

FORM

27

Rev 6/99

#6029

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

RECEIVED
8/15/2011

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.

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: 05-103-10958

County: Rio Blanco

Facility Name: Piceance Creek

Facility Number: Pit #1 - 414351 Pit #2 - 414352

Well Name: Federal #25-95-16-22 CP

Well Number: Federal #25-95-16-22 CP

Location: (QtrQtr, Sec, Twp, Rng, Meridian): SE/NW, 16, 2S, 95W, 6th Latitude: 39.875557 Longitude: 108.064815

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: Irigul-Parachute

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 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 exceeds Table 910-1 allowable levels (refer to Table 1 - Laboratory Results Summary).

REMEDATION WORKPLAN

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

Assessment activities to determine Table 910-1 constituent concentrations of pit contents were initiated in preparation for pit closures. A mixed Freshwater Pit (Pit #2) bottom sample was collected and analyzed for select constituents. This pit has been empty for some time. A composite sample of pit contents from Reserve Pits (Pit #1) A & B was collected and submitted to an analytical laboratory for TPH constituent analysis. A composite sample from the Cuttings Pit was collected and submitted to an analytical laboratory for Table 910-1 constituent analyses. A discrete sample was collected from the Flare Pit (no facility number) and submitted to a laboratory for Table 910-1 constituent analyses. Additionally, five (5) soil samples were collected from undisturbed areas adjacent to the pit locations (see Figure 1) and submitted to an analytical laboratory to establish the background concentration level for arsenic (see Attached Table 1 - Laboratory Results Summary). (Please note: COGCC references the Reserve Pits as "Pit 1" with Facility Number 414351 and the Freshwater Pit as "Pit 2" with Facility Number 414352; KRW Consulting, Inc. divides the Reserve Pit into two separate structures: Reserve A [the larger portion] and Reserve B [the smaller portion] for sample collection purposes.)

Describe how source is to be removed:

Laboratory results for TPH in the Freshwater Pit were 4.3 mg/kg. Laboratory results for TPH on Reserve Pit A & B contents were 384.4 mg/kg. Pit contents of Reserve Pit A & B were mixed/blended with clean onsite spoils to solidify the material. TPH results for the Cuttings Pit contents were 183.0 mg/kg. This material was mixed/blended to solidify, also. The mixed/blended material from both pits was placed in the empty Fresh Water Pit and Cuttings Pit, once empty. Representative samples of the mixed/blended material were collected and submitted to a laboratory for Table 910-1 constituent analyses. Laboratory analyses indicated that TPH concentrations for the Reserve A & B Pits were 114 mg/kg; and TPH concentrations for the Cuttings Pit were 23.5 mg/kg, both results below Table 910-1 clean-up levels. The discrete sample collected from the Flare Pit and analyzed for Table 910-1 constituents indicated a TPH concentration of 1,320 mg/kg. This material was mixed/blended with clean onsite spoils. A subsequent sample was collected after the mix/blending process and analyzed for TPH with results indicating a TPH concentration of 189 mg/kg. All pit content material will be buried in place with a minimum 3-foot cover of clean, native soils. Pit liners were removed and transported to Wray Gulch Landfill facility near Meeker, CO for disposal.

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.:

See attached Form 4 - Sundry Notice regarding arsenic levels.

Submit Page 2 with Page 1



REMEDIAL WORKPLAN (Cont.)

Tracking Number: _____

Name of Operator: _____

OGCC Operator No: _____

Received Date: _____

Well Name & No: _____

Facility Name & No: _____

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.

