

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



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

#6415

FOR OGCC USE ONLY

RECEIVED
10/5/2011

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.

CAUSE OF CONDITION BEING INVESTIGATED AND REMEDIATED

☐ Spill or Release ☐ Plug & Abandon ☐ Central Facility Closure ☐ Site/Facility Closure ☒ Other (describe): Pit closures

OGCC Employee:

☐ Spill ☐ Complaint☐ Inspection ☐ NOAV

Tracking No:

OGCC Operator Number: 100264

Name of Operator: XTO Energy, Inc.

Address: 382 County Road 3100

City: Aztec

State: NM Zip: 87410

Contact Name and Telephone:

Jody Mecham

No: (435) 722-4521

Fax: (435) 722-5004

API Number: 05-103-10918

County: Rio Blanco

Facility Name: Piceance Creek

Facility Number:

Well Name: Federal #1S-96-9-11BP

Well Number: Federal #1S-96-9-11BP

Location: (QtrQtr, Sec, Twp, Rng, Meridian): NWNW S9, T1S, R96W, 6th P.M. Latitude: 39.990327 Longitude: 108.17745

TECHNICAL CONDITIONS

Type of Waste Causing Impact (crude oil, condensate, produced water, etc.): Drill cuttings and fluids

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.): Rangeland

Soil type, if not previously identified on Form 2A or Federal Surface Use Plan: Rentsac channery loam

Potential receptors (water wells within 1/4 mi, surface waters, etc.): There are no water wells or surface waters within 1/4 mile of the subject location.

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

Impacted Media (check):

Extent of Impact:

How Determined:



Soils

pH

Laboratory analyses on soil samples. The pH



Vegetation

values exceed Table 910-1 allowable levels



Groundwater

(refer to Table 1 - Laboratory Results



Surface Water

Summary Table).

REMEDIALATION WORKPLAN

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

Three pits at this site are identified for closure: Freshwater Pit, Cuttings Pit and Reserve Pit. Samples were collected from all three pits and submitted to an analytical laboratory for Table 910-1 constituent analysis. Elevated TPH levels were detected in the Cuttings Pit (3,207.4 mg/Kg) and Reserve Pit A (1,526.70 mg/Kg). Background samples were also collected to establish arsenic background concentration levels. Please refer to Table 1 - Laboratory Results Summary Table.

Describe how source is to be removed:

Pit synthetic liners were removed and sent to an offsite permitted disposal facility. Pit contents exceeding TPH concentration levels were mix/blended with on-site spoils. All pit content material will be buried in place with a minimum 3-foot cover of clean, native soils.

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.:

Native soil is being used as surface fill for the top three feet of pits. Approval of site-specific background arsenic levels to be used in lieu of Table 910-1 limits is requested. See attached Form 4 - Sundry Notice regarding arsenic levels.

Fed 15-96-9-11BP

FORM
27
Rev 6/99

State of Colorado
Oil and Gas Conservation Commission
1120 Lincoln Street, Suite 801, Denver, Colorado 80203
(303)894-2100 Fax: (303)894-2109



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

Page 2

REMEDATION WORKPLAN (Cont.)

OGCC Employee: _____

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

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.

Pit contents from both the Cuttings Pit and Reserve Pit A were mix/blended with clean on-site spoils to reduce TPH concentrations below Table 910-1 levels. A minimum of 3-feet cover of clean native soils will be placed over the pit contents; thereby meeting the criteria to allow placement of soils exceeding SAR and pH values. Arsenic concentrations in the pits are below maximum background arsenic levels when a 10% variability factor is applied to background soil concentration values for arsenic (see Attached Sundry Notice).

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:

Soil samples were collected below each of the synthetic pit liners (Cuttings Pit and Reserve Pit A) and from the pit bottoms (Freshwater Pit and Reserve Pit B, liners previously removed) and submitted to an analytical laboratory for Table 910-1 constituent analyses. Additionally, five (5) soil samples were collected from undisturbed areas adjacent to the pit locations and submitted to a laboratory to establish the background concentration level for arsenic. Analytical results are presented in the attached Laboratory Results Summary Table. With the exception of pH, SAR and arsenic, underliner impacts were below Table 910-1 constituent levels; subliner arsenic levels were below maximum allowable levels when the 10% variability factor is applied to the highest background concentration ($48.2 \text{ mg/kg} \times 1.1 = 53.02 \text{ mg/kg}$). Complete laboratory reports are available upon request. A minimum of 3-feet cover of clean native soils will be placed over the pit contents; thereby meeting criteria to allow placement of soils exceeding Table 910-1 pH and SAR values.

