

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



#6415

FOR OGCC USE ONLY

RECEIVED  
10/5/2011

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

**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:

**CAUSE OF CONDITION BEING INVESTIGATED AND REMEDIATED**

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

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):  Soils  Vegetation  Groundwater  Surface Water  
Extent of Impact: pH  
How Determined: Laboratory analyses on soil samples. The pH values exceed Table 910-1 allowable levels (refer to Table 1 - Laboratory Results Summary Table).

**REMEDIALTION 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:

REMEDIATION 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 [x] 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 mg/kg x 1.1 = 53.02 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: [Signature] Title: Environmental Coordinator Date: 10/5/2011

OGCC Approved: [Signature] Title: For Chris Canfield Date: 10/14/2011 EPS NW Region



**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	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		Survey Plat	
6 Well/Facility Name	Federal #15 96 9 11BP	7 Well/Facility Number	Federal #15 96 9 11BP	Directional Survey	
8 Location (Otr/Ctr Sec Twp Rng Meridian)	NWNW S9 T1S R96W, 6th P.M.			Surface Eqmpt Diagram	
9 County	Rio Blanco	10 Field Name	Piceance Creek	Technical Info Page	
11 Federal Indian or State Lease Number	COC-61131			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/SL  FEL/FWL

Change of **Surface** Footage to Exterior Section Lines

Change of **Bottomhole** Footage from Exterior Section Lines

Change of **Bottomhole** Footage to Exterior Section Lines    attach directional survey

Bottomhole location Otr/Ctr Sec Twp Rng Mer

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** From  To  NUMBER   
 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** \*submit cbl and cement job summaries  
 Method used  Cementing tool setting/perf depth  Cement volume  Cement top  Cement bottom  Date

**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 Approximate Start Date  Report of Work Done Date Work Completed

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

Intent to Recomplete (submit form 2)  Request to Vent or Flare  E&P Waste Disposal

Change Drilling Plans  Repair Well  Beneficial Reuse of E&P Waste

Gross Interval Changed?  Rule 502 variance requested  Status Update/Change of Remediation Plans

Casing/Cementing Program Change  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 Dealing Date 10/5/2011 Email jessica-dealing@xtoenergy.com  
 Print Name Jessica Dealing Title Environmental Coordinator

