



Callie Karrigan

Huskey-Mckay Federal No.1 Remediation Closure Report

2RP-5131

API NO. 30-005-61616

Release Date: December 14, 2018

Unit Letter O, Section 18, Township 8 South, Range 26 East

Chaves County

1/30/2019

Prepared By:



White Buffalo Environmental, Inc.

407 East Broadway

Hobbs, NM 88240

Phone: (575)738-0424

Fax: (575)738-0430



January 30, 2019

Marathon Oil Company
C/O Callie Karrigan
4111 S. Tidwell Street
Carlsbad, NM 88220

State of New Mexico Oil Conservation Division
C/O Mike Bratcher
District II
811 S. First Street
Artesia, NM 88210

Bureau of Land Management
C/O Harley Davis
2909 West Second Street
Roswell, NM 88201

RE: Huskey-Mckay Federal No. 1
API No: 30-005-61616

Dear Mr. Bratcher and Mr. Davis,

Marathon Oil Company retained White Buffalo Environmental to address the above environmental release for the site detailed herein.

The site is located in Chaves County. The Huskey-McKay Federal No. 1 release occurred on December 4, 2018. Approximately 6.47bbls of crude oil was released in the pasture area due to a 3rd party contractor who was in the process of flushing the flowline during a wellsite abandonment activity, when one of the fittings failed. The fitting was found to be corroded. No fluid was recovered due to the release occurring in a sandy loam area.

WBE immediately arrived onsite, when notified of the release. The crews working on the line made the appropriate repairs, while WBE began to move the saturated soil from the release point and stockpiled on plastic to minimize the environmental impact of this release. Upon site

assessment, there were two different release points, one labelled North release and the second labelled South release.

Groundwater Data

WBE conducted a groundwater study of the area and has determined that according to the New Mexico Office of the State Engineer the ground water depth in this area is averaged at 43' bgs. With the data collected during the ground water research, all wells within this area range from 12' bgs to 80' bgs. The 12' bgs well is labelled RA-04747. Please see the attached Water Column/Average Depth to Water Sheet.

Reclamation and Remediation Procedures

Immediately upon arrival, WBE assessed the release, measured, mapped, photographed and called in an Emergency One-call. Once the one-call was cleared WBE staff began to sample the surface of impacted area. At this time the heavy saturated soil was excavated and placed on plastic. Further delineation began December 5th of 2018.

The release area was fully delineated, vertically and horizontally to find the extent of the contaminated area. The Closure Criteria for Soils Impacted by a Release is below, based on ground water depth of under 50' bgs.

DGW	Constituent	Method	Limit
≤ 50	Chloride	EPA 300.0 OR SM4500 CLB	600 mg/kg
	TPH (GRO + DRO + MRO)	EPA SW-846 METHOD 8015M	100 mg/kg
	GRO + DRO	EPA SW-846 METHOD 8015M	50 mg/kg
	BTEX	EPA SW-846 METHOD 8021B OR 8260B	10 mg/kg
	Benzene	EPA SW-846 METHOD 8021B OR 8260B	10 mg/kg

Based on the sample data obtained for this sampling event, all sample points were under the required limits. Please see the sample data, site map and lab analysis attached to this report.

Delineation

On December 5th 2018 White Buffalo Environmental personnel-initiated delineation of this site as per the Condition of Approval (COA) received from the NMOCD. The visually stained area was measured and surface soil samples were collected and field tested for chloride and BTEX. Field testing indicated that soil was impacted, therefore horizontal and vertical delineation of the site was completed to closure limits for the closure criteria for 50'bgs. Please find the sampling data and lab analyses for this site attached to this report herein.

Remediation

The impacted soil was excavated and stockpiled on plastic. WBE then hauled a total of 360 cubic yards to R360 for disposal. Both release areas depth of excavation varied from 4' to 6'bgs. Once the contamination was removed from the impacted area, Harley Davis with the BLM was notified of final sampling event and could not make it to the site. Final samples were extracted then taken to Cardinal Lab for confirmation. The closure sample data can be found in the sampling data sheet for this site as well on the attached analytical reports. Once verified by Cardinal labs backfilling of the excavation area was backfill using 84 yards of caliche/topsoil mix from left over soil from the reclaim from the well pad Huskey-McKay Federal #001. At which point 276 cubic yards of topsoil was purchased and hauled to site from the Cooper Ranch.

The area was fully backfilled and contoured to its natural state. The area was ripped and then reseeded with special seed requested from Cooper Ranch. Which consisted of Blue Grama, Sand Drop Seed, Plains Bristle Grass, Buckwheat, Four-Wing Salt Brush, Desert Globe Mallow and Alkali Sacaton purchased from Curtis and Curtis. Once hand broadcasted, the area was then watered and re-ripped to hold seed in place for revegetation purposes.

Closure Request

White Buffalo Environmental, along with Marathon Oil Permian, LLC would like to request the site closure for the release for 2RP-5131 dated December 4, 2018. Please find all the supporting documentation along with the final C-141 for this release attached herein.

If you have any questions or concerns, please do not hesitate to contact me.

Sincerely,



Natalie Gladden
Environmental & Regulatory Director
White Buffalo Environmental, Inc.
407 East Broadway
Hobbs, NM 88240
Office (575) 738-0424
Fax (575) 738-0430
Cell (575) 390-6397
Email: natalie.gladden@whitebuffalo.com

Attachments:

C141
Groundwater Data
Sampling Data and Lab Analyses
Site Diagram and Site Photographs
Photographs
Seed Tag
Final 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

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

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

Incident ID	
District RP	
Facility ID	
Application ID	

Release Notification

Responsible Party

Responsible Party	OGRID
Contact Name	Contact Telephone
Contact email	Incident # (assigned by OCD)
Contact mailing address	

Location of Release Source

Latitude _____ Longitude _____
(NAD 83 in decimal degrees to 5 decimal places)

Site Name	Site Type
Date Release Discovered	API# (if applicable)

Unit Letter	Section	Township	Range	County

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)

<input type="checkbox"/> Crude Oil	Volume Released (bbls)	Volume Recovered (bbls)
<input type="checkbox"/> Produced Water	Volume Released (bbls)	Volume Recovered (bbls)
	Is the concentration of total dissolved solids (TDS) in the produced water >10,000 mg/l?	<input type="checkbox"/> Yes <input type="checkbox"/> No
<input type="checkbox"/> Condensate	Volume Released (bbls)	Volume Recovered (bbls)
<input type="checkbox"/> Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
<input type="checkbox"/> Other (describe)	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)

Cause of Release

Incident ID	
District RP	
Facility ID	
Application ID	

Was this a major release as defined by 19.15.29.7(A) NMAC? <input type="checkbox"/> Yes <input type="checkbox"/> No	If YES, for what reason(s) does the responsible party consider this a major release?
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

<input type="checkbox"/> The source of the release has been stopped. <input type="checkbox"/> The impacted area has been secured to protect human health and the environment. <input type="checkbox"/> Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices. <input type="checkbox"/> All free liquids and recoverable materials have been removed and managed appropriately.
If all the actions described above have <u>not</u> 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: _____ Title: _____ Signature: <i>Collin Karrigan</i> _____ Date: _____ email: _____ Telephone: _____
<u>OCD Only</u> Received by: _____ Date: _____

Incident ID	
District RP	
Facility ID	
Application ID	

Site Assessment/Characterization

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

What is the shallowest depth to groundwater beneath the area affected by the release?	_____ (ft bgs)
Did this release impact groundwater or surface water?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	<input type="checkbox"/> Yes <input type="checkbox"/> 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)?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	<input type="checkbox"/> Yes <input type="checkbox"/> 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?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are the lateral extents of the release within 300 feet of a wetland?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are the lateral extents of the release overlying a subsurface mine?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are the lateral extents of the release overlying an unstable area such as karst geology?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are the lateral extents of the release within a 100-year floodplain?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Did the release impact areas not on an exploration, development, production, or storage site?	<input type="checkbox"/> Yes <input type="checkbox"/> 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.

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: _____ Title: _____

Signature: *Callie Harrigan* _____ Date: _____

email: _____ Telephone: _____

OCD Only

Received by: _____ Date: _____

Incident ID	
District RP	
Facility ID	
Application ID	

Remediation Plan

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

- Detailed description of proposed remediation technique
- Scaled sitemap with GPS coordinates showing delineation points
- Estimated volume of material to be remediated
- Closure criteria is to Table 1 specifications subject to 19.15.29.12(C)(4) NMAC
- 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: _____ Title: _____

Signature: Colleen Harrigan Date: _____

email: _____ Telephone: _____

OCD Only

Received by: _____ Date: _____

- Approved
 Approved with Attached Conditions of Approval
 Denied
 Deferral Approved

Signature: _____ Date: _____

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: _____ Title: _____

Signature: *Callie Karrigan* _____ Date: _____

email: _____ Telephone: _____

OCD Only

Received by: _____ Date: _____

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

Closure Approved by: _____ Date: _____

Printed Name: _____ Title: _____



New Mexico Office of the State Engineer

Water Column/Average Depth to Water

(A CLW##### in the POD suffix indicates the POD has been replaced & no longer serves a water right file.)