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

Pit contents have been processed on site by mix/blend methods to reduce TPH constituent concentrations below Table 910-1 levels and will be buried on site. Post remediation TPH samples collected of the Cuttings Pit and Reserve Pit A samples were 124.35 mg/Kg and 432 mg/Kg, respectively. A minimum 3-foot of native clean soils will be placed over the buried material. The synthetic liners were removed from the Cuttings Pit and Reserve Pit A and transported to Wray Gulch Landfill near Meeker, CO for disposal.

IMPLEMENTATION SCHEDULE

Date Site Investigation Began: 07/14/11	Date Site Investigation Completed: 09/23/11	Date Remediation Plan Submitted: 10/05/11
Remediation Start Date: ASAP	Anticipated Completion Date: TBD	Actual Completion Date: TBD

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

Print Name: Jessica Darling

Signed: _____

Title: Environmental Coordinator

Date: 10/5/2011

OGCC Approved: _____

Title: For Chris Canfield

Date: 10/14/2011

EPS NW Region

State of Colorado
Oil and Gas Conservation Commission

1120 Lincoln Street, Suite 801, Denver, Colorado 80203 Phone: (303) 854-7100 Fax: (303) 854-7105



SUNDRY NOTICE

Submit original plus one copy. This form is to be used for general technical and environmental sundry information. For proposed or completed operations, describe in full on Technical Information Page (Page 2 of this form). Identify well or other facility by API Number or by OGCC Facility ID. Operator shall send an informational copy of all sundry notices for wells located in High Density Areas to the Local Government Designee (Rule 603b).

1 OGCC Operator Number	100264	1 Contact Name	Jody Mecham	Complete the Attachment Checklist	
2 Name of Operator	XTO Energy, Inc.	Phone	(435) 722 4521		
3 Address	382 County Road 3100	Fax	(435) 722 5004		
City	Aztec	State	NM	Zip	87410
5 API Number	05-103 10918	OGCC Facility ID Number			
6 Well/Facility Name	Federal #15 96 9 11BP	7 Well/Facility Number	Federal #15 96 9 11BP	Survey Plat	
8 Location (Otr/Otr Sec Twp Rng Meridian)	NWNW S9 T1S R96W, 6th P.M.		Directional Survey		
9 County	Rio Blanco	10 Field Name	Piceance Creek	Surface Eqmt Diagram	
11 Federal Indian or State Lease Number	COC-61131			Technical Info Page	
				Other	

General Notice

☐ **CHANGE OF LOCATION:** Attach New Survey Plat (a change of surface qtr/qtr is substantive and requires a new permit)

Change of **Surface** Footage from Exterior Section Lines ☐ Full/FSL ☐ Full/FSL ☐ Full/FSL ☐ Full/FSL

Change of **Surface** Footage to Exterior Section Lines ☐ Full/FSL ☐ Full/FSL ☐ Full/FSL ☐ Full/FSL

Change of **Bottomhole** Footage from Exterior Section Lines ☐ Full/FSL ☐ Full/FSL ☐ Full/FSL ☐ Full/FSL

Change of **Bottomhole** Footage to Exterior Section Lines ☐ Full/FSL ☐ Full/FSL ☐ Full/FSL ☐ Full/FSL

Bottomhole location Qtr/Otr Sec Twp Rng Mer ☐ attach directional survey

Latitude Distance to nearest property line Distance to nearest bldg, public rd, utility or RR

Longitude Distance to nearest lease line Is location in a High Density Area (rule 603b)? Yes/No ☐

Ground Elevation Distance to nearest well same formation Surface owner consultation date

