C-144

Permanent Pit

Closure Report

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-144
Revised June 6, 2013

For temporary pits, below-grade tanks, and multi-well fluid management pits, submit to the appropriate NMOCD District Office.
For permanent pits submit to the Santa Fe Environmental Bureau office and provide a copy to the appropriate NMOCD District Office.

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Pit, Below-Grade Tank, or Proposed Alternative Method Permit or Closure Plan Application

Type of action:
- ☐ Below grade tank registration
- ☐ Permit of a pit or proposed alternative method
- ☒ Closure of a pit, below-grade tank, or proposed alternative method
- ☐ Modification to an existing permit/or registration
- ☐ closure plan only submitted for an existing permitted or non-permitted pit, below-grade tank, or proposed alternative method

Instructions: Please submit one application (Form C-144) per individual pit, below-grade tank or alternative request

Please be advised that approval of this request does not relieve the operator of liability should operations result in pollution of surface water, ground water or the environment. Nor does approval relieve the operator of its responsibility to comply with any other applicable governmental authority's rules, regulations or ordinances.

1.
Operator: BP America Production Co. OGRID #: 778
Address: 200 Energy Ct. Farmington, NM. 87401
Facility or well name: Riddle F LS 008
API Number: 3004520921 OCD Permit Number:
U/L or Qtr/Qtr M Section 8 Township 28N Range 8W County: San Juan
Center of Proposed Design: Latitude 36.670937 Longitude -107.710388 NAD: ☐1927 ☒ 1983
Surface Owner: ☒ Federal ☐ State ☐ Private ☐ Tribal Trust or Indian Allotment

2.
☒ **Pit:** Subsection F, G or J of 19.15.17.11 NMAC
Temporary: ☐ Drilling ☐ Workover
☒ Permanent ☐ Emergency ☐ Cavitation ☐ P&A ☐ Multi-Well Fluid Management Low Chloride Drilling Fluid ☐ yes ☐ no
☐ Lined ☒ Unlined Liner type: Thickness mil ☐ LLDPE ☐ HDPE ☐ PVC ☐ Other
☐ String-Reinforced
Liner Seams: ☐ Welded ☐ Factory ☐ Other Volume: bbl Dimensions: L x W x D

3.
☐ **Below-grade tank:** Subsection I of 19.15.17.11 NMAC
Volume: bbl Type of fluid:
Tank Construction material:
☐ Secondary containment with leak detection ☐ Visible sidewalls, liner, 6-inch lift and automatic overflow shut-off
☐ Visible sidewalls and liner ☐ Visible sidewalls only ☐ Other
Liner type: Thickness mil ☐ HDPE ☐ PVC ☐ Other

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4.
☐ **Alternative Method:**
Submittal of an exception request is required. Exceptions must be submitted to the Santa Fe Environmental Bureau office for consideration of approval.

5.
Fencing: Subsection D of 19.15.17.11 NMAC *(Applies to permanent pits, temporary pits, and below-grade tanks)*
☐ Chain link, six feet in height, two strands of barbed wire at top *(Required if located within 1000 feet of a permanent residence, school, hospital, institution or church)*
☐ Four foot height, four strands of barbed wire evenly spaced between one and four feet
☐ Alternate. Please specify

6.

Netting: Subsection E of 19.15.17.11 NMAC *(Applies to permanent pits and permanent open top tanks)*

☐ Screen ☐ Netting ☐ Other_____

☐ Monthly inspections (If netting or screening is not physically feasible)

7.

Signs: Subsection C of 19.15.17.11 NMAC

☐ 12"x 24", 2" lettering, providing Operator's name, site location, and emergency telephone numbers

☐ Signed in compliance with 19.15.16.8 NMAC

8.

Variances and Exceptions:

Justifications and/or demonstrations of equivalency are required. Please refer to 19.15.17 NMAC for guidance.

Please check a box if one or more of the following is requested, if not leave blank:

☐ Variance(s): Requests must be submitted to the appropriate division district for consideration of approval.

☐ Exception(s): Requests must be submitted to the Santa Fe Environmental Bureau office for consideration of approval.

9.

Siting Criteria (regarding permitting): 19.15.17.10 NMAC

Instructions: The applicant must demonstrate compliance for each siting criteria below in the application. Recommendations of acceptable source material are provided below. **Siting criteria does not apply to drying pads or above-grade tanks.**

General siting

Ground water is less than 25 feet below the bottom of a low chloride temporary pit or below-grade tank. ☐ Yes ☐ No ☐ NA
- ☐ NM Office of the State Engineer - iWATERS database search; ☐ USGS; ☐ Data obtained from nearby wells

Ground water is less than 50 feet below the bottom of a Temporary pit, permanent pit, or Multi-Well Fluid Management pit . ☐ Yes ☒ No ☐ NA
NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells

Within incorporated municipal boundaries or within a defined municipal fresh water well field covered under a municipal ordinance adopted pursuant to NMSA 1978, Section 3-27-3, as amended. **(Does not apply to below grade tanks)** ☐ Yes ☐ No
- Written confirmation or verification from the municipality; Written approval obtained from the municipality

Within the area overlying a subsurface mine. **(Does not apply to below grade tanks)** ☐ Yes ☐ No
- Written confirmation or verification or map from the NM EMNRD-Mining and Mineral Division

Within an unstable area. **(Does not apply to below grade tanks)** ☐ Yes ☐ No
- Engineering measures incorporated into the design; NM Bureau of Geology & Mineral Resources; USGS; NM Geological Society; Topographic map

Within a 100-year floodplain. **(Does not apply to below grade tanks)** ☐ Yes ☐ No
- FEMA map

Below Grade Tanks

Within 100 feet of a continuously flowing watercourse, significant watercourse, lake bed, sinkhole, wetland or playa lake (measured from the ordinary high-water mark). ☐ Yes ☐ No
- Topographic map; Visual inspection (certification) of the proposed site

Within 200 horizontal feet of a spring or a fresh water well used for public or livestock consumption;. ☐ Yes ☐ No
- NM Office of the State Engineer - iWATERS database search; Visual inspection (certification) of the proposed site

Temporary Pit using Low Chloride Drilling Fluid (maximum chloride content 15,000 mg/liter)

Within 100 feet of a continuously flowing watercourse, or any other significant watercourse or within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark). (Applies to low chloride temporary pits.) ☐ Yes ☐ No
- Topographic map; Visual inspection (certification) of the proposed site

Within 300 feet from a occupied permanent residence, school, hospital, institution, or church in existence at the time of initial application. ☐ Yes ☐ No
- Visual inspection (certification) of the proposed site; Aerial photo; Satellite image

Within 200 horizontal feet of a spring or a private, domestic fresh water well used by less than five households for domestic or stock watering purposes, or 300feet of any other fresh water well or spring, in existence at the time of the initial application. ☐ Yes ☐ No
NM Office of the State Engineer - iWATERS database search; Visual inspection (certification) of the proposed site

