AKA Frontier Field Services, LLC
Bulldog 12” Value Setting

Closure Report

Section 24, T19S, R32E
Lea County, New Mexico
1RP-5349

February 22, 2019

Prepared for:

AKA Frontier Field Services, LLC
4200 E. Skelly Drive, Suite 700
Tulsa, OK 74135

By:

Safety & Environmental Solutions, Inc.
703 East Clinton
Hobbs, New Mexico 88240
(575) 397-0510

TABLE OF CONTENTS

I. Company Contacts

Representative	Company	Telephone	E-mail
John Prentiss	AKA Energy Group, LLC	575-677-5108	jprentiss@akaenergy.com
Bob Allen	SESI	575-397-0510	ballen@sesi-nm.com

II. Background

Safety and Environmental Solutions, Inc., hereinafter referred to as (SESI) was engaged by AKA Frontier Services to perform site remediation on the Santo Nino 8" Steel Pipeline, concerning a twenty (20) bbl. release of pipeline liquids. This site is situated in Lea County, Section 24, Township 19S, and Range 32E.

According to the C-141: Approximately twenty (20) bbls of heavy pipeline liquid from a buried pipeline were released, resulting in a pooling of pipeline liquids on the surface above the pipeline. The pipeline was immediately shut in and repaired. The area was archaeology surveyed and identified as not being an archaeological site. AKA proceeded with proactive measures and removed all saturated surface soil, as well as soil immediately surrounding source of pipeline compromise. Safety & Environmental Solutions was contacted for remediation.

III. Surface and Ground Water

The New Mexico Office of the State Engineer records indicates depth to groundwater to be an average of 223' bgs. for this area.

IV. Characterization

The aforementioned site has been remediated according to the NMOCD published guidelines (July 24, 2018). The site ranking and soil screening levels as presented in the table below:

Table 1 Closure Criteria for Soils Impacted by a Release			
Minimum depth below any point within the horizontal boundary of the release to ground water less than 10,000 mg/l TDS	Constituent	Method*	Limit**
<50 feet	Chloride***	EPA 300.0 or SM4500 Cl B	600 mg/kg
	TPH (GRO+DRO+MRO)	EPA SW-846 Method 8015B	100 mg/kg
	BTEX	EPA SW-846 Method 8021B or 8260B	50 mg/kg
	Benzene	EPA SW-846 Method 8021B or 8260B	10 mg/kg
51 feet-100 feet	Chloride***	EPA 300.0 or SM4500 Cl B	10,000 mg/kg
	TPH (GRO+DRO+MRO)	EPA SW-846 Method 8015B	2,500 mg/kg
	BTEX	EPA SW-846 Method 8021B or 8260B	50 mg/kg
	Benzene	EPA SW-846 Method 8021B or 8260B	10 mg/kg
>100 feet	Chloride***	EPA 300.0 or SM4500 Cl B	20,000 mg/kg
	TPH (GRO+DRO+MRO)	EPA SW-846 Method 8015B	2,500 mg/kg
	BTEX	EPA SW-846 Method 8021B or 8260B	50 mg/kg
	Benzene	EPA SW-846 Method 8021B or 8260B	10 mg/kg

Pursuant to email correspondence from NMOCD representative requesting measurements, volume estimation, and soil parameters, SESI Hydrologist conducted the following analyses on the site, and is recapped as follows:

1. Photographs taken at the site (attached) show heavy hydrocarbon liquids on the surface. These are likely paraffin's that have characteristics of pipeline pigging waste.
2. Liquids having this heavy consistency are unlikely to have penetrated more than three-inches below ground in a silty soil, especially in cooler temperatures in November. Therefore for volume calculations an infiltration depth of three-inches was chosen (see image 1742).
3. Porosity is defined as the fraction of a bulk soil that is occupied by void space, either interconnected or isolated. Non-cemented soils that are uniform may have porosities ranging from 25 to 30 percent to as high as 45 to 50 percent. Mixtures of soils (eg. sand and silt with some gravels) can have porosities ranging from 10 to 35 percent. For this exercise, surface soils are assumed to have a porosity of 30 percent.
4. Photographs taken of the excavation show white material characteristic of caliche at a shallow depth. Where caliche is present, porosity might be between 5 and 20 percent depending on the amount of cementation. A porosity of 10 percent was chosen for this calculation.

A calculation using surface square footage of 971 sq. ft., a depth of 3 inches and a porosity of 0.3 results in a volume of 13 barrels of oil on the surface.
Two subsurface volumes were calculated. The upper subsurface volume was calculated using the volume of a cylinder 3 feet deep with a surface area of 69 square feet and a porosity of 0.3 for a resultant upper subsurface volume of 11 barrels. The second subsurface volume was calculated using the volume of a cone from 3 to 7 feet below ground surface and a caliche porosity of 0.1 for a volume of 1.6 barrels.