COGCC Approved Chris Canfield Title FOR Date 10/14/2011

CONDITIONS OF APPROVAL IF ANY  
Chris Canfield  
E&P NW Region

TECHNICAL INFORMATION PAGE



FOR OGCC USE ONLY

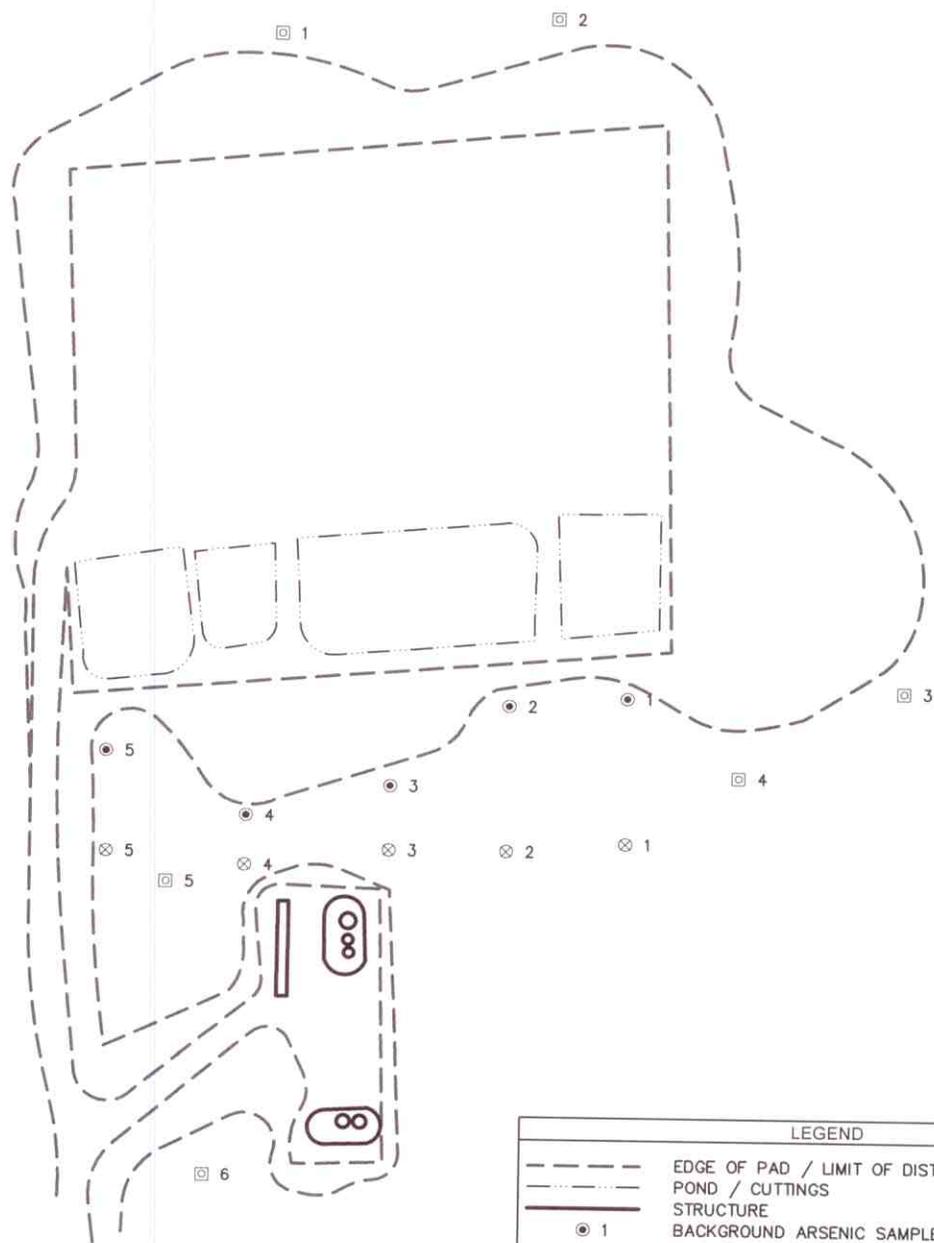
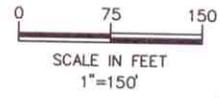
- 1. OGCC Operator Number: 100264 API Number: 05-103-10918
- 2. Name of Operator: XTO Energy, Inc. OGCC Facility ID # \_\_\_\_\_
- 3. Well/Facility Name: Federal #1S-96-9-11BP Well/Facility Number: 1S-96-9-11BP
- 4. Location (QtrQtr, Sec, Twp, Rng, Meridian): NWNW S9, T1S, R96W, 6th P.M.

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 x 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.



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:\proj\xt\1107-03 9-11\civil3d\arsenic.dwg,10/4/11

DESIGNED: RR	CHECKED: RR	FIGURE 1	NOTES:	
DATE: 10/4/11	DRAWN: DRF		DATE	REVISIONS
FILE NAME: arsenic	SHEET NO. 1 of 1			
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	-	-	-	-	-	-	1,000	-
Napthalene (mg/Kg)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-	-	-	-	-	0.22	-
Pyrene (mg/Kg)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-	-	-	-	-	23	-
Electrical Conductivity (mmhos/cm)	0.435	0.522	2.900	0.695	0.411	2.570	2.290	1.750	0.223	1.110	-	-	-	-	-	-	1,000	-
Sodium Adsorption Ratio (SAR)	2.29	2.8	22.60	6.55	7.33	32.3	8.94	13.7	2.71	11.2	-	-	-	-	-	-	<4or 2X BG	-
pH	9.51	10.06	9.07	9.57	10.09	9.00	9.44	9.57	9.74	9.64	-	-	-	-	-	-	<12	-
Arsenic (mg/Kg)	29.9	6.7	13.3	26.9	3.8	5.7	20.4	9.0	16.4	10.5	-	-	-	-	-	-	6-9	-
Arsenic (mg/Kg) Bkgmd (07/14/11)	-	-	-	-	-	-	-	-	-	-	32.2	21.3	7.1	48.2	13.2	-	0.39	-
Arsenic (mg/Kg) Bkgmd (08/30/11)	-	-	-	-	-	-	-	-	-	-	4.9	3.0	3.6	3.1	3.0	-	0.39	53.02 mg/kg
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.