GPS DATA:
Date of Measurement PDOP Reading Instrument Operator's Name

☐ **CHANGE SPACING UNIT**
Formation Formation Code Spacing order number Unit Acreage Unit configuration

☐ Remove from surface bond
Signed surface use agreement attached ☐

☐ **CHANGE OF OPERATOR (prior to drilling):**
Effective Date
Plugging Bond ☐ Blanket ☐ Individual

☐ **CHANGE WELL NAME** ☐ **NUMBER**
From To
Effective Date

☐ **ABANDONED LOCATION:**
Was location ever built? ☐ Yes ☐ No
Is site ready for inspection? ☐ Yes ☐ No
Date Ready for Inspection

☐ **NOTICE OF CONTINUED SHUT IN STATUS**
Date well shut in or temporarily abandoned
Has Production Equipment been removed from site? ☐ Yes ☐ No
MIT required if shut in longer than two years Date of last MIT

☐ **SPUD DATE:**

☐ **REQUEST FOR CONFIDENTIAL STATUS** (5 mos from date casing set)

☐ **SUBSEQUENT REPORT OF STAGE, SQUEEZE OR REMEDIAL CEMENT WORK**
Method used Cementing tool setting/perf depth Cement volume Cement top Cement bottom Date

*submit cbl and cement job summaries

☐ **RECLAMATION:** Attach technical page describing final reclamation procedures per Rule 1004.
Final reclamation will commence on approximately ☐ Final reclamation is completed and site is ready for inspection

Technical Engineering/Environmental Notice

☐ Notice of Intent ☐ Report of Work Done
Approximate Start Date Date Work Completed

Details of work must be described in full on Technical Information Page (Page 2 must be submitted.)

<input type="checkbox"/> Intent to Recomplete (submit form 2)	<input type="checkbox"/> Request to Vent or Flare	<input type="checkbox"/> E&P Waste Disposal
<input type="checkbox"/> Change Drilling Plans	<input type="checkbox"/> Repair Well	<input type="checkbox"/> Beneficial Reuse of E&P Waste
<input type="checkbox"/> Gross Interval Changed?	<input type="checkbox"/> Rule 502 variance requested	<input type="checkbox"/> Status Update/Change of Remediation Plans
<input type="checkbox"/> Casing/Cementing Program Change	<input checked="" type="checkbox"/> Other See Page 2	for Spills and Releases

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

Signed Jessica Darling Date 10/5/2011 Email jessica-darling@xtoenergy.com
Print Name Jess Darling Title Environmental Coordinator

COGCC Approved Chris Canfield Title FOR Date 10/14/2011
CONDITIONS OF APPROVAL IF ANY E&P NW Region

TECHNICAL INFORMATION PAGE



FOR OGCC USE ONLY

1. OGCC Operator Number: 100264 API Number: 05-103-10918
 2. Name of Operator: XTO Energy, Inc. OGCC Facility ID #
 3. Well/Facility Name: Federal #1S-96-9-11BP Well/Facility Number: 1S-96-9-11BP
 4. Location (QtrQtr, Sec, Twp, Rng, Meridian): NWNW S9, T1S, R96W, 6th P.M.

This form is to be completed whenever a Sundry Notice is submitted requiring detailed report of work to be performed or completed. This form shall be transmitted within 30 days of work completed as a "subsequent" report and must accompany Form 4, page 1.

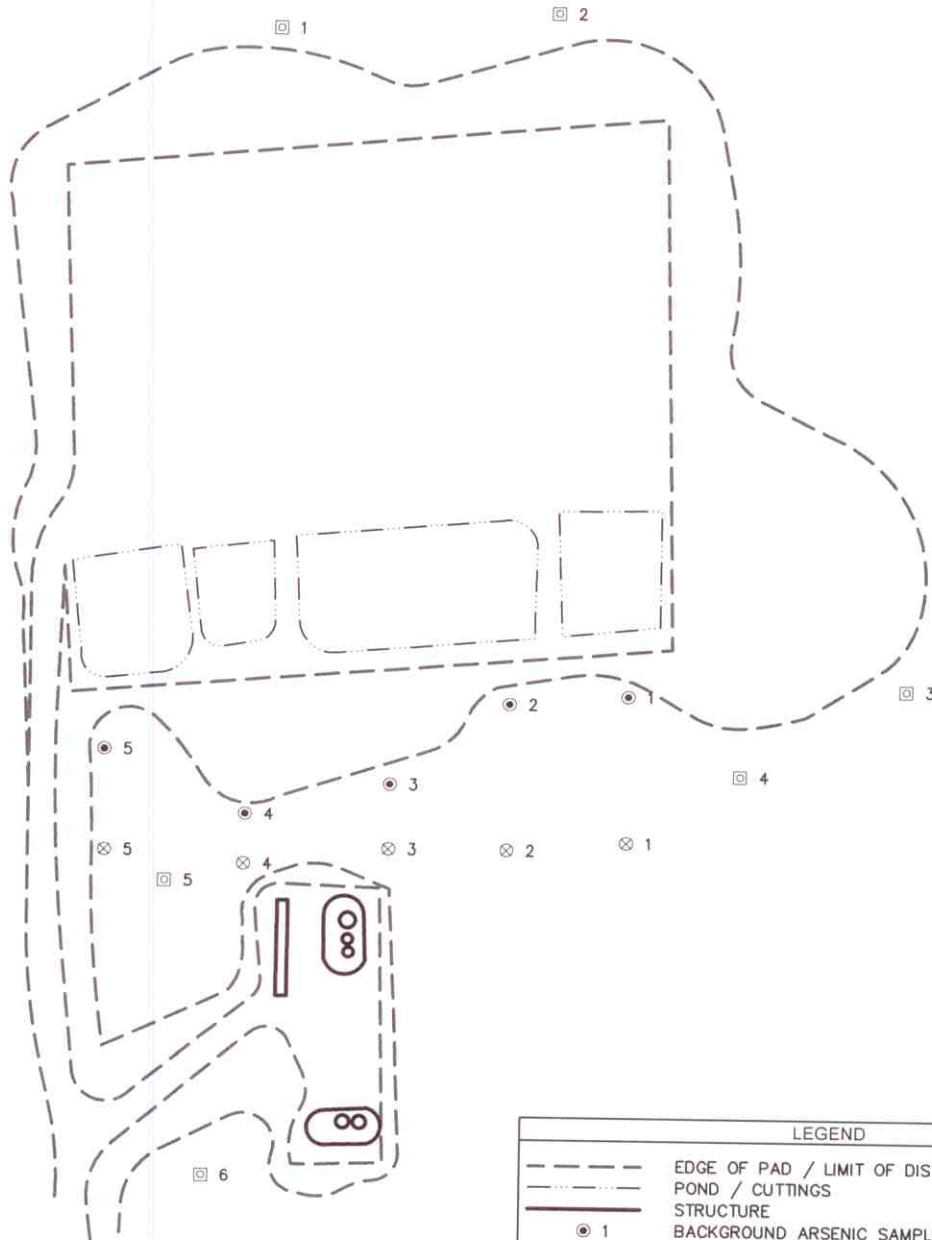
5.

DESCRIBE PROPOSED OR COMPLETED OPERATIONS

The operator is respectfully requesting a change in the allowable arsenic concentration level at the subject location. Specifically, COGCC Table 910-1 Concentration Levels lists the allowable concentration level for arsenic in soil at 0.39 mg/kg. However, COGCC has allowed site specific changes to allowable concentration levels based upon background concentration levels. At other locations, COGCC has allowed the determination of allowable levels based upon a 10% variability factor applied to background soil concentration values, where the maximum allowable level is computed by multiplying the highest detected background concentration by 1.1 (e.g. $5.6 \times 1.1 = 6.2$). Five representative background samples were collected from undisturbed areas adjacent to the subject location. Arsenic concentrations in those samples ranged from 7.1 mg/kg to 48.2 mg/kg. Applying the 10% variability factor to the highest concentration detected, results in an allowable arsenic concentration level of 53.02 mg/kg for the subject location.