Using the above calculation results the total volume of liquids released is estimated at 26 barrels. This estimate does include such parameters as fluid viscosity or soil bulk density which would require laboratory determination of the soil and fluid properties and cannot be determined given that the site has been remediated

V. Work Performed

On December 6, 2018, SESI personnel were onsite with Rocky Peak crew, two Backhoes w/operators and AKA personnel at the AKA Santo Nino release to install test trenches to determine vertical extent of TPH & Chloride contamination. Test trenches were installed and field tested for TPH & Chlorides. The test trench locations were mapped using the Juno 3B. All soil samples were properly packaged, preserved and transported to Cardinal Laboratories, Hobbs, NM by chain of custody, and analyzed for TPH (total petroleum hydrocarbons)(Method 8015M), BTEX, and Chlorides (Method 300). The results are presented in the following table:

SAMPLE ID	Benzene	Toluene	Ethyl benzene	Total Xylenes	Total BTEX	TPH GRO	TPH DRO	Chlorides
SP-1 6ft	ND	ND	ND	ND	ND	ND	44.0	32.0
SP-1 7ft	ND	ND	ND	ND	ND	ND	10.7	48.0
SP-1 17.5ft	ND	ND	ND	ND	ND	ND	ND	160
SP-2 1ft.	94.5	398	212	238	943	6680	13000	32.0
SP-2 2ft	0.321	0.528	0.184	0.242	1.28	12.5	99.4	48.0
SP-2 3ft	ND	ND	ND	ND	ND	ND	ND	16
SP-2 4ft	ND	ND	ND	ND	ND	ND	52.7	16
SP-2 14ft	ND	ND	ND	ND	ND	ND	ND	144
SP-3 E. Wall	ND	ND	ND	ND	ND	ND	ND	32.0
SP-4 E. Wall	ND	ND	ND	ND	ND	ND	23.5	32.0
SP-5 W. Wall	ND	ND	ND	ND	ND	ND	ND	ND
SP-6 W. Wall	ND	ND	ND	ND	ND	ND	ND	32.0
SP-7 N. Wall	ND	ND	ND	ND	ND	ND	ND	32.0
SP-8 S. Wall	ND	ND	ND	ND	ND	ND	ND	16.0

VI. Conclusions

Based on the above soil analyses, and depth to groundwater: NMOCD representatives approved the following remediation protocol.
The impacted area was excavated to depths of 1.5' bgs. All impacted soil was transported to R360 Landfill (an NMOCD approved facility), on December 18, 2018. A total of 572 (Five Hundred Seventy Two Yards) were disposed of, which correlates to the spill area calculations and soil parameters. The excavated area was backfilled with fresh topsoil and returned to grade. Per BLM guidelines; the site is scheduled to be reseeded in the spring of 2019.

On behalf of AKA Frontier Field Services, SESI respectfully requests closure of the regulatory files for this incident.

VII. Figures & Appendices

Figure 1 – Site Map
Appendix A – Photo Documentation
Appendix B – C-141
Appendix C – Analytical Results

Figure 1
Site Map

AKA Bulldog

Legend
- AKA Bulldog 12"
- Pipeline
- Sample Point
- Spill Area

Sample Point 8
SP 7 North Wall
AKA Bulldog 12"
SP 6 West Wall
Sample Point 7
Sample Point 3
SP 2 14ft Bottom
SP4 East Wall
Sample Point 5
13
19S 32E
SP 5 West Wall
SP 3 East Wall
Sample Point 4
SP 1 17.5ft
Sample Point 2
Sample Point 9
SP 8 South Wall

Google Earth

N

30 ft

Appendix A
Site Photographs

Bulldog 12” Valve Setting

Source

Spill traversed area

Proactive repair

Removal of fluids

Test Trench

Aerial of test trenches

Bulldog 12” Valve Setting

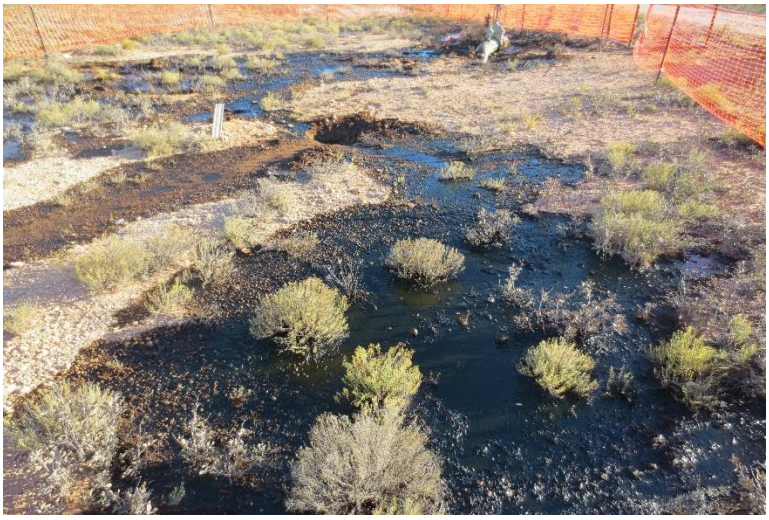
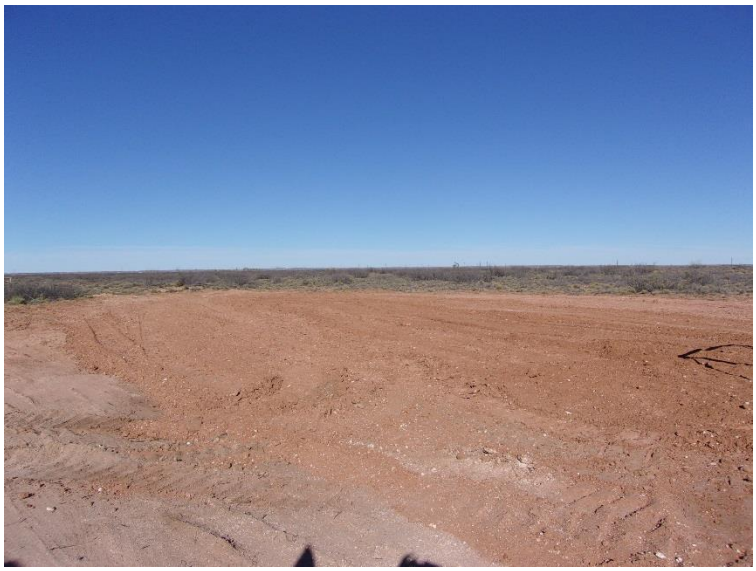