Within 100 feet of a wetland.
- US Fish and Wildlife Wetland Identification map; Topographic map; Visual inspection (certification) of the proposed site ☐ Yes ☐ No

Temporary Pit Non-low chloride drilling fluid

Within 300 feet of a continuously flowing watercourse, or any other significant watercourse, or within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark).
- Topographic map; Visual inspection (certification) of the proposed site ☐ Yes ☐ No

Within 300 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application.
- Visual inspection (certification) of the proposed site; Aerial photo; Satellite image ☐ Yes ☐ No

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, or 1000 feet of any other fresh water well or spring, in the existence at the time of the initial application;
- NM Office of the State Engineer - iWATERS database search; Visual inspection (certification) of the proposed site ☐ Yes ☐ No

Within 300 feet of a wetland.
- US Fish and Wildlife Wetland Identification map; Topographic map; Visual inspection (certification) of the proposed site ☐ Yes ☐ No

Permanent Pit or Multi-Well Fluid Management Pit

Within 300 feet of a continuously flowing watercourse, or 200 feet of any other significant watercourse, or lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark).
- Topographic map; Visual inspection (certification) of the proposed site ☐ Yes ☐ No

Within 1000 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application.
- Visual inspection (certification) of the proposed site; Aerial photo; Satellite image ☐ Yes ☐ No

Within 500 horizontal feet of a spring or a fresh water well used for domestic or stock watering purposes, in existence at the time of initial application.
- NM Office of the State Engineer - iWATERS database search; Visual inspection (certification) of the proposed site ☐ Yes ☐ No

Within 500 feet of a wetland.
- US Fish and Wildlife Wetland Identification map; Topographic map; Visual inspection (certification) of the proposed site ☐ Yes ☐ No

10.
Temporary Pits, Emergency Pits, and Below-grade Tanks Permit Application Attachment Checklist: Subsection B of 19.15.17.9 NMAC
Instructions: Each of the following items must be attached to the application. Please indicate, by a check mark in the box, that the documents are attached.
- ☐ Hydrogeologic Report (Below-grade Tanks) - based upon the requirements of Paragraph (4) of Subsection B of 19.15.17.9 NMAC
- ☐ Hydrogeologic Data (Temporary and Emergency Pits) - based upon the requirements of Paragraph (2) of Subsection B of 19.15.17.9 NMAC
- ☐ Siting Criteria Compliance Demonstrations - based upon the appropriate requirements of 19.15.17.10 NMAC
- ☐ Design Plan - based upon the appropriate requirements of 19.15.17.11 NMAC
- ☐ Operating and Maintenance Plan - based upon the appropriate requirements of 19.15.17.12 NMAC
- ☐ Closure Plan (Please complete Boxes 14 through 18, if applicable) - based upon the appropriate requirements of Subsection C of 19.15.17.9 NMAC and 19.15.17.13 NMAC

☐ Previously Approved Design (attach copy of design) API Number: _____ or Permit Number: _____

11.
Multi-Well Fluid Management Pit Checklist: Subsection B of 19.15.17.9 NMAC
Instructions: Each of the following items must be attached to the application. Please indicate, by a check mark in the box, that the documents are attached.
- ☐ Design Plan - based upon the appropriate requirements of 19.15.17.11 NMAC
- ☐ Operating and Maintenance Plan - based upon the appropriate requirements of 19.15.17.12 NMAC
- ☐ A List of wells with approved application for permit to drill associated with the pit.
- ☐ Closure Plan (Please complete Boxes 14 through 18, if applicable) - based upon the appropriate requirements of Subsection C of 19.15.17.9 NMAC and 19.15.17.13 NMAC
- ☐ Hydrogeologic Data - based upon the requirements of Paragraph (4) of Subsection B of 19.15.17.9 NMAC
- ☐ Siting Criteria Compliance Demonstrations - based upon the appropriate requirements of 19.15.17.10 NMAC

☐ Previously Approved Design (attach copy of design) API Number: _____ or Permit Number: _____

12.
Permanent Pits Permit Application Checklist: Subsection B of 19.15.17.9 NMAC
Instructions: Each of the following items must be attached to the application. Please indicate, by a check mark in the box, that the documents are attached.

- ☐ Hydrogeologic Report - based upon the requirements of Paragraph (1) of Subsection B of 19.15.17.9 NMAC
- ☐ Siting Criteria Compliance Demonstrations - based upon the appropriate requirements of 19.15.17.10 NMAC
- ☐ Climatological Factors Assessment
- ☐ Certified Engineering Design Plans - based upon the appropriate requirements of 19.15.17.11 NMAC
- ☐ Dike Protection and Structural Integrity Design - based upon the appropriate requirements of 19.15.17.11 NMAC
- ☐ Leak Detection Design - based upon the appropriate requirements of 19.15.17.11 NMAC
- ☐ Liner Specifications and Compatibility Assessment - based upon the appropriate requirements of 19.15.17.11 NMAC
- ☐ Quality Control/Quality Assurance Construction and Installation Plan
- ☐ Operating and Maintenance Plan - based upon the appropriate requirements of 19.15.17.12 NMAC
- ☐ Freeboard and Overtopping Prevention Plan - based upon the appropriate requirements of 19.15.17.11 NMAC
- ☐ Nuisance or Hazardous Odors, including H_2S, Prevention Plan
- ☐ Emergency Response Plan
- ☐ Oil Field Waste Stream Characterization
- ☐ Monitoring and Inspection Plan
- ☐ Erosion Control Plan
- ☐ Closure Plan - based upon the appropriate requirements of Subsection C of 19.15.17.9 NMAC and 19.15.17.13 NMAC

13.
Proposed Closure: 19.15.17.13 NMAC
Instructions: Please complete the applicable boxes, Boxes 14 through 18, in regards to the proposed closure plan.

