydrocarbons per US EPA Method 8015B. 54 BTEX - Benzene, toluene, ethylbenzene, total xylenes per US EPA Method 8021B. 56 ND - Not detected at the Laboratory Reporting Limit ppm - Parts per million. 58 mg/Kg B.G. - Below grade.	50 - NOTES: - SAND SILTY SAND SILT SILTY CLAY SHA									
54 - 10tal Petroleum Hydrocarbons per US EPA Method 8015B. OVM CALIBRATION 54 - BTEX - Benzene, toluene, ethylbenzene, total xylenes per US EPA Method 8021B. Date: 09/22/2015 Time: 0640 56 - - Ppm - Parts per million. Date: 09/22/2015 Time: 0640 58 - - Milligram per kilogram. 100 ppm calibration gas - isobutylene. RF = 1.00 (RF = response factor).	52 -			OVM	- Org	anic vapo	r meter o	r photoioi	nization detector (PID).	
56 ND - Not detected at the Laboratory Reporting Limit Date: 09/22/2015 Time: 0640 58	54 -	4 BTEX - Benzene, toluene, ethylbenzene, total xylenes per US EPA Method 8015B. OVM CALIBRATION BTEX - Benzene, toluene, ethylbenzene, total xylenes per US EPA Method 8021B.								
58 mg/Kg - Milligram per kilogram. B.G. - Below grade.	56 -			ND	- Not	detected	at the La	boratory I	Reporting Limit	Reading 100.0 ppm
B.G Below grade.	58 -			ppm mg/Kg	- Part J - Milli	s per mill gram per	kilogram.			100 ppm calibration gas - isobutylene.
DRAWING: MUDGE B 12R GP-2 2015-09-22.SKF DATE: 10/02/2015 DWN BY: NJV	60 -			B.G.	- Belo	ow grade.			DRAWING: MUDGE B 12R GP-2 2015-09-22 SKF	DATE: 10/02/2015 DWN BY: NJV

-										
						В	LAG	GE	NGINEERING, INC.	
									P.O. BOX 87	GP - 3
								BLO	JMFTELD, NM 87413	
									(505) 652-1199	
B	OF	RE	/	TE	S	ГΙ	HC)LE	EREPORT	BORING # 3
С	CLIENT: BP AMERICA PRODUCT								TION CO.	PAGE # 3
									3004510792) UNIT A, SEC. 17, T31N, R11W	DATE STARTED 09/24/15
E	QUIP	MENTU	JSI	ED:	GEO	PROBE 2	200	o, mo. /		OPERATOR KP
B	ORIN	G LOCA	ATI	ON:	91 FI	eet, s42	2.5E FR	OM WEL	L HEAD (NORTH OF BGT).	LOGGED BY JCB
DEPTH (FT.)	INTERVAL	LITHOLOGY INTERVAL	PIEZOMETER	SAMPLE INTERVAL (FT.)	sample Time	FIELD OVM (ppm)	TPH (mg/Kg)	BENZENE & TOTAL BTEX (mg/Kg)	FIELD CLASSIFICATION AN	D REMARKS
2-	-									
4 -										
6-										
8-					0848	0.1				
10 -										
12 -	11-12 0852 0.0									
14 -				15-16	DARK YELLOWISH ORANGE SILTY SAND, NON CO	OHESIVE, SLIGHTLY MOIST				
16-				-10-10	0000	0.0			(0.0 - 31.0 FT. B.G.).	ODORDETEOTED
20 -				19 - 20	0900	0.0				
20										
24 -				23 - 24	<mark>0904</mark>	0.4				
26 -										
28 -				27 - 28	0910	0.7				
30 -									DARK YELLOWISH ORANGE CLAYEY SILT SLIGHT	TI Y PLASTIC SUGHTLY MOIST
32 -				31-32	0917	1.1			NO APPARENT HYDROCARBON ODOR (31.0 - 32.0	FT. B.G.).
34 -								ND	DARK YELLOWISH ORANGE SILTY SAND, NON CO	CHESIVE, SLIGHTLY MOIST,
30 -				36	0927	0.8	ND	ND	HYDROCARBON ODOR DETECTED (32.0 - 39.0 FT.	B.G.).
40			0	39	0955	0.3	2015			
42 -			0 0 0 0	42	1038	01110/1	ND	ND	DAKK YELLOWISH ORANGE MEDIUM COARSE GR NON COHESIVE, FIRM, SLIGHTLY MOIST, NO APPA	AINED SAND WITH PEBBLES, RENT HYDROCARBON ODOR
44 -			-					ND	DETECTED, MOIST TO WET BETWEEN 41 - 44 FT. E	3.G. (39.0 - 44.0 FT. B.G.).
46 -		1 INCH	P\/	CCASING	45 FT					
48 -		MANUA	LL	/ DRILLED) LAST 4	FT. OF C	ASING (39.2 - 43.	2 FT. B.G.). DEPTH TO WATER ~ 40.75 FT. B.G., MEASI	URED 9/25/2015.
50 -		NOTE	S:		- SAM	ND.		5		
52 -	52 OVM - Organic vapor meter or photoionization detector (PID).									
54 -		-		TPH	- Tota	al Petroleu zene, tolu	im Hydro	carbons p	er US EPA Method 8015B.	Date: 09/24/2015 Time: 0700
56 -				ND	- Not	detected	at the La	poratory F	Reporting Limit	Reading 100.2 ppm
58 -				ppm mg/Kg	- Parl J - Milli	ts per milli gram per	ion. kilogram.		the state	100 ppm calibration gas - isobutylene. RF = 1.00 (RF = response factor).
- 00		-	-	B.G.	- Belo	ow grade.			DRAWING: MUDGE B 12R GP-3 2015-09-24.SKF	ATE: 10/05/2015 DWN BY: NJV

BLAGG ENGINEERING, INC. P.O. BX 87 BLOOMFIELD, NM 87413 (505) 632-1199 GP - 4 OPING 8											
P.O. BOX 87 BLOOMFIELD, NM 87413 (505) 632-1199 GP - 4 BORRE / TEST HOLE REPORT BORING #							В	LAG	G E	NGINEERING, INC.	
BORRE / TEST HOLE REPORT BORING # 4 I COLINI NAME: BPAMERICA PRODUCTION CO. MV# MV# COLIENT: LOCATION NAME: BPAMERICA PRODUCTION CO. MUDGE B# 12X (API # 3004510782) UNITA SEC. 17, T31N, R1W CONTRACTOR: BORING I COLTON BIAGG BINGINGHENKI, NC, IVYENDERKSY SERVORS, NC. DATE FINISHED DA2ALS CONTRACTOR: BLAGG BINGINGHENKI, NC, IVYENDERKSY SERVORS, NC. DOTE FINISHED DA2ALS DEORING LOCATION: TIP FETT SER FROM WELL HEAD MEST OF BGT. DATE FINISHED DA2ALS DEORING LOCATION: TIP FETT SER FROM WELL HEAD MEST OF BGT. DATE FINISHED DA2ALS 10 11:32, 1130 0.0 Immediation of the server se									RI O	P.O. BOX 87	GP - 4
BORRE / TEST HOLE REPORT BORING #									DLO	(505) 632-1199	
BORRE / TEST HOLE REPORT BORNE CLIENT: LOCATION NAME: CONTRACTOR BPAMERICA PRODUCTION CO. MUDGE B #12R. (API #. 3004510782) _UNITA, SEC. 17, T3IN, RTW BLAGE BKINEED										(000) 002 1100	
CLIENT: LOCATION NAME: CONTRACTOR: BP AMERICA PRODUCTION CO. MUDDE B# 12R. (API #: 3004510732) UNITA, SEC. 17, T31N, R11W DATE STARTED D0248 fs. CONTRACTOR: EQUIPMENT USED: BORING LOCATION: BLAGE BM.DREINK, INC. (KYVEK ENERGY SERVICES, INC. GEORPORE 200 DATE FINSHED D0248 fs. DATE STARTED D0248 fs. DPTIM 1000000000000000000000000000000000000	B	OF	RE	/	TE	S	ΓΙ	HC)LE	E REPORT	BORING #4 MW #NA
LOCATION NAME MUDDE B # 12R API # 3004510729 UNITA, SEC. 17, T31N, R11W DATE SINCHED DB28203 CONTRACTOR BLAGG ENNORMERING, NC. / KYVEK ENERGY SERVICES, INC. DEPT M USC BATTER SHEED DB28203 DEPT M BLAGG ENNORMEERING, NC. / KYVEK ENERGY SERVICES, INC. DEPT M UCG BO PROBE 200 DATE FINISHED DB28203 DEPT M BI FEET, S2TE FROM WELL HEAD (WEST OF BGT). UCG BO PR	CLIENT: BP AMERICA PRODUCTIO								DUCT	FION CO.	PAGE # 4
EQUIPMENT USED: GEOPROBE 200 OPERATOR OPERATOR Linkality BORING LOCATION: 115 FEET, S2IE FROM WELL HEAD (WEST OF BOT). DOGED BY	LOCATION NAME: MUDGE B # 12R (API #: 3004510792)								3004510792) UNIT A, SEC. 17, T31N, R11W	DATE STARTED 09/24/15	
BORING LOCATION: 115 FEET, S21E FROM WELL HEAD (WEST OF BGT). LOGGED BY	E	QUIP	MENTU	N. ISE	ED:	GEOF	PROBE 2	200	0, 110.1		OPERATOR KP
DEPTH (FT) MINEX WEEK MAME A WEEK	В	ORIN	G LOCA		ON:	115 F	EET, S2	21E FRC	M WEL	L HEAD (WEST OF BGT).	LOGGED BY JCB
2 3 4 1120 0.0 10 12 12 12 0.0 12 11 12 13 0.0 14 16 15 13 0.0 18 19 20 13 13 0.0 22 14 16 10 10 10 10 20 12 13 10 0.0 10 </td <td>DEPTH (FT.)</td> <td>INTERVAL</td> <td>Lithology Interval</td> <td>PIEZOMETER</td> <td>SAMPLE INTERVAL (FT.)</td> <td>Sample Time</td> <td>FIELD OVM (ppm)</td> <td>TPH (mg/Kg)</td> <td>BENZENE & TOTAL BTEX (mg/Kg)</td> <td>FIELD CLASSIFICATION AN</td> <td>D REMARKS</td>	DEPTH (FT.)	INTERVAL	Lithology Interval	PIEZOMETER	SAMPLE INTERVAL (FT.)	Sample Time	FIELD OVM (ppm)	TPH (mg/Kg)	BENZENE & TOTAL BTEX (mg/Kg)	FIELD CLASSIFICATION AN	D REMARKS
4 6 8 112 112 112 113 0.0 10 11 12 113 0.0 0 0 0 14 16 16 16 13 0.0 0 0 0 10 12 13 0.0 0	2-										
6 8 .7.2.8.1125 0.0 10 12 11.2 11.2 11.2 14 16 15.2.36 11.30 0.0 18 19.20 11.3 0.0 0.0 20 23.2.24 11.37 0.0 0.0 22 24 23.2.24 11.4 0.6 26 27.2.23 11.4 0.6 0.0 31.3.2 11.50 1.1 0.0 0.3 34 36 33.5.32 11.50 1.1 34 36 33.5.32 11.00 1.0 34 36 33.5.32 11.00 1.0 34 36 38.4 0.3 ND ND 34 36 38.4 1.10 ND ND 34 36 38.4 1.1 ND ND 34 36 38.4 1.10 ND ND 34 11.00 1.1 ND ND ND 35 1.210 0.3 ND ND	4 -				3-4	1120	0.0				
8 10 12 112 1130 0.0 12 116 116 116 116 116 116 18 19 20 1137 0.0 0.0 0.0 0.0 22 1137 0.0 19 20 1137 0.0 0.0 22 126 23 1137 0.0 0.0 0.0 0.0 0.0 24 19 20 1144 0.6 0.0	6-										
10 11 11 11 13 0.0 0.0 12 14 16 16 13 0.0 0.0 18 19 20 1137 0.0 0.0 0.0 0.0 20 19 20 1137 0.0	8-				<u>7-8</u>	1125	0.0				
12 1113/2 113/3 0.0 14 16 16 ± 36 113/4 0.0 18 19 ± 20 113/7 0.0 0.0 20 123 ± 24 114/2 0.6 21 123 ± 24 114/2 0.6 22 13/7 0.0 8 - 12 FT. & 28 - 32 FT. B.G. (0.0 - 37.0 FT. B.G.). 20 13/1 ± 32 114/6 1.0 30 31/2 ± 32 114/6 1.0 30 31/3 ± 32 1150 1.1 34 36 50/7 ± 38.5 FT. B.G.). SAME AS ABOVE EXCEPT GRAY, VERY SLIGHT APPARENT HYDROCARBON ODOR 40 110/7 ± 00.5 ND ND ND ND 34 38 1210 GW on 101/20/5 ND SAME AS ABOVE EXCEPT GRAY, VERY SLIGHT APPARENT HYDROCARBON ODOR 41 14/2 14/8 1.0 ND ND 42 14/1 0.3 ND ND ND 44 1218 0.3 ND ND ND 45 1218 0.3 ND ND ND 50 NOTES	10 -				41 12	1120	0.0				
14 16 16 15 13 0.0 0.0 18 19 20 1137 0.0 0.0 0.0 0.0 22 24 23 24 14 0.6 0.0	12 -				-11:34.	1150	0.0				
10 10 <td< td=""><td>14 -</td><td></td><td></td><td></td><td>15 - 16</td><td>1134</td><td>0.0</td><td></td><td></td><td></td><td></td></td<>	14 -				15 - 16	1134	0.0				
20 19:20 1137 0.0 0.0 0.0 22 24 23:23 1142 0.6 0.0 0.0 0.0 30 21:25:28 1146 1.0 0.0	18 -									DARK YELLOWISH ORANGE SILTY SAND, NON CO	DHESIVE, SLIGHTLY MOIST,
22 24 25 - 24 1142 0.6 26 27 - 28 1146 1.0 30 32 31 - 32 1150 1.1 34 36 37 - 38 1200 1.4 38 38 6.0 ND ND (37.0 - 38.5 FT. B.G.). 40 42 42 1210 GW on 10/1/20 15 SAME AS ABOVE EXCEPT GRAY, VERY SLIGHT APPARENT HYDROCARBON ODOR 42 42 42 42 0.3 ND ND ND 44 1218 0.3 ND ND ND SAME AS ABOVE EXCEPT DARK YELLOWISH ORANGE, MOIST TO WET, NO APPARENT HYDROCARBON ODOR (38.5 - 44.0 FT. B.G.). 46 11 INCH PVC CASING, 45 FT. TOTAL LENGTH, TOP OF CASING ~ 2.6 FT. ABOVE GRADE, BOTTOM OF PIPE ~ 42.4 FT. B.G., HOLES 50 NOTES: - SILTY SAND. 52 - SILTY SAND. 54 BTEX - Berzene, Ibluene, ethylberzene, Ibtal Petroleum Hydrocarbons per US EPA Method 80158. 56 ND ND Not detected at the Laboratory Reporting Limit ppm 58 - Not detected at the Laboratory Reporting Limit ppm - Parts per million. 704 - Willoram	20 -				19 - 20	<mark>1137</mark>	0.0			8 - 12 FT. & 28 - 32 FT. B.G. (0.0 - 37.0 FT. B.G.).	ECTED, MOIST BETWEEN
24 23 = 24 1142 0.6 26 28 27 = 28 1146 1.0 30 32 31 = 32 1150 1.1 34 36 38 = 0 0.0 ND ND 38 36 38 = 0 1210 GW on 10/1/2015 SAME AS ABOVE EXCEPT GRAY, VERY SLIGHT APPARENT HYDROCARBON ODOR 40 38 = 0 1210 GW on 10/1/2015 SAME AS ABOVE EXCEPT DARK YELLOWSH ORANGE, MOIST TO WET, NO APPARENT 42 42 1210 GW on 10/1/2015 SAME AS ABOVE EXCEPT DARK YELLOWSH ORANGE, MOIST TO WET, NO APPARENT 44 1NCH PVC CASING 45 FT. TOTAL LENGTH, TOP OF CASING 2.6 FT. ABOVE EXCEPT DARK YELLOWSH ORANGE, MOIST TO WET, NO APPARENT 44 1218 0.3 ND ND 44 11NCH PVC CASING 45 FT. TOTAL LENGTH, TOP OF CASING 2.6 FT. ABOVE GRADE, BOTTOM OF PIPE ~ 42.4 FT. B.G., HOLES 50 NOTES: - SILTY SAND. 51 OVM Organic vapor meter or photoionization detector (PID). 54 - SILTY SAND. 0VM CALLBRATION 56 ND ND Not detected at the Laboratory Reporting Limit 58 Ppm - Parts per million.	22 -										
26 27.28 1146 1.0 30 31.32 1150 1.1 34 35.38 1200 1.4 38 38.32 1210 GW on 10/1/20 15 40 1210 GW on 10/1/20 15 50 1210 GW on 10/1/20 15 50 1100000000000000000000000000000000000	24 -				23 - 24	1142	0.6				
28 30 32 31 - 32 1150 1.1 34 36 35 - 36 1200 1.4 ND ND 38 36 38 6.0 ND ND ND 40 1210 GW on 10/1/20 5 SAME AS ABOVE EXCEPT GRAY, VERY SLIGHT APPARENT HYDROCARBON ODOR 42 38 -42 1210 GW on 10/1/20 5 SAME AS ABOVE EXCEPT DARK YELLOWSH ORANGE, MOIST TO WET, NO APPARENT 44 -42 -42 0.3 ND ND ND 44 -42 -1218 0.3 ND ND SAME AS ABOVE EXCEPT DARK YELLOWSH ORANGE, MOIST TO WET, NO APPARENT 46 -11NCH PVC CASING, 45 FT. TOTAL LENGTH, TOP OF CASING ~ 2.6 FT. ABOVE GRADE, BOTTOM OF PIPE ~ 42.4 FT. B.G., HOLES SAME AS ABOVE EXCEPT DARK YELLOWSH ORANGE, MOIST TO WET, NO APPARENT 50 -10NCH PVC CASING, 45 FT. TOTAL LENGTH, TOP OF CASING ~ 2.6 FT. ABOVE GRADE, BOTTOM OF PIPE ~ 42.4 FT. B.G., HOLES SAME AS ABOVE EXCEPT DARK YELLOWSH ORANGE, MOIST TO WET, NO APPARENT 50 -11NCH PVC CASING, 45 FT. TOTAL LENGTH, TOP OF CASING ~ 2.6 FT. ABOVE GRADE, BOTTOM OF PIPE ~ 42.4 FT. B.G., MEASURED 9/25/2015. SAUTO NO 51 -1218 -110 FT entition SAUTO NO 52 -	26 -				27 20	1146	10				
30 31-32 1150 1.1 34 36 31-32 1150 1.1 34 36 35-36 1200 1.4 38 38 38 50 ND ND 40 38 52-36 1200 1.4 SAME AS ABOVE EXCEPT GRAY, VERY SLIGHT APPARENT HYDROCARBON ODOR 42 38 1210 GW on 10/1/2015 SAME AS ABOVE EXCEPT DARK YELLOWISH ORANGE, MOIST TO WET, NO APPARENT HYDROCARBON ODOR (38.5 - 44.0 FT. B.G.). 44 46 11NCH PVC CASING, 45 FT. TOTAL LENGTH, TOP OF CASING ~ 2.6 FT. ABOVE GRADE, BOTTOM OF PIPE ~ 42.4 FT. B.G., HOLES 50 1INCH PVC CASING, 45 FT. TOTAL LENGTH, TOP OF CASING ~ 2.6 FT. ABOVE GRADE, BOTTOM OF PIPE ~ 42.4 FT. B.G., HOLES 50 NOTES: SILTY SAND. 51 OVM Organic vapor meter or photoionization detector (PID). 52 OVM Organic vapor meter or photoionization detector (PID). 54 BTEX Benzene, toluene, ethylbenzene, total xylenes per US EPA Method 8015B. 56 ND Not detected at the Laboratory Reporting Limit 700 promotilization gas - isobutylene. 78 Parts per million. 79 ND witer	28 -				-61 - 49	1140	1.0				
34 36 35::36 1200 1.4 ND ND 38 38 38 38 55::36 1200 1.4 ND ND 40 38 38 38 50::00 10/1/2015 SAME AS ABOVE EXCEPT GRAY, VERY SLIGHT APPARENT HYDROCARBON ODOR 42 38::00 1210 GW on 10/1/2015 SAME AS ABOVE EXCEPT DARK YELLOWISH ORANGE, MOIST TO WET, NO APPARENT HYDROCARBON ODOR (38::00::000 (38::	32 -	-			31 - 32	1150	1.1				
36 38 1200 1.4 ND ND ND 38 38 6.0 ND ND ND (37.0 - 38.5 FT. B.G.). 40 42 44 46 1210 GW on 10/1/20 IS SAME AS ABOVE EXCEPT DARK YELLOWISH ORANGE, MOIST TO WET, NO APPARENT HYDROCARBON ODOR (38.5 - 44.0 FT. B.G.). 44 46 11NCH PVC CASING, 45 FT. TOTAL LENGTH, TOP OF CASING ~ 2.6 FT. ABOVE GRADE, BOTTOM OF PIPE ~ 42.4 FT. B.G., HOLES 48 MANUALLY DRILLED LAST 6 FT. OF CASING (36.4 - 42.4 FT. B.G.). DEPTH TO WATER ~ 39.95 FT. B.G., MEASURED 9/25/2015. 50 NOTES: - SILTY SAND. 52 OVM Organic vapor meter or photoionization detector (PID). 54 BTEX - Benzene, toluene, ethylbenzene, total xylenes per US EPA Method 8021B. 56 ND - Not detected at the Laboratory Reporting Limit 58 - Parts per million. 100 ppm calibration gas - isobutylene. 64 - Milligram per kilogram. 100 ppm calibration gas - isobutylene.	34 -										
38 6.0 ND ND <t< td=""><td>36 -</td><td></td><td></td><td></td><td>35 - 36</td><td>1200</td><td>1.4</td><td></td><td></td><td></td><td></td></t<>	36 -				35 - 36	1200	1.4				
40 1210 IGW on f10/1/2015 42 0.3 ND ND 44 1218 0.3 ND ND 46 1218 0.3 ND ND 47 1218 0.3 ND ND 46 1218 0.3 ND ND 47 1218 0.3 ND ND 48 11NCH PVC CASING, 45 FT. TOTAL LENGTH, TOP OF CASING ~ 2.6 FT. ABOVE GRADE, BOTTOM OF PIPE ~ 42.4 FT. B.G., HOLES 49 MANUALLY DRILLED LAST 6 FT. OF CASING (36.4 - 42.4 FT. B.G.). DEPTH TO WATER ~ 39.95 FT. B.G., MEASURED 9/25/2015. 50 NOTES: - SILTY SAND. 51 OVM Organic vapor meter or photoionization detector (PID). 54 TH Total Petroleum Hydrocarbons per US EPA Method 8015B. 56 ND Not detected at the Laboratory Reporting Limit 58 ND N	38 -			000000	38		6.0	ND	ND ND	SAME AS ABOVE EXCEPT GRAY, VERY SLIGHT APPAR (37.0 - 38.5 FT. B.G.).	RENT HYDROCARBON ODOR
42 44 46 46 46 47 46 48 46 48 46 48 46 48 46 48 46 48 46 48 46 48 46 48 48 50 50 52 50 52 50 52 50 52 50 52 50 52 50 52 50 52 50 52 50 52 50 52 52 53 54 55 52 52 53 54 55 52 53 54 55 52 53 54 55 52 55 55	40 -			00000	V	1210	GW on	10/1/20	5	SAME AS ABOVE EXCEPT DARK YELLOWISH ORANGE	E, MOIST TO WET, NO APPARENT
 44 46 48 49 42.4 FT. B.G., HOLES 42.4 FT. B.G.). DEPTH TO WATER ~ 39.95 FT. B.G., MEASURED 9/25/2015. 50 51 52 52 54 54 54 54 55 56 57 57 58 58 58 58 59 50 58 59 50 50 50 51 52 52 51 52 52 52 53 54 55 56 57 58 58 59 59 50 50 50 51 52 51 52 52 52 53 54 54 55 56 57 58 58 59 59 50 50 50 51 52 51 52 51 52 52 52 53 	42 -			*	42	1218	0.3	ND	ND	HYDROCARBON ODOR (38.5 - 44.0 FT. B.G.).	
 1 INCH PVC CASING, 45 FT. TOTAL LENGTH, TOP OF CASING ~ 2.6 FT. ABOVE GRADE, BOTTOM OF PIPE ~ 42.4 FT. B.G., HOLES MANUALLY DRILLED LAST 6 FT. OF CASING (36.4 - 42.4 FT. B.G.). DEPTH TO WATER ~ 39.95 FT. B.G., MEASURED 9/25/2015. NOTES: SILTY SAND. OVM - Organic vapor meter or photoionization detector (PID). TPH - Total Petroleum Hydrocarbons per US EPA Method 8015B. BTEX - Benzene, toluene, ethylbenzene, total xylenes per US EPA Method 8021B. ND - Not detected at the Laboratory Reporting Limit ppm - Parts per million. mg/Kg - Milligram per kilogram. 	44 -					1210					
50 NOTES: - SILTY SAND. 52 OVM - Organic vapor meter or photoionization detector (PID). 54 TPH - Total Petroleum Hydrocarbons per US EPA Method 8015B. 56 BTEX - Benzene, toluene, ethylbenzene, total xylenes per US EPA Method 8021B. 56 ND - Not detected at the Laboratory Reporting Limit 58 ppm - Parts per million. mg/Kg - Milligram per kilogram.	40 -		1 INCH MANUA	PV(C CASING	6, 45 FT. D LAST 6	FT. OF C	ENGTH, T CASING (TOP OF 0 36.4 - 42	CASING ~ 2.6 FT. ABOVE GRADE, BOTTOM OF PIPE ~ 4 .4 FT. B.G.). DEPTH TO WATER ~ 39.95 FT. B.G., MEASI	12.4 FT. B.G., HOLES URED 9/25/2015.
52 - SILTY SAND. 54 - OVM - Organic vapor meter or photoionization detector (PID). 54 TPH - Total Petroleum Hydrocarbons per US EPA Method 8015B. 56 BTEX - Benzene, toluene, ethylbenzene, total xylenes per US EPA Method 8021B. ND - Not detected at the Laboratory Reporting Limit Date: 09/24/2015 58 - - Time: 0700 78 - - - 58 - - - 58 - - - 58 - - - 58 - - - 58 - - - 58 - - - 58 - - - 58 - - - 58 - - - 58 - - - 58 - - - 59 - - - 58 - - -	50 -		NOTE	0		1					
54 TPH - Total Petroleum Hydrocarbons per US EPA Method 8015B. OVM CALIBRATION 56 BTEX - Benzene, toluene, ethylbenzene, total xylenes per US EPA Method 8021B. Date: 09/24/2015 Time: 0700 58 ND - Not detected at the Laboratory Reporting Limit ppm - Parts per million. 100 ppm calibration gas - isobutylene. 78 mg/Kg - Milligram per kilogram. Ref = 1.00 (RF = response factor).	52 -		NOTE	5:	OVM	- SIL	anic vapo	or meter o	r photoio	nization detector (PID).	0.44.0111701-011
56 ND - Not detected at the Laboratory Reporting Limit Reading 100.2 ppm 58 - Parts per million. 100 ppm calibration gas - isobutylene. rmg/Kg - Milligram per kilogram. Reading 100.2 ppm	54 -				TPH	- Tota	I Petroleu	um Hydro	carbons p	per US EPA Method 8015B.	Date: 09/24/2015 Time: 0700
58 ppm - Parts per million. mg/Kg - Milligram per kilogram. F = 1.00 (RF = response factor).	56 -				ND	- Not	detected	at the Lal	poratory I	r, total xylenes per US EPA Method 6021B. Reporting Limit	Reading 100.2 ppm
	58 -				ppm mg/Kg	- Part - Milli	ts per mill gram per	ion. kilogram.			100 ppm calibration gas - isobutylene. RF = 1.00 (RF = response factor).
B.G Below grade. DRAWING: MUDGE B 12R GP-4 2015-09-24.SKF DATE: 10/05/2015 DWN BY: NJV	60 -			6.5	B.G.	- Belo	ow grade.	Real of the		DRAWING: NUDGE B 12R GP-4 2015-09-24.SKF	ATE: 10/05/2015 DWN BY: NJV