Image 1742 Depth of Impact

Source Site at Completion



Pasture Area at Completion

Appendix B
C-141

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

State of New Mexico
Energy Minerals and Natural Resources Department

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

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

Incident ID	
District RP	
Facility ID	
Application ID	

Release Notification

Responsible Party

Responsible Party Frontier Field Services, LLC	OGRID 221115
Contact Name Joe Calderon	Contact Telephone (432) 701-7802
Contact email jcalderon@akaenergy.com	Incident # *(assigned by OCD)*
Contact mailing address 13303 Lovington Hwy Loco Hills, NM 88255	

Location of Release Source

Latitude _32.653786 _____ Longitude _-103.717187_____
(NAD 83 in decimal degrees to 5 decimal places)

Site Name Bulldog 12" Valve setting	Site Type Pipeline
Date Release Discovered 11-13-18	API# *(if applicable)*

Unit Letter	Section	Township	Range	County
O	13	19S	32E	Lea

Surface Owner: ☐ State ☒ Federal ☐ Tribal ☐ Private (*Name:* _____)

Nature and Volume of Release

Material(s) Released (Select all that apply and attach calculations or specific justification for the volumes provided below)

☐ Crude	Volume Released (bbls)	Volume Recovered (bbls)
☐ Produced Water	Volume Released (bbls)	Volume Recovered (bbls)
	Is the concentration of total dissolved solids (TDS) in the produced water >10,000 mg/l?	☐ Yes ☐ No
☐ Condensate	Volume Released (bbls)	Volume Recovered (bbls)
☒ Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
☑ Other (describe)	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)
Condensed Water	20 bbls.	

Cause of Release: Line break

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

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

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

☐ Yes ☑ No

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

Initial Response

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

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

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

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

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

Printed Name Joe Calderon Joe Calderon Title: Pipeline Foreman

Signature: Joe Calderon Date: 01/18/19

email: jcalderon@akaenergy.com Telephone: 575-677-5120

OCD Only

Received by: _____ Date: _____

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?	223 (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
- ☐ 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.

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

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: Joe Calderon Title: Pipeline Foreman

Signature: Joe Calderon Date: 01/18/19

email: jcalderon@akaenergy.com Telephone: 575-677-5120

OCD Only

Received by: _____ Date: _____

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

Remediation Plan

Remediation Plan Checklist: ***Each of the following items must be included in the plan.***

- [x] Detailed description of proposed remediation technique
- [x] Scaled sitemap with GPS coordinates showing delineation points
- [x] Estimated volume of material to be remediated
- [x] Closure criteria is to Table 1 specifications subject to 19.15.29.12(C)(4) NMAC
- [x] Proposed schedule for remediation (note if remediation plan timeline is more than 90 days OCD approval is required)

Deferral Requests Only: ***Each of the following items must be confirmed as part of any request for deferral of remediation.***

- [ ] Contamination must be in areas immediately under or around production equipment where remediation could cause a major facility deconstruction.
- [ ] Extents of contamination must be fully delineated.
- [ ] Contamination does not cause an imminent risk to human health, the environment, or groundwater.

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: Joe Calderon Title: Pipeline Foreman

Signature: Joe Calderon Date: 01/18/19

email: jcalderon@akaenergy.com Telephone: 575-677-5120

OCD Only

Received by: _____ Date: _____

- [ ] Approved
- [ ] Approved with Attached Conditions of Approval
- [ ] Denied
- [ ] Deferral Approved

Signature: _____ Date: _____

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

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)

☑ 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: Joe Calderon Title: Pipeline Foreman

Signature: Joe Calderon Date: 01/18/19

email: jcalderon@akaenergy.com Telephone: 575-677-5120

OCD Only

Received by: Vanessa Fields Date: 2/25/2019

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: Vanessa Fields Date: 2/26/2019

Printed Name: Vanessa Fields Title: Environmental Specialist

Appendix C
Analytical Data

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

December 13, 2018

Bob Allen

Safety & Environmental Solutions

703 East Clinton

Hobbs, NM 88240

RE: BULL DOG RELEASE

Enclosed are the results of analyses for samples received by the laboratory on 12/07/18 8:00.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-18-11. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab_accred_certif.html.