Type: ☐ Drilling ☐ Workover ☐ Emergency ☐ Cavitation ☐ P&A ☒ Permanent Pit ☐ Below-grade Tank ☐ Multi-well Fluid Management Pit ☐ Alternative

Proposed Closure Method: ☒ Waste Excavation and Removal
☐ Waste Removal (Closed-loop systems only)
☐ On-site Closure Method (Only for temporary pits and closed-loop systems)
☐ In-place Burial ☐ On-site Trench Burial
☐ Alternative Closure Method

14.
Waste Excavation and Removal Closure Plan Checklist: (19.15.17.13 NMAC) ***Instructions: Each of the following items must be attached to the closure plan. Please indicate, by a check mark in the box, that the documents are attached.***

- ☒ Protocols and Procedures - based upon the appropriate requirements of 19.15.17.13 NMAC
- ☒ Confirmation Sampling Plan (if applicable) - based upon the appropriate requirements of Subsection C of 19.15.17.13 NMAC
- ☒ Disposal Facility Name and Permit Number (for liquids, drilling fluids and drill cuttings)
- ☒ Soil Backfill and Cover Design Specifications - based upon the appropriate requirements of Subsection H of 19.15.17.13 NMAC
- ☒ Re-vegetation Plan - based upon the appropriate requirements of Subsection H of 19.15.17.13 NMAC
- ☒ Site Reclamation Plan - based upon the appropriate requirements of Subsection H of 19.15.17.13 NMAC

15.
Siting Criteria (regarding on-site closure methods only): 19.15.17.10 NMAC
Instructions: Each siting criteria requires a demonstration of compliance in the closure plan. Recommendations of acceptable source material are provided below. Requests regarding changes to certain siting criteria require justifications and/or demonstrations of equivalency. Please refer to 19.15.17.10 NMAC for guidance.

Ground water is less than 25 feet below the bottom of the buried waste. - NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells	☐ Yes ☐ No ☐ NA
Ground water is between 25-50 feet below the bottom of the buried waste - NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells	☐ Yes ☐ No ☐ NA
Ground water is more than 100 feet below the bottom of the buried waste. - NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells	☐ Yes ☐ No ☐ NA
Within 100 feet of a continuously flowing watercourse, or 200 feet of any other significant watercourse, lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark). - Topographic map; Visual inspection (certification) of the proposed site	☐ Yes ☐ No
Within 300 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application. - Visual inspection (certification) of the proposed site; Aerial photo; Satellite image	☐ Yes ☐ No
Within 300 horizontal feet of a private, domestic fresh water well or spring used for domestic or stock watering purposes, in existence at the time of initial application. - NM Office of the State Engineer - iWATERS database; Visual inspection (certification) of the proposed site	☐ Yes ☐ No
Written confirmation or verification from the municipality; Written approval obtained from the municipality	☐ Yes ☐ No
Within 300 feet of a wetland. US Fish and Wildlife Wetland Identification map; Topographic map; Visual inspection (certification) of the proposed site	☐ Yes ☐ No
Within incorporated municipal boundaries or within a defined municipal fresh water well field covered under a municipal ordinance	

adopted pursuant to NMSA 1978, Section 3-27-3, as amended. - Written confirmation or verification from the municipality; Written approval obtained from the municipality	☐ Yes ☐ No
Within the area overlying a subsurface mine. - Written confirmation or verification or map from the NM EMNRD-Mining and Mineral Division	☐ Yes ☐ No
Within an unstable area. - Engineering measures incorporated into the design; NM Bureau of Geology & Mineral Resources; USGS; NM Geological Society; Topographic map	☐ Yes ☐ No
Within a 100-year floodplain. - FEMA map	☐ Yes ☐ No

16.
On-Site Closure Plan Checklist: (19.15.17.13 NMAC) ***Instructions: Each of the following items must be attached to the closure plan. Please indicate, by a check mark in the box, that the documents are attached.***

- ☐ Siting Criteria Compliance Demonstrations - based upon the appropriate requirements of 19.15.17.10 NMAC
- ☐ Proof of Surface Owner Notice - based upon the appropriate requirements of Subsection E of 19.15.17.13 NMAC
- ☐ Construction/Design Plan of Burial Trench (if applicable) based upon the appropriate requirements of Subsection K of 19.15.17.11 NMAC
- ☐ Construction/Design Plan of Temporary Pit (for in-place burial of a drying pad) - based upon the appropriate requirements of 19.15.17.11 NMAC
- ☐ Protocols and Procedures - based upon the appropriate requirements of 19.15.17.13 NMAC
- ☐ Confirmation Sampling Plan (if applicable) - based upon the appropriate requirements of 19.15.17.13 NMAC
- ☐ Waste Material Sampling Plan - based upon the appropriate requirements of 19.15.17.13 NMAC
- ☐ Disposal Facility Name and Permit Number (for liquids, drilling fluids and drill cuttings or in case on-site closure standards cannot be achieved)
- ☐ Soil Cover Design - based upon the appropriate requirements of Subsection H of 19.15.17.13 NMAC
- ☐ Re-vegetation Plan - based upon the appropriate requirements of Subsection H of 19.15.17.13 NMAC
- ☐ Site Reclamation Plan - based upon the appropriate requirements of Subsection H of 19.15.17.13 NMAC

17.
Operator Application Certification:

I hereby certify that the information submitted with this application is true, accurate and complete to the best of my knowledge and belief.

Name (Print): Courtney Cochran Title: Field Environmental Advisor

Signature: Date: 10/21/2013

e-mail address: Courtney.Cochran@bp.com Telephone: 505-326-9457

18.
OCD Approval: ☐ Permit Application (including closure plan) ☒ Closure Plan (only) ☐ OCD Conditions (see attachment)

OCD Representative Signature: **Approval Date:** 10/22/13

Title: Environmental Engineer **OCD Permit Number:**

19.
Closure Report (required within 60 days of closure completion): 19.15.17.13 NMAC

Instructions: Operators are required to obtain an approved closure plan prior to implementing any closure activities and submitting the closure report. The closure report is required to be submitted to the division within 60 days of the completion of the closure activities. Please do not complete this section of the form until an approved closure plan has been obtained and the closure activities have been completed.

☒ **Closure Completion Date:** 5/5/2014

20.
Closure Method:

☒ Waste Excavation and Removal ☐ On-Site Closure Method ☐ Alternative Closure Method ☐ Waste Removal (Closed-loop systems only)

☐ If different from approved plan, please explain.

21.
Closure Report Attachment Checklist: ***Instructions: Each of the following items must be attached to the closure report. Please indicate, by a check mark in the box, that the documents are attached.***

- ☒ Proof of Closure Notice (surface owner and division)
- ☐ Proof of Deed Notice (required for on-site closure for private land only)
- ☐ Plot Plan (for on-site closures and temporary pits)
- ☒ Confirmation Sampling Analytical Results (if applicable)
- ☐ Waste Material Sampling Analytical Results (required for on-site closure)
- ☒ Disposal Facility Name and Permit Number
- ☒ Soil Backfilling and Cover Installation
- ☒ Re-vegetation Application Rates and Seeding Technique
- ☒ Site Reclamation (Photo Documentation)

On-site Closure Location: Latitude 36.670934N Longitude -107.710388W NAD: ☐1927 ☒1983

22.

Operator Closure Certification:

I hereby certify that the information and attachments submitted with this closure report is true, accurate and complete to the best of my knowledge and belief. I also certify that the closure complies with all applicable closure requirements and conditions specified in the approved closure plan.