	and the second sec			L			N. 21 (A			
						B	LAG	G E	NGINEERING, INC.	
									P.O. BOX 87	CP_5
								BLO	OMFIELD, NM 87413	GF - J
									(505) 632-1199	
BC	DF	RE	/	TE	S	ΓΙ	НС)LE	E REPORT	BORING # <u>5</u> MW # NA
C	CLIENT: BP AMERICA PRODUC								FION CO.	PAGE # <u>5</u>
LC	LOCATION NAME: MUDGE B # 12R (API #: 30							(API #:	3004510792) UNIT A, SEC. 17, T31N, R11W	DATE STARTED09/24/15
CO		RACTOR	2: 100	-D.	BLAG		NEERIN	g, INC. /	KYVEK ENERGY SERVICES, INC.	DATE FINISHED 09/24/15
EQUIPMENT USED: GEOPROBE 200 BORING LOCATION: 146 FEET, S38E FROM WELL HEAD, (SOUTHEAST OF BGT)								L HEAD (SOUTHEAST OF BGT)		
DEPTH (FT.)	INTERVAL	LITHOLOGY	PIEZOMET	INTERVAL (FT.)	SAMPLE	OVM (ppm)	TPH (mg/Kg)	& TOTAL BTEX (mg/Kg)		ID REIVIARKS
2-									DARK YELLOWISH ORANGE SILTY SAND, NON CO	OHESIVE, SLIGHTLY MOIST,
4 -									FIRM, NO APPARENT HYDROCARBON ODOR DET	ECTED (0.0 - 7.5 FT. B.G.).
6-				7 0	1250	224				
8-				(-9	1350	231				
10 -				11 12	1250	740				
12 -				-11:536.	1555	143				
14 -				15-16	1402	709			ODOR (7.5 - 20.0 FT. B.G.).	UNG AFFARENT HTDROUARBON
16-	_			-10-10	1402	105				
18-				19 - 20	1405	603				
20 1				-14-44						
22 -				23 - 24	1408	784				
24										
20				27 - 28	1411	730				
20									GRAY TO BLACK SAND, MEDIUM GRAINED, NON	COHESIVE, SLIGHTLY MOIST,
32 -				31 - 32	1414	596			FIRM, STRONG APPARENT HYDROCARBON ODO	R DETECTED (20.0 - 40.0 FT. B.G.).
34 -										
36 -				35 - 36	1419	783	27	ND		
38 -			000							
40			00000	39 - 40	1434	359	GW	n 10/1/		
42 -			00000	42	1450	14	ND	ND	NO APPARENT HYDROCARBON ODOR DETECTED	ic, moist, firm to stiff,) (40.0 - 44.0 Ft. B.G.).
44 -								UN		
46 -				CASINO	AF ET T		NOTU			
48 -		MANUA	LLY	DRILLED	LAST 6	FT. OF C	ASING (37.25 - 43	3.25 FT. B.G.). DEPTH TO WATER ~ 39.99 FT. B.G., MEA	43.25 FT. B.G., HOLES ASURED 9/25/2015.
50 -		NOTE	ç.		SAN					
52 -		NOTE	0.	OVM	- Oraz	anic vapo	r meter o	photoior	nization detector (PID).	
54 -				TPH	- Tota	I Petroleu	im Hydro	carbons p	er US EPA Method 8015B.	OVM CALIBRATION
56 -				ND	- Ben - Not	zene, tolu detected	iene, ethy at the Lai	oratory F	e, total xylenes per US EPA Method 8021B. Reporting Limit	Reading 100.2 ppm
58 -				ppm	- Part	s per mill	ion.	, ,		100 ppm calibration gas - isobutylene.
60 -				B.G.	- Ivilli	w grade.	kilogram.		DRAWING: MUDGE B 12R GP-5 2015-09-24.SKF D	ATE: 10/05/2015 DWN BY: NJV

						В	LAG	GE	NGINEERING, INC.	
									P.O. BOX 87	GP_6
								BLOO	DMFIELD, NM 87413	01 - 0
									(505) 632-1199	
BC	DF	RE	/	TE	S	Γŀ	-IC)LE	E REPORT	BORING # 66
С	CLIENT: BP AMERICA PRODUCTIO							DUCT	TON CO.	PAGE # 6
	OCAT	ION NA	ME 2.	Ξ:	BLAC	GE B #	12R ((api #: : G, INC. /	3004510792) UNIT A, SEC. 17, 131N, R11VV KYVEK ENERGY SERVICES. INC.	DATE FINISHED 09/24/15
E	QUIP	MENT U	ISE	ED:	GEO	PROBE 2	200			OPERATOR KP
B	ORIN	G LOCA		ON:	182 I	EET, S	BRE FRC	M WELL	HEAD (SOUTHEAST OF BGT & EDGE OF WELL PAD).	LOGGED BY JCB
DEPTH (FT.)	INTERVAL	Lithology Interval	PIEZOMETER	SAMPLE INTERVAL (FT.)	Sample Time	FIELD OVM (ppm)	TPH (mg/Kg)	BENZENE & TOTAL BTEX (mg/Kg)	FIELD CLASSIFICATION AN	DREMARKS
2-										
4-				3-4	1509	0.0				
8-				7-8	1520	0.0			DARK YELLOWISH ORANGE SILT TO SANDY SILT,	NON COHESIVE, SLIGHTLY
10 -									INDIST, FIRM, NO AFFARENT HTDROCARDON ODA	JR DETECTED (0.0 - 16.0 FT. B.G.)
12 -				_11 - 12_	1524	0.0				
14 - 16 -				15 - 16	1528	0.0				
18-										
20 -				19 - 20	1532	0.0				
22 -				23 - 24	1536	0.0				
24 -									DARK YELLOWISH ORANGE SAND, MEDIUM GRAI SLIGHTLY MOIST, FIRM, NO APPARENT HYDROCA	NED, NON COHESIVE, RBON ODOR DETECTED
28 -				27 - 28	1540	0.0			(16.0 - 36.0 FT. B.G.).	
30 -										
32 -				31 - 32	1544	0.0				
34 -				35 - 36	1549	3.6			SAA EXCEPT COARSE GRAINED WITH MINOR ROUND	ED PEBBLES (36.0 - 38.0 FT B.G.)
38 -			000000	38	1549	404	63	ND	SAA EXCEPT GRAY TO BLACK WITH STRONG HYDROC	CARBON ODOR (38.0 - 39.0 FT. B.G.).
40 -			00000	40	1559		05	0.094	DARK YELLOWISH ORANGE SHALLESTONE (39.0	410 FT BG)
42 -			••••	41	1630	Dry to T 2.1	D on 10 ND	1/2015 ND ND	DARK YELLOWISH BROWN SANDY SILT, NON COH	HESIVE, DRY, FIRM TO DENSE,
44 -								ND	DARK YELLOWISH ORANGE SHALESTONE (39.0 -	41.0 FT. B.G.).
46 -		1 INCH	PV	C CASING	6, 43 FT.	TOTAL LE	ENGTH, 1	TOP OF C	CASING ~ 1.00 FT. ABOVE GRADE, BOTTOM OF PIPE ~	42.00 FT. B.G.,
48 -		HOLES	MA C:			LAST 6 I	T. OF C	ASING (3	6.00 - 42.00 FT. B.G.). NO WATER DETECTED, MEASU	RED 9/25/2015.
50 -	OVM - Organic vapor meter or photoionization detector (PID).									
52 TPH - Total Petroleum Hydrocarbons per US EPA Method 8015B. 54 BTEX - Benzene toluene ethythenzene total vydenes per US EPA Method 8021B										
56 -				ND	- Not	detected	at the Lat	poratory F	Reporting Limit	Date: 09/24/2015 Time: 0700 Reading 100.2 ppm
58 -				ppm mg/Kg	- Pari J - Milli	gram per	ion. kilogram.			100 ppm calibration gas - isobutylene.
60 -				B.G. SAA	- Belo	ow grade. ne as abo	ve		DRAWING: MUDGE B 12R GP-6 2015-09-24.SKF	ATE: 10/05/2015 DWN BY: NJV

1.00.00		123-15								
						В	LAG	GE	NGINEERING, INC.	
									P.O. BOX 87	
								BLO	OMFIELD, NM 87413	01 - 1
									(505) 632-1199	
R)F	2F	/	TF	:5	ГΙ) F		BORING #7
			/		.0	<u> </u>				MW# NA
C			ь <i>л</i> е	_ .	BP A	MERIC	LAPRO		[ION CO. 3004510792) LINITA SEC 17 T31N R11W	DATE STARTED
CONTRACTOR: BLAGG ENGINEERING, INC. / KYVEK E							NEERING	G, INC. /	KYVEK ENERGY SERVICES, INC.	DATE FINISHED 09/25/15
EQUIPMENT USED: GEOPROBE 200								OPERATOR KP		
B	BORING LOCATION: 176 FEET, S29E FROM WELL HEAD (SOUTH-SOUTHEAST OF BGT).								LOGGED BY JCB	
DEPTH (FT.)	EPTH (FT.) WEPTH (FT.) WE LITHOLOGY WE SAMPLE SAMPLE TIME OWN (Ppm) INTERVAL (FT.) WE SAMPLE TIME OWN (Ppm) FIELD CLASSIFICATION AN (Ppm) GROUND SURFACE							D REMARKS		
2-										
4 -				3-4	0938	0.0				
6-										
8-				<u> 7 - 8 </u>	0942	0.0				
10 -					00.47					
12 -				-11-32	0947	0.0			DARK YELLOWISH ORANGE SILTY SAND, NON CO FIRM, NO APPARENT HYDROCARBON ODOR DET	HESIVE, SLIGHTLY MOIST, ECTED (0.0 - 24.0 FT. B.G.).
14 -				15-16	0951	0.0				
16-				10-10-	0001	0.0				
20 -				19 - 20	0955	0.0				
20 -										
24 -				23 - 24	1000	0.0				
26 -									DARK YELLOWISH ORANGE SAND, MEDIUM GRAI SLIGHTLY MOIST, FIRM, NO APPARENT HYDROCA	NED, NON COHESIVE, RBON ODOR DETECTED
28 -				27 - 28	1008	0.0			(24.0 - 28.0 FT. B.G.).	
30 -										
32 -				31 - 32	1015	0.8				
34 -					4000		LUT.	ND	INCREASING STARTING AT 30 FT. B.G. (28.0 - 40.0 FT. I	B.G.).
36 -			000	35 - 36	1028	1.5	ND	ND		
38 -			00000	39	1046	1.0			DARK YELLOWISH BROWN SILT, NON COHESIVE,	MOIST, DENSE, NO APPARENT
40 -			00000	41	1130	1.2	ND	ND ND	HTDROCARBON ODOR DE LECTED (40.0 - 41.0 FT, DARK YELLOWISH ORANGE SAND, NON COHESIV	B.G.). /E, MOIST, FIRM, NO APPARENT
42 -						Dry to T	D on 10.	1/2015	HTDROGARBON ODOR DETECTED (41.0 - 41.5 FT. DARK YELLOWISH ORANGE SANDSTONE (41.5 - 4	B.G.). 2.5 FT. B.G.).
46 -									BLUISH SHALESTONE, DRY, NO APPARENT HYDR (42.5 - 43.0 FT. B.G.).	OCARBON ODOR DETECTED
48 -		1 INCH MANUA	PV	C CASING	6, 43.5 FT	FT. OF C	LENGTH ASING (, TOP OF 36.0 - 42.	CASING ~ 1.5 FT. ABOVE GRADE, BOTTOM OF PIPE ~ .0 FT. B.G.). NO WATER DETECTED, MEASURED 9/25/2	42.0 FT. B.G., HOLES 2015.
50 -	_	NOTE	S:		- SILT	TY SAND.		- SAN	ND SILT SANDSTONE.	- SHALESTONE.
52 -					- Org	anic vapo	r meter o	r photoior	nization detector (PID).	0.01.01.177.1701
54 -				BTEX	- Ben	zene, tolu	in Hydrod iene, ethy	lbenzene	e, total xylenes per US EPA Method 8021B.	Date: 09/25/2015 Time: 06/5
56 -				ND ppm	- Not - Part	detected s per milli	at the Lat	poratory F	Reporting Limit	Reading 100.1 ppm
58 -				mg/Kg	- Milli	gram per	kilogram.			100 ppm calibration gas - isobutylene. RF = 1.00 (RF = response factor).
60 -				SAA	- Belo	ne as abo	ve		DRAWING: MUDGE B 12R GP-7 2015-09-25.SKF	ATE: 10/06/2015 DWN BY: NJV

BLAGG ENGINEERING, INC. P.O. BOX 87 BLOOMFIELD, NM 87413 (505) 632-1199 BORRE / TEST HOLE REPORT CLIENT: LOCATION NAME: CONTRACTOR: EQUIPMENT USED: BORING LOCATION NAME: CONTRACTOR: EQUIPMENT USED: BORING LOCATION: BLAGG ENGINEERING, INC. / KYVEK ENERGY SERVICES, INC. GEOPROBE 200 DEPTH IS HERE IN A PARENT HYDROCARBON ODOR DETECTED (0.0 - 20.0 FT. B.G.). DEPTH IS HERE INSHED IN THE INSHED IN A PARENT HYDROCARBON ODOR DETECTED (0.0 - 20.0 FT. B.G.). DEPTH IS HERE I 224 0.0 18 19:20 1211 0.0 22 24 123 224 1214 0.0 DARK YELLOWISH ORANGE SAND, MEDIUM GRAINED, NON COHESIVE, SLIGHTLY MOIST, FIRM, NO APPARENT HYDROCARBON ODOR DETECTED (0.0 - 20.0 FT. B.G.).	8 NA 8 09/25/15 09/25/15 KP JCB								
CLIENT: LOCATION NAME: CONTRACTOR: EQUIPMENT USED: BORING LOCATION: BORING LOC	8 NA 8 09/25/15 09/25/15 KP JCB								
(505) 632-1199 BORRE / TEST HOLE REPORT CLIENT: LOCATION NAME: CONTRACTOR: EQUIPMENT USED: BORING LOCATION: BLAGG ENGINEERING, INC. / KYVEK ENERGY SERVICES, INC. GEOPROBE 200 BORING LOCATION: DEPTH VIENDIN: DIFTH V	8 NA 8 09/25/15 MP JCB								
BORRE / TEST HOLE REPORT BORING #	8 NA 8 09/25/15 09/25/15 KP JCB								
BORRE / TEST HOLE REPORT BORING #	8 NA 8 09/25/15 KP JCB								
CLIENT: LOCATION NAME: CONTRACTOR: EQUIPMENT USED: BORING LOCATION: BP AMERICA PRODUCTION CO. MUDGE B # 12R PAGE # Date started D	8 09/25/15 KP JCB								
LOCATION NAME: CONTRACTOR: EQUIPMENT USED: BORING LOCATION: HUDGE B # 12R (API #: 3004510792) UNITA, SEC. 17, T31N, R11W BLAGG ENGINEERING, INC. / KYVEK ENERGY SERVICES, INC. GEOPROBE 200 BORING LOCATION: HITERNAL B SMERAL (FT.) BURGE B # 12R (API #: 3004510792) UNITA, SEC. 17, T31N, R11W BLAGG ENGINEERING, INC. / KYVEK ENERGY SERVICES, INC. GEOPROBE 200 DEPTH (FT.) BURGE B # 12R (API #: 3004510792) UNITA, SEC. 17, T31N, R11W GEOPROBE 200 DEPTH (FT.) BURGE B # 12R (API #: 3004510792) UNITA, SEC. 17, T31N, R11W GEOPROBE 200 DEPTH (FT.) BURGE B # 12R (API #: 3004510792) UNITA, SEC. 17, T31N, R11W GEOPROBE 200 DEPTH (FT.) DEPTH (FT.) BURGE B # 12R (API #: 3004510792) UNITA, SEC. 17, T31N, R11W GEOPROBE 200 DEPTH (FT.) DEPTH (FT.) DEPTH (FT.) BURGE B # 12R (FT.) DARK YELLOWISH ORANGE SILTY SAND, NON COHESIVE, SLIGHTLY MOIST, FIRM, NO APPARENT HYDROCARBON ODOR DETECTED (0.0 - 20.0 FT. B.G.). DARK YELLOWISH ORANGE SAND, MEDIUM GRAINED, NON COHESIVE, SLIGHTLY MOIST, FIRM, NO APPARENT HYDROCARBON ODOR DETECTED (0.0 - 20.0 FT. B.G.). DARK YELLOWISH ORANGE SAND, MEDIUM GRAINED, NON COHESIVE, SLIGHTLY MOIST, FIRM, NO APPARENT HYDROCARBON ODOR DETECTED (0.0 - 20.0 FT. B.G.). DARK YELLOWISH ORANGE SAND, MEDIUM GRAINED, NON COHESIVE, SLIGHTLY MOIST, FIRM, NO APPARENT HYDROCARBON ODOR DETECTED (0.0 - 20.0 FT. B.G.).	09/25/15 								
CONTRACTOR: BLAGG ENGINEERING, INC. / KTVEN ENERGY SERVICES, INC. DATE FINISTICD Date finisticD Date finisticD Description BORING LOCATION: 140 FEET, S47E FROM WELL HEAD (EAST OF BGT & EDGE OF WELL PAD). OPERATOR	<u>KP</u> <u>JCB</u> JCB								
BORING LOCATION: 140 FEET, S47E FROM WELL HEAD (EAST OF BGT & EDGE OF WELL PAD). LOGGED BY DEPTH MINERAL SAMPLE (FT.) SAMPLE (F	JCB IST, 3.).								
DEPTH (FT.) Image: Same-Le INTERVAL Same-Le INTERVAL (FT.) Same-Le INTERVAL (FT.)<	IST, 3.).								
2 4 6 8 10 11:12 12 11:12 14 16 16 15:16 18 19:20 20 12:12 24 11:12 12 12:12 14 16 16 19:20 19:20 121 0.0 19:20 12:12 124 0.0 10 10 10 11:12 1204 12:12 1204 12:12 1204 14 16 15:236 1208 19:20 1211 0.0 DARK YELLOWISH ORANGE SAND, MEDIUM GRAINED, NON COHESIVE, SLIGHTLY MOIST, FIRM, NO APPARENT HYDROCARBON ODOR DETECTED 22 124 23:24 1214 0.0 DARK YELLOWISH ORANGE SAND, MEDIUM GRAINED, NON COHESIVE, SLIGHTLY MOIST, FIRM, NO APPARENT HYDROCARBON ODOR DETECTED (200:28:05 T, FIGN, NO APPARENT HYDROCARBON ODOR DETECTED	IST, 3.).								
2 4 6 8 10 11:12 12 11:12 14 16 16 15:16 18 19:20 20 19:20 12 121 14 16 16 19:20 18 19:20 20 12:11 12 0.0 18 19:20 19:20 1211 0.0 10 10 10:10:10 11:1:12 1204 10 10:10:10 10 10:10:10 10 10:10:10 11:1:12 1204 12 120 12 120 12 120 12 120 12 120 13:20 1211 10 0.0 11:2:20 1211 12:21 1211 13:22 1211 14:30 120 15:21:21 121:00 <td>IST, 3.).</td>	IST, 3.).								
6 8 15 15 0.0 10 11 12 11 12 0.0 12 11 12 1204 0.0 0.0 14 16 15 16 15 1208 0.0 18 19 20 19 20 12 120 0.0 22 24 12 121 0.0 0.0 0.0 0.0 18 19 20 12 121 0.0 0.0 0.0 24 12 121 0.0 0.0 0.0 0.0 0.0 22 24 12 121 0.0 0.0 0.0 0.0 0.0 24 19 20 121 0.0 0.0 0.0 0.0 24 12 121 0.0 0.0 0.0 0.0 0.0 24 12 23 121 0.0 0.0 0.0 0.0 0.0 24 10 10 0.0 0.0 0.0 0.0	IST, 3.).								
8 10 1158 0.0 10 11-12 1204 0.0 12 11-12 1204 0.0 14 15-16 1208 0.0 18 19-20 1211 0.0 20 19-20 1211 0.0 22 12 1214 0.0 24 12-20 1214 0.0	IST, 3.).								
10 12 11-12 1204 0.0 12 11-12 1204 0.0 DARK YELLOWISH ORANGE SILTY SAND, NON COHESIVE, SLIGHTLY MOIST, FIRM, NO APPARENT HYDROCARBON ODOR DETECTED (0.0 - 20.0 FT. B.G.). 14 15-16 1208 0.0 18 19-20 1211 0.0 20 19-20 1211 0.0 22 24 23-24 1214 0.0	IST, 3.).								
12 12 <td< td=""><td>G.).</td></td<>	G.).								
14 14 15:16 1208 0.0 16 18 19:20 1211 0.0 20 19:20 1211 0.0 22 121 0.0 DARK YELLOWISH ORANGE SAND, MEDIUM GRAINED, NON COHESIVE, SLIGHTLY MOIST, FIRM, NO APPARENT HYDROCARBON ODOR DETECTED (20 23:24 1214 0.0									
16 19-36 1208 0.0 18 19-20 1211 0.0 20 19-20 1211 0.0 22 121 0.0 DARK YELLOWISH ORANGE SAND, MEDIUM GRAINED, NON COHESIVE, SLIGHTLY MOIST, FIRM, NO APPARENT HYDROCARBON ODOR DETECTED (20 23-24 1214 0.0									
18 19-20 1211 0.0 20 19-20 1211 0.0 22 121 0.0 DARK YELLOWISH ORANGE SAND, MEDIUM GRAINED, NON COHESIVE, SLIGHTLY MOIST, FIRM, NO APPARENT HYDROCARBON ODOR DETECTED 24 23-24 1214 0.0									
20 121 0.0 22 123 - 24 1214 0.0 24 123 - 24 1214 0.0									
22 23 - 24 1214 0.0 DARK YELLOWISH ORANGE SAND, MEDIUM GRAINED, NON COHESIVE, SLIGHTLY MOIST, FIRM, NO APPARENT HYDROCARBON ODOR DETECTED (20 0 - 28 0 ET B G) (20 0 - 28 0 ET B G) (20 0 - 28 0 ET B G)									
	D								
28 27 - 28 1217 0.6									
32 31-32 1222 1.1 SAA EXCEPT COARSE GRAINED WITH MINOR ROUNDED PEBBLES (28.0 - 35.0 FT.	FT. B.G.).								
34									
36 ND ND SAA EXCEPT GRAY TO BLACK WITH APPARENT HYDROCARBON ODOR DETECTED	TED,								
38 MOIST TO WET STARTING AT 40 FT. B.G., SATURATED BETWEEN 40 - 41 FT. B.G. (35.0 - 41 FT. B.G.)	2.								
4U 41 1255 0.0 ND ND DARK YELLOWISH ORANGE SILTY CLAY, PLASTIC, WET, FIRM TO STIFF, NO	NO								
42 APPARENT HYDROCARBON ODOR DETECTED (41.0 - 42.0 FT. B.G.).	CTED								
44 (42.0 - 43.0 FT. B.G.).									
1 INCH PVC CASING, 43.0 FT. TOTAL LENGTH, TOP OF CASING ~ 1.7 FT. ABOVE GRADE, BOTTOM OF PIPE ~ 41.3 FT. B.G., HOLES									
50 - SILTY SAND. - SAND. - SILTY CLAY. - SHAI ESTONE.	IE.								
52 OVM - Organic vapor meter or photoionization detector (PID).									
TPH - Total Petroleum Hydrocarbons per US EPA Method 8015B. 54 BTEX - Benzene, toluene, ethylbenzene, total xylenes per US EPA Method 8021B.									
56 ND - Not detected at the Laboratory Reporting Limit Reading 100.1 ppm									
58 mg/Kg - Milligram per kilogram.	56 ND - Not detected at the Laboratory Reporting Limit ppm - Parts per million. Reading 100.1 ppm								
B.G Below grade. SAA - Same as above DRAWING: MUDGE B 12R GP-8 2015-09-25.SKF DATE: 10/06/2015 DVAN BY: N	butylene.								