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

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

Accreditation applies to public drinking water matrices.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Celey D. Keene

Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

Safety & Environmental Solutions
Bob Allen
703 East Clinton
Hobbs NM, 88240
Fax To: (575) 393-4388

Received:	12/07/2018	Sampling Date:	12/06/2018
Reported:	12/13/2018	Sampling Type:	Soil
Project Name:	BULL DOG RELEASE	Sampling Condition:	Cool & Intact
Project Number:	AKA - 18 - 001	Sample Received By:	Tamara Oldaker
Project Location:	NONE GIVEN		

Sample ID: SP -1 6' BOTTOM (H803604-01)

BTEX 8021B mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	12/10/2018	ND	2.03	101	2.00	0.591	
Toluene*	<0.050	0.050	12/10/2018	ND	1.98	98.9	2.00	0.443	
Ethylbenzene*	<0.050	0.050	12/10/2018	ND	1.89	94.5	2.00	0.957	
Total Xylenes*	<0.150	0.150	12/10/2018	ND	5.57	92.8	6.00	0.566	
Total BTEX	<0.300	0.300	12/10/2018	ND					

Surrogate: 4-Bromofluorobenzene (PID *99.3 %* *73.3-129*

Chloride, SM4500Cl-B mg/kg Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**32.0**	16.0	12/11/2018	ND	432	108	400	3.77	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	12/10/2018	ND	211	106	200	0.570	
DRO >C10-C28*	**44.0**	10.0	12/10/2018	ND	225	112	200	1.48	
EXT DRO >C28-C36	<10.0	10.0	12/10/2018	ND					

Surrogate: 1-Chlorooctane *92.5 %* *41-142*

Surrogate: 1-Chlorooctadecane *104 %* *37.6-147*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

Safety & Environmental Solutions
Bob Allen
703 East Clinton
Hobbs NM, 88240
Fax To: (575) 393-4388

Received:	12/07/2018	Sampling Date:	12/06/2018
Reported:	12/13/2018	Sampling Type:	Soil
Project Name:	BULL DOG RELEASE	Sampling Condition:	Cool & Intact
Project Number:	AKA - 18 - 001	Sample Received By:	Tamara Oldaker
Project Location:	NONE GIVEN		

Sample ID: SP -1 7' BOTTOM (H803604-02)

BTEX 8021B mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	12/10/2018	ND	2.03	101	2.00	0.591	
Toluene*	<0.050	0.050	12/10/2018	ND	1.98	98.9	2.00	0.443	
Ethylbenzene*	<0.050	0.050	12/10/2018	ND	1.89	94.5	2.00	0.957	
Total Xylenes*	<0.150	0.150	12/10/2018	ND	5.57	92.8	6.00	0.566	
Total BTEX	<0.300	0.300	12/10/2018	ND					

Surrogate: 4-Bromofluorobenzene (PID *99.8 %* *73.3-129*

Chloride, SM4500Cl-B mg/kg **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**48.0**	16.0	12/11/2018	ND	432	108	400	3.77	

TPH 8015M mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	12/10/2018	ND	211	106	200	0.570	
DRO >C10-C28*	**10.7**	10.0	12/10/2018	ND	225	112	200	1.48	
EXT DRO >C28-C36	<10.0	10.0	12/10/2018	ND					

Surrogate: 1-Chlorooctane *87.2 %* *41-142*

Surrogate: 1-Chlorooctadecane *99.1 %* *37.6-147*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

Safety & Environmental Solutions
Bob Allen
703 East Clinton
Hobbs NM, 88240
Fax To: (575) 393-4388

Received:	12/07/2018	Sampling Date:	12/06/2018
Reported:	12/13/2018	Sampling Type:	Soil
Project Name:	BULL DOG RELEASE	Sampling Condition:	Cool & Intact
Project Number:	AKA - 18 - 001	Sample Received By:	Tamara Oldaker
Project Location:	NONE GIVEN		

Sample ID: SP -1 17.5' BOTTOM (H803604-03)

BTEX 8021B mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	12/10/2018	ND	2.03	101	2.00	0.591	
Toluene*	<0.050	0.050	12/10/2018	ND	1.98	98.9	2.00	0.443	
Ethylbenzene*	<0.050	0.050	12/10/2018	ND	1.89	94.5	2.00	0.957	
Total Xylenes*	<0.150	0.150	12/10/2018	ND	5.57	92.8	6.00	0.566	
Total BTEX	<0.300	0.300	12/10/2018	ND					

Surrogate: 4-Bromofluorobenzene (PID *99.8 %* *73.3-129*

Chloride, SM4500Cl-B mg/kg **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**160**	16.0	12/11/2018	ND	432	108	400	3.77	

TPH 8015M mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	12/10/2018	ND	211	106	200	0.570	
DRO >C10-C28*	<10.0	10.0	12/10/2018	ND	225	112	200	1.48	
EXT DRO >C28-C36	<10.0	10.0	12/10/2018	ND					

Surrogate: 1-Chlorooctane *95.9 %* *41-142*

Surrogate: 1-Chlorooctadecane *105 %* *37.6-147*

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Safety & Environmental Solutions
Bob Allen
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Fax To: (575) 393-4388

Received:	12/07/2018	Sampling Date:	12/06/2018
Reported:	12/13/2018	Sampling Type:	Soil
Project Name:	BULL DOG RELEASE	Sampling Condition:	Cool & Intact
Project Number:	AKA - 18 - 001	Sample Received By:	Tamara Oldaker
Project Location:	NONE GIVEN		