It should be noted that three (3) separate sets of background arsenic samples were collected from different locations around the well pad. The initial set was collected on July 14, 2011 (mentioned above). A second set was collected on August 30, 2011 with arsenic values ranging from 3.0 mg/kg to 4.9 mg/kg. A third set was collected on September 23, 2011 where arsenic values ranged from 2.8 mg/kg to 11.9 mg/kg. Refer to Figure 1 for the approximate background sample locations. All background arsenic data is presented on Table 1- Laboratory Results Summary. A further note is the evidence of a wildfire which occurred on and around this location at some point in the past which may have impacted arsenic levels in this area.

0 75 150
SCALE IN FEET
1"=150'



LEGEND	
---	EDGE OF PAD / LIMIT OF DISTURBANCE
---	POND / CUTTINGS
---	STRUCTURE
● 1	BACKGROUND ARSENIC SAMPLE LOCATION (7/14/11)
⊗ 1	BACKGROUND ARSENIC SAMPLE LOCATION (8/30/11)
⊠ 1	BACKGROUND ARSENIC SAMPLE LOCATION (9/23/11)

s:\pro\cto\1107-03 9-11\civil3d\arsenic.dwg,10/4/11

DESIGNED: RR	CHECKED: RR	FIGURE 1	NOTES:
DATE: 10/4/11	DRAWN: DRF		
FILE NAME: arsenic	SHEET NO. 1 of 1	DATE	REVISIONS
PROJECT NO. 1107-03	SCALE: 1"=150'		

KRW CONSULTING, INC.
8000 W. 14TH AVENUE, SUITE 200
LAKEWOOD, COLORADO
(303) 239-9011

FIGURE 1
PICEANCE CREEK
XTO 9-11
ARSENIC BACKGROUND
SAMPLE LOCATIONS
PREPARED FOR XTO ENERGY, INC.