Delineation Laboratory Results

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

October 01, 2015

Jeff Blagg Blagg Engineering P. O. Box 87 Bloomfield, NM 87413 TEL: (505) 320-1183 FAX (505) 632-3903

RE: Mudge B #12R

OrderNo.: 1509B35

Dear Jeff Blagg:

Hall Environmental Analysis Laboratory received 4 sample(s) on 9/24/2015 for the analyses presented in the following report.

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

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

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

Sincerely,

andy

Andy Freeman Laboratory Manager 4901 Hawkins NE Albuquerque, NM 87109

Lab Order 1509B35

Date Reported: 10/1/2015

Hall Environmental Analysis Laboratory, Inc.

CLIENT:	Blagg Engineering			C	lient Sampl	e ID: GF	2-1@36'		
Project:	Mudge B #12R				Collection 1	Date: 9/2	2/2015 10:27:00 AM		
Lab ID:	1509B35-001	Matrix:	SOIL		Received Date: 9/24/2015 6:45:00 AM				
Analyses		Result	RL	Qual	Units	DF	Date Analyzed	Batch	
EPA MET	HOD 300.0: ANIONS						Analyst	: LGT	
Chloride		690	30		mg/Kg	20	9/29/2015 3:16:14 PM	21577	
EPA MET	HOD 8015M/D: DIESEL RA	NGE ORGANIC	S				Analyst	: KJH	
Diesel R	ange Organics (DRO)	100	9.9		mg/Kg	1	9/29/2015 9:11:27 AM	21532	
Motor Oi	Range Organics (MRO)	ND	50		mg/Kg	1	9/29/2015 9:11:27 AM	21532	
Surr: [ONOP	88.9	57.9-140		%REC	1	9/29/2015 9:11:27 AM	21532	
EPA MET	HOD 8015D: GASOLINE R	ANGE					Analyst	: NSB	
Gasoline	Range Organics (GRO)	630	49		mg/Kg	10	9/29/2015 10:37:02 AM	21514	
Surr: E	BFB	233	75.4-113	S	%REC	10	9/29/2015 10:37:02 AM	21514	
EPA MET	HOD 8021B: VOLATILES						Analyst	: NSB	
Benzene	•	ND	0.24		mg/Kg	10	9/29/2015 10:37:02 AN	21514	
Toluene		1.0	0.49		mg/Kg	10	9/29/2015 10:37:02 AM	21514	
Ethylben	zene	3.0	0.49		mg/Kg	10	9/29/2015 10:37:02 AN	21514	
Xylenes,	Total	36	0.98		mg/Kg	10	9/29/2015 10:37:02 AN	21514	
Surr 4	4-Bromofluorobenzene	125	80-120	S	%REC	10	9/29/2015 10:37:02 AM	21514	

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method	Blank
	D	Sample Diluted Due to Matrix	Е	Value above quantitation range	
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	Page 1 of 8
	ND	Not Detected at the Reporting Limit	Р	Sample pH Not In Range	1 450 1 01 0
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix			

Lab Order 1509B35

Date Reported: 10/1/2015

Hall Environmental Analysis Laboratory, J	Inc.
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the second s									
CLIENT:	Blagg Engineering			Client Sampl	e ID: GP	2-1@42'			
Project:	Mudge B #12R			Collection	Date: 9/2	2/2015 11:00:00 AM			
Lab ID:	1509B35-002	Matrix:	SOIL	Received	Received Date: 9/24/2015 6:45:00 AM				
Analyses		Result	RL Qu	al Units	DF	Date Analyzed	Batch		
EPA MET	HOD 300.0: ANIONS					Analys	t: LGT		
Chloride		ND	30	mg/Kg	20	9/29/2015 3:53:26 PM	21577		
EPA MET	HOD 8015M/D: DIESEL RA	NGE ORGANICS	6			Analys	t: KJH		
Diesel R	ange Organics (DRO)	ND	9.7	mg/Kg	1	9/29/2015 10:15:35 AM	1 21532		
Motor Oi	Range Organics (MRO)	ND	49	mg/Kg	1	9/29/2015 10:15:35 AM	1 21532		
Surr: I	DNOP	82.2	57.9-140	%REC	1	9/29/2015 10:15:35 AM	1 21532		
EPA MET	HOD 8015D: GASOLINE R	ANGE				Analys	t: NSB		
Gasoline	Range Organics (GRO)	ND	4.7	mg/Kg	1	9/28/2015 4:43:05 PM	21514		
Surr: E	BFB	85.2	75.4-113	%REC	1	9/28/2015 4:43:05 PM	21514		
EPA MET	HOD 8021B: VOLATILES					Analys	t: NSB		
Benzene		ND	0.047	mg/Kg	1	9/28/2015 4:43:05 PM	21514		
Toluene		ND	0.047	mg/Kg	1	9/28/2015 4:43:05 PM	21514		
Ethylben	zene	ND	0.047	mg/Kg	1	9/28/2015 4:43:05 PM	21514		
Xylenes,	Total	0.16	0.094	mg/Kg	1	9/28/2015 4:43:05 PM	21514		
Surr: 4	4-Bromofluorobenzene	103	80-120	%REC	1	9/28/2015 4:43:05 PM	21514		

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method B	lank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	Page 2 of 8
	ND	Not Detected at the Reporting Limit	Р	Sample pH Not In Range	1 450 2 01 0
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix			

Lab Order 1509B35

Date Reported: 10/1/2015

Hall Environmental Analysis Laboratory, Inc.

CLIENT:	Blagg Engineering			Client Samp	le ID: GP	-2@37'	
Project:	Mudge B #12R			Collection	Date: 9/2	2/2015 12:30:00 PM	
Lab ID:	1509B35-003	Matrix:	SOIL	Received	Date: 9/2	4/2015 6:45:00 AM	
Analyses		Result	RL Qu	ual Units	DF	Date Analyzed	Batch
EPA MET	HOD 300.0: ANIONS					Analys	st: LGT
Chloride		830	30	mg/Kg	20	9/29/2015 4:05:50 PM	21577
EPA MET	HOD 8015M/D: DIESEL RA	NGE ORGANICS	6			Analys	st: KJH
Diesel R	ange Organics (DRO)	ND	9.9	mg/Kg	1	9/29/2015 10:37:05 A	VI 21532
Motor Oi	Range Organics (MRO)	ND	49	mg/Kg	1	9/29/2015 10:37:05 A	VI 21532
Surr: I	ONOP	85.8	57.9-140	%REC	1	9/29/2015 10:37:05 A	VI 21532
EPA MET	HOD 8015D: GASOLINE R	ANGE				Analys	st: NSB
Gasoline	Range Organics (GRO)	ND	4.7	mg/Kg	1	9/29/2015 1:12:43 AN	21514
Surr: E	BFB	85.7	75.4-113	%REC	1	9/29/2015 1:12:43 AN	21514
EPA MET	HOD 8021B: VOLATILES					Analys	st: NSB
Benzene		ND	0.047	mg/Kg	1	9/29/2015 1:12:43 AN	21514
Toluene		ND	0.047	mg/Kg	1	9/29/2015 1:12:43 AN	21514
Ethylben	zene	ND	0.047	mg/Kg	1	9/29/2015 1:12:43 AN	21514
Xylenes,	Total	ND	0.094	mg/Kg	1	9/29/2015 1:12:43 AN	21514
Surr: 4	4-Bromofluorobenzene	101	80-120	%REC	1	9/29/2015 1:12:43 AN	21514

the second					And the second sec
Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method	Blank
	D	Sample Diluted Due to Matrix	Е	Value above quantitation range	
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	Page 3 of 8
	ND	Not Detected at the Reporting Limit	Р	Sample pH Not In Range	ruge 5 or o
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix			

Hall Environmental Analysis Laboratory, Inc.

Lab Order 1509B35

Date Reported: 10/1/2015

CLIENT:	Blagg Engineering	Client Sample ID: GP-2@42'								
Project:	Mudge B #12R			Collectio	on Date: 9/2	2/2015 12:40:00 PM				
Lab ID:	1509B35-004	Matrix:	SOIL	Receive	ed Date: 9/2	4/2015 6:45:00 AM				
Analyses		Result	RL (Qual Units	DF	Date Analyzed	Batch			
EPA MET	HOD 300.0: ANIONS					Analyst	: LGT			
Chloride		ND	30	mg/Kg	20	9/29/2015 4:18:15 PM	21577			
EPA MET	HOD 8015M/D: DIESEL RANGI		S			Analyst	: KJH			
Diesel Ra	ange Organics (DRO)	ND	10	mg/Kg	1	9/29/2015 10:58:28 AM	21532			
Motor Oil	Range Organics (MRO)	ND	50	mg/Kg	1	9/29/2015 10:58:28 AM	21532			
Surr: D	DNOP	90.0	57.9-140	%REC	1	9/29/2015 10:58:28 AN	21532			
EPA MET	HOD 8015D: GASOLINE RANG	θE				Analys	: NSB			
Gasoline	Range Organics (GRO)	ND	4.7	mg/Kg	1	9/29/2015 1:35:54 AM	21514			
Surr: E	3FB	85.6	75.4-113	%REC	1	9/29/2015 1:35:54 AM	21514			
EPA MET	HOD 8021B: VOLATILES					Analyst	: NSB			
Benzene		ND	0.047	mg/Kg	1	9/29/2015 1:35:54 AM	21514			
Toluene		ND	0.047	mg/Kg	1	9/29/2015 1:35:54 AM	21514			
Ethylben	zene	ND	0.047	mg/Kg	1	9/29/2015 1:35:54 AM	21514			
Xylenes,	Total	ND	0.095	mg/Kg	1	9/29/2015 1:35:54 AM	21514			
Surr: 4	1-Bromofluorobenzene	101	80-120	%REC	1	9/29/2015 1:35:54 AM	21514			

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method	Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range	
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	Page 4 of 8
	ND	Not Detected at the Reporting Limit	Р	Sample pH Not In Range	ruge for o
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix			

QC SUMMARY REPORT Hall Environmental Analysis Laboratory, Inc.

WO#: 1509B35

01-Oct-15

Client:	Blagg	Engineering							
Froject:	windg	C D #12K							
Sample ID	MB-21577	SampType	MBLK	Test	Code: EPA Method	300.0: Anions			
Client ID:	PBS	Batch ID:	21577	R	unNo: 29185				
Prep Date:	9/29/2015	Analysis Date:	9/29/2015	S	eqNo: 886480	Units: mg/Kg			
Analyte		Result P	QL SPK value	SPK Ref Val	%REC LowLimit	HighLimit 9	%RPD	RPDLimit	Qual
Chloride		ND	1.5						
Sample ID	LCS-21577	SampType	: LCS	Test	Code: EPA Method	300.0: Anions			
Client ID:	LCSS	Batch ID:	21577	R	unNo: 29185				
Prep Date:	9/29/2015	Analysis Date:	9/29/2015	S	eqNo: 886481	Units: mg/Kg			
Analyte		Result P	QL SPK value	SPK Ref Val	%REC LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride		14	1.5 15.00	0	94.8 90	110			

Qualifiers:

- Value exceeds Maximum Contaminant Level. *
- D Sample Diluted Due to Matrix
- Holding times for preparation or analysis exceeded Η
- ND Not Detected at the Reporting Limit
- 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
- Analyte detected below quantitation limits J
- Р Sample pH Not In Range
- RL **Reporting Detection Limit**

Page 5 of 8

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

Client: Bl	ient: Blagg Engineering									
Project: M	udge B #12R									
Sample ID MB-21532	SampT	ype: ME	BLK	Tes	tCode: El	PA Method	8015M/D: Di	esel Rang	e Organics	
Client ID: PBS	Batch	ID: 21	532	F	RunNo: 2	9162				
Prep Date: 9/28/2015	Analysis D	ate: 9/	29/2015	S	SeqNo: 8	85646	Units: mg/ł	٢g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRC) ND	10								
Motor Oil Range Organics (N	RO) ND	50								
Surr: DNOP	8.7		10.00		87.2	57.9	140			
Sample ID LCS-21532	SampT	ype: LC	s	Tes	tCode: El	PA Method	8015M/D: Di	esel Rang	e Organics	
Client ID: LCSS Batch ID: 21532 RunNo: 29162										
Prep Date: 9/28/2015	Analysis D	ate: 9/	29/2015	5	SeqNo: 8	85647	Units: mg/	٢g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRC) 43	10	50.00	0	86.0	57.4	139			
Surr: DNOP	4.3		5.000		86.5	57.9	140			
Sample ID 1509B35-0	01AMS SampT	ype: MS	3	Tes	tCode: El	PA Method	8015M/D: Di	esel Rang	e Organics	
Client ID: GP-1@36'	Batch	ID: 21	532	F	RunNo: 2	9162				
Prep Date: 9/28/2018	Analysis D	ate: 9/	29/2015	S	SeqNo: 8	85649	Units: mg/l	٢g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRC) 180	10	50.00	100.5	159	42.3	146			S
Surr: DNOP	4.4		5.000		88.0	57.9	140			
Sample ID 1509B35-0	01AMSD SampT	ype: MS	SD	Tes	tCode: El	PA Method	8015M/D: Di	esel Rang	e Organics	
Client ID: GP-1@36'	Batch	ID: 21	532	F	RunNo: 2	9162				
Prep Date: 9/28/201	Analysis D	ate: 9/	29/2015	5	SeqNo: 8	85650	Units: mg/l	٢g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRC)) 160	10	50.15	100.5	122	42.3	146	10.7	28.9	
Surr: DNOP	4.3		5.015		86.2	57.9	140	0	0	

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

Page 6 of 8

1509B35 01-Oct-15

WO#:

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

Client: Project:	Blagg Er Mudge E	ngineering 8 #12R									
Sample ID	MB-21514	SampT	ype: ME	BLK	Tes	tCode: El	PA Method	8015D: Gaso	line Rang	e	
Client ID:	PBS	Batch	ID: 21	514	F	unNo: 2	9150				
Prep Date:	9/25/2015	Analysis D	ate: 9/	28/2015	S	eqNo: 8	85044	Units: mg/K	g		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range	e Organics (GRO)	ND	5.0								
Surr: BFB		840		1000		84.1	75.4	113			
Sample ID	LCS-21514	SampT	ype: LC	s	Tes	tCode: El	PA Method	8015D: Gasc	line Rang	e	
Client ID:	LCSS	Batch	ID: 21	514	F	RunNo: 2	9150				

Prep Date: 9/25/2015	Analysis D	ate: 9/	28/2015	S	SeqNo: 8	85045	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	96.8	79.6	122				
Surr: BFB	920		1000		91.8	75.4	113				

Qualifiers:

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

Page 7 of 8

WO#: 1509B35

01-Oct-15

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

Client:	Blagg Eng	gineering									
Project:	Mudge B	#12R									
								Mines and a street			
Sample ID	MB-21514	SampT	Type: MB	BLK	Tes	Code: E	PA Method	8021B: Vola	tiles		
Client ID:	PBS	Batc	h ID: 215	514	R	RunNo: 2	29150				
Prep Date:	9/25/2015	Analysis D	Date: 9/2	28/2015	S	eqNo: 8	885075	Units: mg/k	٢g		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene		ND	0.050								
Toluene		ND	0.050								
Ethylbenzene		ND	0.050								
Xylenes, Total		ND	0.10								
Surr: 4-Bron	nofluorobenzene	1.0		1.000		101	80	120			
Sample ID	LCS-21514	Samp	Гуре: LC	S	Tes	tCode: E	PA Method	8021B: Vola	tiles		
Client ID:	LCSS	Batc	h ID: 21	514	F	RunNo:	29150				
Prep Date:	9/25/2015	Analysis [Date: 9/2	28/2015	S	eqNo:	885076	Units: mg/k	٢g		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene		0.98	0.050	1.000	0	97.9	80	120			
Toluene		0.95	0.050	1.000	0	95.0	80	120			
Ethylbenzene		0.96	0.050	1.000	0	96.0	80	120			
Xylenes, Total		2.9	0.10	3.000	0	97.0	80	120			
Surr: 4-Bron	nofluorobenzene	1.1		1.000		108	80	120			
Sample ID	1509B35-002AMS	Samp	Гуре: MS	5	Tes	tCode: E	PA Method	8021B: Vola	tiles		
Client ID:	GP-1@42'	Batc	h ID: 21	514	F	RunNo:	29150				
Prep Date:	9/25/2015	Analysis [Date: 9/2	28/2015	5	SeqNo:	885081	Units: mg/l	٨g		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene		0.79	0.048	0.9606	0	81.9	69.6	136			
Toluene		0.82	0.048	0.9606	0.02351	83.1	76.2	134			
Ethylbenzene		0.87	0.048	0.9606	0.02299	88.0	75.8	137			
Xylenes, Total		2.8	0.096	2.882	0.1609	91.3	78.9	133			
Surr: 4-Bron	nofluorobenzene	1.0		0.9606		107	80	120			
Sample ID	1509B35-002AMS	D Samp	Type: MS	D	Tes	tCode: E	EPA Method	8021B: Vola	tiles		
Client ID:	GP-1@42'	Batc	h ID: 21	514	F	RunNo:	29150				
Prep Date:	9/25/2015	Analysis [Date: 9/	28/2015	S	SeqNo:	885082	Units: mg/l	۶g		
Analyte		Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene		0.86	0.048	0.9625	0	89.6	69.6	136	9.19	20	
Toluene		0.88	0.048	0.9625	0.02351	89.0	76.2	134	6.87	20	
Ethylbenzene		0.91	0.048	0.9625	0.02299	92.2	75.8	137	4.66	20	
Xylenes, Total		2.9	0.096	2.887	0.1609	94.0	78.9	133	2.96	20	
Surr: 4-Bron	nofluorobenzene	1.0		0.9625		108	80	120	0	0	

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

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WO#: 1509B35

01-Oct-15

HALL ENVIRONMENTAL ANALYSIS LABORATORY	Hall Environmental Albi TEL: 505-345-3975 Website: www.ha	Analysis Lab 4901 Hawi uquerque, NM FAX: 505-34 illenvironmen	oratory kins NE 187109 Sam (5-4107 taLcom	ple Log-In Ch	eck List
Client Name: BLAGG	Work Order Number	1509B35	ng olykildinge anvita krigen bindin schedraften i den	ReptNo: 1	
Received by/date: JA	09/24/15	ala mana para da gra palan dan apa			
Logged By Celina Sessa	9/24/2015 6:45:00 AM		aline &	m	
Completed By: Celina Sessa	9/24/2015 9:01:37 AM		alim S	men	
Reviewed By:	09/25/15			-	
Chain of Custody					
1. Custody seals intact on sample bottles?		Yes 📙	No	Not Present 🗹	
2. Is Chain of Custody complete?		Yes 🖌	No	Not Present	
3. How was the sample delivered?		Courier			
Log In					
4. Was an attempt made to cool the sample	es?	Yes 🔽	No 🗌	NA 🗌	
5. Were all samples received at a temperat	ure 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 te	st(s)?	Yes 🗹	No 🗌		
8. Are samples (except VOA and ONG) pro	perly 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 br	oken?	Yes	No 🗸		
				# of preserved bottles checked	
12. Does paperwork match bottle labels?		Yes 🖌	No	for pH:	>12 unless noted)
12 Are matrices correctly identified on Chain	of Custody2	Yes V	No	Adjusted?	
14 Is it clear what analyses were requested?		Yes V	No 🗌		n de la companya de l
15. Were all holding times able to be met? (If no, notify customer for authorization.)		Yes 🔽	No 🗌	Checked by:	
(,					
Special Handling (if applicable)					
16. Was client notified of all discrepancies w	th this order?	Yes	No	NA 🔽	
Person Notified:	Date				
By Whom:	Via:	eMail	Phone Fax	In Person	
Regarding:	a hina (* 1777). A sharana ana ana ana ana a				
Client Instructions:				nali jenovani nježi na	
17. Additional remarks:					
18. Cooler Information	Seal interi Centhia	Seal Data	Signed Bu	I.	
1 1.1 Good	Yes	Jear Dale			
1 1.1 Good	Yes				
Page 1 of 1				ter Henrich (1995), en 1975 van de trigen de 1975 van de trigen de 1975 van de trigen de 1975 van de 1975 van de	an a

Chain-of-Custody Record			Turn-Around Time:							44		E	NV	TE	20	N	ЛЕ	NT	AL		
Client:	BPA	MERIC	- A	Standard	🗆 Rush						N	AL	YS	SIS	S L	A	30	R/	TC	R	Y
angere in the state of the	P. M	I E		Project Name):					-	14040	v hal	lenv	iron	ment	al co	m				
Mailing	Address	to chi	Incenz	MUDGE	E B #1	2R		49	01 H	awk	ins N	JE -	Alb	uau	erau	e. N	M 87	109			
				Project #:			1	Te	1.50	5-34	15-39	975	F	ax	505-	345-	410	7			
Phone	#: 505	-370	-1183	1								А	naly	/sis	Req	uest	l -				
email o	r Fax#:			Project Mana	ger:		-	(VIL	00					O4)							
QA/QC	Package:			J. R	466		3021	as or	/ MF			S))4,S(CB's						
Stan	dard		Level 4 (Full Validation)		-		5'S (((G	RO			SIN		2,PC	2 P						
Accred	itation	-		Sampler: Z	- Blagg		HAT	TPH	0/0	3.1)	1.1)	270		NO	808			. 1			Î
		L Othe		On Ice:	Yes	NO		+ ш	GRO	418	504	or 8	als	NO ₃	les /		VOA	NE			Y or
	(Type)_		1	Sample Temperature: Z.1-1.0Cr=1.1			E	ATB	5B (thod	thoc	310	Meta	Ū,	sticic	OA)	mi-/	LOR			les (
Date	Time	Matrix	Sample Request ID	Container	Preservative	HEAL No.	+ >	+ >	801	(Me	(Me	s (8	A 8	IS (F	Pe	BS	(Se	5			qqn
Date		Matrix		Type and #	Туре	1509B35	BTE)	BTE)	ТРН	ТРН	EDB	PAH'	RCR	Anio	8081	8260	8270				Air B
hereis	1027	SOIL	GP-10.36	402×1	Care	- 001	×	-	X	-								×			
11	1100	ч	GP-1047	11	ч.	-002	×		×									×			
.(1230	د((2P-Z.C. 37'	71	11	-003	×		×									×			
ic	1240	10	6P-2. C42'	K	N	-004	×		X									×			
																				_	
				and the																	
Date:	Time:	Relinquish	ed by:	Received by:	.) .	Pate Time	Rer	mark	s: J	SILL	BI	>			<u>-</u>						
12 Kois 1248 July Drogy				Muster Walter 1248					E	Sici	NG	T	vfo	T	sh	0110	ω				
Date: Time: Reprovised by:			Dan /	1.6	adjoute nade	-						-				/	-	-1	0.,		
123/15 1810 / Wuster Walters			Dac. U	ance	07/29/11 0075			H	> 6	enta	cfs	: 5	オセイ	e M	uska	2(7	+ Jc	then 1	KIYC	hie	

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

October 05, 2015

Jeff Blagg Blagg Engineering P. O. Box 87 Bloomfield, NM 87413 TEL: (505) 320-1183 FAX (505) 632-3903

RE: Mudge B 12R

OrderNo.: 1509D18

Dear Jeff Blagg:

Hall Environmental Analysis Laboratory received 12 sample(s) on 9/26/2015 for the analyses presented in the following report.