(R=POD has been replaced,
O=orphaned,
C=the file is closed)

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters)

(In feet)

POD Number	POD Code	Sub-basin	County	Q 64	Q 16	Q 4	Sec	Tws	Rng	X	Y	Distance	Depth	Well	Depth	Water Column
RA 11333 POD1		RA	ED	1	4	1	27	19S	26E	558262	3721747	2997	160			
RA 04747		RA	CH	2	3	06	08S	26E	561256	3723273*	3630	105	12	93		
RA 04202		RA	CH	3	3	3	25	08S	25E	559198	3716305*	3653	200			
RA 04202 CLW251916	O	RA	CH	3	3	3	25	08S	25E	559198	3716305*	3653	200			
RA 06879		RA	CH	1	1	36	08S	25E	559300	3716002*	3906	140	35	105		
RA 04807		RA	CH	4	2	01	08S	25E	560473	3723678*	3950	110	68	42		
RA 06860		RA	CH		1	36	08S	25E	559503	3715799*	4047	182	80	102		
RA 04774		RA	CH	2	1	10	08S	25E	556444	3722471*	4878	43	21	22		

Average Depth to Water: **43 feet**
 Minimum Depth: **12 feet**
 Maximum Depth: **80 feet**

Record Count: 8

UTMNAD83 Radius Search (in meters):

Easting (X): 560477.41

Northing (Y): 3719727

Radius: 5000

*UTM location was derived from PLSS - see Help

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

11/19/18 3:05 PM

WATER COLUMN/ AVERAGE DEPTH TO WATER



New Mexico Office of the State Engineer

Point of Diversion Summary

(quarters are 1=NW 2=NE 3=SW 4=SE)
 (quarters are smallest to largest) (NAD83 UTM in meters)

Well Tag	POD Number	Q64 Q16 Q4	Sec	Tws	Rng	X	Y
	RA 04747	2 3 06	08S	26E		561256	3723273*

Driller License: 260		Driller Company: CLARK, G.J.	
Driller Name: CLARK			
Drill Start Date: 01/01/1963	Drill Finish Date: 01/01/1963	Plug Date:	
Log File Date: 01/02/1963	PCW Rcv Date:	Source: Shallow	
Pump Type:	Pipe Discharge Size:	Estimated Yield:	
Casing Size: 7.00	Depth Well: 105 feet	Depth Water: 12 feet	

Water Bearing Stratifications:	Top	Bottom	Description
	18	28	Sandstone/Gravel/Conglomerate
	45	47	Other/Unknown

*UTM location was derived from PLSS - see Help

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

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POINT OF DIVERSION SUMMARY



New Mexico Office of the State Engineer

Point of Diversion Summary

		(quarters are 1=NW 2=NE 3=SW 4=SE)						
		(quarters are smallest to largest)					(NAD83 UTM in meters)	
Well Tag	POD Number	Q64 Q16 Q4	Sec	Tws	Rng		X	Y
RA 11333 POD1		1 4 1	27	19S	26E		558262	3721747

Driller License:	Driller Company:	
Driller Name:		
Drill Start Date:	Drill Finish Date:	Plug Date:
Log File Date:	PCW Rcv Date:	Source:
Pump Type:	Pipe Discharge Size:	Estimated Yield:
Casing Size: 6.00	Depth Well: 160 feet	Depth Water:

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

11/19/18 3:07 PM

POINT OF DIVERSION SUMMARY



New Mexico Office of the State Engineer

Point of Diversion Summary

Well Tag	POD Number	(quarters are 1=NW 2=NE 3=SW 4=SE) (quarters are smallest to largest)				(NAD83 UTM in meters)			
Well Tag	POD Number	Q64	Q16	Q4	Sec	Tws	Rng	X	Y
	RA 04202	3	3	3	25	08S	25E	559198	3716305*

Driller License:	Driller Company:	
Driller Name: STEINBERGER		
Drill Start Date:	Drill Finish Date:	Plug Date:
Log File Date:	PCW Rcv Date:	Source:
Pump Type:	Pipe Discharge Size:	Estimated Yield:
Casing Size: 7.00	Depth Well: 200 feet	Depth Water:

*UTM location was derived from PLSS - see Help

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

11/19/18 3:08 PM

POINT OF DIVERSION SUMMARY

MARATHON - HUSKEY-MCKAY FED 001

Sample ID	Ft	Titration	PID	Lab-Chl	Lab-BTEX	Lab-GRO	Lab-DRO	Lab-MRO	TPH	Soil	Notes
SP1	SUR	240	0								NORTH
	2'	160	0	80	<0.300	<10	<10	<10	<10	CAL	
SP2	SUR		0								
	2'										
	4'										
	6'	480									
	8'	160	0	32	<0.300	<10	<10	<10	<10	CAL	
SP3	SUR	240	0								
	2'	400	0	272	<0.300	<10	<10	<10	<10	CAL	
SP4	SUR	400	0								
	2'	1280	0								
	4'	480	0								
	6'	560	0	608	<0.300	<10	<10	<10	<10	CAL	
	8'	400	0								
	10'	400	0	160	<0.300	<10	<10	<10	<10	CAL	
SP5	SUR	880	0								
	2'	1840	0								
	4'	1440	0								
	6'	2720	0								
	8'	160	0								
	10'	160	0	176	<0.300	<10	<10	<10	<10	CAL	
SW1	SUR	160	0								
	1'	160	0	16	<0.300	<10	<10	<10	<10	CAL	
SW2	SUR	360	0								
	1'	160	0	16	<0.300	<10	<10	<10	<10	CAL	
SW3	SUR	160	0								
	1'	160	0	80	<0.300	<10	<10	<10	<10	CAL	
SW4	SUR	160	0								
	1'	160	0	48	<0.300	<10	<10	<10	<10	CAL	

December 12, 2018

NATALIE GLADDEN
WHITE BUFFALO
8908 YALE AVE #210
TULSA, OK 74137

RE: HUSKEY - MCKAY FED #001

Enclosed are the results of analyses for samples received by the laboratory on 12/11/18 8:40.

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 accredited 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
Lab Director/Quality Manager

Analytical Results For:

 WHITE BUFFALO
 NATALIE GLADDEN
 8908 YALE AVE #210
 TULSA OK, 74137
 Fax To:

Received:	12/11/2018	Sampling Date:	12/06/2018
Reported:	12/12/2018	Sampling Type:	Soil
Project Name:	HUSKEY - MCKAY FED #001	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	MARATHON OIL -		

Sample ID: SP 2 - 8' (NORTH) (H803615-01)

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	12/11/2018	ND	2.04	102	2.00	3.14	
Toluene*	<0.050	0.050	12/11/2018	ND	1.98	99.1	2.00	1.92	
Ethylbenzene*	<0.050	0.050	12/11/2018	ND	1.88	93.8	2.00	2.99	
Total Xylenes*	<0.150	0.150	12/11/2018	ND	6.02	100	6.00	2.83	
Total BTEX	<0.300	0.300	12/11/2018	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	32.0	16.0	12/11/2018	ND	448	112	400	0.00	

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	12/11/2018	ND	204	102	200	2.82	
DRO >C10-C28*	<10.0	10.0	12/11/2018	ND	214	107	200	1.22	
EXT DRO >C28-C36	<10.0	10.0	12/11/2018	ND					

Surrogate: 1-Chlorooctane 114 % 41-142
Surrogate: 1-Chlorooctadecane 121 % 37.6-147

Cardinal Laboratories

*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 WHITE BUFFALO
 NATALIE GLADDEN
 8908 YALE AVE #210
 TULSA OK, 74137
 Fax To:

Received:	12/11/2018	Sampling Date:	12/06/2018
Reported:	12/12/2018	Sampling Type:	Soil
Project Name:	HUSKEY - MCKAY FED #001	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	MARATHON OIL -		

Sample ID: SP 5 - 10' (NORTH) (H803615-02)

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	12/11/2018	ND	2.04	102	2.00	3.14		
Toluene*	<0.050	0.050	12/11/2018	ND	1.98	99.1	2.00	1.92		
Ethylbenzene*	<0.050	0.050	12/11/2018	ND	1.88	93.8	2.00	2.99		
Total Xylenes*	<0.150	0.150	12/11/2018	ND	6.02	100	6.00	2.83		
Total BTEX	<0.300	0.300	12/11/2018	ND						

Surrogate: 4-Bromofluorobenzene (PID) 105 % 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	176	16.0	12/11/2018	ND	448	112	400	0.00		

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	12/11/2018	ND	204	102	200	2.82		
DRO >C10-C28*	<10.0	10.0	12/11/2018	ND	214	107	200	1.22		
EXT DRO >C28-C36	<10.0	10.0	12/11/2018	ND						

Surrogate: 1-Chlorooctane 111 % 41-142

Surrogate: 1-Chlorooctadecane 120 % 37.6-147

Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 WHITE BUFFALO
 NATALIE GLADDEN
 8908 YALE AVE #210
 TULSA OK, 74137
 Fax To:

Received:	12/11/2018	Sampling Date:	12/06/2018
Reported:	12/12/2018	Sampling Type:	Soil
Project Name:	HUSKEY - MCKAY FED #001	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	MARATHON OIL -		

Sample ID: SP 1 - 2' (SOUTH) (H803615-03)