Name (Print): Courtney Cochran Title: Environmental Advisor

Signature: [signature] Date: 5/5/2014

e-mail address: Courtney.Cochran@bp.com Telephone: 505-326-9457

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

November 19, 2013

Nelson Velez
Blagg Engineering
P. O. Box 87
Bloomfield, NM 87413
TEL: (505) 320-3489
FAX (505) 632-3903

RE: Riddle F LS # 8 OrderNo.: 1311337

Dear Nelson Velez:

Hall Environmental Analysis Laboratory received 5 sample(s) on 11/8/2013 for the analyses presented in the following report.

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

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

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

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **1311337**
Date Reported: **11/19/2013**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering
Project: Riddle F LS # 8
Lab ID: 1311337-001 **Matrix:** SOIL

Client Sample ID: TH-EB @ 9.5'(UPP)
Collection Date: 11/7/2013 10:23:00 AM
Received Date: 11/8/2013 10:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE ORGANICS						Analyst: **BCN**	
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	11/13/2013 11:01:19 AM	10292
Surr: DNOP	76.9	66-131		%REC	1	11/13/2013 11:01:19 AM	10292
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	11/12/2013 3:18:38 PM	10281
Surr: BFB	91.3	74.5-129		%REC	1	11/12/2013 3:18:38 PM	10281
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.049		mg/Kg	1	11/12/2013 3:18:38 PM	10281
Toluene	ND	0.049		mg/Kg	1	11/12/2013 3:18:38 PM	10281
Ethylbenzene	ND	0.049		mg/Kg	1	11/12/2013 3:18:38 PM	10281
Xylenes, Total	ND	0.098		mg/Kg	1	11/12/2013 3:18:38 PM	10281
Surr: 4-Bromofluorobenzene	108	80-120		%REC	1	11/12/2013 3:18:38 PM	10281
EPA METHOD 300.0: ANIONS						Analyst: **JRR**	
Chloride	ND	1.5		mg/Kg	1	11/13/2013 12:42:39 PM	10324
EPA METHOD 418.1: TPH						Analyst: **BCN**	
Petroleum Hydrocarbons, TR	28	20		mg/Kg	1	11/14/2013	10298

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering
Project: Riddle F LS # 8
Lab ID: 1311337-002 **Matrix:** SOIL

Client Sample ID: 1-NSW @ 2'(UPP)
Collection Date: 11/7/2013 11:05:00 AM
Received Date: 11/8/2013 10:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE ORGANICS						Analyst: **BCN**	
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	11/13/2013 3:51:20 PM	10292
Surr: DNOP	78.5	66-131		%REC	1	11/13/2013 3:51:20 PM	10292
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	11/12/2013 4:44:16 PM	10281
Surr: BFB	89.6	74.5-129		%REC	1	11/12/2013 4:44:16 PM	10281
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.050		mg/Kg	1	11/12/2013 4:44:16 PM	10281
Toluene	ND	0.050		mg/Kg	1	11/12/2013 4:44:16 PM	10281
Ethylbenzene	ND	0.050		mg/Kg	1	11/12/2013 4:44:16 PM	10281
Xylenes, Total	ND	0.099		mg/Kg	1	11/12/2013 4:44:16 PM	10281
Surr: 4-Bromofluorobenzene	108	80-120		%REC	1	11/12/2013 4:44:16 PM	10281
EPA METHOD 300.0: ANIONS						Analyst: **JRR**	
Chloride	92	7.5		mg/Kg	5	11/13/2013 1:32:17 PM	10324
EPA METHOD 418.1: TPH						Analyst: **BCN**	
Petroleum Hydrocarbons, TR	ND	20		mg/Kg	1	11/14/2013	10298

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering
Project: Riddle F LS # 8
Lab ID: 1311337-003 **Matrix:** SOIL

Client Sample ID: 2-ESW @ 2'(UPP)
Collection Date: 11/7/2013 11:02:00 AM
Received Date: 11/8/2013 10:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE ORGANICS						Analyst: **BCN**	
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	11/15/2013 10:08:40 AM	10292
Surr: DNOP	83.1	66-131		%REC	1	11/15/2013 10:08:40 AM	10292
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	11/12/2013 6:09:54 PM	10281
Surr: BFB	89.4	74.5-129		%REC	1	11/12/2013 6:09:54 PM	10281
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.047		mg/Kg	1	11/12/2013 6:09:54 PM	10281
Toluene	ND	0.047		mg/Kg	1	11/12/2013 6:09:54 PM	10281
Ethylbenzene	ND	0.047		mg/Kg	1	11/12/2013 6:09:54 PM	10281
Xylenes, Total	ND	0.095		mg/Kg	1	11/12/2013 6:09:54 PM	10281
Surr: 4-Bromofluorobenzene	107	80-120		%REC	1	11/12/2013 6:09:54 PM	10281
EPA METHOD 300.0: ANIONS						Analyst: **JRR**	
Chloride	27	1.5		mg/Kg	1	11/13/2013 2:21:56 PM	10324
EPA METHOD 418.1: TPH						Analyst: **BCN**	
Petroleum Hydrocarbons, TR	ND	20		mg/Kg	1	11/14/2013	10298

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering
Project: Riddle F LS # 8
Lab ID: 1311337-004 **Matrix:** SOIL

Client Sample ID: 3-SSW @ 2'(UPP)
Collection Date: 11/7/2013 11:00:00 AM
Received Date: 11/8/2013 10:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE ORGANICS						Analyst: **BCN**	
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	11/13/2013 4:35:13 PM	10292
Surr: DNOP	89.2	66-131		%REC	1	11/13/2013 4:35:13 PM	10292
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	11/12/2013 6:38:28 PM	10281
Surr: BFB	91.1	74.5-129		%REC	1	11/12/2013 6:38:28 PM	10281
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.050		mg/Kg	1	11/12/2013 6:38:28 PM	10281
Toluene	ND	0.050		mg/Kg	1	11/12/2013 6:38:28 PM	10281
Ethylbenzene	ND	0.050		mg/Kg	1	11/12/2013 6:38:28 PM	10281
Xylenes, Total	ND	0.10		mg/Kg	1	11/12/2013 6:38:28 PM	10281
Surr: 4-Bromofluorobenzene	109	80-120		%REC	1	11/12/2013 6:38:28 PM	10281
EPA METHOD 300.0: ANIONS						Analyst: **JRR**	
Chloride	ND	1.5		mg/Kg	1	11/13/2013 2:46:46 PM	10324
EPA METHOD 418.1: TPH						Analyst: **BCN**	
Petroleum Hydrocarbons, TR	ND	20		mg/Kg	1	11/14/2013	10298

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Blagg Engineering
Project: Riddle F LS # 8
Lab ID: 1311337-005 **Matrix:** SOIL