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

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

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

Sincerely,

andy

Andy Freeman Laboratory Manager 4901 Hawkins NE Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

Xylenes, Total

Surr: 4-Bromofluorobenzene

Lab Order 1509D18

Date Reported: 10/5/2015

9/30/2015 8:57:33 PM 21562

9/30/2015 8:57:33 PM 21562

CLIENT: Project: Lab ID:	Blagg Engineering Mudge B 12R 1509D18-001	Matrix:	SOIL	C	lient San Collectio Receive	nple ID: GP-3 @ 3 on Date: 9/24/2015 od Date: 9/26/2015	6' 9:27:00 AM 8:30:00 AM	
Analyses		Result	RL	Qual	Units	DF Date A	nalyzed	Batch
EPA METHOD 300.0: ANIONS Analyst: LGT								LGT
Chloride		670	30		mg/Kg	20 9/30/20	015 6:40:59 PM	21599
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS Analyst: TO							TOM	
Diesel Ra	ange Organics (DRO)	ND	9.5		mg/Kg	1 10/1/20	015 1:08:25 AM	21554
Motor Oil	Range Organics (MRO)	ND	47		mg/Kg	1 10/1/20	015 1:08:25 AM	21554
Surr: D	NOP	111	57.9-140		%REC	1 10/1/20	015 1:08:25 AM	21554
EPA METHOD 8015D: GASOLINE RANGE					Analyst	NSB		
Gasoline	Range Organics (GRO)	ND	4.6		mg/Kg	1 9/30/20	015 8:57:33 PM	21562
Surr: E	BFB	87.1	75.4-113		%REC	1 9/30/20	015 8:57:33 PM	21562
EPA MET	HOD 8021B: VOLATILES						Analyst	NSB
Benzene		ND	0.046		mg/Kg	1 9/30/20	015 8:57:33 PM	21562
Toluene		ND	0.046		mg/Kg	1 9/30/20	015 8:57:33 PM	21562
Ethylbena	zene	ND	0.046		mg/Kg	1 9/30/20	015 8:57:33 PM	21562

0.093

80-120

mg/Kg

%REC

1

1

ND

103

Qualifiers:	*	Value exceeds Maximum Contaminant Level.		Analyte detected in the associated Method Blank	
	D	Sample Diluted Due to Matrix	Е	Value above quantitation range	
	Η	Holding times for preparation or analysis exceeded		Analyte detected below quantitation limits Page 1 of	
	ND	Not Detected at the Reporting Limit	Р	Sample pH Not In Range	
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit	
	S	% Recovery outside of range due to dilution or matrix			
Hall Environmental Analysis Laboratory, Inc.

EPA METHOD 8015M/D: DIESEL RANGE ORGANICS

Chloride

Surr: DNOP

Surr: BFB

Benzene

Toluene

Ethylbenzene

Xylenes, Total

Diesel Range Organics (DRO)

Motor Oil Range Organics (MRO)

Gasoline Range Organics (GRO)

EPA METHOD 8021B: VOLATILES

Surr: 4-Bromofluorobenzene

EPA METHOD 8015D: GASOLINE RANGE

Lab Order 1509D18

Date Reported: 10/5/2015

9/30/2015 7:18:12 PM

10/1/2015 1:30:04 AM

10/1/2015 1:30:04 AM

10/1/2015 1:30:04 AM

9/30/2015 9:20:47 PM

21599

21554

21554

21554

21562

21562

21562

21562

21562

21562

21562

Analyst: TOM

Analyst: NSB

Analyst: NSB

EPA METHOD 300.0: ANIONS				Analys	t: LGT
Analyses	Result	RL	Qual Units	DF Date Analyzed	Batch
Lab ID: 1509D18-002	Matrix:	SOIL	Received	Date: 9/26/2015 8:30:00 AM	
Project: Mudge B 12R			Collection	Date: 9/24/2015 10:38:00 AM	
CLIENT: Blagg Engineering			Client Samp	le ID: GP-3 @ 42'	

30

9.7

49

4.6

57.9-140

75.4-113

0.046

0.046

0.046

0.093

80-120

mg/Kg

mg/Kg

mg/Kg

%REC

mg/Kg

%REC

mg/Kg

mg/Kg

mg/Kg

mg/Kg

%REC

20

1

1

1

1

1

1

1

1

1

1

ND

ND

ND

111

ND

88.4

ND

ND

ND

ND

105

Refer to the QC Summary report	and sample login checklis	st for flagged OC data and	preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analy
	D	Sample Diluted Due to Matrix	Е	Value
	Н	Holding times for preparation or analysis exceeded	J	Analy
	ND	Not Detected at the Reporting Limit	Р	Samp
	R	RPD outside accepted recovery limits	RL	Repor
	S	% Recovery outside of range due to dilution or matrix		

- 3 Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits Page 2 of 16
- P Sample pH Not In Range
- RL Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

Surr: 4-Bromofluorobenzene

Lab Order 1509D18

Date Reported: 10/5/2015

1 9/30/2015 9:43:56 PM 21562

CLIENT: Project: Lab ID:	Blagg Engineering Mudge B 12R 1509D18-003	Matrix:	SOIL	CI (lient Sar Collectio Receive	mple ID: G on Date: 9/2 ed Date: 9/2	P-4 @ 38' 24/2015 12:10:00 PM 26/2015 8:30:00 AM	
Analyses		Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA MET	HOD 300.0: ANIONS						Analyst	LGT
Chloride		480	30		mg/Kg	20	9/30/2015 7:30:37 PM	21599
EPA MET	HOD 8015M/D: DIESEL RANGE	ORGANIC	s				Analyst	: TOM
Diesel Ra	ange Organics (DRO)	ND	9.6		mg/Kg	1	10/1/2015 1:51:46 AM	21554
Motor Oil	Range Organics (MRO)	ND	48		mg/Kg	1	10/1/2015 1:51:46 AM	21554
Surr: D	NOP	110	57.9-140		%REC	1	10/1/2015 1:51:46 AM	21554
EPA MET	HOD 8015D: GASOLINE RANG	E					Analyst	: NSB
Gasoline	Range Organics (GRO)	ND	4.6		mg/Kg	1	9/30/2015 9:43:56 PM	21562
Surr: B	FB	86.3	75.4-113		%REC	1	9/30/2015 9:43:56 PM	21562
EPA MET	HOD 8021B: VOLATILES						Analyst	: NSB
Benzene		ND	0.046		mg/Kg	1	9/30/2015 9:43:56 PM	21562
Toluene		ND	0.046		mg/Kg	1	9/30/2015 9:43:56 PM	21562
Ethylbenz	zene	ND	0.046		mg/Kg	1	9/30/2015 9:43:56 PM	21562
Xylenes,	Total	ND	0.093		mg/Kg	1	9/30/2015 9:43:56 PM	21562

80-120

%REC

101

A COMPANY OF A COM				
Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits Page 3 of 16
	ND	Not Detected at the Reporting Limit	Р	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

Lab Order 1509D18 Date Reported: 10/5/2015

CLIENT:	Blagg Engineering			Client Sample	e ID: GP	-4 @ 42'	
Project:	Mudge B 12R			Collection	Date: 9/2	4/2015 12:18:00 PM	
Lab ID:	1509D18-004	Matrix:	SOIL	Received I	Date: 9/2	6/2015 8:30:00 AM	
Analyses		Result	RL Q	ual Units	DF	Date Analyzed	Batch
EPA MET	HOD 300.0: ANIONS					Analyst	LGT
Chloride		ND	30	mg/Kg	20	9/30/2015 7:43:00 PM	21599
EPA MET	HOD 8015M/D: DIESEL RANG		5			Analyst	: TOM
Diesel Ra	ange Organics (DRO)	ND	10	mg/Kg	1	10/1/2015 2:13:23 AM	21554
Motor Oil	Range Organics (MRO)	ND	50	mg/Kg	1	10/1/2015 2:13:23 AM	21554
Surr: D	ONOP	112	57.9-140	%REC	1	10/1/2015 2:13:23 AM	21554
EPA MET	HOD 8015D: GASOLINE RAN	GE				Analyst	: NSB
Gasoline	Range Organics (GRO)	ND	4.6	mg/Kg	1	9/30/2015 10:07:05 PM	21562
Surr: E	BFB	86.4	75.4-113	%REC	1	9/30/2015 10:07:05 PM	21562
EPA MET	HOD 8021B: VOLATILES					Analyst	: NSB

					/ maryou	1100
Benzene	ND	0.046	mg/Kg	1	9/30/2015 10:07:05 PM	21562
Toluene	ND	0.046	mg/Kg	1	9/30/2015 10:07:05 PM	21562
Ethylbenzene	ND	0.046	mg/Kg	1	9/30/2015 10:07:05 PM	21562
Xylenes, Total	ND	0.093	mg/Kg	1	9/30/2015 10:07:05 PM	21562
Surr: 4-Bromofluorobenzene	102	80-120	%REC	1	9/30/2015 10:07:05 PM	21562

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits Page 4 of 16
	ND	Not Detected at the Reporting Limit	Р	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

Lab Order 1509D18

Date Reported: 10/5/2015

CLIENT:	Blagg Engineering			0	Client Samp	le ID: GF	P-5 @ 36'	
Project:	Mudge B 12R				Collection	Date: 9/2	24/2015 2:19:00 PM	
Lab ID:	1509D18-005	Matrix:	SOIL		Received	Date: 9/2	26/2015 8:30:00 AM	
Analyses		Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA MET	HOD 300.0: ANIONS					2	Analys	t: LGT
Chloride		340	30		mg/Kg	20	9/30/2015 7:55:25 PM	21599
EPA MET	HOD 8015M/D: DIESEL RA	NGE ORGANICS	6				Analys	t: TOM
Diesel Ra	ange Organics (DRO)	10	9.8		mg/Kg	1	10/1/2015 2:35:05 AM	21554
Motor Oil	Range Organics (MRO)	ND	49		mg/Kg	1	10/1/2015 2:35:05 AM	21554
Surr: D	DNOP	111	57.9-140		%REC	1	10/1/2015 2:35:05 AM	21554
EPA MET	HOD 8015D: GASOLINE R	ANGE					Analys	: NSB
Gasoline	Range Organics (GRO)	17	4.6		mg/Kg	1	9/30/2015 10:30:09 PM	21562
Surr: E	3FB	164	75.4-113	S	%REC	1	9/30/2015 10:30:09 PM	21562
EPA MET	HOD 8021B: VOLATILES						Analys	: NSB
Benzene		ND	0.046		mg/Kg	1	9/30/2015 10:30:09 PM	21562
Toluene		ND	0.046		mg/Kg	1	9/30/2015 10:30:09 PM	21562
Ethylben	zene	ND	0.046		mg/Kg	1	9/30/2015 10:30:09 PM	21562
Xylenes,	Total	ND	0.093		mg/Kg	1	9/30/2015 10:30:09 PM	21562
Surr: 4	l-Bromofluorobenzene	111	80-120		%REC	1	9/30/2015 10:30:09 PM	21562

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	Η	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits Page 5 of 16
	ND	Not Detected at the Reporting Limit	Р	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

Lab Order 1509D18

Date Reported: 10/5/2015

CLIENT:	Blagg Engineering	Client Sample ID: GP-5 @ 42'						
Project:	Mudge B 12R	Collection Date: 9/24/2015 2:50:00 PM						
Lab ID:	1509D18-006	Matrix:	SOIL	Rece	ived Date: 9/2	26/2015 8:30:00 AM		
Analyses		Result	RL	Qual Units	DF	Date Analyzed	Batch	
EPA MET	HOD 300.0: ANIONS					Analyst	LGT	
Chloride		ND	30	mg/k	ig 20	9/30/2015 8:07:50 PM	21599	
EPA MET	HOD 8015M/D: DIESEL RA	ANGE ORGANICS	6			Analyst	: TOM	
Diesel Ra	ange Organics (DRO)	ND	10	mg/k	g 1	10/1/2015 2:56:39 AM	21554	
Motor Oil	Range Organics (MRO)	ND	50	mg/k	.g 1	10/1/2015 2:56:39 AM	21554	
Surr: D	DNOP	120	57.9-140	%RE	C 1	10/1/2015 2:56:39 AM	21554	
EPA MET	HOD 8015D: GASOLINE R	ANGE				Analyst	NSB	
Gasoline	Range Organics (GRO)	ND	4.7	mg/k	g 1	9/30/2015 10:53:09 PM	21562	
Surr: E	BFB	87.5	75.4-113	%RE	C 1	9/30/2015 10:53:09 PM	21562	
EPA MET	HOD 8021B: VOLATILES					Analyst	NSB	
Benzene		ND	0.047	mg/K	g 1	9/30/2015 10:53:09 PM	21562	
Toluene		ND	0.047	mg/k	g 1	9/30/2015 10:53:09 PM	21562	
Ethylben	zene	ND	0.047	mg/K	g 1	9/30/2015 10:53:09 PM	21562	
Xylenes,	Total	ND	0.093	mg/k	g 1	9/30/2015 10:53:09 PM	21562	
Surr: 4	-Bromofluorobenzene	102	80-120	%RE	C 1	9/30/2015 10:53:09 PM	21562	

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	Η	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits Page 6 of 16
	ND	Not Detected at the Reporting Limit	Р	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

Surr: 4-Bromofluorobenzene

Lab Order 1509D18

Date Reported: 10/5/2015

9/30/2015 11:16:09 PM 21562

CLIENT:	Blagg Engineering			C	lient Sam	ple ID: GF	P-6 @ 38'	
Project:	Mudge B 12R				Collection	Date: 9/2	24/2015 3:59:00 PM	
Lab ID:	1509D18-007	Matrix:	SOIL		Received	Date: 9/2	26/2015 8:30:00 AM	
Analyses		Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA MET	HOD 300.0: ANIONS						Analys	t: LGT
Chloride		ND	30		mg/Kg	20	9/30/2015 8:45:05 PM	21599
EPA MET	HOD 8015M/D: DIESEL RAN	GE ORGANICS	S				Analys	t: TOM
Diesel Ra	ange Organics (DRO)	56	9.6		mg/Kg	1	10/1/2015 3:18:15 AM	21554
Motor Oil	Range Organics (MRO)	ND	48		mg/Kg	1	10/1/2015 3:18:15 AM	21554
Surr: D	DNOP	109	57.9-140		%REC	1	10/1/2015 3:18:15 AM	21554
EPA MET	HOD 8015D: GASOLINE RAM	IGE					Analys	t: NSB
Gasoline	Range Organics (GRO)	13	4.6		mg/Kg	1	9/30/2015 11:16:09 PM	1 21562
Surr: B	3FB	189	75.4-113	S	%REC	1	9/30/2015 11:16:09 PM	1 21562
EPA MET	HOD 8021B: VOLATILES						Analys	t: NSB
Benzene		ND	0.046		mg/Kg	1	9/30/2015 11:16:09 PM	1 21562
Toluene		ND	0.046		mg/Kg	1	9/30/2015 11:16:09 PM	1 21562
Ethylbenz	zene	ND	0.046		mg/Kg	1	9/30/2015 11:16:09 PM	1 21562
Xylenes,	Total	0.094	0.092		mg/Kg	1	9/30/2015 11:16:09 PM	1 21562

80-120

%REC

1

106

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the
	D	Sample Diluted Due to Matrix	E	Value above quantitation
	Η	Holding times for preparation or analysis exceeded	J	Analyte detected below
	ND	Not Detected at the Reporting Limit	Р	Sample pH Not In Rang
	R	RPD outside accepted recovery limits	RL	Reporting Detection Li
	S	% Recovery outside of range due to dilution or matrix		

- associated Method Blank
- on range
- quantitation limits Page 7 of 16
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Hall Environmental Analysis Laboratory, Inc.

Lab Order 1509D18 Date Reported: 10/5/2015

10/1/2015 12:48:33 AM 21562

10/1/2015 12:48:33 AM 21562

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10/1/2015 12:48:33 AM 21562

and the state of t								
CLIENT:	Blagg Engineering			С	lient Samp	le ID: GF	P-6 @ 41'	
Project:	Mudge B 12R				Collection	Date: 9/2	24/2015 4:30:00 PM	
Lab ID:	1509D18-008	Matrix:	SOIL		Received	Date: 9/2	26/2015 8:30:00 AM	
Analyses		Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA MET	THOD 300.0: ANIONS						Analyst	LGT
Chloride		ND	30		mg/Kg	20	9/30/2015 8:57:29 PM	21599
EPA MET	THOD 8015M/D: DIESEL RAN	IGE ORGANICS	5				Analyst	: том
Diesel R	ange Organics (DRO)	ND	9.6		mg/Kg	1	10/1/2015 3:39:35 AM	21554
Motor Oi	I Range Organics (MRO)	ND	48		mg/Kg	1	10/1/2015 3:39:35 AM	21554
Surr: I	DNOP	106	57.9-140		%REC	1	10/1/2015 3:39:35 AM	21554
EPA MET	HOD 8015D: GASOLINE RA	NGE					Analyst	: NSB
Gasoline	Range Organics (GRO)	ND	4.6		mg/Kg	1	10/1/2015 12:48:33 AM	21562
Surr: E	BFB	86.1	75.4-113		%REC	1	10/1/2015 12:48:33 AM	21562
EPA MET	HOD 8021B: VOLATILES						Analyst	NSB
Benzene		ND	0.046		mg/Kg	1	10/1/2015 12:48:33 AM	21562
Toluene		ND	0.046		ma/Ka	1	10/1/2015 12:48:33 AM	21562

0.046

0.046

0.093

80-120

ND

ND

100

mg/Kg

mg/Kg

mg/Kg

%REC

1

1

1

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

Qualifiers: * Value exceeds Maximum Contaminant Level.

Ethylbenzene

Xylenes, Total

Surr: 4-Bromofluorobenzene

- D Sample Diluted Due to Matrix
- Н 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
- Analyte detected in the associated Method Blank B
- Value above quantitation range E
- Analyte detected below quantitation limits Page 8 of 16 J
- Р Sample pH Not In Range
- RL **Reporting Detection Limit**

Hall Environmental Analysis Laboratory, Inc.

Surr: 4-Bromofluorobenzene

Lab Order 1509D18

1 10/1/2015 1:11:40 AM 21562

Date Reported: 10/5/2015

CLIENT:	Blagg Engineering			С	lient Sam	ple ID: GF	P-7 @ 36'	
Project:	Mudge B 12R				Collection	Date: 9/2	25/2015 10:28:00 AM	
Lab ID:	1509D18-009	Matrix:	SOIL		Received	l Date: 9/2	26/2015 8:30:00 AM	
Analyses		Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA MET	HOD 300.0: ANIONS						Analysi	: LGT
Chloride		40	30		mg/Kg	20	9/30/2015 9:09:54 PM	21599
EPA MET	HOD 8015M/D: DIESEL RANGE	ORGANIC	s				Analyst	: TOM
Diesel Ra	ange Organics (DRO)	ND	9.5		mg/Kg	1	10/1/2015 4:01:13 AM	21554
Motor Oil	Range Organics (MRO)	ND	47		mg/Kg	1	10/1/2015 4:01:13 AM	21554
Surr: D	NOP	108	57.9-140		%REC	1	10/1/2015 4:01:13 AM	21554
EPA MET	HOD 8015D: GASOLINE RANG	E					Analyst	: NSB
Gasoline	Range Organics (GRO)	ND	4.7		mg/Kg	1	10/1/2015 1:11:40 AM	21562
Surr: B	3FB	86.2	75.4-113		%REC	1	10/1/2015 1:11:40 AM	21562
EPA MET	HOD 8021B: VOLATILES						Analyst	: NSB
Benzene		ND	0.047		mg/Kg	1	10/1/2015 1:11:40 AM	21562
Toluene		ND	0.047		mg/Kg	1	10/1/2015 1:11:40 AM	21562
Ethylbenz	zene	ND	0.047		mg/Kg	1	10/1/2015 1:11:40 AM	21562
Xylenes,	Total	ND	0.093		mg/Kg	1	10/1/2015 1:11:40 AM	21562

80-120

%REC

100

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte de
	D	Sample Diluted Due to Matrix	E	Value abov
	Н	Holding times for preparation or analysis exceeded	J	Analyte de
	ND	Not Detected at the Reporting Limit	Р	Sample pH
	R	RPD outside accepted recovery limits	RL	Reporting
	S	% 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 Page 9 of 16
- P Sample pH Not In Range
- RL Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

Lab Order 1509D18

Date Reported: 10/5/2015

10/1/2015 1:34:43 AM 21562

the second s								
CLIENT:	Blagg Engineering			C	lient Sam	ple ID: GF	P-7 @ 41'	
Project:	Mudge B 12R				Collection	Date: 9/2	5/2015 11:30:00 AM	
Lab ID:	1509D18-010	Matrix:	SOIL		Received	l Date: 9/2	.6/2015 8:30:00 AM	
Analyses		Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA MET	HOD 300.0: ANIONS						Analyst	LGT
Chloride		ND	30		mg/Kg	20	9/30/2015 9:22:19 PM	21599
EPA MET	HOD 8015M/D: DIESEL RANG		s				Analyst	TOM
Diesel Ra	ange Organics (DRO)	ND	9.7		mg/Kg	1	10/1/2015 4:22:39 AM	21554
Motor Oil	Range Organics (MRO)	ND	49		mg/Kg	1	10/1/2015 4:22:39 AM	21554
Surr: E	DNOP	108	57.9-140		%REC	1	10/1/2015 4:22:39 AM	21554
EPA MET	HOD 8015D: GASOLINE RAN	GE					Analyst	NSB
Gasoline	Range Organics (GRO)	ND	4.7		mg/Kg	1	10/1/2015 1:34:43 AM	21562
Surr: E	BFB	87.0	75.4-113		%REC	1	10/1/2015 1:34:43 AM	21562
EPA MET	HOD 8021B: VOLATILES						Analyst	NSB
Benzene		ND	0.047		mg/Kg	1	10/1/2015 1:34:43 AM	21562
Toluene		ND	0.047		mg/Kg	1	10/1/2015 1:34:43 AM	21562
Ethylben	zene	ND	0.047		mg/Kg	1	10/1/2015 1:34:43 AM	21562
Xylenes,	Total	ND	0.093		mg/Kg	1	10/1/2015 1:34:43 AM	21562

80-120

%REC

1

102

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

110101	 QC Sum	unitar y	Tope	111 44	IG D	ung	105m	CHECKIIS	101 1	1455	cu	<i>YC</i>	uu	uuu	ina	pre	SUI	vaur	mo	. 1116
							 								anner!				 	-

*	Value exceeds	Maximum	Contaminant	Level

D Sample Diluted Due to Matrix

Qualifiers:

Surr: 4-Bromofluorobenzene

- 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 limitsPage 10 of 16
- P Sample pH Not In Range
- RL Reporting Detection Limit

Hall Environmental Analysis Laboratory, Inc.