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	12/11/2018	ND	2.04	102	2.00	3.14		
Toluene*	<0.050	0.050	12/11/2018	ND	1.98	99.1	2.00	1.92		
Ethylbenzene*	<0.050	0.050	12/11/2018	ND	1.88	93.8	2.00	2.99		
Total Xylenes*	<0.150	0.150	12/11/2018	ND	6.02	100	6.00	2.83		
Total BTEX	<0.300	0.300	12/11/2018	ND						

Surrogate: 4-Bromofluorobenzene (PID) 106 % 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	80.0	16.0	12/11/2018	ND	448	112	400	0.00		

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	12/11/2018	ND	204	102	200	2.82		
DRO >C10-C28*	<10.0	10.0	12/11/2018	ND	214	107	200	1.22		
EXT DRO >C28-C36	<10.0	10.0	12/11/2018	ND						

Surrogate: 1-Chlorooctane 102 % 41-142

Surrogate: 1-Chlorooctadecane 105 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 WHITE BUFFALO
 NATALIE GLADDEN
 8908 YALE AVE #210
 TULSA OK, 74137
 Fax To:

Received:	12/11/2018	Sampling Date:	12/06/2018
Reported:	12/12/2018	Sampling Type:	Soil
Project Name:	HUSKEY - MCKAY FED #001	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	MARATHON OIL -		

Sample ID: SP 2 - 2' (SOUTH) (H803615-04)

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	12/11/2018	ND	2.04	102	2.00	3.14		
Toluene*	<0.050	0.050	12/11/2018	ND	1.98	99.1	2.00	1.92		
Ethylbenzene*	<0.050	0.050	12/11/2018	ND	1.88	93.8	2.00	2.99		
Total Xylenes*	<0.150	0.150	12/11/2018	ND	6.02	100	6.00	2.83		
Total BTEX	<0.300	0.300	12/11/2018	ND						

Surrogate: 4-Bromofluorobenzene (PID) 107 % 73.3-129

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	192	16.0	12/11/2018	ND	448	112	400	0.00		

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	12/11/2018	ND	204	102	200	2.82		
DRO >C10-C28*	<10.0	10.0	12/11/2018	ND	214	107	200	1.22		
EXT DRO >C28-C36	<10.0	10.0	12/11/2018	ND						

Surrogate: 1-Chlorooctane 105 % 41-142

Surrogate: 1-Chlorooctadecane 113 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 WHITE BUFFALO
 NATALIE GLADDEN
 8908 YALE AVE #210
 TULSA OK, 74137
 Fax To:

Received:	12/11/2018	Sampling Date:	12/06/2018
Reported:	12/12/2018	Sampling Type:	Soil
Project Name:	HUSKEY - MCKAY FED #001	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	MARATHON OIL -		

Sample ID: SP 3 - 2' (SOUTH) (H803615-05)

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	12/11/2018	ND	2.04	102	2.00	3.14		
Toluene*	<0.050	0.050	12/11/2018	ND	1.98	99.1	2.00	1.92		
Ethylbenzene*	<0.050	0.050	12/11/2018	ND	1.88	93.8	2.00	2.99		
Total Xylenes*	<0.150	0.150	12/11/2018	ND	6.02	100	6.00	2.83		
Total BTEX	<0.300	0.300	12/11/2018	ND						

Surrogate: 4-Bromofluorobenzene (PID) 105 % 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	448	112	400	0.00		

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	12/11/2018	ND	204	102	200	2.82		
DRO >C10-C28*	<10.0	10.0	12/11/2018	ND	214	107	200	1.22		
EXT DRO >C28-C36	<10.0	10.0	12/11/2018	ND						

Surrogate: 1-Chlorooctane 103 % 41-142

Surrogate: 1-Chlorooctadecane 110 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager

Notes and Definitions

- 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

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Celey D. Keene, Lab Director/Quality Manager

December 17, 2018

NATALIE GLADDEN
WHITE BUFFALO
8908 YALE AVE #210
TULSA, OK 74137

RE: HUSKEY - MCKAY FED #001

Enclosed are the results of analyses for samples received by the laboratory on 12/14/18 8:50.

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 accredited 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
Lab Director/Quality Manager

Analytical Results For:

 WHITE BUFFALO
 NATALIE GLADDEN
 8908 YALE AVE #210
 TULSA OK, 74137
 Fax To:

Received:	12/14/2018	Sampling Date:	12/10/2018
Reported:	12/17/2018	Sampling Type:	Soil
Project Name:	HUSKEY - MCKAY FED #001	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	MARATHON OIL -		

Sample ID: SW 1 - 1' NORTH (H803657-01)

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	12/14/2018	ND	2.01	101	2.00	3.50		
Toluene*	<0.050	0.050	12/14/2018	ND	1.95	97.7	2.00	2.85		
Ethylbenzene*	<0.050	0.050	12/14/2018	ND	1.91	95.4	2.00	2.71		
Total Xylenes*	<0.150	0.150	12/14/2018	ND	5.79	96.5	6.00	2.22		
Total BTEX	<0.300	0.300	12/14/2018	ND						

Surrogate: 4-Bromofluorobenzene (PID) 99.7 % 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	12/14/2018	ND	432	108	400	3.64		

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	12/14/2018	ND	195	97.7	200	0.439		
DRO >C10-C28*	<10.0	10.0	12/14/2018	ND	195	97.4	200	0.217		
EXT DRO >C28-C36	<10.0	10.0	12/14/2018	ND						

Surrogate: 1-Chlorooctane 74.9 % 41-142

Surrogate: 1-Chlorooctadecane 75.7 % 37.6-147

Cardinal Laboratories

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 WHITE BUFFALO
 NATALIE GLADDEN
 8908 YALE AVE #210
 TULSA OK, 74137
 Fax To:

Received:	12/14/2018	Sampling Date:	12/10/2018
Reported:	12/17/2018	Sampling Type:	Soil
Project Name:	HUSKEY - MCKAY FED #001	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	MARATHON OIL -		

Sample ID: SW 2 - 1' NORTH (H803657-02)

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	12/14/2018	ND	2.01	101	2.00	3.50		
Toluene*	<0.050	0.050	12/14/2018	ND	1.95	97.7	2.00	2.85		
Ethylbenzene*	<0.050	0.050	12/14/2018	ND	1.91	95.4	2.00	2.71		
Total Xylenes*	<0.150	0.150	12/14/2018	ND	5.79	96.5	6.00	2.22		
Total BTEX	<0.300	0.300	12/14/2018	ND						

Surrogate: 4-Bromofluorobenzene (PID) 101 % 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	12/14/2018	ND	400	100	400	0.00		

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	12/14/2018	ND	195	97.7	200	0.439		
DRO >C10-C28*	<10.0	10.0	12/14/2018	ND	195	97.4	200	0.217		
EXT DRO >C28-C36	<10.0	10.0	12/14/2018	ND						

Surrogate: 1-Chlorooctane 85.7 % 41-142

Surrogate: 1-Chlorooctadecane 84.7 % 37.6-147

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* = Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 WHITE BUFFALO
 NATALIE GLADDEN
 8908 YALE AVE #210
 TULSA OK, 74137
 Fax To:

Received:	12/14/2018	Sampling Date:	12/10/2018
Reported:	12/17/2018	Sampling Type:	Soil
Project Name:	HUSKEY - MCKAY FED #001	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	MARATHON OIL -		

Sample ID: SW 3 - 1' NORTH (H803657-03)

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	12/14/2018	ND	2.01	101	2.00	3.50		
Toluene*	<0.050	0.050	12/14/2018	ND	1.95	97.7	2.00	2.85		
Ethylbenzene*	<0.050	0.050	12/14/2018	ND	1.91	95.4	2.00	2.71		
Total Xylenes*	<0.150	0.150	12/14/2018	ND	5.79	96.5	6.00	2.22		
Total BTEX	<0.300	0.300	12/14/2018	ND						

Surrogate: 4-Bromofluorobenzene (PID) 99.0 % 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	80.0	16.0	12/14/2018	ND	400	100	400	0.00		

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	12/14/2018	ND	195	97.7	200	0.439		
DRO >C10-C28*	<10.0	10.0	12/14/2018	ND	195	97.4	200	0.217		
EXT DRO >C28-C36	<10.0	10.0	12/14/2018	ND						

Surrogate: 1-Chlorooctane 84.9 % 41-142

Surrogate: 1-Chlorooctadecane 86.1 % 37.6-147

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* = Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 WHITE BUFFALO
 NATALIE GLADDEN
 8908 YALE AVE #210
 TULSA OK, 74137
 Fax To:

Received:	12/14/2018	Sampling Date:	12/10/2018
Reported:	12/17/2018	Sampling Type:	Soil
Project Name:	HUSKEY - MCKAY FED #001	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	MARATHON OIL -		

Sample ID: SW 4 - 1' NORTH (H803657-04)

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	12/14/2018	ND	2.01	101	2.00	3.50		
Toluene*	<0.050	0.050	12/14/2018	ND	1.95	97.7	2.00	2.85		
Ethylbenzene*	<0.050	0.050	12/14/2018	ND	1.91	95.4	2.00	2.71		
Total Xylenes*	<0.150	0.150	12/14/2018	ND	5.79	96.5	6.00	2.22		
Total BTEX	<0.300	0.300	12/14/2018	ND						

