

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  
Date received  
**7/3/2014**  
**REM #5155, 5076**

**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  
 Inspect **1733595,**  
Tracking No: **1733596**

**CAUSE OF CONDITION BEING INVESTIGATED AND REMEDIATED**

Spill or Release  Plug & Abandon  Central Facility Closure  Site/Facility Closure  Other (describe): Rem #5155 Update Doc #2608528

OGCC Operator Number: <u>100264</u>	Contact Name and Telephone: <u>Jessica Dooling</u>
Name of Operator: <u>XTO Energy Inc.</u>	No: <u>970-675-4122</u>
Address: <u>PO Box 6501</u>	Fax: <u>970-675-4150</u>
City: <u>Englewood</u> State: <u>CO</u> Zip: <u>80155</u>	

API Number: <u>05-103-10822</u>	County: <u>Rio Blanco</u>
Facility Name: <u>Piceance Creek Unit</u>	Facility Number: _____
Well Name: <u>Piceance Creek Unit</u>	Well Number: <u>296-7A</u>
Location: (QtrQtr, Sec, Twp, Rng, Meridian): <u>SENE, Sec. 7, T2S, R96W, 6th P.M.</u>	Latitude: <u>39.893417</u> Longitude: <u>-108.203283</u>

**TECHNICAL CONDITIONS**

Type of Waste Causing Impact (crude oil, condensate, produced water, etc): Condensate

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.): non-cropland rangeland

Soil type, if not previously identified on Form 2A or Federal Surface Use Plan: Piceance Fine Sandy Loam; 5-15% Slope

Potential receptors (water wells within 1/4 mi, surface waters, etc.): Nearest water well ~3.4 miles, nearest surface water ~1900' (Hatch Gulch).

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

Impacted Media (check):	Extent of Impact:	How Determined:
<input checked="" type="checkbox"/> Soils	<u>TPH and Arsenic</u>	<u>laboratory analysis</u>
<input type="checkbox"/> Vegetation	_____	_____
<input type="checkbox"/> Groundwater	_____	_____
<input type="checkbox"/> Surface Water	_____	_____

**REMEDIATION WORKPLAN**

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

Initial Impacts referenced in Form 19 and Form 27 (Rem # 5155, Spill Report Doc. #2608528). Refer to Attachments 1 and 2 for details regarding initial action taken and background Arsenic consideration.

Describe how source is to be removed:

Impacted soils from 0-4' beneath the tank area were removed and transported offsite for disposal at the Wray Gulch Landfill in Meeker, CO. Impacted soils from 4' bgs to 10.5' bgs were removed, mix/blend processed and sampled to ensure Table 910 compliance.

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.:

N/A



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.):

Available information indicates that the uppermost groundwater bearing zone is greater than 100 feet below the ground surface. Soil samples were collected for laboratory analysis of subtank material to confirm no groundwater impact potential exists (see Tables 1 through 2A).

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.

Please see Attachment II.

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:

Based on subliner sample results no additional assessment will be necessary beneath the Tank area (see Tables 1 through 2A).

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

Synthetic liner from the tank containment, gravel and four feet of impacted material beneath the tank area were removed and transported for offsite disposal at the Wray Gulch Landfill in Meeker, CO. Impacted soils from 4' to 10.5' were removed and mix/blend processed with a confirmation sample collected to ensure Table 910-1 compliance. Mix/blend processed material will be used for on-site fill.

**IMPLEMENTATION SCHEDULE**

Date Site Investigation Began: 01/14/10 Date Site Investigation Completed: 4/22/14 Date Remediation Plan Submitted: \_\_\_\_\_  
Remediation Start Date: 8/23/10 Anticipated Completion Date: Pending Approval 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 Dooling Signed: \_\_\_\_\_  
Title: Piceance EH&S Supervisor Date: 7/1/2014

OGCC Approved: Stanley C. Spencer Title: EPS NW Region Date: 7/2/14

## ATTACHMENT I

### PCU 296-7A Former Tank Containment Area Workplan, Form 27 Page 1

#### **Describe initial action taken:**

The site consists of a former tank containment area (see Figure 1).