A composite sample of pit contents from Reserve Pit A & B was collected and submitted to an analytical laboratory for TPH analysis. TPH concentrations were below Table 910-1 allowable concentrations (i.e. <500 mg/kg). The pit contents were mixed/blended with clean onsite spoils material and placed in the empty Fresh Water Pit and empty Cuttings Pit. Pit contents from the Cuttings Pit were also mixed blended and placed in the Fresh Water Pit and Cuttings Pit once it was empty. Representative samples of the mixed/blended material were collected and submitted to a laboratory for Table 910-1 constituent analyses. Laboratory results for TPH on the mixed blended material from the Reserve A & B Pit and Cuttings Pit were 114 mg/kg and 23.5 mg/kg, respectively and were below Table 910-1 cleanup levels (see attached Table 1 - Laboratory Results Summary). Flare Pit contents were mixed/blended with clean onsite spoils with a resulting TPH concentration of 189 mg/kg. Flare Pit material will be buried in the Reserve B Pit. Additionally, sub-liner soil samples were collected from the Reserve A & B Pits and Cuttings Pit and analyzed for Table 910-1 constituents. With the exception of elevated pH and arsenic levels, laboratory analytical results for the pit sub-liners were below Table 910-1 cleanup criteria. Based on a 10% variability factor applied to background soil concentration values for arsenic, the concentrations for arsenic in the pit bottoms are below maximum background (see attached Sundry Notice). A minimum 3-foot cover of clean native soils will be placed over the pit contents; thereby, meeting the criteria to allow placement of soils exceeding pH values.

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 (Reserve A & B, Cuttings) 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 and arsenic, underliner impacts were below Table 910-1 constituent levels; sub-liner arsenic levels were below maximum allowable levels when the 10% variability factor is applied to the highest background concentration for arsenic (6.2 mg/kg x 1.1 = 6.82 mg/kg). Complete laboratory reports are available upon request. A minimum 3-foot 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 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. A minimum 3 feet of native clean soils will be placed over the buried material. The synthetic liners were removed from each pit (Reserve A & B Pits, Cuttings Pit) and transported to Wray Gulch Landfill near Meeker, CO for disposal.

IMPLEMENTATION SCHEDULE

Date Site Investigation Began: <u>09/02/09</u>	Date Site Investigation Completed: <u>TBD</u>	Date Remediation Plan Submitted: <u>08/15/2011</u>
Remediation Start Date: <u>6/1/11</u>	Anticipated Completion Date: <u>8/29/11</u>	Actual Completion Date: <u>TBD</u>

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

Print Name: Sam E. Montoya

Signed: Sam E. Montoya

Title: Sr. EHS Supervisor

Date: 08/15/2011

OGCC Approved: [Signature]

Title: For Chris Camfield

Date: 08/19/2011

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	4. Contact Name Jody Mecham	Complete the Attachment Checklist OGCC
2. Name of Operator: XTO Energy, Inc.	Phone: (435) 722-4521 Fax: (435) 722-5004	
3. Address: 382 County Road 3100 City: Aztec State: NM Zip: 87410		
5. API Number: 05-103-10958	OGCC Facility ID Number: 414351/414352	Survey Plot
6. Well/Facility Name: Federal #25-95-16-22 CP	Well/Facility Number: Federal #25-95-16-22 CP	Directional Survey
8. Location (Qtr/Sec, Twp, Rng, Meridian): SE/NW, 16, 25, 95W, 6th		Surface Egmt Diagram
9. County: Rio Blanco	10. Field Name: Picesance Creek	Technical Info Page
11. Federal, Indian or State Lease Number: COC-061047		Other

General Notice

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

Change of Surface Footage from Exterior Section Lines: ☐ FNL/FSL ☐ FFL/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 Qtr/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: _____ 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 (6 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
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).

<input type="checkbox"/> Intent to Recomplete (submit form 2)	<input type="checkbox"/> Request to Vent or Flare	<input type="checkbox"/> E&P Waste to Dispose
<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 for Spills and Releases
<input type="checkbox"/> Casing/Cementing Program Change	<input checked="" type="checkbox"/> Other: See Page 2	

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

Signed: _____ Date: _____ Email: _____
Print Name: _____ Title: _____

OGCC Approved:

CONDITIONS OF APPROVAL, IF ANY:

Title:

FOR

Date:

09/30/2011

Chris Canfield

EPS NW Region

Note: Arsenic concentrations from pit bottom samples in the range of 0.93 - 1.9 < background values ✓
Approved ✓

XTO's signature ? ? ?