Surrogate: 4-Bromofluorobenzene (PID) 99.7 % 73.3-129

Chloride, SM4500CI-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	12/14/2018	ND	400	100	400	0.00		

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	12/14/2018	ND	195	97.7	200	0.439		
DRO >C10-C28*	<10.0	10.0	12/14/2018	ND	195	97.4	200	0.217		
EXT DRO >C28-C36	<10.0	10.0	12/14/2018	ND						

Surrogate: 1-Chlorooctane 87.4 % 41-142

Surrogate: 1-Chlorooctadecane 87.0 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 WHITE BUFFALO
 NATALIE GLADDEN
 8908 YALE AVE #210
 TULSA OK, 74137
 Fax To:

Received:	12/14/2018	Sampling Date:	12/10/2018
Reported:	12/17/2018	Sampling Type:	Soil
Project Name:	HUSKEY - MCKAY FED #001	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	MARATHON OIL -		

Sample ID: SW 1 - 1' SOUTH (H803657-05)

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	12/14/2018	ND	2.01	101	2.00	3.50		
Toluene*	<0.050	0.050	12/14/2018	ND	1.95	97.7	2.00	2.85		
Ethylbenzene*	<0.050	0.050	12/14/2018	ND	1.91	95.4	2.00	2.71		
Total Xylenes*	<0.150	0.150	12/14/2018	ND	5.79	96.5	6.00	2.22		
Total BTEX	<0.300	0.300	12/14/2018	ND						

Surrogate: 4-Bromofluorobenzene (PID) 100 % 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	80.0	16.0	12/14/2018	ND	400	100	400	0.00		

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	12/14/2018	ND	195	97.7	200	0.439		
DRO >C10-C28*	<10.0	10.0	12/14/2018	ND	195	97.4	200	0.217		
EXT DRO >C28-C36	<10.0	10.0	12/14/2018	ND						

Surrogate: 1-Chlorooctane 75.6 % 41-142

Surrogate: 1-Chlorooctadecane 74.8 % 37.6-147

Cardinal Laboratories

* = Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 WHITE BUFFALO
 NATALIE GLADDEN
 8908 YALE AVE #210
 TULSA OK, 74137
 Fax To:

Received:	12/14/2018	Sampling Date:	12/10/2018
Reported:	12/17/2018	Sampling Type:	Soil
Project Name:	HUSKEY - MCKAY FED #001	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	MARATHON OIL -		

Sample ID: SW 2 - 1' SOUTH (H803657-06)

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	12/14/2018	ND	2.01	101	2.00	3.50		
Toluene*	<0.050	0.050	12/14/2018	ND	1.95	97.7	2.00	2.85		
Ethylbenzene*	<0.050	0.050	12/14/2018	ND	1.91	95.4	2.00	2.71		
Total Xylenes*	<0.150	0.150	12/14/2018	ND	5.79	96.5	6.00	2.22		
Total BTEX	<0.300	0.300	12/14/2018	ND						

Surrogate: 4-Bromofluorobenzene (PID) 99.5 % 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	12/14/2018	ND	400	100	400	0.00		

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	12/14/2018	ND	195	97.7	200	0.439		
DRO >C10-C28*	<10.0	10.0	12/14/2018	ND	195	97.4	200	0.217		
EXT DRO >C28-C36	<10.0	10.0	12/14/2018	ND						

Surrogate: 1-Chlorooctane 92.8 % 41-142

Surrogate: 1-Chlorooctadecane 92.0 % 37.6-147

Cardinal Laboratories

* = Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 WHITE BUFFALO
 NATALIE GLADDEN
 8908 YALE AVE #210
 TULSA OK, 74137
 Fax To:

Received:	12/14/2018	Sampling Date:	12/10/2018
Reported:	12/17/2018	Sampling Type:	Soil
Project Name:	HUSKEY - MCKAY FED #001	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	MARATHON OIL -		

Sample ID: SW 3 - 1' SOUTH (H803657-07)

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	12/14/2018	ND	2.01	101	2.00	3.50		
Toluene*	<0.050	0.050	12/14/2018	ND	1.95	97.7	2.00	2.85		
Ethylbenzene*	<0.050	0.050	12/14/2018	ND	1.91	95.4	2.00	2.71		
Total Xylenes*	<0.150	0.150	12/14/2018	ND	5.79	96.5	6.00	2.22		
Total BTEX	<0.300	0.300	12/14/2018	ND						

Surrogate: 4-Bromofluorobenzene (PID) 101 % 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	12/14/2018	ND	400	100	400	0.00		

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	12/14/2018	ND	195	97.7	200	0.439		
DRO >C10-C28*	<10.0	10.0	12/14/2018	ND	195	97.4	200	0.217		
EXT DRO >C28-C36	<10.0	10.0	12/14/2018	ND						

Surrogate: 1-Chlorooctane 91.6 % 41-142

Surrogate: 1-Chlorooctadecane 90.5 % 37.6-147

Cardinal Laboratories

* = Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 WHITE BUFFALO
 NATALIE GLADDEN
 8908 YALE AVE #210
 TULSA OK, 74137
 Fax To:

Received:	12/14/2018	Sampling Date:	12/10/2018
Reported:	12/17/2018	Sampling Type:	Soil
Project Name:	HUSKEY - MCKAY FED #001	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	MARATHON OIL -		

Sample ID: SW 4 - 1' SOUTH (H803657-08)

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	12/15/2018	ND	2.01	101	2.00	3.50		
Toluene*	<0.050	0.050	12/15/2018	ND	1.95	97.7	2.00	2.85		
Ethylbenzene*	<0.050	0.050	12/15/2018	ND	1.91	95.4	2.00	2.71		
Total Xylenes*	<0.150	0.150	12/15/2018	ND	5.79	96.5	6.00	2.22		
Total BTEX	<0.300	0.300	12/15/2018	ND						

Surrogate: 4-Bromofluorobenzene (PID) 102 % 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	12/14/2018	ND	400	100	400	0.00		

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	12/15/2018	ND	195	97.7	200	0.439		
DRO >C10-C28*	<10.0	10.0	12/15/2018	ND	195	97.4	200	0.217		
EXT DRO >C28-C36	<10.0	10.0	12/15/2018	ND						

Surrogate: 1-Chlorooctane 94.9 % 41-142

Surrogate: 1-Chlorooctadecane 94.9 % 37.6-147

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*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Notes and Definitions

- 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

December 28, 2018

NATALIE GLADDEN
WHITE BUFFALO
8908 YALE AVE #210
TULSA, OK 74137

RE: HUSKEY - MCKAY FED #001

Enclosed are the results of analyses for samples received by the laboratory on 12/27/18 15:00.

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 accredited 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
Lab Director/Quality Manager

Analytical Results For:

 WHITE BUFFALO
 NATALIE GLADDEN
 8908 YALE AVE #210
 TULSA OK, 74137
 Fax To:

Received:	12/27/2018	Sampling Date:	12/20/2018
Reported:	12/28/2018	Sampling Type:	Soil
Project Name:	HUSKEY - MCKAY FED #001	Sampling Condition:	Cool & Intact
Project Number:	CLOSURE	Sample Received By:	Tamara Oldaker
Project Location:	MARATHON OIL -		

Sample ID: SOUTH COMPOSITE (H803795-01)

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	12/28/2018	ND	1.70	85.0	2.00	3.29	
Toluene*	<0.050	0.050	12/28/2018	ND	1.76	87.9	2.00	3.13	
Ethylbenzene*	<0.050	0.050	12/28/2018	ND	1.75	87.3	2.00	3.36	
Total Xylenes*	<0.150	0.150	12/28/2018	ND	5.19	86.6	6.00	3.28	
Total BTEX	<0.300	0.300	12/28/2018	ND					

Surrogate: 4-Bromofluorobenzene (PID) 103 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	288	16.0	12/28/2018	ND	400	100	400	7.69	

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	12/28/2018	ND	185	92.4	200	1.69	
DRO >C10-C28*	<10.0	10.0	12/28/2018	ND	223	112	200	5.94	
EXT DRO >C28-C36	<10.0	10.0	12/28/2018	ND					

Surrogate: 1-Chlorooctane 83.0 % 41-142

Surrogate: 1-Chlorooctadecane 78.7 % 37.6-147

Cardinal Laboratories

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 WHITE BUFFALO
 NATALIE GLADDEN
 8908 YALE AVE #210
 TULSA OK, 74137
 Fax To:

Received:	12/27/2018	Sampling Date:	12/20/2018
Reported:	12/28/2018	Sampling Type:	Soil
Project Name:	HUSKEY - MCKAY FED #001	Sampling Condition:	Cool & Intact
Project Number:	CLOSURE	Sample Received By:	Tamara Oldaker
Project Location:	MARATHON OIL -		

Sample ID: NORTH COMPOSITE - 6' (H803795-02)

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	12/28/2018	ND	1.70	85.0	2.00	3.29		
Toluene*	<0.050	0.050	12/28/2018	ND	1.76	87.9	2.00	3.13		
Ethylbenzene*	<0.050	0.050	12/28/2018	ND	1.75	87.3	2.00	3.36		
Total Xylenes*	<0.150	0.150	12/28/2018	ND	5.19	86.6	6.00	3.28		
Total BTEX	<0.300	0.300	12/28/2018	ND						