Sample ID: SP -2 1' BOTTOM (H803604-04)

BTEX 8021B mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	**94.5**	2.00	12/11/2018	ND	2.03	101	2.00	0.591	
Toluene*	**398**	2.00	12/11/2018	ND	1.98	98.9	2.00	0.443	
Ethylbenzene*	**212**	2.00	12/11/2018	ND	1.89	94.5	2.00	0.957	
Total Xylenes*	**238**	6.00	12/11/2018	ND	5.57	92.8	6.00	0.566	
Total BTEX	**943**	12.0	12/11/2018	ND					

Surrogate: 4-Bromofluorobenzene (PID *109 %* *73.3-129*

Chloride, SM4500Cl-B mg/kg Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**32.0**	16.0	12/11/2018	ND	432	108	400	3.77	

TPH 8015M mg/kg Analyzed By: MS S-06

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	**6680**	50.0	12/10/2018	ND	211	106	200	0.570	
DRO >C10-C28*	**13000**	50.0	12/10/2018	ND	225	112	200	1.48	
EXT DRO >C28-C36	**1880**	50.0	12/10/2018	ND					

Surrogate: 1-Chlorooctane *301 %* *41-142*

Surrogate: 1-Chlorooctadecane *484 %* *37.6-147*

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Received:	12/07/2018	Sampling Date:	12/06/2018
Reported:	12/13/2018	Sampling Type:	Soil
Project Name:	BULL DOG RELEASE	Sampling Condition:	Cool & Intact
Project Number:	AKA - 18 - 001	Sample Received By:	Tamara Oldaker
Project Location:	NONE GIVEN		

Sample ID: SP -2 2' BOTTOM (H803604-05)

BTEX 8021B mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	**0.321**	0.050	12/11/2018	ND	2.03	101	2.00	0.591	
Toluene*	**0.528**	0.050	12/11/2018	ND	1.98	98.9	2.00	0.443	
Ethylbenzene*	**0.184**	0.050	12/11/2018	ND	1.89	94.5	2.00	0.957	
Total Xylenes*	**0.242**	0.150	12/11/2018	ND	5.57	92.8	6.00	0.566	
Total BTEX	**1.28**	0.300	12/11/2018	ND					

Surrogate: 4-Bromofluorobenzene (PID *96.5 %* *73.3-129*

Chloride, SM4500Cl-B mg/kg Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**48.0**	16.0	12/11/2018	ND	432	108	400	3.77	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	**12.5**	10.0	12/10/2018	ND	211	106	200	0.570	
DRO >C10-C28*	**99.4**	10.0	12/10/2018	ND	225	112	200	1.48	
EXT DRO >C28-C36	**16.2**	10.0	12/10/2018	ND					

Surrogate: 1-Chlorooctane *99.5 %* *41-142*

Surrogate: 1-Chlorooctadecane *113 %* *37.6-147*

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Received:	12/07/2018	Sampling Date:	12/06/2018
Reported:	12/13/2018	Sampling Type:	Soil
Project Name:	BULL DOG RELEASE	Sampling Condition:	Cool & Intact
Project Number:	AKA - 18 - 001	Sample Received By:	Tamara Oldaker
Project Location:	NONE GIVEN		

Sample ID: SP -2 3' BOTTOM (H803604-06)

BTEX 8021B mg/kg Analyzed By: ms

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	12/12/2018	ND	2.04	102	2.00	3.14	
Toluene*	<0.050	0.050	12/12/2018	ND	1.98	99.1	2.00	1.92	
Ethylbenzene*	<0.050	0.050	12/12/2018	ND	1.88	93.8	2.00	2.99	
Total Xylenes*	<0.150	0.150	12/12/2018	ND	6.02	100	6.00	2.83	
Total BTEX	<0.300	0.300	12/12/2018	ND					

Surrogate: 4-Bromofluorobenzene (PID *104 %* *73.3-129*

Chloride, SM4500Cl-B mg/kg Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**16.0**	16.0	12/11/2018	ND	432	108	400	3.77	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	12/10/2018	ND	211	106	200	0.570	
DRO >C10-C28*	<10.0	10.0	12/10/2018	ND	225	112	200	1.48	
EXT DRO >C28-C36	<10.0	10.0	12/10/2018	ND					

Surrogate: 1-Chlorooctane *93.1 %* *41-142*

Surrogate: 1-Chlorooctadecane *102 %* *37.6-147*

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Received:	12/07/2018	Sampling Date:	12/06/2018
Reported:	12/13/2018	Sampling Type:	Soil
Project Name:	BULL DOG RELEASE	Sampling Condition:	Cool & Intact
Project Number:	AKA - 18 - 001	Sample Received By:	Tamara Oldaker
Project Location:	NONE GIVEN		

Sample ID: SP -2 4' BOTTOM (H803604-07)

BTEX 8021B mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	12/12/2018	ND	2.08	104	2.00	12.3	
Toluene*	<0.050	0.050	12/12/2018	ND	1.97	98.4	2.00	12.3	
Ethylbenzene*	<0.050	0.050	12/12/2018	ND	1.88	94.1	2.00	12.9	
Total Xylenes*	<0.150	0.150	12/12/2018	ND	5.58	92.9	6.00	13.2	
Total BTEX	<0.300	0.300	12/12/2018	ND					