Client Sample ID: 4-WSW @ 2'(UPP)
Collection Date: 11/7/2013 11:07:00 AM
Received Date: 11/8/2013 10:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015D: DIESEL RANGE ORGANICS						Analyst: **BCN**	
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	11/13/2013 4:57:07 PM	10292
Surr: DNOP	98.2	66-131		%REC	1	11/13/2013 4:57:07 PM	10292
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **NSB**	
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	11/12/2013 7:06:57 PM	10281
Surr: BFB	90.5	74.5-129		%REC	1	11/12/2013 7:06:57 PM	10281
EPA METHOD 8021B: VOLATILES						Analyst: **NSB**	
Benzene	ND	0.048		mg/Kg	1	11/12/2013 7:06:57 PM	10281
Toluene	ND	0.048		mg/Kg	1	11/12/2013 7:06:57 PM	10281
Ethylbenzene	ND	0.048		mg/Kg	1	11/12/2013 7:06:57 PM	10281
Xylenes, Total	ND	0.095		mg/Kg	1	11/12/2013 7:06:57 PM	10281
Surr: 4-Bromofluorobenzene	108	80-120		%REC	1	11/12/2013 7:06:57 PM	10281
EPA METHOD 300.0: ANIONS						Analyst: **JRR**	
Chloride	17	7.5		mg/Kg	5	11/13/2013 3:11:35 PM	10324
EPA METHOD 418.1: TPH						Analyst: **BCN**	
Petroleum Hydrocarbons, TR	ND	20		mg/Kg	1	11/14/2013	10298

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1311337**

19-Nov-13

Client: Blagg Engineering
Project: Riddle F LS # 8

Sample ID	MB-10324	SampType:	MBLK		TestCode:	EPA Method 300.0: Anions				
Client ID:	PBS	Batch ID:	10324		RunNo:	14791				
Prep Date:	11/13/2013	Analysis Date:	11/13/2013		SeqNo:	426109	Units:	mg/Kg		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID	LCS-10324	SampType:	LCS		TestCode:	EPA Method 300.0: Anions				
Client ID:	LCSS	Batch ID:	10324		RunNo:	14791				
Prep Date:	11/13/2013	Analysis Date:	11/13/2013		SeqNo:	426111	Units:	mg/Kg		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	91.3	90	110			

Sample ID	1311337-001AMS	SampType:	MS		TestCode:	EPA Method 300.0: Anions				
Client ID:	TH-EB @ 9.5'(UPP)	Batch ID:	10324		RunNo:	14791				
Prep Date:	11/13/2013	Analysis Date:	11/13/2013		SeqNo:	426114	Units:	mg/Kg		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0.4859	90.5	58.8	109			

Sample ID	1311337-001AMSD	SampType:	MSD		TestCode:	EPA Method 300.0: Anions				
Client ID:	TH-EB @ 9.5'(UPP)	Batch ID:	10324		RunNo:	14791				
Prep Date:	11/13/2013	Analysis Date:	11/13/2013		SeqNo:	426115	Units:	mg/Kg		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0.4859	90.1	58.8	109	0.345	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1311337

19-Nov-13

Client: Blagg Engineering

Project: Riddle F LS # 8

Sample ID	MB-10298	SampType:	MBLK		TestCode:	EPA Method 418.1: TPH				
Client ID:	PBS	Batch ID:	10298		RunNo:	14800				
Prep Date:	11/12/2013	Analysis Date:	11/14/2013		SeqNo:	426345	Units:	mg/Kg		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Petroleum Hydrocarbons, TR	ND	20								

Sample ID	LCS-10298	SampType:	LCS		TestCode:	EPA Method 418.1: TPH				
Client ID:	LCSS	Batch ID:	10298		RunNo:	14800				
Prep Date:	11/12/2013	Analysis Date:	11/14/2013		SeqNo:	426346	Units:	mg/Kg		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Petroleum Hydrocarbons, TR	100	20	100.0	0	99.9	80	120			

Sample ID	LCSD-10298	SampType:	LCSD		TestCode:	EPA Method 418.1: TPH				
Client ID:	LCSS02	Batch ID:	10298		RunNo:	14800				
Prep Date:	11/12/2013	Analysis Date:	11/14/2013		SeqNo:	426347	Units:	mg/Kg		
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Petroleum Hydrocarbons, TR	100	20	100.0	0	99.9	80	120	0	20	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1311337

19-Nov-13

Client: Blagg Engineering

Project: Riddle F LS # 8

Sample ID	MB-10292	SampType:	MBLK		TestCode:	EPA Method 8015D: Diesel Range Organics				
Client ID:	PBS	Batch ID:	10292		RunNo:	14724				
Prep Date:	11/12/2013	Analysis Date:	11/12/2013		SeqNo:	424197	Units:	mg/Kg		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Surr: DNOP	8.8		10.00		87.6	66	131			

Sample ID	LCS-10292	SampType:	LCS		TestCode:	EPA Method 8015D: Diesel Range Organics				
Client ID:	LCSS	Batch ID:	10292		RunNo:	14724				
Prep Date:	11/12/2013	Analysis Date:	11/12/2013		SeqNo:	424198	Units:	mg/Kg		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	47	10	50.00	0	94.4	62.1	127			
Surr: DNOP	4.7		5.000		94.1	66	131			

Sample ID	1311337-001AMS	SampType:	MS		TestCode:	EPA Method 8015D: Diesel Range Organics				
Client ID:	TH-EB @ 9.5'(UPP)	Batch ID:	10292		RunNo:	14753				
Prep Date:	11/12/2013	Analysis Date:	11/13/2013		SeqNo:	425368	Units:	mg/Kg		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	44	10	50.20	0	86.8	47.4	148			
Surr: DNOP	5.4		5.020		108	66	131			

Sample ID	1311337-001AMSD	SampType:	MSD		TestCode:	EPA Method 8015D: Diesel Range Organics				
Client ID:	TH-EB @ 9.5'(UPP)	Batch ID:	10292		RunNo:	14753				
Prep Date:	11/12/2013	Analysis Date:	11/13/2013		SeqNo:	425394	Units:	mg/Kg		

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	43	10	49.80	0	85.6	47.4	148	2.25	22.7	
Surr: DNOP	5.1		4.980		103	66	131	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1311337

19-Nov-13

Client: Blagg Engineering

Project: Riddle F LS # 8

Sample ID	MB-10281 MK	SampType:	MBLK	TestCode:	EPA Method 8015D: Gasoline Range					
Client ID:	PBS	Batch ID:	R14740	RunNo:	14740					
Prep Date:		Analysis Date:	11/12/2013	SeqNo:	424557	Units:	%REC			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	920		1000		92.4	74.5	129			

Sample ID	LCS-10281 MK	SampType:	LCS	TestCode:	EPA Method 8015D: Gasoline Range					
Client ID:	LCSS	Batch ID:	R14740	RunNo:	14740					
Prep Date:		Analysis Date:	11/12/2013	SeqNo:	424558	Units:	%REC			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	980		1000		98.2	74.5	129			