See background Arsenic Sundry (Form 4, Rem #5076, DOC #2607402) that was COGCC approved on 5/28/2010 and established a background Arsenic level of 18 mg/kg.

Elevated Arsenic levels above Table 910-1 Concentration levels were detected beneath the former tank area. Five samples were collected at -6' below ground surface (BGS) with results ranging from 1.4 mg/kg to 3.1 mg/kg. These Arsenic concentrations are within the allowable background Arsenic concentration of 18 mg/kg (See Table 1).

## ATTACHMENT II

### PCU 296-7A Former Tank Containment Area Workplan, Form 27 Pages 1 and 2

#### Describe initial action taken:

The site consists of a Former Tank Containment Area (see Figure 1).

XTO Energy is requesting No Further Action for Spill Report (Form 19 Doc #2608528) submitted on 8/6/2010 describing spill remediation activities.

Below is an update to the Site Investigation and Remediation Workplan (Doc #2608528, Rem #5155), COGCC approved on 8/6/2010. See Attachment I, Tables 1, 2, 2A and Figures 1-3B (7 total).

#### 1. Former Tank Containment Area

- a) Initial assessment identified impacted soils beneath the tank containment area. Soils were removed from 3' in the east part of the containment area to 6' below ground surface (bgs) in the western part of the containment area. Impacted soils were disposed of at the Wray Gulch Landfill in Meeker, CO.
- b) Containment area samples were collected in the -3' and -6' areas and tested for TPH/BTEX. Results exceeded Table 910 concentration levels for TPH in the -3' area (1665 mg/kg) and (3628 mg/kg) in the -6' area (see Figure 1).
- c) Drill assessment was completed in 2011 to assess the vertical and lateral extent of the impacts beneath the tank containment area. The area to the west at -6' was backfilled to -3.5' bgs to allow the drill rig access. Three of the soil borings had elevated TPH results:
  - **BH-01** at -5.5' to -8' TPH: 619 mg/kg. This sample was a composite of the hollow stem drilling Borehole 01 from -5.5' to the -8'. The TPH is below Table 910-1 concentration levels immediately above this sample (Southwest corner 1 at -10.5' TPH: 199 mg/kg and Southwest Corner 2 at -8.5' TPH: 34.2 mg/kg) and below (BH-01, -10.5' to -13' TPH: ND). It is believed that this sample is anomalous and likely due to cross contamination during boring operations.
  - **BH-02** at -18' to -20' TPH: 1060 mg/kg. This sample was a composite of the hollow stem drilling Borehole 02 from -18' to -20'. Based on assessment in and around this area, it appears that this

is an isolated zone and non-contiguous. After review of this anomalous finding it has been determined to be oil shale.

- **BH-04** at -4' to -9' TPH: 716 mg/kg. This sample was a composite of the hollow stem drilling Borehole 04 from -4' to -9'. The TPH is below Table 910-1 concentration levels above this sample (Northeast corner 3 at -6.5' TPH: 104 mg/kg) and below (BH-04, -14' to -19' TPH: 11.6 mg/kg). It is believed that this sample is anomalous and likely due to cross contamination during boring operations.
- See Figures 3 through 3B for borehole locations and Tables 1 through 2A for lab results.

**d)** Tank Containment Area impacted soils were removed across the former containment area to 6' bgs. Five discrete soil samples were collected and analyzed for Table 910-1 parameters. Results exceeded Table 910-1 concentration levels for TPH (656 mg/kg in Southwest Corner #2), pH (9.54 in Northwest Corner #1) and Arsenic (2.7 mg/kg in Northwest Corner #1; 3.1 mg/kg in Southwest Corner #2; 2.1 mg/kg in Northeast Corner #3; 1.4 mg/kg in Southeast Corner #4 and 2.9 mg/kg in Center #5) See Attachment I for Background Arsenic information.