Surrogate: 4-Bromofluorobenzene (PID *95.1 %* *73.3-129*

Chloride, SM4500Cl-B mg/kg **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**16.0**	16.0	12/11/2018	ND	400	100	400	3.92	

TPH 8015M mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	12/10/2018	ND	211	106	200	0.570	
DRO >C10-C28*	**52.7**	10.0	12/10/2018	ND	225	112	200	1.48	
EXT DRO >C28-C36	<10.0	10.0	12/10/2018	ND					

Surrogate: 1-Chlorooctane *86.0 %* *41-142*

Surrogate: 1-Chlorooctadecane *98.2 %* *37.6-147*

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Received:	12/07/2018	Sampling Date:	12/06/2018
Reported:	12/13/2018	Sampling Type:	Soil
Project Name:	BULL DOG RELEASE	Sampling Condition:	Cool & Intact
Project Number:	AKA - 18 - 001	Sample Received By:	Tamara Oldaker
Project Location:	NONE GIVEN		

Sample ID: SP -2 14' BOTTOM (H803604-08)

BTEX 8021B mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	12/12/2018	ND	2.08	104	2.00	12.3	
Toluene*	<0.050	0.050	12/12/2018	ND	1.97	98.4	2.00	12.3	
Ethylbenzene*	<0.050	0.050	12/12/2018	ND	1.88	94.1	2.00	12.9	
Total Xylenes*	<0.150	0.150	12/12/2018	ND	5.58	92.9	6.00	13.2	
Total BTEX	<0.300	0.300	12/12/2018	ND					

Surrogate: 4-Bromofluorobenzene (PID *96.4 %* *73.3-129*

Chloride, SM4500Cl-B mg/kg **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**144**	16.0	12/11/2018	ND	400	100	400	3.92	

TPH 8015M mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	12/10/2018	ND	211	106	200	0.570	
DRO >C10-C28*	<10.0	10.0	12/10/2018	ND	225	112	200	1.48	
EXT DRO >C28-C36	<10.0	10.0	12/10/2018	ND					

Surrogate: 1-Chlorooctane *89.7 %* *41-142*

Surrogate: 1-Chlorooctadecane *99.3 %* *37.6-147*

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Received:	12/07/2018	Sampling Date:	12/06/2018
Reported:	12/13/2018	Sampling Type:	Soil
Project Name:	BULL DOG RELEASE	Sampling Condition:	Cool & Intact
Project Number:	AKA - 18 - 001	Sample Received By:	Tamara Oldaker
Project Location:	NONE GIVEN		

Sample ID: SP - 3 EAST WALL (H803604-09)

BTEX 8021B mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	12/12/2018	ND	2.08	104	2.00	12.3	
Toluene*	<0.050	0.050	12/12/2018	ND	1.97	98.4	2.00	12.3	
Ethylbenzene*	<0.050	0.050	12/12/2018	ND	1.88	94.1	2.00	12.9	
Total Xylenes*	<0.150	0.150	12/12/2018	ND	5.58	92.9	6.00	13.2	
Total BTEX	<0.300	0.300	12/12/2018	ND					

Surrogate: 4-Bromofluorobenzene (PID *97.4 %* *73.3-129*

Chloride, SM4500Cl-B mg/kg Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**32.0**	16.0	12/11/2018	ND	400	100	400	3.92	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	12/10/2018	ND	211	106	200	0.570	
DRO >C10-C28*	<10.0	10.0	12/10/2018	ND	225	112	200	1.48	
EXT DRO >C28-C36	<10.0	10.0	12/10/2018	ND					

Surrogate: 1-Chlorooctane *90.9 %* *41-142*

Surrogate: 1-Chlorooctadecane *99.7 %* *37.6-147*

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Received:	12/07/2018	Sampling Date:	12/06/2018
Reported:	12/13/2018	Sampling Type:	Soil
Project Name:	BULL DOG RELEASE	Sampling Condition:	Cool & Intact
Project Number:	AKA - 18 - 001	Sample Received By:	Tamara Oldaker
Project Location:	NONE GIVEN		

Sample ID: SP - 4 EAST WALL (H803604-10)

BTEX 8021B mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	12/12/2018	ND	2.08	104	2.00	12.3	
Toluene*	<0.050	0.050	12/12/2018	ND	1.97	98.4	2.00	12.3	
Ethylbenzene*	<0.050	0.050	12/12/2018	ND	1.88	94.1	2.00	12.9	
Total Xylenes*	<0.150	0.150	12/12/2018	ND	5.58	92.9	6.00	13.2	
Total BTEX	<0.300	0.300	12/12/2018	ND					

Surrogate: 4-Bromofluorobenzene (PID *98.5 %* *73.3-129*

Chloride, SM4500Cl-B mg/kg Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**32.0**	16.0	12/11/2018	ND	400	100	400	3.92	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	12/12/2018	ND	204	102	200	2.82	
DRO >C10-C28*	**23.5**	10.0	12/12/2018	ND	214	107	200	1.22	
EXT DRO >C28-C36	<10.0	10.0	12/12/2018	ND					