Sample ID	MB-10281	SampType:	MBLK	TestCode:	EPA Method 8015D: Gasoline Range					
Client ID:	PBS	Batch ID:	10281	RunNo:	14740					
Prep Date:	11/11/2013	Analysis Date:	11/12/2013	SeqNo:	424578	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	920		1000		92.4	74.5	129			

Sample ID	LCS-10281	SampType:	LCS	TestCode:	EPA Method 8015D: Gasoline Range					
Client ID:	LCSS	Batch ID:	10281	RunNo:	14740					
Prep Date:	11/11/2013	Analysis Date:	11/12/2013	SeqNo:	424579	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	25	5.0	25.00	0	99.9	74.5	126			
Surr: BFB	980		1000		98.2	74.5	129			

Sample ID	1311337-001AMS	SampType:	MS	TestCode:	EPA Method 8015D: Gasoline Range					
Client ID:	TH-EB @ 9.5'(UPP)	Batch ID:	10281	RunNo:	14740					
Prep Date:	11/11/2013	Analysis Date:	11/12/2013	SeqNo:	424584	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	23	4.9	24.63	0	92.2	76	156			
Surr: BFB	980		985.2		99.1	74.5	129			

Sample ID	1311337-001AMSD	SampType:	MSD	TestCode:	EPA Method 8015D: Gasoline Range					
Client ID:	TH-EB @ 9.5'(UPP)	Batch ID:	10281	RunNo:	14740					
Prep Date:	11/11/2013	Analysis Date:	11/12/2013	SeqNo:	424585	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	28	4.9	24.61	0	115	76	156	21.7	17.7	R
Surr: BFB	980		984.3		99.3	74.5	129	0	0	

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1311337**

19-Nov-13

Client: Blagg Engineering
Project: Riddle F LS # 8

Sample ID	**MB-10281 MK**	SampType: **MBLK**		TestCode: **EPA Method 8021B: Volatiles**					
Client ID:	**PBS**	Batch ID: **R14740**		RunNo: **14740**					
Prep Date:		Analysis Date: **11/12/2013**		SeqNo: **424628**		Units: **%REC**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	1.1		1.000		111	80	120			

Sample ID	**LCS-10281 MK**	SampType: **LCS**		TestCode: **EPA Method 8021B: Volatiles**					
Client ID:	**LCSS**	Batch ID: **R14740**		RunNo: **14740**					
Prep Date:		Analysis Date: **11/12/2013**		SeqNo: **424629**		Units: **%REC**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	1.2		1.000		116	80	120			

Sample ID	**MB-10281**	SampType: **MBLK**		TestCode: **EPA Method 8021B: Volatiles**					
Client ID:	**PBS**	Batch ID: **10281**		RunNo: **14740**					
Prep Date:	**11/11/2013**	Analysis Date: **11/12/2013**		SeqNo: **424645**		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	1.1		1.000		111	80	120			

Sample ID	**LCS-10281**	SampType: **LCS**		TestCode: **EPA Method 8021B: Volatiles**					
Client ID:	**LCSS**	Batch ID: **10281**		RunNo: **14740**					
Prep Date:	**11/11/2013**	Analysis Date: **11/12/2013**		SeqNo: **424646**		Units: **mg/Kg**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.0	0.050	1.000	0	99.7	80	120			
Toluene	1.0	0.050	1.000	0	102	80	120			
Ethylbenzene	1.0	0.050	1.000	0	102	80	120			
Xylenes, Total	3.1	0.10	3.000	0	104	80	120			
Surr: 4-Bromofluorobenzene	1.2		1.000		116	80	120			

Sample ID	**1311337-002AMS**	SampType: **MS**		TestCode: **EPA Method 8021B: Volatiles**					
Client ID:	**1-NSW @ 2'(UPP)**	Batch ID: **10281**		RunNo: **14740**					
Prep Date:	**11/11/2013**	Analysis Date: **11/12/2013**		SeqNo: **424654**		Units: **mg/Kg**			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.0	0.050	0.9911	0	102	67.3	145			
Toluene	1.0	0.050	0.9911	0.008276	105	66.8	144			
Ethylbenzene	1.1	0.050	0.9911	0	108	61.9	153			
Xylenes, Total	3.3	0.099	2.973	0.01212	109	65.8	149			

Qualifiers:

- * Value exceeds Maximum Contaminant Level.
- E Value above quantitation range
- J Analyte detected below quantitation limits
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- P Sample pH greater than 2 for VOA and TOC only.
- RL Reporting Detection Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1311337

19-Nov-13

Client: Blagg Engineering

Project: Riddle F LS # 8

Sample ID	1311337-002AMS	SampType:	MS	TestCode:	EPA Method 8021B: Volatiles					
Client ID:	1-NSW @ 2'(UPP)	Batch ID:	10281	RunNo:	14740					
Prep Date:	11/11/2013	Analysis Date:	11/12/2013	SeqNo:	424654	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	1.1		0.9911		116	80	120			

Sample ID	1311337-002AMSD	SampType:	MSD	TestCode:	EPA Method 8021B: Volatiles					
Client ID:	1-NSW @ 2'(UPP)	Batch ID:	10281	RunNo:	14740					
Prep Date:	11/11/2013	Analysis Date:	11/12/2013	SeqNo:	424655	Units:	mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.1	0.050	0.9930	0	106	67.3	145	4.02	20	
Toluene	1.1	0.050	0.9930	0.008276	110	66.8	144	4.66	20	
Ethylbenzene	1.1	0.050	0.9930	0	113	61.9	153	4.91	20	
Xylenes, Total	3.4	0.099	2.979	0.01212	114	65.8	149	4.62	20	
Surr: 4-Bromofluorobenzene	1.1		0.9930		115	80	120	0	0	

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
O	RSD is greater than RSDlimit	P	Sample pH greater than 2 for VOA and TOC only.
R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
S	Spike Recovery outside accepted recovery limits		

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Sample Log-In Check List

Client Name: BLAGG | Work Order Number: 1311337 | RcptNo: 1

Received by/date: JMM 11/08/13

Logged By: **Ashley Gallegos** 11/8/2013 10:00:00 AM AG

Completed By: **Ashley Gallegos** 11/8/2013 2:24:47 PM AG

Reviewed By: 11/08/13

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?	Client		

Log In

4. Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
5. Were all samples received at a temperature of >0° C to 6.0°C	Yes ☑	No ☐	NA ☐
6. Sample(s) in proper container(s)?	Yes ☑	No ☐	
7. Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
8. Are samples (except VOA and ONG) properly preserved?	Yes ☑	No ☐	
9. Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
10. VOA vials have zero headspace?	Yes ☐	No ☐	No VOA Vials ☑
11. Were any sample containers received broken?	Yes ☐	No ☑	
12. Does paperwork match bottle labels? (Note discrepancies on chain of custody)	Yes ☑	No ☐	
13. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
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 ☐	