**e)** Impacted soils from -6' to -10.5' were removed in the Southwest Corner #2 area with confirmation samples collected for TPH. Results ranged from 34.2 mg/kg to 199 mg/kg.

- Tank containment area subliner impacted material removed from -4' to -10.5' was mix/blend processed and sampled to ensure Table 910 compliance (see Table 1).
- Mix/blend processed material that meets Table 910-1 concentration levels will be used onsite for backfill.
- Refer to Tables 1 and 2 for summaries of the laboratory results and Figures 1 – 3B (7 total) for layout of the Tank Pit and sample locations.
- Elevated Arsenic levels above Table 910-1 concentration levels were detected beneath the former tank containment area (see Attachment I).
- Any remaining elevated levels of Electrical Conductivity, SAR and pH detected beneath the tank containment area or in material used for backfill

will be covered with a minimum 3 feet of clean, native soils per COGCC guidance. No additional treatment of these soils will be required.

- Reclamation activities will be performed in accordance with applicable COGCC 900, 1000 Series rules and as specified in the Surface Use Plan and BLM Conditions of Approval.

**Table 1**  
**Location: PCU 296-7A**  
**Lab Summary - Tank Area Assessment**

Last update 6/19/2014

Analytical Parameter  (with units)	Tank Area Initial Assessment						Tank Area Post -6' Excavation					Post 8.5' Excavation	Post 10.5'	Ex. Mtrl	Background					COGCC	Maximum based on Background		
	East Sidewall	South Sidewall	West Sidewall	North Sidewall	Subtank -3' <sup>5</sup>	Subtank -6' (West third) <sup>5</sup>	Northwest Corner 1 (6')	Southwest Corner 2 (-6')	Northeast Corner 3 (-6')	Southeast Corner 4 (-6')	Center 5 (-6')	Southwest Corner (-8.5') 1	Southwest Corner (-8.5') 2	Southwest Corner (-10.5') 1	Ex. Mtrl Stockpile	B1A at 1'	B1B at 12'	B2A at 1'	B2B at 16'	B3A at 1'		B3B at 13'	Table 910-1 Concentration Levels
Accutest Job #	D16721 (8/23/10)						D55434 (2/25/14)					D56289 (3/25/14)		D56825 (4/11/14)	D57113 (4/22/14)	D10402 (1/14/10)					-	-	
Sample type (Composite/Discrete)	C	C	C	C	C	C	D	D	D	D	D	D	D	D	C	D	D	D	D	D	D	-	-
TPH (GRO) (mg/Kg)	ND	ND	ND	ND	14.9	77.7	ND	21.2	ND	ND	ND	ND	11.3	ND	ND	-	-	-	-	-	-	-	-
TPH (DRO) (mg/Kg)	356	64.7	118	23.0	1650	3550	142	635	104	28.5	31	761	22.9	199	51.8	-	-	-	-	-	-	-	-
TPH (GRO + DRO) (mg/Kg)	356	64.7	118	23.0	1,665	3,628	142	656	104	28.5	31	761	34.2	199	51.8	-	-	-	-	-	-	500	-
Benzene (mg/Kg)	ND	ND	ND	ND	0.0075	ND	ND	ND	ND	ND	ND	-	-	-	-	-	-	-	-	-	-	0.170	-
Toluene (mg/Kg)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-	-	-	-	-	-	-	-	-	85	-