Surrogate: 1-Chlorooctane *98.8 %* *41-142*

Surrogate: 1-Chlorooctadecane *110 %* *37.6-147*

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Received:	12/07/2018	Sampling Date:	12/06/2018
Reported:	12/13/2018	Sampling Type:	Soil
Project Name:	BULL DOG RELEASE	Sampling Condition:	Cool & Intact
Project Number:	AKA - 18 - 001	Sample Received By:	Tamara Oldaker
Project Location:	NONE GIVEN		

Sample ID: SP - 5 WEST WALL (H803604-11)

BTEX 8021B mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	12/12/2018	ND	2.08	104	2.00	12.3	
Toluene*	<0.050	0.050	12/12/2018	ND	1.97	98.4	2.00	12.3	
Ethylbenzene*	<0.050	0.050	12/12/2018	ND	1.88	94.1	2.00	12.9	
Total Xylenes*	<0.150	0.150	12/12/2018	ND	5.58	92.9	6.00	13.2	
Total BTEX	<0.300	0.300	12/12/2018	ND					

Surrogate: 4-Bromofluorobenzene (PID *97.8 %* *73.3-129*

Chloride, SM4500Cl-B mg/kg Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0	16.0	12/11/2018	ND	400	100	400	3.92	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	12/12/2018	ND	205	102	200	3.70	
DRO >C10-C28*	<10.0	10.0	12/12/2018	ND	212	106	200	4.26	
EXT DRO >C28-C36	<10.0	10.0	12/12/2018	ND					

Surrogate: 1-Chlorooctane *89.4 %* *41-142*

Surrogate: 1-Chlorooctadecane *96.5 %* *37.6-147*

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Received:	12/07/2018	Sampling Date:	12/06/2018
Reported:	12/13/2018	Sampling Type:	Soil
Project Name:	BULL DOG RELEASE	Sampling Condition:	Cool & Intact
Project Number:	AKA - 18 - 001	Sample Received By:	Tamara Oldaker
Project Location:	NONE GIVEN		

Sample ID: SP - 6 WEST WALL (H803604-12)

BTEX 8021B mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	12/12/2018	ND	2.08	104	2.00	12.3	
Toluene*	<0.050	0.050	12/12/2018	ND	1.97	98.4	2.00	12.3	
Ethylbenzene*	<0.050	0.050	12/12/2018	ND	1.88	94.1	2.00	12.9	
Total Xylenes*	<0.150	0.150	12/12/2018	ND	5.58	92.9	6.00	13.2	
Total BTEX	<0.300	0.300	12/12/2018	ND					

Surrogate: 4-Bromofluorobenzene (PID *97.5 %* *73.3-129*

Chloride, SM4500Cl-B mg/kg Analyzed By: AC

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**32.0**	16.0	12/11/2018	ND	400	100	400	3.92	

TPH 8015M mg/kg Analyzed By: MS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	12/12/2018	ND	205	102	200	3.70	
DRO >C10-C28*	<10.0	10.0	12/12/2018	ND	212	106	200	4.26	
EXT DRO >C28-C36	<10.0	10.0	12/12/2018	ND					

Surrogate: 1-Chlorooctane *94.8 %* *41-142*

Surrogate: 1-Chlorooctadecane *98.3 %* *37.6-147*

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Received:	12/07/2018	Sampling Date:	12/06/2018
Reported:	12/13/2018	Sampling Type:	Soil
Project Name:	BULL DOG RELEASE	Sampling Condition:	Cool & Intact
Project Number:	AKA - 18 - 001	Sample Received By:	Tamara Oldaker
Project Location:	NONE GIVEN		

Sample ID: SP - 7 NORTH WALL (H803604-13)

BTEX 8021B mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	12/12/2018	ND	2.08	104	2.00	12.3	
Toluene*	<0.050	0.050	12/12/2018	ND	1.97	98.4	2.00	12.3	
Ethylbenzene*	<0.050	0.050	12/12/2018	ND	1.88	94.1	2.00	12.9	
Total Xylenes*	<0.150	0.150	12/12/2018	ND	5.58	92.9	6.00	13.2	
Total BTEX	<0.300	0.300	12/12/2018	ND					

Surrogate: 4-Bromofluorobenzene (PID *97.0 %* *73.3-129*

Chloride, SM4500Cl-B mg/kg **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**32.0**	16.0	12/11/2018	ND	400	100	400	3.92	

TPH 8015M mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	12/12/2018	ND	205	102	200	3.70	
DRO >C10-C28*	<10.0	10.0	12/12/2018	ND	212	106	200	4.26	
EXT DRO >C28-C36	<10.0	10.0	12/12/2018	ND					

Surrogate: 1-Chlorooctane *93.7 %* *41-142*

Surrogate: 1-Chlorooctadecane *97.9 %* *37.6-147*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

Safety & Environmental Solutions
Bob Allen
703 East Clinton
Hobbs NM, 88240
Fax To: (575) 393-4388

Received:	12/07/2018	Sampling Date:	12/06/2018
Reported:	12/13/2018	Sampling Type:	Soil
Project Name:	BULL DOG RELEASE	Sampling Condition:	Cool & Intact
Project Number:	AKA - 18 - 001	Sample Received By:	Tamara Oldaker
Project Location:	NONE GIVEN		

Sample ID: SP - 8 SOUTH WALL (H803604-14)