# of preserved bottles checked for pH: _____ (<2 or >12 unless noted)

Adjusted? _____

Checked by: _____

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

17. Additional remarks:

18. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.0	Good	Not Present			

Chain-of-Custody Record

Client: BLAGG ENGR. / BP AMERICA

Mailing Address: P.O. BOX 87
BLOOMFIELD, NM 87413

Phone #: (505) 632-1199

email or Fax#:

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

Accreditation:
☐ NELAP ☐ Other
☐ EDD (Type)

Turn-Around Time:
☑ Standard ☐ Rush

Project Name: Riddle F LS # 8

Project #:

Project Manager: NELSON VELEZ

Sampler: NELSON VELEZ

On Ice: ☑ Yes ☐ No

Sample Temperature: 1.6

HALL ENVIRONMENTAL ANALYSIS LABORATORY
www.hallenvironmental.com
4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1311335	BTEX + ~~MTBE + TMB's~~ (8021B)	BTEX + MTBE + TPH (Gas only)	TPH 8015B (GRO / DRO / ~~MRO~~)	TPH (Method 418.1)	EDB (Method 504.1)	PAH (8310 or 8270SIMS)	RCRA 8 Metals	Anions (F,Cl,NO_3,NO_2,PO_4,SO_4)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Chloride (soil - 300.0 / water - 300.1)		Grab sample	5 pt. composite sample
11/7/13	1023	SOIL	TH-EB @ 9.5' (UPP)	4 oz. - 1	Cool	-001	✓		✓	✓								✓			✓
11/7/13	1105	SOIL	1-NSW @ 2' (UPP)	4 oz. - 1	Cool	-002	✓		✓	✓								✓		✓	
11/7/13	1102	SOIL	2-ESW @ 2' (UPP)	4 oz. - 1	Cool	-003	✓		✓	✓								✓		✓	
11/7/13	1100	SOIL	3-SSW @ 2' (UPP)	4 oz. - 1	Cool	-004	✓		✓	✓								✓		✓	
11/7/13	1107	SOIL	4-WSW @ 2' (UPP)	4 oz. - 1	Cool	-005	✓		✓	✓								✓		✓	

Date:	Time:	Relinquished by:	Received by:	Date	Time
11/7/13	1525		Christine Walker	11/7/13	1525
11/8/13	645	Christine Walker	Michelle Tan	11/08/13	1000

Remarks:

BILL DIRECTLY TO BP:
Jeff Peace, 200 Energy Court, Farmington, NM 87401

Work Order: N15385774 Paykey: ZFEIRKOSJS

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.

bp

BP America Production Company
200 Energy Court
Farmington, NM 87401
Phone: (505) 326-9200

October 24, 2013

Bureau of Land Management
Mark Kelly
6251 College Blvd, Suite A
Farmington, NM 87402

VIA CERTIFIED MAIL – RETURN RECEIPT REQUESTED

Re: Notification of plans to close Unlined Permanent Pit
Well Name: Riddle F LS 8

Dear Mr. Kelly,

As part of the NM "Pit Rule": 19.15.17.13 Closure Requirements, Paragraph J. BP America Production Company (BP) is required to notify the surface owner of BP's plans to close an Unlined Permanent Pit. BP wishes to inform you of our plans to close an Unlined Permanent Pit on its well pad located on your surface. BP plans to commence this work on or about November 18, 2013. If there aren't any unforeseen problems, the work should be completed within 10 working days.

Unless you have questions about this notice, there is no need to respond to this letter. If you do have any questions or concerns, please contact me at 505-326-9214

Sincerely,

Jerry Van Riper
Surface Land Negotiator
BP America Production Company

revised 5/5/2014 to read Unlined Permanent Pit

BP AMERICA PRODUCTION COMPANY

SAN JUAN BASIN, NORTHWEST NEW MEXICO

UNLINED PERMANENT PIT CLOSURE PLAN

AL Elliott B004
3004508537
Section: 10 T29N R09W

RECEIVED OCD
2014 MAY -5 P 4:28

This plan will address the method, procedures, and protocols for closure of unlined permanent pits (UPPs) on BP America Production Company (BP) well sites pursuant to Subsection A of 19.15.17.13 NMAC. As stipulated in Paragraph (1) of Subsection C of 19.15.17.13 NMAC, BP will not commence closure without first obtaining approval of the closure plan submitted. If deviations from this plan are necessary, BP will request preapproval from the New Mexico Oil Conservation Division (NMOCD) of any specific changes and will be included on form C-144.

General Closure Plan

1. BP shall notify the surface owner by certified mail, return receipt requested that it plans to close a UPP. Notice given will be at least 72 hours in advanced, but not more than one week prior to any closure operation. The notice shall include the well name, API number, and legal description of the location. Evidence of mailing of the notice to the address of the surface owner shown in the county tax records demonstrates compliance with this requirement.

   BP notified the surface owner of this well that BP would be sampling and closing the UPP prior to commencement of any work. A copy of the letter sent to the surface owner is included with this submission.

2. BP is notifying the Santa Fe office at least 60 days prior to cessation of operations and providing a proposed schedule for closure enclosed with this submission, prior to any closure operation. The notice shall include the name, and the location of the UPP to be closed by unit letter, section, township and range. If the UPP closure is associated with a particular well, then the notice shall also include the well's name, number and API number.

   Copies of the C-144 along with the proposed schedule are included with this submission. All approvals and signatures were obtained before the commencement of any work.

3. BP shall remove liquids and sludge from the UPP prior to implementing a closure method and dispose of the liquids and sludge in a NMOCD approved facility. The facilities to be used are:
   a. BP Crouch Mesa Landfarm, Permit NM-02-003 (Solids)
   b. JFJ Landfarm, Permit NM-01-010(B) (Solids and Sludge)
   c. Basin Disposal, Permit NM-01-0005 (Liquids)
   d. Envirotech Inc Soil Remediation Facility, Permit NM-01-0011 (Solids and Sludge)
   e. BP Operated E.E. Elliott SWD #1, API 30-045-27799 (Liquids)
   f. BP Operated 13 GCU SWD #1, API 30-045-28601 (Liquids)
   g. BP Operated GCU 259 SWD, API 30-045-20006 (Liquids)
   h. BP Operated GCU 306 SWD, API 30-045-24286 (Liquids)
   i. BP Operated GCU 307 SWD, API 30-045-24248 (Liquids)
   j. BP Operated GCU 328 SWD, API 30-045-24735 (Liquids)
   k. BP Operated Pritchard SWD #1, API 30-045-28351 (Liquids)

No liquids or sludge remained in the UPP; therefore, no material was removed from the UPP.