TECHNICAL INFORMATION PAGE



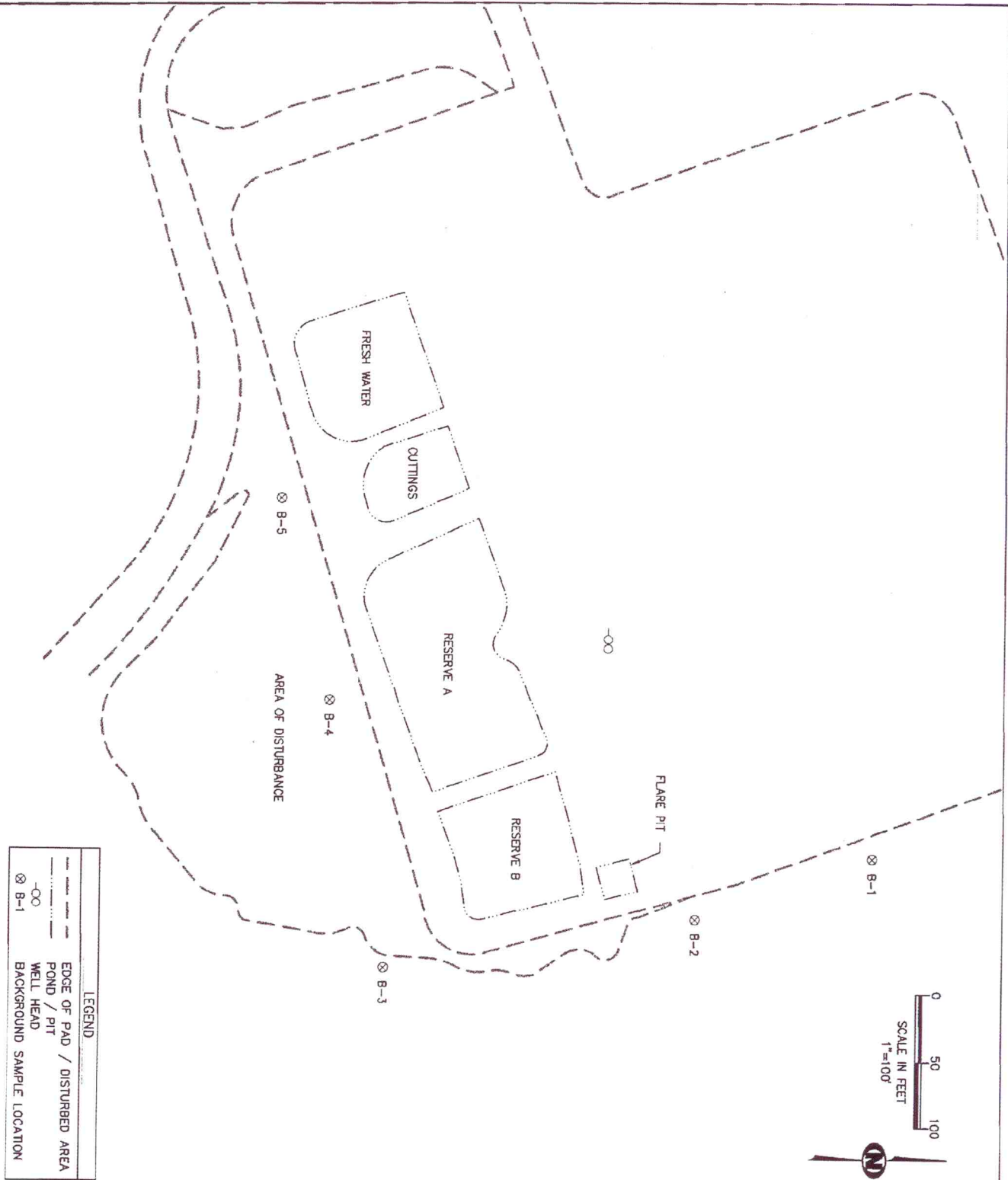
FOR OGCC USE ONLY

1. OGCC Operator Number: 100264 API Number: 05-103-10958
2. Name of Operator: XTO Energy, Inc. OGCC Facility ID # 414351/414352
3. Well/Facility Name: Federal #25-95-16-22 CP Well/Facility Number: 25-95-16-22 CP
4. Location (QtrQtr, Sec, Twp, Rng, Meridian): SE/NW, 16, 2S, 95W, 6th

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 1.2 mg/kg to 6.2 mg/kg. Applying the 10% variability factor to the highest concentration detected, results in an allowable arsenic concentration level of 6.82 mg/kg for the subject location.