Surr: 4-Bromofluorobenzene

Lab Order 1509D18

Date Reported: 10/5/2015

10/1/2015 1:57:52 AM 21562

CLIENT:	Blagg Engineering			Client San	nple ID: GP-8 @ 36'
Project:	Mudge B 12R			Collectio	on Date: 9/25/2015 12:28:00 PM
Lab ID:	1509D18-011	Matrix:	SOIL	Receive	ed Date: 9/26/2015 8:30:00 AM
Analyses		Result	RL Q	ual Units	DF Date Analyzed Batcl
EPA MET	HOD 300.0: ANIONS				Analyst: LGT
Chloride		37	30	mg/Kg	20 9/30/2015 9:34:43 PM 21599
EPA MET	HOD 8015M/D: DIESEL RANGE	ORGANIC	S		Analyst: TOM
Diesel Ra	ange Organics (DRO)	ND	10	mg/Kg	1 10/1/2015 4:44:12 AM 21554
Motor Oil	Range Organics (MRO)	ND	50	mg/Kg	1 10/1/2015 4:44:12 AM 21554
Surr: E	DNOP	104	57.9-140	%REC	1 10/1/2015 4:44:12 AM 21554
EPA MET	HOD 8015D: GASOLINE RANG	E			Analyst: NSB
Gasoline	Range Organics (GRO)	ND	4.7	mg/Kg	1 10/1/2015 1:57:52 AM 21562
Surr: E	3FB	87.8	75.4-113	%REC	1 10/1/2015 1:57:52 AM 21562
EPA MET	HOD 8021B: VOLATILES				Analyst: NSB
Benzene		ND	0.047	mg/Kg	1 10/1/2015 1:57:52 AM 21562
Toluene		ND	0.047	mg/Kg	1 10/1/2015 1:57:52 AM 21562
Ethylben	zene	ND	0.047	mg/Kg	1 10/1/2015 1:57:52 AM 21562
Xylenes,	Total	ND	0.093	mg/Kg	1 10/1/2015 1:57:52 AM 21562

80-120

%REC

1

104

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	Η	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limitspace 11 of 16
	ND	Not Detected at the Reporting Limit	Р	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

Lab Order 1509D18

Date Reported: 10/5/2015

CLIENT:	Blagg Engineering			C	lient Sam	ple ID: GP	-8 @ 41'	
Project:	Mudge B 12R				Collection	n Date: 9/2	5/2015 12:55:00 PM	
Lab ID:	1509D18-012	Matrix:	SOIL		Receive	d Date: 9/2	6/2015 8:30:00 AM	
Analyses		Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA MET	HOD 300.0: ANIONS						Analys	t: LGT
Chloride		ND	30		mg/Kg	20	9/30/2015 9:47:08 PM	21599
EPA MET	HOD 8015M/D: DIESEL RANG		S				Analys	t: TOM
Diesel Ra	ange Organics (DRO)	ND	9.9		mg/Kg	1	10/1/2015 5:05:34 AM	21554
Motor Oil	Range Organics (MRO)	ND	49		mg/Kg	1	10/1/2015 5:05:34 AM	21554
Surr: D	NOP	109	57.9-140		%REC	1	10/1/2015 5:05:34 AM	21554
EPA MET	HOD 8015D: GASOLINE RAN	GE					Analys	t: NSB
Gasoline	Range Organics (GRO)	ND	4.6		mg/Kg	1	10/1/2015 2:44:00 AM	21562
Surr: E	BFB	87.1	75.4-113		%REC	1	10/1/2015 2:44:00 AM	21562
EPA MET	HOD 8021B: VOLATILES						Analys	t: NSB
Benzene		ND	0.046		mg/Kg	1	10/1/2015 2:44:00 AM	21562
Toluene		ND	0.046		mg/Kg	1	10/1/2015 2:44:00 AM	21562
Ethylben	zene	ND	0.046		mg/Kg	1	10/1/2015 2:44:00 AM	21562
Xylenes,	Total	ND	0.093		mg/Kg	1	10/1/2015 2:44:00 AM	21562
Surr: 4	-Bromofluorobenzene	103	80-120		%REC	1	10/1/2015 2:44:00 AM	21562

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	Η	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limitspage 12 of 16
	ND	Not Detected at the Reporting Limit	Р	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix		

Hall Environmental Analysis Laboratory, Inc.

 Client:
 Blagg Engineering

 Project:
 Mudge B 12R

 Sample ID
 MB-21599
 SampType:

Sample ID MB-21599	SampType: MBLK	TestCode: EPA Method	300.0: Anions	
Client ID: PBS	Batch ID: 21599	RunNo: 29225		
Prep Date: 9/30/2015	Analysis Date: 9/30/2015	SeqNo: 888014	Units: mg/Kg	
Analyte	Result PQL SPK value	e SPK Ref Val %REC LowLimit	HighLimit %RPD	RPDLimit Qual
Chloride	ND 1.5			
the state of the s				
Sample ID LCS-21599	SampType: LCS	TestCode: EPA Method	300.0: Anions	
Sample ID LCS-21599 Client ID: LCSS	SampType: LCS Batch ID: 21599	TestCode: EPA Method RunNo: 29225	300.0: Anions	
Sample ID LCS-21599 Client ID: LCSS Prep Date: 9/30/2015	SampType: LCS Batch ID: 21599 Analysis Date: 9/30/2015	TestCode: EPA Method RunNo: 29225 SeqNo: 888015	300.0: Anions Units: mg/Kg	
Sample ID LCS-21599 Client ID: LCSS Prep Date: 9/30/2015 Analyte	SampType: LCS Batch ID: 21599 Analysis Date: 9/30/2015 Result PQL SPK value	TestCode: EPA Method RunNo: 29225 SeqNo: 888015 e SPK Ref Val %REC LowLimit	300.0: Anions Units: mg/Kg HighLimit %RPD	RPDLimit Qual

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

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WO#: 1509D18 05-Oct-15

Hall Environmental Analysis Laboratory, Inc.

Client: Blagg Project: Mudge	Engineering B 12R									
Sample ID MB-21554	SampTy	SampType: MBLK TestCode: EPA Method 8015M/D: Diesel Range Organics								
Client ID: PBS	Batch I	D: 21	554	R	unNo: 2	9205				
Prep Date: 9/29/2015	9/2015 Analysis Date: 9/30/2015 SeqNo: 887145 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	9.6		10.00		95.8	57.9	140			
Sample ID LCS-21554	SampTy	be: LC	S	Test	Code: El	PA Method	8015M/D: Die	esel Range	e Organics	
Client ID: LCSS	Batch I	D: 21	554	R	unNo: 2	9205				
Prep Date: 9/29/2015	Analysis Dat	te: 9/	30/2015	S	eqNo: 8	87161	Units: mg/K	g		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	46	10	50.00	0	91.7	57.4	139			
Surr: DNOP	5.0		5.000		99.4	57.9	140			

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

Page 14 of 16

WO#: 1509D18

Hall Environmental Analysis Laboratory, Inc.

Client: Blagg E Project: Mudge	ngineering B 12R								
Sample ID MB-21562	SampType:	MBLK	Test	tCode: El	PA Method	8015D: Gaso	line Rang	9	
Client ID: PBS	Batch ID:	<mark>21562</mark>	R	RunNo: 2	9220				
Prep Date: 9/29/2015	Analysis Date:	9/30/2015	S	eqNo: 8	87525	Units: mg/K	g		
Analyte	Result PQ	L SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	
Gasoline Range Organics (GRO)	ND 5	0.0							Promition of
Surr: BFB	850	1000		85.5	75.4	113			
Sample ID LCS-21562	SampType:	LCS	Test	Code: El	PA Method	8015D: Gaso	line Range	e	
Client ID: LCSS	Batch ID:	21562	R	unNo: 29	9220				
Prep Date: 9/29/2015	Analysis Date:	9/30/2015	S	eqNo: 8	87526	Units: mg/K	g		
Analyte	Result PQ	L SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	
Basoline Range Organics (GRO)	25 5	.0 25.00	0	99.1	79.6	122			
Surr: BFB	920	1000		92.4	75.4	113			

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

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WO#: 1509D18

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Hall Environmenta	l Analysis	Laboratory,	Inc.
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Client:Blagg EngineeringProject:Mudge B 12R

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Sample ID MB-21562	Samp	SampType: MBLK TestCode: EPA Method 8021B: Volatiles									
Client ID: PBS	Batc	h ID: 21	562	F	RunNo: 2	9220					
Prep Date: 9/29/2015	Analysis E	nalysis Date: 9/30/2015 SeqNo: 887599 Units: mg/Kg									
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Benzene	ND	0.050									
Toluene	ND	0.050									
Ethylbenzene	ND	0.050									
Xylenes, Total	ND	0.10									
Surr: 4-Bromofluorobenzene	1.0		1.000		102	80	120				
Sample ID LCS-21562	Samp	Type: LC	S	Tes	Code: El	PA Method	8021B: Volat	tiles			
Client ID: LCSS	Batc	h ID: 21	562	F	unNo: 2	9220					
Prep Date: 9/29/2015	Analysis I	Date: 9/	30/2015	5	eqNo: 8	87600	Units: mg/k	(g			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Benzene	1.0	0.050	1.000	0	101	80	120				
Toluene	0.98	0.050	1.000	0	97.8	80	120				
Ethylbenzene	1.0	0.050	1.000	0	101	80	120				
Xylenes, Total	3.0	0.10	3.000	0	101	80	120				

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

Page 16 of 16

WO#: 1509D18

HALI. ENVIRONMENTAL ANALYSIS LABORATORY	rtan Environmentat A Albug TEL: 505-345-3975 I Website: www.hali	natysts Lanor 4901 Haveki querque, NM & VAX: 505-345 lenvironmenta	alory ns NE 87109 Samp -4107 d.com	ole Log-In C	heck List
Client Name: BLAGA	Work Order Number:	1509D18		RcptNo:	1
Received by/date Ashley Gallegos	09/26/2015 8:30:00 AM		A		
Completed By: Ashley Gallegos	9/28/2015 1:53:44 PM		AJ		
Reviewed By:	09/29/15				
Chain of Custody					
1. Custody seals intact on sample bottles?		Yes [.]	No	Not Present	
2. Is Chain of Custody complete?		Yes 🖈	No	Not Present	
3. How was the sample delivered?		Courier			
Log In					
4. Was an attempt made to cool the sample	s?	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 tes	t(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 bottles checked	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)		Yes 🛃	No	for pH: (<2	or >12 unless noted)
13. Are matrices correctly identified on Chain	of Custody?	Yes	No	Adjusted?	
14. Is it clear what analyses were requested?		Yes 🛃	No		
15. Were all holding times able to be met? (If no, notify customer for authorization.)		Yes 🕢	No	Checked by:	
Special Handling (if applicable)				1.41	
16. Was client notified of all discrepancies wit	h this order?	Yes	No L.I	NA 🜌	
Person Notified:	Date	an a	and a second second second		
By Whom:	Via: [eMail] Phone [] Fax		
Regarding:	પ્લેલ કે પ્લાન્ટ વાલ કોઈ કોઈ કે વાલ્કો છે. જે તે વર્કે કે કે કે કે કે કે કે કે પ્લાન્ક કે પ્લાન્ક કે અને અને અને અને અને અને અને અને અને અન	na ¹ , gags sada isgagina dikiniki dikiniki dikiniki dikiniki dikiniki dikiniki dikiniki dikiniki dikiniki dikin	and characterized and a page of the definition of the sec	فالعا فالانتقاء المهالير الأماريه، بو عرض و الولاء والا	
17. Additional remarks:					
18. Cooler Information					
Cooler No Temp °C Condition 1 1.3 Good	Seal Intact Seal No S	Seal Date	Signed By		
Page 1 of 1					

С	hain-	of-Cu	stody Record	Turn-Around	Time:					н		LL	E	V	IR	0	NN	1E	NT/	AL
Client:	BPAN	AERICA		X Standard	C Rush			1000 C	F	A	N	AL	YS	SIS	5 L	AE	30	RA	TO	RY
	2			Project Name):						****	/ hall	lenv	ironn	nent	al co	m			
Mailing	Address			MODE	B 12R			40	04.11	auti			Alb				4.97	100		
				Project #:				49		awki			diA	uque	= que	3, INF	4107	109		
								IE	91. 50	5-34	5-35	Δ	naly	ax	Real	uest	4107			
Phone	#:			Designation					â				licity	-						
email of	r ⊦ax#:			Project Mana	ger:		21)	onl	MRG					SO	3's					
QA/QC	Package:			J-B	LAGE		(80	Gas	10			MS		04	PC					
Accredi	tation			Samplar: 7	- Riald) H	DR	~	_	S O		02,1	082					-
	AP	□ Othe	r	On Ice:	Z Yes	□ No	Ħ	H +	102	18.1	04.1	827		03,N	/ 8((A			N N
	(Type)			Sample Tem	perature: 1,L	1-121-=13		ВЕ	(GF	d 4	2 pc	0 or	tals	N,	ides	8	07-	14)		2
						oner	H I	MT	15B	etho	lethc	831	3 Me	(F,C	estic	(VO)	iemi	SIDE		-Inc
Date	Time	Matrix	Sample Request ID	Container	Preservative	HEAL No.	+	+ ×	180	N)	S	1's (SA 8	suc	1 Pe	OB	0 (S	9		4
				Type and #	Type	1509 D18	BTE	BTE	TPH	TP	EDE	PAF	RCF	Anic	808	826	827	J		Air
1/24/15	0927	SOIL	GP-3@36	402 ×1	Cool	-001	×		×									×		
11	1038	11	GP-30 42	1(-002	×		×									×		
11	1210	11	6P-4038	1(ч	-003	×		×									×		
u	1218	11	GP-4042	11	iş	- 004	×		×									×		
٤١	1419	15	6P-5 @ 36	11	11	-005	×		×									x		
ι(1450	Ц	GP-5@ 42	1(u.	-00L0	×		×									×		
11	1559	11	6P-6 C 38'	1(11	- 007	×		×									×		
11	1630	ч	6-P-6 C 41	((L.	- 008	×		×									×		
1/25/15	1028	51	GP-7036	15	4	-009	×		×									×		
11	1130	1.	GP-7041		L:	-010	×		×									×		
11	1228	15	6P-8C36	11	1(-011	×		×									×		
11	1255	10	GP-8041'	11	11	-012	×		×									x		
Date:	Time:	Relinquish	ed by:	Received by:	1).1	Date Time	Ren	nark	s: I	BILL	B	P								
125/2015	1715	fe	1 Blagg	1 Witsh	, Wette	1/25/15 1715			5	Silla	16.	INF	5	10	Fou	ow				
Date:	Time:	Relinquish	ed by:	Received by	4	Date Time														
1/25/15	1916	lina	A Lalte		T I	4/24/15 D830	3P	° ca	NTA	75:	STE	eve N	Mosie	AL Y	Jo	HN I	RITC	HIE		

Groundwater Monitoring Data



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

October 04, 2018

Steve Moskal Blagg Engineering P. O. Box 87 Bloomfield, NM 87413 TEL: (505) 632-1199 FAX (505) 632-3903

RE: Mudge B 12R

OrderNo.: 1809H33

Dear Steve Moskal:

Hall Environmental Analysis Laboratory received 3 sample(s) on 9/28/2018 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 <u>www.hallenvironmental.com</u> 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 #NM0901

Sincerely,

andy

Andy Freeman Laboratory Manager 4901 Hawkins NE Albuquerque, NM 87109

Lab Order 1809H33

Date Reported: 10/4/2018

of 9

CLIENT: Blagg Engineering Project: Mudge B 12R		Clien Col	t Sample II lection Date): M e: 9/2	W #1 26/2018 9:05:00 AM	
Lab ID: 1809H33-001	Matrix: AQUEO	US Re	eceived Date	e: 9/2	28/2018 8:40:00 AM	
Analyses	Result	PQL Q	ual Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES					Analyst	RAA
Benzene	ND	1.0	µg/L	1	10/1/2018 4:35:00 PM	R54556
Toluene	ND	1.0	µg/L	1	10/1/2018 4:35:00 PM	R54556
Ethylbenzene	ND	1.0	µg/L	1	10/1/2018 4:35:00 PM	R54556
Methyl tert-butyl ether (MTBE)	ND	1.0	µg/L	1	10/1/2018 4:35:00 PM	R54556
1,2,4-Trimethylbenzene	ND	1.0	µg/L	1	10/1/2018 4:35:00 PM	R54556
1,3,5-Trimethylbenzene	ND	1.0	µg/L	1	10/1/2018 4:35:00 PM	R54556
1,2-Dichloroethane (EDC)	ND	1.0	µg/L	1	10/1/2018 4:35:00 PM	R54556
1,2-Dibromoethane (EDB)	ND	1.0	µg/L	1	10/1/2018 4:35:00 PM	R54556
Naphthalene	ND	2.0	µg/L	1	10/1/2018 4:35:00 PM	R54556
1-Methylnaphthalene	ND	4.0	µg/L	1	10/1/2018 4:35:00 PM	R54556
2-Methylnaphthalene	ND	4.0	µg/L	1	10/1/2018 4:35:00 PM	R54556
Acetone	ND	10	µg/L	1	10/1/2018 4:35:00 PM	R54556
Bromobenzene	ND	1.0	µg/L	1	10/1/2018 4:35:00 PM	R54556
Bromodichloromethane	ND	1.0	µg/L	1	10/1/2018 4:35:00 PM	R54556
Bromoform	ND	1.0	µg/L	1	10/1/2018 4:35:00 PM	R54556
Bromomethane	ND	3.0	μg/L	1	10/1/2018 4:35:00 PM	R54556
2-Butanone	ND	10	µg/L	1	10/1/2018 4:35:00 PM	R54556
Carbon disulfide	ND	10	µg/L	1	10/1/2018 4:35:00 PM	R54556
Carbon Tetrachloride	ND	1.0	µg/L	1	10/1/2018 4:35:00 PM	R54556
Chlorobenzene	ND	1.0	µg/L	1	10/1/2018 4:35:00 PM	R54556
Chloroethane	ND	2.0	µg/L	1	10/1/2018 4:35:00 PM	R54556
Chloroform	ND	1.0	µg/L	1	10/1/2018 4:35:00 PM	R54556
Chloromethane	ND	3.0	µg/L	1	10/1/2018 4:35:00 PM	R54556
2-Chlorotoluene	ND	1.0	µg/L	1	10/1/2018 4:35:00 PM	R54556
4-Chlorotoluene	ND	1.0	µg/L	1	10/1/2018 4:35:00 PM	R54556
cis-1,2-DCE	ND	1.0	µg/L	1	10/1/2018 4:35:00 PM	R54556
cis-1,3-Dichloropropene	ND	1.0	µg/L	1	10/1/2018 4:35:00 PM	R54556
1,2-Dibromo-3-chloropropane	ND	2.0	µg/L	1	10/1/2018 4:35:00 PM	R54556
Dibromochloromethane	ND	1.0	µg/L	1	10/1/2018 4:35:00 PM	R54556
Dibromomethane	ND	1.0	µg/L	1	10/1/2018 4:35:00 PM	R54556
1,2-Dichlorobenzene	ND	1.0	µg/L	1	10/1/2018 4:35:00 PM	R54556
1,3-Dichlorobenzene	ND	1.0	µg/L	1	10/1/2018 4:35:00 PM	R54556
1,4-Dichlorobenzene	ND	1.0	µg/L	1	10/1/2018 4:35:00 PM	R54556
Dichlorodifluoromethane	ND	1.0	µg/L	1	10/1/2018 4:35:00 PM	R54556
1,1-Dichloroethane	ND	1.0	µg/L	1	10/1/2018 4:35:00 PM	R54556
1,1-Dichloroethene	ND	1.0	µg/L	1	10/1/2018 4:35:00 PM	R54556
1,2-Dichloropropane	ND	1.0	µg/L	1	10/1/2018 4:35:00 PM	R54556
1,3-Dichloropropane	ND	1.0	µg/L	1	10/1/2018 4:35:00 PM	K54556
2,2-Dichloropropane	ND	2.0	µg/L	1	10/1/2018 4:35:00 PM	R54556

Hall Environmental Analysis Laboratory, Inc.

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

Hall Environmental Analysis Laboratory, Inc.

Lab Order **1809H33** Date Reported: **10/4/2018**

CLIENT: Blagg EngineeringProject: Mudge B 12RLab ID: 1809H33-001	Matrix: AQUEC	Cli C DUS	ent Sample II Collection Date Received Date	D: M e: 9/2 e: 9/2	W #1 26/2018 9:05:00 AM 28/2018 8:40:00 AM	
Analyses	Result	PQL	Qual Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES					Analyst	RAA
1,1-Dichloropropene	ND	1.0	µg/L	1	10/1/2018 4:35:00 PM	R54556
Hexachlorobutadiene	ND	1.0	µg/L	1	10/1/2018 4:35:00 PM	R54556
2-Hexanone	ND	10	µg/L	1	10/1/2018 4:35:00 PM	R54556
Isopropylbenzene	ND	1.0	µg/L	1	10/1/2018 4:35:00 PM	R54556
4-Isopropyltoluene	ND	1.0	µg/L	1	10/1/2018 4:35:00 PM	R54556
4-Methyl-2-pentanone	ND	10	µg/L	1	10/1/2018 4:35:00 PM	R54556
Methylene Chloride	ND	3.0	µg/L	1	10/1/2018 4:35:00 PM	R54556
n-Butylbenzene	ND	3.0	µg/L	1	10/1/2018 4:35:00 PM	R54556
n-Propylbenzene	ND	1.0	µg/L	1	10/1/2018 4:35:00 PM	R54556
sec-Butylbenzene	ND	1.0	µg/L	1	10/1/2018 4:35:00 PM	R54556
Styrene	ND	1.0	µg/L	1	10/1/2018 4:35:00 PM	R54556
tert-Butylbenzene	ND	1.0	µg/L	1	10/1/2018 4:35:00 PM	R54556
1,1,1,2-Tetrachloroethane	ND	1.0	µg/L	1	10/1/2018 4:35:00 PM	R54556
1,1,2,2-Tetrachloroethane	ND	2.0	µg/L	1	10/1/2018 4:35:00 PM	R54556
Tetrachloroethene (PCE)	ND	1.0	µg/L	1	10/1/2018 4:35:00 PM	R54556
trans-1,2-DCE	ND	1.0	µg/L	1	10/1/2018 4:35:00 PM	R54556
trans-1,3-Dichloropropene	ND	1.0	µg/L	1	10/1/2018 4:35:00 PM	R54556
1,2,3-Trichlorobenzene	ND	1.0	µg/L	1	10/1/2018 4:35:00 PM	R54556
1,2,4-Trichlorobenzene	ND	1.0	µg/L	1	10/1/2018 4:35:00 PM	R54556
1,1,1-Trichloroethane	ND	1.0	µg/L	1	10/1/2018 4:35:00 PM	R54556
1,1,2-Trichloroethane	ND	1.0	µg/L	1	10/1/2018 4:35:00 PM	R54556
Trichloroethene (TCE)	ND	1.0	µg/L	1	10/1/2018 4:35:00 PM	R54556
Trichlorofluoromethane	ND	1.0	µg/L	1	10/1/2018 4:35:00 PM	R54556
1,2,3-Trichloropropane	ND	2.0	µg/L	1	10/1/2018 4:35:00 PM	R54556
Vinyl chloride	ND	1.0	µg/L	1	10/1/2018 4:35:00 PM	R54556
Xylenes, Total	ND	1.5	µg/L	1	10/1/2018 4:35:00 PM	R54556
Surr: 1,2-Dichloroethane-d4	111	70-130	%Rec	1	10/1/2018 4:35:00 PM	R54556
Surr: 4-Bromofluorobenzene	102	70-130	%Rec	1	10/1/2018 4:35:00 PM	R54556
Surr: Dibromofluoromethane	113	70-130	%Rec	1	10/1/2018 4:35:00 PM	R54556
Surr: Toluene-d8	97.0	70-130	%Rec	1	10/1/2018 4:35:00 PM	R54556

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	Η	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits Page 2 of 0
	ND	Not Detected at the Reporting Limit	Р	Sample pH Not In Range
	PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Lab Order 1809H33

Hall Environmental Analysis Laboratory, Inc.