4. BP shall remove any on-site equipment associated with a UPP unless the equipment is required for some other purpose.

No on-site equipment remained, so no equipment was removed.

5. BP shall test the soils beneath the UPP to determine whether a release has occurred. BP shall collect at a minimum: a five (5) point composite sample to include any obvious stained or wet soils, or other evidence of a release shall be collected under the UPP and analyze for the constituents listed in Table 1. The testing methods for those constituents are as follows;

Laboratory analysis was conducted on a representative sample, and all constituents returned results below the listed standards. A copy of the laboratory analysis is included with this submission.

Table 1
Closure Criteria for Soils Beneath Unlined Permanent Pit

Depth below bottom of pit to groundwater less than 10,000 mg/l TDS	Constituent	Method*	Limit**
≤50	Chloride	EPA 300.0	600 mg/kg
	TPH	EPA SW-846 Method 418.1	100 mg/kg
	BTEX	EPA SW-846 Method 8021B or 8260B	50 mg/kg
	Benzene	EPA SW-846 Method 8021B or 8015M	10 mg/kg

Notes: **mg/Kg = milligram per kilogram, BTEX = benzene, toluene, ethylbenzene, and total xylenes, TPH = total petroleum hydrocarbons, TDS = total dissolved solids.**
*** - Or other test methods approved by the division**
**** - Numerical limits or natural background level, whichever is greater**

6. If any contaminant exceeds the standards set in Table 1, less than or equal to 50 feet to groundwater, BP will acknowledge NMOCD's position to require additional delineation upon review of the results. BP will not proceed with any further closure activities until approval is first granted by NMOCD.

No contaminants exceeded the listed standards.

7. If the sampling demonstrates that any contaminant concentrations are less than or equal to the parameters listed in Table 1, less than or equal to 50 feet to groundwater, then BP shall backfill the excavation with non-waste containing uncontaminated earthen material.

The UPP was backfilled with clean fill material.

8. BP shall reclaim the UPP location and all areas associated with the UPP including associated access roads to a safe and stable condition that blends with the surrounding undisturbed area. BP shall substantially restore the impacted surface area to the condition that existed prior to oil and gas operations by placement of the soil cover as provided in Paragraph (2) of Subsection H of 19.15.17.13 NMAC, re-contour the UPP location and associated areas to a contour that approximates the original contour and blends with the surrounding topography and re-vegetate according to Paragraph (5) of Subsection H of 19.15.17.13 NMAC.

BP is in the process of reclaiming the UPP area to the required standard as found in regulation.

9. BP may propose an alternative to the re-vegetation or re-contouring requirement if it can demonstrate to the NMOCD's District III office that the proposed alternative provides equal or greater prevention of erosion, and protection of fresh water, public health and the environment. BP will seek surface owner approval of the proposed alternative and provide written documentation of the surface owner's approval to NMOCD for its approval.

BP is not proposing any alternatives to the re-vegetation or re-contouring requirement.

10. Areas reasonably needed for production operations or for subsequent drilling operations shall be compacted, covered, paved, or otherwise stabilized and maintained in such a way as to minimize dust and erosion to the extent practicable.

None exist. The well location associated with the UPP was plugged and abandoned. Location will be returned to the surface owner (BLM) after reclamation activities are deemed acceptable and complete.

11. The soil cover for closures after site contouring, shall include either the background thickness of topsoil or one foot of suitable material to establish vegetation at the site, whichever is greater.

The soil cover of the UPP area matches the background thickness of topsoil at the site.

12. The soil cover will be constructed to the site's existing grade and all practicable efforts will be made to prevent ponding of water and erosion of the cover material.

The UPP area was graded to match existing grade, background thickness and to control erosion.

13. All areas disturbed by the closure of the UPP, except areas reasonably needed for production operations or for subsequent drilling operations, shall be reclaimed as early and as nearly as practicable to their original condition or their final land use and shall be maintained to control dust and minimize erosion to the extent practicable.

The UPP area will be fully reclaimed and re-vegetated as soon as practicable.

14. Top-soils and sub-soils shall be replaced to their original relative positions and contoured so as to achieve erosion control, long-term stability and preservation of surface water flow patterns. The disturbed area then shall be reseeded in the first favorable growing season following closure the UPP.

The UPP area was graded to achieve erosion control, long-term stability and the preservation of surface water flow patterns. The UPP area will be re-seeded during the optimal seeding period - late summer to early fall.

15. Reclamation of all disturbed areas no longer in use shall be considered complete when all ground surface disturbing activities at the site have been completed, and a uniform vegetative cover has been established that reflects a life-form ratio of plus or minus fifty percent (50%) of pre-disturbance levels and a total percent plant cover of at least seventy percent (70%) of pre-disturbance levels, excluding noxious weeds.

The reclamation process including grading is underway. Seeding of the UPP area will be completed during the optimal seeding period - late summer to early fall. Seeding will be specific to the vegetative community the UPP is located in. A seed pick list and application rate is attached with closure packet.

16. The re-vegetation and reclamation obligations imposed by other applicable federal or tribal agencies on lands managed by those agencies shall supersede these provisions and govern the obligations of BP subject to those provisions, provided that the other requirements provide equal or better protection of fresh water, human health and the environment.

The UPP area will be fully reclaimed as required by regulation.

17. Pursuant to Subparagraph (e) of Paragraph (5) of Subsection H of 19.15.17.13 NMAC, BP shall notify the NMOCD when reclamation and re-vegetation has been successfully achieved.

The reclamation process has commenced. Grading has been completed and seeding will be completed during the optimal seeding period - late summer to early fall. BP will notify the NMOCD when reclamation and re-vegetation is successful.

18. Within 60 days of closure completion, BP shall submit a closure report on NMOCD's form C-144, and will include the following;
    a. necessary attachments to document all closure activities
    b. sampling results
    c. information required by 19.15.17 NMAC
    d. details on back-filling, capping and covering, where applicable.

This submission contains all the required documents related to closure activities.

19. BP shall certify that all information in the report and attachments is accurate, truthful, and compliant with all applicable closure requirements and conditions specified in the approved closure plan.

BP certifies that all information is accurate, truthful, and compliant as agreed to in the attached C-144.

Seed Pick List and Application Rate for UPP Closure Area:

Species	**Pound/Acre (PLS)**
Antelope bitterbrush (Purshia tridentata)	2.0
Needle-and-thread (Hesperostipa comata)	3.0
Western wheatgrass (Pascopyrum smithii)	2.0
Blue grama (Bouteloua gracilis)	2.0
Muttongrass (Poe fendleriana)	2.0
Prairie junegrass (Koeleria macrantha)	2.0
Utah sweetvetch (Hedysarum boreale)	0.3
Total	13.3