Ethylbenzene (mg/Kg)	ND	ND	ND	ND	0.0199	0.228	ND	ND	ND	ND	ND	-	-	-	-	-	-	-	-	-	-	100	-
Xylenes (total) (mg/Kg)	0.0213	0.0167	0.0129	0.0124	0.0239	ND	ND	ND	ND	ND	ND	-	-	-	-	-	-	-	-	-	-	175	-
Acenaphthene (mg/Kg)	-	-	-	-	-	-	ND	ND	ND	ND	ND	-	-	-	-	-	-	-	-	-	-	1000	-
Anthracene (mg/Kg)	-	-	-	-	-	-	ND	ND	ND	ND	ND	-	-	-	-	-	-	-	-	-	-	1000	-
Benzo(A)anthracene (mg/Kg)	-	-	-	-	-	-	ND	ND	ND	ND	ND	-	-	-	-	-	-	-	-	-	-	0.22	-
Benzo(A)pyrene (mg/Kg)	-	-	-	-	-	-	ND	ND	ND	ND	ND	-	-	-	-	-	-	-	-	-	-	0.022	-
Benzo(B)fluoranthene (mg/Kg)	-	-	-	-	-	-	ND	ND	ND	ND	ND	-	-	-	-	-	-	-	-	-	-	0.22	-
Benzo(K)fluoranthene (mg/Kg)	-	-	-	-	-	-	ND	ND	ND	ND	ND	-	-	-	-	-	-	-	-	-	-	2.2	-
Chrysene (mg/Kg)	-	-	-	-	-	-	ND	0.0064	ND	ND	ND	-	-	-	-	-	-	-	-	-	-	22	-
Dibenzo(A,H)anthracene (mg/Kg)	-	-	-	-	-	-	ND	ND	ND	ND	ND	-	-	-	-	-	-	-	-	-	-	0.022	-
Fluoranthene (mg/Kg)	-	-	-	-	-	-	ND	ND	ND	ND	0.0062	-	-	-	-	-	-	-	-	-	-	1000	-
Fluorene (mg/Kg)	-	-	-	-	-	-	ND	ND	ND	ND	ND	-	-	-	-	-	-	-	-	-	-	1000	-
Indeno(1,2,3-C,D)pyrene (mg/Kg)	-	-	-	-	-	-	ND	ND	ND	ND	ND	-	-	-	-	-	-	-	-	-	-	0.22	-
Naphthalene (mg/Kg)	-	-	-	-	-	-	ND	ND	ND	ND	ND	-	-	-	-	-	-	-	-	-	-	23	-
Pyrene (mg/Kg)	-	-	-	-	-	-	ND	0.0055	ND	ND	ND	-	-	-	-	-	-	-	-	-	-	1000	-
Electrical Conductivity (mmhos/cm)	0.933	0.466	0.453	0.650	0.669	0.602	0.270	0.164	0.218	0.218	0.274	-	-	-	-	0.281	0.626	0.495	1.440	0.230	0.503	4	-
Sodium Adsorption Ratio (SAR)	2.76	1.49	2.19	2.60	2.19	4.09	1.04	0.616	1.22	0.992	1.57	-	-	-	-	0.921	0.794	1.12	6.85	0.243	1.90	12	-
pH	9.38	9.38	9.40	9.49	9.40	9.38	9.54	8.84	8.93	8.76	8.92	-	-	-	-	8.99	8.40	7.79	9.40	8.93	9.22	6-9	-
Arsenic (mg/kg)	-	-	-	-	-	-	2.7	3.1	2.1	1.4	2.9	-	-	-	-	5.8	5.0	6.5	16.0	6.2	5.3	0.39	17.6
Barium (mg/kg)	-	-	-	-	-	-	197	200	332	289	2400	-	-	-	-	-	-	-	-	-	-	15000	-
Cadmium (mg/kg)	-	-	-	-	-	-	<1.1	<1.2	<1.2	<1.2	<1.2	-	-	-	-	-	-	-	-	-	-	70	-
Chromium (III) (mg/Kg)	-	-	-	-	-	-	51.1	39.9	56.3	53.3	41.2	-	-	-	-	-	-	-	-	-	-	120000	-
Chromium (VI) (mg/Kg)	-	-	-	-	-	-	<1.0	<1.0	<1.0	<1.0	<1.0	-	-	-	-	-	-	-	-	-	-	23	-
Copper (mg/kg)	-	-	-	-	-	-	10.3	9.3	9.9	10.8	9.2	-	-	-	-	-	-	-	-	-	-	3100	-
Lead (inorganic) (mg/kg)	-	-	-	-	-	-	14.5	14.2	14.0	14.8	12.6	-	-	-	-	-	-	-	-	-	-	400	-
Mercury (mg/kg)	-	-	-	-	-	-	<0.096	<0.096	<0.097	<0.094	<0.099	-	-	-	-	-	-	-	-	-	-	23	-
Nickel (mg/kg)	-	-	-	-	-	-	22.6	18.5	23.8	22.7	19.0	-	-	-	-	-	-	-	-	-	-	1600	-
Selenium (mg/kg)	-	-	-	-	-	-	<5.7	<6.0	<6.0	<5.8	<6.0	-	-	-	-	-	-	-	-	-	-	390	-
Silver (mg/kg)	-	-	-	-	-	-	<3.4	<3.6	<3.6	<3.5	<3.6	-	-	-	-	-	-	-	-	-	-	390	-
Zinc (mg/kg)	-	-	-	-	-	-	47.6	43.6	46.7	46.4	42.3	-	-	-	-	-	-	-	-	-	-	23000	-
% Solids	90.3	91.9	94.9	92.0	96.4	86.4	82.3	82.9	82.2	83.3	82.9	86.9	86.8	85.0	91.0	82.4	90.3	85.3	86.4	86.5	85.2	-	-