Surrogate: 4-Bromofluorobenzene (PID) 102 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: HM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	624	16.0	12/28/2018	ND	400	100	400	7.69		

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	12/28/2018	ND	185	92.4	200	1.69		
DRO >C10-C28*	<10.0	10.0	12/28/2018	ND	223	112	200	5.94		
EXT DRO >C28-C36	<10.0	10.0	12/28/2018	ND						

Surrogate: 1-Chlorooctane 84.8 % 41-142

Surrogate: 1-Chlorooctadecane 80.4 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 WHITE BUFFALO
 NATALIE GLADDEN
 8908 YALE AVE #210
 TULSA OK, 74137
 Fax To:

Received:	12/27/2018	Sampling Date:	12/21/2018
Reported:	12/28/2018	Sampling Type:	Soil
Project Name:	HUSKEY - MCKAY FED #001	Sampling Condition:	Cool & Intact
Project Number:	CLOSURE	Sample Received By:	Tamara Oldaker
Project Location:	MARATHON OIL -		

Sample ID: SW 1 - 2' NORTH (H803795-03)

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	12/28/2018	ND	1.70	85.0	2.00	3.29		
Toluene*	<0.050	0.050	12/28/2018	ND	1.76	87.9	2.00	3.13		
Ethylbenzene*	<0.050	0.050	12/28/2018	ND	1.75	87.3	2.00	3.36		
Total Xylenes*	<0.150	0.150	12/28/2018	ND	5.19	86.6	6.00	3.28		
Total BTEX	<0.300	0.300	12/28/2018	ND						

Surrogate: 4-Bromofluorobenzene (PID) 98.7 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: HM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	<16.0	16.0	12/28/2018	ND	400	100	400	7.69		

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	12/28/2018	ND	185	92.4	200	1.69		
DRO >C10-C28*	<10.0	10.0	12/28/2018	ND	223	112	200	5.94		
EXT DRO >C28-C36	<10.0	10.0	12/28/2018	ND						

Surrogate: 1-Chlorooctane 86.5 % 41-142

Surrogate: 1-Chlorooctadecane 83.0 % 37.6-147

Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 WHITE BUFFALO
 NATALIE GLADDEN
 8908 YALE AVE #210
 TULSA OK, 74137
 Fax To:

Received:	12/27/2018	Sampling Date:	12/20/2018
Reported:	12/28/2018	Sampling Type:	Soil
Project Name:	HUSKEY - MCKAY FED #001	Sampling Condition:	Cool & Intact
Project Number:	CLOSURE	Sample Received By:	Tamara Oldaker
Project Location:	MARATHON OIL -		

Sample ID: SW 1 - 2' SOUTH (H803795-04)

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	12/28/2018	ND	1.70	85.0	2.00	3.29		
Toluene*	<0.050	0.050	12/28/2018	ND	1.76	87.9	2.00	3.13		
Ethylbenzene*	<0.050	0.050	12/28/2018	ND	1.75	87.3	2.00	3.36		
Total Xylenes*	<0.150	0.150	12/28/2018	ND	5.19	86.6	6.00	3.28		
Total BTEX	<0.300	0.300	12/28/2018	ND						

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

Chloride, SM4500Cl-B		mg/kg		Analyzed By: HM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	32.0	16.0	12/28/2018	ND	400	100	400	7.69		

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	12/28/2018	ND	185	92.4	200	1.69		
DRO >C10-C28*	<10.0	10.0	12/28/2018	ND	223	112	200	5.94		
EXT DRO >C28-C36	<10.0	10.0	12/28/2018	ND						

Surrogate: 1-Chlorooctane 84.4 % 41-142

Surrogate: 1-Chlorooctadecane 80.7 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 WHITE BUFFALO
 NATALIE GLADDEN
 8908 YALE AVE #210
 TULSA OK, 74137
 Fax To:

Received:	12/27/2018	Sampling Date:	12/20/2018
Reported:	12/28/2018	Sampling Type:	Soil
Project Name:	HUSKEY - MCKAY FED #001	Sampling Condition:	Cool & Intact
Project Number:	CLOSURE	Sample Received By:	Tamara Oldaker
Project Location:	MARATHON OIL -		

Sample ID: SW 2 - 1' NORTH (H803795-05)

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	12/28/2018	ND	1.70	85.0	2.00	3.29		
Toluene*	<0.050	0.050	12/28/2018	ND	1.76	87.9	2.00	3.13		
Ethylbenzene*	<0.050	0.050	12/28/2018	ND	1.75	87.3	2.00	3.36		
Total Xylenes*	<0.150	0.150	12/28/2018	ND	5.19	86.6	6.00	3.28		
Total BTEX	<0.300	0.300	12/28/2018	ND						

Surrogate: 4-Bromofluorobenzene (PID) 103 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: HM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	<16.0	16.0	12/28/2018	ND	400	100	400	7.69		

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	12/28/2018	ND	185	92.4	200	1.69		
DRO >C10-C28*	<10.0	10.0	12/28/2018	ND	223	112	200	5.94		
EXT DRO >C28-C36	<10.0	10.0	12/28/2018	ND						

Surrogate: 1-Chlorooctane 83.5 % 41-142

Surrogate: 1-Chlorooctadecane 81.9 % 37.6-147

Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 WHITE BUFFALO
 NATALIE GLADDEN
 8908 YALE AVE #210
 TULSA OK, 74137
 Fax To:

Received:	12/27/2018	Sampling Date:	12/20/2018
Reported:	12/28/2018	Sampling Type:	Soil
Project Name:	HUSKEY - MCKAY FED #001	Sampling Condition:	Cool & Intact
Project Number:	CLOSURE	Sample Received By:	Tamara Oldaker
Project Location:	MARATHON OIL -		

Sample ID: SW 2 - 1' SOUTH (H803795-06)

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	12/28/2018	ND	1.70	85.0	2.00	3.29		
Toluene*	<0.050	0.050	12/28/2018	ND	1.76	87.9	2.00	3.13		
Ethylbenzene*	<0.050	0.050	12/28/2018	ND	1.75	87.3	2.00	3.36		
Total Xylenes*	<0.150	0.150	12/28/2018	ND	5.19	86.6	6.00	3.28		
Total BTEX	<0.300	0.300	12/28/2018	ND						

Surrogate: 4-Bromofluorobenzene (PID) 101 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: HM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	<16.0	16.0	12/28/2018	ND	400	100	400	7.69		

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	12/28/2018	ND	185	92.4	200	1.69		
DRO >C10-C28*	<10.0	10.0	12/28/2018	ND	223	112	200	5.94		
EXT DRO >C28-C36	<10.0	10.0	12/28/2018	ND						

Surrogate: 1-Chlorooctane 80.0 % 41-142

Surrogate: 1-Chlorooctadecane 79.3 % 37.6-147

Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 WHITE BUFFALO
 NATALIE GLADDEN
 8908 YALE AVE #210
 TULSA OK, 74137
 Fax To:

Received:	12/27/2018	Sampling Date:	12/21/2018
Reported:	12/28/2018	Sampling Type:	Soil
Project Name:	HUSKEY - MCKAY FED #001	Sampling Condition:	Cool & Intact
Project Number:	CLOSURE	Sample Received By:	Tamara Oldaker
Project Location:	MARATHON OIL -		

Sample ID: SW 3 - 2' NORTH (H803795-07)

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	12/28/2018	ND	1.70	85.0	2.00	3.29		
Toluene*	<0.050	0.050	12/28/2018	ND	1.76	87.9	2.00	3.13		
Ethylbenzene*	<0.050	0.050	12/28/2018	ND	1.75	87.3	2.00	3.36		
Total Xylenes*	<0.150	0.150	12/28/2018	ND	5.19	86.6	6.00	3.28		
Total BTEX	<0.300	0.300	12/28/2018	ND						

Surrogate: 4-Bromofluorobenzene (PID) 101 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: HM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	<16.0	16.0	12/28/2018	ND	400	100	400	7.69		

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	12/28/2018	ND	185	92.4	200	1.69		
DRO >C10-C28*	<10.0	10.0	12/28/2018	ND	223	112	200	5.94		
EXT DRO >C28-C36	<10.0	10.0	12/28/2018	ND						

Surrogate: 1-Chlorooctane 82.5 % 41-142

Surrogate: 1-Chlorooctadecane 81.1 % 37.6-147

Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 WHITE BUFFALO
 NATALIE GLADDEN
 8908 YALE AVE #210
 TULSA OK, 74137
 Fax To:

Received:	12/27/2018	Sampling Date:	12/21/2018
Reported:	12/28/2018	Sampling Type:	Soil
Project Name:	HUSKEY - MCKAY FED #001	Sampling Condition:	Cool & Intact
Project Number:	CLOSURE	Sample Received By:	Tamara Oldaker
Project Location:	MARATHON OIL -		

Sample ID: SW 3 - 2' SOUTH (H803795-08)

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	12/28/2018	ND	1.70	85.0	2.00	3.29		
Toluene*	<0.050	0.050	12/28/2018	ND	1.76	87.9	2.00	3.13		
Ethylbenzene*	<0.050	0.050	12/28/2018	ND	1.75	87.3	2.00	3.36		
Total Xylenes*	<0.150	0.150	12/28/2018	ND	5.19	86.6	6.00	3.28		
Total BTEX	<0.300	0.300	12/28/2018	ND						