Table 1 - Laboratory Results Summary
XTO 9-11

Updated: 10/4/2011

Analytical Parameter (with units)	Fresh Water Pit Samples		Cuttings Pit Samples			Reserve Pit A Samples			Reserve Pit B Samples		Background (7/14/11 - 9/23/11)						COGCC Table 910-1 Allowable Levels	Maximum allowable based on background
	Fresh Water Pit Bottom (7/14/11)	Freshwater Pit Bottom (09/23/11)	Cuttings Pit Contents (08/09/11)	Cuttings Pit Mix/Blend (08/18/11)	Cuttings Pit Subliner (08/18/11)	Reserve Pit A Pit Contents (07/26/11)	Reserve Pit A Mix/Blend (08/09/11)	Reserve Pit A Sub liner (08/17/11)	Reserve Pit B Bottom (7/14/11)	Reserve Pit B Sub liner (08/17/11)	Bg #1	Bg #2	Bg #3	Bg #4	Bg #5	Bg #6		
TPH (TVH and TEPH) (mg/Kg)	32.1	23.6	3,207.4	124.35	21.5	1,526.70	432.00	57.0	ND	43.1	-	-	-	-	-	-	500	-
Benzene (mg/Kg)	ND	ND	ND	ND	ND	0.07	ND	0.031	ND	ND	-	-	-	-	-	-	0.17	-
Toluene (mg/Kg)	ND	ND	ND	ND	ND	0.270	ND	0.067	ND	ND	-	-	-	-	-	-	85	-
Ethylbenzene (mg/Kg)	ND	ND	0.093	ND	ND	0.584	0.044	0.033	ND	ND	-	-	-	-	-	-	100	-
Xylenes (total) (mg/Kg)	ND	ND	0.454	0.144	0.126	0.586	0.165	ND	ND	ND	-	-	-	-	-	-	175	-
Acenaphthene (mg/Kg)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-	-	-	-	-	1,000	-
Anthracene (mg/Kg)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-	-	-	-	-	1,000	-
Benzo(A)anthracene (mg/Kg)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-	-	-	-	-	0.22	-
Benzo(B)fluoranthene (mg/Kg)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-	-	-	-	-	0.22	-
Benzo(K)fluoranthene (mg/Kg)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-	-	-	-	-	2.2	-
Benzo(A)pyrene (mg/Kg)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-	-	-	-	-	0.022	-
Chrysene (mg/Kg)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-	-	-	-	-	22	-
Dibenzo(A,H)anthracene (mg/Kg)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-	-	-	-	-	0.022	-
Fluoranthene (mg/Kg)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-	-	-	-	-	1,000	-
Fluorene (mg/Kg)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-	-	-	-	-	1,000	-
Indo(1,2,3,C,D)pyrene (mg/Kg)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-	-	-	-	-	0.22	-
Napthalene (mg/Kg)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-	-	-	-	-	23	-
Pyrene (mg/Kg)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-	-	-	-	-	1,000	-
Electrical Conductivity (mmhos/cm)	0.435	0.522	2.900	0.695	0.411	2.570	2.290	1.750	0.223	1.110	-	-	-	-	-	-	<4or 2X BG	-
Sodium Adsorption Ratio (SAR)	2.29	2.8	22.60	6.55	7.33	32.3	8.94	13.7	2.71	11.2	-	-	-	-	-	-	<12	-
pH	9.51	10.06	9.07	9.57	10.09	9.00	9.44	9.57	9.74	9.64	-	-	-	-	-	-	6-9	-
Arsenic (mg/Kg)	29.9	6.7	13.3	26.9	3.8	5.7	20.4	9.0	16.4	10.5	-	-	-	-	-	-	0.39	-
Arsenic (mg/Kg) Bkgmd (07/14/11)	-	-	-	-	-	-	-	-	-	-	32.2	21.3	7.1	48.2	13.2	-	0.39	53.02 mg/kg
Arsenic (mg/Kg) Bkgmd (08/30/11)	-	-	-	-	-	-	-	-	-	-	4.9	3.0	3.6	3.1	3.0	-	0.39	-
Arsenic (mg/Kg) Bkgmd (09/23/11)	-	-	-	-	-	-	-	-	-	-	11.9	7.5	3.2	6.7	3.5	2.8	0.39	-
Barium (mg/Kg)	264	476	10,400	789	303	6,840	4,140	2,130	1,470	1,350	-	-	-	-	-	-	15,000	-
Cadmium (mg/Kg)	<1.1	<1.0	<1.7	<1.3	<1.0	<1.4	<1.1	<0.94	<1.1	<0.96	-	-	-	-	-	-	70	-
Chromium (III) (mg/Kg)	20.7	36.8	25.0	21.0	26.7	14.9	25.5	27.7	21.5	30.6	-	-	-	-	-	-	120,000	-
Chromium (VI) (mg/Kg)	<0.44	<0.43	0.65	<0.46	<0.40	<0.58	0.46	<0.40	0.49	<0.41	-	-	-	-	-	-	23	-
Copper (mg/Kg)	11.9	15.2	36.5	15.7	18.7	28.0	20.2	16.4	14.8	16.5	-	-	-	-	-	-	3,100	-
Lead (inorganic) (mg/Kg)	10.4	10.8	26.6	12.9	13.4	17.3	15.5	13.7	11.2	13.9	-	-	-	-	-	-	400	-
Mercury (mg/Kg)	<0.11	<0.12	<0.17	<0.12	<0.099	<0.14	<0.11	<0.10	<0.11	<0.11	-	-	-	-	-	-	23	-
Nickel (mg/Kg)	13.3	17.3	22.1	17.5	17.9	11.7	17.7	16.2	16.4	16.6	-	-	-	-	-	-	1,600	-
Selenium (mg/Kg)	<5.6	<5.2	<83	<6.6	<5.1	<36	<55	<4.7	<5.6	<4.8	-	-	-	-	-	-	390	-
Silver (mg/Kg)	<3.3	<3.1	<5.0	<3.9	<3.0	<4.3	<3.3	<2.8	<3.4	<2.9	-	-	-	-	-	-	390	-
Zinc (mg/Kg)	36.0	49.8	54.0	34.4	29.7	33.2	43.2	37.0	36.4	39.8	-	-	-	-	-	-	23,000	-

Notes:

- 1) "-" indicates no analysis.
- 2) ND = not detectible to the laboratory detection limit.
- 3) Results highlighted in yellow exceed Table 910-1 parameters. Results highlighted in Gray exceed Table 910-1 but are below maximum background levels.
- 4) Refer to the attached site map for approximate sample locations.