BTEX 8021B mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	12/12/2018	ND	2.08	104	2.00	12.3	
Toluene*	<0.050	0.050	12/12/2018	ND	1.97	98.4	2.00	12.3	
Ethylbenzene*	<0.050	0.050	12/12/2018	ND	1.88	94.1	2.00	12.9	
Total Xylenes*	<0.150	0.150	12/12/2018	ND	5.58	92.9	6.00	13.2	
Total BTEX	<0.300	0.300	12/12/2018	ND					

Surrogate: 4-Bromofluorobenzene (PID *94.2 %* *73.3-129*

Chloride, SM4500Cl-B mg/kg **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**16.0**	16.0	12/11/2018	ND	400	100	400	3.92	

TPH 8015M mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	12/12/2018	ND	205	102	200	3.70	
DRO >C10-C28*	<10.0	10.0	12/12/2018	ND	212	106	200	4.26	
EXT DRO >C28-C36	<10.0	10.0	12/12/2018	ND					

Surrogate: 1-Chlorooctane *91.6 %* *41-142*

Surrogate: 1-Chlorooctadecane *97.5 %* *37.6-147*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Notes and Definitions

S-06	The recovery of this surrogate is outside control limits due to sample dilution required from high analyte concentration and/or matrix interference's.
QR-02	The RPD result exceeded the QC control limits; however, both percent recoveries were acceptable. Sample results for the QC batch were accepted based on percent recoveries and completeness of QC data.
QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C
	Samples reported on an as received basis (wet) unless otherwise noted on report

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

Company Name:	Safety and Environmental Solutions	**BILL TO**	
Project Manager:	Bob Allen	P.O. #:	
Address:	703 East Clinton, PO Box 1613	Company:	Same
City:	Hobbs State: NM Zip: 88240	Attn:	
Phone #:	575 397-0510 Fax #: 575 393-4388	Address:	
Project #:	AHA-18-001 Project Owner:	City:	
Project Name:	BULL DOG Release	State: Zip:	
Project Location:		Phone #:	
Sampler Name:		Fax #:	

FOR LAB USE ONLY Lab I.D.	Sample I.D.		(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX: GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER:	PRESERV.: ACID/BASE:	ICE / COOL	OTHER:	SAMPLING: DATE	TIME	TPH (8015 Ext)	BTEX	Chlorides (4500)
H803604																		
1	SP-1	6' Bottom	G	1			X					X		12/6	0815	X	X	X
2	SP-1	7' Bottom	G	1			X					X		12/6	0830			
3	SP-1	17.5' Bottom	G	1			X					X		12/6	0900			
4	SP-2	1' Bottom	G	1			X					X		12/6	0915			
5	SP-2	2' Bottom	G	1			X					X		12/6	0920			
6	SP-2	3' Bottom	G	1			X					X		12/6	0930			
7	SP-2	4' Bottom	G	1			X					X		12/6	0945			
8	SP-2	14' Bottom	G	1			X					X		12/6	1020			
9	SP-3	East Wall	G	1			X					X		12/6	1115			
10	SP-4	East Wall	G				X					X		12/6	1140	X	X	X

Relinquished By:	Date: 12/07/18	Received By:	Phone Result: ☐ Yes ☐ No Add'l Phone #:
	Time: 0800		Fax Result: ☐ Yes ☐ No Add'l Fax #:
Relinquished By:	Date:	Received By:	REMARKS:
	Time:		

Delivered By: (Circle One) Sampler - UPS - Bus - Other: 1.8° #97	Sample Condition Cool: ☐ Yes ☐ No Intact: ☐ Yes ☐ No	CHECKED BY: (Initials) TO

CARDINAL Laboratories

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

Company Name:	Safety and Environmental Solutions	BILL TO	
Project Manager:	Bob Allen	P.O. #:	
Address:	703 East Clinton, PO Box 1613	Company:	Same
City:	Hobbs State: NM Zip: 88240	Attn:	
Phone #:	575 397-0510 Fax #: 575 393-4388	Address:	
Project #:	AKA-18-001 Project Owner:	City:	
Project Name:	Bull Dog RELEASE	State: Zip:	
Project Location:		Phone #:	
Sampler Name:		Fax #:	

FOR LAB USE ONLY Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX: GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER:	PRESERV.: ACID/BASE:	ICE / COOL	OTHER:	SAMPLING: DATE	TIME (BM)	ANALYSIS REQUEST: TPH (8015 Ext)	BTEX	Chlorides (4500)
H803604																	
11	SP-5 WESTWALL	G	1			X					X		12/6	1230	X	X	X
12	SP-6 WESTWALL	G	1			X					X		12/6	0100	"	"	"
13	SP-7 NORTHWALL	G	1			X					X		12/6	1205	"	"	"
14	SP-8 SOUTH WALL	G	1			X					X		12/6	DHO	X	X	X

Relinquished By:	Date: 12/07/18 Time: 0800	Received By:	Tamara Oldaker
Relinquished By:	Date: Time:	Received By:	
Delivered By: (Circle One) Sampler - UPS - Bus - Other:	1.8° #97	Sample Condition Cool: Yes / No Intact: Yes / No	CHECKED BY: (Initials) T.D.

Phone Result: ☐ Yes ☐ No Add'l Phone #:
Fax Result: ☐ Yes ☐ No Add'l Fax #:
REMARKS: