

Mr. Aaron M. Hale, P.G.  
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Subject:

**Summary Report for Site MC-8  
McElmo Dome Unit, Southwestern Colorado**

ENVIRONMENT

Dear Mr. Hale:

Date:

February 8, 2017

Included herein is the Summary Report for site MC-8, which is part of the McElmo Dome Unit in southwestern Colorado. Arcadis U.S., Inc. (Arcadis) completed field work at site MC-8 in support of Kinder Morgan CO<sub>2</sub> Company, LP's (KM) efforts to evaluate how the former drill pits were reclaimed and to determine if remediation is warranted, as may be required by the Colorado Oil and Gas Conservation Commission (COGCC).

Contact:

Kelli Jo Preston

Phone:

303.471.3403

### Objectives

The objective of the work completed at site MC-8 (described in the Form 27 application [**Attachment A**]) was to demonstrate that *"soils beneath the pit meet the acceptable concentration levels for various constituents of concern (COCs), as outlined in COGCC's Table 910-1 of their 900 Series Rules"*. Additionally, if groundwater was encountered during site activities, characterization would be conducted.

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Our ref:

CO002055

### Methodology

Soil conditions beneath the former pit location were investigated by advancing eight shallow soil borings as illustrated in **Figure 1**. The soil borings were used to evaluate and confirm the thickness of clean soil cover material, evaluate thickness and characterize COC concentrations of any drilling material left in the

former pit, document the presence or absence of any liner material, and determine the depth and characteristics of native soils beneath the former pit extent. Arcadis subcontracted Kyvek Drilling, out of Aztec, New Mexico to complete the borings.

Soil borings were advanced using hollow stem auger methods, with collection of continuous soil cores, to a target depth of 2 feet below the bottom of the former pit excavation, or an approximate depth up to 15 to 20 feet below ground surface (bgs). Detailed boring logs for the shallow soil borings are provided in **Attachment B**. The borings were drilled with a 5-foot section of hollow stem auger and borehole materials were continuously sampled using two-foot long split spoons. An Arcadis geologist recorded sample recovery footages and field screened recovered materials in one-foot intervals using a photo-ionization detector (PID) and a soil conductivity probe. Sample materials were logged in accordance with the unified soil classification system (USCS) and field boring logs were prepared with annotations regarding the disposition and depth of any foreign debris (e.g., liner materials) encountered. All shallow soil borings were backfilled using auger cuttings. The drillers also added hydrated bentonite chips, as necessary, to backfill each location and meet existing grade.

Arcadis collected soil aliquots from each recovered one-foot interval in a labeled Ziplock® baggie to facilitate headspace PID screening. Samples from select intervals were transferred into laboratory prepared sample containers for subsequent laboratory analysis of COCs. All samples were submitted to ALS Environmental Laboratory (ALS) for analysis. Each soil sample was analyzed for the following:

- Metals by USEPA Method SW6020A
- Volatiles by USEPA Method SW8260
- Soluble cations (calcium, magnesium, sodium) by Method La29B-6020
- Hexavalent chromium by USEPA Method SW7196 (trivalent chromium was subsequently calculated)
- Electrical conductivity (EC), saturation point, and sodium absorption ratio (SAR) by LaDNR-29B
- Gasoline range organics (GRO) by USEPA Method SW8015
- Diesel range organics (DRO) by USEPA Method SW8015M
- Mercury by USEPA Method SW7471A
- pH by USEPA Method SW9045B

Photos were also collected at the site documenting current surface vegetation; reclamation is considered successful by COGCC when vegetative cover reaches 80%. The photos provide an indication of current land use at, and surrounding the site, which can be used as reference for comparison purposes. The photo log for site MC-8 is provided in **Attachment C**.

Detailed notes were kept during the field activities completed at site MC-8 and are provided in **Attachment D**.

## Results

Analytical results received from ALS for the soil samples collected at site MC-8 are presented in **Table 1**. Laboratory report(s) are provided in **Attachment E**.

A total of 24 soil samples collected from eight soil borings, were submitted to ALS for site MC-8. For comparison purposes, **Table 1** also includes screening levels (SLs) where applicable, as defined in Table 910-1 of the COGCC's 900 Series Rules. Analytical results that exceed the Table 910-1 SLs are highlighted in yellow. Key findings are summarized as follows:

- Two EC exceedances, one pH exceedance, and two SAR exceedances were observed in soils shallower than 3 feet from two boring locations (boring 3 and boring 6; **Figure 1** and **Table 1**). Per COGCC guidance, provided under their Rules and Regulation frequently asked questions (FAQs) from 2008 (COGCC 2016); EC, pH, and SAR SLs only need to be applied to samples collected from the first 3 feet bgs. Therefore, any SL exceedances observed at a depth greater than 3 feet bgs "should not adversely affect the successful reclamation of the site" and therefore have not been highlighted.
- Arsenic was observed in multiple locations at concentrations greater than SLs, with a maximum observed concentration of 4.75 milligrams per kilogram (mg/kg). It is generally accepted that background concentrations of arsenic may be as high as 11 mg/kg per the Colorado Department of Public Health and Environment (CDPHE 2014, **Attachment F**). All concentrations were below 11 mg/kg.
- Liner material was observed at 3, 5, and 2 feet bgs in borings 2, 6, and 7, respectively, but was otherwise absent from the other borings.

## References

- Colorado Department of Public Health and Environment (CDPHE). 2014. Arsenic Concentrations in Soil: Risk Management Guidance for Evaluating. July.
- Colorado Oil and Gas Conservation Commission (COGCC). Rules & Regulations online FAQ from 2008, accessed July 14, 2016. <http://cogcc.state.co.us/documents/reg/Rules/2008/FAQ.cfm#204>

Mr. Aaron Hale  
February 8, 2017

Please let us know if you have any questions regarding the content of this summary report.

Sincerely,

Arcadis U.S., Inc.

A handwritten signature in black ink that reads "Kelli Jo Preston". The signature is written in a cursive, flowing style.

Kelli Jo Preston  
Project Manager

#### **Tables**

- 1 Soil Analytical Results for Samples Collected at McElmo Dome Site MC-8

#### **Figures**

- 1 MC-8 Site Features

#### **Attachments**

- A Form 27 Application
- B Boring Logs
- C Photo Log
- D Field Notes
- E Laboratory Analytical Reports
- F CDPHE White Paper on Arsenic Concentrations in Soil

*Use or disclosure of information contained on this sheet is subject to the restriction and disclaimer located on the signature page of this document.*

# TABLES



Table 1 - Soil Analytical Results for Samples Collected at McElmo Dome Site MC-8  
Kinder Morgan CO2 Company LP

						Metals											Volatiles					
Site	Sample Location	Depth (ft bgs)	Date Collected	Sample ID	Matrix	Arsenic	Barium	Boron	Cadmium	Chromium	Copper	Lead	Nickel	Selenium	Silver	Zinc	Benzene	Ethylbenzene	m&p-Xylenes	o-Xylene	Toluene	Total Xylenes
			Table 910-1 Screening Level			0.39	15000	2 mg/L (results below in mg/kg)	70	NS	3100	400	1600	390	390	23000	0.17	100	NS	NS	85	175
			Units			mg/kg											mg/kg					
MC-8	Boring 1	0-1	11/17/2016	MC-8-1-0-1-111716	Soil	2.44	137	3.47	< 0.0475	7.93	7.11	6.92	8.06	< 0.171	< 0.0761	22.4	< 0.00048	< 0.00068	< 0.0016	< 0.00097	< 0.00058	< 0.00097
MC-8	Boring 1	6-7	11/17/2016	MC-8-1-6-7-111716	Soil	2.61	160	2.91	< 0.0469	7.84	5.59	6.74	9.39	< 0.169	< 0.0750	21.4	< 0.00049	< 0.00069	< 0.0016	< 0.00098	< 0.00059	< 0.00098
MC-8	Boring 1	9-10	11/17/2016	MC-8-1-9-10-111716	Soil	1.67	105	2.66	< 0.0460	4.14	2.98	3.52	6.08	< 0.165	< 0.0735	12.1	< 0.00048	< 0.00068	< 0.0016	< 0.00097	< 0.00058	< 0.00097
MC-8	Boring 2	1-2	11/17/2016	MC-8-2-1-2-111716	Soil	2.85	164	3.06	< 0.0478	8.58	7.30	7.80	8.77	< 0.172	< 0.0766	23.9	< 0.00050	< 0.00069	< 0.0016	< 0.00099	< 0.00059	< 0.00099
MC-8	Boring 2	8-9	11/17/2016	MC-8-2-8-9-111716	Soil	1.84	93.9	6.55	< 0.0458	7.52	3.83	4.14	4.44	< 0.165	< 0.0734	18.3	< 0.00049	< 0.00069	< 0.0016	< 0.00098	< 0.00059	< 0.00098
MC-8	Boring 2	14-15	11/17/2016	MC-8-2-14-15-111716	Soil	2.00	141	2.61	< 0.0459	2.81	1.90	2.77	3.26	< 0.165	< 0.0735	9.13	< 0.00050	< 0.00069	< 0.0016	< 0.00099	< 0.00059	< 0.00099
MC-8	Boring 3	1-2	11/17/2016	MC-8-3-1-2-111716	Soil	2.17	131	2.67	< 0.0478	6.62	5.46	5.99	6.98	< 0.172	< 0.0765	18.9	< 0.00048	< 0.00068	< 0.0016	< 0.00097	< 0.00058	< 0.00097
MC-8	Boring 3	6-7	11/17/2016	MC-8-3-6-7-111716	Soil	2.22	188	3.56	< 0.0467	5.96	3.44	5.02	7.10	< 0.168	< 0.0747	16.3	< 0.00048	< 0.00068	< 0.0016	< 0.00097	< 0.00058	< 0.00097
MC-8	Boring 3	9-10	11/17/2016	MC-8-3-9-10-111716	Soil	2.43	122	4.03	< 0.0472	5.36	3.75	4.46	6.65	< 0.170	< 0.0755	15.0	< 0.00049	< 0.00069	< 0.0016	< 0.00098	< 0.00059	< 0.00098
MC-8	Boring 4	2-3	11/17/2016	MC-8-4-2-3-111716	Soil	2.15	127	2.70	< 0.0472	6.52	6.02	6.35	7.17	< 0.170	< 0.0755	19.7	< 0.00049	< 0.00069	< 0.0016	< 0.00098	< 0.00059	< 0.00098
MC-8	Boring 4	3-4	11/17/2016	MC-8-4-3-4-111716	Soil	3.29	191	3.83	< 0.0461	9.20	6.21	7.50	9.58	< 0.166	< 0.0738	26.5	< 0.00049	< 0.00069	< 0.0016	< 0.00098	< 0.00059	< 0.00098
MC-8	Boring 4	8-9	11/17/2016	MC-8-4-8-9-111716	Soil	4.42	359	< 6.64	< 0.237	< 0.427	2.91	< 0.237	4.02	< 0.853	< 0.379	7.94	< 0.00048	< 0.00067	< 0.0015	< 0.00096	< 0.00058	< 0.00096
MC-8	Boring 5	2-3	11/17/2016	MC-8-5-2-3-111716	Soil	1.71	114	3.41	< 0.0479	6.29	7.06	6.38	6.92	< 0.172	< 0.0766	20.8	< 0.00050	< 0.00069	< 0.0016	< 0.00099	< 0.00059	< 0.00099
MC-8	Boring 5	4-5	11/17/2016	MC-8-5-4-5-111716	Soil	3.13	202	3.66	< 0.0456	9.00	5.45	7.13	9.28	< 0.164	< 0.0729	23.3	< 0.00048	< 0.00068	< 0.0016	< 0.00097	< 0.00058	< 0.00097
MC-8	Boring 5	8-9	11/17/2016	MC-8-5-8-9-111716	Soil	< 0.468	313	< 6.56	< 0.234	5.17	3.93	3.80	6.90	< 0.843	< 0.375	14.7	< 0.00049	< 0.00069	< 0.0016	< 0.00098	< 0.00059	< 0.00098
MC-8	Boring 6	2-3	11/17/2016	MC-8-6-2-3-111716	Soil	4.75	90.3	51.2	< 0.0471	6.81	4.92	6.34	5.48	0.496	< 0.0754	17.4	< 0.00048	< 0.00067	< 0.0015	< 0.00096	< 0.00058	< 0.00096
MC-8	Boring 6	5-6	11/17/2016	MC-8-6-5-6-111716	Soil	3.92	132	55.8	< 0.0463	9.21	5.79	5.80	6.26	0.505	< 0.0740	18.7	< 0.00050	< 0.00069	< 0.0016	< 0.00099	< 0.00059	< 0.00099
MC-8	Boring 6	11-12	11/17/2016	MC-8-6-11-12-111716	Soil	2.07	365	5.05	< 0.0465	6.22	4.41	5.23	6.54	< 0.167	< 0.0744	18.6	< 0.00048	< 0.00067	< 0.0015	< 0.00096	< 0.00058	< 0.00096
MC-8	Boring 7	2-3	11/17/2016	MC-8-7-2-3-111716	Soil	2.23	124	3.48	< 0.0478	7.87	7.96	7.16	8.26	< 0.172	< 0.0765	23.6	< 0.00049	< 0.00069	< 0.0016	< 0.00098	< 0.00059	< 0.00098
MC-8	Boring 7	6-7	11/17/2016	MC-8-7-6-7-111716	Soil	2.53	136	3.37	< 0.0474	7.85	8.80	7.27	7.66	< 0.171	< 0.0759	21.5	< 0.00050	< 0.00070	< 0.0016	< 0.0010	< 0.00060	< 0.0010
MC-8	Boring 7	13-14	11/17/2016	MC-8-7-13-14-111716	Soil	2.57	116	4.09	< 0.0475	7.94	5.74	6.29	9.72	< 0.171	< 0.0761	22.7	< 0.00051	< 0.00071	< 0.0016	< 0.0010	< 0.00061	< 0.0010
MC-8	Boring 8	2-3	11/17/2016	MC-8-8-2-3-111716	Soil	2.55	148	3.34	< 0.0473	8.34	7.28	7.49	8.28	< 0.170	< 0.0757	24.3	< 0.00048	< 0.00068	< 0.0016	< 0.00097	< 0.00058	< 0.00097
MC-8	Boring 8	9-10	11/17/2016	MC-8-8-9-10-111716	Soil	1.89	150	3.40	< 0.0479	5.19	3.58	4.53	6.68	< 0.172	< 0.0766	15.1	< 0.00048	< 0.00068	< 0.0016	< 0.00097	< 0.00058	< 0.00097
MC-8	Boring 8	11-12	11/17/2016	MC-8-8-11-12-111716	Soil	2.25	123	3.02	< 0.0457	5.40	4.71	4.62	6.89	< 0.165	< 0.0731	16.5	< 0.00048	< 0.00067	< 0.0015	< 0.00096	< 0.00058	< 0.00096

Notes:  
bgs = below ground surface  
Cr(III) = Trivalent Chromium  
Cr(VI) = Hexavalent Chromium  
DRO = Diesel Range Organics  
EC = Electrical Conductivity  
ft = feet  
GRO = Gasoline Range Organics  
meq/meq = milliequivalent  
mg/kg = milligrams per kilogram  
mg/L = milligrams per liter  
mmhos/cm = micromho per centimeter  
NS = not specified  
pH = acidic/basic of water  
SAR = Sodium Adsorption Ratio  
sat = saturation  
TPH= total petroleum hydrocarbons  
Exceed the corresponding Table 910-1 concentration screening level.

Table 1 - Soil Analytical Results for Samples Collected at McElmo Dome Site MC-8  
Kinder Morgan CO2 Company LP

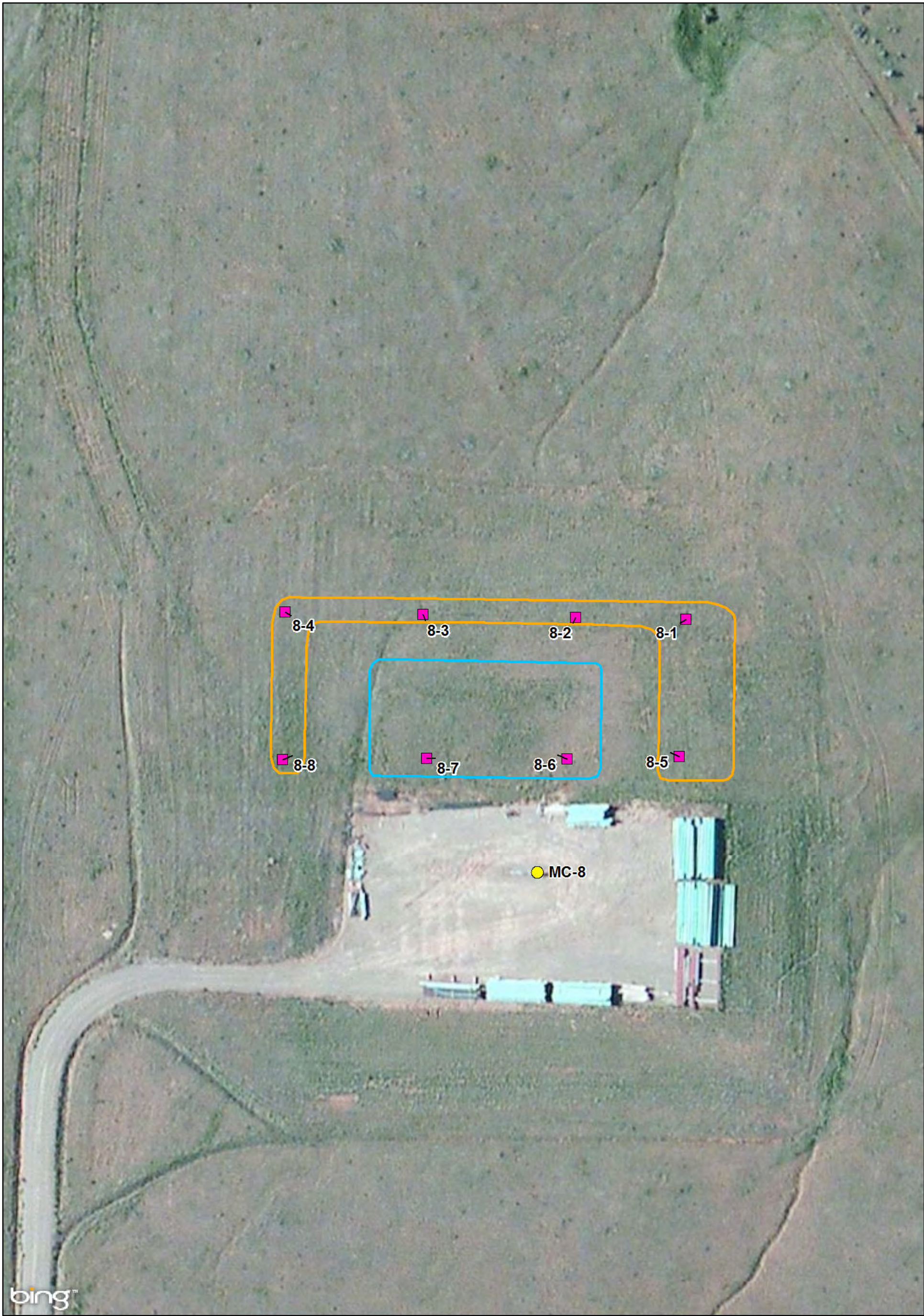
						Soluble Cations for SAR			Chromium		EC (mmhos/cm@25C)	TPH		Mercury	pH Units	SAR
Site	Sample Location	Depth (ft bgs)	Date Collected	Sample ID	Matrix	Calcium	Magnesium	Sodium	Cr(III)	Cr(VI)	EC@sat	GRO	DRO	Mercury	pH	SAR
			Table 910-1 Screening Level			NS	NS	NS	120000	23	<4 mmhos/cm or 2x background	500	23	6-9	<12	
			Units			mg/L			mg/kg		mmhos/cm	mg/kg		mg/kg	SU	meq/meq
MC-8	Boring 1	0-1	11/17/2016	MC-8-1-0-1-111716	Soil	108	16.5	5.78	7.93	< 0.298	1.60	< 0.010	< 0.50	0.0111	7.90	0.137
MC-8	Boring 1	6-7	11/17/2016	MC-8-1-6-7-111716	Soil	83.8	20.4	25.3	7.84	< 0.299	1.78	< 0.010	< 0.50	0.00911	7.66	0.643
MC-8	Boring 1	9-10	11/17/2016	MC-8-1-9-10-111716	Soil	98.9	16.4	10.9	< 0.700	< 0.298	1.90	< 0.0099	< 0.50	0.0150	8.13	0.267
MC-8	Boring 2	1-2	11/17/2016	MC-8-2-1-2-111716	Soil	170	5.63	82.6	8.58	< 0.299	3.02	< 0.010	< 0.50	0.0110	8.16	1.70
MC-8	Boring 2	8-9	11/17/2016	MC-8-2-8-9-111716	Soil	382	< 5.00	844	7.52	< 0.300	11.5	0.14	4.2	< 0.000504	11.4	11.9
MC-8	Boring 2	14-15	11/17/2016	MC-8-2-14-15-111716	Soil	96.1	23.3	48.6	< 0.700	< 0.298	2.91	< 0.0099	< 0.50	0.0343	8.15	1.15
MC-8	Boring 3	1-2	11/17/2016	MC-8-3-1-2-111716	Soil	509	52.3	1270	6.62	< 0.298	22.2	< 0.010	< 0.50	0.0112	8.23	14.3
MC-8	Boring 3	6-7	11/17/2016	MC-8-3-6-7-111716	Soil	462	128	59.3	5.96	< 0.299	9.84	< 0.0099	< 0.50	0.0140	7.50	0.629
MC-8	Boring 3	9-10	11/17/2016	MC-8-3-9-10-111716	Soil	45.7	13.7	21.6	5.36	< 0.300	1.27	< 0.0099	< 0.50	0.00969	8.37	0.720
MC-8	Boring 4	2-3	11/17/2016	MC-8-4-2-3-111716	Soil	68.6	8.72	21.4	6.52	< 0.299	1.16	< 0.0099	< 0.50	0.0104	7.96	0.647
MC-8	Boring 4	3-4	11/17/2016	MC-8-4-3-4-111716	Soil	65.2	7.76	17.4	9.20	< 0.299	1.04	< 0.010	< 0.50	0.0109	8.01	0.543
MC-8	Boring 4	8-9	11/17/2016	MC-8-4-8-9-111716	Soil	50.8	12.2	63.7	< 0.700	< 0.300	2.05	< 0.010	< 0.50	0.0314	8.44	2.08
MC-8	Boring 5	2-3	11/17/2016	MC-8-5-2-3-111716	Soil	100	12.4	17.7	6.29	< 0.300	1.82	< 0.0099	< 0.50	0.00997	7.69	0.444
MC-8	Boring 5	4-5	11/17/2016	MC-8-5-4-5-111716	Soil	45.1	10.6	7.77	9.00	< 0.300	0.703	< 0.0099	< 0.50	0.0191	7.88	0.270
MC-8	Boring 5	8-9	11/17/2016	MC-8-5-8-9-111716	Soil	27.2	7.16	28.9	5.17	< 0.298	0.774	< 0.010	< 0.50	0.0178	8.52	1.27
MC-8	Boring 6	2-3	11/17/2016	MC-8-6-2-3-111716	Soil	9380	< 5.00	18500	6.81	< 0.299	221	< 0.010	< 0.50	< 0.000504	12.2	52.6
MC-8	Boring 6	5-6	11/17/2016	MC-8-6-5-6-111716	Soil	9760	< 5.00	29100	9.21	< 0.300	358	< 0.010	4.6	0.00636	10.6	81.1
MC-8	Boring 6	11-12	11/17/2016	MC-8-6-11-12-111716	Soil	41.1	15.9	81.6	6.22	< 0.300	1.54	< 0.010	< 0.50	0.0167	8.41	2.74
MC-8	Boring 7	2-3	11/17/2016	MC-8-7-2-3-111716	Soil	75.6	10.8	8.08	7.87	< 0.298	1.14	< 0.0099	< 0.50	0.00996	8.11	0.230
MC-8	Boring 7	6-7	11/17/2016	MC-8-7-6-7-111716	Soil	30.2	6.46	7.55	7.85	< 0.298	0.598	< 0.010	< 0.50	0.00866	8.33	0.325
MC-8	Boring 7	13-14	11/17/2016	MC-8-7-13-14-111716	Soil	23.8	7.21	18.5	7.94	< 0.300	0.597	< 0.010	< 0.50	0.0120	8.23	0.853
MC-8	Boring 8	2-3	11/17/2016	MC-8-8-2-3-111716	Soil	76.5	13.5	6.03	8.34	< 0.299	1.27	< 0.0099	< 0.50	0.00900	7.97	0.167
MC-8	Boring 8	9-10	11/17/2016	MC-8-8-9-10-111716	Soil	107	23.2	20.7	5.19	< 0.300	1.95	< 0.0099	< 0.50	0.0227	7.88	0.473
MC-8	Boring 8	11-12	11/17/2016	MC-8-8-11-12-111716	Soil	34.0	7.83	14.9	5.40	< 0.298	0.768	< 0.0099	< 0.50	0.0176	8.25	0.599

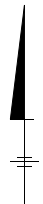
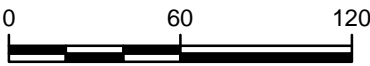

Notes:  
bgs = below ground surface  
Cr(III) = Trivalent Chromium  
Cr(VI) = Hexavalent Chromium  
DRO = Diesel Range Organics  
EC = Electrical Conductivity  
ft = feet  
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meq/meq = milliequivalent  
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mg/L = milligrams per liter  
mmhos/cm = micromho per centimeter  
NS = not specified  
pH = acidic/basic of water  
SAR = Sodium Adsorption Ratio  
sat = saturation  
TPH= total petroleum hydrocarbons  
Exceed the corresponding Table 910-1 concentration screening level.

# FIGURES







<b>LEGEND</b> <ul style="list-style-type: none"><li>Production Well</li><li>Shallow Boring Location</li><li>Salt Water Pit 10 Feet Deep</li><li>Fresh Water Reserve Pit 10 Feet Deep</li></ul>	  SCALE IN FEET	KINDER MORGAN CORTEZ, CO	
		MC-8 SITE FEATURES	
			FIGURE 1



# ATTACHMENT A

Form 27 Application



**State of Colorado**  
**Oil and Gas Conservation Commission**

1120 Lincoln Street, Suite 801, Denver, Colorado 80203 (303)894-2100 Fax:(303)894-2109



FOR OGCC USE ONLY

## SITE INVESTIGATION AND REMEDIATION WORKPLAN

This form shall be submitted to the Director for approval prior to the initiation of site investigation and remediation activities. Form 27 is intended to be used whenever possible. Additional documentation will be required when large volumes of soil and groundwater have been impacted or involve large facilities with multiple source areas. See Rule 910. Attach as many pages as needed to fully describe the proposed work.

OGCC Employee:

☐ Spill ☐ Complaint  
☐ Inspection ☐ NOAV

Tracking No: REM #9886

### CAUSE OF CONDITION BEING INVESTIGATED AND REMEDIATED

☐ Spill or Release ☐ Plug & Abandon ☐ Central Facility Closure ☐ Site/Facility Closure ☒ Other (describe): Evaluation of Former Drilling Pit Area

OGCC Operator Number: 46685

Name of Operator: Kinder Morgan CO2 Co

Address: 17801 Hwy 491

City: Cortez State: CO Zip: 81321

Contact Name and Telephone:

Andrew Antipas

No: 970-882-5534

Fax: 970-882-5521

API Number: 05-083-06625

County: Montezuma

Facility Name: N/A

Facility Number: N/A

Well Name: Moqui (MC-8)

Well Number: 8

Location: (QtrQtr, Sec, Twp, Rng, Meridian): NW 1/4 SW 1/4, Sec. 6, T36N, R17W Latitude: 37.40475 N Longitude: 108.77143 W

### TECHNICAL CONDITIONS

Type of Waste Causing Impact (crude oil, condensate, produced water, etc.): Potential for CO2 well drill cuttings exceeding Pre 2008 COGCC Table 910-1 concentrations

**Site Conditions:** Is location within a sensitive area (according to Rule 901e)? ☐ Y ☒ N If yes, attach evaluation.

Adjacent land use (cultivated, irrigated, dry land farming, industrial, residential, etc.): cultivated, dry land farming

Soil type, if not previously identified on Form 2A or Federal Surface Use Plan: Submitted on previous Form 2A

Potential receptors (water wells within 1/4 mi, surface waters, etc.): No surface water, water wells, or residences identified within 1/2 mile of location.

Description of Impact (if previously provided, refer to that form or document):

Impacted Media (check):



Soils



Vegetation



Groundwater



Surface Water

Extent of Impact:

Not yet determined

How Determined:

See attached assessment scope

### REMEDIALTION WORKPLAN

Describe initial action taken (if previously provided, refer to that form or document):

To date the only initial actions that have taken place is to conduct a water well review to identify water wells within 1/2 mile of the location and the preparation of the attached scope of work for the assessment of the former drilling pit location.

Describe how source is to be removed:

Upon completion of assessment activities, Kinder Morgan will meet with COGCC to review assessment results and present a Remediation Work plan if subsurface conditions warrant.

Describe how remediation of existing impacts is to be accomplished, including removal and disposal at an injection well or licensed facility, land treatment on site, removal of impacted groundwater, insitu bioremediation, burning of oily vegetation, etc.:

Upon the completion of the assessment activities, Kinder Morgan will submit the results to the COGCC along with any remediation plans (as needed) for the consideration and approval of the COGCC.



Tracking Number: \_\_\_\_\_  
Name of Operator: \_\_\_\_\_  
OGCC Operator No: \_\_\_\_\_  
Received Date: \_\_\_\_\_  
Well Name & No: \_\_\_\_\_  
Facility Name & No: \_\_\_\_\_

Page 2

**REMEDIATION WORKPLAN (Cont.)**

OGCC Employee: \_\_\_\_\_

**If groundwater has been impacted, describe proposed monitoring plan** (# of wells or sample points, sampling schedule, analytical methods, etc.):

There are no anticipated impacts to groundwater at this location. Please see Groundwater Evaluation section of the attached General Scope of Work.

**Describe reclamation plan.** Discuss existing and new grade recontouring; method and testing of compaction alleviation; and reseeding program, including location of new seed, seed mix and noxious weed prevention. Attach diagram or drawing. Use additional sheet for description if required.

If a remediation plan is deemed necessary, Kinder Morgan will address any needed reclamation activities within the remediation plan. This would be completed after Kinder Morgan submits the soil assessment report to the COGCC.

**Attach samples and analytical results taken to verify remediation of impacts. Show locations of samples on an onsite schematic or drawing.**

**Is further site investigation required?** ☐ Y ☐ N If yes, describe:

No soil samples are available at this time. Proposed soil boring locations are presented on the figure included within the attached General Scope of Work.

**Final disposition of E&P waste** (landtreated and disposed onsite, name of licensed disposal facility, recycling, reuse, etc.):

If offsite disposal of any material is deemed necessary, a properly licensed disposal facility will be used.

**IMPLEMENTATION SCHEDULE**

Date Site Investigation Began: 3Q 2016	Date Site Investigation Completed: _____	Date Remediation Plan Submitted: 10/5/16
Remediation Start Date: _____	Anticipated Completion Date: _____	Actual Completion Date: _____

I hereby certify that the statements made in this form are, to the best of my knowledge, true, correct, and complete.

Print Name: James Conway

Signed: \_\_\_\_\_

Title: Operations Engineering & Regulatory Manager

Date: 10/5/16

OGCC Approved: \_\_\_\_\_

Title: Environmental Protection Specialist

Date: 10/21/16

See COAs



### **General Scope of Work for Moqui (MC-8)**

Kinder Morgan CO2 – McElmo Dome Units  
API Number – 05-083-06625  
Montezuma County, Colorado

### **General Well Location Information**

Kinder Morgan's Moqui Well MC-8 was drilled in 2005. This well was drilled as a CO2 production well. A lined, earthen pit was constructed to hold the water-based drilling fluids for this well. Kinder Morgan's records indicate that the physical pit closure occurred in 2006.

The land use immediately surrounding the well location consists of non-irrigated farm land. In addition, the land use within ½ mile of this well location includes rangeland within the BLM administered Canyons of the Ancients National Monument. There are no residences within ½ mile of this well location.

### **Groundwater Evaluation**

Using the COGCC GIS Online mapping system and knowledge of the area, no groundwater wells were identified or located within ½ mile of this well location. An aerial photo from the COGCC mapping system is included with this work plan.

A review of US Geological Survey data identifies the Dakota-Glen Canyon aquifer system as the major aquifer system in this area of Colorado (Ground Water Atlas of the United States; Arizona, Colorado, New Mexico Utah HA 730-C; US Geological Survey, 1995). The regional direction of flow of the Dakota-Glen Canyon aquifer system in this area is typically to the west and estimated depth of this regional aquifer is between 800-1,200 feet below ground surface. The Mancos Shale confining unit is located between the surface and the Dakota-Glen Canyon aquifer systems which should prohibit any downward migration of surface water into the Dakota-Glen Canyon aquifer system. The major recharge areas for the Dakota-Glen Canyon aquifer system lie well outside of the MC-8 location.

The COGCC GIS Online mapping system shows 1 water well location 0.8 miles north of the MC-8 location. This water well location is at the Kinder Morgan Moqui Compressor Station. The permit was issued in 1988 for a water well with a total depth of 160 feet. Kinder Morgan personnel familiar with the location report that the water well drilled as a "dry hole" and the boring subsequently plugged and abandoned. Potable water is delivered by truck to the Moqui Compressor Station. All other water wells are more than one mile east of the MC-8 location. The area surrounding MC-8 is on a point separating Yellow Jacket Canyon to the north from McElmo Canyon to the south. Shallow water rarely occurs on these points. The potential for use in the area is further restricted by the surrounding land contained

within the Canyons of the Ancients National Monument. For this reason, Kinder Morgan does not anticipate that any shallow groundwater would be located at the MC-8 location.

In addition, Kinder Morgan does not anticipate any hydrocarbon impact could migrate to groundwater from the former pits at this location since oil-based drilling mud was not used and the well was drilled for production of CO<sub>2</sub>. Kinder Morgan does not anticipate encountering any perched water within the former drilling pit, however, if perched water is encountered in the bottom of the hole a sample will be submitted for analysis of BTEX, TDS, Chlorides, and Sulfates per Table 910-1.

### **Site Assessment**

This site assessment is intended to collect current data from the former drilling pit location including:

- Photographic documentation of current surface vegetation and current land use.
- Soil samples from 8 boring locations within the former pit area to gather the following data:
  - Thickness of the clean soil cap
  - Thickness of any drilling material left in the former drilling pit and soil samples to evaluate current concentrations of applicable constituents.
  - Document the presence or absence of any liner material.
  - Depth to native soil or bedrock below the former drilling pit.
- GPS coordinates of each soil boring location.
- Summary report

### **Soil Boring Program:**

Eight soil borings will be advanced to native soil or bedrock below the former drilling pit location to assess the current soil conditions in the former drilling pit location. Borings may extend 2 feet below the bottom of the former drilling pit. A soil boring location map is also included as an attachment to this work plan. The soil boring program will be conducted as follows:

- All necessary utility notifications will be made prior to advancing soil borings.
- A hollow stem auger rig will be utilized to collect a continuous sample of each boring.
- Photograph each full diameter split spoon for inclusion in the assessment report.
- Field screen a sample of each 1 foot interval for total chloride concentration and note on a boring log. Jar the remainder of the sample for potential laboratory analysis per the Laboratory Analysis Plan below. The typical sample submittal for laboratory analysis for each boring will be as follows:
  - Highest chloride sample interval observed from the surface to 3 feet bgs.
  - Highest chloride concentration of the visually identified drilling waste. If no waste is visible, the highest observed chloride concentration from 3 feet bgs to the bottom of the boring.
  - The bottom boring sample.
  - Please note that groundwater is not anticipated to be encountered, however, perched water may be encountered in the bottom of the hole in select locations. If groundwater

is encountered, a sample will be submitted for analysis of BTEX, TDS, Chlorides, and Sulfates per Table 910-1.

- Collect the GPS coordinates for each boring.
- Backfill each boring with removed material plus bentonite chips near the ground surface, as needed.

#### Laboratory Analysis Plan

Kinder Morgan proposes to submit each soil sample for analysis of all applicable constituents on COGCC Table 910-1 with the exception of PAHs (Acenaphthene, Anthracene, Benz(a)anthracene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Chrysene, Dibenzo(a,h)anthracene, Fluoranthene, Fluorene, Indeno(1,2,3,c,d)pyrene, Naphthalene, and Pyrene). The rationale for omitting the PAH analysis is based on the fact that Kinder Morgan did not use any oil based drilling fluids nor were any PAHs listed as chemical ingredients on any of the Safety Data Sheets of the drilling fluid additives.

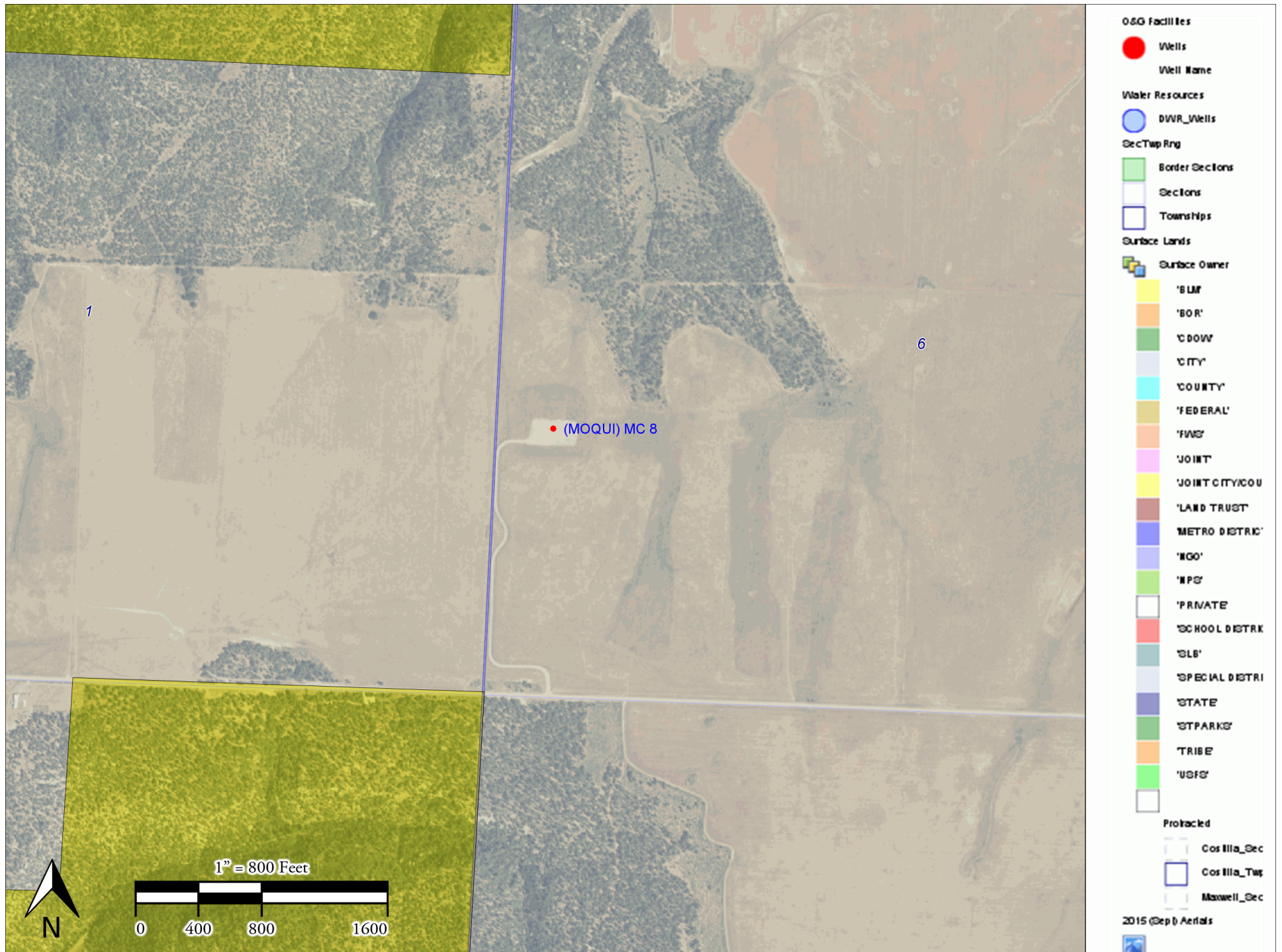
Per COGCC Rule 910.b(3)C, Kinder Morgan is requesting the COGCC approve this proposed laboratory analysis plan.

#### Summary Report:

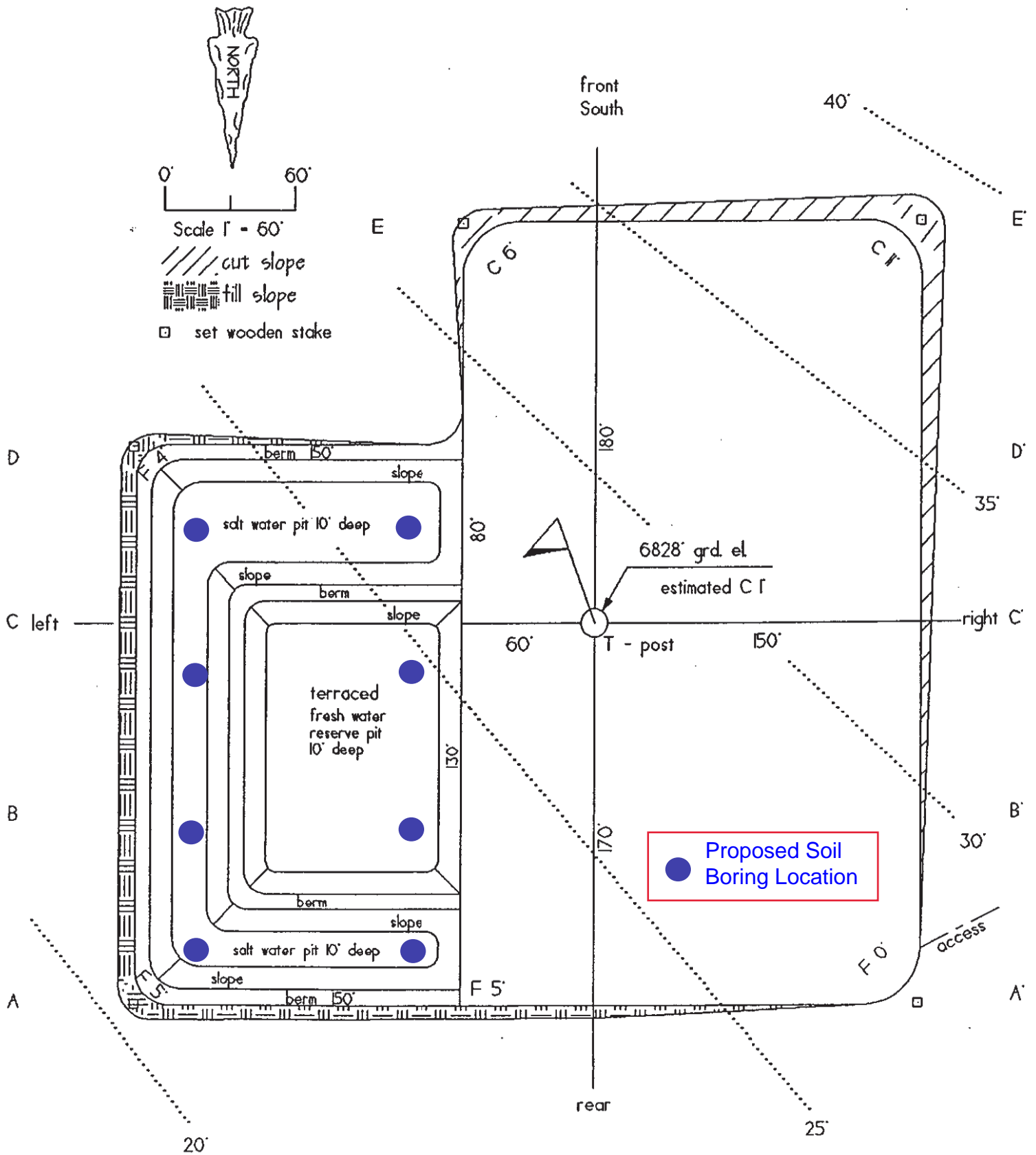
Upon completion of the site assessment activities, a summary report will be prepared and submitted to the COGCC accompanied by an updated Form 27. The summary report will contain all sampling information, including sampling data from the laboratory, field notes, and site photographs.



# Kinder Morgan MC-8







**Kinder Morgan CO<sub>2</sub> Co., NWSW Section 6, T36N, R17W, N PM, Montezuma County, Colorado, Form 27  
Conditions of Approval (COAs)**

**Conditions of Approval:**

Conditionally approved, however, additional information or activities may be required during the course of remediation/reclamation.

COGCC approval is contingent on operator providing notice to SW Environmental Protection Specialist Jim Hughes, jimo.hughes@state.co.us or 970-903-4072 a minimum of 72 hours prior to conducting field operations.

The operator shall collect discrete soil samples to adequately characterize impacted material. Composite samples will NOT be accepted for this purpose. Current COGCC Rules and Regulations regarding pit closures and clean-up standards shall be applied, specifically, but not limited to, the 900 and 1000 series rules. Given that there is no evidence or documentation of pit closure, the current COGCC Rules and Regulations effective May 1, 2009 on federal lands and April 1, 2009 on fee surface shall apply.

Should impacted material be discovered, regardless of size, the operator shall document the source and location, the impacted media and the extent of impact, how and when the operator plans to remediate the impacts, the final disposition of any impacted material removed from the location, as well as analytical results from confirmation samples.

Review of Colorado Division of Water Resources water well information indicates that the nearest domestic water wells, (approximately 1 mile from the former pit location) have a range of recorded water levels from 40-130 ft. bgs. Kinder Morgan shall not be required to advance an additional boring to a depth of 50 ft. bgs at the location to evaluate the potential for shallow groundwater. If groundwater is encountered in the shallow pit area borings, water samples shall be collected and analyzed for Table 910-1 constituents.

Boreholes shall be abandoned per the Colorado Division of Water Resources Water Well Construction Rules.

If any impacted material generated during investigation is temporarily stored on adjacent well pad per COGCC rules and regulations, a Form 4 Sundry Notice shall be submitted by the Operator stating the reason and estimated timeline proposed for the storage of impacted material.

Surface reclamation must meet the COGCC 1000 series rules. Approval of this Form 27 does not imply approval of the reclamation plan submitted by the operator. The operator shall contact the COGCC regional reclamation specialist (Catherine Roy) regarding compliance with 1000 series Rules.

After discussions with KM representatives, it is the understanding of the COGCC that PAHs have not been encountered in other site investigations that have been conducted by the operator thus far. An abbreviated Table 910-1 constituent list, excluding PAHs, shall be accepted at this location. Laboratory results, documenting non-

**Kinder Morgan CO<sub>2</sub> Co., NWSW Section 6, T36N, R17W, N PM, Montezuma County, Colorado, Form 27  
Conditions of Approval (COAs)**

detect of PAHs in previous investigations, shall be provided to COGCC SW EPS prior to commencing sampling for this closure project.

# ATTACHMENT B

Boring Logs



## EXPLORATORY BORING LOG

project no: C0002255.0001 date: 11 - 17 - 16 boring number: MC-8-1  
 client: Kinder Morgan  
 location: Cortez, CO  
 logged by: B. Draeger  
 driller/helper: Kyrek

page 1 of 1

field location of boring:

N: 770139.73'

E: -8636089.15'

drilling method: Hollow Stem Auger

hole diameter:

casing diameter:

well completion data:

075 0745-0815

ground elevation: 6795.76'

datum: MAD 1983

boring/well construction	headspace: (ft)	Conductivity (µS/cm)	blows per foot or pressure in psi	depth	sample	soil group symbol (USCS)	water level	time	date
	gastech FID ppm	sample number							
	6.3	0.11	3		①				
	5.3	0.10	5	1					
	5.1	0.14	5	2					
	12.8	0.14	12	3					
	19.9	0.09	4	4					
	18.9	0.14	15	5					
	29.0	0.18	10	6	②				
	13.7	0.28	8	7					
	10.1	0.54	2	8					
	9.6	0.24	12	9	③				
			20, 5"/30, 2"	10					
				11					
				12					
				13					
				14					
				15					
				16					
				17					
				18					
				19					
				20					

Top Soil

Clayey silt w/ some c. sand, hard, dry, non plastic, poorly graded, reddish brown

Moistens and softens w/ depth

Silty sand, dry to damp, hard but loose when broken, poorly graded, light brown to tan

End boring due to refusal

USCS lithology; Munsell color; sorting; grain size; lith. %s; modifiers; consistency; moisture.

# EXPLORATORY BORING LOG

project no: C0002255.0001 date: 11 - 17 - 16 boring number: MC-8-2  
 client: Kinder Morgan  
 location: Cortez, CO  
 logged by: B. Draeger  
 driller/helper: Kyrek

page 1 of 1

field location of boring:

N: 770167.59'

E: -8636155.68'

drilling method: Hollow Stem Auger

hole diameter:

casing diameter:

well completion data:

0830-0915

ground elevation: 6795.45'

datum: NAD 1983

boring/well construction	headspace: gastech FID ppm	conductivity sample number	blows per foot or pressure in psi	depth	sample	soil group symbol (USCS)	water level	time	date
	4.7	0.03	3						
	7.7	0.15	4	1	①	Top Soil			
			5			Clayey silt, hard, dry, non plastic, poorly graded, reddish brown			
	1.4	0.43	3	2					
			10						
			12	3					
	1.7	0.14	4			Thin black liner			
			20	4		Mixture of reddish and black contaminated soil, hard, dry, f. to c. sand cemented w/ halite and clay, mod poor grading			
	3.7	0.02	10						
			18	5					
	4.8	0.29	24						
			26	6					
	10.0	0.11	10						
			15	7					
	25.2	0.07	27						
			29	8					
	27.3	2.1	2		②				
			2	9					
	6.9	2.52	4			Clayey silt, moist, soft, low plasticity, v. poorly graded, reddish brown			
			6	10					
	7.1	1.15	6			Silt, dry, hard, non plastic, v. poorly graded, light brown			
			10	11					
	3.1	0.66	15						
			20	12					
	7.0	0.75	3						
			9	13					
	6.8	1.27	10						
			16	14		Softens, moistens			
	3.9	0.36	8		③	Sandstone			
			18	15					
						End boring			
				16					
				17					
				18					
				19					
				20					

USCS lithology; Munsell color; sorting; grain size; lith. %s; modifiers; consistency; moisture.

## EXPLORATORY BORING LOG

project no: C0002255.0001 date: 11 - 17 - 16 boring number: MC-8-3  
 client: Kinder Morgan  
 location: Cortez, CO  
 designed by: B. Draeger  
 driller/helper: Kyrek

page 1 of 1

field location of boring:

N: 770184.59'

E: -8636204.26'

drilling method: Hollow Stem Auger

hole diameter:

casing diameter:

well completion data:

0930 - 1015

ground elevation: 6794.74'

datum: NAD 1983

boring/well construction	headspace: gastech FID ppm	Conductivity sample number	blows per foot or pressure in psi	depth	sample	soil group symbol (USCS)	water level	time	date
	3.8	0.06	4	1	①				Top Soil
	5.5	0.12	5	2					Silty clay, hard, dry to damp, non-plastic, v. poorly graded, reddish brown
	3.8	0.20	6	3					
	3.4	1.31	10	4					
	1.4	1.98	6	5					moistens and softens w/ depth
	5.3	0.46	9	6					
	7.5	0.32	10	7	②				<del>Silty clay, dry, crumbly, light brown</del>
	4.6	0.40	18	8					Silt w/ f. sand, dry, hard but crumbly, poorly graded, non-plastic, light brown
	6.1	2.91	15	9					
	1.4	0.21	23	10	③				Sandstone
			28	11					End boring due to refusal
			2	12					
			50, 1"	13					
				14					
				15					
				16					
				17					
				18					
				19					
				20					

USCS lithology; Munsell color; sorting; grain size; lith. %s; modifiers; consistency; moisture.

## EXPLORATORY BORING LOG

project no: C0002255.0001 date: 11 - 17 - 16 boring number: MC-8-4  
 client: Kinder Morgan  
 location: Cortez, CO  
 logged by: B. Draeger  
 driller/helper: Kyvek

page 1 of 1

field location of boring:

N: 770193.36'

E: -8636258.94'

ground elevation: 6795.72'

datum: NAD 1983

drilling method: Hollow Stem Auger

hole diameter:

casing diameter:

well completion data:

1100 - 1130

boring/well construction	headspace: gastech PID	Conductivity FID ppm	sample number	blows per foot or pressure in psi	depth	sample	soil group symbol (USCS)	water level	time	date
	2.0	0.20	4	4	1					Top Soil
	1.8	0.10	7	4	2					Silty clay, hard, dry to damp, non plastic, v. poorly graded, reddish brown
	2.4	0.38	8	6	3	①				
	4.2	0.04	10	8	4	②				Whitish staining
	2.0	0.05	5	10	5					
	1.6	0.05	5	8	6					
	2.7	0.06	8	10	7					Sandy silt, dry, crumbly, non plastic, v. poorly graded, light brown
	—	—	10	50; 3"	8					} not enough recovery for a sample
	3.3	0.01	33	40; 2"	9	③				Sandstone w/ loose, c. sand, dry, poorly graded, light brown to tan
			50		10					End boring
					11					
					12					
					13					
					14					
					15					
					16					
					17					
					18					
					19					
					20					

USCS lithology; Munsell color; sorting; grain size; lith. %s; modifiers; consistency; moisture.



# EXPLORATORY BORING LOG

project no: CO 002255.0001  
 client: Kinder Morgan  
 location: Cortez, CO  
 logged by: B. Draeger  
 filler/helper:

date: 11 - 17 - 16

boring number:

MC-8-5

~~MC-8-48~~

page 1 of 1

field location of boring:

drilling method: Coordinates

hole diameter: N: 770111.98'

casing diameter: E: -8636281.60'

well completion data: ELEV: 6796.17'

1420-1500

ground elevation:

datum:

boring/well construction	headsapce: gastech (PID) FID ppm	Conductivity sample number	blows per foot or pressure in psi	depth	sample	soil group symbol (USCS)	water level	time	date
	0.6	<del>0.06</del>	3						
		0.06	6	1					
	0.8	<del>0.18</del>	5						
		0.12	3	2					
	1.6	<del>1.23</del>	9		①				
		0.08	11	3					
	1.3	<del>3.46</del>	11						
		0.08	12	4					
	2.4	<del>2.88</del>	8		②				
		0.08	16	5					
	2.0	<del>0.37</del>	17						
		0.13	13	6					
	1.2	<del>0.13</del>	8						
		0.02	30	7					
	1.8	<del>0.28</del>	50; 5"						
		0.02		8					
	2.6	<del>0.37</del>	16/30; 2"		③				
		0.03	45/50; 3"	9					
				10					
				11					
				12					
				13					
				14					
				15					
				16					
				17					
				18					
				19					
				20					

Top Soil

Silty sand, hard but loose, dry, med to c. sand, non plastic, mod poor grading, brown

Clayey silt, hard, dry to damp, non plastic, v. poorly graded, reddish brown

Veins of whitish staining

Clayey sand, v. dry and crumbly, f. sand, v. poorly graded, non plastic, v. light brown to tan

End boring due to refusal

USCS lithology; Munsell color; sorting; grain size; lith. %s; modifiers; consistency; moisture.

## EXPLORATORY BORING LOG

project no:	C0002255.0001	date:	11 - 17 - 16	boring number:	MC-8-6
client:	Kinder Morgan				
location:	Cortez, CO				
designed by:	B. Draeger				
driller/helper:	Kyrek				

page 1 of 1

field location of boring:

N: 770103.64'

E: -8636224.96'

drilling method: Hollow Stem Auger

hole diameter:

casing diameter:

well completion data:

1330 - 1410

ground elevation: 6795.08'

datum: NAD 1983

boring/well construction	headspace: gastech FID ppm	Conductivity sample number	blows per foot or pressure in psi	depth	sample	soil group symbol (USCS)	water level	time	date
	3.6	0.06	2						
	3.4	0.18	2	1					
			3						
	10.0	1.23	8	2					
			15		①				
	25.2	3.46	22	3					
			29						
	20.2	2.38	9	4					
			18						
	42.8	3.70	21	5					
			26		②				
	17.2	1.24	5	6					
			12						
	2.0	3.83	18	7					
			16						
	1.6	0.06	3	8					
			11						
	1.4	0.99	20	9					
			24						
	2.0	0.23	4	10					
			12						
	1.6	0.37	20	11					
			20		③				
				12					
				13					
				14					
				15					
				16					
				17					
				18					
				19					
				20					

Silty Sand, f. sand w/ some c., dry, hard but loose, med grading, non plastic, reddish brown

Contaminated Soil

Black, c., poorly graded, loose, dry sand mixed w/ cemented halite

Some reddish brown clay, some pockets of pure halite

liner seen at 5'

Contaminated Soil continues but clay % increases

Clayey Silt, damp, v. hard, non plastic, v. poorly graded, reddish brown w/ some tan

Silty Sand, damp, loose, f. to med sand, non plastic, poorly graded, v. light brown to tan

Some pieces of sandstone present  
End Boring

USCS lithology; Munsell color; sorting; grain size; lith. %s; modifiers; consistency; moisture.

# EXPLORATORY BORING LOG

project no: CO 002255.0001  
 client: Kinder Morgan  
 location: Cortez, CO  
 logged by: B. Draeger  
 filler/helper:

date: 11 - 17 - 16

boring number:

MC-8-7

page 1 of 1

field location of boring:

drilling method: Coordinates

hole diameter: N: 770079.99'

casing diameter: E: -8636174.22'

well completion data: Elev: 6796.73'

1230 - 1315

ground elevation:

datum:

boring/well construction	headspace: (ft) gas tech (FID ppm)	Conductivity sample number	blows per foot or pressure in psi	depth	sample	soil group symbol (USCS)	water level	time	date
	3.5	0.04	2						
			4	1					
	3.1	0.05	8						
			7	2					
	3.9	0.02	8		①				
			10	3					
	3.7	0.03	12						
			15	4					
	3.4	0.05	8						
			18	5					
	2.6	0.11	20						
			21	6					
	4.4	0.05	7		②				
			10	7					
	2.0	0.04	14						
			10	8					
	1.1	0.13	9						
			12	9					
	1.1	0.02	16						
	1.6		20	10					
	1.9	0.03	8						
			15	11					
	1.6	0.12	22						
			25	12					
	3.7	0.24	5						
			10	13					
	4.0	0.37	15		③				
			18	14					
				15					
				16					
				17					
				18					
				19					
				20					

Top Soil

Clayey silt, dry, v. poorly graded, v. hard, non plastic, reddish brown

liner seen at 2' but no contaminated soil seen

Sandy silt, dry, med. soft/ loose, poorly graded, non plastic, reddish brown, f. sand  
 Sand content decreases

Returns to clayey silt above

End boring due to refusal from bedrock

USCS lithology; Munsell color; sorting; grain size; lith. %s; modifiers; consistency; moisture.

taken 24hrs

G:\Admin\field Forms\BORINGLG After Collection

# EXPLORATORY BORING LOG

project no: C0002255.0001 date: 11 - 16 boring number: MC-8-8  
 client: Kinder Morgan  
 location: Cortez, CO  
 logged by: B. Draeger  
 driller/helper: Kyvek

page 1 of 1

field location of boring:

N: 770065.03'

E: -8636105.71'

drilling method: Hollow Stem Auger

hole diameter:

casing diameter:

well completion data:

1145-1210

ground elevation: 6797.27'

datum: NAD 1983

boring/well construction	headsace: (FID) gastech FID ppm	Conductivity sample number	blows per foot or pressure in psi	depth	sample	soil group symbol (USCS)	water level	time	date
	3.2	0.06	2						
			4	1					
	3.0	0.04	7						
			8	2					
	3.4	0.09	4		①				
			12	3					
	2.7	0.06	14						
			18	4					
	3.2	0.12	8						
			11	5					
	2.7	0.18	12						
			10	6					
	4.1	0.29	8						
			12	7					
	5.9	0.64	15						
			18	8					
	2.7	0.15	8						
			12	9					
	7.4	0.12	16		②				
			15	10					
	3.3	0.14	2						
			7	11					
	4.3	0.09	16		③				
			50; 3"	12					
				13					
				14					
				15					
				16					
				17					
				18					
				19					
				20					

bp Soil

Sandy silt, v.f. to f. sand (mostly mixed but some loose, gray v.f. sand), mod soft, dry, non plastic, poorly graded, brown

Clayey silt, dry, hard, crumbly when broken, non plastic, v. poorly graded, reddish brown

Becomes more dry and crumbly  
Damp, v. hard, v. cohesive

Mixture (marbled texture) of above unit and sandy silt, damp, soft, non plastic, poorly graded, tan w/ some veins of black staining

End boring due to refusal

USCS lithology; Munsell color; sorting; grain size; lith. %s; modifiers; consistency; moisture.

# ATTACHMENT C

Photo Log



## Project Photographs

McElmo Dome  
Cortez, Colorado



**Photo: 1**

**Date:**  
11/16/16

**Description:**  
Looking north

**Location:**  
MC-8



**Photo: 2**

**Date:**  
11/16/16

**Description:**  
Looking east

**Location:**  
MC-8



## Project Photographs

McElmo Dome  
Cortez, Colorado



**Photo: 3**

**Date:**  
11/16/16

**Description:**  
Looking south

**Location:**  
MC-8



**Photo: 4**

**Date:**  
11/16/16

**Description:**  
Looking west

**Location:**  
MC-8

# ATTACHMENT D

Field Notes





## DAILY LOG

Project No.: CO 002255.0001

Page 1 of 1

Site Location: Cortez, CA

Prepared By: B. Draeger

[illegible]

# ATTACHMENT E

Laboratory Analytical Reports





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10450 Stancliff Rd. Suite 210  
Houston, TX 77099  
T: +1 281 530 5656  
F: +1 281 530 5887  
www.alsglobal.com

December 22, 2016

Aaron Hale  
Kinder Morgan  
1001 Louisiana Street  
Suite 740D  
Houston, TX 77002

Work Order: **HS16111139**

Laboratory Results for: **McElmo Dome**

Dear Aaron,

ALS Environmental received 27 sample(s) on Nov 23, 2016 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

A handwritten signature in black ink that reads "Sonia West".

Generated By: Jumoke.Lawal  
Sonia West  
Project Manager

**Client:** Kinder Morgan  
**Project:** McElmo Dome  
**Work Order:** HS16111139

**SAMPLE SUMMARY**

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS16111139-01	MC-8-1-0-1-111716	Soil		17-Nov-2016 07:45	23-Nov-2016 08:51	<input type="checkbox"/>
HS16111139-02	MC-8-1-6-7-111716	Soil		17-Nov-2016 08:10	23-Nov-2016 08:51	<input type="checkbox"/>
HS16111139-03	MC-8-1-9-10-111716	Soil		17-Nov-2016 08:15	23-Nov-2016 08:51	<input type="checkbox"/>
HS16111139-04	MC-8-2-1-2-111716	Soil		17-Nov-2016 08:30	23-Nov-2016 08:51	<input type="checkbox"/>
HS16111139-05	MC-8-2-8-9-111716	Soil		17-Nov-2016 08:50	23-Nov-2016 08:51	<input type="checkbox"/>
HS16111139-06	MC-8-2-14-15-111716	Soil		17-Nov-2016 09:15	23-Nov-2016 08:51	<input type="checkbox"/>
HS16111139-07	MC-8-3-1-2-111716	Soil		17-Nov-2016 09:30	23-Nov-2016 08:51	<input type="checkbox"/>
HS16111139-08	MC-8-3-6-7-111716	Soil		17-Nov-2016 10:10	23-Nov-2016 08:51	<input type="checkbox"/>
HS16111139-09	TB - 053116-13	Water		17-Nov-2016 00:01	23-Nov-2016 08:51	<input type="checkbox"/>
HS16111139-10	MC-8-3-9-10-111716	Soil		17-Nov-2016 10:15	23-Nov-2016 08:51	<input type="checkbox"/>
HS16111139-11	MC-8-4-2-3-111716	Soil		17-Nov-2016 11:15	23-Nov-2016 08:51	<input type="checkbox"/>
HS16111139-12	MC-8-4-3-4-111716	Soil		17-Nov-2016 11:20	23-Nov-2016 08:51	<input type="checkbox"/>
HS16111139-13	MC-8-4-8-9-111716	Soil		17-Nov-2016 11:30	23-Nov-2016 08:51	<input type="checkbox"/>
HS16111139-14	MC-8-5-2-3-111716	Soil		17-Nov-2016 14:30	23-Nov-2016 08:51	<input type="checkbox"/>
HS16111139-15	MC-8-5-4-5-111716	Soil		17-Nov-2016 14:40	23-Nov-2016 08:51	<input type="checkbox"/>
HS16111139-16	MC-8-5-8-9-111716	Soil		17-Nov-2016 15:00	23-Nov-2016 08:51	<input type="checkbox"/>
HS16111139-17	MC-8-6-2-3-111716	Soil		17-Nov-2016 13:30	23-Nov-2016 08:51	<input type="checkbox"/>
HS16111139-18	TB - 082916-59	Water		17-Nov-2016 00:01	23-Nov-2016 08:51	<input type="checkbox"/>
HS16111139-19	MC-8-6-5-6-111716	Soil		17-Nov-2016 13:45	23-Nov-2016 08:51	<input type="checkbox"/>
HS16111139-20	MC-8-6-11-12-111716	Soil		17-Nov-2016 14:10	23-Nov-2016 08:51	<input type="checkbox"/>
HS16111139-21	MC-8-7-2-3-111716	Soil		17-Nov-2016 12:30	23-Nov-2016 08:51	<input type="checkbox"/>
HS16111139-22	MC-8-7-6-7-111716	Soil		17-Nov-2016 12:45	23-Nov-2016 08:51	<input type="checkbox"/>
HS16111139-23	MC-8-7-13-14-111716	Soil		17-Nov-2016 13:15	23-Nov-2016 08:51	<input type="checkbox"/>
HS16111139-24	MC-8-8-2-3-111716	Soil		17-Nov-2016 11:45	23-Nov-2016 08:51	<input type="checkbox"/>
HS16111139-25	MC-8-8-9-10-111716	Soil		17-Nov-2016 12:00	23-Nov-2016 08:51	<input type="checkbox"/>
HS16111139-26	MC-8-8-11-12-111716	Soil		17-Nov-2016 12:10	23-Nov-2016 08:51	<input type="checkbox"/>
HS16111139-27	TB - 082916-81	Water		17-Nov-2016 00:01	23-Nov-2016 08:51	<input type="checkbox"/>

**Client:** Kinder Morgan  
**Project:** McElmo Dome  
**Work Order:** HS16111139

**CASE NARRATIVE**

---

**Work Order Comments**

- Sample received outside method holding time for pH. pH is an immediate test. Sample results are flagged with an "H" qualifier.  
The temperature at the time of pH is reported. Please note that all pH results are already normalized to a temperature of 25 °C.

---

**GC Semivolatiles by Method SW8015M**

**Batch ID: 110253,110255**

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

---

**GC Volatiles by Method SW8015**

**Batch ID: R285660,R285662**

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

---

**GCMS Volatiles by Method SW8260**

**Batch ID: R285471**

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

**Batch ID: R285561**

Sample ID: **MC-8-7-2-3-111716 (HS16111139-21MS)**

- MS/MSD failed QC limits for most compounds.

**Batch ID: R285564**

Sample ID: **MC-8-1-0-1-111716 (HS16111139-01MS)**

- MS/MSD failed QC limits for some compounds.

Sample ID: **MC-8-2-8-9-111716 (HS16111139-05)**

- Surrogate failure for HS16111139-05 due to sample matrix.

---

**Metals by Method La29B-6020**

**Batch ID: 110894,110896**

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

---

**Metals by Method La29B SAR**

**Batch ID: R287022**

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

---

**Metals by Method Calculation**

**Batch ID: R286329**

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

---

**Metals by Method SW7471A**

**Batch ID: 110625,110626**

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

**Client:** Kinder Morgan  
**Project:** McElmo Dome  
**Work Order:** HS16111139

**CASE NARRATIVE**

---

**Metals by Method SW6020****Batch ID: 110420**

Sample ID: **MC-8-4-8-9-111716 (HS16111139-13)**

Sample ID: **MC-8-5-8-9-111716 (HS16111139-16)**

- Sample ran at a 5X dilution due to internal standard failure.

Sample ID: **MC-8-7-6-7-111716 (HS16111139-22MS)**

- The MS and/or MSD recovery was outside of the control; however, the result in the parent sample is greater than 4x the spike amount. Barium

Sample ID: **MC-8-7-6-7-111716 (HS16111139-22MSD)**

- Copper and Lead failed on the MSD but passed on the MS and PDS.

Sample ID: **MC-8-7-6-7-111716 (HS16111139-22PDS)**

- The PDS recovery was outside of the control; however, the result in the parent sample is greater than 4x the spike amount for Barium.

**Batch ID: 110430**

Sample ID: **HS16120058-03MS**

- MS/MSD and DUPs are for an unrelated sample

---

**WetChemistry by Method LaDNR-29B EC****Batch ID: R287018,R287021**

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

---

**WetChemistry by Method SW9045B****Batch ID: R286192,R286307**

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

---

**WetChemistry by Method LaDNR-29B SP****Batch ID: R286683,R286685**

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

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**WetChemistry by Method SW3550****Batch ID: R286097,R286098**

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

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**WetChemistry by Method SW7196****Batch ID: 110450,110464**

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Client: Kinder Morgan  
 Project: McElmo Dome  
 Sample ID: MC-8-1-0-1-111716  
 Collection Date: 17-Nov-2016 07:45

**ANALYTICAL REPORT**

WorkOrder:HS16111139  
 Lab ID:HS16111139-01  
 Matrix:Soil

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>VOLATILES BY SW8260C</b>		<b>Method:SW8260</b>		Analyst: WLR		
Benzene	ND		4.8	ug/Kg	1	29-Nov-2016 00:19
Ethylbenzene	ND		4.8	ug/Kg	1	29-Nov-2016 00:19
m,p-Xylene	ND		9.7	ug/Kg	1	29-Nov-2016 00:19
o-Xylene	ND		4.8	ug/Kg	1	29-Nov-2016 00:19
Toluene	ND		4.8	ug/Kg	1	29-Nov-2016 00:19
Xylenes, Total	ND		4.8	ug/Kg	1	29-Nov-2016 00:19
Surr: 1,2-Dichloroethane-d4	97.9		70-128	%REC	1	29-Nov-2016 00:19
Surr: 4-Bromofluorobenzene	100		73-126	%REC	1	29-Nov-2016 00:19
Surr: Dibromofluoromethane	99.3		71-128	%REC	1	29-Nov-2016 00:19
Surr: Toluene-d8	108		73-127	%REC	1	29-Nov-2016 00:19
<b>GASOLINE RANGE ORGANICS BY SW8015C</b>		<b>Method:SW8015</b>		Analyst: SFE		
Gasoline Range Organics	ND		0.050	mg/Kg	1	29-Nov-2016 15:20
Surr: 4-Bromofluorobenzene	79.5		70-130	%REC	1	29-Nov-2016 15:20
<b>TPH DRO/ORO BY SW8015C</b>		<b>Method:SW8015M</b>		Prep:SW3541 / 29-Nov-2016 Analyst: AAP		
TPH (Diesel Range)	ND		1.7	mg/Kg	1	02-Dec-2016 04:15
Surr: 2-Fluorobiphenyl	85.2		60-135	%REC	1	02-Dec-2016 04:15
<b>TRIVALENT CHROMIUM</b>		<b>Method:Calculation</b>		Analyst: DQ		
Chromium, Trivalent	7.93		5.00	mg/Kg	1	10-Dec-2016 15:12
<b>LA29B SODIUM ADSORPTION RATIO</b>		<b>Method:La29B SAR</b>		Analyst: DQ		
Sodium Adsorption Ratio	0.137		0.0100	meq/meq	1	21-Dec-2016 19:14
<b>LA 29B - 1:1 SOLUBLE CATIONS FOR SAR</b>		<b>Method:La29B-6020</b>		Prep:La29B-6020 Analyst: JCJ		
Calcium	108		5.00	mg/L	10	20-Dec-2016 12:53
Magnesium	16.5		5.00	mg/L	10	20-Dec-2016 12:53
Sodium	5.78		5.00	mg/L	10	20-Dec-2016 12:53
<b>METALS BY SW6020A</b>		<b>Method:SW6020</b>		Prep:SW3050A / 05-Dec-2016 Analyst: JCJ		
Arsenic	2.44		0.475	mg/Kg	1	05-Dec-2016 19:45
Barium	137		0.475	mg/Kg	1	05-Dec-2016 19:45
Boron	3.47		2.38	mg/Kg	1	06-Dec-2016 13:33
Cadmium	ND		0.475	mg/Kg	1	05-Dec-2016 19:45
Chromium	7.93		0.475	mg/Kg	1	05-Dec-2016 19:45
Copper	7.11		0.190	mg/Kg	1	05-Dec-2016 19:45
Lead	6.92		0.475	mg/Kg	1	05-Dec-2016 19:45
Nickel	8.06		0.475	mg/Kg	1	05-Dec-2016 19:45
Selenium	ND		0.475	mg/Kg	1	05-Dec-2016 19:45
Silver	ND		0.475	mg/Kg	1	05-Dec-2016 19:45
Zinc	22.4		0.475	mg/Kg	1	05-Dec-2016 19:45
<b>MERCURY BY SW7471B</b>		<b>Method:SW7471A</b>		Prep:SW7471A / 10-Dec-2016 Analyst: JCJ		
Mercury	11.1		3.49	ug/Kg	1	10-Dec-2016 19:31

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Kinder Morgan  
 Project: McElmo Dome  
 Sample ID: MC-8-1-0-1-111716  
 Collection Date: 17-Nov-2016 07:45

**ANALYTICAL REPORT**

WorkOrder:HS16111139  
 Lab ID:HS16111139-01  
 Matrix:Soil

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>LA29B ELECTRICAL CONDUCTIVITY</b>		<b>Method:LaDNR-29B EC</b>		Analyst: JHD		
Electrical Conductivity @ saturation	1.60		0.0100	mmhos/cm @25°C	1	21-Dec-2016 18:38
Electrical Conductivity, 1:1 aqueous	0.711		0.0100	mmhos/cm @25°C	1	21-Dec-2016 18:38
Saturation % as decimal	0.445		0	mmhos/cm @25°C	1	21-Dec-2016 18:38
<b>LA29B SATURATION POINT (AS FRACTION)</b>		<b>Method:LaDNR-29B SP</b>		Analyst: KAH		
Saturation Point	0.445		0.100	SP as fraction	1	15-Dec-2016 11:00
<b>MOISTURE</b>		<b>Method:SW3550</b>		Analyst: DFF		
Percent Moisture	8.57		0.0100	wt%	1	06-Dec-2016 10:17
<b>HEXAVALENT CHROMIUM BY SW7196A</b>		<b>Method:SW7196</b>		Prep:SW3060A / 06-Dec-2016 Analyst: KVL		
Chromium, Hexavalent	ND		1.99	mg/kg	1	07-Dec-2016 16:45
<b>PH SOIL BY SW9045D</b>		<b>Method:SW9045B</b>		Analyst: SAP		
pH	7.90	H	0.100	pH Units	1	08-Dec-2016 12:45
Temp Deg C @pH	19.9	H	0	°C	1	08-Dec-2016 12:45

Note: See Qualifiers Page for a list of qualifiers and their explanation.



Client: Kinder Morgan  
 Project: McElmo Dome  
 Sample ID: MC-8-1-6-7-111716  
 Collection Date: 17-Nov-2016 08:10

**ANALYTICAL REPORT**

WorkOrder:HS16111139  
 Lab ID:HS16111139-02  
 Matrix:Soil

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>VOLATILES BY SW8260C</b>		<b>Method:SW8260</b>		Analyst: WLR		
Benzene	ND		4.9	ug/Kg	1	29-Nov-2016 01:51
Ethylbenzene	ND		4.9	ug/Kg	1	29-Nov-2016 01:51
m,p-Xylene	ND		9.8	ug/Kg	1	29-Nov-2016 01:51
o-Xylene	ND		4.9	ug/Kg	1	29-Nov-2016 01:51
Toluene	ND		4.9	ug/Kg	1	29-Nov-2016 01:51
Xylenes, Total	ND		4.9	ug/Kg	1	29-Nov-2016 01:51
Surr: 1,2-Dichloroethane-d4	103		70-128	%REC	1	29-Nov-2016 01:51
Surr: 4-Bromofluorobenzene	105		73-126	%REC	1	29-Nov-2016 01:51
Surr: Dibromofluoromethane	105		71-128	%REC	1	29-Nov-2016 01:51
Surr: Toluene-d8	109		73-127	%REC	1	29-Nov-2016 01:51
<b>GASOLINE RANGE ORGANICS BY SW8015C</b>		<b>Method:SW8015</b>		Analyst: SFE		
Gasoline Range Organics	ND		0.050	mg/Kg	1	29-Nov-2016 16:08
Surr: 4-Bromofluorobenzene	72.4		70-130	%REC	1	29-Nov-2016 16:08
<b>TPH DRO/ORO BY SW8015C</b>		<b>Method:SW8015M</b>		Prep:SW3541 / 29-Nov-2016 Analyst: AAP		
TPH (Diesel Range)	ND		1.7	mg/Kg	1	02-Dec-2016 04:39
Surr: 2-Fluorobiphenyl	70.4		60-135	%REC	1	02-Dec-2016 04:39
<b>TRIVALENT CHROMIUM</b>		<b>Method:Calculation</b>		Analyst: DQ		
Chromium, Trivalent	7.84		5.00	mg/Kg	1	10-Dec-2016 15:12
<b>LA29B SODIUM ADSORPTION RATIO</b>		<b>Method:La29B SAR</b>		Analyst: DQ		
Sodium Adsorption Ratio	0.643		0.0100	meq/meq	1	21-Dec-2016 19:14
<b>LA 29B - 1:1 SOLUBLE CATIONS FOR SAR</b>		<b>Method:La29B-6020</b>		Prep:La29B-6020 Analyst: JCJ		
Calcium	83.8		5.00	mg/L	10	20-Dec-2016 12:58
Magnesium	20.4		5.00	mg/L	10	20-Dec-2016 12:58
Sodium	25.3		5.00	mg/L	10	20-Dec-2016 12:58
<b>METALS BY SW6020A</b>		<b>Method:SW6020</b>		Prep:SW3050A / 05-Dec-2016 Analyst: JCJ		
Arsenic	2.61		0.469	mg/Kg	1	05-Dec-2016 19:49
Barium	160		0.469	mg/Kg	1	05-Dec-2016 19:49
Boron	2.91		2.34	mg/Kg	1	06-Dec-2016 13:38
Cadmium	ND		0.469	mg/Kg	1	05-Dec-2016 19:49
Chromium	7.84		0.469	mg/Kg	1	05-Dec-2016 19:49
Copper	5.59		0.187	mg/Kg	1	05-Dec-2016 19:49
Lead	6.74		0.469	mg/Kg	1	05-Dec-2016 19:49
Nickel	9.39		0.469	mg/Kg	1	05-Dec-2016 19:49
Selenium	ND		0.469	mg/Kg	1	05-Dec-2016 19:49
Silver	ND		0.469	mg/Kg	1	05-Dec-2016 19:49
Zinc	21.4		0.469	mg/Kg	1	05-Dec-2016 19:49
<b>MERCURY BY SW7471B</b>		<b>Method:SW7471A</b>		Prep:SW7471A / 10-Dec-2016 Analyst: JCJ		
Mercury	9.11		3.58	ug/Kg	1	10-Dec-2016 19:33

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Kinder Morgan  
 Project: McElmo Dome  
 Sample ID: MC-8-1-6-7-111716  
 Collection Date: 17-Nov-2016 08:10

**ANALYTICAL REPORT**

WorkOrder:HS16111139  
 Lab ID:HS16111139-02  
 Matrix:Soil

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>LA29B ELECTRICAL CONDUCTIVITY</b>		<b>Method:LaDNR-29B EC</b>		Analyst: JHD		
Electrical Conductivity @ saturation	1.78		0.0100	mmhos/cm @25°C	1	21-Dec-2016 18:38
Electrical Conductivity, 1:1 aqueous	0.841		0.0100	mmhos/cm @25°C	1	21-Dec-2016 18:38
Saturation % as decimal	0.472		0	mmhos/cm @25°C	1	21-Dec-2016 18:38
<b>LA29B SATURATION POINT (AS FRACTION)</b>		<b>Method:LaDNR-29B SP</b>		Analyst: KAH		
Saturation Point	0.472		0.100	SP as fraction	1	15-Dec-2016 11:00
<b>MOISTURE</b>		<b>Method:SW3550</b>		Analyst: DFF		
Percent Moisture	13.3		0.0100	wt%	1	06-Dec-2016 10:17
<b>HEXAVALENT CHROMIUM BY SW7196A</b>		<b>Method:SW7196</b>		Prep:SW3060A / 06-Dec-2016 Analyst: KVL		
Chromium, Hexavalent	ND		1.99	mg/kg	1	07-Dec-2016 16:45
<b>PH SOIL BY SW9045D</b>		<b>Method:SW9045B</b>		Analyst: SAP		
pH	7.66	H	0.100	pH Units	1	08-Dec-2016 12:45
Temp Deg C @pH	19.9	H	0	°C	1	08-Dec-2016 12:45

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Kinder Morgan  
 Project: McElmo Dome  
 Sample ID: MC-8-1-9-10-111716  
 Collection Date: 17-Nov-2016 08:15

**ANALYTICAL REPORT**

WorkOrder:HS16111139  
 Lab ID:HS16111139-03  
 Matrix:Soil

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>VOLATILES BY SW8260C</b>		<b>Method:SW8260</b>		Analyst: WLR		
Benzene	ND		4.8	ug/Kg	1	29-Nov-2016 02:15
Ethylbenzene	ND		4.8	ug/Kg	1	29-Nov-2016 02:15
m,p-Xylene	ND		9.7	ug/Kg	1	29-Nov-2016 02:15
o-Xylene	ND		4.8	ug/Kg	1	29-Nov-2016 02:15
Toluene	ND		4.8	ug/Kg	1	29-Nov-2016 02:15
Xylenes, Total	ND		4.8	ug/Kg	1	29-Nov-2016 02:15
Surr: 1,2-Dichloroethane-d4	99.6		70-128	%REC	1	29-Nov-2016 02:15
Surr: 4-Bromofluorobenzene	100		73-126	%REC	1	29-Nov-2016 02:15
Surr: Dibromofluoromethane	100		71-128	%REC	1	29-Nov-2016 02:15
Surr: Toluene-d8	108		73-127	%REC	1	29-Nov-2016 02:15
<b>GASOLINE RANGE ORGANICS BY SW8015C</b>		<b>Method:SW8015</b>		Analyst: SFE		
Gasoline Range Organics	ND		0.050	mg/Kg	1	29-Nov-2016 16:24
Surr: 4-Bromofluorobenzene	92.3		70-130	%REC	1	29-Nov-2016 16:24
<b>TPH DRO/ORO BY SW8015C</b>		<b>Method:SW8015M</b>		Prep:SW3541 / 29-Nov-2016 Analyst: AAP		
TPH (Diesel Range)	ND		1.7	mg/Kg	1	02-Dec-2016 05:04
Surr: 2-Fluorobiphenyl	85.7		60-135	%REC	1	02-Dec-2016 05:04
<b>TRIVALENT CHROMIUM</b>		<b>Method:Calculation</b>		Analyst: DQ		
Chromium, Trivalent	ND		5.00	mg/Kg	1	10-Dec-2016 15:12
<b>LA29B SODIUM ADSORPTION RATIO</b>		<b>Method:La29B SAR</b>		Analyst: DQ		
Sodium Adsorption Ratio	0.267		0.0100	meq/meq	1	21-Dec-2016 19:14
<b>LA 29B - 1:1 SOLUBLE CATIONS FOR SAR</b>		<b>Method:La29B-6020</b>		Prep:La29B-6020 Analyst: JCJ		
Calcium	98.9		5.00	mg/L	10	20-Dec-2016 13:02
Magnesium	16.4		5.00	mg/L	10	20-Dec-2016 13:02
Sodium	10.9		5.00	mg/L	10	20-Dec-2016 13:02
<b>METALS BY SW6020A</b>		<b>Method:SW6020</b>		Prep:SW3050A / 05-Dec-2016 Analyst: JCJ		
Arsenic	1.67		0.460	mg/Kg	1	05-Dec-2016 19:54
Barium	105		0.460	mg/Kg	1	05-Dec-2016 19:54
Boron	2.66		2.30	mg/Kg	1	06-Dec-2016 14:16
Cadmium	ND		0.460	mg/Kg	1	05-Dec-2016 19:54
Chromium	4.14		0.460	mg/Kg	1	05-Dec-2016 19:54
Copper	2.98		0.184	mg/Kg	1	05-Dec-2016 19:54
Lead	3.52		0.460	mg/Kg	1	05-Dec-2016 19:54
Nickel	6.08		0.460	mg/Kg	1	05-Dec-2016 19:54
Selenium	ND		0.460	mg/Kg	1	05-Dec-2016 19:54
Silver	ND		0.460	mg/Kg	1	05-Dec-2016 19:54
Zinc	12.1		0.460	mg/Kg	1	05-Dec-2016 19:54
<b>MERCURY BY SW7471B</b>		<b>Method:SW7471A</b>		Prep:SW7471A / 10-Dec-2016 Analyst: JCJ		
Mercury	15.0		3.39	ug/Kg	1	10-Dec-2016 19:35

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Kinder Morgan  
 Project: McElmo Dome  
 Sample ID: MC-8-1-9-10-111716  
 Collection Date: 17-Nov-2016 08:15

**ANALYTICAL REPORT**

WorkOrder:HS16111139  
 Lab ID:HS16111139-03  
 Matrix:Soil

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>LA29B ELECTRICAL CONDUCTIVITY</b>		<b>Method:LaDNR-29B EC</b>		Analyst: JHD		
Electrical Conductivity @ saturation	1.90		0.0100	mmhos/cm @25°C	1	21-Dec-2016 18:38
Electrical Conductivity, 1:1 aqueous	0.908		0.0100	mmhos/cm @25°C	1	21-Dec-2016 18:38
Saturation % as decimal	0.477		0	mmhos/cm @25°C	1	21-Dec-2016 18:38
<b>LA29B SATURATION POINT (AS FRACTION)</b>		<b>Method:LaDNR-29B SP</b>		Analyst: KAH		
Saturation Point	0.477		0.100	SP as fraction	1	15-Dec-2016 11:00
<b>MOISTURE</b>		<b>Method:SW3550</b>		Analyst: DFF		
Percent Moisture	30.6		0.0100	wt%	1	06-Dec-2016 10:17
<b>HEXAVALENT CHROMIUM BY SW7196A</b>		<b>Method:SW7196</b>		Prep:SW3060A / 06-Dec-2016 Analyst: KVL		
Chromium, Hexavalent	ND		1.98	mg/kg	1	07-Dec-2016 16:45
<b>PH SOIL BY SW9045D</b>		<b>Method:SW9045B</b>		Analyst: SAP		
pH	8.13	H	0.100	pH Units	1	08-Dec-2016 12:45
Temp Deg C @pH	19.9	H	0	°C	1	08-Dec-2016 12:45

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Kinder Morgan  
 Project: McElmo Dome  
 Sample ID: MC-8-2-1-2-111716  
 Collection Date: 17-Nov-2016 08:30

**ANALYTICAL REPORT**

WorkOrder:HS16111139  
 Lab ID:HS16111139-04  
 Matrix:Soil

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>VOLATILES BY SW8260C</b>		<b>Method:SW8260</b>		Analyst: WLR		
Benzene	ND		5.0	ug/Kg	1	29-Nov-2016 02:38
Ethylbenzene	ND		5.0	ug/Kg	1	29-Nov-2016 02:38
m,p-Xylene	ND		9.9	ug/Kg	1	29-Nov-2016 02:38
o-Xylene	ND		5.0	ug/Kg	1	29-Nov-2016 02:38
Toluene	ND		5.0	ug/Kg	1	29-Nov-2016 02:38
Xylenes, Total	ND		5.0	ug/Kg	1	29-Nov-2016 02:38
Surr: 1,2-Dichloroethane-d4	101		70-128	%REC	1	29-Nov-2016 02:38
Surr: 4-Bromofluorobenzene	102		73-126	%REC	1	29-Nov-2016 02:38
Surr: Dibromofluoromethane	100		71-128	%REC	1	29-Nov-2016 02:38
Surr: Toluene-d8	109		73-127	%REC	1	29-Nov-2016 02:38
<b>GASOLINE RANGE ORGANICS BY SW8015C</b>		<b>Method:SW8015</b>		Analyst: SFE		
Gasoline Range Organics	ND		0.050	mg/Kg	1	29-Nov-2016 16:40
Surr: 4-Bromofluorobenzene	83.7		70-130	%REC	1	29-Nov-2016 16:40
<b>TPH DRO/ORO BY SW8015C</b>		<b>Method:SW8015M</b>		Prep:SW3541 / 29-Nov-2016 Analyst: AAP		
TPH (Diesel Range)	ND		1.7	mg/Kg	1	02-Dec-2016 05:28
Surr: 2-Fluorobiphenyl	74.2		60-135	%REC	1	02-Dec-2016 05:28
<b>TRIVALENT CHROMIUM</b>		<b>Method:Calculation</b>		Analyst: DQ		
Chromium, Trivalent	8.58		5.00	mg/Kg	1	10-Dec-2016 15:12
<b>LA29B SODIUM ADSORPTION RATIO</b>		<b>Method:La29B SAR</b>		Analyst: DQ		
Sodium Adsorption Ratio	1.70		0.0100	meq/meq	1	21-Dec-2016 19:14
<b>LA 29B - 1:1 SOLUBLE CATIONS FOR SAR</b>		<b>Method:La29B-6020</b>		Prep:La29B-6020 Analyst: JCJ		
Calcium	170		5.00	mg/L	10	20-Dec-2016 13:07
Magnesium	5.63		5.00	mg/L	10	20-Dec-2016 13:07
Sodium	82.6		5.00	mg/L	10	20-Dec-2016 13:07
<b>METALS BY SW6020A</b>		<b>Method:SW6020</b>		Prep:SW3050A / 05-Dec-2016 Analyst: JCJ		
Arsenic	2.85		0.478	mg/Kg	1	05-Dec-2016 19:58
Barium	164		0.478	mg/Kg	1	05-Dec-2016 19:58
Boron	3.06		2.39	mg/Kg	1	06-Dec-2016 14:21
Cadmium	ND		0.478	mg/Kg	1	05-Dec-2016 19:58
Chromium	8.58		0.478	mg/Kg	1	05-Dec-2016 19:58
Copper	7.30		0.191	mg/Kg	1	05-Dec-2016 19:58
Lead	7.80		0.478	mg/Kg	1	05-Dec-2016 19:58
Nickel	8.77		0.478	mg/Kg	1	05-Dec-2016 19:58
Selenium	ND		0.478	mg/Kg	1	05-Dec-2016 19:58
Silver	ND		0.478	mg/Kg	1	05-Dec-2016 19:58
Zinc	23.9		0.478	mg/Kg	1	05-Dec-2016 19:58
<b>MERCURY BY SW7471B</b>		<b>Method:SW7471A</b>		Prep:SW7471A / 10-Dec-2016 Analyst: JCJ		
Mercury	11.0		3.56	ug/Kg	1	10-Dec-2016 19:36

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Kinder Morgan  
 Project: McElmo Dome  
 Sample ID: MC-8-2-1-2-111716  
 Collection Date: 17-Nov-2016 08:30

**ANALYTICAL REPORT**

WorkOrder:HS16111139  
 Lab ID:HS16111139-04  
 Matrix:Soil

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>LA29B ELECTRICAL CONDUCTIVITY</b>		<b>Method:LaDNR-29B EC</b>		Analyst: JHD		
Electrical Conductivity @ saturation	3.02		0.0100	mmhos/cm @25°C	1	21-Dec-2016 18:38
Electrical Conductivity, 1:1 aqueous	1.37		0.0100	mmhos/cm @25°C	1	21-Dec-2016 18:38
Saturation % as decimal	0.453		0	mmhos/cm @25°C	1	21-Dec-2016 18:38
<b>LA29B SATURATION POINT (AS FRACTION)</b>		<b>Method:LaDNR-29B SP</b>		Analyst: KAH		
Saturation Point	0.453		0.100	SP as fraction	1	15-Dec-2016 11:00
<b>MOISTURE</b>		<b>Method:SW3550</b>		Analyst: DFF		
Percent Moisture	7.70		0.0100	wt%	1	06-Dec-2016 10:17
<b>HEXAVALENT CHROMIUM BY SW7196A</b>		<b>Method:SW7196</b>		Prep:SW3060A / 06-Dec-2016 Analyst: KVL		
Chromium, Hexavalent	ND		1.99	mg/kg	1	07-Dec-2016 16:45
<b>PH SOIL BY SW9045D</b>		<b>Method:SW9045B</b>		Analyst: SAP		
pH	8.16	H	0.100	pH Units	1	08-Dec-2016 12:45
Temp Deg C @pH	19.9	H	0	°C	1	08-Dec-2016 12:45

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Kinder Morgan  
 Project: McElmo Dome  
 Sample ID: MC-8-2-8-9-111716  
 Collection Date: 17-Nov-2016 08:50

**ANALYTICAL REPORT**

WorkOrder:HS16111139  
 Lab ID:HS16111139-05  
 Matrix:Soil

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>VOLATILES BY SW8260C</b>		<b>Method:SW8260</b>		Analyst: WLR		
Benzene	ND		4.9	ug/Kg	1	29-Nov-2016 03:01
Ethylbenzene	ND		4.9	ug/Kg	1	29-Nov-2016 03:01
m,p-Xylene	ND		9.8	ug/Kg	1	29-Nov-2016 03:01
o-Xylene	ND		4.9	ug/Kg	1	29-Nov-2016 03:01
Toluene	ND		4.9	ug/Kg	1	29-Nov-2016 03:01
Xylenes, Total	ND		4.9	ug/Kg	1	29-Nov-2016 03:01
Surr: 1,2-Dichloroethane-d4	102		70-128	%REC	1	29-Nov-2016 03:01
Surr: 4-Bromofluorobenzene	104		73-126	%REC	1	29-Nov-2016 03:01
Surr: Dibromofluoromethane	63.3	S	71-128	%REC	1	29-Nov-2016 03:01
Surr: Toluene-d8	112		73-127	%REC	1	29-Nov-2016 03:01
<b>GASOLINE RANGE ORGANICS BY SW8015C</b>		<b>Method:SW8015</b>		Analyst: SFE		
Gasoline Range Organics	0.14		0.050	mg/Kg	1	29-Nov-2016 16:56
Surr: 4-Bromofluorobenzene	86.6		70-130	%REC	1	29-Nov-2016 16:56
<b>TPH DRO/ORO BY SW8015C</b>		<b>Method:SW8015M</b>		Prep:SW3541 / 29-Nov-2016 Analyst: AAP		
TPH (Diesel Range)	4.2		1.7	mg/Kg	1	02-Dec-2016 05:52
Surr: 2-Fluorobiphenyl	70.7		60-135	%REC	1	02-Dec-2016 05:52
<b>TRIVALENT CHROMIUM</b>		<b>Method:Calculation</b>		Analyst: DQ		
Chromium, Trivalent	7.52		5.00	mg/Kg	1	10-Dec-2016 15:12
<b>LA29B SODIUM ADSORPTION RATIO</b>		<b>Method:La29B SAR</b>		Analyst: DQ		
Sodium Adsorption Ratio	11.9		0.0100	meq/meq	1	21-Dec-2016 19:14
<b>LA 29B - 1:1 SOLUBLE CATIONS FOR SAR</b>		<b>Method:La29B-6020</b>		Prep:La29B-6020 Analyst: JCJ		
Calcium	382		5.00	mg/L	10	20-Dec-2016 13:12
Magnesium	ND		5.00	mg/L	10	20-Dec-2016 13:12
Sodium	844		5.00	mg/L	10	20-Dec-2016 13:12
<b>METALS BY SW6020A</b>		<b>Method:SW6020</b>		Prep:SW3050A / 05-Dec-2016 Analyst: JCJ		
Arsenic	1.84		0.458	mg/Kg	1	05-Dec-2016 20:03
Barium	93.9		0.458	mg/Kg	1	05-Dec-2016 20:03
Boron	6.55		2.29	mg/Kg	1	06-Dec-2016 14:25
Cadmium	ND		0.458	mg/Kg	1	05-Dec-2016 20:03
Chromium	7.52		0.458	mg/Kg	1	05-Dec-2016 20:03
Copper	3.83		0.183	mg/Kg	1	05-Dec-2016 20:03
Lead	4.14		0.458	mg/Kg	1	05-Dec-2016 20:03
Nickel	4.44		0.458	mg/Kg	1	05-Dec-2016 20:03
Selenium	ND		0.458	mg/Kg	1	05-Dec-2016 20:03
Silver	ND		0.458	mg/Kg	1	05-Dec-2016 20:03
Zinc	18.3		0.458	mg/Kg	1	05-Dec-2016 20:03
<b>MERCURY BY SW7471B</b>		<b>Method:SW7471A</b>		Prep:SW7471A / 10-Dec-2016 Analyst: JCJ		
Mercury	ND		3.57	ug/Kg	1	10-Dec-2016 19:38

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Kinder Morgan  
 Project: McElmo Dome  
 Sample ID: MC-8-2-8-9-111716  
 Collection Date: 17-Nov-2016 08:50

**ANALYTICAL REPORT**

WorkOrder:HS16111139  
 Lab ID:HS16111139-05  
 Matrix:Soil

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>LA29B ELECTRICAL CONDUCTIVITY</b>		<b>Method:LaDNR-29B EC</b>		Analyst: JHD		
Electrical Conductivity @ saturation	11.5		0.0100	mmhos/cm @25°C	1	21-Dec-2016 18:38
Electrical Conductivity, 1:1 aqueous	7.03		0.0100	mmhos/cm @25°C	1	21-Dec-2016 18:38
Saturation % as decimal	0.611		0	mmhos/cm @25°C	1	21-Dec-2016 18:38
<b>LA29B SATURATION POINT (AS FRACTION)</b>		<b>Method:LaDNR-29B SP</b>		Analyst: KAH		
Saturation Point	0.611		0.100	SP as fraction	1	15-Dec-2016 11:00
<b>MOISTURE</b>		<b>Method:SW3550</b>		Analyst: DFF		
Percent Moisture	25.0		0.0100	wt%	1	06-Dec-2016 10:17
<b>HEXAVALENT CHROMIUM BY SW7196A</b>		<b>Method:SW7196</b>		Prep:SW3060A / 06-Dec-2016 Analyst: KVL		
Chromium, Hexavalent	ND		2.00	mg/kg	1	07-Dec-2016 16:45
<b>PH SOIL BY SW9045D</b>		<b>Method:SW9045B</b>		Analyst: SAP		
pH	11.4	H	0.100	pH Units	1	08-Dec-2016 12:45
Temp Deg C @pH	19.9	H	0	°C	1	08-Dec-2016 12:45

Note: See Qualifiers Page for a list of qualifiers and their explanation.