Dichlorodifluoromethane

1,1-Dichloroethane

1,1-Dichloroethene

1,2-Dichloropropane

1,3-Dichloropropane

2,2-Dichloropropane

Date Reported: 10/4/2018

CLIENT: Blagg Engineering		Cli	ient Sample I	D: M	W #2	
Project: Mudge B 12R		0	Collection Dat	e: 9/2	26/2018 10:50:00 AM	
Lab ID: 1809H33-002	Matrix: AQUEOUS	5	Received Dat	e: 9/2	28/2018 8:40:00 AM	
Analyses	Result	PQL	Qual Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES					Analyst	RAA
Benzene	140	5.0	µg/L	5	10/1/2018 5:00:00 PM	R54556
Toluene	ND	5.0	µg/L	5	10/1/2018 5:00:00 PM	R54556
Ethylbenzene	320	5.0	µg/L	5	10/1/2018 5:00:00 PM	R54556
Methyl tert-butyl ether (MTBE)	ND	5.0	µg/L	5	10/1/2018 5:00:00 PM	R54556
1,2,4-Trimethylbenzene	190	5.0	µg/L	5	10/1/2018 5:00:00 PM	R54556
1,3,5-Trimethylbenzene	5.9	5.0	µg/L	5	10/1/2018 5:00:00 PM	R54556
1,2-Dichloroethane (EDC)	ND	5.0	µg/L	5	10/1/2018 5:00:00 PM	R54556
1,2-Dibromoethane (EDB)	ND	5.0	µg/L	5	10/1/2018 5:00:00 PM	R54556
Naphthalene	ND	10	µg/L	5	10/1/2018 5:00:00 PM	R54556
1-Methylnaphthalene	ND	20	µg/L	5	10/1/2018 5:00:00 PM	R54556
2-Methylnaphthalene	ND	20	µg/L	5	10/1/2018 5:00:00 PM	R54556
Acetone	ND	50	µg/L	5	10/1/2018 5:00:00 PM	R54556
Bromobenzene	ND	5.0	µg/L	5	10/1/2018 5:00:00 PM	R54556
Bromodichloromethane	ND	5.0	µg/L	5	10/1/2018 5:00:00 PM	R54556
Bromoform	ND	5.0	µg/L	5	10/1/2018 5:00:00 PM	R54556
Bromomethane	ND	15	µg/L	5	10/1/2018 5:00:00 PM	R54556
2-Butanone	54	50	µg/L	5	10/1/2018 5:00:00 PM	R54556
Carbon disulfide	ND	50	µg/L	5	10/1/2018 5:00:00 PM	R54556
Carbon Tetrachloride	ND	5.0	µg/L	5	10/1/2018 5:00:00 PM	R54556
Chlorobenzene	ND	5.0	µg/L	5	10/1/2018 5:00:00 PM	R54556
Chloroethane	ND	10	µg/L	5	10/1/2018 5:00:00 PM	R54556
Chloroform	ND	5.0	µg/L	5	10/1/2018 5:00:00 PM	R54556
Chloromethane	ND	15	µg/L	5	10/1/2018 5:00:00 PM	R54556
2-Chlorotoluene	ND	5.0	µg/L	5	10/1/2018 5:00:00 PM	R54556
4-Chlorotoluene	ND	5.0	µg/L	5	10/1/2018 5:00:00 PM	R54556
cis-1,2-DCE	ND	5.0	µg/L	5	10/1/2018 5:00:00 PM	R54556
cis-1,3-Dichloropropene	ND	5.0	µg/L	5	10/1/2018 5:00:00 PM	R54556
1,2-Dibromo-3-chloropropane	ND	10	µg/L	5	10/1/2018 5:00:00 PM	R54556
Dibromochloromethane	ND	5.0	µg/L	5	10/1/2018 5:00:00 PM	R54556
Dibromomethane	ND	5.0	µg/L	5	10/1/2018 5:00:00 PM	R54556
1,2-Dichlorobenzene	ND	5.0	µg/L	5	10/1/2018 5:00:00 PM	R54556
1,3-Dichlorobenzene	ND	5.0	µg/L	5	10/1/2018 5:00:00 PM	R54556
1,4-Dichlorobenzene	ND	5.0	µg/L	5	10/1/2018 5:00:00 PM	R54556

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

5.0

5.0

5.0

5.0

5.0

10

µg/L

µg/L

µg/L

µg/L

µg/L

µg/L

5

5

5

5

5

5

10/1/2018 5:00:00 PM

R54556

R54556

R54556

R54556

R54556

R54556

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

ND

ND

ND

ND

ND

ND

Lab Order 1809H33

Date Reported: 10/4/2018

CLIENT:	Blagg Engineering			Cl	ient Sa	mple ID	: MV	W #2	
Project:	Mudge B 12R			0	Collect	ion Date	: 9/2	6/2018 10:50:00 AM	
Lab ID:	1809H33-002	Matrix:	AQUEOU	S	Receiv	ed Date	: 9/2	8/2018 8:40:00 AM	
Analyses		Re	sult	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA MET	HOD 8260B: VOLATILES							Analys	st: RAA
1,1-Dichl	oropropene		ND	5.0		µg/L	5	10/1/2018 5:00:00 PM	R54556
Hexachlo	probutadiene		ND	5.0		µg/L	5	10/1/2018 5:00:00 PM	R54556
2-Hexand	one		ND	50		µg/L	5	10/1/2018 5:00:00 PM	R54556
Isopropy	benzene		31	5.0		µg/L	5	10/1/2018 5:00:00 PM	R54556
4-Isoprop	byltoluene		6.6	5.0		µg/L	5	10/1/2018 5:00:00 PM	R54556
4-Methyl-	-2-pentanone		ND	50		µg/L	5	10/1/2018 5:00:00 PM	R54556
Methylen	e Chloride		ND	15		µg/L	5	10/1/2018 5:00:00 PM	R54556
n-Butylbe	enzene		ND	15		µg/L	5	10/1/2018 5:00:00 PM	R54556
n-Propylk	penzene		34	5.0		µg/L	5	10/1/2018 5:00:00 PM	R54556
sec-Buty	lbenzene		7.4	5.0		µg/L	5	10/1/2018 5:00:00 PM	R54556
Styrene			ND	5.0		µg/L	5	10/1/2018 5:00:00 PM	R54556
tert-Butyl	benzene		ND	5.0		µg/L	5	10/1/2018 5:00:00 PM	R54556
1,1,1,2-T	etrachloroethane		ND	5.0		µg/L	5	10/1/2018 5:00:00 PM	R54556
1,1,2,2-T	etrachloroethane		ND	10		µg/L	5	10/1/2018 5:00:00 PM	R54556
Tetrachic	proethene (PCE)		ND	5.0		µg/L	5	10/1/2018 5:00:00 PM	R54556
trans-1,2	-DCE		ND	5.0		µg/L	5	10/1/2018 5:00:00 PM	R54556
trans-1,3	-Dichloropropene		ND	5.0		µg/L	5	10/1/2018 5:00:00 PM	R54556
1,2,3-Tri	chlorobenzene		ND	5.0		µg/L	5	10/1/2018 5:00:00 PM	R54556
1,2,4-Tri	chlorobenzene		ND	5.0		µg/L	5	10/1/2018 5:00:00 PM	R54556
1,1,1-Trie	chloroethane		ND	5.0		µg/L	5	10/1/2018 5:00:00 PM	R54556
1,1,2-Tri	chloroethane		ND	5.0		µg/L	5	10/1/2018 5:00:00 PM	R54556
Trichloro	ethene (TCE)		ND	5.0		µg/L	5	10/1/2018 5:00:00 PM	R54556
Trichloro	fluoromethane		ND	5.0		µg/L	5	10/1/2018 5:00:00 PM	R54556
1,2,3-Tri	chloropropane		ND	10		µg/L	5	10/1/2018 5:00:00 PM	R54556
Vinyl chl	oride		ND	5.0		µg/L	5	10/1/2018 5:00:00 PM	R54556
Xylenes,	Total		620	7.5		µg/L	5	10/1/2018 5:00:00 PM	R54556
Surr: 1	1,2-Dichloroethane-d4		104	70-130		%Rec	5	10/1/2018 5:00:00 PM	R54556
Surr: 4	4-Bromofluorobenzene		102	70-130		%Rec	5	10/1/2018 5:00:00 PM	R54556
Surr: I	Dibromofluoromethane		108	70-130		%Rec	5	10/1/2018 5:00:00 PM	R54556
Surr:	Toluene-d8		107	70-130		%Rec	5	10/1/2018 5:00:00 PM	R54556

Hall Environmental Analysis Laboratory, Inc.

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

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

Lab Order 1809H33

Date Reported: 10/4/2018

Hall	Environmenta	al Anal	lysis	Labor	ratory,	Inc.

CLIENT: Blagg Engineering Project: Mudge B 12R	Client Sample ID: MW #3 Collection Date: 9/26/2018 10:00:00 AM								
Lab ID: 1809H33-003	Matrix: AQUEOUS		Received Dat	e: 9/2	28/2018 8:40:00 AM				
Analyses	Result	PQL	Qual Units	DF	Date Analyzed	Batch			
EPA METHOD 8260B: VOLATILES					Analyst:	RAA			
Benzene	13	1.0	µg/L	1	10/1/2018 5:24:00 PM	R54556			
Toluene	ND	1.0	µg/L	1	10/1/2018 5:24:00 PM	R54556			
Ethylbenzene	ND	1.0	µg/L	1	10/1/2018 5:24:00 PM	R54556			
Methyl tert-butyl ether (MTBE)	ND	1.0	µg/L	1	10/1/2018 5:24:00 PM	R54556			
1,2,4-Trimethylbenzene	3.4	1.0	µg/L	1	10/1/2018 5:24:00 PM	R54556			
1,3,5-Trimethylbenzene	ND	1.0	µg/L	1	10/1/2018 5:24:00 PM	R54556			
1,2-Dichloroethane (EDC)	ND	1.0	µg/L	1	10/1/2018 5:24:00 PM	R54556			
1,2-Dibromoethane (EDB)	ND	1.0	µg/L	1	10/1/2018 5:24:00 PM	R54556			
Naphthalene	ND	2.0	µg/L	1	10/1/2018 5:24:00 PM	R54556			

	110		- 3 . –			
1,2-Dibromoethane (EDB)	ND	1.0	µg/L	1	10/1/2018 5:24:00 PM	R54556
Naphthalene	ND	2.0	µg/L	1	10/1/2018 5:24:00 PM	R54556
1-Methylnaphthalene	ND	4.0	µg/L	1	10/1/2018 5:24:00 PM	R54556
2-Methylnaphthalene	ND	4.0	µg/L	1	10/1/2018 5:24:00 PM	R54556
Acetone	ND	10	µg/L	1	10/1/2018 5:24:00 PM	R54556
Bromobenzene	ND	1.0	µg/L	1	10/1/2018 5:24:00 PM	R54556
Bromodichloromethane	ND	1.0	µg/L	1	10/1/2018 5:24:00 PM	R54556
Bromoform	ND	1.0	µg/L	1	10/1/2018 5:24:00 PM	R54556
Bromomethane	ND	3.0	µg/L	1	10/1/2018 5:24:00 PM	R54556
2-Butanone	ND	10	µg/L	1	10/1/2018 5:24:00 PM	R54556
Carbon disulfide	ND	10	µg/L	1	10/1/2018 5:24:00 PM	R54556
Carbon Tetrachloride	ND	1.0	µg/L	1	10/1/2018 5:24:00 PM	R54556
Chlorobenzene	ND	1.0	µg/L	1	10/1/2018 5:24:00 PM	R54556
Chloroethane	ND	2.0	µg/L	1	10/1/2018 5:24:00 PM	R54556
Chloroform	ND	1.0	µg/L	1	10/1/2018 5:24:00 PM	R54556
Chloromethane	ND	3.0	µg/L	1	10/1/2018 5:24:00 PM	R54556
2-Chlorotoluene	ND	1.0	µg/L	1	10/1/2018 5:24:00 PM	R54556
4-Chlorotoluene	ND	1.0	µg/L	1	10/1/2018 5:24:00 PM	R54556
cis-1,2-DCE	ND	1.0	µg/L	1	10/1/2018 5:24:00 PM	R54556
cis-1,3-Dichloropropene	ND	1.0	µg/L	1	10/1/2018 5:24:00 PM	R54556
1,2-Dibromo-3-chloropropane	ND	2.0	µg/L	1	10/1/2018 5:24:00 PM	R54556
Dibromochloromethane	ND	1.0	µg/L	1	10/1/2018 5:24:00 PM	R54556
Dibromomethane	ND	1.0	µg/L	1	10/1/2018 5:24:00 PM	R54556
1,2-Dichlorobenzene	ND	1.0	µg/L	1	10/1/2018 5:24:00 PM	R54556
1,3-Dichlorobenzene	ND	1.0	µg/L	1	10/1/2018 5:24:00 PM	R54556
1,4-Dichlorobenzene	ND	1.0	µg/L	1	10/1/2018 5:24:00 PM	R54556
Dichlorodifluoromethane	ND	1.0	µg/L	1	10/1/2018 5:24:00 PM	R54556
1,1-Dichloroethane	ND	1.0	µg/L	1	10/1/2018 5:24:00 PM	R54556
1,1-Dichloroethene	ND	1.0	µg/L	1	10/1/2018 5:24:00 PM	R54556
1,2-Dichloropropane	ND	1.0	µg/L	1	10/1/2018 5:24:00 PM	R54556
1,3-Dichloropropane	ND	1.0	µg/L	1	10/1/2018 5:24:00 PM	R54556
2,2-Dichloropropane	ND	2.0	µg/L	1	10/1/2018 5:24:00 PM	R54556

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

Lab Order 1809H33

Hall Environmental Analysis Laboratory, Inc. Date Reported: 10/4/2018								
CLIENT: Blagg Engineer	ing	Clie	ent Sample II): M	W #3			
Project: Mudge B 12R		Co	ollection Date	e: 9/2	26/2018 10:00:00 AM			
Lab ID: 1809H33-003	Matrix: AQU	EOUS F	Received Date	e: 9/2	28/2018 8:40:00 AM			
Analyses	Result	PQL 0	Qual Units	DF	Date Analyzed	Batch		
EPA METHOD 8260B: V	OLATILES				Analyst	RAA		
1,1-Dichloropropene	ND	1.0	µg/L	1	10/1/2018 5:24:00 PM	R54556		
Hexachlorobutadiene	ND	1.0	µg/L	1	10/1/2018 5:24:00 PM	R54556		
2-Hexanone	ND	10	µg/L	1	10/1/2018 5:24:00 PM	R54556		
Isopropylbenzene	ND	1.0	µg/L	1	10/1/2018 5:24:00 PM	R54556		
4-Isopropyltoluene	ND	1.0	µg/L	1	10/1/2018 5:24:00 PM	R54556		
4-Methyl-2-pentanone	ND	10	µg/L	1	10/1/2018 5:24:00 PM	R54556		
Methylene Chloride	ND	3.0	µg/L	1	10/1/2018 5:24:00 PM	R54556		
n-Butylbenzene	ND	3.0	µg/L	1	10/1/2018 5:24:00 PM	R54556		
n-Propylbenzene	ND	1.0	µg/L	1	10/1/2018 5:24:00 PM	R54556		
sec-Butylbenzene	ND	1.0	µg/L	1	10/1/2018 5:24:00 PM	R54556		
Styrene	ND	1.0	µg/L	1	10/1/2018 5:24:00 PM	R54556		
tert-Butylbenzene	ND	1.0	µg/L	1	10/1/2018 5:24:00 PM	R54556		
1,1,1,2-Tetrachloroethane	ND	1.0	µg/L	1	10/1/2018 5:24:00 PM	R54556		
1,1,2,2-Tetrachloroethane	ND	2.0	µg/L	1	10/1/2018 5:24:00 PM	R54556		
Tetrachloroethene (PCE)	ND	1.0	µg/L	1	10/1/2018 5:24:00 PM	R54556		
trans-1,2-DCE	ND	1.0	µg/L	1	10/1/2018 5:24:00 PM	R54556		
trans-1,3-Dichloropropene	ND	1.0	µg/L	1	10/1/2018 5:24:00 PM	R54556		
1,2,3-Trichlorobenzene	ND	1.0	µg/L	1	10/1/2018 5:24:00 PM	R54556		
1,2,4-Trichlorobenzene	ND	1.0	µg/L	1	10/1/2018 5:24:00 PM	R54556		
1,1,1-Trichloroethane	ND	1.0	µg/L	1	10/1/2018 5:24:00 PM	R54556		
1,1,2-Trichloroethane	ND	1.0	µg/L	1	10/1/2018 5:24:00 PM	R54556		
Trichloroethene (TCE)	ND	1.0	µg/L	1	10/1/2018 5:24:00 PM	R54556		
Trichlorofluoromethane	ND	1.0	µg/L	1	10/1/2018 5:24:00 PM	R54556		
1,2,3-Trichloropropane	ND	2.0	µg/L	1	10/1/2018 5:24:00 PM	R54556		
Vinyl chloride	ND	1.0	µg/L	1	10/1/2018 5:24:00 PM	R54556		
Xylenes, Total	ND	1.5	µg/L	1	10/1/2018 5:24:00 PM	R54556		
Surr: 1,2-Dichloroethane	-d4 106	70-130	%Rec	1	10/1/2018 5:24:00 PM	R54556		
Surr: 4-Bromofluorobenz	ene 99.2	70-130	%Rec	1	10/1/2018 5:24:00 PM	R54556		
Surr: Dibromofluorometh	iane 110	70-130	%Rec	1	10/1/2018 5:24:00 PM	R54556		
Surr: Toluene-d8	99.5	70-130	%Rec	1	10/1/2018 5:24:00 PM	R54556		

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

*	Value exceeds	Maximum	Contaminant	Level.
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D Sample Diluted Due to Matrix

Qualifiers:

- 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 9
 - P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

QC SUMMARY REPORT Hall Environmental Analysis Laboratory, Inc.

Client: Blagg Engineering Project: Mudge B 12R

inoject. Muuge	Disit									
Sample ID 100ng Ics	SampT	ype: LC	s	Tes	Code: El	PA Method	8260B: VOL	ATILES		
Client ID: LCSW	Batch	ID: R5	4556	F	RunNo: 5	4556				
Prep Date:	Analysis D	ate: 10	0/1/2018	S	SeqNo: 1	808975	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	21	1.0	20.00	0	104	70	130			
Toluene	21	1.0	20.00	0	105	70	130			
Chlorobenzene	22	1.0	20.00	0	108	70	130			
1,1-Dichloroethene	22	1.0	20.00	0	111	70	130			
Trichloroethene (TCE)	20	1.0	20.00	0	99.9	70	130			
Surr: 1,2-Dichloroethane-d4	9.8		10.00		98.2	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		102	70	130			
Surr: Dibromofluoromethane	10		10.00		104	70	130			
Surr: Toluene-d8	10		10.00		99.8	70	130			
Sample ID RB	SampT	ype: MI	BLK	Tes	tCode: El	PA Method	8260B: VOL	ATILES		
Client ID: PBW	Batch	1D: R5	54556	F	RunNo: 5	4556				
Prep Date:	Analysis D	ate: 1	0/1/2018	S	SeqNo: 1	808978	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
1,2-Dichloroethane (EDC)	ND	1.0								
1,2-Dibromoethane (EDB)	ND	1.0								
Naphthalene	ND	2.0								
1-Methylnaphthalene	ND	4.0								
2-Methylnaphthalene	ND	4.0								
Acetone	ND	10								
Bromobenzene	ND	1.0								
Bromodichloromethane	ND	1.0								
Bromoform	ND	1.0								
Bromomethane	ND	3.0								
2-Butanone	ND	10								
Carbon disulfide	ND	10								
Carbon Tetrachloride	ND	1.0								
Chlorobenzene	ND	1.0								
Chloroethane	ND	2.0								
Chloroform	ND	1.0								
Chloromethane	ND	3.0								
2-Chlorotoluene	ND	1.0								

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

WO#: 1809H33

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QC SUMMARY REPORT Hall Environmental Analysis Laboratory, Inc.

Client: Blagg Engineering

Project: Mudg	e B 12R								
Sample ID RB	SampTyp	e: MBLK	Te	stCode: E	PA Method	8260B: VOL	ATILES		
Client ID: PBW	Batch II	: R54556		RunNo: 5	54556				
Prep Date:	Analysis Date	e: 10/1/2018	5	SeqNo: 1	808978	Units: µg/L			
Analyte	Result	PQL SPK va	alue SPK Ref Va	I %REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
4-Chlorotoluene	ND	1.0							
cis-1,2-DCE	ND	1.0							
cis-1,3-Dichloropropene	ND	1.0							
1,2-Dibromo-3-chloropropane	ND	2.0							
Dibromochloromethane	ND	1.0							
Dibromomethane	ND	1.0							
1,2-Dichlorobenzene	ND	1.0							
1,3-Dichlorobenzene	ND	1.0							
1,4-Dichlorobenzene	ND	1.0							
Dichlorodifluoromethane	ND	1.0							
1,1-Dichloroethane	ND	1.0							
1.1-Dichloroethene	ND	1.0							
1.2-Dichloropropane	ND	1.0							
1.3-Dichloropropane	ND	1.0							
2 2-Dichloropropane	ND	2.0							
1 1-Dichloropropene	ND	1.0							
Hexachlorobutadiene	ND	1.0							
2-Hexanone	ND	10							
Isopronylhenzene	ND	1.0							
A-Isopropyltoluene	ND	1.0							
4-Methyl-2-pentanone	ND	10							
Methylene Chloride	ND	3.0							
n Butylbonzono	ND	3.0							
n-Dutyibenzene	ND	1.0							
soc Butybonzono	ND	1.0							
Sec-DulyiDelizene	ND	1.0							
tort Butylbonzono	ND	1.0							
1 1 1 2 Totrachloraethana	ND	1.0							
1,1,2.2 Tetrachloroethano		2.0							
Totrachloroothono (PCE)	ND	1.0							
trans 1.2 DCE	ND	1.0							
trans 1.2 Dichloropropopo	ND	1.0							
123 Trichlorobenzone		1.0							
1.2.4 Trichlorobenzene		1.0							
1,2,4-1 Inchloropenzene		1.0							
1,1,1-Inchloroethane		1.0							
Trichlemethene (TOE)	ND	1.0							
Inchloroethene (ICE)	ND	1.0							
Inchlorofluoromethane	ND	1.0							
1,2,3-Trichloropropane	ND	2.0							

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

WO#: 1809H33

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QC SUMMARY REPORT Hall Environmental Analysis Laboratory, Inc.

Client:	Blagg Engineering
Project:	Mudge B 12R

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Sample ID RB	SampT	ype: ME	BLK	Test	Code: El	PA Method	8260B: VOL	ATILES			
Client ID: PBW	Batch	n ID: R5	4556	R	tunNo: 5	4556					
Prep Date:	Analysis D	ate: 10)/1/2018	S	eqNo: 1	808978	Units: µg/L				
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Vinyl chloride	ND	1.0									
Xylenes, Total	ND	1.5									
Surr: 1,2-Dichloroethane-d4	10		10.00		104	70	130				
Surr: 4-Bromofluorobenzene	10		10.00		99.5	70	130				
Surr: Dibromofluoromethane	11		10.00		106	70	130				
Surr: Toluene-d8	9.9		10.00		99.0	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
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Page 9 of 9

WO#: 1809H33 04-Oct-18

h	HALL ENVIR ANAL LABO	RONMENT YSIS RATORY	AL	Hall Environm TEL: 505-345- Website: ww	ental Analysis La 4901 Ha Albuquerque, N 3975 FAX: 505- w.hallenvironm	nboratory wkins NE M 87105 345-4107 ental.con	mple Log-In C	check List
Client	Name:	BLAGG		Work Order Num	ber: 1809H33		RcptNo:	1
Receiv	ed By:	Anne Th	orne	9/28/2018 8:40:00	AM	anne J	l-	
Comple	eted By:	Ashley G	allegos	9/28/2018 11:21:5	8 AM	A	-	
Review	ved By:	Thom	Mayke	:	label	ed b	y' Juq	28.15
Chain	of Cus	stody				_	_	
1. Is C	hain of C	custody com	plete?		Yes 🗹	No L	Not Present	
2. How	v was the	sample del	ivered?		Courier			
Log I 3. Was	l <u>n</u> s an atter	npt made to	cool the same	oles?	Yes 🗹	No 🗌		
4. Wen	e all sam	ples receive	ed at a tempera	ature of >0° C to 6.0°C	Yes 🗹	No		
5. Sam	nple(s) in	proper cont	ainer(s)?		Yes 🗹	No 🗔		
6. Suffi	icient san	nple volume	for indicated 1	est(s)?	Yes 🖌	No 🗌		
7. Are	samples	(except VO/	A and ONG) pr	operly preserved?	Yes 🗹	No 🗔		
8. Was	preserva	ative added	to bottles?		Yes	No 🗹	NA 🗆	
9. VOA	vials ha	ve zero hea	dspace?		Yes 🗹	No 🗌	No VOA Vials	0
10. Wer	re any sa	mple contai	ners received	proken?	Yes	No 🗹	# of preserved	
11. Doe: (Not	s paperw e discrep	ork match b ancies on c	ottle labels? hain of custody	<i>y</i>)	Yes 🗹	No 🗌	for pH:	>12 unless noted)
12. Are	matrices	correctly ide	entified on Cha	in of Custody?	Yes 🗹	No 🗌	Adjusted?	50 aid
13. Is it	clear wha	at analyses	were requeste	d?	Yes 🖌	No 🗌		9.28.18
14. Wen (If ne	e all hold o, notify d	ling times at	ble to be met? authorization.)	Yes 🗹	No	Checked by:	l
Specia	Hand	ling (if ap	plicable)					
15. Wa	s client n	otified of all	discrepancies	with this order?	Yes 🗌	No 🗌	NA 🗹	
	Persor	Notified:		Date	e		•	
	By Wh	iom:	Constantine and the second	Via:	eMail	Phone Fa	ax In Person	
	Regard	ding:	THE AREA STATES AND A CONTRACT OF THE OWNER OF	NARONALISTINI II I. I. INAN ING YANG YANG YANG YANG YANG YANG YANG YA		alan sanadalan kanada kanad	SELLENNER MESSER KOLLENNEN AN	
	Client	Instructions	1					
16. Ad	ditional re	emarks:						
17. Co	oler Info	rmation						
	Cooler N	o Temp º	C Condition	Seal Intact Seal No	Seal Date	Signed By		
1		1.3	Good	Yes		1]	

Page 1 of 1

CI	hain-c	of-Cus	tody Record	Turn-Around T	ime:					H	A	LL	E	NV	IF	20	N	ME	N	FA	L	
Client:	BLAG	G ENGR.	/ BP AMERICA	Standard	Rush_					A	N	AL	Y	ST	5 L	A	80	R/	AT	OR	Y	
				Project Name:							www	v.ha	llen	viro	nme	ntal	.con	1				
Mailing Ad	ddress:	P.O. BO	X 87	N	IUDGE B #	12R		49	01 H	awki	ins M	NE -	Alb	ouqu	erqu	ue, N	IM 8	3710	9			
		BLOOM	FIELD, NM 87413	Project #:	annan an a' Guige an Geadhan Star		Tel. 505-345-3975 Fax 505-345-4107															
Phone #:		(505) 63	2-1199							S.I.		۵	anal	ysis	Rec	ques	st					
email or F	ax#:			Project Manag	er.									4)								
QA/QC Pad	ckage: ard		Level 4 (Full Validation)		STEVE MO	SKAL	218)	(yluo	MRO)			S)		O4,SO.	PCB's							
Accreditat	ion:		Boror + (r an randation)	Sampler:	NELSON VI	ELEZ	s (80	Gas	00		=	SIM		02, P	082		nce	ids			nple	
)	□ Other		On Ice:	Yes	□ No	MB	Hd	IQ/O	118.	504.	3270		D3, N	s / 8		Bala	Sol			e sal	î
	ype)			Sample Tempe	rature: 2.3	CF-10=13	[+ 	+ -	GRO	po	po	or 8	etals	CI,NC	cide	A)	lion	lvec		e	osit	10 <u>λ</u>
Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL NO.	BTEX + MTB	BTEX + MTB	TPH 8015B	TPH (Meth	EDB (Meth	PAH (8310	RCRA 8 Me	Anions (F,C	8081 Pesti	8260B (VO	Cation / Ar	Total Disso		Grab samp	5 pt. comp	Air Bubbles
9/26/18	0965	WATER	MW # 1	40 ml VOA - 2	HCI & Cool	m										٧			\square	V		
9/28/18	1050	WATER	MW # 2	40 ml VOA - 2	HCi & Cool	-00a										۷				V		
9/26/18	1000	WATER	MW # 3	40 ml VOA - 2	HCI & Cool	-003										۷				۷		
-																	•			_		
													_									
Participant and a first of the																		-		_		
M-107-0-10-100-010-010-010-010-010-010-01												-			-	-	-		$\left - \right $	_	_	
									_		-		-	-	-	-	-			-		
Date:	Time:	Relinquish	ed by;	Received by:	[Date Time	Ren	nark	s:				L									
9/27/18	1541	1	last	Khust	Hart "	1/18/541	BI	LL DI	RECT	LY T	O BF	P: al										
Date: 9/27/10	Time:	Relinquish	ed by:	Received by:	1	Pate Time J 09/28/19	SI	O #: BS E	LEME	ENT:	1900 L1-0	0400	0768 V-E:I	<u>85</u> MUD	GEB	<u>12R</u>						
1.0	11001	1/1/1		1	m	This serves as notice of	f thin n	76-11	the A	nu auto	contr	hetpe	data	uill bo	alaart	u nota	tad on	the or	abytics	Ireno	rt	

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

July 09, 2018

Steve Moskal Blagg Engineering P. O. Box 87 Bloomfield, NM 87413 TEL: (505) 632-1199 FAX (505) 632-3903

RE: Mudge B 12R

OrderNo.: 1806I49

Dear Steve Moskal:

Hall Environmental Analysis Laboratory received 3 sample(s) on 6/30/2018 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 <u>www.hallenvironmental.com</u> 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 #NM0901

Sincerely,

andy

Andy Freeman Laboratory Manager 4901 Hawkins NE Albuquerque, NM 87109

Lab Order 1806149

Date Reported: 7/9/2018

7/6/2018 6:22:00 PM

7/6/2018 6:22:00 PM

R52521

R52521

Hall Env	ironmental	Analysis	Laboratory,	Inc.
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CLIENT: Blagg Engineering		Cli	ent Sa	mple II	D: M	W #1	
Project: Mudge B 12R		C	Collecti	on Dat	e: 6/2	28/2018 7:15:00 AM	
Lab ID: 1806149-001	Matrix: AQUEOUS	S	Receiv	ed Dat	e: 6 /3	30/2018 10:15:00 AM	
Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES						Analyst	RAA
Benzene	ND	1.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
Toluene	ND	1.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
Ethylbenzene	ND	1.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
Methyl tert-butyl ether (MTBE)	ND	1.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
1,2,4-Trimethylbenzene	ND	1.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
1,3,5-Trimethylbenzene	ND	1.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
1,2-Dichloroethane (EDC)	ND	1.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
1,2-Dibromoethane (EDB)	ND	1.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
Naphthalene	ND	2.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
1-Methylnaphthalene	ND	4.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
2-Methylnaphthalene	ND	4.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
Acetone	ND	10		µg/L	1	7/6/2018 6:22:00 PM	R52521
Bromobenzene	ND	1.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
Bromodichloromethane	ND	1.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
Bromoform	ND	1.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
Bromomethane	ND	3.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
2-Butanone	ND	10		µg/L	1	7/6/2018 6:22:00 PM	R52521
Carbon disulfide	ND	10		µg/L	1	7/6/2018 6:22:00 PM	R52521
Carbon Tetrachloride	ND	1.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
Chlorobenzene	ND	1.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
Chloroethane	ND	2.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
Chloroform	ND	1.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
Chloromethane	ND	3.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
2-Chlorotoluene	ND	1.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
4-Chlorotoluene	ND	1.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
cis-1,2-DCE	ND	1.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
cis-1,3-Dichloropropene	ND	1.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
1,2-Dibromo-3-chloropropane	ND	2.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
Dibromochloromethane	ND	1.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
Dibromomethane	ND	1.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
1,2-Dichlorobenzene	ND	1.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
1,3-Dichlorobenzene	ND	1.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
1,4-Dichlorobenzene	ND	1.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
Dichlorodifluoromethane	ND	1.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
1,1-Dichloroethane	ND	1.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
1,1-Dichloroethene	ND	1.0		µg/L	1	7/6/2018 6:22:00 PM	R52521
1,2-Dichloropropane	ND	1.0		µg/L	1	7/6/2018 6:22:00 PM	R52521

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

1.0

2.0

µg/L

µg/L

1

1

ND

ND

1,3-Dichloropropane 2,2-Dichloropropane

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

Lab Order 1806149

Date Reported: 7/9/2018

Hall Environmental Analy	sis Laboratory, Ir	1C.				Date Reported: 7/9/2018	ł	
CLIENT: Blagg Engineering Project: Mudge B 12R		С	lient Sar Collectio	mple II on Dat	D: M e: 6/.	W #1 28/2018 7:15:00 AM		
Lab ID: 1806149-001	Matrix: AQUEOU	Matrix: AQUEOUS Received Date: 6/						
Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch	
EPA METHOD 8260B: VOLATILES						Analyst:	RAA	
1,1-Dichloropropene	ND	1.0)	µg/L	1	7/6/2018 6:22:00 PM	R52521	
Hexachlorobutadiene	ND	1.0		µg/L	1	7/6/2018 6:22:00 PM	R52521	
2-Hexanone	ND	10		µg/L	1	7/6/2018 6:22:00 PM	R52521	
Isopropylbenzene	ND	1.0		µg/L	1	7/6/2018 6:22:00 PM	R52521	
4-Isopropyltoluene	ND	1.0	1	µg/L	1	7/6/2018 6:22:00 PM	R52521	
4-Methyl-2-pentanone	ND	10		µg/L	1	7/6/2018 6:22:00 PM	R52521	
Methylene Chloride	ND	3.0)	µg/L	1	7/6/2018 6:22:00 PM	R52521	
n-Butylbenzene	ND	3.0		µg/L	1	7/6/2018 6:22:00 PM	R52521	
n-Propylbenzene	ND	1.0)	µg/L	1	7/6/2018 6:22:00 PM	R52521	
sec-Butylbenzene	ND	1.0	1	µg/L	1	7/6/2018 6:22:00 PM	R52521	
Styrene	ND	1.0)	µg/L	1	7/6/2018 6:22:00 PM	R52521	
tert-Butylbenzene	ND	1.0)	µg/L	1	7/6/2018 6:22:00 PM	R52521	
1,1,1,2-Tetrachloroethane	ND	1.0)	µg/L	1	7/6/2018 6:22:00 PM	R52521	
1,1,2,2-Tetrachloroethane	ND	2.0)	µg/L	1	7/6/2018 6:22:00 PM	R52521	
Tetrachloroethene (PCE)	ND	1.0)	µg/L	1	7/6/2018 6:22:00 PM	R52521	
trans-1,2-DCE	ND	1.0)	µg/L	1	7/6/2018 6:22:00 PM	R52521	
trans-1,3-Dichloropropene	ND	1.0)	µg/L	1	7/6/2018 6:22:00 PM	R52521	
1,2,3-Trichlorobenzene	ND	1.0)	µg/L	1	7/6/2018 6:22:00 PM	R52521	
1,2,4-Trichlorobenzene	ND	1.0)	µg/L	1	7/6/2018 6:22:00 PM	R52521	
1,1,1-Trichloroethane	ND	1.0)	µg/L	1	7/6/2018 6:22:00 PM	R52521	
1,1,2-Trichloroethane	ND	1.0)	µg/L	1	7/6/2018 6:22:00 PM	R52521	
Trichloroethene (TCE)	ND	1.0)	µg/L	1	7/6/2018 6:22:00 PM	R52521	
Trichlorofluoromethane	ND	1.0)	µg/L	1	7/6/2018 6:22:00 PM	R52521	
1,2,3-Trichloropropane	ND	2.0)	µg/L	1	7/6/2018 6:22:00 PM	R52521	
Vinyl chloride	ND	1.0)	µg/L	1	7/6/2018 6:22:00 PM	R52521	
Xylenes, Total	ND	1.5	5	µg/L	1	7/6/2018 6:22:00 PM	R52521	
Surr: 1,2-Dichloroethane-d4	99.0	70-130)	%Rec	1	7/6/2018 6:22:00 PM	R52521	
Surr: 4-Bromofluorobenzene	95.8	70-130)	%Rec	1	7/6/2018 6:22:00 PM	R52521	
Surr: Dibromofluoromethane	94.1	70-130)	%Rec	1	7/6/2018 6:22:00 PM	R52521	
Surr: Toluene-d8	96.4	70-130)	%Rec	1	7/6/2018 6:22:00 PM	R52521	

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

Lab Order 1806149

Hall Environmental Analysis Laboratory, Inc.

1,1-Dichloroethane

1,1-Dichloroethene

1,2-Dichloropropane

1,3-Dichloropropane

2,2-Dichloropropane

Date Reported: 7/9/2018

CLIENT: Blagg Engineering Project: Mudge B 12R		CI	ient Sample II	D: M	W #2 28/2018 8:55:00 AM	
Lab ID: 1806149-002	Matrix: AQUEOUS	5	Received Dat	e: 6/3	30/2018 10:15:00 AM	
Analyses	Result	PQL	Qual Units	DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES					Analyst	RAA
Benzene	110	5.0	µg/L	5	7/6/2018 3:55:00 PM	R52521
Toluene	ND	5.0	µg/L	5	7/6/2018 3:55:00 PM	R52521
Ethylbenzene	270	5.0	µg/L	5	7/6/2018 3:55:00 PM	R52521
Methyl tert-butyl ether (MTBE)	ND	5.0	µg/L	5	7/6/2018 3:55:00 PM	R52521
1,2,4-Trimethylbenzene	190	5.0	µg/L	5	7/6/2018 3:55:00 PM	R52521
1,3,5-Trimethylbenzene	7.9	5.0	µg/L	5	7/6/2018 3:55:00 PM	R52521
1,2-Dichloroethane (EDC)	ND	5.0	µg/L	5	7/6/2018 3:55:00 PM	R52521
1,2-Dibromoethane (EDB)	ND	5.0	µg/L	5	7/6/2018 3:55:00 PM	R52521
Naphthalene	14	10	µg/L	5	7/6/2018 3:55:00 PM	R52521
1-Methylnaphthalene	ND	20	µg/L	5	7/6/2018 3:55:00 PM	R52521
2-Methylnaphthalene	ND	20	µg/L	5	7/6/2018 3:55:00 PM	R52521
Acetone	ND	50	µg/L	5	7/6/2018 3:55:00 PM	R52521
Bromobenzene	ND	5.0	µg/L	5	7/6/2018 3:55:00 PM	R52521
Bromodichloromethane	ND	5.0	µg/L	5	7/6/2018 3:55:00 PM	R52521
Bromoform	ND	5.0	µg/L	5	7/6/2018 3:55:00 PM	R52521
Bromomethane	ND	15	µg/L	5	7/6/2018 3:55:00 PM	R52521
2-Butanone	ND	50	µg/L	5	7/6/2018 3:55:00 PM	R52521
Carbon disulfide	ND	50	µg/L	5	7/6/2018 3:55:00 PM	R52521
Carbon Tetrachloride	ND	5.0	µg/L	5	7/6/2018 3:55:00 PM	R52521
Chlorobenzene	ND	5.0	µg/L	5	7/6/2018 3:55:00 PM	R52521
Chloroethane	ND	10	µg/L	5	7/6/2018 3:55:00 PM	R52521
Chloroform	ND	5.0	µg/L	5	7/6/2018 3:55:00 PM	R52521
Chloromethane	ND	15	µg/L	5	7/6/2018 3:55:00 PM	R52521
2-Chlorotoluene	ND	5.0	µg/L	5	7/6/2018 3:55:00 PM	R52521
4-Chlorotoluene	ND	5.0	µg/L	5	7/6/2018 3:55:00 PM	R52521
cis-1,2-DCE	ND	5.0	µg/L	5	7/6/2018 3:55:00 PM	R52521
cis-1,3-Dichloropropene	ND	5.0	µg/L	5	7/6/2018 3:55:00 PM	R52521
1,2-Dibromo-3-chloropropane	ND	10	µg/L	5	7/6/2018 3:55:00 PM	R52521
Dibromochloromethane	ND	5.0	µg/L	5	7/6/2018 3:55:00 PM	R52521
Dibromomethane	ND	5.0	µg/L	5	7/6/2018 3:55:00 PM	R52521
1,2-Dichlorobenzene	ND	5.0	µg/L	5	7/6/2018 3:55:00 PM	R52521
1,3-Dichlorobenzene	ND	5.0	µg/L	5	7/6/2018 3:55:00 PM	R52521
1,4-Dichlorobenzene	ND	5.0	µg/L	5	7/6/2018 3:55:00 PM	R52521
Dichlorodifluoromethane	ND	5.0	µg/L	5	7/6/2018 3:55:00 PM	R52521

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

µg/L

µg/L

µg/L

µg/L

µg/L

5

5

5

5

5

7/6/2018 3:55:00 PM

R52521

R52521

R52521

R52521

R52521

5.0

5.0

5.0

5.0

10

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

ND

ND

ND

ND

ND

Lab Order 1806I49

Date Reported: 7/9/2018

CLIENT: Blagg Engineering Project: Mudge B 12R		CI	lient Sample Collection D	ID: M ate: 6/2	W #2 28/2018 8:55:00 AM	
Lab ID: 1806149-002	Matrix: AQUEOUS		Received D	ate: 6/3	30/2018 10:15:00 AM	
Analyses	Result	PQL	Qual Units	s DF	Date Analyzed	Batch
EPA METHOD 8260B: VOLATILES					Analyst	RAA
1,1-Dichloropropene	ND	5.0	µg/L	5	7/6/2018 3:55:00 PM	R52521
Hexachlorobutadiene	ND	5.0	µg/L	5	7/6/2018 3:55:00 PM	R52521
2-Hexanone	ND	50	µg/L	5	7/6/2018 3:55:00 PM	R52521
Isopropylbenzene	30	5.0	µg/L	5	7/6/2018 3:55:00 PM	R52521
4-Isopropyltoluene	5.5	5.0	µg/L	5	7/6/2018 3:55:00 PM	R52521
4-Methyl-2-pentanone	ND	50	µg/L	5	7/6/2018 3:55:00 PM	R52521
Methylene Chloride	ND	15	µg/L	5	7/6/2018 3:55:00 PM	R52521
n-Butylbenzene	ND	15	µg/L	5	7/6/2018 3:55:00 PM	R52521
n-Propylbenzene	30	5.0	µg/L	5	7/6/2018 3:55:00 PM	R52521
sec-Butylbenzene	5.5	5.0	µg/L	5	7/6/2018 3:55:00 PM	R52521
Styrene	ND	5.0	µg/L	5	7/6/2018 3:55:00 PM	R52521
tert-Butylbenzene	ND	5.0	µg/L	5	7/6/2018 3:55:00 PM	R52521
1,1,1,2-Tetrachloroethane	ND	5.0	µg/L	5	7/6/2018 3:55:00 PM	R52521
1,1,2,2-Tetrachloroethane	ND	10	µg/L	5	7/6/2018 3:55:00 PM	R52521
Tetrachloroethene (PCE)	ND	5.0	µg/L	5	7/6/2018 3:55:00 PM	R52521
trans-1,2-DCE	ND	5.0	µg/L	5	7/6/2018 3:55:00 PM	R52521
trans-1,3-Dichloropropene	ND	5.0	µg/L	5	7/6/2018 3:55:00 PM	R52521
1,2,3-Trichlorobenzene	ND	5.0	µg/L	5	7/6/2018 3:55:00 PM	R52521
1,2,4-Trichlorobenzene	ND	5.0	µg/L	5	7/6/2018 3:55:00 PM	R52521
1,1,1-Trichloroethane	ND	5.0	µg/L	5	7/6/2018 3:55:00 PM	R52521
1,1,2-Trichloroethane	ND	5.0	µg/L	5	7/6/2018 3:55:00 PM	R52521
Trichloroethene (TCE)	ND	5.0	µg/L	5	7/6/2018 3:55:00 PM	R52521
Trichlorofluoromethane	ND	5.0	µg/L	5	7/6/2018 3:55:00 PM	R52521
1,2,3-Trichloropropane	ND	10	µg/L	5	7/6/2018 3:55:00 PM	R52521
Vinyl chloride	ND	5.0	µg/L	5	7/6/2018 3:55:00 PM	R52521
Xylenes, Total	620	7.5	µg/L	5	7/6/2018 3:55:00 PM	R52521
Surr: 1,2-Dichloroethane-d4	96.5	70-130	%Re	c 5	7/6/2018 3:55:00 PM	R52521
Surr: 4-Bromofluorobenzene	97.6	70-130	%Re	c 5	7/6/2018 3:55:00 PM	R52521
Surr: Dibromofluoromethane	93.8	70-130	%Re	c 5	7/6/2018 3:55:00 PM	R52521
Surr: Toluene-d8	100	70-130	%Re	c 5	7/6/2018 3:55:00 PM	R52521

Hall Environmental Analysis Laboratory, Inc.

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

Lab Order 1806I49

RAA R52521 R52521

Hall Environmental Analysis Laboratory, Inc. Date Reporte						:d: 7/9/2018	
CLIENT: Blagg Engineering	Client Sample ID: MW #3 Collection Date: 6/28/2018 8:05:00 AM						
Project: Mudge B 12R							
Lab ID: 1806I49-003	Matrix: AQUEOUS	R	eceived Dat	e: 6/3	30/2018 10:15:00 AM		
Analyses	Result	PQL Q	PQL Qual Units		DF Date Analyzed		
EPA METHOD 8260B: VOLATILES					Analys	t: RAA	
Benzene	9.1	1.0	µg/L	1	7/6/2018 5:08:00 PM	R5252	
Toluene	ND	1.0	µg/L	1	7/6/2018 5:08:00 PM	R5252	
Ethylbenzene	1.8	1.0	μg/L	1	7/6/2018 5:08:00 PM	R5252	
Methyl tert-butyl ether (MTBE)	ND	1.0	µg/L	1	7/6/2018 5:08:00 PM	R5252	
1,2,4-Trimethylbenzene	3.5	1.0	µg/L	1	7/6/2018 5:08:00 PM	R5252	
1,3,5-Trimethylbenzene	ND	1.0	µg/L	1	7/6/2018 5:08:00 PM	R5252	
1,2-Dichloroethane (EDC)	ND	1.0	µg/L	1	7/6/2018 5:08:00 PM	R5252	
1,2-Dibromoethane (EDB)	ND	1.0	µg/L	1	7/6/2018 5:08:00 PM	R5252	
Naphthalene	ND	2.0	µg/L	1	7/6/2018 5:08:00 PM	R5252	
1-Methylnaphthalene	ND	4.0	µg/L	1	7/6/2018 5:08:00 PM	R5252	
2-Methylnaphthalene	ND	4.0	µg/L	1	7/6/2018 5:08:00 PM	R5252	
Acetone	ND	10	µg/L	1	7/6/2018 5:08:00 PM	R5252	
Bromobenzene	ND	1.0	µg/L	1	7/6/2018 5:08:00 PM	R5252	
Bromodichloromethane	ND	1.0	µg/L	1	7/6/2018 5:08:00 PM	R5252	
Bromoform	ND	1.0	µg/L	1	7/6/2018 5:08:00 PM	R5252	
Bromomethane	ND	3.0	µg/L	1	7/6/2018 5:08:00 PM	R5252	
2-Butanone	ND	10	µg/L	1	7/6/2018 5:08:00 PM	R5252	
Carbon disulfide	ND	10	µg/L	1	7/6/2018 5:08:00 PM	R5252	
Carbon Tetrachloride	ND	10	ug/l	1	7/6/2018 5:08:00 PM	R5252	

Bromomethane	ND	3.0	µg/L	1	7/6/2018 5:08:00 PM	R52521
2-Butanone	ND	10	µg/L	1	7/6/2018 5:08:00 PM	R52521
Carbon disulfide	ND	10	µg/L	1	7/6/2018 5:08:00 PM	R52521
Carbon Tetrachloride	ND	1.0	µg/L	1	7/6/2018 5:08:00 PM	R52521
Chlorobenzene	ND	1.0	µg/L	1	7/6/2018 5:08:00 PM	R52521
Chloroethane	ND	2.0	µg/L	1	7/6/2018 5:08:00 PM	R52521
Chloroform	ND	1.0	µg/L	1	7/6/2018 5:08:00 PM	R52521
Chloromethane	ND	3.0	µg/L	1	7/6/2018 5:08:00 PM	R52521
2-Chlorotoluene	ND	1.0	µg/L	1	7/6/2018 5:08:00 PM	R52521
4-Chlorotoluene	ND	1.0	µg/L	1	7/6/2018 5:08:00 PM	R52521
cis-1,2-DCE	ND	1.0	µg/L	1	7/6/2018 5:08:00 PM	R52521
cis-1,3-Dichloropropene	ND	1.0	µg/L	1	7/6/2018 5:08:00 PM	R52521
1,2-Dibromo-3-chloropropane	ND	2.0	µg/L	1	7/6/2018 5:08:00 PM	R52521
Dibromochloromethane	ND	1.0	µg/L	1	7/6/2018 5:08:00 PM	R52521
Dibromomethane	ND	1.0	µg/L	1	7/6/2018 5:08:00 PM	R52521
1,2-Dichlorobenzene	ND	1.0	µg/L	1	7/6/2018 5:08:00 PM	R52521
1,3-Dichlorobenzene	ND	1.0	µg/L	1	7/6/2018 5:08:00 PM	R52521
1,4-Dichlorobenzene	ND	1.0	µg/L	1	7/6/2018 5:08:00 PM	R52521
Dichlorodifluoromethane	ND	1.0	µg/L	1	7/6/2018 5:08:00 PM	R52521
1,1-Dichloroethane	ND	1.0	µg/L	1	7/6/2018 5:08:00 PM	R52521
1,1-Dichloroethene	ND	1.0	µg/L	1	7/6/2018 5:08:00 PM	R52521
1,2-Dichloropropane	ND	1.0	µg/L	1	7/6/2018 5:08:00 PM	R52521
1,3-Dichloropropane	ND	1.0	µg/L	1	7/6/2018 5:08:00 PM	R52521
2,2-Dichloropropane	ND	2.0	µg/L	1	7/6/2018 5:08:00 PM	R52521

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

Lab Order 1806149

Hall Environmental Analysis Laboratory, Inc.