\\pro\cto\1105-04 16-22\sample.dwg,8/10/11

DESIGNED: RR	CHECKED: RR	FIGURE 1	NOTES:
DATE: 8/10/11	DRAWN: DRF		
FILE NAME: sample	SHEET NO. 1 of 1	DATE	REVISIONS
PROJECT NO. 1105-04	SCALE: 1"=100'		

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

FIGURE 1
 PICEANCE CREEK
 16-22
 SAMPLE LOCATIONS MAP
 PREPARED FOR XTO ENERGY, INC.

KRW Consulting, Inc.
Piceance Creek Unit

Table 1 - Laboratory Results Summary
Pit Contents and Underliner
XTO 16-22

Updated: 08/08/2011

Analytical Parameter (with units)	16-22 Pits										COGCC
	Freshwater Pit Bottom 09/02/09	Reserve Pit A & B Contents (6/28/11)	Reserve Pit A Sub Liner (7/20/11)	Reserve Pit B Sub Liner (7/19/11)	Reserve Pit A&B Backfill (mix/blend) (7/19/11)	Cuttings Pit Contents (06/28/11)	Cuttings Pit Sub liner 6/23/11	Cuttings Backfill Confirmation (mix/blend) (7/7/11)	Initial Flare Pit Sample (06/28/11)	Post Flare Pit Mix/Blend (7/14/11)	Table 910-1 Allowable Levels
TPH (TVH and TEPH) (mg/Kg)	4.3	384.4	117.0	119.0	114.0	183.0	55.3	23.5	1320	189	500
Benzene (mg/Kg)	-	-	ND	ND	ND	0.006	ND	ND	0.002	-	0.17
Toluene (mg/Kg)	-	-	ND	ND	ND	0.009	ND	0.079	0.005	-	85
Ethylbenzene (mg/Kg)	-	-	ND	ND	ND	0.003	ND	ND	0.001	-	100
Xylenes (total) (mg/Kg)	-	-	ND	ND	ND	0.011	0.128	0.243	0.006	-	175
Acenaphthene (mg/Kg)	-	-	ND	ND	ND	ND	ND	ND	ND	-	1,000
Anthracene (mg/Kg)	-	-	ND	ND	ND	ND	ND	ND	ND	-	1,000
Benzo(A)anthracene (mg/Kg)	-	-	ND	ND	ND	ND	ND	ND	ND	-	0.22
Benzo(B)fluoranthene (mg/Kg)	-	-	ND	ND	ND	ND	ND	ND	ND	-	0.22
Benzo(K)fluoranthene (mg/Kg)	-	-	ND	ND	ND	ND	ND	ND	ND	-	2.2
Benzo(A)pyrene (mg/Kg)	-	-	ND	ND	ND	ND	ND	ND	ND	-	0.022
Chrysene (mg/Kg)	-	-	ND	ND	ND	ND	ND	ND	0.056	-	22
Dibenzo(A,H)anthracene (mg/Kg)	-	-	ND	ND	ND	ND	ND	ND	ND	-	0.022
Fluoranthene (mg/Kg)	-	-	ND	ND	ND	ND	ND	ND	ND	-	1,000
Fluorene (mg/Kg)	-	-	ND	ND	ND	0.45	ND	ND	0.118	-	1,000
Indo(1,2,3,C,D)pyrene (mg/Kg)	-	-	ND	ND	ND	ND	ND	ND	ND	-	0.22
Napthalene (mg/Kg)	-	-	ND	ND	ND	ND	ND	ND	ND	-	23
Pyrene (mg/Kg)	-	-	ND	ND	ND	ND	ND	ND	0.065	-	1,000
Electrical Conductivity (mmhos/cm)	0.180	-	1.01	0.965	1.58	1.35	0.251	0.858	0.429	-	<4or 2X background
Sodium Adsorption Ratio (SAR)	3.7	-	5.63	9.91	5.16	4.52	1.70	3.78	8.76	-	<12
pH	8.4	-	9.41	9.90	9.29	9.37	9.48	8.93	9.77	-	6-9
Arsenic (mg/Kg)	BDL	-	1.9	1.6	1.4	1.3	1.1	1.2	0.93	-	0.39
Barium (mg/Kg)	410	-	897	1,420	2,800	2,640	707	2840	389	-	15,000
Cadmium (mg/Kg)	0.28	-	<1.1	<1.1	<1.1	<1.0	<1.1	<1.2	<0.97	-	70
Chromium (III) (mg/Kg)	45.0	-	39.5	29.0	29.9	33.7	40.1	35.7	25.4	-	120,000
Chromium (VI) (mg/Kg)	BDL	-	<0.47	<0.46	<0.45	0.57	<0.45	<0.47	0.56	-	23
Copper (mg/Kg)	18	-	7.7	9.8	14.6	22	15.7	12.3	10.2	-	3,100
Lead (inorganic) (mg/Kg)	15	-	15.0	16.2	12.6	17	13.4	13.7	12.3	-	400
Mercury (mg/Kg)	0.028	-	<0.11	<0.12	<0.10	<0.11	<0.11	<0.11	<0.10	-	23
Nickel (mg/Kg)	30	-	17.7	16.2	16.3	23.3	22.9	17.3	13.6	-	1,600
Selenium (mg/Kg)	9.2	-	<5.7	<5.4	<5.6	<5.0	<5.5	<5.9	<4.9	-	390
Silver (mg/Kg)	0.60	-	<3.4	<3.3	<3.3	<3.0	<3.3	<3.5	<2.9	-	390
Zinc (mg/Kg)	43.0	-	32.4	33.8	38.2	46.1	40.9	38.9	39.7	-	23,000