Client: Kinder Morgan  
 Project: McElmo Dome  
 Sample ID: MC-8-2-14-15-111716  
 Collection Date: 17-Nov-2016 09:15

**ANALYTICAL REPORT**

WorkOrder:HS16111139  
 Lab ID:HS16111139-06  
 Matrix:Soil

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>VOLATILES BY SW8260C</b>		<b>Method:SW8260</b>		Analyst: WLR		
Benzene	ND		5.0	ug/Kg	1	29-Nov-2016 03:24
Ethylbenzene	ND		5.0	ug/Kg	1	29-Nov-2016 03:24
m,p-Xylene	ND		9.9	ug/Kg	1	29-Nov-2016 03:24
o-Xylene	ND		5.0	ug/Kg	1	29-Nov-2016 03:24
Toluene	ND		5.0	ug/Kg	1	29-Nov-2016 03:24
Xylenes, Total	ND		5.0	ug/Kg	1	29-Nov-2016 03:24
Surr: 1,2-Dichloroethane-d4	95.9		70-128	%REC	1	29-Nov-2016 03:24
Surr: 4-Bromofluorobenzene	101		73-126	%REC	1	29-Nov-2016 03:24
Surr: Dibromofluoromethane	98.1		71-128	%REC	1	29-Nov-2016 03:24
Surr: Toluene-d8	107		73-127	%REC	1	29-Nov-2016 03:24
<b>GASOLINE RANGE ORGANICS BY SW8015C</b>		<b>Method:SW8015</b>		Analyst: SFE		
Gasoline Range Organics	ND		0.050	mg/Kg	1	29-Nov-2016 17:28
Surr: 4-Bromofluorobenzene	79.6		70-130	%REC	1	29-Nov-2016 17:28
<b>TPH DRO/ORO BY SW8015C</b>		<b>Method:SW8015M</b>		Prep:SW3541 / 29-Nov-2016 Analyst: AAP		
TPH (Diesel Range)	ND		1.7	mg/Kg	1	02-Dec-2016 06:17
Surr: 2-Fluorobiphenyl	90.9		60-135	%REC	1	02-Dec-2016 06:17
<b>TRIVALENT CHROMIUM</b>		<b>Method:Calculation</b>		Analyst: DQ		
Chromium, Trivalent	ND		5.00	mg/Kg	1	10-Dec-2016 15:12
<b>LA29B SODIUM ADSORPTION RATIO</b>		<b>Method:La29B SAR</b>		Analyst: DQ		
Sodium Adsorption Ratio	1.15		0.0100	meq/meq	1	21-Dec-2016 19:14
<b>LA 29B - 1:1 SOLUBLE CATIONS FOR SAR</b>		<b>Method:La29B-6020</b>		Prep:La29B-6020 Analyst: JCJ		
Calcium	96.1		5.00	mg/L	10	20-Dec-2016 13:16
Magnesium	23.3		5.00	mg/L	10	20-Dec-2016 13:16
Sodium	48.6		5.00	mg/L	10	20-Dec-2016 13:16
<b>METALS BY SW6020A</b>		<b>Method:SW6020</b>		Prep:SW3050A / 05-Dec-2016 Analyst: JCJ		
Arsenic	2.00		0.459	mg/Kg	1	05-Dec-2016 20:07
Barium	141		0.459	mg/Kg	1	05-Dec-2016 20:07
Boron	2.61		2.30	mg/Kg	1	06-Dec-2016 14:30
Cadmium	ND		0.459	mg/Kg	1	05-Dec-2016 20:07
Chromium	2.81		0.459	mg/Kg	1	05-Dec-2016 20:07
Copper	1.90		0.184	mg/Kg	1	05-Dec-2016 20:07
Lead	2.77		0.459	mg/Kg	1	05-Dec-2016 20:07
Nickel	3.26		0.459	mg/Kg	1	05-Dec-2016 20:07
Selenium	ND		0.459	mg/Kg	1	05-Dec-2016 20:07
Silver	ND		0.459	mg/Kg	1	05-Dec-2016 20:07
Zinc	9.13		0.459	mg/Kg	1	05-Dec-2016 20:07
<b>MERCURY BY SW7471B</b>		<b>Method:SW7471A</b>		Prep:SW7471A / 10-Dec-2016 Analyst: JCJ		
Mercury	34.3		3.42	ug/Kg	1	10-Dec-2016 19:40

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Kinder Morgan  
 Project: McElmo Dome  
 Sample ID: MC-8-2-14-15-111716  
 Collection Date: 17-Nov-2016 09:15

**ANALYTICAL REPORT**

WorkOrder:HS16111139  
 Lab ID:HS16111139-06  
 Matrix:Soil

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>LA29B ELECTRICAL CONDUCTIVITY</b>		<b>Method:LaDNR-29B EC</b>		Analyst: JHD		
Electrical Conductivity @ saturation	2.91		0.0100	mmhos/cm @25°C	1	21-Dec-2016 18:38
Electrical Conductivity, 1:1 aqueous	1.14		0.0100	mmhos/cm @25°C	1	21-Dec-2016 18:38
Saturation % as decimal	0.392		0	mmhos/cm @25°C	1	21-Dec-2016 18:38
<b>LA29B SATURATION POINT (AS FRACTION)</b>		<b>Method:LaDNR-29B SP</b>		Analyst: KAH		
Saturation Point	0.392		0.100	SP as fraction	1	15-Dec-2016 11:00
<b>MOISTURE</b>		<b>Method:SW3550</b>		Analyst: DFF		
Percent Moisture	32.7		0.0100	wt%	1	06-Dec-2016 10:17
<b>HEXAVALENT CHROMIUM BY SW7196A</b>		<b>Method:SW7196</b>		Prep:SW3060A / 06-Dec-2016 Analyst: KVL		
Chromium, Hexavalent	ND		1.99	mg/kg	1	07-Dec-2016 16:45
<b>PH SOIL BY SW9045D</b>		<b>Method:SW9045B</b>		Analyst: SAP		
pH	8.15	H	0.100	pH Units	1	08-Dec-2016 12:45
Temp Deg C @pH	19.9	H	0	°C	1	08-Dec-2016 12:45

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Kinder Morgan  
 Project: McElmo Dome  
 Sample ID: MC-8-3-1-2-111716  
 Collection Date: 17-Nov-2016 09:30

**ANALYTICAL REPORT**

WorkOrder:HS16111139  
 Lab ID:HS16111139-07  
 Matrix:Soil

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>VOLATILES BY SW8260C</b>		<b>Method:SW8260</b>		Analyst: WLR		
Benzene	ND		4.8	ug/Kg	1	29-Nov-2016 03:47
Ethylbenzene	ND		4.8	ug/Kg	1	29-Nov-2016 03:47
m,p-Xylene	ND		9.7	ug/Kg	1	29-Nov-2016 03:47
o-Xylene	ND		4.8	ug/Kg	1	29-Nov-2016 03:47
Toluene	ND		4.8	ug/Kg	1	29-Nov-2016 03:47
Xylenes, Total	ND		4.8	ug/Kg	1	29-Nov-2016 03:47
Surr: 1,2-Dichloroethane-d4	102		70-128	%REC	1	29-Nov-2016 03:47
Surr: 4-Bromofluorobenzene	106		73-126	%REC	1	29-Nov-2016 03:47
Surr: Dibromofluoromethane	105		71-128	%REC	1	29-Nov-2016 03:47
Surr: Toluene-d8	114		73-127	%REC	1	29-Nov-2016 03:47
<b>GASOLINE RANGE ORGANICS BY SW8015C</b>		<b>Method:SW8015</b>		Analyst: SFE		
Gasoline Range Organics	ND		0.050	mg/Kg	1	29-Nov-2016 17:44
Surr: 4-Bromofluorobenzene	82.9		70-130	%REC	1	29-Nov-2016 17:44
<b>TPH DRO/ORO BY SW8015C</b>		<b>Method:SW8015M</b>		Prep:SW3541 / 29-Nov-2016		Analyst: AAP
TPH (Diesel Range)	ND		1.7	mg/Kg	1	02-Dec-2016 06:41
Surr: 2-Fluorobiphenyl	75.4		60-135	%REC	1	02-Dec-2016 06:41
<b>TRIVALENT CHROMIUM</b>		<b>Method:Calculation</b>		Analyst: DQ		
Chromium, Trivalent	6.62		5.00	mg/Kg	1	10-Dec-2016 15:12
<b>LA29B SODIUM ADSORPTION RATIO</b>		<b>Method:La29B SAR</b>		Analyst: DQ		
Sodium Adsorption Ratio	14.3		0.0100	meq/meq	1	21-Dec-2016 19:14
<b>LA 29B - 1:1 SOLUBLE CATIONS FOR SAR</b>		<b>Method:La29B-6020</b>		Prep:La29B-6020		Analyst: JCJ
Calcium	509		5.00	mg/L	10	20-Dec-2016 13:21
Magnesium	52.3		5.00	mg/L	10	20-Dec-2016 13:21
Sodium	1,270		5.00	mg/L	10	20-Dec-2016 13:21
<b>METALS BY SW6020A</b>		<b>Method:SW6020</b>		Prep:SW3050A / 05-Dec-2016		Analyst: JCJ
Arsenic	2.17		0.478	mg/Kg	1	05-Dec-2016 20:11
Barium	131		0.478	mg/Kg	1	05-Dec-2016 20:11
Boron	2.67		2.39	mg/Kg	1	06-Dec-2016 14:34
Cadmium	ND		0.478	mg/Kg	1	05-Dec-2016 20:11
Chromium	6.62		0.478	mg/Kg	1	05-Dec-2016 20:11
Copper	5.46		0.191	mg/Kg	1	05-Dec-2016 20:11
Lead	5.99		0.478	mg/Kg	1	05-Dec-2016 20:11
Nickel	6.98		0.478	mg/Kg	1	05-Dec-2016 20:11
Selenium	ND		0.478	mg/Kg	1	05-Dec-2016 20:11
Silver	ND		0.478	mg/Kg	1	05-Dec-2016 20:11
Zinc	18.9		0.478	mg/Kg	1	05-Dec-2016 20:11
<b>MERCURY BY SW7471B</b>		<b>Method:SW7471A</b>		Prep:SW7471A / 10-Dec-2016		Analyst: JCJ
Mercury	11.2		3.55	ug/Kg	1	10-Dec-2016 19:42

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Kinder Morgan  
 Project: McElmo Dome  
 Sample ID: MC-8-3-1-2-111716  
 Collection Date: 17-Nov-2016 09:30

**ANALYTICAL REPORT**

WorkOrder:HS16111139  
 Lab ID:HS16111139-07  
 Matrix:Soil

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>LA29B ELECTRICAL CONDUCTIVITY</b>		<b>Method:LaDNR-29B EC</b>		Analyst: JHD		
Electrical Conductivity @ saturation	22.2		0.0100	mmhos/cm @25°C	1	21-Dec-2016 18:38
Electrical Conductivity, 1:1 aqueous	10.8		0.0100	mmhos/cm @25°C	1	21-Dec-2016 18:38
Saturation % as decimal	0.487		0	mmhos/cm @25°C	1	21-Dec-2016 18:38
<b>LA29B SATURATION POINT (AS FRACTION)</b>		<b>Method:LaDNR-29B SP</b>		Analyst: KAH		
Saturation Point	0.487		0.100	SP as fraction	1	15-Dec-2016 11:00
<b>MOISTURE</b>		<b>Method:SW3550</b>		Analyst: DFF		
Percent Moisture	9.24		0.0100	wt%	1	06-Dec-2016 10:17
<b>HEXAVALENT CHROMIUM BY SW7196A</b>		<b>Method:SW7196</b>		Prep:SW3060A / 06-Dec-2016 Analyst: KVL		
Chromium, Hexavalent	ND		1.99	mg/kg	1	07-Dec-2016 16:45
<b>PH SOIL BY SW9045D</b>		<b>Method:SW9045B</b>		Analyst: SAP		
pH	8.23	H	0.100	pH Units	1	08-Dec-2016 12:45
Temp Deg C @pH	19.9	H	0	°C	1	08-Dec-2016 12:45

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Kinder Morgan  
 Project: McElmo Dome  
 Sample ID: MC-8-3-6-7-111716  
 Collection Date: 17-Nov-2016 10:10

**ANALYTICAL REPORT**

WorkOrder:HS16111139  
 Lab ID:HS16111139-08  
 Matrix:Soil

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>VOLATILES BY SW8260C</b>		<b>Method:SW8260</b>		Analyst: WLR		
Benzene	ND		4.8	ug/Kg	1	29-Nov-2016 04:11
Ethylbenzene	ND		4.8	ug/Kg	1	29-Nov-2016 04:11
m,p-Xylene	ND		9.7	ug/Kg	1	29-Nov-2016 04:11
o-Xylene	ND		4.8	ug/Kg	1	29-Nov-2016 04:11
Toluene	ND		4.8	ug/Kg	1	29-Nov-2016 04:11
Xylenes, Total	ND		4.8	ug/Kg	1	29-Nov-2016 04:11
Surr: 1,2-Dichloroethane-d4	101		70-128	%REC	1	29-Nov-2016 04:11
Surr: 4-Bromofluorobenzene	100		73-126	%REC	1	29-Nov-2016 04:11
Surr: Dibromofluoromethane	101		71-128	%REC	1	29-Nov-2016 04:11
Surr: Toluene-d8	108		73-127	%REC	1	29-Nov-2016 04:11
<b>GASOLINE RANGE ORGANICS BY SW8015C</b>		<b>Method:SW8015</b>		Analyst: SFE		
Gasoline Range Organics	ND		0.050	mg/Kg	1	29-Nov-2016 18:00
Surr: 4-Bromofluorobenzene	83.7		70-130	%REC	1	29-Nov-2016 18:00
<b>TPH DRO/ORO BY SW8015C</b>		<b>Method:SW8015M</b>		Prep:SW3541 / 29-Nov-2016 Analyst: AAP		
TPH (Diesel Range)	ND		1.7	mg/Kg	1	02-Dec-2016 07:54
Surr: 2-Fluorobiphenyl	64.5		60-135	%REC	1	02-Dec-2016 07:54
<b>TRIVALENT CHROMIUM</b>		<b>Method:Calculation</b>		Analyst: DQ		
Chromium, Trivalent	5.96		5.00	mg/Kg	1	10-Dec-2016 15:12
<b>LA29B SODIUM ADSORPTION RATIO</b>		<b>Method:La29B SAR</b>		Analyst: DQ		
Sodium Adsorption Ratio	0.629		0.0100	meq/meq	1	21-Dec-2016 19:14
<b>LA 29B - 1:1 SOLUBLE CATIONS FOR SAR</b>		<b>Method:La29B-6020</b>		Prep:La29B-6020 Analyst: JCJ		
Calcium	462		5.00	mg/L	10	20-Dec-2016 13:25
Magnesium	128		5.00	mg/L	10	20-Dec-2016 13:25
Sodium	59.3		5.00	mg/L	10	20-Dec-2016 13:25
<b>METALS BY SW6020A</b>		<b>Method:SW6020</b>		Prep:SW3050A / 05-Dec-2016 Analyst: JCJ		
Arsenic	2.22		0.467	mg/Kg	1	05-Dec-2016 20:25
Barium	188		2.33	mg/Kg	5	06-Dec-2016 13:42
Boron	3.56		2.33	mg/Kg	1	06-Dec-2016 15:01
Cadmium	ND		0.467	mg/Kg	1	05-Dec-2016 20:25
Chromium	5.96		0.467	mg/Kg	1	05-Dec-2016 20:25
Copper	3.44		0.187	mg/Kg	1	05-Dec-2016 20:25
Lead	5.02		0.467	mg/Kg	1	05-Dec-2016 20:25
Nickel	7.10		0.467	mg/Kg	1	05-Dec-2016 20:25
Selenium	ND		0.467	mg/Kg	1	05-Dec-2016 20:25
Silver	ND		0.467	mg/Kg	1	05-Dec-2016 20:25
Zinc	16.3		0.467	mg/Kg	1	05-Dec-2016 20:25
<b>MERCURY BY SW7471B</b>		<b>Method:SW7471A</b>		Prep:SW7471A / 10-Dec-2016 Analyst: JCJ		
Mercury	14.0		3.48	ug/Kg	1	10-Dec-2016 19:43

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Kinder Morgan  
 Project: McElmo Dome  
 Sample ID: MC-8-3-6-7-111716  
 Collection Date: 17-Nov-2016 10:10

**ANALYTICAL REPORT**

WorkOrder:HS16111139  
 Lab ID:HS16111139-08  
 Matrix:Soil

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>LA29B ELECTRICAL CONDUCTIVITY</b>		<b>Method:LaDNR-29B EC</b>		Analyst: JHD		
Electrical Conductivity @ saturation	9.84		0.0100	mmhos/cm @25°C	1	21-Dec-2016 18:38
Electrical Conductivity, 1:1 aqueous	4.76		0.0100	mmhos/cm @25°C	1	21-Dec-2016 18:38
Saturation % as decimal	0.484		0	mmhos/cm @25°C	1	21-Dec-2016 18:38
<b>LA29B SATURATION POINT (AS FRACTION)</b>		<b>Method:LaDNR-29B SP</b>		Analyst: KAH		
Saturation Point	0.484		0.100	SP as fraction	1	15-Dec-2016 11:00
<b>MOISTURE</b>		<b>Method:SW3550</b>		Analyst: DFF		
Percent Moisture	13.8		0.0100	wt%	1	06-Dec-2016 10:17
<b>HEXAVALENT CHROMIUM BY SW7196A</b>		<b>Method:SW7196</b>		Prep:SW3060A / 06-Dec-2016 Analyst: KVL		
Chromium, Hexavalent	ND		1.99	mg/kg	1	07-Dec-2016 16:45
<b>PH SOIL BY SW9045D</b>		<b>Method:SW9045B</b>		Analyst: SAP		
pH	7.50	H	0.100	pH Units	1	09-Dec-2016 17:13
Temp Deg C @pH	20.7	H	0	°C	1	09-Dec-2016 17:13

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Kinder Morgan  
 Project: McElmo Dome  
 Sample ID: TB - 053116-13  
 Collection Date: 17-Nov-2016 00:01

**ANALYTICAL REPORT**

WorkOrder:HS16111139  
 Lab ID:HS16111139-09  
 Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>LOW LEVEL VOLATILES BY SW8260C</b>		<b>Method:SW8260</b>		Analyst: AKP		
Benzene	ND		1.0	ug/L	1	26-Nov-2016 19:55
Ethylbenzene	ND		1.0	ug/L	1	26-Nov-2016 19:55
m,p-Xylene	ND		2.0	ug/L	1	26-Nov-2016 19:55
o-Xylene	ND		1.0	ug/L	1	26-Nov-2016 19:55
Toluene	ND		1.0	ug/L	1	26-Nov-2016 19:55
Xylenes, Total	ND		1.0	ug/L	1	26-Nov-2016 19:55
<i>Surr: 1,2-Dichloroethane-d4</i>	99.6		71-125	%REC	1	26-Nov-2016 19:55
<i>Surr: 4-Bromofluorobenzene</i>	99.9		70-125	%REC	1	26-Nov-2016 19:55
<i>Surr: Dibromofluoromethane</i>	103		74-125	%REC	1	26-Nov-2016 19:55
<i>Surr: Toluene-d8</i>	101		75-125	%REC	1	26-Nov-2016 19:55

Note: See Qualifiers Page for a list of qualifiers and their explanation.



Client: Kinder Morgan  
 Project: McElmo Dome  
 Sample ID: MC-8-3-9-10-111716  
 Collection Date: 17-Nov-2016 10:15

**ANALYTICAL REPORT**

WorkOrder:HS16111139  
 Lab ID:HS16111139-10  
 Matrix:Soil

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>VOLATILES BY SW8260C</b>		<b>Method:SW8260</b>		Analyst: WLR		
Benzene	ND		4.9	ug/Kg	1	29-Nov-2016 04:34
Ethylbenzene	ND		4.9	ug/Kg	1	29-Nov-2016 04:34
m,p-Xylene	ND		9.8	ug/Kg	1	29-Nov-2016 04:34
o-Xylene	ND		4.9	ug/Kg	1	29-Nov-2016 04:34
Toluene	ND		4.9	ug/Kg	1	29-Nov-2016 04:34
Xylenes, Total	ND		4.9	ug/Kg	1	29-Nov-2016 04:34
Surr: 1,2-Dichloroethane-d4	98.7		70-128	%REC	1	29-Nov-2016 04:34
Surr: 4-Bromofluorobenzene	102		73-126	%REC	1	29-Nov-2016 04:34
Surr: Dibromofluoromethane	99.3		71-128	%REC	1	29-Nov-2016 04:34
Surr: Toluene-d8	110		73-127	%REC	1	29-Nov-2016 04:34
<b>GASOLINE RANGE ORGANICS BY SW8015C</b>		<b>Method:SW8015</b>		Analyst: SFE		
Gasoline Range Organics	ND		0.050	mg/Kg	1	29-Nov-2016 18:16
Surr: 4-Bromofluorobenzene	82.6		70-130	%REC	1	29-Nov-2016 18:16
<b>TPH DRO/ORO BY SW8015C</b>		<b>Method:SW8015M</b>		Prep:SW3541 / 29-Nov-2016 Analyst: AAP		
TPH (Diesel Range)	ND		1.7	mg/Kg	1	02-Dec-2016 08:18
Surr: 2-Fluorobiphenyl	84.6		60-135	%REC	1	02-Dec-2016 08:18
<b>TRIVALENT CHROMIUM</b>		<b>Method:Calculation</b>		Analyst: DQ		
Chromium, Trivalent	5.36		5.00	mg/Kg	1	10-Dec-2016 15:12
<b>LA29B SODIUM ADSORPTION RATIO</b>		<b>Method:La29B SAR</b>		Analyst: DQ		
Sodium Adsorption Ratio	0.720		0.0100	meq/meq	1	21-Dec-2016 19:14
<b>LA 29B - 1:1 SOLUBLE CATIONS FOR SAR</b>		<b>Method:La29B-6020</b>		Prep:La29B-6020 Analyst: JCJ		
Calcium	45.7		5.00	mg/L	10	20-Dec-2016 13:48
Magnesium	13.7		5.00	mg/L	10	20-Dec-2016 13:48
Sodium	21.6		5.00	mg/L	10	20-Dec-2016 13:48
<b>METALS BY SW6020A</b>		<b>Method:SW6020</b>		Prep:SW3050A / 05-Dec-2016 Analyst: JCJ		
Arsenic	2.43		0.472	mg/Kg	1	05-Dec-2016 20:29
Barium	122		0.472	mg/Kg	1	05-Dec-2016 20:29
Boron	4.03		2.36	mg/Kg	1	06-Dec-2016 15:05
Cadmium	ND		0.472	mg/Kg	1	05-Dec-2016 20:29
Chromium	5.36		0.472	mg/Kg	1	05-Dec-2016 20:29
Copper	3.75		0.189	mg/Kg	1	05-Dec-2016 20:29
Lead	4.46		0.472	mg/Kg	1	05-Dec-2016 20:29
Nickel	6.65		0.472	mg/Kg	1	05-Dec-2016 20:29
Selenium	ND		0.472	mg/Kg	1	05-Dec-2016 20:29
Silver	ND		0.472	mg/Kg	1	05-Dec-2016 20:29
Zinc	15.0		0.472	mg/Kg	1	05-Dec-2016 20:29
<b>MERCURY BY SW7471B</b>		<b>Method:SW7471A</b>		Prep:SW7471A / 10-Dec-2016 Analyst: JCJ		
Mercury	9.69		3.50	ug/Kg	1	10-Dec-2016 19:48

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Kinder Morgan  
 Project: McElmo Dome  
 Sample ID: MC-8-3-9-10-111716  
 Collection Date: 17-Nov-2016 10:15

**ANALYTICAL REPORT**

WorkOrder:HS16111139  
 Lab ID:HS16111139-10  
 Matrix:Soil

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>LA29B ELECTRICAL CONDUCTIVITY</b>		<b>Method:LaDNR-29B EC</b>		Analyst: JHD		
Electrical Conductivity @ saturation	1.27		0.0100	mmhos/cm @25°C	1	21-Dec-2016 18:38
Electrical Conductivity, 1:1 aqueous	0.579		0.0100	mmhos/cm @25°C	1	21-Dec-2016 18:38
Saturation % as decimal	0.457		0	mmhos/cm @25°C	1	21-Dec-2016 18:38
<b>LA29B SATURATION POINT (AS FRACTION)</b>		<b>Method:LaDNR-29B SP</b>		Analyst: KAH		
Saturation Point	0.457		0.100	SP as fraction	1	15-Dec-2016 11:00
<b>MOISTURE</b>		<b>Method:SW3550</b>		Analyst: DFF		
Percent Moisture	14.5		0.0100	wt%	1	06-Dec-2016 10:17
<b>HEXAVALENT CHROMIUM BY SW7196A</b>		<b>Method:SW7196</b>		Prep:SW3060A / 06-Dec-2016 Analyst: KVL		
Chromium, Hexavalent	ND		2.00	mg/kg	1	07-Dec-2016 16:45
<b>PH SOIL BY SW9045D</b>		<b>Method:SW9045B</b>		Analyst: SAP		
pH	8.37	H	0.100	pH Units	1	09-Dec-2016 17:13
Temp Deg C @pH	20.2	H	0	°C	1	09-Dec-2016 17:13

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Kinder Morgan  
 Project: McElmo Dome  
 Sample ID: MC-8-4-2-3-111716  
 Collection Date: 17-Nov-2016 11:15

**ANALYTICAL REPORT**

WorkOrder:HS16111139  
 Lab ID:HS16111139-11  
 Matrix:Soil

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>VOLATILES BY SW8260C</b>		<b>Method:SW8260</b>		Analyst: WLR		
Benzene	ND		4.9	ug/Kg	1	29-Nov-2016 04:57
Ethylbenzene	ND		4.9	ug/Kg	1	29-Nov-2016 04:57
m,p-Xylene	ND		9.8	ug/Kg	1	29-Nov-2016 04:57
o-Xylene	ND		4.9	ug/Kg	1	29-Nov-2016 04:57
Toluene	ND		4.9	ug/Kg	1	29-Nov-2016 04:57
Xylenes, Total	ND		4.9	ug/Kg	1	29-Nov-2016 04:57
Surr: 1,2-Dichloroethane-d4	100		70-128	%REC	1	29-Nov-2016 04:57
Surr: 4-Bromofluorobenzene	99.8		73-126	%REC	1	29-Nov-2016 04:57
Surr: Dibromofluoromethane	98.8		71-128	%REC	1	29-Nov-2016 04:57
Surr: Toluene-d8	108		73-127	%REC	1	29-Nov-2016 04:57
<b>GASOLINE RANGE ORGANICS BY SW8015C</b>		<b>Method:SW8015</b>		Analyst: SFE		
Gasoline Range Organics	ND		0.050	mg/Kg	1	29-Nov-2016 18:32
Surr: 4-Bromofluorobenzene	83.5		70-130	%REC	1	29-Nov-2016 18:32
<b>TPH DRO/ORO BY SW8015C</b>		<b>Method:SW8015M</b>		Prep:SW3541 / 29-Nov-2016 Analyst: AAP		
TPH (Diesel Range)	ND		1.7	mg/Kg	1	02-Dec-2016 08:42
Surr: 2-Fluorobiphenyl	76.9		60-135	%REC	1	02-Dec-2016 08:42
<b>TRIVALENT CHROMIUM</b>		<b>Method:Calculation</b>		Analyst: DQ		
Chromium, Trivalent	6.52		5.00	mg/Kg	1	10-Dec-2016 15:12
<b>LA29B SODIUM ADSORPTION RATIO</b>		<b>Method:La29B SAR</b>		Analyst: DQ		
Sodium Adsorption Ratio	0.647		0.0100	meq/meq	1	21-Dec-2016 19:14
<b>LA 29B - 1:1 SOLUBLE CATIONS FOR SAR</b>		<b>Method:La29B-6020</b>		Prep:La29B-6020 Analyst: JCJ		
Calcium	68.6		5.00	mg/L	10	20-Dec-2016 13:53
Magnesium	8.72		5.00	mg/L	10	20-Dec-2016 13:53
Sodium	21.4		5.00	mg/L	10	20-Dec-2016 13:53
<b>METALS BY SW6020A</b>		<b>Method:SW6020</b>		Prep:SW3050A / 05-Dec-2016 Analyst: JCJ		
Arsenic	2.15		0.472	mg/Kg	1	05-Dec-2016 20:34
Barium	127		0.472	mg/Kg	1	05-Dec-2016 20:34
Boron	2.70		2.36	mg/Kg	1	06-Dec-2016 15:10
Cadmium	ND		0.472	mg/Kg	1	05-Dec-2016 20:34
Chromium	6.52		0.472	mg/Kg	1	05-Dec-2016 20:34
Copper	6.02		0.189	mg/Kg	1	05-Dec-2016 20:34
Lead	6.35		0.472	mg/Kg	1	05-Dec-2016 20:34
Nickel	7.17		0.472	mg/Kg	1	05-Dec-2016 20:34
Selenium	ND		0.472	mg/Kg	1	05-Dec-2016 20:34
Silver	ND		0.472	mg/Kg	1	05-Dec-2016 20:34
Zinc	19.7		0.472	mg/Kg	1	05-Dec-2016 20:34
<b>MERCURY BY SW7471B</b>		<b>Method:SW7471A</b>		Prep:SW7471A / 10-Dec-2016 Analyst: JCJ		
Mercury	10.4		3.60	ug/Kg	1	10-Dec-2016 19:50

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Kinder Morgan  
 Project: McElmo Dome  
 Sample ID: MC-8-4-2-3-111716  
 Collection Date: 17-Nov-2016 11:15

**ANALYTICAL REPORT**

WorkOrder:HS16111139  
 Lab ID:HS16111139-11  
 Matrix:Soil

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>LA29B ELECTRICAL CONDUCTIVITY</b>		<b>Method:LaDNR-29B EC</b>		Analyst: JHD		
Electrical Conductivity @ saturation	1.16		0.0100	mmhos/cm @25°C	1	21-Dec-2016 18:38
Electrical Conductivity, 1:1 aqueous	0.555		0.0100	mmhos/cm @25°C	1	21-Dec-2016 18:38
Saturation % as decimal	0.481		0	mmhos/cm @25°C	1	21-Dec-2016 18:38
<b>LA29B SATURATION POINT (AS FRACTION)</b>		<b>Method:LaDNR-29B SP</b>		Analyst: KAH		
Saturation Point	0.481		0.100	SP as fraction	1	15-Dec-2016 11:00
<b>MOISTURE</b>		<b>Method:SW3550</b>		Analyst: DFF		
Percent Moisture	9.50		0.0100	wt%	1	06-Dec-2016 10:17
<b>HEXAVALENT CHROMIUM BY SW7196A</b>		<b>Method:SW7196</b>		Prep:SW3060A / 05-Dec-2016 Analyst: KVL		
Chromium, Hexavalent	ND		1.99	mg/kg	1	06-Dec-2016 15:53
<b>PH SOIL BY SW9045D</b>		<b>Method:SW9045B</b>		Analyst: SAP		
pH	7.96	H	0.100	pH Units	1	09-Dec-2016 17:13
Temp Deg C @pH	19.6	H	0	°C	1	09-Dec-2016 17:13

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Kinder Morgan  
 Project: McElmo Dome  
 Sample ID: MC-8-4-3-4-111716  
 Collection Date: 17-Nov-2016 11:20

**ANALYTICAL REPORT**

WorkOrder:HS16111139  
 Lab ID:HS16111139-12  
 Matrix:Soil

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>VOLATILES BY SW8260C</b>		<b>Method:SW8260</b>		Analyst: WLR		
Benzene	ND		4.9	ug/Kg	1	29-Nov-2016 05:20
Ethylbenzene	ND		4.9	ug/Kg	1	29-Nov-2016 05:20
m,p-Xylene	ND		9.8	ug/Kg	1	29-Nov-2016 05:20
o-Xylene	ND		4.9	ug/Kg	1	29-Nov-2016 05:20
Toluene	ND		4.9	ug/Kg	1	29-Nov-2016 05:20
Xylenes, Total	ND		4.9	ug/Kg	1	29-Nov-2016 05:20
Surr: 1,2-Dichloroethane-d4	94.8		70-128	%REC	1	29-Nov-2016 05:20
Surr: 4-Bromofluorobenzene	98.2		73-126	%REC	1	29-Nov-2016 05:20
Surr: Dibromofluoromethane	99.0		71-128	%REC	1	29-Nov-2016 05:20
Surr: Toluene-d8	107		73-127	%REC	1	29-Nov-2016 05:20
<b>GASOLINE RANGE ORGANICS BY SW8015C</b>		<b>Method:SW8015</b>		Analyst: SFE		
Gasoline Range Organics	ND		0.050	mg/Kg	1	29-Nov-2016 18:48
Surr: 4-Bromofluorobenzene	83.9		70-130	%REC	1	29-Nov-2016 18:48
<b>TPH DRO/ORO BY SW8015C</b>		<b>Method:SW8015M</b>		Prep:SW3541 / 29-Nov-2016 Analyst: AAP		
TPH (Diesel Range)	ND		1.7	mg/Kg	1	02-Dec-2016 09:06
Surr: 2-Fluorobiphenyl	77.6		60-135	%REC	1	02-Dec-2016 09:06
<b>TRIVALENT CHROMIUM</b>		<b>Method:Calculation</b>		Analyst: DQ		
Chromium, Trivalent	9.20		5.00	mg/Kg	1	10-Dec-2016 15:12
<b>LA29B SODIUM ADSORPTION RATIO</b>		<b>Method:La29B SAR</b>		Analyst: DQ		
Sodium Adsorption Ratio	0.543		0.0100	meq/meq	1	21-Dec-2016 19:14
<b>LA 29B - 1:1 SOLUBLE CATIONS FOR SAR</b>		<b>Method:La29B-6020</b>		Prep:La29B-6020 Analyst: JCJ		
Calcium	65.2		5.00	mg/L	10	20-Dec-2016 13:58
Magnesium	7.76		5.00	mg/L	10	20-Dec-2016 13:58
Sodium	17.4		5.00	mg/L	10	20-Dec-2016 13:58
<b>METALS BY SW6020A</b>		<b>Method:SW6020</b>		Prep:SW3050A / 05-Dec-2016 Analyst: JCJ		
Arsenic	3.29		0.461	mg/Kg	1	05-Dec-2016 20:38
Barium	191		2.30	mg/Kg	5	06-Dec-2016 13:46
Boron	3.83		2.30	mg/Kg	1	06-Dec-2016 15:14
Cadmium	ND		0.461	mg/Kg	1	05-Dec-2016 20:38
Chromium	9.20		0.461	mg/Kg	1	05-Dec-2016 20:38
Copper	6.21		0.184	mg/Kg	1	05-Dec-2016 20:38
Lead	7.50		0.461	mg/Kg	1	05-Dec-2016 20:38
Nickel	9.58		0.461	mg/Kg	1	05-Dec-2016 20:38
Selenium	ND		0.461	mg/Kg	1	05-Dec-2016 20:38
Silver	ND		0.461	mg/Kg	1	05-Dec-2016 20:38
Zinc	26.5		0.461	mg/Kg	1	05-Dec-2016 20:38
<b>MERCURY BY SW7471B</b>		<b>Method:SW7471A</b>		Prep:SW7471A / 10-Dec-2016 Analyst: JCJ		
Mercury	10.9		3.54	ug/Kg	1	10-Dec-2016 19:52

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Kinder Morgan  
 Project: McElmo Dome  
 Sample ID: MC-8-4-3-4-111716  
 Collection Date: 17-Nov-2016 11:20

**ANALYTICAL REPORT**

WorkOrder:HS16111139  
 Lab ID:HS16111139-12  
 Matrix:Soil

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>LA29B ELECTRICAL CONDUCTIVITY</b>		<b>Method:LaDNR-29B EC</b>		Analyst: JHD		
Electrical Conductivity @ saturation	1.04		0.0100	mmhos/cm @25°C	1	21-Dec-2016 18:38
Electrical Conductivity, 1:1 aqueous	0.493		0.0100	mmhos/cm @25°C	1	21-Dec-2016 18:38
Saturation % as decimal	0.473		0	mmhos/cm @25°C	1	21-Dec-2016 18:38
<b>LA29B SATURATION POINT (AS FRACTION)</b>		<b>Method:LaDNR-29B SP</b>		Analyst: KAH		
Saturation Point	0.473		0.100	SP as fraction	1	15-Dec-2016 11:00
<b>MOISTURE</b>		<b>Method:SW3550</b>		Analyst: DFF		
Percent Moisture	10.4		0.0100	wt%	1	06-Dec-2016 10:17
<b>HEXAVALENT CHROMIUM BY SW7196A</b>		<b>Method:SW7196</b>		Prep:SW3060A / 05-Dec-2016 Analyst: KVL		
Chromium, Hexavalent	ND		1.99	mg/kg	1	06-Dec-2016 15:53
<b>PH SOIL BY SW9045D</b>		<b>Method:SW9045B</b>		Analyst: SAP		
pH	8.01	H	0.100	pH Units	1	09-Dec-2016 17:13
Temp Deg C @pH	20.0	H	0	°C	1	09-Dec-2016 17:13

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Kinder Morgan  
 Project: McElmo Dome  
 Sample ID: MC-8-4-8-9-111716  
 Collection Date: 17-Nov-2016 11:30

**ANALYTICAL REPORT**

WorkOrder:HS16111139  
 Lab ID:HS16111139-13  
 Matrix:Soil

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>VOLATILES BY SW8260C</b>		<b>Method:SW8260</b>		Analyst: WLR		
Benzene	ND		4.8	ug/Kg	1	29-Nov-2016 05:43
Ethylbenzene	ND		4.8	ug/Kg	1	29-Nov-2016 05:43
m,p-Xylene	ND		9.6	ug/Kg	1	29-Nov-2016 05:43
o-Xylene	ND		4.8	ug/Kg	1	29-Nov-2016 05:43
Toluene	ND		4.8	ug/Kg	1	29-Nov-2016 05:43
Xylenes, Total	ND		4.8	ug/Kg	1	29-Nov-2016 05:43
Surr: 1,2-Dichloroethane-d4	108		70-128	%REC	1	29-Nov-2016 05:43
Surr: 4-Bromofluorobenzene	106		73-126	%REC	1	29-Nov-2016 05:43
Surr: Dibromofluoromethane	107		71-128	%REC	1	29-Nov-2016 05:43
Surr: Toluene-d8	112		73-127	%REC	1	29-Nov-2016 05:43
<b>GASOLINE RANGE ORGANICS BY SW8015C</b>		<b>Method:SW8015</b>		Analyst: SFE		
Gasoline Range Organics	ND		0.050	mg/Kg	1	29-Nov-2016 19:04
Surr: 4-Bromofluorobenzene	90.7		70-130	%REC	1	29-Nov-2016 19:04
<b>TPH DRO/ORO BY SW8015C</b>		<b>Method:SW8015M</b>		Prep:SW3541 / 29-Nov-2016 Analyst: AAP		
TPH (Diesel Range)	ND		1.7	mg/Kg	1	02-Dec-2016 09:31
Surr: 2-Fluorobiphenyl	75.0		60-135	%REC	1	02-Dec-2016 09:31
<b>TRIVALENT CHROMIUM</b>		<b>Method:Calculation</b>		Analyst: DQ		
Chromium, Trivalent	ND		5.00	mg/Kg	1	10-Dec-2016 15:12
<b>LA29B SODIUM ADSORPTION RATIO</b>		<b>Method:La29B SAR</b>		Analyst: DQ		
Sodium Adsorption Ratio	2.08		0.0100	meq/meq	1	21-Dec-2016 19:14
<b>LA 29B - 1:1 SOLUBLE CATIONS FOR SAR</b>		<b>Method:La29B-6020</b>		Prep:La29B-6020 Analyst: JCJ		
Calcium	50.8		5.00	mg/L	10	20-Dec-2016 14:02
Magnesium	12.2		5.00	mg/L	10	20-Dec-2016 14:02
Sodium	63.7		5.00	mg/L	10	20-Dec-2016 14:02
<b>METALS BY SW6020A</b>		<b>Method:SW6020</b>		Prep:SW3050A / 05-Dec-2016 Analyst: JCJ		
Arsenic	4.42		2.37	mg/Kg	5	06-Dec-2016 14:39
Barium	359		2.37	mg/Kg	5	06-Dec-2016 14:39
Boron	ND		11.8	mg/Kg	5	06-Dec-2016 14:39
Cadmium	ND		2.37	mg/Kg	5	06-Dec-2016 14:39
Chromium	ND		2.37	mg/Kg	5	06-Dec-2016 14:39
Copper	2.91		0.948	mg/Kg	5	06-Dec-2016 14:39
Lead	ND		2.37	mg/Kg	5	06-Dec-2016 14:39
Nickel	4.02		2.37	mg/Kg	5	06-Dec-2016 14:39
Selenium	ND		2.37	mg/Kg	5	06-Dec-2016 14:39
Silver	ND		2.37	mg/Kg	5	06-Dec-2016 14:39
Zinc	7.94		2.37	mg/Kg	5	06-Dec-2016 14:39
<b>MERCURY BY SW7471B</b>		<b>Method:SW7471A</b>		Prep:SW7471A / 10-Dec-2016 Analyst: JCJ		
Mercury	31.4		3.50	ug/Kg	1	10-Dec-2016 19:53

Note: See Qualifiers Page for a list of qualifiers and their explanation.



Client: Kinder Morgan  
 Project: McElmo Dome  
 Sample ID: MC-8-4-8-9-111716  
 Collection Date: 17-Nov-2016 11:30

**ANALYTICAL REPORT**

WorkOrder:HS16111139  
 Lab ID:HS16111139-13  
 Matrix:Soil

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>LA29B ELECTRICAL CONDUCTIVITY</b>		<b>Method:LaDNR-29B EC</b>		Analyst: JHD		
Electrical Conductivity @ saturation	2.05		0.0100	mmhos/cm @25°C	1	21-Dec-2016 18:38
Electrical Conductivity, 1:1 aqueous	0.773		0.0100	mmhos/cm @25°C	1	21-Dec-2016 18:38
Saturation % as decimal	0.378		0	mmhos/cm @25°C	1	21-Dec-2016 18:38
<b>LA29B SATURATION POINT (AS FRACTION)</b>		<b>Method:LaDNR-29B SP</b>		Analyst: KAH		
Saturation Point	0.378		0.100	SP as fraction	1	15-Dec-2016 11:00
<b>MOISTURE</b>		<b>Method:SW3550</b>		Analyst: DFF		
Percent Moisture	12.9		0.0100	wt%	1	06-Dec-2016 10:17
<b>HEXAVALENT CHROMIUM BY SW7196A</b>		<b>Method:SW7196</b>		Prep:SW3060A / 05-Dec-2016 Analyst: KVL		
Chromium, Hexavalent	ND		2.00	mg/kg	1	06-Dec-2016 15:53
<b>PH SOIL BY SW9045D</b>		<b>Method:SW9045B</b>		Analyst: SAP		
pH	8.44	H	0.100	pH Units	1	09-Dec-2016 17:13
Temp Deg C @pH	20.0	H	0	°C	1	09-Dec-2016 17:13

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Kinder Morgan  
 Project: McElmo Dome  
 Sample ID: MC-8-5-2-3-111716  
 Collection Date: 17-Nov-2016 14:30

**ANALYTICAL REPORT**

WorkOrder:HS16111139  
 Lab ID:HS16111139-14  
 Matrix:Soil

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>VOLATILES BY SW8260C</b>		<b>Method:SW8260</b>		Analyst: WLR		
Benzene	ND		5.0	ug/Kg	1	29-Nov-2016 06:06
Ethylbenzene	ND		5.0	ug/Kg	1	29-Nov-2016 06:06
m,p-Xylene	ND		9.9	ug/Kg	1	29-Nov-2016 06:06
o-Xylene	ND		5.0	ug/Kg	1	29-Nov-2016 06:06
Toluene	ND		5.0	ug/Kg	1	29-Nov-2016 06:06
Xylenes, Total	ND		5.0	ug/Kg	1	29-Nov-2016 06:06
Surr: 1,2-Dichloroethane-d4	107		70-128	%REC	1	29-Nov-2016 06:06
Surr: 4-Bromofluorobenzene	103		73-126	%REC	1	29-Nov-2016 06:06
Surr: Dibromofluoromethane	101		71-128	%REC	1	29-Nov-2016 06:06
Surr: Toluene-d8	109		73-127	%REC	1	29-Nov-2016 06:06
<b>GASOLINE RANGE ORGANICS BY SW8015C</b>		<b>Method:SW8015</b>		Analyst: SFE		
Gasoline Range Organics	ND		0.050	mg/Kg	1	29-Nov-2016 19:20
Surr: 4-Bromofluorobenzene	91.7		70-130	%REC	1	29-Nov-2016 19:20
<b>TPH DRO/ORO BY SW8015C</b>		<b>Method:SW8015M</b>		Prep:SW3541 / 29-Nov-2016 Analyst: AAP		
TPH (Diesel Range)	ND		1.7	mg/Kg	1	02-Dec-2016 09:55
Surr: 2-Fluorobiphenyl	86.4		60-135	%REC	1	02-Dec-2016 09:55
<b>TRIVALENT CHROMIUM</b>		<b>Method:Calculation</b>		Analyst: DQ		
Chromium, Trivalent	6.29		5.00	mg/Kg	1	10-Dec-2016 15:12
<b>LA29B SODIUM ADSORPTION RATIO</b>		<b>Method:La29B SAR</b>		Analyst: DQ		
Sodium Adsorption Ratio	0.444		0.0100	meq/meq	1	21-Dec-2016 19:14
<b>LA 29B - 1:1 SOLUBLE CATIONS FOR SAR</b>		<b>Method:La29B-6020</b>		Prep:La29B-6020 Analyst: JCJ		
Calcium	100		5.00	mg/L	10	20-Dec-2016 14:07
Magnesium	12.4		5.00	mg/L	10	20-Dec-2016 14:07
Sodium	17.7		5.00	mg/L	10	20-Dec-2016 14:07
<b>METALS BY SW6020A</b>		<b>Method:SW6020</b>		Prep:SW3050A / 05-Dec-2016 Analyst: JCJ		
Arsenic	1.71		0.479	mg/Kg	1	05-Dec-2016 20:47
Barium	114		0.479	mg/Kg	1	05-Dec-2016 20:47
Boron	3.41		2.39	mg/Kg	1	06-Dec-2016 15:19
Cadmium	ND		0.479	mg/Kg	1	05-Dec-2016 20:47
Chromium	6.29		0.479	mg/Kg	1	05-Dec-2016 20:47
Copper	7.06		0.191	mg/Kg	1	05-Dec-2016 20:47
Lead	6.38		0.479	mg/Kg	1	05-Dec-2016 20:47
Nickel	6.92		0.479	mg/Kg	1	05-Dec-2016 20:47
Selenium	ND		0.479	mg/Kg	1	05-Dec-2016 20:47
Silver	ND		0.479	mg/Kg	1	05-Dec-2016 20:47
Zinc	20.8		0.479	mg/Kg	1	05-Dec-2016 20:47
<b>MERCURY BY SW7471B</b>		<b>Method:SW7471A</b>		Prep:SW7471A / 10-Dec-2016 Analyst: JCJ		
Mercury	9.97		3.48	ug/Kg	1	10-Dec-2016 19:59

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Kinder Morgan  
 Project: McElmo Dome  
 Sample ID: MC-8-5-2-3-111716  
 Collection Date: 17-Nov-2016 14:30

**ANALYTICAL REPORT**

WorkOrder:HS16111139  
 Lab ID:HS16111139-14  
 Matrix:Soil

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>LA29B ELECTRICAL CONDUCTIVITY</b>		<b>Method:LaDNR-29B EC</b>		Analyst: JHD		
Electrical Conductivity @ saturation	1.82		0.0100	mmhos/cm @25°C	1	21-Dec-2016 18:38
Electrical Conductivity, 1:1 aqueous	0.772		0.0100	mmhos/cm @25°C	1	21-Dec-2016 18:38
Saturation % as decimal	0.423		0	mmhos/cm @25°C	1	21-Dec-2016 18:38
<b>LA29B SATURATION POINT (AS FRACTION)</b>		<b>Method:LaDNR-29B SP</b>		Analyst: KAH		
Saturation Point	0.423		0.100	SP as fraction	1	15-Dec-2016 11:00
<b>MOISTURE</b>		<b>Method:SW3550</b>		Analyst: DFF		
Percent Moisture	5.85		0.0100	wt%	1	06-Dec-2016 10:17
<b>HEXAVALENT CHROMIUM BY SW7196A</b>		<b>Method:SW7196</b>		Prep:SW3060A / 05-Dec-2016 Analyst: KVL		
Chromium, Hexavalent	ND		2.00	mg/kg	1	06-Dec-2016 15:53
<b>PH SOIL BY SW9045D</b>		<b>Method:SW9045B</b>		Analyst: SAP		
pH	7.69	H	0.100	pH Units	1	09-Dec-2016 17:13
Temp Deg C @pH	19.7	H	0	°C	1	09-Dec-2016 17:13

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Kinder Morgan  
 Project: McElmo Dome  
 Sample ID: MC-8-5-4-5-111716  
 Collection Date: 17-Nov-2016 14:40

**ANALYTICAL REPORT**

WorkOrder:HS16111139  
 Lab ID:HS16111139-15  
 Matrix:Soil

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>VOLATILES BY SW8260C</b>		<b>Method:SW8260</b>		Analyst: WLR		
Benzene	ND		4.8	ug/Kg	1	29-Nov-2016 06:30
Ethylbenzene	ND		4.8	ug/Kg	1	29-Nov-2016 06:30
m,p-Xylene	ND		9.7	ug/Kg	1	29-Nov-2016 06:30
o-Xylene	ND		4.8	ug/Kg	1	29-Nov-2016 06:30
Toluene	ND		4.8	ug/Kg	1	29-Nov-2016 06:30
Xylenes, Total	ND		4.8	ug/Kg	1	29-Nov-2016 06:30
Surr: 1,2-Dichloroethane-d4	105		70-128	%REC	1	29-Nov-2016 06:30
Surr: 4-Bromofluorobenzene	103		73-126	%REC	1	29-Nov-2016 06:30
Surr: Dibromofluoromethane	104		71-128	%REC	1	29-Nov-2016 06:30
Surr: Toluene-d8	110		73-127	%REC	1	29-Nov-2016 06:30
<b>GASOLINE RANGE ORGANICS BY SW8015C</b>		<b>Method:SW8015</b>		Analyst: SFE		
Gasoline Range Organics	ND		0.050	mg/Kg	1	29-Nov-2016 19:36
Surr: 4-Bromofluorobenzene	85.1		70-130	%REC	1	29-Nov-2016 19:36
<b>TPH DRO/ORO BY SW8015C</b>		<b>Method:SW8015M</b>		Prep:SW3541 / 29-Nov-2016 Analyst: AAP		
TPH (Diesel Range)	ND		1.7	mg/Kg	1	02-Dec-2016 10:19
Surr: 2-Fluorobiphenyl	75.2		60-135	%REC	1	02-Dec-2016 10:19
<b>TRIVALENT CHROMIUM</b>		<b>Method:Calculation</b>		Analyst: DQ		
Chromium, Trivalent	9.00		5.00	mg/Kg	1	10-Dec-2016 15:12
<b>LA29B SODIUM ADSORPTION RATIO</b>		<b>Method:La29B SAR</b>		Analyst: DQ		
Sodium Adsorption Ratio	0.270		0.0100	meq/meq	1	21-Dec-2016 19:14
<b>LA 29B - 1:1 SOLUBLE CATIONS FOR SAR</b>		<b>Method:La29B-6020</b>		Prep:La29B-6020 Analyst: JCJ		
Calcium	45.1		5.00	mg/L	10	20-Dec-2016 14:11
Magnesium	10.6		5.00	mg/L	10	20-Dec-2016 14:11
Sodium	7.77		5.00	mg/L	10	20-Dec-2016 14:11
<b>METALS BY SW6020A</b>		<b>Method:SW6020</b>		Prep:SW3050A / 05-Dec-2016 Analyst: JCJ		
Arsenic	3.13		0.456	mg/Kg	1	05-Dec-2016 20:52
Barium	202		2.28	mg/Kg	5	06-Dec-2016 14:43
Boron	3.66		2.28	mg/Kg	1	06-Dec-2016 15:23
Cadmium	ND		0.456	mg/Kg	1	05-Dec-2016 20:52
Chromium	9.00		0.456	mg/Kg	1	05-Dec-2016 20:52
Copper	5.45		0.182	mg/Kg	1	05-Dec-2016 20:52
Lead	7.13		0.456	mg/Kg	1	05-Dec-2016 20:52
Nickel	9.28		0.456	mg/Kg	1	05-Dec-2016 20:52
Selenium	ND		0.456	mg/Kg	1	05-Dec-2016 20:52
Silver	ND		0.456	mg/Kg	1	05-Dec-2016 20:52
Zinc	23.3		0.456	mg/Kg	1	05-Dec-2016 20:52
<b>MERCURY BY SW7471B</b>		<b>Method:SW7471A</b>		Prep:SW7471A / 10-Dec-2016 Analyst: JCJ		
Mercury	19.1		3.53	ug/Kg	1	10-Dec-2016 20:04

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Kinder Morgan  
 Project: McElmo Dome  
 Sample ID: MC-8-5-4-5-111716  
 Collection Date: 17-Nov-2016 14:40

**ANALYTICAL REPORT**

WorkOrder:HS16111139  
 Lab ID:HS16111139-15  
 Matrix:Soil

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>LA29B ELECTRICAL CONDUCTIVITY</b>		<b>Method:LaDNR-29B EC</b>		Analyst: JHD		
Electrical Conductivity @ saturation	0.703		0.0100	mmhos/cm @25°C	1	21-Dec-2016 18:38
Electrical Conductivity, 1:1 aqueous	0.363		0.0100	mmhos/cm @25°C	1	21-Dec-2016 18:38
Saturation % as decimal	0.516		0	mmhos/cm @25°C	1	21-Dec-2016 18:38
<b>LA29B SATURATION POINT (AS FRACTION)</b>		<b>Method:LaDNR-29B SP</b>		Analyst: KAH		
Saturation Point	0.516		0.100	SP as fraction	1	15-Dec-2016 11:00
<b>MOISTURE</b>		<b>Method:SW3550</b>		Analyst: DFF		
Percent Moisture	9.20		0.0100	wt%	1	06-Dec-2016 10:17
<b>HEXAVALENT CHROMIUM BY SW7196A</b>		<b>Method:SW7196</b>		Prep:SW3060A / 05-Dec-2016 Analyst: KVL		
Chromium, Hexavalent	ND		2.00	mg/kg	1	06-Dec-2016 15:53
<b>PH SOIL BY SW9045D</b>		<b>Method:SW9045B</b>		Analyst: SAP		
pH	7.88	H	0.100	pH Units	1	09-Dec-2016 17:13
Temp Deg C @pH	20.0	H	0	°C	1	09-Dec-2016 17:13

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Kinder Morgan  
 Project: McElmo Dome  
 Sample ID: MC-8-5-8-9-111716  
 Collection Date: 17-Nov-2016 15:00

**ANALYTICAL REPORT**

WorkOrder:HS16111139  
 Lab ID:HS16111139-16  
 Matrix:Soil

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>VOLATILES BY SW8260C</b>		<b>Method:SW8260</b>		Analyst: WLR		
Benzene	ND		4.9	ug/Kg	1	29-Nov-2016 06:53
Ethylbenzene	ND		4.9	ug/Kg	1	29-Nov-2016 06:53
m,p-Xylene	ND		9.8	ug/Kg	1	29-Nov-2016 06:53
o-Xylene	ND		4.9	ug/Kg	1	29-Nov-2016 06:53
Toluene	ND		4.9	ug/Kg	1	29-Nov-2016 06:53
Xylenes, Total	ND		4.9	ug/Kg	1	29-Nov-2016 06:53
Surr: 1,2-Dichloroethane-d4	104		70-128	%REC	1	29-Nov-2016 06:53
Surr: 4-Bromofluorobenzene	101		73-126	%REC	1	29-Nov-2016 06:53
Surr: Dibromofluoromethane	102		71-128	%REC	1	29-Nov-2016 06:53
Surr: Toluene-d8	109		73-127	%REC	1	29-Nov-2016 06:53
<b>GASOLINE RANGE ORGANICS BY SW8015C</b>		<b>Method:SW8015</b>		Analyst: SFE		
Gasoline Range Organics	ND		0.050	mg/Kg	1	29-Nov-2016 19:52
Surr: 4-Bromofluorobenzene	81.0		70-130	%REC	1	29-Nov-2016 19:52
<b>TPH DRO/ORO BY SW8015C</b>		<b>Method:SW8015M</b>		Prep:SW3541 / 29-Nov-2016 Analyst: AAP		
TPH (Diesel Range)	ND		1.7	mg/Kg	1	02-Dec-2016 10:44
Surr: 2-Fluorobiphenyl	71.1		60-135	%REC	1	02-Dec-2016 10:44
<b>TRIVALENT CHROMIUM</b>		<b>Method:Calculation</b>		Analyst: DQ		
Chromium, Trivalent	5.17		5.00	mg/Kg	1	10-Dec-2016 15:12
<b>LA29B SODIUM ADSORPTION RATIO</b>		<b>Method:La29B SAR</b>		Analyst: DQ		
Sodium Adsorption Ratio	1.27		0.0100	meq/meq	1	21-Dec-2016 19:14
<b>LA 29B - 1:1 SOLUBLE CATIONS FOR SAR</b>		<b>Method:La29B-6020</b>		Prep:La29B-6020 Analyst: JCJ		
Calcium	27.2		5.00	mg/L	10	20-Dec-2016 14:16
Magnesium	7.16		5.00	mg/L	10	20-Dec-2016 14:16
Sodium	28.9		5.00	mg/L	10	20-Dec-2016 14:16
<b>METALS BY SW6020A</b>		<b>Method:SW6020</b>		Prep:SW3050A / 05-Dec-2016 Analyst: JCJ		
Arsenic	ND		2.34	mg/Kg	5	06-Dec-2016 14:47
Barium	313		2.34	mg/Kg	5	06-Dec-2016 14:47
Boron	ND		11.7	mg/Kg	5	06-Dec-2016 14:47
Cadmium	ND		2.34	mg/Kg	5	06-Dec-2016 14:47
Chromium	5.17		2.34	mg/Kg	5	06-Dec-2016 14:47
Copper	3.93		0.937	mg/Kg	5	06-Dec-2016 14:47
Lead	3.80		2.34	mg/Kg	5	06-Dec-2016 14:47
Nickel	6.90		2.34	mg/Kg	5	06-Dec-2016 14:47
Selenium	ND		2.34	mg/Kg	5	06-Dec-2016 14:47
Silver	ND		2.34	mg/Kg	5	06-Dec-2016 14:47
Zinc	14.7		2.34	mg/Kg	5	06-Dec-2016 14:47
<b>MERCURY BY SW7471B</b>		<b>Method:SW7471A</b>		Prep:SW7471A / 10-Dec-2016 Analyst: JCJ		
Mercury	17.8		3.39	ug/Kg	1	10-Dec-2016 20:09

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Kinder Morgan  
 Project: McElmo Dome  
 Sample ID: MC-8-5-8-9-111716  
 Collection Date: 17-Nov-2016 15:00

**ANALYTICAL REPORT**

WorkOrder:HS16111139  
 Lab ID:HS16111139-16  
 Matrix:Soil

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>LA29B ELECTRICAL CONDUCTIVITY</b>		<b>Method:LaDNR-29B EC</b>		Analyst: JHD		
Electrical Conductivity @ saturation	0.774		0.0100	mmhos/cm @25°C	1	21-Dec-2016 18:38
Electrical Conductivity, 1:1 aqueous	0.332		0.0100	mmhos/cm @25°C	1	21-Dec-2016 18:38
Saturation % as decimal	0.429		0	mmhos/cm @25°C	1	21-Dec-2016 18:38
<b>LA29B SATURATION POINT (AS FRACTION)</b>		<b>Method:LaDNR-29B SP</b>		Analyst: KAH		
Saturation Point	0.429		0.100	SP as fraction	1	15-Dec-2016 11:00
<b>MOISTURE</b>		<b>Method:SW3550</b>		Analyst: DFF		
Percent Moisture	10.5		0.0100	wt%	1	06-Dec-2016 10:17
<b>HEXAVALENT CHROMIUM BY SW7196A</b>		<b>Method:SW7196</b>		Prep:SW3060A / 05-Dec-2016 Analyst: KVL		
Chromium, Hexavalent	ND		1.99	mg/kg	1	06-Dec-2016 15:53
<b>PH SOIL BY SW9045D</b>		<b>Method:SW9045B</b>		Analyst: SAP		
pH	8.52	H	0.100	pH Units	1	09-Dec-2016 17:13
Temp Deg C @pH	20.2	H	0	°C	1	09-Dec-2016 17:13

Note: See Qualifiers Page for a list of qualifiers and their explanation.



Client: Kinder Morgan  
 Project: McElmo Dome  
 Sample ID: MC-8-6-2-3-111716  
 Collection Date: 17-Nov-2016 13:30

**ANALYTICAL REPORT**

WorkOrder:HS16111139  
 Lab ID:HS16111139-17  
 Matrix:Soil

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>VOLATILES BY SW8260C</b>		<b>Method:SW8260</b>		Analyst: WLR		
Benzene	ND		4.8	ug/Kg	1	29-Nov-2016 07:16
Ethylbenzene	ND		4.8	ug/Kg	1	29-Nov-2016 07:16
m,p-Xylene	ND		9.6	ug/Kg	1	29-Nov-2016 07:16
o-Xylene	ND		4.8	ug/Kg	1	29-Nov-2016 07:16
Toluene	ND		4.8	ug/Kg	1	29-Nov-2016 07:16
Xylenes, Total	ND		4.8	ug/Kg	1	29-Nov-2016 07:16
Surr: 1,2-Dichloroethane-d4	100		70-128	%REC	1	29-Nov-2016 07:16
Surr: 4-Bromofluorobenzene	106		73-126	%REC	1	29-Nov-2016 07:16
Surr: Dibromofluoromethane	71.8		71-128	%REC	1	29-Nov-2016 07:16
Surr: Toluene-d8	110		73-127	%REC	1	29-Nov-2016 07:16
<b>GASOLINE RANGE ORGANICS BY SW8015C</b>		<b>Method:SW8015</b>		Analyst: SFE		
Gasoline Range Organics	ND		0.050	mg/Kg	1	29-Nov-2016 20:24
Surr: 4-Bromofluorobenzene	79.6		70-130	%REC	1	29-Nov-2016 20:24
<b>TPH DRO/ORO BY SW8015C</b>		<b>Method:SW8015M</b>		Prep:SW3541 / 29-Nov-2016 Analyst: AAP		
TPH (Diesel Range)	ND		1.7	mg/Kg	1	02-Dec-2016 11:57
Surr: 2-Fluorobiphenyl	88.4		60-135	%REC	1	02-Dec-2016 11:57
<b>TRIVALENT CHROMIUM</b>		<b>Method:Calculation</b>		Analyst: DQ		
Chromium, Trivalent	6.81		5.00	mg/Kg	1	10-Dec-2016 15:12
<b>LA29B SODIUM ADSORPTION RATIO</b>		<b>Method:La29B SAR</b>		Analyst: DQ		
Sodium Adsorption Ratio	52.6		0.0100	meq/meq	1	21-Dec-2016 19:14
<b>LA 29B - 1:1 SOLUBLE CATIONS FOR SAR</b>		<b>Method:La29B-6020</b>		Prep:La29B-6020 Analyst: JCJ		
Calcium	9,380		100	mg/L	200	20-Dec-2016 15:08
Magnesium	ND		5.00	mg/L	10	20-Dec-2016 14:36
Sodium	18,500		100	mg/L	200	20-Dec-2016 15:08
<b>METALS BY SW6020A</b>		<b>Method:SW6020</b>		Prep:SW3050A / 05-Dec-2016 Analyst: JCJ		
Arsenic	4.75		0.471	mg/Kg	1	06-Dec-2016 15:28
Barium	90.3		0.471	mg/Kg	1	06-Dec-2016 15:28
Boron	51.2		2.36	mg/Kg	1	06-Dec-2016 15:28
Cadmium	ND		0.471	mg/Kg	1	06-Dec-2016 15:28
Chromium	6.81		0.471	mg/Kg	1	06-Dec-2016 15:28
Copper	4.92		0.188	mg/Kg	1	06-Dec-2016 15:28
Lead	6.34		0.471	mg/Kg	1	06-Dec-2016 15:28
Nickel	5.48		0.471	mg/Kg	1	06-Dec-2016 15:28
Selenium	0.496		0.471	mg/Kg	1	06-Dec-2016 15:28
Silver	ND		0.471	mg/Kg	1	06-Dec-2016 15:28
Zinc	17.4		0.471	mg/Kg	1	06-Dec-2016 15:28
<b>MERCURY BY SW7471B</b>		<b>Method:SW7471A</b>		Prep:SW7471A / 10-Dec-2016 Analyst: JCJ		
Mercury	ND		3.57	ug/Kg	1	10-Dec-2016 20:11

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Kinder Morgan  
 Project: McElmo Dome  
 Sample ID: MC-8-6-2-3-111716  
 Collection Date: 17-Nov-2016 13:30

**ANALYTICAL REPORT**

WorkOrder:HS16111139  
 Lab ID:HS16111139-17  
 Matrix:Soil

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>LA29B ELECTRICAL CONDUCTIVITY</b>		<b>Method:LaDNR-29B EC</b>		Analyst: JHD		
Electrical Conductivity @ saturation	221		0.0100	mmhos/cm @25°C	1	21-Dec-2016 18:38
Electrical Conductivity, 1:1 aqueous	164		0.0100	mmhos/cm @25°C	1	21-Dec-2016 18:38
Saturation % as decimal	0.742		0	mmhos/cm @25°C	1	21-Dec-2016 18:38
<b>LA29B SATURATION POINT (AS FRACTION)</b>		<b>Method:LaDNR-29B SP</b>		Analyst: KAH		
Saturation Point	0.742		0.100	SP as fraction	1	15-Dec-2016 11:00
<b>MOISTURE</b>		<b>Method:SW3550</b>		Analyst: DFF		
Percent Moisture	24.1		0.0100	wt%	1	06-Dec-2016 10:17
<b>HEXAVALENT CHROMIUM BY SW7196A</b>		<b>Method:SW7196</b>		Prep:SW3060A / 05-Dec-2016 Analyst: KVL		
Chromium, Hexavalent	ND		1.99	mg/kg	1	06-Dec-2016 15:53
<b>PH SOIL BY SW9045D</b>		<b>Method:SW9045B</b>		Analyst: SAP		
pH	12.2	H	0.100	pH Units	1	09-Dec-2016 17:13
Temp Deg C @pH	20.3	H	0	°C	1	09-Dec-2016 17:13

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Kinder Morgan  
 Project: McElmo Dome  
 Sample ID: TB - 082916-59  
 Collection Date: 17-Nov-2016 00:01

**ANALYTICAL REPORT**

WorkOrder:HS16111139  
 Lab ID:HS16111139-18  
 Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>LOW LEVEL VOLATILES BY SW8260C</b>		<b>Method:SW8260</b>		Analyst: AKP		
Benzene	ND		1.0	ug/L	1	26-Nov-2016 20:20
Ethylbenzene	ND		1.0	ug/L	1	26-Nov-2016 20:20
m,p-Xylene	ND		2.0	ug/L	1	26-Nov-2016 20:20
o-Xylene	ND		1.0	ug/L	1	26-Nov-2016 20:20
Toluene	ND		1.0	ug/L	1	26-Nov-2016 20:20
Xylenes, Total	ND		1.0	ug/L	1	26-Nov-2016 20:20
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>101</i>		<i>71-125</i>	<i>%REC</i>	<i>1</i>	<i>26-Nov-2016 20:20</i>
<i>Surr: 4-Bromofluorobenzene</i>	<i>99.4</i>		<i>70-125</i>	<i>%REC</i>	<i>1</i>	<i>26-Nov-2016 20:20</i>
<i>Surr: Dibromofluoromethane</i>	<i>100</i>		<i>74-125</i>	<i>%REC</i>	<i>1</i>	<i>26-Nov-2016 20:20</i>
<i>Surr: Toluene-d8</i>	<i>100</i>		<i>75-125</i>	<i>%REC</i>	<i>1</i>	<i>26-Nov-2016 20:20</i>

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Kinder Morgan  
 Project: McElmo Dome  
 Sample ID: MC-8-6-5-6-111716  
 Collection Date: 17-Nov-2016 13:45

**ANALYTICAL REPORT**

WorkOrder:HS16111139  
 Lab ID:HS16111139-19  
 Matrix:Soil

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>VOLATILES BY SW8260C</b>		<b>Method:SW8260</b>		Analyst: WLR		
Benzene	ND		5.0	ug/Kg	1	28-Nov-2016 21:59
Ethylbenzene	ND		5.0	ug/Kg	1	28-Nov-2016 21:59
m,p-Xylene	ND		9.9	ug/Kg	1	28-Nov-2016 21:59
o-Xylene	ND		5.0	ug/Kg	1	28-Nov-2016 21:59
Toluene	ND		5.0	ug/Kg	1	28-Nov-2016 21:59
Xylenes, Total	ND		5.0	ug/Kg	1	28-Nov-2016 21:59
Surr: 1,2-Dichloroethane-d4	98.6		70-128	%REC	1	28-Nov-2016 21:59
Surr: 4-Bromofluorobenzene	96.1		73-126	%REC	1	28-Nov-2016 21:59
Surr: Dibromofluoromethane	90.2		71-128	%REC	1	28-Nov-2016 21:59
Surr: Toluene-d8	99.8		73-127	%REC	1	28-Nov-2016 21:59
<b>GASOLINE RANGE ORGANICS BY SW8015C</b>		<b>Method:SW8015</b>		Analyst: SFE		
Gasoline Range Organics	ND		0.050	mg/Kg	1	29-Nov-2016 20:40
Surr: 4-Bromofluorobenzene	91.1		70-130	%REC	1	29-Nov-2016 20:40
<b>TPH DRO/ORO BY SW8015C</b>		<b>Method:SW8015M</b>		Prep:SW3541 / 29-Nov-2016 Analyst: AAP		
TPH (Diesel Range)	4.6		1.7	mg/Kg	1	02-Dec-2016 12:21
Surr: 2-Fluorobiphenyl	70.7		60-135	%REC	1	02-Dec-2016 12:21
<b>TRIVALENT CHROMIUM</b>		<b>Method:Calculation</b>		Analyst: DQ		
Chromium, Trivalent	9.21		5.00	mg/Kg	1	10-Dec-2016 15:12
<b>LA29B SODIUM ADSORPTION RATIO</b>		<b>Method:La29B SAR</b>		Analyst: DQ		
Sodium Adsorption Ratio	81.1		0.0100	meq/meq	1	21-Dec-2016 19:14
<b>LA 29B - 1:1 SOLUBLE CATIONS FOR SAR</b>		<b>Method:La29B-6020</b>		Prep:La29B-6020 Analyst: JCJ		
Calcium	9,760		50.0	mg/L	100	20-Dec-2016 15:12
Magnesium	ND		5.00	mg/L	10	20-Dec-2016 14:41
Sodium	29,100		250	mg/L	500	20-Dec-2016 15:28
<b>METALS BY SW6020A</b>		<b>Method:SW6020</b>		Prep:SW3050A / 05-Dec-2016 Analyst: JCJ		
Arsenic	3.92		0.463	mg/Kg	1	05-Dec-2016 22:24
Barium	132		0.463	mg/Kg	1	05-Dec-2016 22:24
Boron	55.8		2.31	mg/Kg	1	05-Dec-2016 22:24
Cadmium	ND		0.463	mg/Kg	1	05-Dec-2016 22:24
Chromium	9.21		0.463	mg/Kg	1	05-Dec-2016 22:24
Copper	5.79		0.185	mg/Kg	1	05-Dec-2016 22:24
Lead	5.80		0.463	mg/Kg	1	05-Dec-2016 22:24
Nickel	6.26		0.463	mg/Kg	1	05-Dec-2016 22:24
Selenium	0.505		0.463	mg/Kg	1	05-Dec-2016 22:24
Silver	ND		0.463	mg/Kg	1	05-Dec-2016 22:24
Zinc	18.7		0.463	mg/Kg	1	05-Dec-2016 22:24
<b>MERCURY BY SW7471B</b>		<b>Method:SW7471A</b>		Prep:SW7471A / 10-Dec-2016 Analyst: JCJ		
Mercury	6.36		3.52	ug/Kg	1	10-Dec-2016 20:12

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Kinder Morgan  
 Project: McElmo Dome  
 Sample ID: MC-8-6-5-6-111716  
 Collection Date: 17-Nov-2016 13:45

**ANALYTICAL REPORT**

WorkOrder:HS16111139  
 Lab ID:HS16111139-19  
 Matrix:Soil

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>LA29B ELECTRICAL CONDUCTIVITY</b>		<b>Method:LaDNR-29B EC</b>		Analyst: JHD		
Electrical Conductivity @ saturation	358		0.0100	mmhos/cm @25°C	1	21-Dec-2016 18:38
Electrical Conductivity, 1:1 aqueous	214		0.0100	mmhos/cm @25°C	1	21-Dec-2016 18:38
Saturation % as decimal	0.598		0	mmhos/cm @25°C	1	21-Dec-2016 18:38
<b>LA29B SATURATION POINT (AS FRACTION)</b>		<b>Method:LaDNR-29B SP</b>		Analyst: KAH		
Saturation Point	0.598		0.100	SP as fraction	1	15-Dec-2016 11:00
<b>MOISTURE</b>		<b>Method:SW3550</b>		Analyst: DFF		
Percent Moisture	23.3		0.0100	wt%	1	06-Dec-2016 10:17
<b>HEXAVALENT CHROMIUM BY SW7196A</b>		<b>Method:SW7196</b>		Prep:SW3060A / 05-Dec-2016 Analyst: KVL		
Chromium, Hexavalent	ND		2.00	mg/kg	1	06-Dec-2016 15:53
<b>PH SOIL BY SW9045D</b>		<b>Method:SW9045B</b>		Analyst: SAP		
pH	10.6	H	0.100	pH Units	1	09-Dec-2016 17:13
Temp Deg C @pH	20.0	H	0	°C	1	09-Dec-2016 17:13

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Kinder Morgan  
 Project: McElmo Dome  
 Sample ID: MC-8-6-11-12-111716  
 Collection Date: 17-Nov-2016 14:10

**ANALYTICAL REPORT**

WorkOrder:HS16111139  
 Lab ID:HS16111139-20  
 Matrix:Soil

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>VOLATILES BY SW8260C</b>		<b>Method:SW8260</b>		Analyst: WLR		
Benzene	ND		4.8	ug/Kg	1	28-Nov-2016 21:32
Ethylbenzene	ND		4.8	ug/Kg	1	28-Nov-2016 21:32
m,p-Xylene	ND		9.6	ug/Kg	1	28-Nov-2016 21:32
o-Xylene	ND		4.8	ug/Kg	1	28-Nov-2016 21:32
Toluene	ND		4.8	ug/Kg	1	28-Nov-2016 21:32
Xylenes, Total	ND		4.8	ug/Kg	1	28-Nov-2016 21:32
Surr: 1,2-Dichloroethane-d4	93.6		70-128	%REC	1	28-Nov-2016 21:32
Surr: 4-Bromofluorobenzene	87.7		73-126	%REC	1	28-Nov-2016 21:32
Surr: Dibromofluoromethane	100		71-128	%REC	1	28-Nov-2016 21:32
Surr: Toluene-d8	101		73-127	%REC	1	28-Nov-2016 21:32
<b>GASOLINE RANGE ORGANICS BY SW8015C</b>		<b>Method:SW8015</b>		Analyst: SFE		
Gasoline Range Organics	ND		0.050	mg/Kg	1	29-Nov-2016 20:56
Surr: 4-Bromofluorobenzene	86.3		70-130	%REC	1	29-Nov-2016 20:56
<b>TPH DRO/ORO BY SW8015C</b>		<b>Method:SW8015M</b>		Prep:SW3541 / 29-Nov-2016		Analyst: AAP
TPH (Diesel Range)	ND		1.7	mg/Kg	1	02-Dec-2016 13:35
Surr: 2-Fluorobiphenyl	71.3		60-135	%REC	1	02-Dec-2016 13:35
<b>TRIVALENT CHROMIUM</b>		<b>Method:Calculation</b>		Analyst: DQ		
Chromium, Trivalent	6.22		5.00	mg/Kg	1	10-Dec-2016 15:12
<b>LA29B SODIUM ADSORPTION RATIO</b>		<b>Method:La29B SAR</b>		Analyst: DQ		
Sodium Adsorption Ratio	2.74		0.0100	meq/meq	1	21-Dec-2016 19:14
<b>LA 29B - 1:1 SOLUBLE CATIONS FOR SAR</b>		<b>Method:La29B-6020</b>		Prep:La29B-6020		Analyst: JCJ
Calcium	41.1		5.00	mg/L	10	20-Dec-2016 14:46
Magnesium	15.9		5.00	mg/L	10	20-Dec-2016 14:46
Sodium	81.6		5.00	mg/L	10	20-Dec-2016 14:46
<b>METALS BY SW6020A</b>		<b>Method:SW6020</b>		Prep:SW3050A / 05-Dec-2016		Analyst: JCJ
Arsenic	2.07		0.465	mg/Kg	1	05-Dec-2016 22:29
Barium	365		2.32	mg/Kg	5	06-Dec-2016 15:32
Boron	5.05		2.32	mg/Kg	1	05-Dec-2016 22:29
Cadmium	ND		0.465	mg/Kg	1	05-Dec-2016 22:29
Chromium	6.22		0.465	mg/Kg	1	05-Dec-2016 22:29
Copper	4.41		0.186	mg/Kg	1	05-Dec-2016 22:29
Lead	5.23		0.465	mg/Kg	1	05-Dec-2016 22:29
Nickel	6.54		0.465	mg/Kg	1	05-Dec-2016 22:29
Selenium	ND		0.465	mg/Kg	1	05-Dec-2016 22:29
Silver	ND		0.465	mg/Kg	1	05-Dec-2016 22:29
Zinc	18.6		0.465	mg/Kg	1	05-Dec-2016 22:29
<b>MERCURY BY SW7471B</b>		<b>Method:SW7471A</b>		Prep:SW7471A / 10-Dec-2016		Analyst: JCJ
Mercury	16.7		3.44	ug/Kg	1	10-Dec-2016 20:14

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Kinder Morgan  
 Project: McElmo Dome  
 Sample ID: MC-8-6-11-12-111716  
 Collection Date: 17-Nov-2016 14:10

**ANALYTICAL REPORT**

WorkOrder:HS16111139  
 Lab ID:HS16111139-20  
 Matrix:Soil

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>LA29B ELECTRICAL CONDUCTIVITY</b>		<b>Method:LaDNR-29B EC</b>		Analyst: JHD		
Electrical Conductivity @ saturation	1.54		0.0100	mmhos/cm @25°C	1	21-Dec-2016 18:38
Electrical Conductivity, 1:1 aqueous	0.753		0.0100	mmhos/cm @25°C	1	21-Dec-2016 18:38
Saturation % as decimal	0.488		0	mmhos/cm @25°C	1	21-Dec-2016 18:38
<b>LA29B SATURATION POINT (AS FRACTION)</b>		<b>Method:LaDNR-29B SP</b>		Analyst: KAH		
Saturation Point	0.488		0.100	SP as fraction	1	15-Dec-2016 11:00
<b>MOISTURE</b>		<b>Method:SW3550</b>		Analyst: DFF		
Percent Moisture	14.4		0.0100	wt%	1	06-Dec-2016 10:21
<b>HEXAVALENT CHROMIUM BY SW7196A</b>		<b>Method:SW7196</b>		Prep:SW3060A / 05-Dec-2016 Analyst: KVL		
Chromium, Hexavalent	ND		2.00	mg/kg	1	06-Dec-2016 15:53
<b>PH SOIL BY SW9045D</b>		<b>Method:SW9045B</b>		Analyst: SAP		
pH	8.41	H	0.100	pH Units	1	09-Dec-2016 17:13
Temp Deg C @pH	20.0	H	0	°C	1	09-Dec-2016 17:13

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Kinder Morgan  
 Project: McElmo Dome  
 Sample ID: MC-8-7-2-3-111716  
 Collection Date: 17-Nov-2016 12:30

**ANALYTICAL REPORT**

WorkOrder:HS16111139  
 Lab ID:HS16111139-21  
 Matrix:Soil

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>VOLATILES BY SW8260C</b>		<b>Method:SW8260</b>		Analyst: WLR		
Benzene	ND		4.9	ug/Kg	1	28-Nov-2016 21:05
Ethylbenzene	ND		4.9	ug/Kg	1	28-Nov-2016 21:05
m,p-Xylene	ND		9.8	ug/Kg	1	28-Nov-2016 21:05
o-Xylene	ND		4.9	ug/Kg	1	28-Nov-2016 21:05
Toluene	ND		4.9	ug/Kg	1	28-Nov-2016 21:05
Xylenes, Total	ND		4.9	ug/Kg	1	28-Nov-2016 21:05
Surr: 1,2-Dichloroethane-d4	99.2		70-128	%REC	1	28-Nov-2016 21:05
Surr: 4-Bromofluorobenzene	90.1		73-126	%REC	1	28-Nov-2016 21:05
Surr: Dibromofluoromethane	107		71-128	%REC	1	28-Nov-2016 21:05
Surr: Toluene-d8	100		73-127	%REC	1	28-Nov-2016 21:05
<b>GASOLINE RANGE ORGANICS BY SW8015C</b>		<b>Method:SW8015</b>		Analyst: SFE		
Gasoline Range Organics	ND		0.050	mg/Kg	1	29-Nov-2016 21:12
Surr: 4-Bromofluorobenzene	83.5		70-130	%REC	1	29-Nov-2016 21:12
<b>TPH DRO/ORO BY SW8015C</b>		<b>Method:SW8015M</b>		Prep:SW3541 / 29-Nov-2016 Analyst: AAP		
TPH (Diesel Range)	ND		1.7	mg/Kg	1	02-Dec-2016 13:59
Surr: 2-Fluorobiphenyl	77.1		60-135	%REC	1	02-Dec-2016 13:59
<b>TRIVALENT CHROMIUM</b>		<b>Method:Calculation</b>		Analyst: DQ		
Chromium, Trivalent	7.87		5.00	mg/Kg	1	10-Dec-2016 15:12
<b>LA29B SODIUM ADSORPTION RATIO</b>		<b>Method:La29B SAR</b>		Analyst: DQ		
Sodium Adsorption Ratio	0.230		0.0100	meq/meq	1	21-Dec-2016 19:14
<b>LA 29B - 1:1 SOLUBLE CATIONS FOR SAR</b>		<b>Method:La29B-6020</b>		Prep:La29B-6020 Analyst: JCJ		
Calcium	75.6		5.00	mg/L	10	20-Dec-2016 14:50
Magnesium	10.8		5.00	mg/L	10	20-Dec-2016 14:50
Sodium	8.08		5.00	mg/L	10	20-Dec-2016 14:50
<b>METALS BY SW6020A</b>		<b>Method:SW6020</b>		Prep:SW3050A / 05-Dec-2016 Analyst: JCJ		
Arsenic	2.23		0.478	mg/Kg	1	05-Dec-2016 22:33
Barium	124		0.478	mg/Kg	1	05-Dec-2016 22:33
Boron	3.48		2.39	mg/Kg	1	05-Dec-2016 22:33
Cadmium	ND		0.478	mg/Kg	1	05-Dec-2016 22:33
Chromium	7.87		0.478	mg/Kg	1	05-Dec-2016 22:33
Copper	7.96		0.191	mg/Kg	1	05-Dec-2016 22:33
Lead	7.16		0.478	mg/Kg	1	05-Dec-2016 22:33
Nickel	8.26		0.478	mg/Kg	1	05-Dec-2016 22:33
Selenium	ND		0.478	mg/Kg	1	05-Dec-2016 22:33
Silver	ND		0.478	mg/Kg	1	05-Dec-2016 22:33
Zinc	23.6		0.478	mg/Kg	1	05-Dec-2016 22:33
<b>MERCURY BY SW7471B</b>		<b>Method:SW7471A</b>		Prep:SW7471A / 10-Dec-2016 Analyst: JCJ		
Mercury	9.96		3.45	ug/Kg	1	10-Dec-2016 20:16

Note: See Qualifiers Page for a list of qualifiers and their explanation.



Client: Kinder Morgan  
 Project: McElmo Dome  
 Sample ID: MC-8-7-2-3-111716  
 Collection Date: 17-Nov-2016 12:30

**ANALYTICAL REPORT**

WorkOrder:HS16111139  
 Lab ID:HS16111139-21  
 Matrix:Soil

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>LA29B ELECTRICAL CONDUCTIVITY</b>		<b>Method:LaDNR-29B EC</b>		Analyst: JHD		
Electrical Conductivity @ saturation	1.14		0.0100	mmhos/cm @25°C	1	21-Dec-2016 18:38
Electrical Conductivity, 1:1 aqueous	0.503		0.0100	mmhos/cm @25°C	1	21-Dec-2016 18:38
Saturation % as decimal	0.442		0	mmhos/cm @25°C	1	21-Dec-2016 18:38
<b>LA29B SATURATION POINT (AS FRACTION)</b>		<b>Method:LaDNR-29B SP</b>		Analyst: KAH		
Saturation Point	0.442		0.100	SP as fraction	1	15-Dec-2016 11:00
<b>MOISTURE</b>		<b>Method:SW3550</b>		Analyst: DFF		
Percent Moisture	7.05		0.0100	wt%	1	06-Dec-2016 10:21
<b>HEXAVALENT CHROMIUM BY SW7196A</b>		<b>Method:SW7196</b>		Prep:SW3060A / 06-Dec-2016 Analyst: KVL		
Chromium, Hexavalent	ND		1.99	mg/kg	1	07-Dec-2016 16:45
<b>PH SOIL BY SW9045D</b>		<b>Method:SW9045B</b>		Analyst: SAP		
pH	8.11	H	0.100	pH Units	1	09-Dec-2016 17:13
Temp Deg C @pH	20.0	H	0	°C	1	09-Dec-2016 17:13

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Kinder Morgan  
 Project: McElmo Dome  
 Sample ID: MC-8-7-6-7-111716  
 Collection Date: 17-Nov-2016 12:45

**ANALYTICAL REPORT**

WorkOrder:HS16111139  
 Lab ID:HS16111139-22  
 Matrix:Soil

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>VOLATILES BY SW8260C</b>		<b>Method:SW8260</b>		Analyst: WLR		
Benzene	ND		5.0	ug/Kg	1	28-Nov-2016 23:46
Ethylbenzene	ND		5.0	ug/Kg	1	28-Nov-2016 23:46
m,p-Xylene	ND		10	ug/Kg	1	28-Nov-2016 23:46
o-Xylene	ND		5.0	ug/Kg	1	28-Nov-2016 23:46
Toluene	ND		5.0	ug/Kg	1	28-Nov-2016 23:46
Xylenes, Total	ND		5.0	ug/Kg	1	28-Nov-2016 23:46
<i>Surr: 1,2-Dichloroethane-d4</i>	83.8		70-128	%REC	1	28-Nov-2016 23:46
<i>Surr: 4-Bromofluorobenzene</i>	87.2		73-126	%REC	1	28-Nov-2016 23:46
<i>Surr: Dibromofluoromethane</i>	89.8		71-128	%REC	1	28-Nov-2016 23:46
<i>Surr: Toluene-d8</i>	99.6		73-127	%REC	1	28-Nov-2016 23:46
<b>GASOLINE RANGE ORGANICS BY SW8015C</b>		<b>Method:SW8015</b>		Analyst: SFE		
Gasoline Range Organics	ND		0.050	mg/Kg	1	29-Nov-2016 21:28
<i>Surr: 4-Bromofluorobenzene</i>	84.2		70-130	%REC	1	29-Nov-2016 21:28
<b>TPH DRO/ORO BY SW8015C</b>		<b>Method:SW8015M</b>		Prep:SW3541 / 29-Nov-2016 Analyst: AAP		
TPH (Diesel Range)	ND		1.7	mg/Kg	1	03-Dec-2016 10:37
<i>Surr: 2-Fluorobiphenyl</i>	75.6		60-135	%REC	1	03-Dec-2016 10:37
<b>TRIVALENT CHROMIUM</b>		<b>Method:Calculation</b>		Analyst: DQ		
Chromium, Trivalent	7.85		5.00	mg/Kg	1	10-Dec-2016 15:12
<b>LA29B SODIUM ADSORPTION RATIO</b>		<b>Method:La29B SAR</b>		Analyst: DQ		
Sodium Adsorption Ratio	0.325		0.0100	meq/meq	1	21-Dec-2016 19:14
<b>LA 29B - 1:1 SOLUBLE CATIONS FOR SAR</b>		<b>Method:La29B-6020</b>		Prep:La29B-6020 Analyst: JCJ		
Calcium	30.2		5.00	mg/L	10	20-Dec-2016 14:55
Magnesium	6.46		5.00	mg/L	10	20-Dec-2016 14:55
Sodium	7.55		5.00	mg/L	10	20-Dec-2016 14:55
<b>METALS BY SW6020A</b>		<b>Method:SW6020</b>		Prep:SW3050A / 05-Dec-2016 Analyst: JCJ		
Arsenic	2.53		0.474	mg/Kg	1	05-Dec-2016 22:38
Barium	136		0.474	mg/Kg	1	05-Dec-2016 22:38
Boron	3.37		2.37	mg/Kg	1	05-Dec-2016 22:38
Cadmium	ND		0.474	mg/Kg	1	05-Dec-2016 22:38
Chromium	7.85		0.474	mg/Kg	1	05-Dec-2016 22:38
Copper	8.80		0.190	mg/Kg	1	05-Dec-2016 22:38
Lead	7.27		0.474	mg/Kg	1	05-Dec-2016 22:38
Nickel	7.66		0.474	mg/Kg	1	05-Dec-2016 22:38
Selenium	ND		0.474	mg/Kg	1	05-Dec-2016 22:38
Silver	ND		0.474	mg/Kg	1	05-Dec-2016 22:38
Zinc	21.5		0.474	mg/Kg	1	05-Dec-2016 22:38
<b>MERCURY BY SW7471B</b>		<b>Method:SW7471A</b>		Prep:SW7471A / 10-Dec-2016 Analyst: JCJ		
Mercury	8.66		3.57	ug/Kg	1	10-Dec-2016 20:17

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Kinder Morgan  
 Project: McElmo Dome  
 Sample ID: MC-8-7-6-7-111716  
 Collection Date: 17-Nov-2016 12:45

**ANALYTICAL REPORT**

WorkOrder:HS16111139  
 Lab ID:HS16111139-22  
 Matrix:Soil

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>LA29B ELECTRICAL CONDUCTIVITY</b>		<b>Method:LaDNR-29B EC</b>		Analyst: JHD		
Electrical Conductivity @ saturation	0.598		0.0100	mmhos/cm @25°C	1	21-Dec-2016 18:38
Electrical Conductivity, 1:1 aqueous	0.248		0.0100	mmhos/cm @25°C	1	21-Dec-2016 18:38
Saturation % as decimal	0.415		0	mmhos/cm @25°C	1	21-Dec-2016 18:38
<b>LA29B SATURATION POINT (AS FRACTION)</b>		<b>Method:LaDNR-29B SP</b>		Analyst: KAH		
Saturation Point	0.415		0.100	SP as fraction	1	15-Dec-2016 11:00
<b>MOISTURE</b>		<b>Method:SW3550</b>		Analyst: DFF		
Percent Moisture	6.21		0.0100	wt%	1	06-Dec-2016 10:21
<b>HEXAVALENT CHROMIUM BY SW7196A</b>		<b>Method:SW7196</b>		Prep:SW3060A / 06-Dec-2016 Analyst: KVL		
Chromium, Hexavalent	ND		1.99	mg/kg	1	07-Dec-2016 16:45
<b>PH SOIL BY SW9045D</b>		<b>Method:SW9045B</b>		Analyst: SAP		
pH	8.33	H	0.100	pH Units	1	09-Dec-2016 17:13
Temp Deg C @pH	20.0	H	0	°C	1	09-Dec-2016 17:13

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Kinder Morgan  
 Project: McElmo Dome  
 Sample ID: MC-8-7-13-14-111716  
 Collection Date: 17-Nov-2016 13:15

**ANALYTICAL REPORT**

WorkOrder:HS16111139  
 Lab ID:HS16111139-23  
 Matrix:Soil

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>VOLATILES BY SW8260C</b>		<b>Method:SW8260</b>		Analyst: WLR		
Benzene	ND		5.1	ug/Kg	1	29-Nov-2016 00:13
Ethylbenzene	ND		5.1	ug/Kg	1	29-Nov-2016 00:13
m,p-Xylene	ND		10	ug/Kg	1	29-Nov-2016 00:13
o-Xylene	ND		5.1	ug/Kg	1	29-Nov-2016 00:13
Toluene	ND		5.1	ug/Kg	1	29-Nov-2016 00:13
Xylenes, Total	ND		5.1	ug/Kg	1	29-Nov-2016 00:13
Surr: 1,2-Dichloroethane-d4	84.1		70-128	%REC	1	29-Nov-2016 00:13
Surr: 4-Bromofluorobenzene	88.5		73-126	%REC	1	29-Nov-2016 00:13
Surr: Dibromofluoromethane	105		71-128	%REC	1	29-Nov-2016 00:13
Surr: Toluene-d8	98.1		73-127	%REC	1	29-Nov-2016 00:13
<b>GASOLINE RANGE ORGANICS BY SW8015C</b>		<b>Method:SW8015</b>		Analyst: SFE		
Gasoline Range Organics	ND		0.050	mg/Kg	1	29-Nov-2016 23:53
Surr: 4-Bromofluorobenzene	78.8		70-130	%REC	1	29-Nov-2016 23:53
<b>TPH DRO/ORO BY SW8015C</b>		<b>Method:SW8015M</b>		Prep:SW3541 / 29-Nov-2016 Analyst: AAP		
TPH (Diesel Range)	ND		1.7	mg/Kg	1	03-Dec-2016 11:01
Surr: 2-Fluorobiphenyl	67.5		60-135	%REC	1	03-Dec-2016 11:01
<b>TRIVALENT CHROMIUM</b>		<b>Method:Calculation</b>		Analyst: DQ		
Chromium, Trivalent	7.94		5.00	mg/Kg	1	10-Dec-2016 15:12
<b>LA29B SODIUM ADSORPTION RATIO</b>		<b>Method:La29B SAR</b>		Analyst: DQ		
Sodium Adsorption Ratio	0.853		0.0100	meq/meq	1	21-Dec-2016 19:14
<b>LA 29B - 1:1 SOLUBLE CATIONS FOR SAR</b>		<b>Method:La29B-6020</b>		Prep:La29B-6020 Analyst: JCJ		
Calcium	23.8		5.00	mg/L	10	20-Dec-2016 15:47
Magnesium	7.21		5.00	mg/L	10	20-Dec-2016 15:47
Sodium	18.5		5.00	mg/L	10	20-Dec-2016 15:47
<b>METALS BY SW6020A</b>		<b>Method:SW6020</b>		Prep:SW3050A / 05-Dec-2016 Analyst: JCJ		
Arsenic	2.57		0.475	mg/Kg	1	06-Dec-2016 02:19
Barium	116		0.475	mg/Kg	1	06-Dec-2016 02:19
Boron	4.09		2.38	mg/Kg	1	06-Dec-2016 02:19
Cadmium	ND		0.475	mg/Kg	1	06-Dec-2016 02:19
Chromium	7.94		0.475	mg/Kg	1	06-Dec-2016 02:19
Copper	5.74		0.190	mg/Kg	1	06-Dec-2016 02:19
Lead	6.29		0.475	mg/Kg	1	06-Dec-2016 02:19
Nickel	9.72		0.475	mg/Kg	1	06-Dec-2016 02:19
Selenium	ND		0.475	mg/Kg	1	06-Dec-2016 02:19
Silver	ND		0.475	mg/Kg	1	06-Dec-2016 02:19
Zinc	22.7		0.475	mg/Kg	1	06-Dec-2016 02:19
<b>MERCURY BY SW7471B</b>		<b>Method:SW7471A</b>		Prep:SW7471A / 10-Dec-2016 Analyst: JCJ		
Mercury	12.0		3.43	ug/Kg	1	10-Dec-2016 20:19

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Kinder Morgan  
 Project: McElmo Dome  
 Sample ID: MC-8-7-13-14-111716  
 Collection Date: 17-Nov-2016 13:15

**ANALYTICAL REPORT**

WorkOrder:HS16111139  
 Lab ID:HS16111139-23  
 Matrix:Soil

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>LA29B ELECTRICAL CONDUCTIVITY</b>		<b>Method:LaDNR-29B EC</b>		Analyst: JHD		
Electrical Conductivity @ saturation	0.597		0.0100	mmhos/cm @25°C	1	21-Dec-2016 19:07
Electrical Conductivity, 1:1 aqueous	0.292		0.0100	mmhos/cm @25°C	1	21-Dec-2016 19:07
Saturation % as decimal	0.489		0	mmhos/cm @25°C	1	21-Dec-2016 19:07
<b>LA29B SATURATION POINT (AS FRACTION)</b>		<b>Method:LaDNR-29B SP</b>		Analyst: KAH		
Saturation Point	0.489		0.100	SP as fraction	1	15-Dec-2016 11:05
<b>MOISTURE</b>		<b>Method:SW3550</b>		Analyst: DFF		
Percent Moisture	14.2		0.0100	wt%	1	06-Dec-2016 10:21
<b>HEXAVALENT CHROMIUM BY SW7196A</b>		<b>Method:SW7196</b>		Prep:SW3060A / 06-Dec-2016 Analyst: KVL		
Chromium, Hexavalent	ND		2.00	mg/kg	1	07-Dec-2016 16:45
<b>PH SOIL BY SW9045D</b>		<b>Method:SW9045B</b>		Analyst: SAP		
pH	8.23	H	0.100	pH Units	1	09-Dec-2016 17:13
Temp Deg C @pH	20.0	H	0	°C	1	09-Dec-2016 17:13

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Kinder Morgan  
 Project: McElmo Dome  
 Sample ID: MC-8-8-2-3-111716  
 Collection Date: 17-Nov-2016 11:45

**ANALYTICAL REPORT**

WorkOrder:HS16111139  
 Lab ID:HS16111139-24  
 Matrix:Soil

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>VOLATILES BY SW8260C</b>		<b>Method:SW8260</b>		Analyst: WLR		
Benzene	ND		4.8	ug/Kg	1	29-Nov-2016 00:41
Ethylbenzene	ND		4.8	ug/Kg	1	29-Nov-2016 00:41
m,p-Xylene	ND		9.7	ug/Kg	1	29-Nov-2016 00:41
o-Xylene	ND		4.8	ug/Kg	1	29-Nov-2016 00:41
Toluene	ND		4.8	ug/Kg	1	29-Nov-2016 00:41
Xylenes, Total	ND		4.8	ug/Kg	1	29-Nov-2016 00:41
Surr: 1,2-Dichloroethane-d4	97.1		70-128	%REC	1	29-Nov-2016 00:41
Surr: 4-Bromofluorobenzene	89.7		73-126	%REC	1	29-Nov-2016 00:41
Surr: Dibromofluoromethane	105		71-128	%REC	1	29-Nov-2016 00:41
Surr: Toluene-d8	99.5		73-127	%REC	1	29-Nov-2016 00:41
<b>GASOLINE RANGE ORGANICS BY SW8015C</b>		<b>Method:SW8015</b>		Analyst: SFE		
Gasoline Range Organics	ND		0.050	mg/Kg	1	30-Nov-2016 00:09
Surr: 4-Bromofluorobenzene	82.4		70-130	%REC	1	30-Nov-2016 00:09
<b>TPH DRO/ORO BY SW8015C</b>		<b>Method:SW8015M</b>		Prep:SW3541 / 29-Nov-2016 Analyst: AAP		
TPH (Diesel Range)	ND		1.7	mg/Kg	1	03-Dec-2016 11:26
Surr: 2-Fluorobiphenyl	76.8		60-135	%REC	1	03-Dec-2016 11:26
<b>TRIVALENT CHROMIUM</b>		<b>Method:Calculation</b>		Analyst: DQ		
Chromium, Trivalent	8.34		5.00	mg/Kg	1	10-Dec-2016 15:12
<b>LA29B SODIUM ADSORPTION RATIO</b>		<b>Method:La29B SAR</b>		Analyst: DQ		
Sodium Adsorption Ratio	0.167		0.0100	meq/meq	1	21-Dec-2016 19:14
<b>LA 29B - 1:1 SOLUBLE CATIONS FOR SAR</b>		<b>Method:La29B-6020</b>		Prep:La29B-6020 Analyst: JCJ		
Calcium	76.5		5.00	mg/L	10	20-Dec-2016 15:51
Magnesium	13.5		5.00	mg/L	10	20-Dec-2016 15:51
Sodium	6.03		5.00	mg/L	10	20-Dec-2016 15:51
<b>METALS BY SW6020A</b>		<b>Method:SW6020</b>		Prep:SW3050A / 05-Dec-2016 Analyst: JCJ		
Arsenic	2.55		0.473	mg/Kg	1	06-Dec-2016 02:23
Barium	148		0.473	mg/Kg	1	06-Dec-2016 02:23
Boron	3.34		2.36	mg/Kg	1	06-Dec-2016 02:23
Cadmium	ND		0.473	mg/Kg	1	06-Dec-2016 02:23
Chromium	8.34		0.473	mg/Kg	1	06-Dec-2016 02:23
Copper	7.28		0.189	mg/Kg	1	06-Dec-2016 02:23
Lead	7.49		0.473	mg/Kg	1	06-Dec-2016 02:23
Nickel	8.28		0.473	mg/Kg	1	06-Dec-2016 02:23
Selenium	ND		0.473	mg/Kg	1	06-Dec-2016 02:23
Silver	ND		0.473	mg/Kg	1	06-Dec-2016 02:23
Zinc	24.3		0.473	mg/Kg	1	06-Dec-2016 02:23
<b>MERCURY BY SW7471B</b>		<b>Method:SW7471A</b>		Prep:SW7471A / 10-Dec-2016 Analyst: JCJ		
Mercury	9.00		3.59	ug/Kg	1	10-Dec-2016 20:21

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Kinder Morgan  
 Project: McElmo Dome  
 Sample ID: MC-8-8-2-3-111716  
 Collection Date: 17-Nov-2016 11:45

**ANALYTICAL REPORT**

WorkOrder:HS16111139  
 Lab ID:HS16111139-24  
 Matrix:Soil

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>LA29B ELECTRICAL CONDUCTIVITY</b>		<b>Method:LaDNR-29B EC</b>		Analyst: JHD		
Electrical Conductivity @ saturation	1.27		0.0100	mmhos/cm @25°C	1	21-Dec-2016 19:07
Electrical Conductivity, 1:1 aqueous	0.575		0.0100	mmhos/cm @25°C	1	21-Dec-2016 19:07
Saturation % as decimal	0.451		0	mmhos/cm @25°C	1	21-Dec-2016 19:07
<b>LA29B SATURATION POINT (AS FRACTION)</b>		<b>Method:LaDNR-29B SP</b>		Analyst: KAH		
Saturation Point	0.451		0.100	SP as fraction	1	15-Dec-2016 11:05
<b>MOISTURE</b>		<b>Method:SW3550</b>		Analyst: DFF		
Percent Moisture	7.58		0.0100	wt%	1	06-Dec-2016 10:21
<b>HEXAVALENT CHROMIUM BY SW7196A</b>		<b>Method:SW7196</b>		Prep:SW3060A / 05-Dec-2016 Analyst: KVL		
Chromium, Hexavalent	ND		1.99	mg/kg	1	06-Dec-2016 15:53
<b>PH SOIL BY SW9045D</b>		<b>Method:SW9045B</b>		Analyst: SAP		
pH	7.97	H	0.100	pH Units	1	09-Dec-2016 17:13
Temp Deg C @pH	20.0	H	0	°C	1	09-Dec-2016 17:13

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Kinder Morgan  
 Project: McElmo Dome  
 Sample ID: MC-8-8-9-10-111716  
 Collection Date: 17-Nov-2016 12:00

**ANALYTICAL REPORT**

WorkOrder:HS16111139  
 Lab ID:HS16111139-25  
 Matrix:Soil

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>VOLATILES BY SW8260C</b>		<b>Method:SW8260</b>		Analyst: WLR		
Benzene	ND		4.8	ug/Kg	1	29-Nov-2016 01:08
Ethylbenzene	ND		4.8	ug/Kg	1	29-Nov-2016 01:08
m,p-Xylene	ND		9.7	ug/Kg	1	29-Nov-2016 01:08
o-Xylene	ND		4.8	ug/Kg	1	29-Nov-2016 01:08
Toluene	ND		4.8	ug/Kg	1	29-Nov-2016 01:08
Xylenes, Total	ND		4.8	ug/Kg	1	29-Nov-2016 01:08
Surr: 1,2-Dichloroethane-d4	81.1		70-128	%REC	1	29-Nov-2016 01:08
Surr: 4-Bromofluorobenzene	87.9		73-126	%REC	1	29-Nov-2016 01:08
Surr: Dibromofluoromethane	99.9		71-128	%REC	1	29-Nov-2016 01:08
Surr: Toluene-d8	99.8		73-127	%REC	1	29-Nov-2016 01:08
<b>GASOLINE RANGE ORGANICS BY SW8015C</b>		<b>Method:SW8015</b>		Analyst: SFE		
Gasoline Range Organics	ND		0.050	mg/Kg	1	29-Nov-2016 23:05
Surr: 4-Bromofluorobenzene	83.8		70-130	%REC	1	29-Nov-2016 23:05
<b>TPH DRO/ORO BY SW8015C</b>		<b>Method:SW8015M</b>		Prep:SW3541 / 29-Nov-2016 Analyst: AAP		
TPH (Diesel Range)	ND		1.7	mg/Kg	1	03-Dec-2016 11:50
Surr: 2-Fluorobiphenyl	63.6		60-135	%REC	1	03-Dec-2016 11:50
<b>TRIVALENT CHROMIUM</b>		<b>Method:Calculation</b>		Analyst: DQ		
Chromium, Trivalent	5.19		5.00	mg/Kg	1	10-Dec-2016 15:12
<b>LA29B SODIUM ADSORPTION RATIO</b>		<b>Method:La29B SAR</b>		Analyst: DQ		
Sodium Adsorption Ratio	0.473		0.0100	meq/meq	1	21-Dec-2016 19:14
<b>LA 29B - 1:1 SOLUBLE CATIONS FOR SAR</b>		<b>Method:La29B-6020</b>		Prep:La29B-6020 Analyst: JCJ		
Calcium	107		5.00	mg/L	10	20-Dec-2016 15:56
Magnesium	23.2		5.00	mg/L	10	20-Dec-2016 15:56
Sodium	20.7		5.00	mg/L	10	20-Dec-2016 15:56
<b>METALS BY SW6020A</b>		<b>Method:SW6020</b>		Prep:SW3050A / 05-Dec-2016 Analyst: JCJ		
Arsenic	1.89		0.479	mg/Kg	1	06-Dec-2016 02:28
Barium	150		0.479	mg/Kg	1	06-Dec-2016 02:28
Boron	3.40		2.40	mg/Kg	1	06-Dec-2016 02:28
Cadmium	ND		0.479	mg/Kg	1	06-Dec-2016 02:28
Chromium	5.19		0.479	mg/Kg	1	06-Dec-2016 02:28
Copper	3.58		0.192	mg/Kg	1	06-Dec-2016 02:28
Lead	4.53		0.479	mg/Kg	1	06-Dec-2016 02:28
Nickel	6.68		0.479	mg/Kg	1	06-Dec-2016 02:28
Selenium	ND		0.479	mg/Kg	1	06-Dec-2016 02:28
Silver	ND		0.479	mg/Kg	1	06-Dec-2016 02:28
Zinc	15.1		0.479	mg/Kg	1	06-Dec-2016 02:28
<b>MERCURY BY SW7471B</b>		<b>Method:SW7471A</b>		Prep:SW7471A / 10-Dec-2016 Analyst: JCJ		
Mercury	22.7		3.51	ug/Kg	1	10-Dec-2016 20:23

Note: See Qualifiers Page for a list of qualifiers and their explanation.



Client: Kinder Morgan  
 Project: McElmo Dome  
 Sample ID: MC-8-8-9-10-111716  
 Collection Date: 17-Nov-2016 12:00

**ANALYTICAL REPORT**

WorkOrder:HS16111139  
 Lab ID:HS16111139-25  
 Matrix:Soil

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>LA29B ELECTRICAL CONDUCTIVITY</b>		<b>Method:LaDNR-29B EC</b>		Analyst: JHD		
Electrical Conductivity @ saturation	1.95		0.0100	mmhos/cm @25°C	1	21-Dec-2016 19:07
Electrical Conductivity, 1:1 aqueous	1.09		0.0100	mmhos/cm @25°C	1	21-Dec-2016 19:07
Saturation % as decimal	0.562		0	mmhos/cm @25°C	1	21-Dec-2016 19:07
<b>LA29B SATURATION POINT (AS FRACTION)</b>		<b>Method:LaDNR-29B SP</b>		Analyst: KAH		
Saturation Point	0.562		0.100	SP as fraction	1	15-Dec-2016 11:05
<b>MOISTURE</b>		<b>Method:SW3550</b>		Analyst: DFF		
Percent Moisture	19.7		0.0100	wt%	1	06-Dec-2016 10:21
<b>HEXAVALENT CHROMIUM BY SW7196A</b>		<b>Method:SW7196</b>		Prep:SW3060A / 05-Dec-2016 Analyst: KVL		
Chromium, Hexavalent	ND		2.00	mg/kg	1	06-Dec-2016 15:53
<b>PH SOIL BY SW9045D</b>		<b>Method:SW9045B</b>		Analyst: SAP		
pH	7.88	H	0.100	pH Units	1	09-Dec-2016 17:13
Temp Deg C @pH	20.3	H	0	°C	1	09-Dec-2016 17:13

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Kinder Morgan  
 Project: McElmo Dome  
 Sample ID: MC-8-8-11-12-111716  
 Collection Date: 17-Nov-2016 12:10

**ANALYTICAL REPORT**

WorkOrder:HS16111139  
 Lab ID:HS16111139-26  
 Matrix:Soil

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>VOLATILES BY SW8260C</b>		<b>Method:SW8260</b>		Analyst: WLR		
Benzene	ND		4.8	ug/Kg	1	29-Nov-2016 01:36
Ethylbenzene	ND		4.8	ug/Kg	1	29-Nov-2016 01:36
m,p-Xylene	ND		9.6	ug/Kg	1	29-Nov-2016 01:36
o-Xylene	ND		4.8	ug/Kg	1	29-Nov-2016 01:36
Toluene	ND		4.8	ug/Kg	1	29-Nov-2016 01:36
Xylenes, Total	ND		4.8	ug/Kg	1	29-Nov-2016 01:36
Surr: 1,2-Dichloroethane-d4	93.8		70-128	%REC	1	29-Nov-2016 01:36
Surr: 4-Bromofluorobenzene	87.8		73-126	%REC	1	29-Nov-2016 01:36
Surr: Dibromofluoromethane	105		71-128	%REC	1	29-Nov-2016 01:36
Surr: Toluene-d8	99.4		73-127	%REC	1	29-Nov-2016 01:36
<b>GASOLINE RANGE ORGANICS BY SW8015C</b>		<b>Method:SW8015</b>		Analyst: SFE		
Gasoline Range Organics	ND		0.050	mg/Kg	1	30-Nov-2016 00:25
Surr: 4-Bromofluorobenzene	81.0		70-130	%REC	1	30-Nov-2016 00:25
<b>TPH DRO/ORO BY SW8015C</b>		<b>Method:SW8015M</b>		Prep:SW3541 / 29-Nov-2016 Analyst: AAP		
TPH (Diesel Range)	ND		1.7	mg/Kg	1	03-Dec-2016 13:03
Surr: 2-Fluorobiphenyl	70.8		60-135	%REC	1	03-Dec-2016 13:03
<b>TRIVALENT CHROMIUM</b>		<b>Method:Calculation</b>		Analyst: DQ		
Chromium, Trivalent	5.40		5.00	mg/Kg	1	10-Dec-2016 15:12
<b>LA29B SODIUM ADSORPTION RATIO</b>		<b>Method:La29B SAR</b>		Analyst: DQ		
Sodium Adsorption Ratio	0.599		0.0100	meq/meq	1	21-Dec-2016 19:14
<b>LA 29B - 1:1 SOLUBLE CATIONS FOR SAR</b>		<b>Method:La29B-6020</b>		Prep:La29B-6020 Analyst: JCJ		
Calcium	34.0		5.00	mg/L	10	20-Dec-2016 16:00
Magnesium	7.83		5.00	mg/L	10	20-Dec-2016 16:00
Sodium	14.9		5.00	mg/L	10	20-Dec-2016 16:00
<b>METALS BY SW6020A</b>		<b>Method:SW6020</b>		Prep:SW3050A / 05-Dec-2016 Analyst: JCJ		
Arsenic	2.25		0.457	mg/Kg	1	06-Dec-2016 02:33
Barium	123		0.457	mg/Kg	1	06-Dec-2016 02:33
Boron	3.02		2.29	mg/Kg	1	06-Dec-2016 02:33
Cadmium	ND		0.457	mg/Kg	1	06-Dec-2016 02:33
Chromium	5.40		0.457	mg/Kg	1	06-Dec-2016 02:33
Copper	4.71		0.183	mg/Kg	1	06-Dec-2016 02:33
Lead	4.62		0.457	mg/Kg	1	06-Dec-2016 02:33
Nickel	6.89		0.457	mg/Kg	1	06-Dec-2016 02:33
Selenium	ND		0.457	mg/Kg	1	06-Dec-2016 02:33
Silver	ND		0.457	mg/Kg	1	06-Dec-2016 02:33
Zinc	16.5		0.457	mg/Kg	1	06-Dec-2016 02:33
<b>MERCURY BY SW7471B</b>		<b>Method:SW7471A</b>		Prep:SW7471A / 10-Dec-2016 Analyst: JCJ		
Mercury	17.6		3.59	ug/Kg	1	10-Dec-2016 20:24

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Kinder Morgan  
 Project: McElmo Dome  
 Sample ID: MC-8-8-11-12-111716  
 Collection Date: 17-Nov-2016 12:10

**ANALYTICAL REPORT**

WorkOrder:HS16111139  
 Lab ID:HS16111139-26  
 Matrix:Soil

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>LA29B ELECTRICAL CONDUCTIVITY</b>		<b>Method:LaDNR-29B EC</b>		Analyst: JHD		
Electrical Conductivity @ saturation	0.768		0.0100	mmhos/cm @25°C	1	21-Dec-2016 19:07
Electrical Conductivity, 1:1 aqueous	0.386		0.0100	mmhos/cm @25°C	1	21-Dec-2016 19:07
Saturation % as decimal	0.503		0	mmhos/cm @25°C	1	21-Dec-2016 19:07
<b>LA29B SATURATION POINT (AS FRACTION)</b>		<b>Method:LaDNR-29B SP</b>		Analyst: KAH		
Saturation Point	0.503		0.100	SP as fraction	1	15-Dec-2016 11:05
<b>MOISTURE</b>		<b>Method:SW3550</b>		Analyst: DFF		
Percent Moisture	14.7		0.0100	wt%	1	06-Dec-2016 10:21
<b>HEXAVALENT CHROMIUM BY SW7196A</b>		<b>Method:SW7196</b>		Prep:SW3060A / 05-Dec-2016 Analyst: KVL		
Chromium, Hexavalent	ND		1.99	mg/kg	1	06-Dec-2016 15:53
<b>PH SOIL BY SW9045D</b>		<b>Method:SW9045B</b>		Analyst: SAP		
pH	8.25	H	0.100	pH Units	1	09-Dec-2016 17:13
Temp Deg C @pH	20.6	H	0	°C	1	09-Dec-2016 17:13

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Kinder Morgan  
Project: McElmo Dome  
Sample ID: TB - 082916-81  
Collection Date: 17-Nov-2016 00:01

**ANALYTICAL REPORT**

WorkOrder:HS16111139  
Lab ID:HS16111139-27  
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>LOW LEVEL VOLATILES BY SW8260C</b>		<b>Method:SW8260</b>		Analyst: AKP		
Benzene	ND		1.0	ug/L	1	26-Nov-2016 20:44
Ethylbenzene	ND		1.0	ug/L	1	26-Nov-2016 20:44
m,p-Xylene	ND		2.0	ug/L	1	26-Nov-2016 20:44
o-Xylene	ND		1.0	ug/L	1	26-Nov-2016 20:44
Toluene	ND		1.0	ug/L	1	26-Nov-2016 20:44
Xylenes, Total	ND		1.0	ug/L	1	26-Nov-2016 20:44
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>99.8</i>		<i>71-125</i>	<i>%REC</i>	<i>1</i>	<i>26-Nov-2016 20:44</i>
<i>Surr: 4-Bromofluorobenzene</i>	<i>98.1</i>		<i>70-125</i>	<i>%REC</i>	<i>1</i>	<i>26-Nov-2016 20:44</i>
<i>Surr: Dibromofluoromethane</i>	<i>104</i>		<i>74-125</i>	<i>%REC</i>	<i>1</i>	<i>26-Nov-2016 20:44</i>
<i>Surr: Toluene-d8</i>	<i>102</i>		<i>75-125</i>	<i>%REC</i>	<i>1</i>	<i>26-Nov-2016 20:44</i>

Note: See Qualifiers Page for a list of qualifiers and their explanation.

## WEIGHT LOG

Client: Kinder Morgan

Project: McElmo Dome

WorkOrder: HS16111139

Batch ID: 1403 Method: VOLATILES BY SW8260C

SampleID	Container	Sample Wt/Vol	Final Volume	Weight Factor	Container Type
HS16111139-01	1	5.178 (g)	5 (mL)	0.97	Bulk (5030B)
HS16111139-02	1	5.103 (g)	5 (mL)	0.98	Bulk (5030B)
HS16111139-03	1	5.132 (g)	5 (mL)	0.97	Bulk (5030B)
HS16111139-04	1	5.045 (g)	5 (mL)	0.99	Bulk (5030B)
HS16111139-05	1	5.081 (g)	5 (mL)	0.98	Bulk (5030B)
HS16111139-06	1	5.029 (g)	5 (mL)	0.99	Bulk (5030B)
HS16111139-07	1	5.162 (g)	5 (mL)	0.97	Bulk (5030B)
HS16111139-08	1	5.153 (g)	5 (mL)	0.97	Bulk (5030B)
HS16111139-10	1	5.125 (g)	5 (mL)	0.98	Bulk (5030B)
HS16111139-11	1	5.128 (g)	5 (mL)	0.98	Bulk (5030B)
HS16111139-12	1	5.103 (g)	5 (mL)	0.98	Bulk (5030B)
HS16111139-13	1	5.193 (g)	5 (mL)	0.96	Bulk (5030B)
HS16111139-14	1	5.069 (g)	5 (mL)	0.99	Bulk (5030B)
HS16111139-15	1	5.177 (g)	5 (mL)	0.97	Bulk (5030B)
HS16111139-16	1	5.109 (g)	5 (mL)	0.98	Bulk (5030B)
HS16111139-17	1	5.195 (g)	5 (mL)	0.96	Bulk (5030B)
HS16111139-19	1	5.045 (g)	5 (mL)	0.99	Bulk (5030B)
HS16111139-20	1	5.188 (g)	5 (mL)	0.96	Bulk (5030B)
HS16111139-21	1	5.078 (g)	5 (mL)	0.98	Bulk (5030B)
HS16111139-22	1	5.006 (g)	5 (mL)	1	Bulk (5030B)
HS16111139-23	1	4.926 (g)	5 (mL)	1.02	Bulk (5030B)
HS16111139-24	1	5.153 (g)	5 (mL)	0.97	Bulk (5030B)
HS16111139-25	1	5.179 (g)	5 (mL)	0.97	Bulk (5030B)
HS16111139-26	1	5.186 (g)	5 (mL)	0.96	Bulk (5030B)

Batch ID: 1411 Method: GASOLINE RANGE ORGANICS BY SW8015C Prep:

SampleID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS16111139-01	1	5.02 (g)	5 (mL)	1	Bulk (5030B)
HS16111139-02	1	5.01 (g)	5 (mL)	1	Bulk (5030B)
HS16111139-03	1	5.03 (g)	5 (mL)	0.99	Bulk (5030B)
HS16111139-04	1	5.01 (g)	5 (mL)	1	Bulk (5030B)
HS16111139-05	1	5.01 (g)	5 (mL)	1	Bulk (5030B)
HS16111139-06	1	5.04 (g)	5 (mL)	0.99	Bulk (5030B)
HS16111139-07	1	5.02 (g)	5 (mL)	1	Bulk (5030B)
HS16111139-08	1	5.05 (g)	5 (mL)	0.99	Bulk (5030B)
HS16111139-10	1	5.05 (g)	5 (mL)	0.99	Bulk (5030B)
HS16111139-11	1	5.04 (g)	5 (mL)	0.99	Bulk (5030B)
HS16111139-12	1	5.02 (g)	5 (mL)	1	Bulk (5030B)
HS16111139-13	1	5.02 (g)	5 (mL)	1	Bulk (5030B)
HS16111139-14	1	5.03 (g)	5 (mL)	0.99	Bulk (5030B)
HS16111139-15	1	5.04 (g)	5 (mL)	0.99	Bulk (5030B)
HS16111139-16	1	5 (g)	5 (mL)	1	Bulk (5030B)
HS16111139-17	1	5.01 (g)	5 (mL)	1	Bulk (5030B)
HS16111139-19	1	5.02 (g)	5 (mL)	1	Bulk (5030B)
HS16111139-20	1	5.02 (g)	5 (mL)	1	Bulk (5030B)
HS16111139-21	1	5.03 (g)	5 (mL)	0.99	Bulk (5030B)
HS16111139-22	1	5.02 (g)	5 (mL)	1	Bulk (5030B)
HS16111139-23	1	5.02 (g)	5 (mL)	1	Bulk (5030B)
HS16111139-24	1	5.04 (g)	5 (mL)	0.99	Bulk (5030B)
HS16111139-25	1	5.03 (g)	5 (mL)	0.99	Bulk (5030B)
HS16111139-26	1	5.03 (g)	5 (mL)	0.99	Bulk (5030B)

## WEIGHT LOG

Client: Kinder Morgan

Project: McElmo Dome

WorkOrder: HS16111139

**Batch ID:** 110253      **Method:** TPH DRO/ORO BY SW8015C      **Prep:** 8015SPR\_LL

SamplID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS16111139-01	1	30.03	1 (mL)	0.0333
HS16111139-02	1	30.06	1 (mL)	0.03327
HS16111139-03	1	30.08	1 (mL)	0.03324
HS16111139-04	1	30.06	1 (mL)	0.03327
HS16111139-05	1	30.07	1 (mL)	0.03326
HS16111139-06	1	30.02	1 (mL)	0.03331
HS16111139-07	1	30.01	1 (mL)	0.03332
HS16111139-08	1	30.07	1 (mL)	0.03326
HS16111139-10	1	30.06	1 (mL)	0.03327
HS16111139-11	1	30.09	1 (mL)	0.03323
HS16111139-12	1	30.01	1 (mL)	0.03332
HS16111139-13	1	30.08	1 (mL)	0.03324
HS16111139-14	1	30.07	1 (mL)	0.03326
HS16111139-15	1	30.03	1 (mL)	0.0333
HS16111139-16	1	30.09	1 (mL)	0.03323
HS16111139-17	1	30.06	1 (mL)	0.03327
HS16111139-19	1	30.01	1 (mL)	0.03332
HS16111139-20	1	30.03	1 (mL)	0.0333
HS16111139-21	1	30.04	1 (mL)	0.03329

**Batch ID:** 110255      **Method:** TPH DRO/ORO BY SW8015C      **Prep:** 8015SPR\_LL

SamplID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS16111139-22	1	30.07	1 (mL)	0.03326
HS16111139-23	1	30.01	1 (mL)	0.03332
HS16111139-24	1	30.04	1 (mL)	0.03329
HS16111139-25	1	30.06	1 (mL)	0.03327
HS16111139-26	1	30.03	1 (mL)	0.0333

## WEIGHT LOG

Client: Kinder Morgan

Project: McElmo Dome

WorkOrder: HS16111139

**Batch ID:** 110420      **Method:** METALS BY SW6020A      **Prep:** 3050\_I\_LOW

SampleID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS16111139-01	1	0.5258	50 (mL)	95.09
HS16111139-02	1	0.5335	50 (mL)	93.72
HS16111139-03	1	0.5439	50 (mL)	91.93
HS16111139-04	1	0.5225	50 (mL)	95.69
HS16111139-05	1	0.5453	50 (mL)	91.69
HS16111139-06	1	0.5444	50 (mL)	91.84
HS16111139-07	1	0.5227	50 (mL)	95.66
HS16111139-08	1	0.5358	50 (mL)	93.32
HS16111139-10	1	0.5295	50 (mL)	94.43
HS16111139-11	1	0.5295	50 (mL)	94.43
HS16111139-12	1	0.5423	50 (mL)	92.2
HS16111139-13	1	0.5275	50 (mL)	94.79
HS16111139-14	1	0.5224	50 (mL)	95.71
HS16111139-15	1	0.5488	50 (mL)	91.11
HS16111139-16	1	0.5337	50 (mL)	93.69
HS16111139-17	1	0.5307	50 (mL)	94.22
HS16111139-19	1	0.5404	50 (mL)	92.52
HS16111139-20	1	0.5377	50 (mL)	92.99
HS16111139-21	1	0.5232	50 (mL)	95.57
HS16111139-22	1	0.5269	50 (mL)	94.89

**Batch ID:** 110430      **Method:** METALS BY SW6020A      **Prep:** 3050\_I\_LOW

SampleID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS16111139-23	1	0.5259	50 (mL)	95.08
HS16111139-24	1	0.5287	50 (mL)	94.57
HS16111139-25	1	0.5219	50 (mL)	95.8
HS16111139-26	1	0.5469	50 (mL)	91.42

**Batch ID:** 110450      **Method:** HEXAVALENT CHROMIUM BY SW7196A      **Prep:** CR6\_S\_PR3060A

SampleID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS16111139-11	1	2.5064	100 (mL)	39.9
HS16111139-12	1	2.5078	100 (mL)	39.88
HS16111139-13	1	2.5024	100 (mL)	39.96
HS16111139-14	1	2.4988	100 (mL)	40.02
HS16111139-15	1	2.5003	100 (mL)	40
HS16111139-16	1	2.5183	100 (mL)	39.71
HS16111139-17	1	2.5107	100 (mL)	39.83
HS16111139-19	1	2.5006	100 (mL)	39.99
HS16111139-20	1	2.4996	100 (mL)	40.01
HS16111139-24	1	2.5064	100 (mL)	39.9
HS16111139-25	1	2.5031	100 (mL)	39.95
HS16111139-26	1	2.5154	100 (mL)	39.76

## WEIGHT LOG

Client: Kinder Morgan

Project: McElmo Dome

WorkOrder: HS16111139

**Batch ID:** 110464      **Method:** HEXAVALENT CHROMIUM BY SW7196A      **Prep:** CR6\_S\_PR3060A

SamplID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS16111139-01	1	2.5133	100 (mL)	39.79
HS16111139-02	1	2.5071	100 (mL)	39.89
HS16111139-03	1	2.5189	100 (mL)	39.7
HS16111139-04	1	2.5064	100 (mL)	39.9
HS16111139-05	1	2.5013	100 (mL)	39.98
HS16111139-06	1	2.5183	100 (mL)	39.71
HS16111139-07	1	2.5146	100 (mL)	39.77
HS16111139-08	1	2.512	100 (mL)	39.81
HS16111139-10	1	2.4968	100 (mL)	40.05
HS16111139-21	1	2.5152	100 (mL)	39.76
HS16111139-22	1	2.5142	100 (mL)	39.77
HS16111139-23	1	2.4996	100 (mL)	40.01

**Batch ID:** 110625      **Method:** MERCURY BY SW7471B      **Prep:** HG\_S\_LOWPR

SamplID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS16111139-01	1	0.5715	40 (mL)	69.99
HS16111139-02	1	0.5574	40 (mL)	71.76
HS16111139-03	1	0.5889	40 (mL)	67.92
HS16111139-04	1	0.5602	40 (mL)	71.4
HS16111139-05	1	0.5591	40 (mL)	71.54
HS16111139-06	1	0.5838	40 (mL)	68.52
HS16111139-07	1	0.5623	40 (mL)	71.14
HS16111139-08	1	0.5733	40 (mL)	69.77
HS16111139-10	1	0.5697	40 (mL)	70.21
HS16111139-11	1	0.5549	40 (mL)	72.09
HS16111139-12	1	0.5629	40 (mL)	71.06
HS16111139-13	1	0.5692	40 (mL)	70.27

**Batch ID:** 110626      **Method:** MERCURY BY SW7471B      **Prep:** HG\_S\_LOWPR

SamplID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS16111139-14	1	0.5739	40 (mL)	69.7
HS16111139-15	1	0.5657	40 (mL)	70.71
HS16111139-16	1	0.5877	40 (mL)	68.06
HS16111139-17	1	0.5595	40 (mL)	71.49
HS16111139-19	1	0.5661	40 (mL)	70.66
HS16111139-20	1	0.5807	40 (mL)	68.88
HS16111139-21	1	0.5784	40 (mL)	69.16
HS16111139-22	1	0.5589	40 (mL)	71.57
HS16111139-23	1	0.5819	40 (mL)	68.74
HS16111139-24	1	0.5556	40 (mL)	71.99
HS16111139-25	1	0.5682	40 (mL)	70.4
HS16111139-26	1	0.5553	40 (mL)	72.03



## WEIGHT LOG

Client: Kinder Morgan

Project: McElmo Dome

WorkOrder: HS16111139

**Batch ID:** 110894      **Method:** LA 29B - 1:1 SOLUBLE CATIONS FOR SAR      **Prep:** LA29B SAR CATPR

SamplID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS16111139-01	1	75.0081	75 (mL)	1
HS16111139-02	1	75.0203	75 (mL)	1
HS16111139-03	1	75.0455	75 (mL)	1
HS16111139-04	1	75.0055	75 (mL)	1
HS16111139-05	1	75.0188	75 (mL)	1
HS16111139-06	1	75.0401	75 (mL)	1
HS16111139-07	1	75.011	75 (mL)	1
HS16111139-08	1	75.0183	75 (mL)	1
HS16111139-10	1	75.0545	75 (mL)	1
HS16111139-11	1	75.054	75 (mL)	1
HS16111139-12	1	75.0569	75 (mL)	1
HS16111139-13	1	75.091	75 (mL)	1
HS16111139-14	1	75.044	75 (mL)	1
HS16111139-15	1	75.017	75 (mL)	1
HS16111139-16	1	75.0119	75 (mL)	1
HS16111139-17	1	75.0182	75 (mL)	1
HS16111139-19	1	75.459	75 (mL)	1
HS16111139-20	1	75.018	75 (mL)	1
HS16111139-21	1	75.0149	75 (mL)	1
HS16111139-22	1	75.0046	75 (mL)	1

**Batch ID:** 110896      **Method:** LA 29B - 1:1 SOLUBLE CATIONS FOR SAR      **Prep:** LA29B SAR CATPR

SamplID	Container	Sample Wt/Vol	Final Volume	Prep Factor
HS16111139-23	1	75.0224	75 (mL)	1
HS16111139-24	1	75.0026	75 (mL)	1
HS16111139-25	1	75.0483	75 (mL)	1
HS16111139-26	1	75.0232	75 (mL)	1

**Client:** Kinder Morgan  
**Project:** McElmo Dome  
**WorkOrder:** HS16111139

**DATES REPORT**

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
<b>Batch ID</b> 110253	<b>Test Name :</b> TPH DRO/ORO BY SW8015C			<b>Matrix:</b> Soil		
HS16111139-01	MC-8-1-0-1-111716	17 Nov 2016 07:45		29 Nov 2016 13:57	02 Dec 2016 04:15	1
HS16111139-02	MC-8-1-6-7-111716	17 Nov 2016 08:10		29 Nov 2016 13:57	02 Dec 2016 04:39	1
HS16111139-03	MC-8-1-9-10-111716	17 Nov 2016 08:15		29 Nov 2016 13:57	02 Dec 2016 05:04	1
HS16111139-04	MC-8-2-1-2-111716	17 Nov 2016 08:30		29 Nov 2016 13:57	02 Dec 2016 05:28	1
HS16111139-05	MC-8-2-8-9-111716	17 Nov 2016 08:50		29 Nov 2016 13:57	02 Dec 2016 05:52	1
HS16111139-06	MC-8-2-14-15-111716	17 Nov 2016 09:15		29 Nov 2016 13:57	02 Dec 2016 06:17	1
HS16111139-07	MC-8-3-1-2-111716	17 Nov 2016 09:30		29 Nov 2016 13:57	02 Dec 2016 06:41	1
HS16111139-08	MC-8-3-6-7-111716	17 Nov 2016 10:10		29 Nov 2016 13:57	02 Dec 2016 07:54	1
HS16111139-10	MC-8-3-9-10-111716	17 Nov 2016 10:15		29 Nov 2016 13:57	02 Dec 2016 08:18	1
HS16111139-11	MC-8-4-2-3-111716	17 Nov 2016 11:15		29 Nov 2016 13:57	02 Dec 2016 08:42	1
HS16111139-12	MC-8-4-3-4-111716	17 Nov 2016 11:20		29 Nov 2016 13:57	02 Dec 2016 09:06	1
HS16111139-13	MC-8-4-8-9-111716	17 Nov 2016 11:30		29 Nov 2016 13:57	02 Dec 2016 09:31	1
HS16111139-14	MC-8-5-2-3-111716	17 Nov 2016 14:30		29 Nov 2016 13:57	02 Dec 2016 09:55	1
HS16111139-15	MC-8-5-4-5-111716	17 Nov 2016 14:40		29 Nov 2016 13:57	02 Dec 2016 10:19	1
HS16111139-16	MC-8-5-8-9-111716	17 Nov 2016 15:00		29 Nov 2016 13:57	02 Dec 2016 10:44	1
HS16111139-17	MC-8-6-2-3-111716	17 Nov 2016 13:30		29 Nov 2016 13:57	02 Dec 2016 11:57	1
HS16111139-19	MC-8-6-5-6-111716	17 Nov 2016 13:45		29 Nov 2016 13:57	02 Dec 2016 12:21	1
HS16111139-20	MC-8-6-11-12-111716	17 Nov 2016 14:10		29 Nov 2016 13:57	02 Dec 2016 13:35	1
HS16111139-21	MC-8-7-2-3-111716	17 Nov 2016 12:30		29 Nov 2016 13:57	02 Dec 2016 13:59	1
<b>Batch ID</b> 110255	<b>Test Name :</b> TPH DRO/ORO BY SW8015C			<b>Matrix:</b> Soil		
HS16111139-22	MC-8-7-6-7-111716	17 Nov 2016 12:45		29 Nov 2016 14:04	03 Dec 2016 10:37	1
HS16111139-23	MC-8-7-13-14-111716	17 Nov 2016 13:15		29 Nov 2016 14:04	03 Dec 2016 11:01	1
HS16111139-24	MC-8-8-2-3-111716	17 Nov 2016 11:45		29 Nov 2016 14:04	03 Dec 2016 11:26	1
HS16111139-25	MC-8-8-9-10-111716	17 Nov 2016 12:00		29 Nov 2016 14:04	03 Dec 2016 11:50	1
HS16111139-26	MC-8-8-11-12-111716	17 Nov 2016 12:10		29 Nov 2016 14:04	03 Dec 2016 13:03	1

**Client:** Kinder Morgan  
**Project:** McElmo Dome  
**WorkOrder:** HS16111139

**DATES REPORT**

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
<b>Batch ID</b> 110420	<b>Test Name : METALS BY SW6020A</b>			<b>Matrix: Soil</b>		
HS16111139-01	MC-8-1-0-1-111716	17 Nov 2016 07:45		05 Dec 2016 12:35	06 Dec 2016 13:33	1
HS16111139-01	MC-8-1-0-1-111716	17 Nov 2016 07:45		05 Dec 2016 12:35	05 Dec 2016 19:45	1
HS16111139-02	MC-8-1-6-7-111716	17 Nov 2016 08:10		05 Dec 2016 12:35	06 Dec 2016 13:38	1
HS16111139-02	MC-8-1-6-7-111716	17 Nov 2016 08:10		05 Dec 2016 12:35	05 Dec 2016 19:49	1
HS16111139-03	MC-8-1-9-10-111716	17 Nov 2016 08:15		05 Dec 2016 12:35	06 Dec 2016 14:16	1
HS16111139-03	MC-8-1-9-10-111716	17 Nov 2016 08:15		05 Dec 2016 12:35	05 Dec 2016 19:54	1
HS16111139-04	MC-8-2-1-2-111716	17 Nov 2016 08:30		05 Dec 2016 12:35	06 Dec 2016 14:21	1
HS16111139-04	MC-8-2-1-2-111716	17 Nov 2016 08:30		05 Dec 2016 12:35	05 Dec 2016 19:58	1
HS16111139-05	MC-8-2-8-9-111716	17 Nov 2016 08:50		05 Dec 2016 12:35	06 Dec 2016 14:25	1
HS16111139-05	MC-8-2-8-9-111716	17 Nov 2016 08:50		05 Dec 2016 12:35	05 Dec 2016 20:03	1
HS16111139-06	MC-8-2-14-15-111716	17 Nov 2016 09:15		05 Dec 2016 12:35	06 Dec 2016 14:30	1
HS16111139-06	MC-8-2-14-15-111716	17 Nov 2016 09:15		05 Dec 2016 12:35	05 Dec 2016 20:07	1
HS16111139-07	MC-8-3-1-2-111716	17 Nov 2016 09:30		05 Dec 2016 12:35	06 Dec 2016 14:34	1
HS16111139-07	MC-8-3-1-2-111716	17 Nov 2016 09:30		05 Dec 2016 12:35	05 Dec 2016 20:11	1
HS16111139-08	MC-8-3-6-7-111716	17 Nov 2016 10:10		05 Dec 2016 12:35	06 Dec 2016 15:01	1
HS16111139-08	MC-8-3-6-7-111716	17 Nov 2016 10:10		05 Dec 2016 12:35	06 Dec 2016 13:42	5
HS16111139-08	MC-8-3-6-7-111716	17 Nov 2016 10:10		05 Dec 2016 12:35	05 Dec 2016 20:25	1
HS16111139-10	MC-8-3-9-10-111716	17 Nov 2016 10:15		05 Dec 2016 12:35	06 Dec 2016 15:05	1
HS16111139-10	MC-8-3-9-10-111716	17 Nov 2016 10:15		05 Dec 2016 12:35	05 Dec 2016 20:29	1
HS16111139-11	MC-8-4-2-3-111716	17 Nov 2016 11:15		05 Dec 2016 12:35	06 Dec 2016 15:10	1
HS16111139-11	MC-8-4-2-3-111716	17 Nov 2016 11:15		05 Dec 2016 12:35	05 Dec 2016 20:34	1
HS16111139-12	MC-8-4-3-4-111716	17 Nov 2016 11:20		05 Dec 2016 12:35	06 Dec 2016 15:14	1
HS16111139-12	MC-8-4-3-4-111716	17 Nov 2016 11:20		05 Dec 2016 12:35	06 Dec 2016 13:46	5
HS16111139-12	MC-8-4-3-4-111716	17 Nov 2016 11:20		05 Dec 2016 12:35	05 Dec 2016 20:38	1
HS16111139-13	MC-8-4-8-9-111716	17 Nov 2016 11:30		05 Dec 2016 12:35	06 Dec 2016 14:39	5
HS16111139-14	MC-8-5-2-3-111716	17 Nov 2016 14:30		05 Dec 2016 12:35	06 Dec 2016 15:19	1
HS16111139-14	MC-8-5-2-3-111716	17 Nov 2016 14:30		05 Dec 2016 12:35	05 Dec 2016 20:47	1
HS16111139-15	MC-8-5-4-5-111716	17 Nov 2016 14:40		05 Dec 2016 12:35	06 Dec 2016 15:23	1
HS16111139-15	MC-8-5-4-5-111716	17 Nov 2016 14:40		05 Dec 2016 12:35	06 Dec 2016 14:43	5
HS16111139-15	MC-8-5-4-5-111716	17 Nov 2016 14:40		05 Dec 2016 12:35	05 Dec 2016 20:52	1
HS16111139-16	MC-8-5-8-9-111716	17 Nov 2016 15:00		05 Dec 2016 12:35	06 Dec 2016 14:47	5
HS16111139-17	MC-8-6-2-3-111716	17 Nov 2016 13:30		05 Dec 2016 12:35	06 Dec 2016 15:28	1
HS16111139-19	MC-8-6-5-6-111716	17 Nov 2016 13:45		05 Dec 2016 12:35	05 Dec 2016 22:24	1
HS16111139-20	MC-8-6-11-12-111716	17 Nov 2016 14:10		05 Dec 2016 12:35	06 Dec 2016 15:32	5
HS16111139-20	MC-8-6-11-12-111716	17 Nov 2016 14:10		05 Dec 2016 12:35	05 Dec 2016 22:29	1
HS16111139-21	MC-8-7-2-3-111716	17 Nov 2016 12:30		05 Dec 2016 12:35	05 Dec 2016 22:33	1
HS16111139-22	MC-8-7-6-7-111716	17 Nov 2016 12:45		05 Dec 2016 12:35	05 Dec 2016 22:38	1

**Client:** Kinder Morgan  
**Project:** McElmo Dome  
**WorkOrder:** HS16111139

**DATES REPORT**

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
<b>Batch ID 110430 Test Name : METALS BY SW6020A Matrix: Soil</b>						
HS16111139-23	MC-8-7-13-14-111716	17 Nov 2016 13:15		05 Dec 2016 02:30	06 Dec 2016 02:19	1
HS16111139-24	MC-8-8-2-3-111716	17 Nov 2016 11:45		05 Dec 2016 02:30	06 Dec 2016 02:23	1
HS16111139-25	MC-8-8-9-10-111716	17 Nov 2016 12:00		05 Dec 2016 02:30	06 Dec 2016 02:28	1
HS16111139-26	MC-8-8-11-12-111716	17 Nov 2016 12:10		05 Dec 2016 02:30	06 Dec 2016 02:33	1
<b>Batch ID 110450 Test Name : HEXAVALENT CHROMIUM BY SW7196A Matrix: Soil</b>						
HS16111139-11	MC-8-4-2-3-111716	17 Nov 2016 11:15		05 Dec 2016 18:06	06 Dec 2016 15:53	1
HS16111139-12	MC-8-4-3-4-111716	17 Nov 2016 11:20		05 Dec 2016 18:06	06 Dec 2016 15:53	1
HS16111139-13	MC-8-4-8-9-111716	17 Nov 2016 11:30		05 Dec 2016 18:06	06 Dec 2016 15:53	1
HS16111139-14	MC-8-5-2-3-111716	17 Nov 2016 14:30		05 Dec 2016 18:06	06 Dec 2016 15:53	1
HS16111139-15	MC-8-5-4-5-111716	17 Nov 2016 14:40		05 Dec 2016 18:06	06 Dec 2016 15:53	1
HS16111139-16	MC-8-5-8-9-111716	17 Nov 2016 15:00		05 Dec 2016 18:06	06 Dec 2016 15:53	1
HS16111139-17	MC-8-6-2-3-111716	17 Nov 2016 13:30		05 Dec 2016 18:06	06 Dec 2016 15:53	1
HS16111139-19	MC-8-6-5-6-111716	17 Nov 2016 13:45		05 Dec 2016 18:06	06 Dec 2016 15:53	1
HS16111139-20	MC-8-6-11-12-111716	17 Nov 2016 14:10		05 Dec 2016 18:06	06 Dec 2016 15:53	1
HS16111139-24	MC-8-8-2-3-111716	17 Nov 2016 11:45		05 Dec 2016 18:06	06 Dec 2016 15:53	1
HS16111139-25	MC-8-8-9-10-111716	17 Nov 2016 12:00		05 Dec 2016 18:06	06 Dec 2016 15:53	1
HS16111139-26	MC-8-8-11-12-111716	17 Nov 2016 12:10		05 Dec 2016 18:06	06 Dec 2016 15:53	1
<b>Batch ID 110464 Test Name : HEXAVALENT CHROMIUM BY SW7196A Matrix: Soil</b>						
HS16111139-01	MC-8-1-0-1-111716	17 Nov 2016 07:45		06 Dec 2016 11:43	07 Dec 2016 16:45	1
HS16111139-02	MC-8-1-6-7-111716	17 Nov 2016 08:10		06 Dec 2016 11:43	07 Dec 2016 16:45	1
HS16111139-03	MC-8-1-9-10-111716	17 Nov 2016 08:15		06 Dec 2016 11:43	07 Dec 2016 16:45	1
HS16111139-04	MC-8-2-1-2-111716	17 Nov 2016 08:30		06 Dec 2016 11:43	07 Dec 2016 16:45	1
HS16111139-05	MC-8-2-8-9-111716	17 Nov 2016 08:50		06 Dec 2016 11:43	07 Dec 2016 16:45	1
HS16111139-06	MC-8-2-14-15-111716	17 Nov 2016 09:15		06 Dec 2016 11:43	07 Dec 2016 16:45	1
HS16111139-07	MC-8-3-1-2-111716	17 Nov 2016 09:30		06 Dec 2016 11:43	07 Dec 2016 16:45	1
HS16111139-08	MC-8-3-6-7-111716	17 Nov 2016 10:10		06 Dec 2016 11:43	07 Dec 2016 16:45	1
HS16111139-10	MC-8-3-9-10-111716	17 Nov 2016 10:15		06 Dec 2016 11:43	07 Dec 2016 16:45	1
HS16111139-21	MC-8-7-2-3-111716	17 Nov 2016 12:30		06 Dec 2016 11:43	07 Dec 2016 16:45	1
HS16111139-22	MC-8-7-6-7-111716	17 Nov 2016 12:45		06 Dec 2016 11:43	07 Dec 2016 16:45	1
HS16111139-23	MC-8-7-13-14-111716	17 Nov 2016 13:15		06 Dec 2016 11:43	07 Dec 2016 16:45	1

**Client:** Kinder Morgan  
**Project:** McElmo Dome  
**WorkOrder:** HS16111139

**DATES REPORT**

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
<b>Batch ID</b> 110625	<b>Test Name : MERCURY BY SW7471B</b>			<b>Matrix: Soil</b>		
HS16111139-01	MC-8-1-0-1-111716	17 Nov 2016 07:45		10 Dec 2016 15:44	10 Dec 2016 19:31	1
HS16111139-02	MC-8-1-6-7-111716	17 Nov 2016 08:10		10 Dec 2016 15:44	10 Dec 2016 19:33	1
HS16111139-03	MC-8-1-9-10-111716	17 Nov 2016 08:15		10 Dec 2016 15:44	10 Dec 2016 19:35	1
HS16111139-04	MC-8-2-1-2-111716	17 Nov 2016 08:30		10 Dec 2016 15:44	10 Dec 2016 19:36	1
HS16111139-05	MC-8-2-8-9-111716	17 Nov 2016 08:50		10 Dec 2016 15:44	10 Dec 2016 19:38	1
HS16111139-06	MC-8-2-14-15-111716	17 Nov 2016 09:15		10 Dec 2016 15:44	10 Dec 2016 19:40	1
HS16111139-07	MC-8-3-1-2-111716	17 Nov 2016 09:30		10 Dec 2016 15:44	10 Dec 2016 19:42	1
HS16111139-08	MC-8-3-6-7-111716	17 Nov 2016 10:10		10 Dec 2016 15:44	10 Dec 2016 19:43	1
HS16111139-10	MC-8-3-9-10-111716	17 Nov 2016 10:15		10 Dec 2016 15:44	10 Dec 2016 19:48	1
HS16111139-11	MC-8-4-2-3-111716	17 Nov 2016 11:15		10 Dec 2016 15:44	10 Dec 2016 19:50	1
HS16111139-12	MC-8-4-3-4-111716	17 Nov 2016 11:20		10 Dec 2016 15:44	10 Dec 2016 19:52	1
HS16111139-13	MC-8-4-8-9-111716	17 Nov 2016 11:30		10 Dec 2016 15:44	10 Dec 2016 19:53	1
<b>Batch ID</b> 110626	<b>Test Name : MERCURY BY SW7471B</b>			<b>Matrix: Soil</b>		
HS16111139-14	MC-8-5-2-3-111716	17 Nov 2016 14:30		10 Dec 2016 15:46	10 Dec 2016 19:59	1
HS16111139-15	MC-8-5-4-5-111716	17 Nov 2016 14:40		10 Dec 2016 15:46	10 Dec 2016 20:04	1
HS16111139-16	MC-8-5-8-9-111716	17 Nov 2016 15:00		10 Dec 2016 15:46	10 Dec 2016 20:09	1
HS16111139-17	MC-8-6-2-3-111716	17 Nov 2016 13:30		10 Dec 2016 15:46	10 Dec 2016 20:11	1
HS16111139-19	MC-8-6-5-6-111716	17 Nov 2016 13:45		10 Dec 2016 15:46	10 Dec 2016 20:12	1
HS16111139-20	MC-8-6-11-12-111716	17 Nov 2016 14:10		10 Dec 2016 15:46	10 Dec 2016 20:14	1
HS16111139-21	MC-8-7-2-3-111716	17 Nov 2016 12:30		10 Dec 2016 15:46	10 Dec 2016 20:16	1
HS16111139-22	MC-8-7-6-7-111716	17 Nov 2016 12:45		10 Dec 2016 15:46	10 Dec 2016 20:17	1
HS16111139-23	MC-8-7-13-14-111716	17 Nov 2016 13:15		10 Dec 2016 15:46	10 Dec 2016 20:19	1
HS16111139-24	MC-8-8-2-3-111716	17 Nov 2016 11:45		10 Dec 2016 15:46	10 Dec 2016 20:21	1
HS16111139-25	MC-8-8-9-10-111716	17 Nov 2016 12:00		10 Dec 2016 15:46	10 Dec 2016 20:23	1
HS16111139-26	MC-8-8-11-12-111716	17 Nov 2016 12:10		10 Dec 2016 15:46	10 Dec 2016 20:24	1

**Client:** Kinder Morgan  
**Project:** McElmo Dome  
**WorkOrder:** HS16111139

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Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
<b>Batch ID</b> 110894	<b>Test Name :</b> LA 29B - 1:1 SOLUBLE CATIONS FOR SAR			<b>Matrix:</b> Soil		
HS16111139-01	MC-8-1-0-1-111716	17 Nov 2016 07:45			20 Dec 2016 12:53	10
HS16111139-02	MC-8-1-6-7-111716	17 Nov 2016 08:10			20 Dec 2016 12:58	10
HS16111139-03	MC-8-1-9-10-111716	17 Nov 2016 08:15			20 Dec 2016 13:02	10
HS16111139-04	MC-8-2-1-2-111716	17 Nov 2016 08:30			20 Dec 2016 13:07	10
HS16111139-05	MC-8-2-8-9-111716	17 Nov 2016 08:50			20 Dec 2016 13:12	10
HS16111139-06	MC-8-2-14-15-111716	17 Nov 2016 09:15			20 Dec 2016 13:16	10
HS16111139-07	MC-8-3-1-2-111716	17 Nov 2016 09:30			20 Dec 2016 13:21	10
HS16111139-08	MC-8-3-6-7-111716	17 Nov 2016 10:10			20 Dec 2016 13:25	10
HS16111139-10	MC-8-3-9-10-111716	17 Nov 2016 10:15			20 Dec 2016 13:48	10
HS16111139-11	MC-8-4-2-3-111716	17 Nov 2016 11:15			20 Dec 2016 13:53	10
HS16111139-12	MC-8-4-3-4-111716	17 Nov 2016 11:20			20 Dec 2016 13:58	10
HS16111139-13	MC-8-4-8-9-111716	17 Nov 2016 11:30			20 Dec 2016 14:02	10
HS16111139-14	MC-8-5-2-3-111716	17 Nov 2016 14:30			20 Dec 2016 14:07	10
HS16111139-15	MC-8-5-4-5-111716	17 Nov 2016 14:40			20 Dec 2016 14:11	10
HS16111139-16	MC-8-5-8-9-111716	17 Nov 2016 15:00			20 Dec 2016 14:16	10
HS16111139-17	MC-8-6-2-3-111716	17 Nov 2016 13:30			20 Dec 2016 15:08	200
HS16111139-17	MC-8-6-2-3-111716	17 Nov 2016 13:30			20 Dec 2016 14:36	10
HS16111139-19	MC-8-6-5-6-111716	17 Nov 2016 13:45			20 Dec 2016 15:28	500
HS16111139-19	MC-8-6-5-6-111716	17 Nov 2016 13:45			20 Dec 2016 15:12	100
HS16111139-19	MC-8-6-5-6-111716	17 Nov 2016 13:45			20 Dec 2016 14:41	10
HS16111139-20	MC-8-6-11-12-111716	17 Nov 2016 14:10			20 Dec 2016 14:46	10
HS16111139-21	MC-8-7-2-3-111716	17 Nov 2016 12:30			20 Dec 2016 14:50	10
HS16111139-22	MC-8-7-6-7-111716	17 Nov 2016 12:45			20 Dec 2016 14:55	10
<b>Batch ID</b> 110896	<b>Test Name :</b> LA 29B - 1:1 SOLUBLE CATIONS FOR SAR			<b>Matrix:</b> Soil		
HS16111139-23	MC-8-7-13-14-111716	17 Nov 2016 13:15			20 Dec 2016 15:47	10
HS16111139-24	MC-8-8-2-3-111716	17 Nov 2016 11:45			20 Dec 2016 15:51	10
HS16111139-25	MC-8-8-9-10-111716	17 Nov 2016 12:00			20 Dec 2016 15:56	10
HS16111139-26	MC-8-8-11-12-111716	17 Nov 2016 12:10			20 Dec 2016 16:00	10
<b>Batch ID</b> R285471	<b>Test Name :</b> LOW LEVEL VOLATILES BY SW8260C			<b>Matrix:</b> Water		
HS16111139-09	TB - 053116-13	17 Nov 2016 00:01			26 Nov 2016 19:55	1
HS16111139-18	TB - 082916-59	17 Nov 2016 00:01			26 Nov 2016 20:20	1
HS16111139-27	TB - 082916-81	17 Nov 2016 00:01			26 Nov 2016 20:44	1

**Client:** Kinder Morgan  
**Project:** McElmo Dome  
**WorkOrder:** HS16111139

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Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
<b>Batch ID</b> R285561	<b>Test Name : VOLATILES BY SW8260C</b>			<b>Matrix: Soil</b>		
HS16111139-19	MC-8-6-5-6-111716	17 Nov 2016 13:45			28 Nov 2016 21:59	1
HS16111139-20	MC-8-6-11-12-111716	17 Nov 2016 14:10			28 Nov 2016 21:32	1
HS16111139-21	MC-8-7-2-3-111716	17 Nov 2016 12:30			28 Nov 2016 21:05	1
HS16111139-22	MC-8-7-6-7-111716	17 Nov 2016 12:45			28 Nov 2016 23:46	1
HS16111139-23	MC-8-7-13-14-111716	17 Nov 2016 13:15			29 Nov 2016 00:13	1
HS16111139-24	MC-8-8-2-3-111716	17 Nov 2016 11:45			29 Nov 2016 00:41	1
HS16111139-25	MC-8-8-9-10-111716	17 Nov 2016 12:00			29 Nov 2016 01:08	1
HS16111139-26	MC-8-8-11-12-111716	17 Nov 2016 12:10			29 Nov 2016 01:36	1
<b>Batch ID</b> R285564	<b>Test Name : VOLATILES BY SW8260C</b>			<b>Matrix: Soil</b>		
HS16111139-01	MC-8-1-0-1-111716	17 Nov 2016 07:45			29 Nov 2016 00:19	1
HS16111139-02	MC-8-1-6-7-111716	17 Nov 2016 08:10			29 Nov 2016 01:51	1
HS16111139-03	MC-8-1-9-10-111716	17 Nov 2016 08:15			29 Nov 2016 02:15	1
HS16111139-04	MC-8-2-1-2-111716	17 Nov 2016 08:30			29 Nov 2016 02:38	1
HS16111139-05	MC-8-2-8-9-111716	17 Nov 2016 08:50			29 Nov 2016 03:01	1
HS16111139-06	MC-8-2-14-15-111716	17 Nov 2016 09:15			29 Nov 2016 03:24	1
HS16111139-07	MC-8-3-1-2-111716	17 Nov 2016 09:30			29 Nov 2016 03:47	1
HS16111139-08	MC-8-3-6-7-111716	17 Nov 2016 10:10			29 Nov 2016 04:11	1
HS16111139-10	MC-8-3-9-10-111716	17 Nov 2016 10:15			29 Nov 2016 04:34	1
HS16111139-11	MC-8-4-2-3-111716	17 Nov 2016 11:15			29 Nov 2016 04:57	1
HS16111139-12	MC-8-4-3-4-111716	17 Nov 2016 11:20			29 Nov 2016 05:20	1
HS16111139-13	MC-8-4-8-9-111716	17 Nov 2016 11:30			29 Nov 2016 05:43	1
HS16111139-14	MC-8-5-2-3-111716	17 Nov 2016 14:30			29 Nov 2016 06:06	1
HS16111139-15	MC-8-5-4-5-111716	17 Nov 2016 14:40			29 Nov 2016 06:30	1
HS16111139-16	MC-8-5-8-9-111716	17 Nov 2016 15:00			29 Nov 2016 06:53	1
HS16111139-17	MC-8-6-2-3-111716	17 Nov 2016 13:30			29 Nov 2016 07:16	1

**Client:** Kinder Morgan  
**Project:** McElmo Dome  
**WorkOrder:** HS16111139

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Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
<b>Batch ID</b> R285660	<b>Test Name :</b> GASOLINE RANGE ORGANICS BY SW8015C			<b>Matrix:</b> Soil		
HS16111139-01	MC-8-1-0-1-111716	17 Nov 2016 07:45			29 Nov 2016 15:20	1
HS16111139-02	MC-8-1-6-7-111716	17 Nov 2016 08:10			29 Nov 2016 16:08	1
HS16111139-03	MC-8-1-9-10-111716	17 Nov 2016 08:15			29 Nov 2016 16:24	1
HS16111139-04	MC-8-2-1-2-111716	17 Nov 2016 08:30			29 Nov 2016 16:40	1
HS16111139-05	MC-8-2-8-9-111716	17 Nov 2016 08:50			29 Nov 2016 16:56	1
HS16111139-06	MC-8-2-14-15-111716	17 Nov 2016 09:15			29 Nov 2016 17:28	1
HS16111139-07	MC-8-3-1-2-111716	17 Nov 2016 09:30			29 Nov 2016 17:44	1
HS16111139-08	MC-8-3-6-7-111716	17 Nov 2016 10:10			29 Nov 2016 18:00	1
HS16111139-10	MC-8-3-9-10-111716	17 Nov 2016 10:15			29 Nov 2016 18:16	1
HS16111139-11	MC-8-4-2-3-111716	17 Nov 2016 11:15			29 Nov 2016 18:32	1
HS16111139-12	MC-8-4-3-4-111716	17 Nov 2016 11:20			29 Nov 2016 18:48	1
HS16111139-13	MC-8-4-8-9-111716	17 Nov 2016 11:30			29 Nov 2016 19:04	1
HS16111139-14	MC-8-5-2-3-111716	17 Nov 2016 14:30			29 Nov 2016 19:20	1
HS16111139-15	MC-8-5-4-5-111716	17 Nov 2016 14:40			29 Nov 2016 19:36	1
HS16111139-16	MC-8-5-8-9-111716	17 Nov 2016 15:00			29 Nov 2016 19:52	1
HS16111139-17	MC-8-6-2-3-111716	17 Nov 2016 13:30			29 Nov 2016 20:24	1
HS16111139-19	MC-8-6-5-6-111716	17 Nov 2016 13:45			29 Nov 2016 20:40	1
HS16111139-20	MC-8-6-11-12-111716	17 Nov 2016 14:10			29 Nov 2016 20:56	1
HS16111139-21	MC-8-7-2-3-111716	17 Nov 2016 12:30			29 Nov 2016 21:12	1
HS16111139-22	MC-8-7-6-7-111716	17 Nov 2016 12:45			29 Nov 2016 21:28	1
<b>Batch ID</b> R285662	<b>Test Name :</b> GASOLINE RANGE ORGANICS BY SW8015C			<b>Matrix:</b> Soil		
HS16111139-23	MC-8-7-13-14-111716	17 Nov 2016 13:15			29 Nov 2016 23:53	1
HS16111139-24	MC-8-8-2-3-111716	17 Nov 2016 11:45			30 Nov 2016 00:09	1
HS16111139-25	MC-8-8-9-10-111716	17 Nov 2016 12:00			29 Nov 2016 23:05	1
HS16111139-26	MC-8-8-11-12-111716	17 Nov 2016 12:10			30 Nov 2016 00:25	1



**Client:** Kinder Morgan  
**Project:** McElmo Dome  
**WorkOrder:** HS16111139

**DATES REPORT**

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
<b>Batch ID R286097 Test Name : MOISTURE Matrix: Soil</b>						
HS16111139-01	MC-8-1-0-1-111716	17 Nov 2016 07:45			06 Dec 2016 10:17	1
HS16111139-02	MC-8-1-6-7-111716	17 Nov 2016 08:10			06 Dec 2016 10:17	1
HS16111139-03	MC-8-1-9-10-111716	17 Nov 2016 08:15			06 Dec 2016 10:17	1
HS16111139-04	MC-8-2-1-2-111716	17 Nov 2016 08:30			06 Dec 2016 10:17	1
HS16111139-05	MC-8-2-8-9-111716	17 Nov 2016 08:50			06 Dec 2016 10:17	1
HS16111139-06	MC-8-2-14-15-111716	17 Nov 2016 09:15			06 Dec 2016 10:17	1
HS16111139-07	MC-8-3-1-2-111716	17 Nov 2016 09:30			06 Dec 2016 10:17	1
HS16111139-08	MC-8-3-6-7-111716	17 Nov 2016 10:10			06 Dec 2016 10:17	1
HS16111139-10	MC-8-3-9-10-111716	17 Nov 2016 10:15			06 Dec 2016 10:17	1
HS16111139-11	MC-8-4-2-3-111716	17 Nov 2016 11:15			06 Dec 2016 10:17	1
HS16111139-12	MC-8-4-3-4-111716	17 Nov 2016 11:20			06 Dec 2016 10:17	1
HS16111139-13	MC-8-4-8-9-111716	17 Nov 2016 11:30			06 Dec 2016 10:17	1
HS16111139-14	MC-8-5-2-3-111716	17 Nov 2016 14:30			06 Dec 2016 10:17	1
HS16111139-15	MC-8-5-4-5-111716	17 Nov 2016 14:40			06 Dec 2016 10:17	1
HS16111139-16	MC-8-5-8-9-111716	17 Nov 2016 15:00			06 Dec 2016 10:17	1
HS16111139-17	MC-8-6-2-3-111716	17 Nov 2016 13:30			06 Dec 2016 10:17	1
HS16111139-19	MC-8-6-5-6-111716	17 Nov 2016 13:45			06 Dec 2016 10:17	1
<b>Batch ID R286098 Test Name : MOISTURE Matrix: Soil</b>						
HS16111139-20	MC-8-6-11-12-111716	17 Nov 2016 14:10			06 Dec 2016 10:21	1
HS16111139-21	MC-8-7-2-3-111716	17 Nov 2016 12:30			06 Dec 2016 10:21	1
HS16111139-22	MC-8-7-6-7-111716	17 Nov 2016 12:45			06 Dec 2016 10:21	1
HS16111139-23	MC-8-7-13-14-111716	17 Nov 2016 13:15			06 Dec 2016 10:21	1
HS16111139-24	MC-8-8-2-3-111716	17 Nov 2016 11:45			06 Dec 2016 10:21	1
HS16111139-25	MC-8-8-9-10-111716	17 Nov 2016 12:00			06 Dec 2016 10:21	1
HS16111139-26	MC-8-8-11-12-111716	17 Nov 2016 12:10			06 Dec 2016 10:21	1
<b>Batch ID R286192 Test Name : PH SOIL BY SW9045D Matrix: Soil</b>						
HS16111139-01	MC-8-1-0-1-111716	17 Nov 2016 07:45			08 Dec 2016 12:45	1
HS16111139-02	MC-8-1-6-7-111716	17 Nov 2016 08:10			08 Dec 2016 12:45	1
HS16111139-03	MC-8-1-9-10-111716	17 Nov 2016 08:15			08 Dec 2016 12:45	1
HS16111139-04	MC-8-2-1-2-111716	17 Nov 2016 08:30			08 Dec 2016 12:45	1
HS16111139-05	MC-8-2-8-9-111716	17 Nov 2016 08:50			08 Dec 2016 12:45	1
HS16111139-06	MC-8-2-14-15-111716	17 Nov 2016 09:15			08 Dec 2016 12:45	1
HS16111139-07	MC-8-3-1-2-111716	17 Nov 2016 09:30			08 Dec 2016 12:45	1

**Client:** Kinder Morgan  
**Project:** McElmo Dome  
**WorkOrder:** HS16111139

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Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
<b>Batch ID</b>	<b>R286307</b>	<b>Test Name : PH SOIL BY SW9045D</b>			<b>Matrix: Soil</b>	
HS16111139-08	MC-8-3-6-7-111716	17 Nov 2016 10:10			09 Dec 2016 17:13	1
HS16111139-10	MC-8-3-9-10-111716	17 Nov 2016 10:15			09 Dec 2016 17:13	1
HS16111139-11	MC-8-4-2-3-111716	17 Nov 2016 11:15			09 Dec 2016 17:13	1
HS16111139-12	MC-8-4-3-4-111716	17 Nov 2016 11:20			09 Dec 2016 17:13	1
HS16111139-13	MC-8-4-8-9-111716	17 Nov 2016 11:30			09 Dec 2016 17:13	1
HS16111139-14	MC-8-5-2-3-111716	17 Nov 2016 14:30			09 Dec 2016 17:13	1
HS16111139-15	MC-8-5-4-5-111716	17 Nov 2016 14:40			09 Dec 2016 17:13	1
HS16111139-16	MC-8-5-8-9-111716	17 Nov 2016 15:00			09 Dec 2016 17:13	1
HS16111139-17	MC-8-6-2-3-111716	17 Nov 2016 13:30			09 Dec 2016 17:13	1
HS16111139-19	MC-8-6-5-6-111716	17 Nov 2016 13:45			09 Dec 2016 17:13	1
HS16111139-20	MC-8-6-11-12-111716	17 Nov 2016 14:10			09 Dec 2016 17:13	1
HS16111139-21	MC-8-7-2-3-111716	17 Nov 2016 12:30			09 Dec 2016 17:13	1
HS16111139-22	MC-8-7-6-7-111716	17 Nov 2016 12:45			09 Dec 2016 17:13	1
HS16111139-23	MC-8-7-13-14-111716	17 Nov 2016 13:15			09 Dec 2016 17:13	1
HS16111139-24	MC-8-8-2-3-111716	17 Nov 2016 11:45			09 Dec 2016 17:13	1
HS16111139-25	MC-8-8-9-10-111716	17 Nov 2016 12:00			09 Dec 2016 17:13	1
HS16111139-26	MC-8-8-11-12-111716	17 Nov 2016 12:10			09 Dec 2016 17:13	1

**Client:** Kinder Morgan  
**Project:** McElmo Dome  
**WorkOrder:** HS16111139

**DATES REPORT**

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
<b>Batch ID</b>	<b>R286329</b>	<b>Test Name : TRIVALENT CHROMIUM</b>			<b>Matrix: Soil</b>	
HS16111139-01	MC-8-1-0-1-111716	17 Nov 2016 07:45			10 Dec 2016 15:12	1
HS16111139-02	MC-8-1-6-7-111716	17 Nov 2016 08:10			10 Dec 2016 15:12	1
HS16111139-03	MC-8-1-9-10-111716	17 Nov 2016 08:15			10 Dec 2016 15:12	1
HS16111139-04	MC-8-2-1-2-111716	17 Nov 2016 08:30			10 Dec 2016 15:12	1
HS16111139-05	MC-8-2-8-9-111716	17 Nov 2016 08:50			10 Dec 2016 15:12	1
HS16111139-06	MC-8-2-14-15-111716	17 Nov 2016 09:15			10 Dec 2016 15:12	1
HS16111139-07	MC-8-3-1-2-111716	17 Nov 2016 09:30			10 Dec 2016 15:12	1
HS16111139-08	MC-8-3-6-7-111716	17 Nov 2016 10:10			10 Dec 2016 15:12	1
HS16111139-10	MC-8-3-9-10-111716	17 Nov 2016 10:15			10 Dec 2016 15:12	1
HS16111139-11	MC-8-4-2-3-111716	17 Nov 2016 11:15			10 Dec 2016 15:12	1
HS16111139-12	MC-8-4-3-4-111716	17 Nov 2016 11:20			10 Dec 2016 15:12	1
HS16111139-13	MC-8-4-8-9-111716	17 Nov 2016 11:30			10 Dec 2016 15:12	1
HS16111139-14	MC-8-5-2-3-111716	17 Nov 2016 14:30			10 Dec 2016 15:12	1
HS16111139-15	MC-8-5-4-5-111716	17 Nov 2016 14:40			10 Dec 2016 15:12	1
HS16111139-16	MC-8-5-8-9-111716	17 Nov 2016 15:00			10 Dec 2016 15:12	1
HS16111139-17	MC-8-6-2-3-111716	17 Nov 2016 13:30			10 Dec 2016 15:12	1
HS16111139-19	MC-8-6-5-6-111716	17 Nov 2016 13:45			10 Dec 2016 15:12	1
HS16111139-20	MC-8-6-11-12-111716	17 Nov 2016 14:10			10 Dec 2016 15:12	1
HS16111139-21	MC-8-7-2-3-111716	17 Nov 2016 12:30			10 Dec 2016 15:12	1
HS16111139-22	MC-8-7-6-7-111716	17 Nov 2016 12:45			10 Dec 2016 15:12	1
HS16111139-23	MC-8-7-13-14-111716	17 Nov 2016 13:15			10 Dec 2016 15:12	1
HS16111139-24	MC-8-8-2-3-111716	17 Nov 2016 11:45			10 Dec 2016 15:12	1
HS16111139-25	MC-8-8-9-10-111716	17 Nov 2016 12:00			10 Dec 2016 15:12	1
HS16111139-26	MC-8-8-11-12-111716	17 Nov 2016 12:10			10 Dec 2016 15:12	1

**Client:** Kinder Morgan  
**Project:** McElmo Dome  
**WorkOrder:** HS16111139

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Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
<b>Batch ID</b> R286683	<b>Test Name :</b> LA29B SATURATION POINT (AS FRACTION)			<b>Matrix:</b> Soil		
HS16111139-01	MC-8-1-0-1-111716	17 Nov 2016 07:45			15 Dec 2016 11:00	1
HS16111139-02	MC-8-1-6-7-111716	17 Nov 2016 08:10			15 Dec 2016 11:00	1
HS16111139-03	MC-8-1-9-10-111716	17 Nov 2016 08:15			15 Dec 2016 11:00	1
HS16111139-04	MC-8-2-1-2-111716	17 Nov 2016 08:30			15 Dec 2016 11:00	1
HS16111139-05	MC-8-2-8-9-111716	17 Nov 2016 08:50			15 Dec 2016 11:00	1
HS16111139-06	MC-8-2-14-15-111716	17 Nov 2016 09:15			15 Dec 2016 11:00	1
HS16111139-07	MC-8-3-1-2-111716	17 Nov 2016 09:30			15 Dec 2016 11:00	1
HS16111139-08	MC-8-3-6-7-111716	17 Nov 2016 10:10			15 Dec 2016 11:00	1
HS16111139-10	MC-8-3-9-10-111716	17 Nov 2016 10:15			15 Dec 2016 11:00	1
HS16111139-11	MC-8-4-2-3-111716	17 Nov 2016 11:15			15 Dec 2016 11:00	1
HS16111139-12	MC-8-4-3-4-111716	17 Nov 2016 11:20			15 Dec 2016 11:00	1
HS16111139-13	MC-8-4-8-9-111716	17 Nov 2016 11:30			15 Dec 2016 11:00	1
HS16111139-14	MC-8-5-2-3-111716	17 Nov 2016 14:30			15 Dec 2016 11:00	1
HS16111139-15	MC-8-5-4-5-111716	17 Nov 2016 14:40			15 Dec 2016 11:00	1
HS16111139-16	MC-8-5-8-9-111716	17 Nov 2016 15:00			15 Dec 2016 11:00	1
HS16111139-17	MC-8-6-2-3-111716	17 Nov 2016 13:30			15 Dec 2016 11:00	1
HS16111139-19	MC-8-6-5-6-111716	17 Nov 2016 13:45			15 Dec 2016 11:00	1
HS16111139-20	MC-8-6-11-12-111716	17 Nov 2016 14:10			15 Dec 2016 11:00	1
HS16111139-21	MC-8-7-2-3-111716	17 Nov 2016 12:30			15 Dec 2016 11:00	1
HS16111139-22	MC-8-7-6-7-111716	17 Nov 2016 12:45			15 Dec 2016 11:00	1
<b>Batch ID</b> R286685	<b>Test Name :</b> LA29B SATURATION POINT (AS FRACTION)			<b>Matrix:</b> Soil		
HS16111139-23	MC-8-7-13-14-111716	17 Nov 2016 13:15			15 Dec 2016 11:05	1
HS16111139-24	MC-8-8-2-3-111716	17 Nov 2016 11:45			15 Dec 2016 11:05	1
HS16111139-25	MC-8-8-9-10-111716	17 Nov 2016 12:00			15 Dec 2016 11:05	1
HS16111139-26	MC-8-8-11-12-111716	17 Nov 2016 12:10			15 Dec 2016 11:05	1

**Client:** Kinder Morgan  
**Project:** McElmo Dome  
**WorkOrder:** HS16111139

**DATES REPORT**

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
<b>Batch ID</b> R287018	<b>Test Name :</b> LA29B ELECTRICAL CONDUCTIVITY			<b>Matrix:</b> Soil		
HS16111139-01	MC-8-1-0-1-111716	17 Nov 2016 07:45			21 Dec 2016 18:38	1
HS16111139-02	MC-8-1-6-7-111716	17 Nov 2016 08:10			21 Dec 2016 18:38	1
HS16111139-03	MC-8-1-9-10-111716	17 Nov 2016 08:15			21 Dec 2016 18:38	1
HS16111139-04	MC-8-2-1-2-111716	17 Nov 2016 08:30			21 Dec 2016 18:38	1
HS16111139-05	MC-8-2-8-9-111716	17 Nov 2016 08:50			21 Dec 2016 18:38	1
HS16111139-06	MC-8-2-14-15-111716	17 Nov 2016 09:15			21 Dec 2016 18:38	1
HS16111139-07	MC-8-3-1-2-111716	17 Nov 2016 09:30			21 Dec 2016 18:38	1
HS16111139-08	MC-8-3-6-7-111716	17 Nov 2016 10:10			21 Dec 2016 18:38	1
HS16111139-10	MC-8-3-9-10-111716	17 Nov 2016 10:15			21 Dec 2016 18:38	1
HS16111139-11	MC-8-4-2-3-111716	17 Nov 2016 11:15			21 Dec 2016 18:38	1
HS16111139-12	MC-8-4-3-4-111716	17 Nov 2016 11:20			21 Dec 2016 18:38	1
HS16111139-13	MC-8-4-8-9-111716	17 Nov 2016 11:30			21 Dec 2016 18:38	1
HS16111139-14	MC-8-5-2-3-111716	17 Nov 2016 14:30			21 Dec 2016 18:38	1
HS16111139-15	MC-8-5-4-5-111716	17 Nov 2016 14:40			21 Dec 2016 18:38	1
HS16111139-16	MC-8-5-8-9-111716	17 Nov 2016 15:00			21 Dec 2016 18:38	1
HS16111139-17	MC-8-6-2-3-111716	17 Nov 2016 13:30			21 Dec 2016 18:38	1
HS16111139-19	MC-8-6-5-6-111716	17 Nov 2016 13:45			21 Dec 2016 18:38	1
HS16111139-20	MC-8-6-11-12-111716	17 Nov 2016 14:10			21 Dec 2016 18:38	1
HS16111139-21	MC-8-7-2-3-111716	17 Nov 2016 12:30			21 Dec 2016 18:38	1
HS16111139-22	MC-8-7-6-7-111716	17 Nov 2016 12:45			21 Dec 2016 18:38	1
<b>Batch ID</b> R287021	<b>Test Name :</b> LA29B ELECTRICAL CONDUCTIVITY			<b>Matrix:</b> Soil		
HS16111139-23	MC-8-7-13-14-111716	17 Nov 2016 13:15			21 Dec 2016 19:07	1
HS16111139-24	MC-8-8-2-3-111716	17 Nov 2016 11:45			21 Dec 2016 19:07	1
HS16111139-25	MC-8-8-9-10-111716	17 Nov 2016 12:00			21 Dec 2016 19:07	1
HS16111139-26	MC-8-8-11-12-111716	17 Nov 2016 12:10			21 Dec 2016 19:07	1

**Client:** Kinder Morgan  
**Project:** McElmo Dome  
**WorkOrder:** HS16111139

**DATES REPORT**

Sample ID	Client Samp ID	Collection Date	TCLP Date	Prep Date	Analysis Date	DF
<b>Batch ID</b>	<b>R287022</b>	<b>Test Name : LA29B SODIUM ADSORPTION RATIO</b>			<b>Matrix: Soil</b>	
HS16111139-01	MC-8-1-0-1-111716	17 Nov 2016 07:45			21 Dec 2016 19:14	1
HS16111139-02	MC-8-1-6-7-111716	17 Nov 2016 08:10			21 Dec 2016 19:14	1
HS16111139-03	MC-8-1-9-10-111716	17 Nov 2016 08:15			21 Dec 2016 19:14	1
HS16111139-04	MC-8-2-1-2-111716	17 Nov 2016 08:30			21 Dec 2016 19:14	1
HS16111139-05	MC-8-2-8-9-111716	17 Nov 2016 08:50			21 Dec 2016 19:14	1
HS16111139-06	MC-8-2-14-15-111716	17 Nov 2016 09:15			21 Dec 2016 19:14	1
HS16111139-07	MC-8-3-1-2-111716	17 Nov 2016 09:30			21 Dec 2016 19:14	1
HS16111139-08	MC-8-3-6-7-111716	17 Nov 2016 10:10			21 Dec 2016 19:14	1
HS16111139-10	MC-8-3-9-10-111716	17 Nov 2016 10:15			21 Dec 2016 19:14	1
HS16111139-11	MC-8-4-2-3-111716	17 Nov 2016 11:15			21 Dec 2016 19:14	1
HS16111139-12	MC-8-4-3-4-111716	17 Nov 2016 11:20			21 Dec 2016 19:14	1
HS16111139-13	MC-8-4-8-9-111716	17 Nov 2016 11:30			21 Dec 2016 19:14	1
HS16111139-14	MC-8-5-2-3-111716	17 Nov 2016 14:30			21 Dec 2016 19:14	1
HS16111139-15	MC-8-5-4-5-111716	17 Nov 2016 14:40			21 Dec 2016 19:14	1
HS16111139-16	MC-8-5-8-9-111716	17 Nov 2016 15:00			21 Dec 2016 19:14	1
HS16111139-17	MC-8-6-2-3-111716	17 Nov 2016 13:30			21 Dec 2016 19:14	1
HS16111139-19	MC-8-6-5-6-111716	17 Nov 2016 13:45			21 Dec 2016 19:14	1
HS16111139-20	MC-8-6-11-12-111716	17 Nov 2016 14:10			21 Dec 2016 19:14	1
HS16111139-21	MC-8-7-2-3-111716	17 Nov 2016 12:30			21 Dec 2016 19:14	1
HS16111139-22	MC-8-7-6-7-111716	17 Nov 2016 12:45			21 Dec 2016 19:14	1
HS16111139-23	MC-8-7-13-14-111716	17 Nov 2016 13:15			21 Dec 2016 19:14	1
HS16111139-24	MC-8-8-2-3-111716	17 Nov 2016 11:45			21 Dec 2016 19:14	1
HS16111139-25	MC-8-8-9-10-111716	17 Nov 2016 12:00			21 Dec 2016 19:14	1
HS16111139-26	MC-8-8-11-12-111716	17 Nov 2016 12:10			21 Dec 2016 19:14	1

**Client:** Kinder Morgan  
**Project:** McElmo Dome  
**WorkOrder:** HS16111139

**QC BATCH REPORT**

Batch ID: 110253		Instrument: FID-8		Method: SW8015M					
<b>MBLK</b>	Sample ID: <b>MBLK-110253</b>	Units: <b>mg/Kg</b>		Analysis Date: <b>02-Dec-2016 03:02</b>					
Client ID:	Run ID: <b>FID-8_285964</b>	SeqNo: <b>3916515</b>		PrepDate: <b>29-Nov-2016</b>		DF: <b>1</b>			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual

TPH (Diesel Range)	ND	1.7							
Surr: 2-Fluorobiphenyl	2.777	0.10	3.33	0	83.4	60 - 135			

<b>LCS</b>	Sample ID: <b>LCS-110253</b>	Units: <b>mg/Kg</b>		Analysis Date: <b>02-Dec-2016 03:26</b>					
Client ID:	Run ID: <b>FID-8_285964</b>	SeqNo: <b>3916516</b>		PrepDate: <b>29-Nov-2016</b>		DF: <b>1</b>			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual

TPH (Diesel Range)	39.49	1.7	33.33	0	118	70 - 130			
Surr: 2-Fluorobiphenyl	3.097	0.10	3.33	0	93.0	60 - 135			

<b>MS</b>	Sample ID: <b>HS16111139-16MS</b>	Units: <b>mg/Kg</b>		Analysis Date: <b>02-Dec-2016 11:08</b>					
Client ID: <b>MC-8-5-8-9-111716</b>	Run ID: <b>FID-8_285964</b>	SeqNo: <b>3916534</b>		PrepDate: <b>29-Nov-2016</b>		DF: <b>1</b>			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual

TPH (Diesel Range)	39.47	1.7	33.27	0.652	117	70 - 130			
Surr: 2-Fluorobiphenyl	2.993	0.10	3.324	0	90.0	60 - 135			

<b>MSD</b>	Sample ID: <b>HS16111139-16MSD</b>	Units: <b>mg/Kg</b>		Analysis Date: <b>02-Dec-2016 11:32</b>					
Client ID: <b>MC-8-5-8-9-111716</b>	Run ID: <b>FID-8_285964</b>	SeqNo: <b>3916535</b>		PrepDate: <b>29-Nov-2016</b>		DF: <b>1</b>			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual

TPH (Diesel Range)	36.7	1.7	33.25	0.652	108	70 - 130	39.47	7.25	30
Surr: 2-Fluorobiphenyl	2.648	0.10	3.322	0	79.7	60 - 135	2.993	12.2	30

The following samples were analyzed in this batch:									
HS16111139-01	HS16111139-02	HS16111139-03	HS16111139-04						
HS16111139-05	HS16111139-06	HS16111139-07	HS16111139-08						
HS16111139-10	HS16111139-11	HS16111139-12	HS16111139-13						
HS16111139-14	HS16111139-15	HS16111139-16	HS16111139-17						
HS16111139-19	HS16111139-20	HS16111139-21							

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**Client:** Kinder Morgan  
**Project:** McElmo Dome  
**WorkOrder:** HS16111139

**QC BATCH REPORT**

Batch ID: 110255		Instrument: FID-8		Method: SW8015M					
<b>MBLK</b>	Sample ID: <b>MBLK-110255</b>	Units: <b>mg/Kg</b>		Analysis Date: <b>03-Dec-2016 02:55</b>					
Client ID:	Run ID: <b>FID-8_286050</b>	SeqNo: <b>3918336</b>		PrepDate: <b>29-Nov-2016</b>		DF: <b>1</b>			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual

TPH (Diesel Range)	ND	1.7							
Surr: 2-Fluorobiphenyl	2.463	0.10	3.33	0	74.0	60 - 135			

<b>LCS</b>	Sample ID: <b>LCS-110255</b>	Units: <b>mg/Kg</b>		Analysis Date: <b>03-Dec-2016 03:19</b>					
Client ID:	Run ID: <b>FID-8_286050</b>	SeqNo: <b>3918337</b>		PrepDate: <b>29-Nov-2016</b>		DF: <b>1</b>			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual

TPH (Diesel Range)	36.77	1.7	33.33	0	110	70 - 130			
Surr: 2-Fluorobiphenyl	2.59	0.10	3.33	0	77.8	60 - 135			

<b>MS</b>	Sample ID: <b>HS16111139-25MS</b>	Units: <b>mg/Kg</b>		Analysis Date: <b>03-Dec-2016 12:15</b>					
Client ID: <b>MC-8-8-9-10-111716</b>	Run ID: <b>FID-8_286050</b>	SeqNo: <b>3918356</b>		PrepDate: <b>29-Nov-2016</b>		DF: <b>1</b>			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual

TPH (Diesel Range)	38.91	1.7	33.27	0	117	70 - 130			
Surr: 2-Fluorobiphenyl	2.342	0.10	3.324	0	70.5	60 - 135			

<b>MSD</b>	Sample ID: <b>HS16111139-25MSD</b>	Units: <b>mg/Kg</b>		Analysis Date: <b>03-Dec-2016 12:39</b>					
Client ID: <b>MC-8-8-9-10-111716</b>	Run ID: <b>FID-8_286050</b>	SeqNo: <b>3918357</b>		PrepDate: <b>29-Nov-2016</b>		DF: <b>1</b>			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual

TPH (Diesel Range)	37.15	1.7	33.25	0	112	70 - 130	38.91	4.62	30
Surr: 2-Fluorobiphenyl	2.228	0.10	3.322	0	67.1	60 - 135	2.342	4.99	30

The following samples were analyzed in this batch:

HS16111139-22	HS16111139-23	HS16111139-24	HS16111139-25
HS16111139-26			

Note: See Qualifiers Page for a list of qualifiers and their explanation.



**Client:** Kinder Morgan  
**Project:** McElmo Dome  
**WorkOrder:** HS16111139

**QC BATCH REPORT**

Batch ID: R285660		Instrument: FID-14		Method: SW8015						
MBLK	Sample ID: GBLK-161129	Units: mg/Kg			Analysis Date: 29-Nov-2016 15:01					
Client ID:	Run ID: FID-14_285660	SeqNo: 3909962		PrepDate:		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Gasoline Range Organics ND 0.050

Surr: 4-Bromofluorobenzene 0.07815 0.0050 0.1 0 78.2 70 - 130

LCS	Sample ID: GLCS-161129	Units: mg/Kg			Analysis Date: 29-Nov-2016 14:28					
Client ID:	Run ID: FID-14_285660	SeqNo: 3909961		PrepDate:		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Gasoline Range Organics 0.912 0.050 1 0 91.2 70 - 130

Surr: 4-Bromofluorobenzene 0.08987 0.0050 0.1 0 89.9 70 - 130

<b>MS</b>										
Sample ID:		<b>HS16111139-01MS</b>			Units: <b>mg/Kg</b>		Analysis Date: <b>29-Nov-2016 15:36</b>			
Client ID:	<b>MC-8-1-0-1-111716</b>			Run ID:	<b>FID-14_285660</b>		SeqNo: <b>3909964</b>		PrepDate:	DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Gasoline Range Organics 0.8073 0.050 1 0 80.7 70 - 130

Surr: 4-Bromofluorobenzene 0.08383 0.0050 0.1 0 83.8 70 - 130

<b>MSD</b>										
Sample ID:		<b>HS16111139-01MSD</b>			Units: <b>mg/Kg</b>		Analysis Date: <b>29-Nov-2016 15:52</b>			
Client ID:	<b>MC-8-1-0-1-111716</b>			Run ID:	<b>FID-14_285660</b>		SeqNo: <b>3909965</b>		PrepDate:	DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Gasoline Range Organics 0.8445 0.050 1 0 84.4 70 - 130 0.8073 4.5 30

Surr: 4-Bromofluorobenzene 0.08587 0.0050 0.1 0 85.9 70 - 130 0.08383 2.41 30

The following samples were analyzed in this batch:			
HS16111139-01	HS16111139-02	HS16111139-03	HS16111139-04
HS16111139-05	HS16111139-06	HS16111139-07	HS16111139-08
HS16111139-10	HS16111139-11	HS16111139-12	HS16111139-13
HS16111139-14	HS16111139-15	HS16111139-16	HS16111139-17
HS16111139-19	HS16111139-20	HS16111139-21	HS16111139-22

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**Client:** Kinder Morgan  
**Project:** McElmo Dome  
**WorkOrder:** HS16111139

**QC BATCH REPORT**

Batch ID: R285662		Instrument: FID-14		Method: SW8015						
MBLK	Sample ID: GBLK-161129	Units: mg/Kg			Analysis Date: 29-Nov-2016 22:48					
Client ID:	Run ID: FID-14_285662	SeqNo: 3910010		PrepDate:		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Gasoline Range Organics ND 0.050

Surr: 4-Bromofluorobenzene 0.08121 0.0050 0.1 0 81.2 70 - 130

LCS	Sample ID: GLCS-161129	Units: mg/Kg			Analysis Date: 29-Nov-2016 22:16					
Client ID:		Run ID: FID-14_285662	SeqNo: 3910009		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Gasoline Range Organics 0.8933 0.050 1 0 89.3 70 - 130

Surr: 4-Bromofluorobenzene 0.0911 0.0050 0.1 0 91.1 70 - 130

<b>MS</b>										
Sample ID:		<b>HS16111139-25MS</b>			Units: <b>mg/Kg</b>		Analysis Date: <b>29-Nov-2016 23:21</b>			
Client ID: <b>MC-8-8-9-10-111716</b>		Run ID: <b>FID-14_285662</b>		SeqNo: <b>3910012</b>		PrepDate:		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Gasoline Range Organics 0.7493 0.050 0.99 0 75.7 70 - 130

Surr: 4-Bromofluorobenzene 0.07802 0.0050 0.099 0 78.8 70 - 130

<b>MSD</b>										
Sample ID:		<b>HS16111139-25MSD</b>			Units: <b>mg/Kg</b>		Analysis Date: <b>29-Nov-2016 23:37</b>			
Client ID: <b>MC-8-8-9-10-111716</b>		Run ID: <b>FID-14_285662</b>		SeqNo: <b>3910013</b>			PrepDate:		DF: <b>1</b>	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Gasoline Range Organics 0.7651 0.050 1 0 76.5 70 - 130 0.7493 2.08 30

Surr: 4-Bromofluorobenzene 0.07452 0.0050 0.1 0 74.5 70 - 130 0.07802 4.59 30

The following samples were analyzed in this batch: HS16111139-23 HS16111139-24 HS16111139-25 HS16111139-26

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**Client:** Kinder Morgan  
**Project:** McElmo Dome  
**WorkOrder:** HS16111139

**QC BATCH REPORT**

Batch ID: 110420		Instrument: ICPMS04		Method: SW6020						
MBLK	Sample ID: MBLK-110420	Units: mg/Kg			Analysis Date: 05-Dec-2016 19:36					
Client ID:	Run ID: ICPMS04_285952		SeqNo: 3917030		PrepDate: 05-Dec-2016		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual	

Arsenic	ND	0.500						
Barium	ND	0.500						
Cadmium	ND	0.500						
Chromium	ND	0.500						
Copper	ND	0.200						
Lead	ND	0.500						
Nickel	ND	0.500						
Selenium	ND	0.500						
Silver	ND	0.500						
Zinc	ND	0.500						

<b>MBLK</b>	Sample ID: <b>MBLK-110420</b>	Units: <b>mg/Kg</b>			Analysis Date: <b>06-Dec-2016 13:24</b>			
Client ID:	Run ID: <b>ICPMS04_286035</b>			SeqNo: <b>3918329</b>	PrepDate: <b>05-Dec-2016</b>	DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD Limit Qual

Boron	ND	2.50						
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<b>LCS</b>	Sample ID: <b>LCS-110420</b>	Units: <b>mg/Kg</b>			Analysis Date: <b>05-Dec-2016 19:40</b>			
Client ID:	Run ID: <b>ICPMS04_285952</b>			SeqNo: <b>3917031</b>	PrepDate: <b>05-Dec-2016</b>	DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD Limit Qual

Arsenic	9.828	0.500	10	0	98.3	80 - 120		
Barium	10.64	0.500	10	0	106	80 - 120		
Cadmium	10.67	0.500	10	0	107	80 - 120		
Chromium	9.844	0.500	10	0	98.4	80 - 120		
Copper	10.04	0.200	10	0	100	80 - 120		
Lead	10.56	0.500	10	0	106	80 - 120		
Nickel	10.11	0.500	10	0	101	80 - 120		
Selenium	9.878	0.500	10	0	98.8	80 - 120		
Silver	10.65	0.500	10	0	106	80 - 120		
Zinc	10.21	0.500	10	0	102	80 - 120		

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**Client:** Kinder Morgan  
**Project:** McElmo Dome  
**WorkOrder:** HS16111139

**QC BATCH REPORT**

Batch ID: 110420		Instrument: ICPMS04		Method: SW6020						
<b>LCS</b>		Sample ID: LCS-110420		Units: mg/Kg		Analysis Date: 06-Dec-2016 13:29				
Client ID:		Run ID: ICPMS04_286035		SeqNo: 3918330		PrepDate: 05-Dec-2016		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Boron	44.22	2.50	50	0	88.4	80 - 120				
<b>MS</b>		Sample ID: HS16111139-22MS		Units: mg/Kg		Analysis Date: 05-Dec-2016 22:47				
Client ID: MC-8-7-6-7-111716		Run ID: ICPMS04_285952		SeqNo: 3917616		PrepDate: 05-Dec-2016		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	10.42	0.468	9.351	2.533	84.4	75 - 125				
Barium	139.8	0.468	9.351	136.1	39.5	75 - 125				SO
Boron	50.51	2.34	46.76	3.37	101	75 - 125				
Cadmium	8.049	0.468	9.351	0.05808	85.5	75 - 125				
Chromium	16.8	0.468	9.351	7.851	95.7	75 - 125				
Copper	16.23	0.187	9.351	8.803	79.4	75 - 125				
Lead	14.98	0.468	9.351	7.269	82.5	75 - 125				
Nickel	15.78	0.468	9.351	7.663	86.8	75 - 125				
Selenium	7.858	0.468	9.351	0.3409	80.4	75 - 125				
Silver	8.092	0.468	9.351	0.02913	86.2	75 - 125				
Zinc	30.44	0.468	9.351	21.45	96.1	75 - 125				
<b>MSD</b>		Sample ID: HS16111139-22MSD		Units: mg/Kg		Analysis Date: 05-Dec-2016 22:52				
Client ID: MC-8-7-6-7-111716		Run ID: ICPMS04_285952		SeqNo: 3917617		PrepDate: 05-Dec-2016		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	9.917	0.469	9.384	2.533	78.7	75 - 125	10.42	4.97	20	
Barium	132.5	0.469	9.384	136.1	-38.5	75 - 125	139.8	5.37	20	SO
Boron	48.09	2.35	46.92	3.37	95.3	75 - 125	50.51	4.9	20	
Cadmium	7.749	0.469	9.384	0.05808	82.0	75 - 125	8.049	3.8	20	
Chromium	15.93	0.469	9.384	7.851	86.1	75 - 125	16.8	5.27	20	
Copper	15.41	0.188	9.384	8.803	70.5	75 - 125	16.23	5.16	20	S
Lead	14.08	0.469	9.384	7.269	72.6	75 - 125	14.98	6.19	20	S
Nickel	15	0.469	9.384	7.663	78.2	75 - 125	15.78	5.06	20	
Selenium	7.514	0.469	9.384	0.3409	76.4	75 - 125	7.858	4.47	20	
Silver	7.625	0.469	9.384	0.02913	80.9	75 - 125	8.092	5.95	20	
Zinc	28.99	0.469	9.384	21.45	80.3	75 - 125	30.44	4.87	20	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**Client:** Kinder Morgan  
**Project:** McElmo Dome  
**WorkOrder:** HS16111139

**QC BATCH REPORT**

Batch ID: 110420		Instrument: ICPMS04		Method: SW6020						
<b>PDS</b>		Sample ID: HS16111139-22PDS		Units: mg/Kg		Analysis Date: 05-Dec-2016 22:56				
Client ID: MC-8-7-6-7-111716		Run ID: ICPMS04_285952		SeqNo: 3917618		PrepDate: 05-Dec-2016		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	11.56	0.474	9.489	2.533	95.1	75 - 125				
Barium	140.4	0.474	9.489	136.1	44.5	75 - 125				SO
Boron	48.17	2.37	47.45	3.37	94.4	75 - 125				
Cadmium	8.889	0.474	9.489	0.05808	93.1	75 - 125				
Chromium	16.57	0.474	9.489	7.851	91.9	75 - 125				
Copper	17.24	0.190	9.489	8.803	88.9	75 - 125				
Lead	15.65	0.474	9.489	7.269	88.3	75 - 125				
Nickel	16.26	0.474	9.489	7.663	90.6	75 - 125				
Selenium	9.322	0.474	9.489	0.3409	94.6	75 - 125				
Silver	8.408	0.474	9.489	0	88.6	75 - 125				
Zinc	29.44	0.474	9.489	21.45	84.2	75 - 125				

<b>SD</b>		Sample ID: HS16111139-22SD		Units: mg/Kg		Analysis Date: 05-Dec-2016 22:42				
Client ID: MC-8-7-6-7-111716		Run ID: ICPMS04_285952		SeqNo: 3917615		PrepDate: 05-Dec-2016		DF: 5		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	%D Limit	Qual
Arsenic	2.569	2.37					2.533	1.43	10	
Barium	136.6	2.37					136.1	0.317	10	
Boron	ND	11.9					3.37	0	10	
Cadmium	ND	2.37					0.05808	0	10	
Chromium	7.946	2.37					7.851	1.2	10	
Copper	9.012	0.949					8.803	2.38	10	
Lead	7.328	2.37					7.269	0.817	10	
Nickel	7.793	2.37					7.663	1.7	10	
Selenium	ND	2.37					0.3409	0	10	
Silver	ND	2.37					0.02913	0	10	
Zinc	21.91	2.37					21.45	2.14	10	

<b>The following samples were analyzed in this batch:</b>			
HS16111139-01	HS16111139-02	HS16111139-03	HS16111139-04
HS16111139-05	HS16111139-06	HS16111139-07	HS16111139-08
HS16111139-10	HS16111139-11	HS16111139-12	HS16111139-13
HS16111139-14	HS16111139-15	HS16111139-16	HS16111139-17
HS16111139-19	HS16111139-20	HS16111139-21	HS16111139-22

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**Client:** Kinder Morgan  
**Project:** McElmo Dome  
**WorkOrder:** HS16111139

**QC BATCH REPORT**

Batch ID: 110430			Instrument: ICPMS04			Method: SW6020				
<b>MBLK</b>		Sample ID: <b>MBLK-110430</b>		Units: <b>mg/Kg</b>		Analysis Date: <b>06-Dec-2016 02:09</b>				
Client ID:		Run ID: <b>ICPMS04_285952</b>		SeqNo: <b>3917712</b>		PrepDate: <b>05-Dec-2016</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	ND	0.500								
Barium	ND	0.500								
Boron	ND	2.50								
Cadmium	ND	0.500								
Chromium	ND	0.500								
Copper	ND	0.200								
Lead	ND	0.500								
Nickel	ND	0.500								
Selenium	ND	0.500								
Silver	ND	0.500								
Zinc	ND	0.500								

<b>LCS</b>		Sample ID: <b>LCS-110430</b>		Units: <b>mg/Kg</b>		Analysis Date: <b>06-Dec-2016 02:14</b>				
Client ID:		Run ID: <b>ICPMS04_285952</b>		SeqNo: <b>3917713</b>		PrepDate: <b>05-Dec-2016</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	10.02	0.500	10	0	100	80 - 120				
Barium	9.833	0.500	10	0	98.3	80 - 120				
Boron	52.98	2.50	50	0	106	80 - 120				
Cadmium	9.742	0.500	10	0	97.4	80 - 120				
Chromium	10.09	0.500	10	0	101	80 - 120				
Copper	10.26	0.200	10	0	103	80 - 120				
Lead	9.868	0.500	10	0	98.7	80 - 120				
Nickel	10.23	0.500	10	0	102	80 - 120				
Selenium	9.768	0.500	10	0	97.7	80 - 120				
Silver	10.04	0.500	10	0	100	80 - 120				
Zinc	10.54	0.500	10	0	105	80 - 120				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**Client:** Kinder Morgan  
**Project:** McElmo Dome  
**WorkOrder:** HS16111139

**QC BATCH REPORT**

Batch ID: 110430		Instrument: ICPMS04		Method: SW6020					
<b>MS</b>		Sample ID: HS16120058-03MS		Units: mg/Kg		Analysis Date: 06-Dec-2016 18:43			
Client ID:		Run ID: ICPMS04_286035		SeqNo: 3919022		PrepDate: 05-Dec-2016		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Arsenic	18.4	0.474	9.48	6.149	129	75 - 125			S
Barium	13400	0.474	9.48	8280	54000	75 - 125			SEO
Boron	47.17	2.37	47.4	0	99.5	75 - 125			
Cadmium	10.28	0.474	9.48	0.5625	102	75 - 125			
Chromium	52.25	0.474	9.48	28	256	75 - 125			S
Copper	26.89	0.190	9.48	12.94	147	75 - 125			S
Lead	156.4	0.474	9.48	100.8	587	75 - 125			SO
Nickel	12.35	0.474	9.48	2.409	105	75 - 125			
Selenium	9.345	0.474	9.48	0.2357	96.1	75 - 125			
Silver	9.83	0.474	9.48	0.2979	101	75 - 125			
Zinc	179.1	0.474	9.48	114	686	75 - 125			SEO

<b>MSD</b>		Sample ID: HS16120058-03MSD		Units: mg/Kg		Analysis Date: 06-Dec-2016 18:47			
Client ID:		Run ID: ICPMS04_286035		SeqNo: 3919023		PrepDate: 05-Dec-2016		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Arsenic	16.83	0.476	9.526	6.149	112	75 - 125	18.4	8.93	20
Barium	15130	0.476	9.526	8280	71900	75 - 125	13400	12.1	20 SEO
Boron	46.76	2.38	47.63	0	98.2	75 - 125	47.17	0.879	20
Cadmium	9.883	0.476	9.526	0.5625	97.8	75 - 125	10.28	3.9	20
Chromium	46.3	0.476	9.526	28	192	75 - 125	52.25	12.1	20 S
Copper	24.81	0.191	9.526	12.94	125	75 - 125	26.89	8.07	20
Lead	142.5	0.476	9.526	100.8	438	75 - 125	156.4	9.3	20 SO
Nickel	12.05	0.476	9.526	2.409	101	75 - 125	12.35	2.45	20
Selenium	9.185	0.476	9.526	0.2357	93.9	75 - 125	9.345	1.73	20
Silver	9.558	0.476	9.526	0.2979	97.2	75 - 125	9.83	2.8	20
Zinc	159.5	0.476	9.526	114	478	75 - 125	179.1	11.6	20 SO

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**Client:** Kinder Morgan  
**Project:** McElmo Dome  
**WorkOrder:** HS16111139

**QC BATCH REPORT**

Batch ID: 110430		Instrument: ICPMS04		Method: SW6020						
PDS	Sample ID: HS16120058-03PDS	Units: mg/Kg			Analysis Date: 06-Dec-2016 04:16					
Client ID:	Run ID: ICPMS04_285952	SeqNo: 3917739		PrepDate: 05-Dec-2016		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual	
Arsenic	16.32	0.474	9.473	6.149	107	75 - 125				
Boron	43.47	2.37	47.37	0	91.8	75 - 125				
Cadmium	9.299	0.474	9.473	0.5625	92.2	75 - 125				
Copper	23.7	0.189	9.473	12.94	114	75 - 125				
Lead	131.2	0.474	9.473	100.8	321	75 - 125			SO	
Nickel	11.65	0.474	9.473	2.409	97.5	75 - 125				
Selenium	9.358	0.474	9.473	0.2357	96.3	75 - 125				
Silver	8.822	0.474	9.473	0.2979	90.0	75 - 125				
Zinc	143.4	0.474	9.473	114	311	75 - 125			SO	
PDS	Sample ID: HS16120058-03PDS	Units: mg/Kg			Analysis Date: 06-Dec-2016 17:06					
Client ID:	Run ID: ICPMS04_286035	SeqNo: 3918870		PrepDate: 05-Dec-2016		DF: 100				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual	
Barium	12620	47.4	947.3	11770	89.6	75 - 125			O	
PDS	Sample ID: HS16120058-03PDS	Units: mg/Kg			Analysis Date: 06-Dec-2016 16:44					
Client ID:	Run ID: ICPMS04_286035	SeqNo: 3918865		PrepDate: 05-Dec-2016		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual	
Chromium	42.38	0.474	9.473	28	152	75 - 125			S	

Note: See Qualifiers Page for a list of qualifiers and their explanation.



**Client:** Kinder Morgan  
**Project:** McElmo Dome  
**WorkOrder:** HS16111139

**QC BATCH REPORT**

Batch ID: 110430		Instrument: ICPMS04		Method: SW6020						
SD	Sample ID: HS16120058-03SD		Units: mg/Kg		Analysis Date: 06-Dec-2016 04:02					
Client ID:	Run ID: ICPMS04_285952		SeqNo: 3917736		PrepDate: 05-Dec-2016		DF: 5			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	Limit	Qual
Arsenic	6.141	2.37					6.149	0.122	10	
Boron	ND	11.8					0.6537	0	10	
Cadmium	0.5459	2.37					0.5625	0	10	J
Chromium	27.44	2.37					28	2.01	10	
Copper	13.46	0.947					12.94	4.07	10	
Lead	103	2.37					100.8	2.19	10	
Nickel	2.436	2.37					2.409	1.12	10	
Selenium	ND	2.37					0.2357	0	10	
Silver	ND	2.37					0.2979	0	10	
Zinc	119.7	2.37					114	5.01	10	
SD	Sample ID: HS16120058-03SD		Units: mg/Kg		Analysis Date: 06-Dec-2016 17:01					
Client ID:	Run ID: ICPMS04_286035		SeqNo: 3918869		PrepDate: 05-Dec-2016		DF: 500			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%D	Limit	Qual
Barium	11470	237					11770	2.58	10	
The following samples were analyzed in this batch:										
HS16111139-23		HS16111139-24		HS16111139-25		HS16111139-26				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**Client:** Kinder Morgan  
**Project:** McElmo Dome  
**WorkOrder:** HS16111139

**QC BATCH REPORT**

Batch ID: 110625		Instrument: HG03		Method: SW7471A	
<b>MBLK</b>	Sample ID: <b>MBLK-110625</b>	Units: <b>ug/Kg</b>		Analysis Date: <b>10-Dec-2016 18:51</b>	
Client ID:	Run ID: <b>HG03_286403</b>	SeqNo: <b>3926045</b>		PrepDate: <b>10-Dec-2016</b>	DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value %REC	Control Limit RPD Ref Value %RPD RPD Limit Qual
Mercury	ND	3.40			
<b>LCS</b>	Sample ID: <b>LCS-110625</b>	Units: <b>ug/Kg</b>		Analysis Date: <b>10-Dec-2016 18:53</b>	
Client ID:	Run ID: <b>HG03_286403</b>	SeqNo: <b>3926046</b>		PrepDate: <b>10-Dec-2016</b>	DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value %REC	Control Limit RPD Ref Value %RPD RPD Limit Qual
Mercury	326.4	3.38	339.3	0 96.2	85 - 115
<b>MS</b>	Sample ID: <b>HS16111131-19MS</b>	Units: <b>ug/Kg</b>		Analysis Date: <b>10-Dec-2016 19:12</b>	
Client ID:	Run ID: <b>HG03_286403</b>	SeqNo: <b>3926048</b>		PrepDate: <b>10-Dec-2016</b>	DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value %REC	Control Limit RPD Ref Value %RPD RPD Limit Qual
Mercury	347.8	3.61	361.5	9.255 93.6	85 - 115
<b>MSD</b>	Sample ID: <b>HS16111131-19MSD</b>	Units: <b>ug/Kg</b>		Analysis Date: <b>10-Dec-2016 19:14</b>	
Client ID:	Run ID: <b>HG03_286403</b>	SeqNo: <b>3926049</b>		PrepDate: <b>10-Dec-2016</b>	DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value %REC	Control Limit RPD Ref Value %RPD RPD Limit Qual
Mercury	350.2	3.59	359.6	9.255 94.8	85 - 115 347.8 0.699 20
The following samples were analyzed in this batch:					
HS16111139-01		HS16111139-02		HS16111139-03	
HS16111139-05		HS16111139-06		HS16111139-07	
HS16111139-10		HS16111139-11		HS16111139-12	
				HS16111139-13	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**Client:** Kinder Morgan  
**Project:** McElmo Dome  
**WorkOrder:** HS16111139

**QC BATCH REPORT**

Batch ID: 110626		Instrument: HG03		Method: SW7471A						
<b>MBLK</b>	Sample ID: <b>MBLK-110626</b>	Units: <b>ug/Kg</b>		Analysis Date: <b>10-Dec-2016 19:55</b>						
Client ID:		Run ID: <b>HG03_286403</b>		SeqNo: <b>3926073</b>	PrepDate: <b>10-Dec-2016</b>	DF: <b>1</b>				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	ND	3.39								
<b>LCS</b>	Sample ID: <b>LCS-110626</b>	Units: <b>ug/Kg</b>		Analysis Date: <b>10-Dec-2016 19:57</b>						
Client ID:		Run ID: <b>HG03_286403</b>		SeqNo: <b>3926074</b>	PrepDate: <b>10-Dec-2016</b>	DF: <b>1</b>				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	322.2	3.33	334.3	0	96.4	85 - 115				
<b>MS</b>	Sample ID: <b>HS16111139-14MS</b>	Units: <b>ug/Kg</b>		Analysis Date: <b>10-Dec-2016 20:00</b>						
Client ID: <b>MC-8-5-2-3-111716</b>		Run ID: <b>HG03_286403</b>		SeqNo: <b>3926076</b>	PrepDate: <b>10-Dec-2016</b>	DF: <b>1</b>				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	350.9	3.52	353	9.967	96.6	85 - 115				
<b>MSD</b>	Sample ID: <b>HS16111139-14MSD</b>	Units: <b>ug/Kg</b>		Analysis Date: <b>10-Dec-2016 20:02</b>						
Client ID: <b>MC-8-5-2-3-111716</b>		Run ID: <b>HG03_286403</b>		SeqNo: <b>3926077</b>	PrepDate: <b>10-Dec-2016</b>	DF: <b>1</b>				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	349.1	3.52	353.3	9.967	96.0	85 - 115	350.9	0.517	20	
The following samples were analyzed in this batch:										
			HS16111139-14	HS16111139-15	HS16111139-16	HS16111139-17				
			HS16111139-19	HS16111139-20	HS16111139-21	HS16111139-22				
			HS16111139-23	HS16111139-24	HS16111139-25	HS16111139-26				

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**Client:** Kinder Morgan  
**Project:** McElmo Dome  
**WorkOrder:** HS16111139

**QC BATCH REPORT**

Batch ID: 110894		Instrument: ICPMS04		Method: La29B-6020						
MBLK	Sample ID: MBLK-110894	Units: mg/L			Analysis Date: 20-Dec-2016 12:49					
Client ID:	Run ID: ICPMS04_286882	SeqNo: 3937110		PrepDate:		DF: 10				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Calcium	ND	5.00								
Magnesium	ND	5.00								
Sodium	ND	5.00								

DUP	Sample ID: HS16111139-16DUP	Units: mg/L			Analysis Date: 20-Dec-2016 14:20					
Client ID: MC-8-5-8-9-111716	Run ID: ICPMS04_286882			SeqNo: 3937256		PrepDate:		DF: 10		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	26.07	5.00					27.16	4.13	30	
Magnesium	7.237	5.00					7.157	1.12	30	
Sodium	29.18	5.00					28.9	0.964	30	

The following samples were analyzed in this batch:

HS16111139-01	HS16111139-02	HS16111139-03	HS16111139-04
HS16111139-05	HS16111139-06	HS16111139-07	HS16111139-08
HS16111139-10	HS16111139-11	HS16111139-12	HS16111139-13
HS16111139-14	HS16111139-15	HS16111139-16	HS16111139-17
HS16111139-19	HS16111139-20	HS16111139-21	HS16111139-22

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**Client:** Kinder Morgan  
**Project:** McElmo Dome  
**WorkOrder:** HS16111139

**QC BATCH REPORT**

Batch ID: 110896		Instrument: ICPMS04		Method: La29B-6020					
MBLK	Sample ID: MBLK-110896	Units: mg/L		Analysis Date: 20-Dec-2016 15:42					
Client ID:	Run ID: ICPMS04_286882	SeqNo: 3937708		PrepDate:		DF: 10			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Calcium	ND	5.00							
Magnesium	ND	5.00							
Sodium	ND	5.00							

DUP	Sample ID: HS16111139-26DUP	Units: mg/L		Analysis Date: 20-Dec-2016 16:05					
Client ID: MC-8-8-11-12-111716	Run ID: ICPMS04_286882	SeqNo: 3937713		PrepDate:		DF: 10			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Calcium	34.57	5.00					33.97	1.77	30
Magnesium	7.932	5.00					7.83	1.3	30
Sodium	15.2	5.00					14.86	2.23	30

The following samples were analyzed in this batch:

HS16111139-23	HS16111139-24	HS16111139-25	HS16111139-26
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Note: See Qualifiers Page for a list of qualifiers and their explanation.

**Client:** Kinder Morgan  
**Project:** McElmo Dome  
**WorkOrder:** HS16111139

**QC BATCH REPORT**

Batch ID: R285471		Instrument: VOA2		Method: SW8260					
<b>MBLK</b>	Sample ID: VBLKW-161123	Units: ug/L		Analysis Date: 26-Nov-2016 11:08					
Client ID:	Run ID: VOA2_285471	SeqNo: 3905983		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	ND	1.0							
Ethylbenzene	ND	1.0							
m,p-Xylene	ND	2.0							
o-Xylene	ND	1.0							
Toluene	ND	1.0							
Xylenes, Total	ND	1.0							
Surr: 1,2-Dichloroethane-d4	50.1	1.0	50	0	100	71 - 125			
Surr: 4-Bromofluorobenzene	49.83	1.0	50	0	99.7	70 - 125			
Surr: Dibromofluoromethane	49.96	1.0	50	0	99.9	74 - 125			
Surr: Toluene-d8	50.76	1.0	50	0	102	75 - 125			

<b>LCS</b>	Sample ID: VLCSW-161123	Units: ug/L		Analysis Date: 26-Nov-2016 10:18					
Client ID:	Run ID: VOA2_285471	SeqNo: 3905982		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	46.62	1.0	50	0	93.2	75 - 122			
Ethylbenzene	43.98	1.0	50	0	88.0	80 - 120			
m,p-Xylene	88.36	2.0	100	0	88.4	80 - 120			
o-Xylene	45.77	1.0	50	0	91.5	80 - 120			
Toluene	45.08	1.0	50	0	90.2	75 - 121			
Xylenes, Total	134.1	1.0	150	0	89.4	79 - 124			
Surr: 1,2-Dichloroethane-d4	51.52	1.0	50	0	103	71 - 125			
Surr: 4-Bromofluorobenzene	50.98	1.0	50	0	102	70 - 125			
Surr: Dibromofluoromethane	50.74	1.0	50	0	101	74 - 125			
Surr: Toluene-d8	48.68	1.0	50	0	97.4	75 - 125			

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**Client:** Kinder Morgan  
**Project:** McElmo Dome  
**WorkOrder:** HS16111139

**QC BATCH REPORT**

Batch ID: R285471		Instrument: VOA2		Method: SW8260						
<b>MS</b>		Sample ID: HS16111097-01MS		Units: ug/L		Analysis Date: 26-Nov-2016 14:56				
Client ID:		Run ID: VOA2_285471		SeqNo: 3905992		PrepDate:		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	46.39	1.0	50	0	92.8	75 - 122				
Ethylbenzene	45.6	1.0	50	0	91.2	80 - 120				
m,p-Xylene	89.15	2.0	100	0	89.2	80 - 120				
o-Xylene	45.66	1.0	50	0	91.3	80 - 120				
Toluene	46.31	1.0	50	0	92.6	75 - 121				
Xylenes, Total	134.8	1.0	150	0	89.9	80 - 124				
Surr: 1,2-Dichloroethane-d4	52.32	1.0	50	0	105	71 - 125				
Surr: 4-Bromofluorobenzene	49.56	1.0	50	0	99.1	70 - 125				
Surr: Dibromofluoromethane	49.03	1.0	50	0	98.1	74 - 125				
Surr: Toluene-d8	49.38	1.0	50	0	98.8	75 - 125				

<b>MSD</b>		Sample ID: HS16111097-01MSD		Units: ug/L		Analysis Date: 26-Nov-2016 15:20				
Client ID:		Run ID: VOA2_285471		SeqNo: 3905993		PrepDate:		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	47.82	1.0	50	0	95.6	75 - 122	46.39	3.04	20	
Ethylbenzene	45.15	1.0	50	0	90.3	80 - 120	45.6	0.995	20	
m,p-Xylene	89.47	2.0	100	0	89.5	80 - 120	89.15	0.358	20	
o-Xylene	45.74	1.0	50	0	91.5	80 - 120	45.66	0.164	20	
Toluene	45.41	1.0	50	0	90.8	75 - 121	46.31	1.97	20	
Xylenes, Total	135.2	1.0	150	0	90.1	80 - 124	134.8	0.292	20	
Surr: 1,2-Dichloroethane-d4	51.94	1.0	50	0	104	71 - 125	52.32	0.725	20	
Surr: 4-Bromofluorobenzene	50.44	1.0	50	0	101	70 - 125	49.56	1.75	20	
Surr: Dibromofluoromethane	50.2	1.0	50	0	100	74 - 125	49.03	2.36	20	
Surr: Toluene-d8	49.02	1.0	50	0	98.0	75 - 125	49.38	0.735	20	

The following samples were analyzed in this batch: HS16111139-09 HS16111139-18 HS16111139-27

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Kinder Morgan  
 Project: McElmo Dome  
 WorkOrder: HS16111139

## QC BATCH REPORT

Batch ID: R285561		Instrument: VOA8		Method: SW8260					
<b>MBLK</b>	Sample ID: VBLKS1-112816	Units: ug/Kg		Analysis Date: 28-Nov-2016 20:38					
Client ID:	Run ID: VOA8_285561	SeqNo: 3907654		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	ND	5.0							
Ethylbenzene	ND	5.0							
m,p-Xylene	ND	10							
o-Xylene	ND	5.0							
Toluene	ND	5.0							
Xylenes, Total	ND	5.0							
Surr: 1,2-Dichloroethane-d4	51.35	0	50	0	103	70 - 128			
Surr: 4-Bromofluorobenzene	46.62	0	50	0	93.2	73 - 126			
Surr: Dibromofluoromethane	55.47	0	50	0	111	71 - 128			
Surr: Toluene-d8	49.86	0	50	0	99.7	73 - 127			

<b>LCS</b>	Sample ID: VLCSS1-112816	Units: ug/Kg		Analysis Date: 28-Nov-2016 19:44					
Client ID:	Run ID: VOA8_285561	SeqNo: 3907653		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	47.65	5.0	50	0	95.3	79 - 122			
Ethylbenzene	51.43	5.0	50	0	103	80 - 122			
m,p-Xylene	100.7	10	100	0	101	79 - 122			
o-Xylene	49.47	5.0	50	0	98.9	80 - 123			
Toluene	47.85	5.0	50	0	95.7	79 - 120			
Xylenes, Total	150.2	5.0	150	0	100	79 - 123			
Surr: 1,2-Dichloroethane-d4	48.84	0	50	0	97.7	70 - 128			
Surr: 4-Bromofluorobenzene	49.63	0	50	0	99.3	73 - 126			
Surr: Dibromofluoromethane	48.94	0	50	0	97.9	71 - 128			
Surr: Toluene-d8	48.31	0	50	0	96.6	73 - 127			

Note: See Qualifiers Page for a list of qualifiers and their explanation.



**Client:** Kinder Morgan  
**Project:** McElmo Dome  
**WorkOrder:** HS16111139

**QC BATCH REPORT**

Batch ID: R285561		Instrument: VOA8		Method: SW8260						
<b>MS</b>		Sample ID: HS16111139-21MS		Units: ug/Kg		Analysis Date: 28-Nov-2016 22:25				
Client ID: MC-8-7-2-3-111716		Run ID: VOA8_285561		SeqNo: 3907658		PrepDate:		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	35.46	5.1	51	0	69.5	79 - 122				S
Ethylbenzene	33.81	5.1	51	0	66.3	80 - 122				S
m,p-Xylene	65.8	10	102	0	64.5	79 - 122				S
o-Xylene	32.12	5.1	51	0	63.0	80 - 123				S
Toluene	33.33	5.1	51	0	65.3	79 - 120				S
Xylenes, Total	97.92	5.1	153	0	64.0	79 - 123				S
Surr: 1,2-Dichloroethane-d4	54.79	0	51	0	107	70 - 128				
Surr: 4-Bromofluorobenzene	50.64	0	51	0	99.3	73 - 126				
Surr: Dibromofluoromethane	56.78	0	51	0	111	71 - 128				
Surr: Toluene-d8	47.37	0	51	0	92.9	73 - 127				

<b>MSD</b>		Sample ID: HS16111139-21MSD		Units: ug/Kg		Analysis Date: 28-Nov-2016 22:52				
Client ID: MC-8-7-2-3-111716		Run ID: VOA8_285561		SeqNo: 3907659		PrepDate:		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	35.9	5.0	50	0	71.8	79 - 122	35.46	1.25	30	S
Ethylbenzene	33.72	5.0	50	0	67.4	80 - 122	33.81	0.277	30	S
m,p-Xylene	66.85	10	100	0	66.8	79 - 122	65.8	1.59	30	S
o-Xylene	32.28	5.0	50	0	64.6	80 - 123	32.12	0.48	30	S
Toluene	33.01	5.0	50	0	66.0	79 - 120	33.33	0.946	30	S
Xylenes, Total	99.13	5.0	150	0	66.1	79 - 123	97.92	1.23	30	S
Surr: 1,2-Dichloroethane-d4	50.39	0	50	0	101	70 - 128	54.79	8.37	30	
Surr: 4-Bromofluorobenzene	49.87	0	50	0	99.7	73 - 126	50.64	1.54	30	
Surr: Dibromofluoromethane	52.68	0	50	0	105	71 - 128	56.78	7.5	30	
Surr: Toluene-d8	48.31	0	50	0	96.6	73 - 127	47.37	1.97	30	

The following samples were analyzed in this batch:

HS16111139-19	HS16111139-20	HS16111139-21	HS16111139-22
HS16111139-23	HS16111139-24	HS16111139-25	HS16111139-26

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Kinder Morgan  
 Project: McElmo Dome  
 WorkOrder: HS16111139

## QC BATCH REPORT

Batch ID: R285564		Instrument: VOA5		Method: SW8260					
<b>MBLK</b>	Sample ID: VBLKS2-112816	Units: ug/Kg		Analysis Date: 28-Nov-2016 22:23					
Client ID:	Run ID: VOA5_285564	SeqNo: 3907679		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	ND	5.0							
Ethylbenzene	ND	5.0							
m,p-Xylene	ND	10							
o-Xylene	ND	5.0							
Toluene	ND	5.0							
Xylenes, Total	ND	5.0							
Surr: 1,2-Dichloroethane-d4	50.9	0	50	0	102	70 - 128			
Surr: 4-Bromofluorobenzene	51.2	0	50	0	102	73 - 126			
Surr: Dibromofluoromethane	53.29	0	50	0	107	71 - 128			
Surr: Toluene-d8	55.19	0	50	0	110	73 - 127			

<b>LCS</b>	Sample ID: VLCSS2-112816	Units: ug/Kg		Analysis Date: 28-Nov-2016 21:37					
Client ID:	Run ID: VOA5_285564	SeqNo: 3907678		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	54.86	5.0	50	0	110	79 - 122			
Ethylbenzene	51.78	5.0	50	0	104	80 - 122			
m,p-Xylene	105	10	100	0	105	79 - 122			
o-Xylene	52.1	5.0	50	0	104	80 - 123			
Toluene	53.11	5.0	50	0	106	79 - 120			
Xylenes, Total	157.1	5.0	150	0	105	79 - 123			
Surr: 1,2-Dichloroethane-d4	54.44	0	50	0	109	70 - 128			
Surr: 4-Bromofluorobenzene	52.58	0	50	0	105	73 - 126			
Surr: Dibromofluoromethane	54.98	0	50	0	110	71 - 128			
Surr: Toluene-d8	53.98	0	50	0	108	73 - 127			

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**Client:** Kinder Morgan  
**Project:** McElmo Dome  
**WorkOrder:** HS16111139

**QC BATCH REPORT**

Batch ID: R285564		Instrument: VOA5		Method: SW8260					
<b>MS</b>		Sample ID: HS16111139-01MS		Units: ug/Kg		Analysis Date: 29-Nov-2016 00:42			
Client ID: MC-8-1-0-1-111716		Run ID: VOA5_285564		SeqNo: 3907685		PrepDate:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	44.38	4.9	49	0	90.6	79 - 122			
Ethylbenzene	35.37	4.9	49	0	72.2	80 - 122			S
m,p-Xylene	72.68	9.8	98	0	74.2	79 - 122			S
o-Xylene	36.5	4.9	49	0	74.5	80 - 123			S
Toluene	38.36	4.9	49	0	78.3	79 - 120			S
Xylenes, Total	109.2	4.9	147	0	74.3	79 - 123			S
Surr: 1,2-Dichloroethane-d4	63.8	0	49	0	130	70 - 128			S
Surr: 4-Bromofluorobenzene	53.11	0	49	0	108	73 - 126			
Surr: Dibromofluoromethane	62.64	0	49	0	128	71 - 128			
Surr: Toluene-d8	52.54	0	49	0	107	73 - 127			

<b>MSD</b>		Sample ID: HS16111139-01MSD		Units: ug/Kg		Analysis Date: 29-Nov-2016 01:05			
Client ID: MC-8-1-0-1-111716		Run ID: VOA5_285564		SeqNo: 3907686		PrepDate:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	41	4.9	49	0	83.7	79 - 122	44.38	7.92	30
Ethylbenzene	35.08	4.9	49	0	71.6	80 - 122	35.37	0.826	30 S
m,p-Xylene	70.81	9.8	98	0	72.3	79 - 122	72.68	2.62	30 S
o-Xylene	35.28	4.9	49	0	72.0	80 - 123	36.5	3.42	30 S
Toluene	38	4.9	49	0	77.5	79 - 120	38.36	0.96	30 S
Xylenes, Total	106.1	4.9	147	0	72.2	79 - 123	109.2	2.88	30 S
Surr: 1,2-Dichloroethane-d4	51.65	0	49	0	105	70 - 128	63.8	21	30
Surr: 4-Bromofluorobenzene	49.81	0	49	0	102	73 - 126	53.11	6.42	30
Surr: Dibromofluoromethane	51.91	0	49	0	106	71 - 128	62.64	18.7	30
Surr: Toluene-d8	51.82	0	49	0	106	73 - 127	52.54	1.38	30

The following samples were analyzed in this batch:			
HS16111139-01	HS16111139-02	HS16111139-03	HS16111139-04
HS16111139-05	HS16111139-06	HS16111139-07	HS16111139-08
HS16111139-10	HS16111139-11	HS16111139-12	HS16111139-13
HS16111139-14	HS16111139-15	HS16111139-16	HS16111139-17

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**Client:** Kinder Morgan  
**Project:** McElmo Dome  
**WorkOrder:** HS16111139

**QC BATCH REPORT**

Batch ID: 110450		Instrument: UV-2450		Method: SW7196	
<b>MBLK</b>	Sample ID: <b>MBLK-110450</b>	Units: <b>mg/kg</b>		Analysis Date: <b>06-Dec-2016 15:53</b>	
Client ID:	Run ID: <b>UV-2450_286266</b>	SeqNo: <b>3922844</b>		PrepDate: <b>05-Dec-2016</b>	DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC Control Limit RPD Ref Value %RPD Limit Qual
Chromium, Hexavalent	ND	2.00			
<b>LCS</b>	Sample ID: <b>LCS-110450</b>	Units: <b>mg/kg</b>		Analysis Date: <b>06-Dec-2016 15:53</b>	
Client ID:	Run ID: <b>UV-2450_286266</b>	SeqNo: <b>3922843</b>		PrepDate: <b>05-Dec-2016</b>	DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC Control Limit RPD Ref Value %RPD Limit Qual
Chromium, Hexavalent	9.2	2.00	10	0	92.0 80 - 120
<b>MS</b>	Sample ID: <b>HS16111139-13MS</b>	Units: <b>mg/kg</b>		Analysis Date: <b>06-Dec-2016 15:53</b>	
Client ID: <b>MC-8-4-8-9-111716</b>	Run ID: <b>UV-2450_286266</b>	SeqNo: <b>3922841</b>		PrepDate: <b>05-Dec-2016</b>	DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC Control Limit RPD Ref Value %RPD Limit Qual
Chromium, Hexavalent	8.063	2.00	9.978	0	80.8 75 - 125
<b>MSD</b>	Sample ID: <b>HS16111139-13MSD</b>	Units: <b>mg/kg</b>		Analysis Date: <b>06-Dec-2016 15:53</b>	
Client ID: <b>MC-8-4-8-9-111716</b>	Run ID: <b>UV-2450_286266</b>	SeqNo: <b>3922842</b>		PrepDate: <b>05-Dec-2016</b>	DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC Control Limit RPD Ref Value %RPD Limit Qual
Chromium, Hexavalent	8.668	2.00	9.986	0	86.8 75 - 125 8.063 7.24 20
The following samples were analyzed in this batch:					
HS16111139-11		HS16111139-12		HS16111139-13	
HS16111139-15		HS16111139-16		HS16111139-17	
HS16111139-20		HS16111139-24		HS16111139-25	
				HS16111139-26	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**Client:** Kinder Morgan  
**Project:** McElmo Dome  
**WorkOrder:** HS16111139

**QC BATCH REPORT**

Batch ID: 110464		Instrument: UV-2450		Method: SW7196	
<b>MBLK</b>	Sample ID: <b>MBLK-110464</b>	Units: <b>mg/kg</b>		Analysis Date: <b>07-Dec-2016 16:45</b>	
Client ID:	Run ID: <b>UV-2450_286226</b>	SeqNo: <b>3921797</b>		PrepDate: <b>06-Dec-2016</b>	DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value %REC	Control Limit RPD Ref Value %RPD RPD Limit Qual
Chromium, Hexavalent	ND	2.00			
<b>LCS</b>	Sample ID: <b>LCS-110464</b>	Units: <b>mg/kg</b>		Analysis Date: <b>07-Dec-2016 16:45</b>	
Client ID:	Run ID: <b>UV-2450_286226</b>	SeqNo: <b>3921796</b>		PrepDate: <b>06-Dec-2016</b>	DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value %REC	Control Limit RPD Ref Value %RPD RPD Limit Qual
Chromium, Hexavalent	9.72	2.00	10	0 97.2	80 - 120
<b>MS</b>	Sample ID: <b>HS16111139-23MS</b>	Units: <b>mg/kg</b>		Analysis Date: <b>07-Dec-2016 16:45</b>	
Client ID: <b>MC-8-7-13-14-111716</b>	Run ID: <b>UV-2450_286226</b>	SeqNo: <b>3921794</b>		PrepDate: <b>06-Dec-2016</b>	DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value %REC	Control Limit RPD Ref Value %RPD RPD Limit Qual
Chromium, Hexavalent	8.843	1.99	9.958	-0.04001 89.2	75 - 125
<b>MSD</b>	Sample ID: <b>HS16111139-23MSD</b>	Units: <b>mg/kg</b>		Analysis Date: <b>07-Dec-2016 16:45</b>	
Client ID: <b>MC-8-7-13-14-111716</b>	Run ID: <b>UV-2450_286226</b>	SeqNo: <b>3921795</b>		PrepDate: <b>06-Dec-2016</b>	DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value %REC	Control Limit RPD Ref Value %RPD RPD Limit Qual
Chromium, Hexavalent	10.68	1.99	9.929	-0.04001 108	75 - 125 8.843 18.9 20
The following samples were analyzed in this batch:					
HS16111139-01		HS16111139-02		HS16111139-03	
HS16111139-05		HS16111139-06		HS16111139-07	
HS16111139-10		HS16111139-21		HS16111139-22	
				HS16111139-23	

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**Client:** Kinder Morgan  
**Project:** McElmo Dome  
**WorkOrder:** HS16111139

**QC BATCH REPORT**

Batch ID: R286097		Instrument: Balance1		Method: SW3550	
<b>DUP</b>	Sample ID: <b>HS16111131-26DUP</b>	Units: <b>wt%</b>		Analysis Date: <b>06-Dec-2016 10:17</b>	
Client ID:	Run ID: <b>Balance1_286097</b>	SeqNo: <b>3919504</b>		PrepDate:	DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value %REC	Control Limit RPD Ref Value %RPD RPD Limit Qual
Percent Moisture	13.1	0.0100			13.4 2.26 20

The following samples were analyzed in this batch:

HS16111139-01	HS16111139-02	HS16111139-03	HS16111139-04
HS16111139-05	HS16111139-06	HS16111139-07	HS16111139-08
HS16111139-10	HS16111139-11	HS16111139-12	HS16111139-13
HS16111139-14	HS16111139-15	HS16111139-16	HS16111139-17
HS16111139-19			

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**Client:** Kinder Morgan  
**Project:** McElmo Dome  
**WorkOrder:** HS16111139

**QC BATCH REPORT**

Batch ID: R286098		Instrument: Balance1		Method: SW3550	
<b>DUP</b>	Sample ID: HS16120096-01DUP	Units: wt%		Analysis Date: 06-Dec-2016 10:21	
Client ID:	Run ID: Balance1_286098	SeqNo: 3919540		PrepDate:	DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value %REC	Control Limit RPD Ref Value %RPD RPD Limit Qual
Percent Moisture	11	0.0100			10.3 6.57 20
The following samples were analyzed in this batch:					
HS16111139-20 HS16111139-21 HS16111139-22 HS16111139-23					
HS16111139-24 HS16111139-25 HS16111139-26					

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**Client:** Kinder Morgan  
**Project:** McElmo Dome  
**WorkOrder:** HS16111139

**QC BATCH REPORT**

Batch ID: R286192		Instrument: WetChem_HS		Method: SW9045B					
DUP	Sample ID: HS16111139-07DUP	Units: pH Units		Analysis Date: 08-Dec-2016 12:45					
Client ID: MC-8-3-1-2-111716	Run ID: WetChem_HS_286192		SeqNo: 3921186		PrepDate:		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
pH	8.2	0.100					8.23	0.365	10
Temp Deg C @pH	19.9	0					19.9	0	10
The following samples were analyzed in this batch:									
HS16111139-01		HS16111139-02		HS16111139-03		HS16111139-04			
HS16111139-05		HS16111139-06		HS16111139-07					

Note: See Qualifiers Page for a list of qualifiers and their explanation.