Date Reported: 7/9/2018

CLIENT:	Blagg Engineering		Cl	ient San	nple II	D: M	W #3	
Project:	Mudge B 12R		0	Collectio	on Dat	e: 6/2	8/2018 8:05:00 AM	
Lab ID:	1806I49-003	Matrix: AQUEOUS	5	Receive	ed Dat	e: 6/3	0/2018 10:15:00 AM	
Analyses		Result	PQL	Qual 1	Units	DF	Date Analyzed	Batch
EPA MET	THOD 8260B: VOLATILES						Analyst:	RAA
1,1-Dich	loropropene	ND	1.0		µg/L	1	7/6/2018 5:08:00 PM	R52521
Hexachle	orobutadiene	ND	1.0		µg/L	1	7/6/2018 5:08:00 PM	R52521
2-Hexan	one	ND	10		µg/L	1	7/6/2018 5:08:00 PM	R52521
Isopropy	lbenzene	ND	1.0		µg/L	1	7/6/2018 5:08:00 PM	R52521
4-Isopro	pyltoluene	ND	1.0		µg/L	1	7/6/2018 5:08:00 PM	R52521
4-Methyl	-2-pentanone	ND	10		µg/L	1	7/6/2018 5:08:00 PM	R52521
Methyler	ne Chloride	ND	3.0		µg/L	1	7/6/2018 5:08:00 PM	R52521
n Butulh	007000	ND	3.0		ug/l	1	7/6/2018 5:08:00 PM	R52521

r, r-Dichloroproperie	ND	1.0	Pg/L		110/2010 0.00.001 11	
Hexachlorobutadiene	ND	1.0	µg/L	1	7/6/2018 5:08:00 PM	R52521
2-Hexanone	ND	10	µg/L	1	7/6/2018 5:08:00 PM	R52521
Isopropylbenzene	ND	1.0	µg/L	1	7/6/2018 5:08:00 PM	R52521
4-Isopropyltoluene	ND	1.0	µg/L	1	7/6/2018 5:08:00 PM	R52521
4-Methyl-2-pentanone	ND	10	µg/L	1	7/6/2018 5:08:00 PM	R52521
Methylene Chloride	ND	3.0	µg/L	1	7/6/2018 5:08:00 PM	R52521
n-Butylbenzene	ND	3.0	µg/L	1	7/6/2018 5:08:00 PM	R52521
n-Propylbenzene	ND	1.0	µg/L	1	7/6/2018 5:08:00 PM	R52521
sec-Butylbenzene	ND	1.0	µg/L	1	7/6/2018 5:08:00 PM	R52521
Styrene	ND	1.0	µg/L	1	7/6/2018 5:08:00 PM	R52521
tert-Butylbenzene	ND	1.0	µg/L	1	7/6/2018 5:08:00 PM	R52521
1,1,1,2-Tetrachloroethane	ND	1.0	µg/L	1	7/6/2018 5:08:00 PM	R52521
1,1,2,2-Tetrachloroethane	ND	2.0	µg/L	1	7/6/2018 5:08:00 PM	R52521
Tetrachloroethene (PCE)	ND	1.0	µg/L	1	7/6/2018 5:08:00 PM	R52521
trans-1,2-DCE	ND	1.0	µg/L	1	7/6/2018 5:08:00 PM	R52521
trans-1,3-Dichloropropene	ND	1.0	µg/L	1	7/6/2018 5:08:00 PM	R52521
1,2,3-Trichlorobenzene	ND	1.0	µg/L	1	7/6/2018 5:08:00 PM	R52521
1,2,4-Trichlorobenzene	ND	1.0	µg/L	1	7/6/2018 5:08:00 PM	R52521
1,1,1-Trichloroethane	ND	1.0	µg/L	1	7/6/2018 5:08:00 PM	R52521
1,1,2-Trichloroethane	ND	1.0	µg/L	1	7/6/2018 5:08:00 PM	R52521
Trichloroethene (TCE)	ND	1.0	µg/L	1	7/6/2018 5:08:00 PM	R52521
Trichlorofluoromethane	ND	1.0	µg/L	1	7/6/2018 5:08:00 PM	R52521
1,2,3-Trichloropropane	ND	2.0	µg/L	1	7/6/2018 5:08:00 PM	R52521
Vinyl chloride	ND	1.0	µg/L	1	7/6/2018 5:08:00 PM	R52521
Xylenes, Total	4.7	1.5	µg/L	1	7/6/2018 5:08:00 PM	R52521
Surr: 1,2-Dichloroethane-d4	97.3	70-130	%Rec	1	7/6/2018 5:08:00 PM	R52521
Surr: 4-Bromofluorobenzene	99.1	70-130	%Rec	1	7/6/2018 5:08:00 PM	R52521
Surr: Dibromofluoromethane	92.3	70-130	%Rec	1	7/6/2018 5:08:00 PM	R52521
Surr: Toluene-d8	97.3	70-130	%Rec	1	7/6/2018 5:08:00 PM	R52521

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

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	В	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	Н	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits Page 6 of 9
	ND	Not Detected at the Reporting Limit	Р	Sample pH Not In Range
	PQL	Practical Quanitative Limit	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT Hall Environmental Analysis Laboratory, Inc.

Client:	Blagg Engineering
Project:	Mudge B 12R

and the second									A CONTRACTOR OF THE OWNER OF THE OWNER	
Sample ID 100ng Ics	SampT	ype: LC	S	Tes	tCode: El	PA Method	8260B: VOLA	ATILES		
Client ID: LCSW	Batch	ID: R5	2521	F	RunNo: 5	2521				
Prep Date:	Analysis D	ate: 7/	6/2018	s	SeqNo: 1	722668	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	17	1.0	20.00	0	84.1	70	130			
Toluene	18	1.0	20.00	0	89.5	70	130			
Chlorobenzene	18	1.0	20.00	0	90.6	70	130			
1,1-Dichloroethene	18	1.0	20.00	0	89.0	70	130			
Trichloroethene (TCE)	17	1.0	20.00	0	82.7	70	130			
Surr: 1,2-Dichloroethane-d4	9.8		10.00		98.4	70	130			
Surr: 4-Bromofluorobenzene	9.1		10.00		91.1	70	130			
Surr: Dibromofluoromethane	9.3		10.00		93.0	70	130			
Surr: Toluene-d8	9.6		10.00		96.1	70	130			
Sample ID rb	SampT	ype: ME	BLK	Tes	tCode: El	PA Method	8260B: VOL	ATILES		
Client ID: PBW	Batch	ID: R5	2521	F	RunNo: 5	2521				
Prep Date:	Analysis D	ate: 7/	6/2018	S	SeqNo: 1	722669	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
1,2,4-Trimethylbenzene	ND	1.0								
1,3,5-Trimethylbenzene	ND	1.0								
1,2-Dichloroethane (EDC)	ND	1.0								
1,2-Dibromoethane (EDB)	ND	1.0								
Naphthalene	ND	2.0								
1-Methylnaphthalene	ND	4.0								
2-Methylnaphthalene	ND	4.0								
Acetone	ND	10								
Bromobenzene	ND	1.0								
Bromodichloromethane	ND	1.0								
Bromoform	ND	1.0								
Bromomethane	ND	3.0								
2-Butanone	ND	10								
Carbon disulfide	ND	10								
Carbon Tetrachloride	ND	1.0								
Chlorobenzene	ND	1.0								
Chloroethane	ND	2.0								
Chloroform	ND	1.0								
Chloromethane	ND	3.0								
2-Chlorotoluene	ND	1.0								

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

WO#: 1806I49

Page 7 of 9

09-Jul-18

QC SUMMARY REPORT Hall Environmental Analysis Laboratory, Inc.

Client: Blagg Engineering Project: Mudge B 12R

Comple ID at	0 7			T	Coder E	DA Mother I	ASCOD: MOL			
Sample ID rb	Sampl	ype: ME	SLK	les	toode: El	PA Method	8260B: VOLA	ATTLES		
Client ID: PBW	Batch	n ID: R5	2521	F	RunNo: 5	2521				
Prep Date:	Analysis D	ate: 7/	6/2018	5	SeqNo: 1	722669	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
4-Chlorotoluene	ND	1.0								
cis-1,2-DCE	ND	1.0								
cis-1,3-Dichloropropene	ND	1.0								
1,2-Dibromo-3-chloropropane	ND	2.0								
Dibromochloromethane	ND	1.0								
Dibromomethane	ND	1.0								
1,2-Dichlorobenzene	ND	1.0								
1,3-Dichlorobenzene	ND	1.0								
1,4-Dichlorobenzene	ND	1.0								
Dichlorodifluoromethane	ND	1.0								
1,1-Dichloroethane	ND	1.0								
1,1-Dichloroethene	ND	1.0								
1,2-Dichloropropane	ND	1.0								
1,3-Dichloropropane	ND	1.0								
2,2-Dichloropropane	ND	2.0								
1,1-Dichloropropene	ND	1.0								
Hexachlorobutadiene	ND	1.0								
2-Hexanone	ND	10								
Isopropylbenzene	ND	1.0								
4-Isopropyitoluene	ND	1.0								
4-Methyl-2-pentanone	ND	10								
Methylene Chloride	ND	3.0								
n-Butylbenzene	ND	3.0								
n-Propylbenzene	ND	1.0								
sec-Butylbenzene	ND	1.0								
Styrene	ND	1.0								
tert-Butylbenzene	ND	1.0								
1,1,1,2-Tetrachloroethane	ND	1.0								
1,1,2,2-Tetrachloroethane	ND	2.0								
Tetrachloroethene (PCE)	ND	1.0								
trans-1,2-DCE	ND	1.0								
trans-1,3-Dichloropropene	ND	1.0								
1,2,3-Trichlorobenzene	ND	1.0								
1,2,4-Trichlorobenzene	ND	1.0								
1,1,1-Trichloroethane	ND	1.0								
1,1,2-Trichloroethane	ND	1.0								
Trichloroethene (TCE)	ND	1.0								
Trichlorofluoromethane	ND	1.0								
1,2,3-Trichloropropane	ND	2.0								

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

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WO#: **1806149** *09-Jul-18*

QC SUMMARY REPORT Hall Environmental Analysis Laboratory, Inc.

Client:	Blagg Engineering
Project:	Mudge B 12R

An air an Anna ann an Anna an	the second s		the second se	and the second se	and the second					
Sample ID rb	SampT	ype: ME	BLK	Tes	tCode: El	PA Method	8260B: VOL	ATILES		
Client ID: PBW Batch ID: R52521 RunNo: 52521										
Prep Date:	Analysis D)ate: 7/	6/2018	S	SeqNo: 1	722669	Units: µg/L			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Vinyl chloride	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	9.4		10.00		94.3	70	130			
Surr: 4-Bromofluorobenzene	9.8		10.00		98.1	70	130			
Surr: Dibromofluoromethane	9.2		10.00		92.3	70	130			
Surr: Toluene-d8	9.6		10.00		95.7	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
- P Sample pH Not In Range
- RL Reporting Detection Limit
- W Sample container temperature is out of limit as specified

Page 9 of 9

WO#: **1806I49** *09-Jul-18*

HALL ENVIRO ANALYS LABOR	ONMENTAL SIS Atory	Hall Environmenta All TEL: 505-345-397. Website: www.h	l Analysis 4901 H buquerque, 5 FAX: 50 allenviron	Laboratory Iawkins NE NM 87109 5-345-4107 nental.com	Sar	nple Log-In C	heck List
Client Name:	BLAGG	Work Order Numbe	180614	9		RcptNo:	1
Received By:	Erin Melendrez	6/30/2018 10:15:00 A	м	Ú	MA	5	
Completed By:	Erin Melendrez	6/30/2018 12:31:10 P	M	ú	MA	1	
Reviewed By:	INM	7/2/18					
LB: H	DILO 201	218					
1 la Chain of Custo			Mar I				
C How was the as	stody complete?		Yes 🖤			Not Present	
2. How was the sa	ample delivered?		Courier				
Log In 3. Was an attempt	t made to cool the s	amples?	Yes 🗹	1	10 🗌		
4. Were all sample	es received at a tem	perature of >0° C to 6.0°C	Yes 🖌] •	No 🗌	NA 🗌	
5. Sample(s) in pro	oper container(s)?		Yes 🔽]	10		
6. Sufficient sample	e volume for indicat	ed test(s)?	Yes 🔽	N	lo 🗌		
7. Are samples (ex	cept VOA and ONG) properly preserved?	Yes 🔽	N			
8. Was preservativ	e added to bottles?		Yes	N	lo 🔽	NA 🗌	
9. VOA vials have	zero headspace? ,	all voas received	Yes 🔽	- N	•	No VOA Vials	AX 07/02/18
10. Were any samp	le containers receiv	ed broken? WHeadspace	Yes	N	lo 🗹	# of preserved	
11. Does paperwork (Note discrepand	match bottle labels cies on chain of cus	? tody)	Yes 🔽	Ν	•	for pH:	>12 unless noted
12. Are matrices cor	rrectly identified on (Chain of Custody?	Yes 🖌	N	•	Adjusted?	102110
13. Is it clear what a	nalyses were reque	sted?	Yes 🗹	N	o 🗆		710
14. Were all holding (If no, notify cust	times able to be me tomer for authorizati	at? on.)	Yes 🗹	N	• 🗆	Checked by:	
Special Handlin	g (if applicable	2					
15. Was client notifi	ied of all discrepanc	ies with this order?	Yes	N	lo 🗌	NA 🗹	
Person No	otified:	Date			1		
By Whom	:	Via:	eMail	Phone	Fax	in Person	
Regarding	;		-				
Client Inst	ructions:						
16. Additional rema	arks:						
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in 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.

Siting Criteria

SITING AND HYDRO-GEOLOGICAL REPORT FOR MUDGE B 012R

SITING CRITERIA 19.15.17.10 NMAC

Depth to groundwater at the site is approximately 40 feet below ground surface (see Bore Log). A piezometer installed between the pre-existing below-grade tank (BGT) (Tank ID: A) and the proposed BGT (Tank ID: B) revealed the groundwater depth previously stated. Local topography and proximity to adjacent water features were also considered. Based on a search of the the New Mexico State Engineer's Office (attached) and multiple database sources provided as an aerial map (Figure 1), there are no freshwater wells or springs used for public or livestock consumption within 200 horizontal feet of the BGT. A topographic map (Figure 2) demonstrates that the BGT is not within 100 feet of any continuously flowing watercourse, significant watercourse, lake bed, sinkhole, wetland or playa lake as measured from the ordinary high water mark. An additional aerial map (Figure 3) with greater detail further illustrates that the BGT is not within the 100 foot setback for the nearest significant watercourse.

LOCAL GEOLOGY AND HYDROLOGY

This particular site is located west of the Animas River between Aztec and Cedar Hill, New Mexico. The Nacimiento Formation of Tertiary age is exposed as interbedded siltstones, shales and sandstones that form steep to gentle slopes. The slopes are dissected by arroyos draining to the Animas River. The Nacimiento Formation is capped to the north by the more resistant cliff-forming sandstones of the San Jose Formation. The site is located greater than 1 mile northwest of the Animas River and greater than 100 feet higher in elevation.

Groundwater at this site has been addressed above.

REGIONAL GEOLOGY AND HYDROLOGY

The San Juan Basin is situated in the Navajo section of the Colorado Plateau and is characterized by broad open valleys, mesas, buttes and hogbacks. Away from major valleys and canyons topographic relief is generally low. Native vegetation is sparse and shrubby. Drainage is mainly by the San Juan River, the only permanent stream in the Navajo Section of the Colorado Plateau. The San Juan River is a tributary of the Colorado River. Major tributaries include the Animas, Chaco and La Plata Rivers. Flow of the San Juan River across the basin is regulated by the Navajo Dam, located about 30 miles northeast of Farmington, New Mexico. The climate is arid to semiarid with an average annual precipitation of 8 to 10 inches. Soils within the basin consist of weathered parent rock derived from predominantly physical means mostly from eolian depositional systems with fluvial having a lesser impact.

Cretaceous and Tertiary sandstones, as well as Quaternary Alluvial deposits, serve as the primary aquifers in the San Juan Basin (Stone et al., 1983). The Nacimiento Formation of Paleocene age occurs at the surface in a broad belt at the western and southern edges of the central San Juan Basin and dips beneath the San Jose Formation in the center. The lower part of the Nacimiento Formation is composed of interbedded black, carbonaceous mudstones and white coarse-grained sandstones. The upper part is comprised of mudstone and sandstone. It is generally slope-forming, even within the sandstone units. Thickness of the Nacimiento Formation are between 0 and 1,000 feet deep in this section of the basin. Wells within these bodies flow from 16 to 100 gallons per minute (gpm), and transmissivities are expected to be 100 ft2/d (Stone et al, 1983). Groundwater within these aquifers flows toward the Animas River.

REFERENCES

Circular 154—Guidebook to coal geology of northwest New Mexico By E. C. Beaumont, J. W. Shomaker, W. J. Stone, and others, 1976

Stone, et al., 1983, Hydrogeology and Water Resources of the San Juan Basin, New Mexico, Socorro, New Mexico Bureau of Mines and Mineral Resources Hydrologic Report 6, 70 p

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						Bl	_AG	G E	NGINEERING, INC. P.O. BOX 87 MFIELD, NM 87413 (505) 632-1199	GP - 4				
BC	BORE / TEST HOLE REPORT													
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DEPTH (FT.)	INTERVAL	LITHOLOGY INTERVAL	PIEZOMETER	SAMPLE INTERVAL (FT.)	Sample Time	FIELD OVM (ppm)	TPH (mg/Kg)	BENZENE & TOTAL BTEX (mg/Kg)	FIELD CLASSIFICATION AN	D REMARKS				
2 - 4 - 6 - 8 - 10 - 12 - 14 - 16 - 18 - 20 - 22 - 24 - 26 - 28 - 28 - 28 - 28 - 30 - 32 - 34 -				- 7 - 8 - 7 - 8 - 11 - 12 - 15 - 16 - 19 - 20 - 23 - 24 - 27 - 28 - 31 - 32	1120 1125 1130 1134 1137 1142 1146 1150	0.0 0.0 0.0 0.0 0.0 0.6 1.0 1.1			DARK YELLOWISH ORANGE SILTY SAND, NON C FIRM, NO APPARENT HYDROCARBON ODOR DET 8 - 12 FT. & 28 - 32 FT. B.G. (0.0 - 37.0 FT. B.G.).	ohesive, slightly moist, Tected, moist between				
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42 44			°°°° 🔦	42	1218	0.3	ND	ND ND	HYDROCARBON ODOR (38.5 - 44.0 FT. B.G.).					
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SOUTHERN SAN JUAN BASIN (SSJB)

Figure Citation List

March 2010

Figure 1: Groundwater Less Than 50 ft.

Layers:

Water Wells:

iWaters Database: NMOSE/ISC (Dec. 2009)

New Mexico Office of the State Engineer (OSE) /ISC iWaters database. (Data updated: 12/2009. Data received: 03/09/2010). Data available from: http://www.ose.state.nm.us/waters db index.html.

Cathodic Wells:

Tierra Corrosion Control, Inc. (Aug. 2008)

Tierra Corrosion Control, Inc. 1700 Schofield Ln. Farmington, NM 87401. Driller's Data Log. (Data collected: All data are associated with cathodic protection wells installed at BP facilities between 2008-2009. Data received: 05/06/2010).

Hydrogeological Evaluation:

Wright Water Engineers, Inc. (2008)

Evaluation completed by Wright Water Engineers, Inc. Durango Office. Data created using digital statewide geology at 1:500,000 from USGS in combination with 10m Digital Elevation Model (DEM) from NRCS. (Data compiled: 2008.)

Results: Spatial Polygons representing "Groundwater likely to be less than 50 ft." and "Groundwater suspected to be less than 50 ft.".

Surficial Geology:

USGS (1963/1987)

Data digitized and rectified by Geospatial Consultants. (Data digitized: 03/23/2010). Original hard copy maps sourced from United States Geological Survey (USGS). Data available from: http://pubs.er.usgs.gov/.

Geology, Structure and Uranium Deposits of the Shiprock Quadrangle, New Mexico and Arizonia. 1:250,000. I - 345. Compiled by Robert B. O'Sullivan and Helen M. Beikman. 1963.

Geologic Map of the Aztec 1 x 2 Quadrangle, Northwestern New Mexico and Southern Colorado. 1:250,000. 1 - 1730. Compiled by Kim Manley, Glenn R. Scott, and Reinhard A. Wobus. 1987.

Aerial Imagery:

Conoco (Summer 2009)

ConocoPhillips Company. (Flown: Summer 2009). 12 in. High Resolution Orthoimagery. Projected coordinate system name:

NAD_1983_StatePlane_New_Mexico_West_FIPS_3003_Feet.

Provided as tiled .tiff images and indexed using polygon index layer.

Figure 2: Proximity to Watercourses

Layers:

- 18

Perennial Streams:

National Hydrography Dataset (NHD). U.S. Geological Survey. (Data last updated: 02/19/ 2010. Data received: 03/09/2010). High-resolution: 1:24,000. Digital Representation of USGS 24k Topographic map series with field updates as required. Data available from: <u>http://nhd.usgs.gov/.</u>

Intermittent Streams:

National Hydrography Dataset (NHD). U.S. Geological Survey. (Data last updated: 02/19/ 2010. Data received: 03/09/2010). High-resolution: 1:24,000. Digital Representation of USGS 24k Topographic map series with field updates as required. Data available from: <u>http://nhd.usgs.gov/.</u>

Water Bodies:

National Hydrography Dataset (NHD). U.S. Geological Survey. (Data last updated: 02/19/ 2010. Data received: 03/09/2010). High-resolution: 1:24,000. Digital representation of USGS 24k Topographic map series with field updates as required. Data available from: http://nhd.usgs.gov/.

USGS Topographic Maps:

USGS (2007)

USGS 24k Topographic map series. 1:24000. Maps are seamless, scanned images of USGS paper topographic maps. Data available from: <u>http://store.usgs.gov</u>.

Figure 3: Proximity to Permanent Structure

Layers:

Aerial Imagery:

Conoco (Summer 2009)

ConocoPhillips Company. (Flown: Summer 2009). 12 in. High Resolution Orthoimagery. Projected coordinate system name:

NAD_1983_StatePlane_New_Mexico_West_FIPS_3003_Feet.

Provided as tiled .tiff images and indexed using polygon index layer.

NHD, USGS (2010)

NHD, USGS (2010)

NHD, USGS (2010)

Figure 4: Proximity to Water Wells

Layers:

Water Wells:

iWaters Database: NMOSE/ISC (Dec. 2009)

New Mexico Office of the State Engineer (OSE) /ISC iWaters database. (Data updated: 12/2009. Data received: 03/09/2010). Data available from: http://www.ose.state.nm.us/waters_db_index.html.

Springs/Seeps:

NHD, USGS (2010)

National Hydrography Dataset (NHD). U.S. Geological Survey. (Data last updated: 02/19/ 2010. Data received: 03/09/2010). High-resolution: 1:24,000. Digital representation of USGS 24k Topographic map series with field updates as required. Data available from: <u>http://nhd.usgs.gov/.</u>

Aerial Imagery:

Conoco (Summer 2009)

ConocoPhillips Company. (Flown: Summer 2009). 12 in. High Resolution Orthoimagery. Projected coordinate system name: NAD_1983_StatePlane_New_Mexico_West_FIPS_3003_Feet.

Provided as tiled .tiff images and indexed using polygon index layer.

Figure 5: Proximity to Municipal Boundary

Layers:

Municipal Boundary:

San Juan County, New Mexico (2010)

Data provided by San Juan County GIS Division. (Data received: 03/25/2010).

Shaded Relief:

NED, USGS (1999)

National Elevation Dataset (NED). U.S. Geological Survey, EROS Data Center. (Data created: 1999. Data downloaded: April, 2010). Resolution: 10 meter (1/3 arc-second). Data available from: <u>http://ned.usgs.gov/</u>.

StreetMap North America:

Tele Atlas North America, Inc., ESRI (2008)

Data derived from Tele Atlas Dynamap/Transportation North America, version 5.2. (Data updated: annually. Data series issue: 2008).

Figure 6: Proximity to Wetlands

Layers:

Wetlands:

NWI (2010)

National Wetlands Inventory (NWI). U.S Fish and Wildlife Service. (Data last updated: 09/25/2009. Data received: 03/21/2010). Data available from: <u>http://www.fws.gov/wetlands/.</u>

Aerial Imagery:

Conoco (Summer 2009)

ConocoPhillips Company. (Flown: Summer 2009). 12 in. High Resolution Orthoimagery. Projected coordinate system name: NAD_1983_StatePlane_New_Mexico_West_FIPS_3003_Feet.

Provided as tiled .tiff images and indexed using polygon index layer.

Figure 7: Proximity to Subsurface Mine

Layers:

Subsurface Mine:

NM Mining and Minerals Division (2010)

New Mexico Mining and Minerals Division. (Data received: 03/12/2010). Contact: Susan Lucas Kamat, Geologist. Provided PLSS NM locations (Sections) for the two subsurface mines located in San Juan and Rio Arriba counties.

Aerial Imagery:

Conoco (Summer 2009)

ConocoPhillips Company. (Flown: Summer 2009). 12 in. High Resolution Orthoimagery. Projected coordinate system name: NAD_1983_StatePlane_New_Mexico_West_FIPS_3003_Feet.

Provided as tiled .tiff images and indexed using polygon index layer.

Figure 8: Proximity to FEMA Floodplain

Layers:

é

FEMA Floodplain:

FEMA (varying years)

Data digitized and rectified by Wright Water Engineers, Inc. (Data digitized: August 2008). Digitized from hard copy Flood Insurance Rate Maps (FIRMs) (varying years) of San Juan County.

Aerial Imagery:

Conoco (Summer 2009)

ConocoPhillips Company. (Flown: Summer 2009). 12 in. High Resolution Orthoimagery. Projected coordinate system name: NAD_1983_StatePlane_New_Mexico_West_FIPS_3003_Feet.

Provided as tiled .tiff images and indexed using polygon index layer.