Notes:

- 1) "-" indicates no analysis.
- 2) ND = not detectable to the laboratory detection limit.
- 3) BDL = below laboratory detection limit
- 4) Results highlighted in yellow exceed Table 910-1 parameters. Results highlighted in grey exceed Table 910-1 but are below maximum background levels.

KRW Consulting, Inc.
Piceance Creek Unit

Table 1 (cont'd) - Laboratory Results Summary Background Samples
XTO 16-22

Updated: 08/08//11

BACKGROUND SAMPLES 16-22					COGCC	Maximum allowable based on background
Background #1	Background #2	Background #3	Background #4	Background #5	Table 910-1 Allowable Levels	
-	-	-	-	-	500	-
-	-	-	-	-	0.17	-
-	-	-	-	-	85	-
-	-	-	-	-	100	-
-	-	-	-	-	175	-
-	-	-	-	-	1,000	-
-	-	-	-	-	1,000	-
-	-	-	-	-	0.22	-
-	-	-	-	-	0.22	-
-	-	-	-	-	2.2	-
-	-	-	-	-	0.022	-
-	-	-	-	-	22	-
-	-	-	-	-	0.022	-
-	-	-	-	-	1,000	-
-	-	-	-	-	1,000	-
-	-	-	-	-	0.22	-
-	-	-	-	-	23	-
-	-	-	-	-	1,000	-
-	-	-	-	-	<4or 2X background	-
-	-	-	-	-	<12	-
-	-	-	-	-	6-9	-
6.0	6.2	4.0	4.7	1.2	0.39	6.82
-	-	-	-	-	15,000	-
-	-	-	-	-	70	-
-	-	-	-	-	120,000	-
-	-	-	-	-	23	-
-	-	-	-	-	3,100	-
-	-	-	-	-	400	-
-	-	-	-	-	23	-
-	-	-	-	-	1,600	-
-	-	-	-	-	390	-
-	-	-	-	-	390	-
-	-	-	-	-	23,000	-

Notes:

- 1) "-" indicates no analysis
- 2) ND = not detectable to the laboratory detection limit
- 3) Results highlighted in yellow exceed Table 910-1 parameters. Results highlighted in grey exceed Table 910-1 but are below maximum background levels.