**Client:** Kinder Morgan  
**Project:** McElmo Dome  
**WorkOrder:** HS16111139

**QC BATCH REPORT**

Batch ID: R286307		Instrument: WetChem_HS		Method: SW9045B						
DUP	Sample ID: HS16111139-13DUP	Units: pH Units			Analysis Date: 09-Dec-2016 17:13					
Client ID: MC-8-4-8-9-111716	Run ID: WetChem_HS_286307		SeqNo: 3923727		PrepDate:			DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	8.48	0.100					8.44	0.473	10	
Temp Deg C @pH	20.7	0					20	3.44	10	

The following samples were analyzed in this batch:

HS16111139-08	HS16111139-10	HS16111139-11	HS16111139-12
HS16111139-13	HS16111139-14	HS16111139-15	HS16111139-16
HS16111139-17	HS16111139-19	HS16111139-20	HS16111139-21
HS16111139-22	HS16111139-23	HS16111139-24	HS16111139-25
HS16111139-26			

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**Client:** Kinder Morgan  
**Project:** McElmo Dome  
**WorkOrder:** HS16111139

**QC BATCH REPORT**

<b>Batch ID: R286683</b>		<b>Instrument: WetChem_HS</b>		<b>Method: LaDNR-29B SP</b>	
<b>DUP</b>	Sample ID: <b>HS16111139-16DUP</b>		Units: <b>SP as fraction</b>		Analysis Date: <b>15-Dec-2016 11:00</b>
Client ID: <b>MC-8-5-8-9-111716</b>	Run ID: <b>WetChem_HS_286683</b>		SeqNo: <b>3932566</b>	PrepDate:	DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value %REC	Control Limit RPD Ref Value %RPD RPD Limit Qual

Saturation Point	0.42	0.100			0.429	2.12	30
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**The following samples were analyzed in this batch:**

HS16111139-01	HS16111139-02	HS16111139-03	HS16111139-04
HS16111139-05	HS16111139-06	HS16111139-07	HS16111139-08
HS16111139-10	HS16111139-11	HS16111139-12	HS16111139-13
HS16111139-14	HS16111139-15	HS16111139-16	HS16111139-17
HS16111139-19	HS16111139-20	HS16111139-21	HS16111139-22

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**Client:** Kinder Morgan  
**Project:** McElmo Dome  
**WorkOrder:** HS16111139

**QC BATCH REPORT**

<b>Batch ID: R286685</b>		<b>Instrument: WetChem_HS</b>		<b>Method: LaDNR-29B SP</b>					
<b>DUP</b>	Sample ID: <b>HS16111139-26DUP</b>		Units: <b>SP as fraction</b>		Analysis Date: <b>15-Dec-2016 11:05</b>				
Client ID: <b>MC-8-8-11-12-111716</b>	Run ID: <b>WetChem_HS_286685</b>		SeqNo: <b>3932603</b>		PrepDate:		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Saturation Point	0.499	0.100					0.503	0.798	30
The following samples were analyzed in this batch:									
HS16111139-23 HS16111139-24 HS16111139-25 HS16111139-26									

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Client: Kinder Morgan  
 Project: McElmo Dome  
 WorkOrder: HS16111139

**QC BATCH REPORT**

Batch ID: R287018		Instrument: WetChem_HS		Method: LaDNR-29B EC					
<b>DUP</b>	Sample ID: HS16111139-16	Units: mmhos/cm @25° C		Analysis Date: 21-Dec-2016 18:38					
Client ID: MC-8-5-8-9-111716	Run ID: WetChem_HS_287018		SeqNo: 3939733		PrepDate:		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Electrical Conductivity @ saturation	0.79	0.0100					0.774	2.05	20
Electrical Conductivity, 1:1 aqueous	0.332	0.0100					0.332	0	20
Saturation % as decimal	0.42	0					0.429	2.12	20
The following samples were analyzed in this batch:									
HS16111139-01		HS16111139-02		HS16111139-03		HS16111139-04			
HS16111139-05		HS16111139-06		HS16111139-07		HS16111139-08			
HS16111139-10		HS16111139-11		HS16111139-12		HS16111139-13			
HS16111139-14		HS16111139-15		HS16111139-16		HS16111139-17			
HS16111139-19		HS16111139-20		HS16111139-21		HS16111139-22			

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**Client:** Kinder Morgan  
**Project:** McElmo Dome  
**WorkOrder:** HS16111139

**QC BATCH REPORT**

Batch ID: R287021		Instrument: WetChem_HS		Method: LaDNR-29B EC					
<b>DUP</b>	Sample ID: HS16111139-26DUP		Units: mmhos/cm @25°C		Analysis Date: 21-Dec-2016 19:07				
Client ID: MC-8-8-11-12-111716	Run ID: WetChem_HS_287021		SeqNo: 3939764		PrepDate:		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Electrical Conductivity @ saturation	0.782	0.0100					0.768	1.81	20
Electrical Conductivity, 1:1 aqueous	0.39	0.0100					0.386	1.03	20
Saturation % as decimal	0.499	0					0.503	0.798	20
The following samples were analyzed in this batch:									
HS16111139-23		HS16111139-24		HS16111139-25		HS16111139-26			

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**Client:** Kinder Morgan  
**Project:** McElmo Dome  
**WorkOrder:** HS16111139

**QUALIFIERS,  
ACRONYMS, UNITS**

<b>Qualifier</b>	<b>Description</b>
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

<b>Acronym</b>	<b>Description</b>
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

<b>Unit Reported</b>	<b>Description</b>
mg/L	Milligrams per Liter

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**CERTIFICATIONS,ACCREDITATIONS & LICENSES**

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<b>Agency</b>	<b>Number</b>	<b>Expire Date</b>
Arkansas	16-022-1	27-Mar-2017
California	2919 2016-2018	31-Jul-2018
Illinois	003872	09-May-2017
Kansas	E-10352 2016-2017	31-Jul-2017
Kentucky	96 2016-2017	30-Apr-2017
Louisiana	03087 2016-2017	30-Jun-2017
North Carolina	624 - 2016	31-Dec-2016
North Dakota	R193 2016-2017	30-Apr-2017
Oklahoma	2016-122	31-Aug-2017
Texas	TX104704231-16-17	30-Apr-2017

**Client:** Kinder Morgan  
**Project:** McElmo Dome  
**Work Order:** HS16111139

**SAMPLE TRACKING**

Lab Samp ID	Client Sample ID	Action	Date	Person	New Location
HS16111139-01	MC-8-1-0-1-111716	Login	11/23/2016 5:47:41 PM	RPG	7D
HS16111139-01	MC-8-1-0-1-111716	Login	11/23/2016 5:47:41 PM	RPG	VW-2
HS16111139-01	MC-8-1-0-1-111716	Login	11/23/2016 5:47:41 PM	RPG	BTEX B1
HS16111139-01	MC-8-1-0-1-111716	Login	11/23/2016 5:47:41 PM	RPG	7D
HS16111139-02	MC-8-1-6-7-111716	Login	11/23/2016 5:47:43 PM	RPG	7D
HS16111139-02	MC-8-1-6-7-111716	Login	11/23/2016 5:47:43 PM	RPG	VW-2
HS16111139-02	MC-8-1-6-7-111716	Login	11/23/2016 5:47:43 PM	RPG	BTEX B1
HS16111139-02	MC-8-1-6-7-111716	Login	11/23/2016 5:47:43 PM	RPG	7D
HS16111139-03	MC-8-1-9-10-111716	Login	11/23/2016 5:47:45 PM	RPG	7D
HS16111139-03	MC-8-1-9-10-111716	Login	11/23/2016 5:47:45 PM	RPG	VW-2
HS16111139-03	MC-8-1-9-10-111716	Login	11/23/2016 5:47:45 PM	RPG	BTEX B1
HS16111139-03	MC-8-1-9-10-111716	Login	11/23/2016 5:47:45 PM	RPG	7D
HS16111139-04	MC-8-2-1-2-111716	Login	11/23/2016 5:47:47 PM	RPG	7D
HS16111139-04	MC-8-2-1-2-111716	Login	11/23/2016 5:47:47 PM	RPG	VW-2
HS16111139-04	MC-8-2-1-2-111716	Login	11/23/2016 5:47:47 PM	RPG	BTEX B1
HS16111139-04	MC-8-2-1-2-111716	Login	11/23/2016 5:47:47 PM	RPG	7D
HS16111139-05	MC-8-2-8-9-111716	Login	11/23/2016 5:47:49 PM	RPG	7D
HS16111139-05	MC-8-2-8-9-111716	Login	11/23/2016 5:47:49 PM	RPG	VW-2
HS16111139-05	MC-8-2-8-9-111716	Login	11/23/2016 5:47:49 PM	RPG	BTEX B1
HS16111139-05	MC-8-2-8-9-111716	Login	11/23/2016 5:47:49 PM	RPG	7D
HS16111139-06	MC-8-2-14-15-111716	Login	11/23/2016 5:47:51 PM	RPG	7D
HS16111139-06	MC-8-2-14-15-111716	Login	11/23/2016 5:47:51 PM	RPG	VW-2
HS16111139-06	MC-8-2-14-15-111716	Login	11/23/2016 5:47:51 PM	RPG	BTEX B1
HS16111139-06	MC-8-2-14-15-111716	Login	11/23/2016 5:47:51 PM	RPG	7D
HS16111139-07	MC-8-3-1-2-111716	Login	11/23/2016 5:47:54 PM	RPG	7D
HS16111139-07	MC-8-3-1-2-111716	Login	11/23/2016 5:47:54 PM	RPG	VW-2
HS16111139-07	MC-8-3-1-2-111716	Login	11/23/2016 5:47:54 PM	RPG	BTEX B1
HS16111139-07	MC-8-3-1-2-111716	Login	11/23/2016 5:47:54 PM	RPG	7D
HS16111139-08	MC-8-3-6-7-111716	Login	11/23/2016 5:47:56 PM	RPG	7D
HS16111139-08	MC-8-3-6-7-111716	Login	11/23/2016 5:47:56 PM	RPG	VW-2
HS16111139-08	MC-8-3-6-7-111716	Login	11/23/2016 5:47:56 PM	RPG	BTEX B1
HS16111139-08	MC-8-3-6-7-111716	Login	11/23/2016 5:47:56 PM	RPG	7D
HS16111139-09	TB - 053116-13	Login	11/23/2016 5:47:58 PM	RPG	7D
HS16111139-09	TB - 053116-13	Login	11/23/2016 5:47:58 PM	RPG	VW-2
HS16111139-09	TB - 053116-13	Login	11/23/2016 5:47:58 PM	RPG	BTEX B1
HS16111139-09	TB - 053116-13	Login	11/23/2016 5:47:58 PM	RPG	7D
HS16111139-10	MC-8-3-9-10-111716	Login	11/23/2016 5:48:00 PM	RPG	7D
HS16111139-10	MC-8-3-9-10-111716	Login	11/23/2016 5:48:00 PM	RPG	VW-2
HS16111139-10	MC-8-3-9-10-111716	Login	11/23/2016 5:48:00 PM	RPG	BTEX B1
HS16111139-10	MC-8-3-9-10-111716	Login	11/23/2016 5:48:00 PM	RPG	7D



**Client:** Kinder Morgan  
**Project:** McElmo Dome  
**Work Order:** HS16111139

**SAMPLE TRACKING**

HS16111139-11	MC-8-4-2-3-111716	Login	11/23/2016 5:48:04 PM	RPG	7D
HS16111139-11	MC-8-4-2-3-111716	Login	11/23/2016 5:48:04 PM	RPG	VW-2
HS16111139-11	MC-8-4-2-3-111716	Login	11/23/2016 5:48:04 PM	RPG	BTEX B1
HS16111139-11	MC-8-4-2-3-111716	Login	11/23/2016 5:48:04 PM	RPG	7D
HS16111139-12	MC-8-4-3-4-111716	Login	11/23/2016 5:48:08 PM	RPG	7D
HS16111139-12	MC-8-4-3-4-111716	Login	11/23/2016 5:48:08 PM	RPG	VW-2
HS16111139-12	MC-8-4-3-4-111716	Login	11/23/2016 5:48:08 PM	RPG	BTEX B1
HS16111139-12	MC-8-4-3-4-111716	Login	11/23/2016 5:48:08 PM	RPG	7D
HS16111139-13	MC-8-4-8-9-111716	Login	11/23/2016 5:48:11 PM	RPG	7D
HS16111139-13	MC-8-4-8-9-111716	Login	11/23/2016 5:48:11 PM	RPG	VW-2
HS16111139-13	MC-8-4-8-9-111716	Login	11/23/2016 5:48:11 PM	RPG	BTEX B1
HS16111139-13	MC-8-4-8-9-111716	Login	11/23/2016 5:48:11 PM	RPG	7D
HS16111139-14	MC-8-5-2-3-111716	Login	11/23/2016 5:48:13 PM	RPG	7D
HS16111139-14	MC-8-5-2-3-111716	Login	11/23/2016 5:48:13 PM	RPG	VW-2
HS16111139-14	MC-8-5-2-3-111716	Login	11/23/2016 5:48:13 PM	RPG	BTEX B1
HS16111139-14	MC-8-5-2-3-111716	Login	11/23/2016 5:48:13 PM	RPG	7D
HS16111139-15	MC-8-5-4-5-111716	Login	11/23/2016 5:48:16 PM	RPG	7D
HS16111139-15	MC-8-5-4-5-111716	Login	11/23/2016 5:48:16 PM	RPG	VW-2
HS16111139-15	MC-8-5-4-5-111716	Login	11/23/2016 5:48:16 PM	RPG	BTEX B1
HS16111139-15	MC-8-5-4-5-111716	Login	11/23/2016 5:48:16 PM	RPG	7D
HS16111139-16	MC-8-5-8-9-111716	Login	11/23/2016 5:48:18 PM	RPG	7D
HS16111139-16	MC-8-5-8-9-111716	Login	11/23/2016 5:48:18 PM	RPG	VW-2
HS16111139-16	MC-8-5-8-9-111716	Login	11/23/2016 5:48:18 PM	RPG	BTEX B1
HS16111139-16	MC-8-5-8-9-111716	Login	11/23/2016 5:48:18 PM	RPG	7D
HS16111139-17	MC-8-6-2-3-111716	Login	11/23/2016 5:48:20 PM	RPG	7D
HS16111139-17	MC-8-6-2-3-111716	Login	11/23/2016 5:48:20 PM	RPG	VW-2
HS16111139-17	MC-8-6-2-3-111716	Login	11/23/2016 5:48:20 PM	RPG	BTEX B1
HS16111139-17	MC-8-6-2-3-111716	Login	11/23/2016 5:48:20 PM	RPG	7D
HS16111139-18	TB - 082916-59	Login	11/23/2016 5:48:22 PM	RPG	7D
HS16111139-18	TB - 082916-59	Login	11/23/2016 5:48:22 PM	RPG	VW-2
HS16111139-18	TB - 082916-59	Login	11/23/2016 5:48:22 PM	RPG	BTEX B1
HS16111139-18	TB - 082916-59	Login	11/23/2016 5:48:22 PM	RPG	7D
HS16111139-19	MC-8-6-5-6-111716	Login	11/23/2016 5:48:24 PM	RPG	7D
HS16111139-19	MC-8-6-5-6-111716	Login	11/23/2016 5:48:24 PM	RPG	VW-2
HS16111139-19	MC-8-6-5-6-111716	Login	11/23/2016 5:48:24 PM	RPG	BTEX B1
HS16111139-19	MC-8-6-5-6-111716	Login	11/23/2016 5:48:24 PM	RPG	7D
HS16111139-20	MC-8-6-11-12-111716	Login	11/23/2016 5:48:26 PM	RPG	7D
HS16111139-20	MC-8-6-11-12-111716	Login	11/23/2016 5:48:26 PM	RPG	VW-2
HS16111139-20	MC-8-6-11-12-111716	Login	11/23/2016 5:48:26 PM	RPG	BTEX B1
HS16111139-20	MC-8-6-11-12-111716	Login	11/23/2016 5:48:26 PM	RPG	7D
HS16111139-21	MC-8-7-2-3-111716	Login	11/23/2016 5:48:28 PM	RPG	7D
HS16111139-21	MC-8-7-2-3-111716	Login	11/23/2016 5:48:28 PM	RPG	VW-2

**Client:** Kinder Morgan  
**Project:** McElmo Dome  
**Work Order:** HS16111139

**SAMPLE TRACKING**

HS16111139-21	MC-8-7-2-3-111716	Login	11/23/2016 5:48:28 PM	RPG	BTEX B1
HS16111139-21	MC-8-7-2-3-111716	Login	11/23/2016 5:48:28 PM	RPG	7D
HS16111139-22	MC-8-7-6-7-111716	Login	11/23/2016 5:48:30 PM	RPG	7D
HS16111139-22	MC-8-7-6-7-111716	Login	11/23/2016 5:48:30 PM	RPG	VW-2
HS16111139-22	MC-8-7-6-7-111716	Login	11/23/2016 5:48:30 PM	RPG	BTEX B1
HS16111139-22	MC-8-7-6-7-111716	Login	11/23/2016 5:48:30 PM	RPG	7D
HS16111139-23	MC-8-7-13-14-111716	Login	11/23/2016 5:48:32 PM	RPG	7D
HS16111139-23	MC-8-7-13-14-111716	Login	11/23/2016 5:48:32 PM	RPG	VW-2
HS16111139-23	MC-8-7-13-14-111716	Login	11/23/2016 5:48:32 PM	RPG	BTEX B1
HS16111139-23	MC-8-7-13-14-111716	Login	11/23/2016 5:48:32 PM	RPG	7D
HS16111139-24	MC-8-8-2-3-111716	Login	11/23/2016 5:48:35 PM	RPG	7D
HS16111139-24	MC-8-8-2-3-111716	Login	11/23/2016 5:48:35 PM	RPG	VW-2
HS16111139-24	MC-8-8-2-3-111716	Login	11/23/2016 5:48:35 PM	RPG	BTEX B1
HS16111139-24	MC-8-8-2-3-111716	Login	11/23/2016 5:48:35 PM	RPG	7D
HS16111139-25	MC-8-8-9-10-111716	Login	11/23/2016 5:48:37 PM	RPG	7D
HS16111139-25	MC-8-8-9-10-111716	Login	11/23/2016 5:48:37 PM	RPG	VW-2
HS16111139-25	MC-8-8-9-10-111716	Login	11/23/2016 5:48:37 PM	RPG	BTEX B1
HS16111139-25	MC-8-8-9-10-111716	Login	11/23/2016 5:48:37 PM	RPG	7D
HS16111139-26	MC-8-8-11-12-111716	Login	11/23/2016 5:48:39 PM	RPG	7D
HS16111139-26	MC-8-8-11-12-111716	Login	11/23/2016 5:48:39 PM	RPG	VW-2
HS16111139-26	MC-8-8-11-12-111716	Login	11/23/2016 5:48:39 PM	RPG	BTEX B1
HS16111139-26	MC-8-8-11-12-111716	Login	11/23/2016 5:48:39 PM	RPG	7D
HS16111139-27	TB - 082916-81	Login	11/23/2016 5:48:42 PM	RPG	7D
HS16111139-27	TB - 082916-81	Login	11/23/2016 5:48:42 PM	RPG	VW-2
HS16111139-27	TB - 082916-81	Login	11/23/2016 5:48:42 PM	RPG	BTEX B1
HS16111139-27	TB - 082916-81	Login	11/23/2016 5:48:42 PM	RPG	7D
HS16111139-01	MC-8-1-0-1-111716	Out	12/5/2016 11:37:28 AM	PVL	METPREP
HS16111139-02	MC-8-1-6-7-111716	Out	12/5/2016 11:37:28 AM	PVL	METPREP
HS16111139-03	MC-8-1-9-10-111716	Out	12/5/2016 11:37:28 AM	PVL	METPREP
HS16111139-04	MC-8-2-1-2-111716	Out	12/5/2016 11:37:28 AM	PVL	METPREP
HS16111139-05	MC-8-2-8-9-111716	Out	12/5/2016 11:37:28 AM	PVL	METPREP
HS16111139-06	MC-8-2-14-15-111716	Out	12/5/2016 11:37:28 AM	PVL	METPREP
HS16111139-07	MC-8-3-1-2-111716	Out	12/5/2016 11:37:28 AM	PVL	METPREP
HS16111139-08	MC-8-3-6-7-111716	Out	12/5/2016 11:37:28 AM	PVL	METPREP
HS16111139-10	MC-8-3-9-10-111716	Out	12/5/2016 11:37:28 AM	PVL	METPREP
HS16111139-11	MC-8-4-2-3-111716	Out	12/5/2016 11:37:28 AM	PVL	METPREP
HS16111139-12	MC-8-4-3-4-111716	Out	12/5/2016 11:37:28 AM	PVL	METPREP
HS16111139-13	MC-8-4-8-9-111716	Out	12/5/2016 11:37:28 AM	PVL	METPREP
HS16111139-14	MC-8-5-2-3-111716	Out	12/5/2016 11:37:28 AM	PVL	METPREP
HS16111139-15	MC-8-5-4-5-111716	Out	12/5/2016 11:37:28 AM	PVL	METPREP
HS16111139-16	MC-8-5-8-9-111716	Out	12/5/2016 11:37:28 AM	PVL	METPREP
HS16111139-17	MC-8-6-2-3-111716	Out	12/5/2016 11:37:28 AM	PVL	METPREP

**Client:** Kinder Morgan  
**Project:** McElmo Dome  
**Work Order:** HS16111139

**SAMPLE TRACKING**

HS16111139-19	MC-8-6-5-6-111716	Out	12/5/2016 11:37:28 AM	PVL	METPREP
HS16111139-20	MC-8-6-11-12-111716	Out	12/5/2016 11:37:28 AM	PVL	METPREP
HS16111139-21	MC-8-7-2-3-111716	Out	12/5/2016 11:37:28 AM	PVL	METPREP
HS16111139-22	MC-8-7-6-7-111716	Out	12/5/2016 11:37:28 AM	PVL	METPREP
HS16111139-01	MC-8-1-0-1-111716	Return	12/5/2016 11:37:49 AM	PVL	7D
HS16111139-02	MC-8-1-6-7-111716	Return	12/5/2016 11:37:49 AM	PVL	7D
HS16111139-03	MC-8-1-9-10-111716	Return	12/5/2016 11:37:49 AM	PVL	7D
HS16111139-04	MC-8-2-1-2-111716	Return	12/5/2016 11:37:49 AM	PVL	7D
HS16111139-05	MC-8-2-8-9-111716	Return	12/5/2016 11:37:49 AM	PVL	7D
HS16111139-06	MC-8-2-14-15-111716	Return	12/5/2016 11:37:49 AM	PVL	7D
HS16111139-07	MC-8-3-1-2-111716	Return	12/5/2016 11:37:49 AM	PVL	7D
HS16111139-08	MC-8-3-6-7-111716	Return	12/5/2016 11:37:49 AM	PVL	7D
HS16111139-10	MC-8-3-9-10-111716	Return	12/5/2016 11:37:49 AM	PVL	7D
HS16111139-11	MC-8-4-2-3-111716	Return	12/5/2016 11:37:49 AM	PVL	7D
HS16111139-12	MC-8-4-3-4-111716	Return	12/5/2016 11:37:49 AM	PVL	7D
HS16111139-13	MC-8-4-8-9-111716	Return	12/5/2016 11:37:49 AM	PVL	7D
HS16111139-14	MC-8-5-2-3-111716	Return	12/5/2016 11:37:49 AM	PVL	7D
HS16111139-15	MC-8-5-4-5-111716	Return	12/5/2016 11:37:49 AM	PVL	7D
HS16111139-16	MC-8-5-8-9-111716	Return	12/5/2016 11:37:49 AM	PVL	7D
HS16111139-17	MC-8-6-2-3-111716	Return	12/5/2016 11:37:49 AM	PVL	7D
HS16111139-19	MC-8-6-5-6-111716	Return	12/5/2016 11:37:49 AM	PVL	7D
HS16111139-20	MC-8-6-11-12-111716	Return	12/5/2016 11:37:49 AM	PVL	7D
HS16111139-21	MC-8-7-2-3-111716	Return	12/5/2016 11:37:49 AM	PVL	7D
HS16111139-22	MC-8-7-6-7-111716	Return	12/5/2016 11:37:49 AM	PVL	7D
HS16111139-23	MC-8-7-13-14-111716	Out	12/5/2016 2:11:50 PM	PVL	METPREP
HS16111139-24	MC-8-8-2-3-111716	Out	12/5/2016 2:11:50 PM	PVL	METPREP
HS16111139-25	MC-8-8-9-10-111716	Out	12/5/2016 2:11:50 PM	PVL	METPREP
HS16111139-26	MC-8-8-11-12-111716	Out	12/5/2016 2:11:50 PM	PVL	METPREP
HS16111139-23	MC-8-7-13-14-111716	Return	12/5/2016 2:12:19 PM	PVL	7D
HS16111139-24	MC-8-8-2-3-111716	Return	12/5/2016 2:12:19 PM	PVL	7D
HS16111139-25	MC-8-8-9-10-111716	Return	12/5/2016 2:12:19 PM	PVL	7D
HS16111139-26	MC-8-8-11-12-111716	Return	12/5/2016 2:12:19 PM	PVL	7D
HS16111139-01	MC-8-1-0-1-111716	Out	12/10/2016 3:45:39 PM	JCJ	METPREP
HS16111139-02	MC-8-1-6-7-111716	Out	12/10/2016 3:45:39 PM	JCJ	METPREP
HS16111139-03	MC-8-1-9-10-111716	Out	12/10/2016 3:45:39 PM	JCJ	METPREP
HS16111139-04	MC-8-2-1-2-111716	Out	12/10/2016 3:45:39 PM	JCJ	METPREP
HS16111139-05	MC-8-2-8-9-111716	Out	12/10/2016 3:45:39 PM	JCJ	METPREP
HS16111139-06	MC-8-2-14-15-111716	Out	12/10/2016 3:45:39 PM	JCJ	METPREP
HS16111139-07	MC-8-3-1-2-111716	Out	12/10/2016 3:45:39 PM	JCJ	METPREP
HS16111139-08	MC-8-3-6-7-111716	Out	12/10/2016 3:45:39 PM	JCJ	METPREP
HS16111139-10	MC-8-3-9-10-111716	Out	12/10/2016 3:45:39 PM	JCJ	METPREP
HS16111139-11	MC-8-4-2-3-111716	Out	12/10/2016 3:45:39 PM	JCJ	METPREP

**Client:** Kinder Morgan  
**Project:** McElmo Dome  
**Work Order:** HS16111139

**SAMPLE TRACKING**

HS16111139-12	MC-8-4-3-4-111716	Out	12/10/2016 3:45:39 PM	JCJ	METPREP
HS16111139-13	MC-8-4-8-9-111716	Out	12/10/2016 3:45:39 PM	JCJ	METPREP
HS16111139-01	MC-8-1-0-1-111716	Return	12/10/2016 3:45:58 PM	JCJ	7D
HS16111139-02	MC-8-1-6-7-111716	Return	12/10/2016 3:45:58 PM	JCJ	7D
HS16111139-03	MC-8-1-9-10-111716	Return	12/10/2016 3:45:58 PM	JCJ	7D
HS16111139-04	MC-8-2-1-2-111716	Return	12/10/2016 3:45:58 PM	JCJ	7D
HS16111139-05	MC-8-2-8-9-111716	Return	12/10/2016 3:45:58 PM	JCJ	7D
HS16111139-06	MC-8-2-14-15-111716	Return	12/10/2016 3:45:58 PM	JCJ	7D
HS16111139-07	MC-8-3-1-2-111716	Return	12/10/2016 3:45:58 PM	JCJ	7D
HS16111139-08	MC-8-3-6-7-111716	Return	12/10/2016 3:45:58 PM	JCJ	7D
HS16111139-10	MC-8-3-9-10-111716	Return	12/10/2016 3:45:58 PM	JCJ	7D
HS16111139-11	MC-8-4-2-3-111716	Return	12/10/2016 3:45:58 PM	JCJ	7D
HS16111139-12	MC-8-4-3-4-111716	Return	12/10/2016 3:45:58 PM	JCJ	7D
HS16111139-13	MC-8-4-8-9-111716	Return	12/10/2016 3:45:58 PM	JCJ	7D
HS16111139-14	MC-8-5-2-3-111716	Out	12/10/2016 3:48:06 PM	JCJ	METPREP
HS16111139-15	MC-8-5-4-5-111716	Out	12/10/2016 3:48:06 PM	JCJ	METPREP
HS16111139-16	MC-8-5-8-9-111716	Out	12/10/2016 3:48:06 PM	JCJ	METPREP
HS16111139-17	MC-8-6-2-3-111716	Out	12/10/2016 3:48:06 PM	JCJ	METPREP
HS16111139-19	MC-8-6-5-6-111716	Out	12/10/2016 3:48:06 PM	JCJ	METPREP
HS16111139-20	MC-8-6-11-12-111716	Out	12/10/2016 3:48:06 PM	JCJ	METPREP
HS16111139-21	MC-8-7-2-3-111716	Out	12/10/2016 3:48:06 PM	JCJ	METPREP
HS16111139-22	MC-8-7-6-7-111716	Out	12/10/2016 3:48:06 PM	JCJ	METPREP
HS16111139-23	MC-8-7-13-14-111716	Out	12/10/2016 3:48:06 PM	JCJ	METPREP
HS16111139-24	MC-8-8-2-3-111716	Out	12/10/2016 3:48:06 PM	JCJ	METPREP
HS16111139-25	MC-8-8-9-10-111716	Out	12/10/2016 3:48:06 PM	JCJ	METPREP
HS16111139-26	MC-8-8-11-12-111716	Out	12/10/2016 3:48:06 PM	JCJ	METPREP
HS16111139-14	MC-8-5-2-3-111716	Return	12/10/2016 3:48:25 PM	JCJ	7D
HS16111139-15	MC-8-5-4-5-111716	Return	12/10/2016 3:48:25 PM	JCJ	7D
HS16111139-16	MC-8-5-8-9-111716	Return	12/10/2016 3:48:25 PM	JCJ	7D
HS16111139-17	MC-8-6-2-3-111716	Return	12/10/2016 3:48:25 PM	JCJ	7D
HS16111139-19	MC-8-6-5-6-111716	Return	12/10/2016 3:48:25 PM	JCJ	7D
HS16111139-20	MC-8-6-11-12-111716	Return	12/10/2016 3:48:25 PM	JCJ	7D
HS16111139-21	MC-8-7-2-3-111716	Return	12/10/2016 3:48:25 PM	JCJ	7D
HS16111139-22	MC-8-7-6-7-111716	Return	12/10/2016 3:48:25 PM	JCJ	7D
HS16111139-23	MC-8-7-13-14-111716	Return	12/10/2016 3:48:25 PM	JCJ	7D
HS16111139-24	MC-8-8-2-3-111716	Return	12/10/2016 3:48:25 PM	JCJ	7D
HS16111139-25	MC-8-8-9-10-111716	Return	12/10/2016 3:48:25 PM	JCJ	7D
HS16111139-26	MC-8-8-11-12-111716	Return	12/10/2016 3:48:25 PM	JCJ	7D

## Sample Receipt Checklist

Client Name: Kinder Morgan  
Work Order: HS16111139

Date/Time Received: **23-Nov-2016 08:51**  
Received by: **NDR**

Checklist completed by: Cesar A. Lira 25-Nov-2016 Reviewed by: Corey Grandits 28-Nov-2016  
eSignature Date eSignature Date

Matrices: **Solid, water**

Carrier name: **FedEx**

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on shipping container/cooler?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
TX1005 solids received in hermetically sealed vials?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Container/Temp Blank temperature in compliance?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temperature(s)/Thermometer(s):	3.0/3.3 3.9/4.2 4.6/4.9 uc/c 11		
Cooler(s)/Kit(s):	23709, 23949, 4077		
Date/Time sample(s) sent to storage:	11/25/2016 12:00pm		
Water - VOA vials have zero headspace?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	No VOA vials submitted <input type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>
pH adjusted?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	N/A <input type="checkbox"/>
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:



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# Chain of Custody Form

Page 1 of 1

COC ID: 148124

HS16111139

WV

Kinder Morgan

McElmo Dome



ALS Project Manager:

Customer Information		Project Information	
Purchase Order	Workorder Dir. 47971	Project Name	McElmo Dome
Work Order		Project Number	CO002255.0001
Company Name	Kinder Morgan	Bill To Company	Kinder Morgan CO2 Company, L.P.
Send Report To	Aaron Hale	Invoice Attn	Mike Hannigan
Address	1001 Louisiana Street Suite 740D	Address	17801 Highway 491
City/State/Zip	Houston, TX 77002	City/State/Zip	Cortez, CO 81321
Phone	(713) 369-9193	Phone	(970) 882-5532
Fax	(713) 495-2835	Fax	
e-Mail Address		e-Mail Address	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MC-8-1-0-1-111716	11/7/16	0745	Soil	—	4	X	X	X	X	X	X	X	X	X	X	
2	MC-8-1-6-7-111716		0810														
3	MC-8-1-9-10-111716		0815														
4	MC-8-2-1-2-111716		0830														
5	MC-8-2-8-9-111716		0850														
6	MC-8-2-14-15-111716		0915														
7	MC-8-3-1-2-111716		0930														
8	MC-8-3-6-7-111716		1010														
9	Trip Blank					2											
10																	

Sampler(s) Please Print & Sign <i>Bethany Draeger</i>		Shipment Method <b>Fed Ex</b>		Required Turnaround Time: (Check Box) TAT <b>10 days</b> Other _____		Results Due Date:	
Relinquished by: <i>Bethany Draeger</i>	Date: <i>11/20/16</i>	Time: <i>1600</i>	Received by: <i>NK</i>	Received by (Laboratory): <i>11/23/16 09:47</i>		Notes: [KM CO2 RFP 16MDLRFP077]	
Relinquished by:	Date:	Time:	Checked by (Laboratory):	Cooler ID <i>23709</i>	Cooler Temp. <i>4/C</i>	QC Package: (Check One Box Below)	
Logged by (Laboratory):	Date:	Time:				QC Level <b>STD</b>	
Preservative Key: 1-HCl 2-HNO <sub>3</sub> 3-H <sub>2</sub> SO <sub>4</sub> 4-NaOH 5-Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> 6-NaHSO <sub>4</sub> 7-Other 8-4°C 9-5035				Other:			

ote: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.  
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the scope of the contract.



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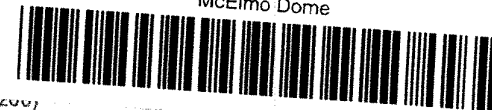
# Chain of Custody Form

Page 1 of 1

COC ID: **148131**

**HS16111139**

Kinder Morgan  
McElmo Dome



Customer Information			Project Information			ALS Project Manager:										
Purchase Order	Workorder Dir. 47971		Project Name	McElmo Dome		A 8260_S (B1 CA 9200)										
Work Order			Project Number	CO002255.0001		B 8015_GRO_S (GRO 8015)										
Company Name	Kinder Morgan		Bill To Company	Kinder Morgan CO2 Company, L.P.		C 8015M_S_LL (DRO 8015)										
Send Report To	Aaron Hale		Invoice Attn	Mike Hannigan		D LA29B SAR (SAR & EC)										
Address	1001 Louisiana Street Suite 740D		Address	17801 Highway 491		E PH_S (pH)										
City/State/Zip	Houston, TX 77002		City/State/Zip	Cortez, CO 81321		F ICP_S_Low (As, Ba, B, Cd, Cr, Cu, Pb, Ni, Se, Ag, Zn)										
Phone	(713) 369-9193		Phone	(970) 882-5532		G HG_S_Low (Mercury)										
Fax	(713) 495-2835		Fax			H Cr3_S (Trivalent Chromium)										
e-Mail Address			e-Mail Address			I Cr6_S (Hexavalent Chromium)										
						J MOIST_SW3550 (Moisture)										

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MC-8-3-9-10-111716	11/17/16	1015	Soil	—	4	X	X	X	X	X	X	X	X	X	X	
2	MC-8-4-2-3-111716		1115														
3	MC-8-4-3-4-111716		1120														
4	MC-8-4-8-9-111716		1130														
5	MC-8-5-2-3-111716		1430														
6	MC-8-5-4-5-111716		1440														
7	MC-8-5-8-9-111716		1500														
8	MC-8-6-2-3-111716		1330														
9	Trip Blank					2											
10																	

Sampler(s) Please Print & Sign		Shipment Method		Required Turnaround Time: (Check Box)		Results Due Date:	
Bethany Draeger <i>B. Draeger</i>		FedEx		TAT <u>10 days</u> Other: _____			
Relinquished by:	Date:	Time:	Received by:	Notes:			
Bethany Draeger	11/20/16	1400		[KM CO2 RFP 16MDLRF077]			
Relinquished by:	Date:	Time:	Received by (Laboratory):	Cooler ID	Cooler Temp.	QC Package: (Check One Box Below)	
			NK 11/23/16 08:51	23949	4/C	QC Level <u>STD</u>	
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):	Other: _____			

Preservative Key: 1-HCl 2-HNO<sub>3</sub> 3-H<sub>2</sub>SO<sub>4</sub> 4-NaOH 5-Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub> 6-NaHSO<sub>4</sub> 7-Other 8-4°C 9-5035

- note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.  
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions of this form.



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# Chain of Custody Form

Page 1 of 1

COC ID: **148129**

**HS16111139**

Kinder Morgan

McElmo Dome



Customer Information		Project Information		ALS Project Manager:	
Purchase Order	Workorder Dir. 47971	Project Name	McElmo Dome	A	8266
Work Order		Project Number	CO002255.0001	B	8015_GRO_S (GRO 8015)
Company Name	Kinder Morgan	Bill To Company	Kinder Morgan CO2 Company, L.P.	C	8015M_S_LL (DRO 8015)
Send Report To	Aaron Hale	Invoice Attn	Mike Hannigan	D	LA29B SAR (SAR & EC)
Address	1001 Louisiana Street Suite 740D	Address	17801 Highway 491	E	PH_S (pH)
City/State/Zip	Houston, TX 77002	City/State/Zip	Cortez, CO 81321	F	ICP_S_Low (As,Ba,B,Cd,Cr,Cu,Pb,Ni,Se,Ag,Zn)
Phone	(713) 369-9193	Phone	(970) 882-5532	G	HG_S_Low (Mercury)
Fax	(713) 495-2835	Fax		H	Cr3_S (Trivalent Chromium)
e-Mail Address		e-Mail Address		I	Cr6_S (Hexavalent Chromium)
				J	MOIST_SW3550 (Moisture)

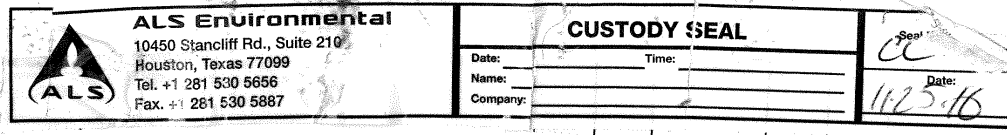
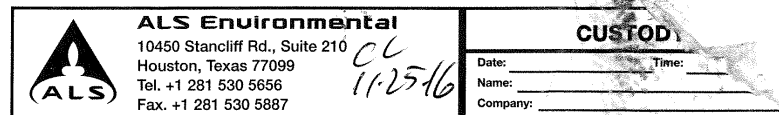
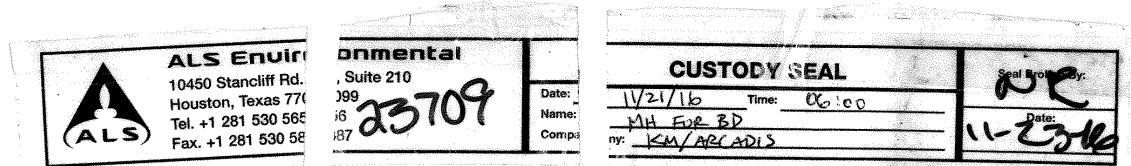
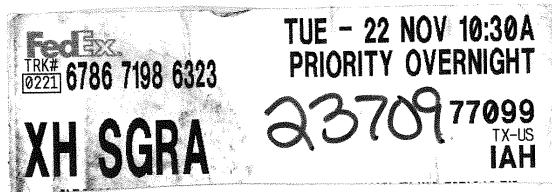
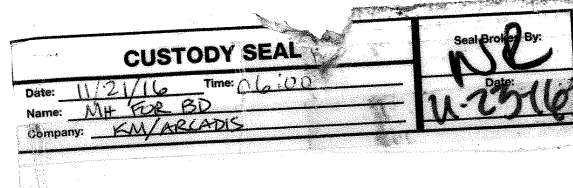
No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	MC-8-6-5-6-111716	11/17/16	1345	Soil	—	4	X	X	X	X	X	X	X	X	X	X	
2	MC-8-6-11-12-111716		1410														
3	MC-8-7-2-3-111716		1230														
4	MC-8-7-6-7-111716		1245														
5	MC-8-7-13-14-111716		1315														
6	MC-8-8-2-3-111716		1145														
7	MC-8-8-9-10-111716		1200														
8	MC-8-8-11-12-111716		1210														
9	Trip Blank					2											
10																	

Sampler(s) Please Print & Sign		Shipment Method		Required Turnaround Time: (Check Box)		Results Due Date:	
Bethany Draeger <i>B. Draeger</i>		Fed Ex		TAT <u>10 days</u>			
Relinquished by:		Date:	Time:	Received by:		Notes:	
Bethany Draeger		11/20/16	1600	NA 11/23/16 DB-51		[KM CO2 RFP 16MDLRFP077]	
Relinquished by:		Date:	Time:	Received by (Laboratory):		Cooler ID	
						4071	
Logged by (Laboratory):		Date:	Time:	Checked by (Laboratory):		Cooler Temp.	
						416	
Preservative Key: 1-HCl 2-HNO <sub>3</sub> 3-H <sub>2</sub> SO <sub>4</sub> 4-NaOH 5-Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> 6-NaHSO <sub>4</sub> 7-Other 8-4°C 9-5035				QC Package: (Check One Box Below)			
				QC Level <u>STD</u>			
				Other:			



ote: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.  
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.  
3. The Chain of Custody is a legal document. All signatures must be legible.



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4077

 <b>ALS Environmental</b> 10450 Stancliff Rd., Suite 210 Houston, Texas 77099 Tel. +1 281 530 5656 Fax. +1 281 530 5887	<b>CUSTODY SEAL</b>		Seal Broken By:  Date: <u>11-25-16</u>
	Date: _____	Time: _____	
	Name: _____	_____	
	Company: _____	_____	

 <b>ALS Environmental</b> 10450 Stancliff Rd., Suite 210 Houston, Texas 77099 Tel. +1 281 530 5656 Fax. +1 281 530 5887	<b>CUSTODY SEAL</b>		Seal Broken By:  Date: <u>11-25-16</u>
	Date: _____	Time: _____	
	Name: _____	_____	
	Company: _____	_____	

<b>FedEx</b> TRK# <u>0221</u> <b>6786 7200 4472</b>	<b>TUE - 22 NOV 10:30A</b> <b>PRIORITY OVERNIGHT</b>
<b>XH SGRA</b>	<b>77099</b> TX-US IAH
	
<small>FTD 962783 21NOV16 DRDA 639C3/CBB1/REBA</small>	

# ATTACHMENT F

CDPHE White Paper on Arsenic Concentrations in Soil





# Arsenic Concentrations in Soil

## Risk management guidance for evaluating

reviewed/revised July 2014

### Regulatory Limitation

This guidance does not modify, replace, or pre-empt any existing statutory or regulatory requirements, enforcement actions, agreements, policies or other legal mechanisms that may govern actions within the Hazardous Materials and Waste Management Division's (the "division's") various remedial programs. In the event of a conflict between this guidance and existing risk assessment guidance and other programmatic requirements, this guidance defers to the various legal and operating mechanisms of those remedial programs.

This guidance was developed with the division's remedial programs in mind. Other state and federal agencies are not obligated to use the process outlined herein, although the same analysis could apply to other sites undergoing investigation and cleanup where testing for arsenic is required and it may be present in sampled environmental media. Parties wanting to use this guidance at their site must seek approval to do so from the regulatory agency responsible for overseeing their remedial activities.

### Purpose

The division has prepared this guidance for the purpose of making preliminary determinations when screening data collected from sites that don't necessarily have a reason to believe arsenic contamination may be present, such as a routine Phase II investigation conducted prior to a property transaction. This guidance is simply meant to inform the regulated community of their responsibilities in managing arsenic risks: it is not regulation, nor does it constitute an enforceable standard that must be complied with.

### Background

Arsenic is naturally occurring in some geologic environments in Colorado due to weathering and erosion of bedrock and soil, including highly mineralized areas that are mined for metal ores. It is present in more than 200 different minerals, the most common of which is called arsenopyrite. It may also be present in the environment due to a number of anthropogenic activities including: military operations and firing ranges; mining, especially sulfide ores; smelting copper, gold and lead ores; preservation of wood (CCA); chicken feed operations and associated manures (CAFO) due to arsenic-containing growth promoters; tanning and taxidermy operations; coal-burning emissions and ash-derived residues from power plants; and may be present in landfills and landfill-derived leachate. Arsenic may also be found due to the manufacture, use and disposal of: ammunition; fireworks; pigments (paint, paper, ceramics, etc.); older herbicides, insecticides, and pesticides (examples: monosodium methanearsonate (MSMA), disodium methanearsonate (DSMA) and lead-arsonate); electronics containing Gallium-Arsenide-Selenium (GAS) semi-conductors; lead acid battery plates; glass; and some pharmaceuticals. Other anthropogenic arsenic sources may likely exist. Arsenic contamination in soil is of public health concern due to its toxic effects as a carcinogen and a non-carcinogen. Making risk management decisions about arsenic can be difficult because natural occurring concentrations in soil often exceed carcinogenic risk based exposure values.

This guidance was prepared by the division using a data set of background arsenic concentrations developed by the U.S. EPA Region 8. The data set includes over 2,700 samples from 44 counties in Colorado. The areas sampled included: native grasslands; agricultural areas; urban mixed land use; and mining. A summary of the data set is presented in the table below. The complete data set may be found on the U.S. EPA Region 8's website at <http://www2.epa.gov/region8/hh-exposure-assessment>.

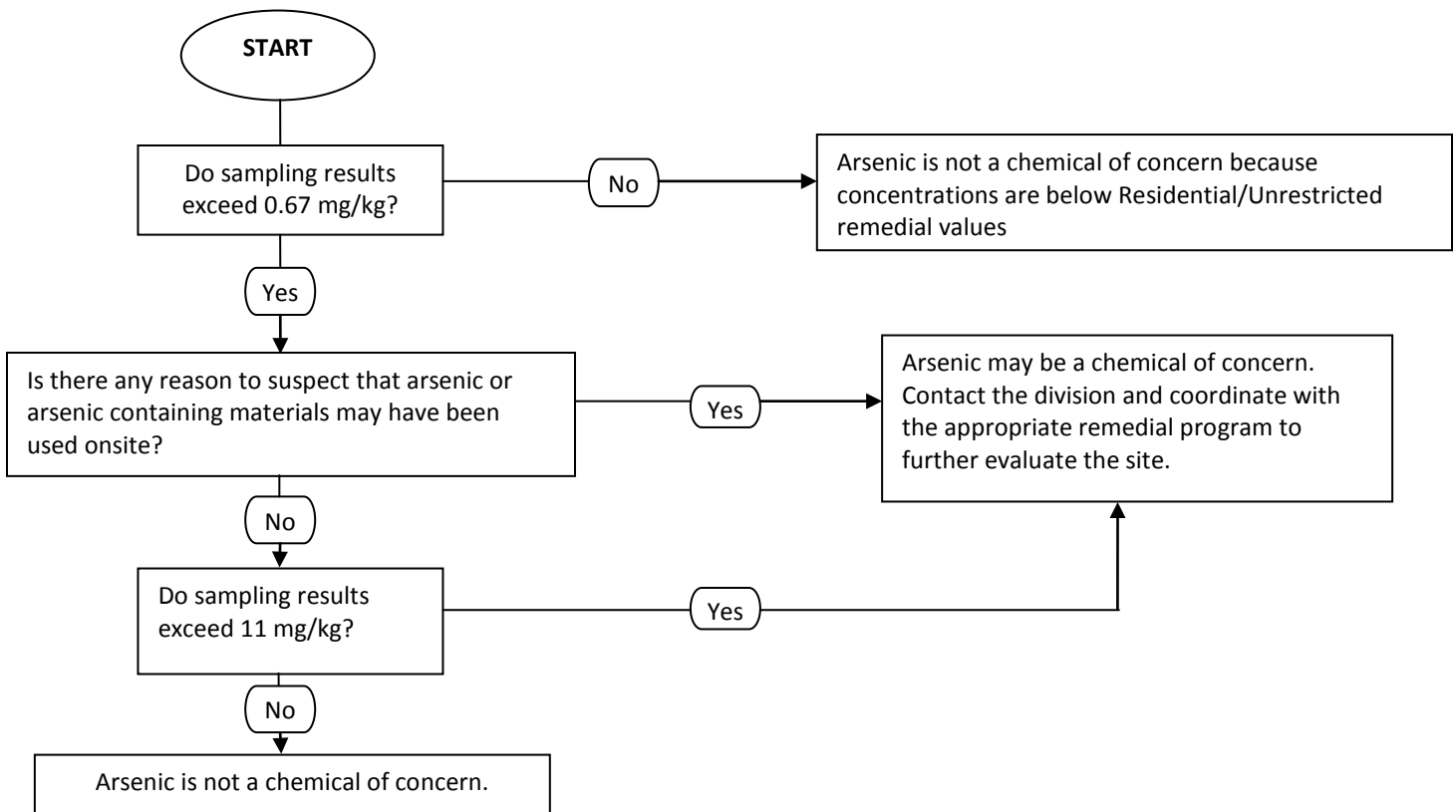
**Region 8 U.S. EPA 95% UCLM Background Soil Arsenic Concentrations in Colorado**

Land Use	Concentration (mg/kg)
Native Grassland, Rangeland, or Agriculture	3-14
Urban Mixed Use	6-19
Mining	10
Average of all land uses	11

## Division Guidance Regarding Background Arsenic Concentration

The division's approach to evaluating arsenic in soil is depicted in the following flowchart. This guidance assumes that, based upon the size, history and environmental concerns associated with a particular site, an adequate amount of arsenic data has been obtained to make a determination regarding arsenic concentrations in soil. It isn't meant to be a guide on how to conduct a background study for risk assessment and/or site closure purposes. Guidance on the subject of data collection and analysis needs for conducting a background study should be sought from other published sources. Soil samples should be collected and analyzed for arsenic if the site history suggests it may be present as a result of anthropogenic activities. However, since arsenic is one of the chemicals included as part of a standard "metals" analysis package from a laboratory, you may already have obtained arsenic data for your site.

The current residential/unrestricted land use remedial objective for inorganic arsenic is 0.67 mg/kg (U.S. EPA regional screening level). If arsenic concentrations at your site are lower than 0.67 mg/kg, the division will require no further action to address arsenic in soil. If arsenic concentrations are lower than 11 mg/kg (the average of the 95% UCLM of background concentrations found by the U.S. EPA in Colorado), and releases of arsenic could not have occurred at the site, based on historical data or process knowledge, the division will require no further action to address arsenic in soil. If arsenic concentrations are greater than 0.67 mg/kg, and the available information suggests that a release of arsenic could have occurred at the site, the division will require additional evaluation of the data and possibly additional sampling to determine whether corrective measures for arsenic are required. This evaluation may include a site specific background study with sampling from offsite locations, and/or additional sampling in areas of the site where activities that could have contributed to environmental contamination never occurred. Please consult with the division prior to performing any background study. If it can be demonstrated that arsenic concentrations in soil are unrelated to site activities, the division will require no further action regarding arsenic. It should be noted that material such as arsenic-bearing mine tailings or oil and gas drill cuttings, although derived from a naturally occurring source material, are not considered to be naturally occurring background once they have been generated through human activity. Therefore, mine tailings and drill cuttings may be subject to remediation if ecological or health-based concentrations are exceeded.



### For more information please contact:

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