Surrogate: 4-Bromofluorobenzene (PID) 101 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: HM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	<16.0	16.0	12/28/2018	ND	400	100	400	7.69		

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	12/28/2018	ND	185	92.4	200	1.69		
DRO >C10-C28*	<10.0	10.0	12/28/2018	ND	223	112	200	5.94		
EXT DRO >C28-C36	<10.0	10.0	12/28/2018	ND						

Surrogate: 1-Chlorooctane 80.2 % 41-142

Surrogate: 1-Chlorooctadecane 78.0 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 WHITE BUFFALO
 NATALIE GLADDEN
 8908 YALE AVE #210
 TULSA OK, 74137
 Fax To:

Received:	12/27/2018	Sampling Date:	12/21/2018
Reported:	12/28/2018	Sampling Type:	Soil
Project Name:	HUSKEY - MCKAY FED #001	Sampling Condition:	Cool & Intact
Project Number:	CLOSURE	Sample Received By:	Tamara Oldaker
Project Location:	MARATHON OIL -		

Sample ID: SW 4 - 2' NORTH (H803795-09)

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	12/28/2018	ND	1.70	85.0	2.00	3.29		
Toluene*	<0.050	0.050	12/28/2018	ND	1.76	87.9	2.00	3.13		
Ethylbenzene*	<0.050	0.050	12/28/2018	ND	1.75	87.3	2.00	3.36		
Total Xylenes*	<0.150	0.150	12/28/2018	ND	5.19	86.6	6.00	3.28		
Total BTEX	<0.300	0.300	12/28/2018	ND						

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

Chloride, SM4500Cl-B		mg/kg		Analyzed By: HM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	<16.0	16.0	12/28/2018	ND	400	100	400	7.69		

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	12/28/2018	ND	185	92.4	200	1.69		
DRO >C10-C28*	<10.0	10.0	12/28/2018	ND	223	112	200	5.94		
EXT DRO >C28-C36	<10.0	10.0	12/28/2018	ND						

Surrogate: 1-Chlorooctane 83.7 % 41-142

Surrogate: 1-Chlorooctadecane 81.5 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 WHITE BUFFALO
 NATALIE GLADDEN
 8908 YALE AVE #210
 TULSA OK, 74137
 Fax To:

Received:	12/27/2018	Sampling Date:	12/21/2018
Reported:	12/28/2018	Sampling Type:	Soil
Project Name:	HUSKEY - MCKAY FED #001	Sampling Condition:	Cool & Intact
Project Number:	CLOSURE	Sample Received By:	Tamara Oldaker
Project Location:	MARATHON OIL -		

Sample ID: SW 4 - 2' SOUTH (H803795-10)

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	12/28/2018	ND	1.70	85.0	2.00	3.29		
Toluene*	<0.050	0.050	12/28/2018	ND	1.76	87.9	2.00	3.13		
Ethylbenzene*	<0.050	0.050	12/28/2018	ND	1.75	87.3	2.00	3.36		
Total Xylenes*	<0.150	0.150	12/28/2018	ND	5.19	86.6	6.00	3.28		
Total BTEX	<0.300	0.300	12/28/2018	ND						

Surrogate: 4-Bromofluorobenzene (PID) 101 % 73.3-129

Chloride, SM4500CI-B		mg/kg		Analyzed By: HM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	1720	16.0	12/28/2018	ND	416	104	400	0.00		

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	12/28/2018	ND	185	92.4	200	1.69		
DRO >C10-C28*	<10.0	10.0	12/28/2018	ND	223	112	200	5.94		
EXT DRO >C28-C36	<10.0	10.0	12/28/2018	ND						

Surrogate: 1-Chlorooctane 82.0 % 41-142

Surrogate: 1-Chlorooctadecane 80.5 % 37.6-147

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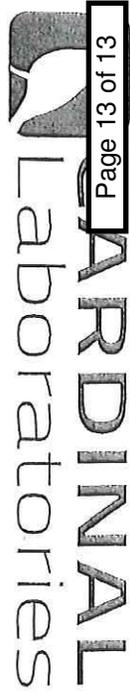


Celey D. Keene, Lab Director/Quality Manager

Notes and Definitions

- 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





* RUSH *

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

BILL TO

ANALYSIS REQUEST

Company Name: Marathon Oil		P.O. #:	
Project Manager: Colleen Rougen		Company: White Buffalo	
Address:		Attn: Steve McFarlin	
City:	State:	Address: 8908 Yule Ave #210	
Phone #:	Fax #:	City: Julia	
Project #:	Project Owner:	State: OK Zip: 74137	
Project Name:	Project Location: Huskey McKay Std 001 (Closure)	Phone #: 918-660-0999	
Sampler Name: Monique Cueto	FOR LAB USE ONLY	Fax #:	
Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS
H803795	South Composite	GROUNDWATER	WASTEWATER
1	North Composite - U'	SOIL	OIL
2	SW1 - 2' North	SLUDGE	OTHER:
3	SW1 - 2' South	ACID/BASE:	ICE / COOL
4	SW2 - 1' North	OTHER:	DATE
5	SW2 - 1' South	DATE	TIME
6	SW3 - 2' North	✓	✓
7	SW3 - 2' South	✓	✓
8	SW3 - 2' North	✓	✓
9	SW4 - 2' North	✓	✓
10	SW4 - 2' South	✓	✓

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Relinquished By: **YM Cueto** Date: **12/17/18** Received By: **[Signature]** Date: **12/22/18**
 Relinquished By: **[Signature]** Date: **12/22/18** Received By: **[Signature]** Date: **12/22/18**
 Time: **15:00**

Delivered By: **(Circle One)** **UPS** **Bus** **Other** **Stic #49**
 Sample Condition: Intact Cool Yes No No No
 CHECKED BY: **[Signature]** (Initials) **YO**

REMARKS: **Email: natalie.glaetson@whitebuffalo.com**
Monique.Cueto@whitebuffalo.com



December 28, 2018

NATALIE GLADDEN
WHITE BUFFALO
8908 YALE AVE #210
TULSA, OK 74137

RE: HUSKEY - MCKAY FED #001

Enclosed are the results of analyses for samples received by the laboratory on 12/27/18 15:00.

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 accredited 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,

A handwritten signature in black ink that reads "Celey D. Keene". The signature is written in a cursive, flowing style.

Celey D. Keene
Lab Director/Quality Manager

Analytical Results For:

 WHITE BUFFALO
 NATALIE GLADDEN
 8908 YALE AVE #210
 TULSA OK, 74137
 Fax To:

Received:	12/27/2018	Sampling Date:	12/21/2018
Reported:	12/28/2018	Sampling Type:	Soil
Project Name:	HUSKEY - MCKAY FED #001	Sampling Condition:	Cool & Intact
Project Number:	LEAK	Sample Received By:	Tamara Oldaker
Project Location:	MARATHON OIL -		

Sample ID: SP 1 - 2' (H803796-01)

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	12/28/2018	ND	1.70	85.0	2.00	3.29		
Toluene*	<0.050	0.050	12/28/2018	ND	1.76	87.9	2.00	3.13		
Ethylbenzene*	<0.050	0.050	12/28/2018	ND	1.75	87.3	2.00	3.36		
Total Xylenes*	<0.150	0.150	12/28/2018	ND	5.19	86.6	6.00	3.28		
Total BTEX	<0.300	0.300	12/28/2018	ND						

Surrogate: 4-Bromofluorobenzene (PID) 96.3 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: HM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	80.0	16.0	12/28/2018	ND	416	104	400	0.00		

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	12/28/2018	ND	185	92.4	200	1.69		
DRO >C10-C28*	<10.0	10.0	12/28/2018	ND	223	112	200	5.94		
EXT DRO >C28-C36	<10.0	10.0	12/28/2018	ND						

Surrogate: 1-Chlorooctane 79.1 % 41-142

Surrogate: 1-Chlorooctadecane 78.1 % 37.6-147

Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 WHITE BUFFALO
 NATALIE GLADDEN
 8908 YALE AVE #210
 TULSA OK, 74137
 Fax To:

Received:	12/27/2018	Sampling Date:	12/21/2018
Reported:	12/28/2018	Sampling Type:	Soil
Project Name:	HUSKEY - MCKAY FED #001	Sampling Condition:	Cool & Intact
Project Number:	LEAK	Sample Received By:	Tamara Oldaker
Project Location:	MARATHON OIL -		

Sample ID: SP 3 - 2' (H803796-02)

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	12/28/2018	ND	1.70	85.0	2.00	3.29		
Toluene*	<0.050	0.050	12/28/2018	ND	1.76	87.9	2.00	3.13		
Ethylbenzene*	<0.050	0.050	12/28/2018	ND	1.75	87.3	2.00	3.36		
Total Xylenes*	<0.150	0.150	12/28/2018	ND	5.19	86.6	6.00	3.28		
Total BTEX	<0.300	0.300	12/28/2018	ND						

Surrogate: 4-Bromofluorobenzene (PID) 90.9 % 73.3-129

Chloride, SM4500CI-B		mg/kg		Analyzed By: HM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	272	16.0	12/28/2018	ND	416	104	400	0.00		

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	12/28/2018	ND	185	92.4	200	1.69		
DRO >C10-C28*	<10.0	10.0	12/28/2018	ND	223	112	200	5.94		
EXT DRO >C28-C36	<10.0	10.0	12/28/2018	ND						

Surrogate: 1-Chlorooctane 85.8 % 41-142

Surrogate: 1-Chlorooctadecane 84.3 % 37.6-147

Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 WHITE BUFFALO
 NATALIE GLADDEN
 8908 YALE AVE #210
 TULSA OK, 74137
 Fax To:

Received:	12/27/2018	Sampling Date:	12/21/2018
Reported:	12/28/2018	Sampling Type:	Soil
Project Name:	HUSKEY - MCKAY FED #001	Sampling Condition:	Cool & Intact
Project Number:	LEAK	Sample Received By:	Tamara Oldaker
Project Location:	MARATHON OIL -		

Sample ID: SP 4 - 6' (H803796-03)

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	12/28/2018	ND	1.70	85.0	2.00	3.29		
Toluene*	<0.050	0.050	12/28/2018	ND	1.76	87.9	2.00	3.13		
Ethylbenzene*	<0.050	0.050	12/28/2018	ND	1.75	87.3	2.00	3.36		
Total Xylenes*	<0.150	0.150	12/28/2018	ND	5.19	86.6	6.00	3.28		
Total BTEX	<0.300	0.300	12/28/2018	ND						

Surrogate: 4-Bromofluorobenzene (PID) 87.3 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: HM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	608	16.0	12/28/2018	ND	416	104	400	0.00		

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	12/28/2018	ND	185	92.4	200	1.69		
DRO >C10-C28*	<10.0	10.0	12/28/2018	ND	223	112	200	5.94		
EXT DRO >C28-C36	<10.0	10.0	12/28/2018	ND						

Surrogate: 1-Chlorooctane 87.5 % 41-142

Surrogate: 1-Chlorooctadecane 84.7 % 37.6-147

Cardinal Laboratories

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Celey D. Keene, Lab Director/Quality Manager

Notes and Definitions

- 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

Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



January 10, 2019

NATALIE GLADDEN
WHITE BUFFALO
8908 YALE AVE #210
TULSA, OK 74137

RE: HUSKEY - MCKAY FED #001

Enclosed are the results of analyses for samples received by the laboratory on 01/09/19 16:15.

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 accredited 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,

A handwritten signature in black ink that reads "Celey D. Keene". The signature is written in a cursive style.

Celey D. Keene
Lab Director/Quality Manager

Analytical Results For:

 WHITE BUFFALO
 NATALIE GLADDEN
 8908 YALE AVE #210
 TULSA OK, 74137
 Fax To:

Received:	01/09/2019	Sampling Date:	01/07/2019
Reported:	01/10/2019	Sampling Type:	Soil
Project Name:	HUSKEY - MCKAY FED #001	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	MARATHON OIL -		

Sample ID: SW 4 - 5' SOUTH (H900062-01)

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	01/10/2019	ND	2.09	105	2.00	1.78	
Toluene*	<0.050	0.050	01/10/2019	ND	2.22	111	2.00	3.34	
Ethylbenzene*	<0.050	0.050	01/10/2019	ND	2.21	111	2.00	0.317	
Total Xylenes*	<0.150	0.150	01/10/2019	ND	6.79	113	6.00	0.690	
Total BTEX	<0.300	0.300	01/10/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 99.1 % 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	240	16.0	01/10/2019	ND	416	104	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	01/10/2019	ND	240	120	200	1.28	
DRO >C10-C28*	<10.0	10.0	01/10/2019	ND	226	113	200	3.48	
EXT DRO >C28-C36	<10.0	10.0	01/10/2019	ND					

Surrogate: 1-Chlorooctane 89.3 % 41-142

Surrogate: 1-Chlorooctadecane 83.0 % 37.6-147

Cardinal Laboratories

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 WHITE BUFFALO
 NATALIE GLADDEN
 8908 YALE AVE #210
 TULSA OK, 74137
 Fax To:

Received:	01/09/2019	Sampling Date:	01/07/2019
Reported:	01/10/2019	Sampling Type:	Soil
Project Name:	HUSKEY - MCKAY FED #001	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	MARATHON OIL -		

Sample ID: SP 4 - 8' (NORTH) (H900062-02)

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	01/10/2019	ND	2.09	105	2.00	1.78	
Toluene*	<0.050	0.050	01/10/2019	ND	2.22	111	2.00	3.34	
Ethylbenzene*	<0.050	0.050	01/10/2019	ND	2.21	111	2.00	0.317	
Total Xylenes*	<0.150	0.150	01/10/2019	ND	6.79	113	6.00	0.690	
Total BTEX	<0.300	0.300	01/10/2019	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	160	16.0	01/10/2019	ND	416	104	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	01/10/2019	ND	240	120	200	1.28	
DRO >C10-C28*	<10.0	10.0	01/10/2019	ND	226	113	200	3.48	
EXT DRO >C28-C36	<10.0	10.0	01/10/2019	ND					

Surrogate: 1-Chlorooctane 88.9 % 41-142

Surrogate: 1-Chlorooctadecane 82.4 % 37.6-147

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

 WHITE BUFFALO
 NATALIE GLADDEN
 8908 YALE AVE #210
 TULSA OK, 74137
 Fax To:

Received:	01/09/2019	Sampling Date:	01/07/2019
Reported:	01/10/2019	Sampling Type:	Soil
Project Name:	HUSKEY - MCKAY FED #001	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	MARATHON OIL -		

Sample ID: COM - 8' (NORTH) (H900062-03)

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	01/10/2019	ND	2.09	105	2.00	1.78	
Toluene*	<0.050	0.050	01/10/2019	ND	2.22	111	2.00	3.34	
Ethylbenzene*	<0.050	0.050	01/10/2019	ND	2.21	111	2.00	0.317	
Total Xylenes*	<0.150	0.150	01/10/2019	ND	6.79	113	6.00	0.690	
Total BTEX	<0.300	0.300	01/10/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 97.3 % 73.3-129

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	128	16.0	01/10/2019	ND	416	104	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	01/10/2019	ND	240	120	200	1.28	
DRO >C10-C28*	<10.0	10.0	01/10/2019	ND	226	113	200	3.48	
EXT DRO >C28-C36	<10.0	10.0	01/10/2019	ND					

Surrogate: 1-Chlorooctane 90.9 % 41-142

Surrogate: 1-Chlorooctadecane 86.6 % 37.6-147

Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Notes and Definitions

- QR-03 The RPD value for the sample duplicate or MS/MSD was outside of QC acceptance limits due to matrix interference. QC batch accepted based on LCS and/or LCS/D recovery and/or RPD values.
- 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

* RUSH *

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

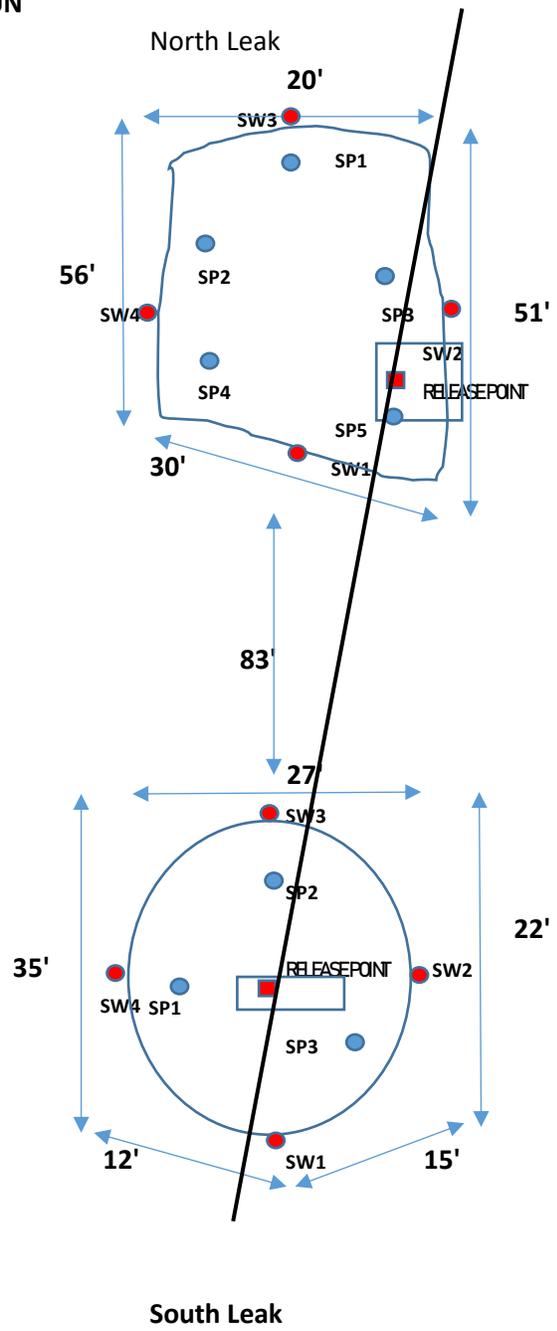
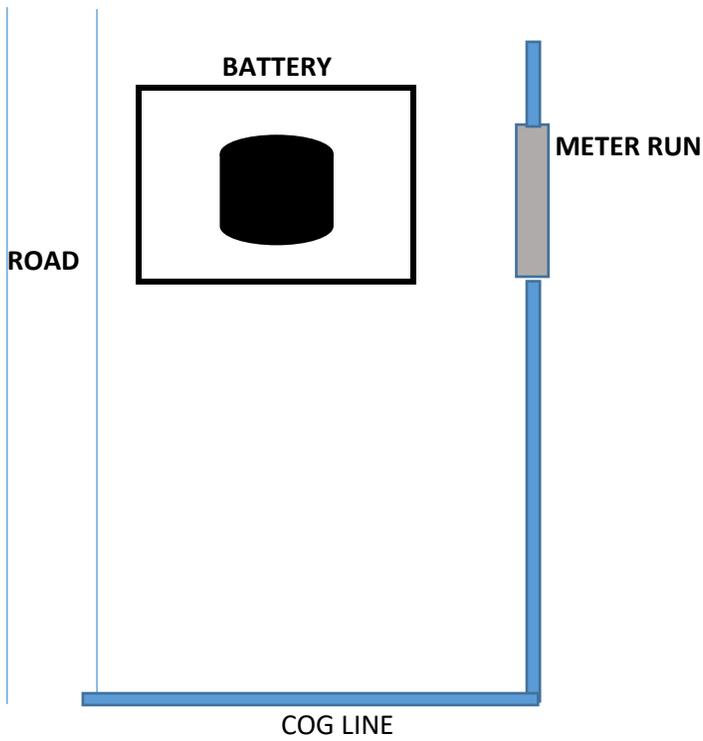
Company Name: Marathon Oil P.O. #: BILL TO
 Project Manager: Callie Rougan Company: White Buffalo
 Address: _____ Attn: Steve McFarlin
 City: _____ State: _____ Zip: _____
 Phone #: _____ Fax #: _____
 Project #: _____ Project Owner: _____
 Project Name: _____ City: Julian
 Project Location: Huskey-McRay Sub #1 State: OK Zip: 74137
 Sampler Name: _____ Phone #: 918-660-0999 Fax #: _____

Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX						DATE	TIME	ANALYSIS REQUEST
				GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :			
HP00062	1 SW4-5' South	G1	1	X						1-7-19	1:23	Chlorides
	2 SP4-8' North	G1	1	X						1-7-19	1:30	BTEX
	3 Com-8' North	G1	1	X						1-7-19	1:36	TPH

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Relinquished By: _____ Date: _____ Time: _____
 Received By: April Jensen Date: _____ Time: _____
 Delivered By: (Circle One) _____
 Sampler - UPS - Bus - Other: -6602/#97
 Sample Condition: Cool Intact
 Checked By: _____
 Phone Result: Yes No Add'l Phone #:
 Fax Result: Yes No Add'l Fax #:
 REMARKS: Email: natalie.alexander@whitebuffalo.com
Monique. Cueto@whitebuffalo.com

* R U S H *



MARATHON - HUSKEY-MCKAY FED 001
 RELEASE DATE: 12/4/18
 API: 30-005-61616

**MARATHON
HUSKEY-MCKAY 001 FLOWLINE LEAK
BEFORE PHOTOS**



**MARATHON
HUSKEY-MCKAY 001 FLOWLINE LEAK
BEFORE PHOTOS**



**MARATHON
HUSKEY-MCKAY 001 FLOWLINE LEAK
BEFORE PHOTOS**



**MARATHON
HUSKEY-MCKAY 001 FLOWLINE LEAK
BEFORE PHOTOS**



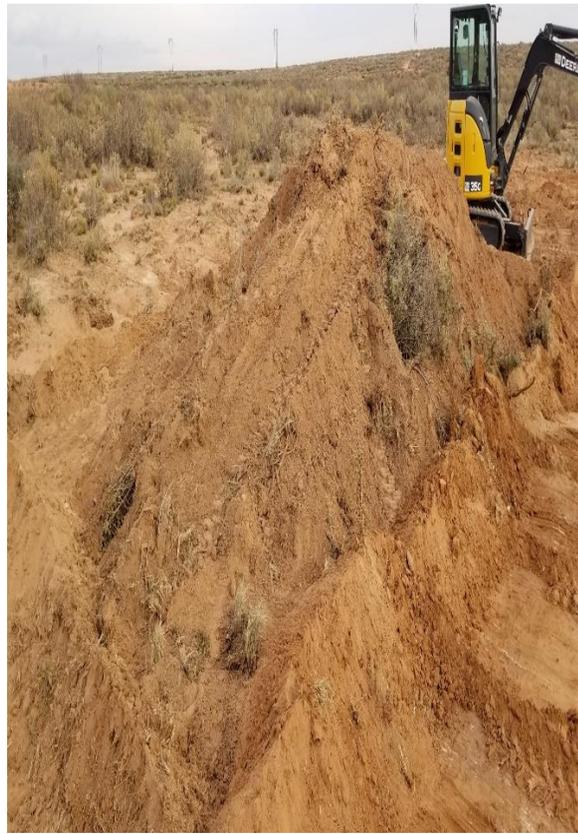
**MARATHON
HUSKEY-MCKAY FLOWLINE LEAK
DURING PHOTOS**



**MARATHON
HUSKEY-MCKAY FLOWLINE LEAK
DURING PHOTOS**



**MARATHON
HUSKEY-MCKAY FLOWLINE LEAK
DURING PHOTOS**



**MARATHON
HUSKEY-MCKAY FLOWLINE LEAK
DURING PHOTOS**



**MARATHON
HUSKEY-MCKAY FLOWLINE LEAK
DURING PHOTOS**



**MARATHON
HUSKEY-MCKAY FLOWLINE LEAK
DURING PHOTOS**



**MARATHON
HUSKEY-MCKAY FLOWLINE LEAK
DURING PHOTOS**



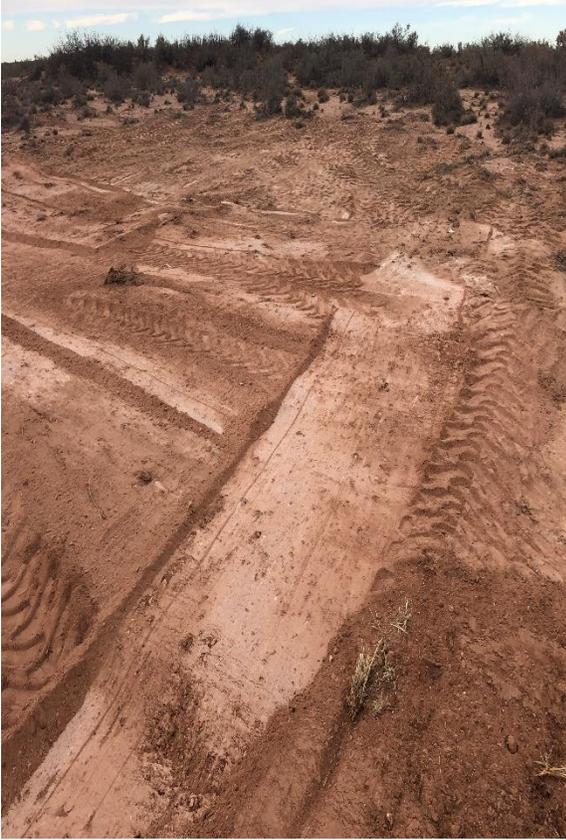
**MARATHON
HUSKEY-MCKAY 001 FLOWLINE LEAK
AFTER SEEDING**



**MARATHON
HUSKEY-MCKAY 001 FLOWLINE LEAK
AFTER SEEDING**



**MARATHON
HUSKEY-MCKAY 001 FLOWLINE LEAK
AFTER SEEDING**



Curtis and Curtis Seed

4500 North Prince
Clovis, NM 88101
Phone: (575) 762-4759
www.curtisseed.com

**White Buffalo Environmental
2 Acre Custom Mix
1 - 2 Acre Bag @ 20.94 Bulk Pounds**

Lot#: M-15513

<u>Item</u>	<u>Origin</u>	<u>Purity</u>	<u>Germ</u>	<u>Dormant</u>	<u>Total Germination</u>	<u>Test Date</u>	<u>Total PLS Pounds</u>
Blue Grama	New Mexico	10.73%	34.00%	55.00%	89.00%	11/18	2.00
Variety Not Stated							
Sand Dropseed	Colorado	9.84%	4.00%	93.00%	97.00%	04/18	2.00
Variety Not Stated							
Plains Bristlegrass	Texas	9.95%	18.00%	78.00%	96.00%	07/18	2.00
Variety Not Stated							
Buckwheat	Missouri	10.16%	94.00%	0.00%	94.00%	03/18	2.00
Variety Not Stated							
Four-Wing Saltbush	New Mexico	11.37%	84.00%	0.00%	84.00%	08/18	2.00
Variety Not Stated							
Desert Globe Mallow	Mexico	9.65%	99.00%	0.00%	99.00%(TZ)	07/18	2.00
Variety Not Stated							
Alkali Sacaton	New Mexico	29.54%	95.00%	2.00%	97.00%	07/18	6.00
Variety Not Stated							
Other Crop:	0.38%	There Are 1 Bags For This Mix			Total Bulk Pounds:	20.94	
Weed Seed:	0.06%	This Bag Weighs 20.94 Bulk Pounds					
Inert Matter:	8.32%	Use This Bag For 2 Acres					