- Notes:
- 1) ND = not detectible to the laboratory detection limit.
  - 2) Results highlighted in yellow exceed Table 910-1 concentration levels. Results highlighted in Gray exceed Table 910-1, but are below background levels.
  - 3) "-" indicates no analysis.
  - 4) See Figure(s) for sample locations.
  - 5) Chain of Custody refers to samples as Bottom Tier #1 down 3' and Bottom Tier #2 Down 6'.

**Table 2**  
**Location: PCU 296-7A**  
**Lab Summary: Tank Area Vertical and Lateral Assessment**

Last Updated: 6/25/2014

Analytical Parameter (with units)	Assessment Samples Boreholes 1 - 5																		COGCC Table 910-1 Concentration Levels	Maximum based on Background
	BH-01 (5.5' - 8')	BH-01 (10.5' - 13')	BH-01 (15.5' - 17.5')	BH-01 (17.5' - 20.5')	BH-02 (3' - 5.5')	BH-02 (15.5' - 18') <sup>5</sup>	BH-02 (18' - 20')	BH-03 (14' - 19')	BH-03 (24' - 29')	BH-04 (4' - 9')	BH-04 (9' - 13')	BH-04 (14' - 19')	BH-04 (19' - 24')	BH-04 (34' - 39')	BH-05 (4' - 9')	BH-05 (14' - 19')	BH-05 (29' - 34')	BH-05 (39' - 44')		
Accutest Job #	D24249 (6/7/11)			D24251 (6/7/11)	D24249 (6/8/11)		D24251 (6/8/11)	D27990 (9/22/11)		D28276 (9/22/11)	D28494 (9/22/11)	D27990 (9/22/11)			D28494 (9/23/11)	D28276 (9/23/11)	D27990 (9/23/11)		-	
Sample Type (Composite/Discrete)	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	-	
TPH (GRO) (mg/Kg)	51.5	ND	ND	ND	53.0	ND	ND	ND	ND	41.9	ND	ND	ND	ND	ND	ND	6.74	ND	-	-
TPH (DRO) (mg/kg)	567	ND	ND	ND	381	ND	1,060	ND	ND	674	36.3	11.6	12.2	25.3	ND	28.1	52.7	15.6	-	-
TPH (GRO + DRO) (mg/Kg)	619	ND	ND	ND	434	ND	1,060	ND	ND	716	36.3	11.6	12.2	25.3	ND	28.1	59.4	15.6	500	-
Benzene (mg/Kg)	-	-	-	ND	-	-	ND	ND	ND	ND	-	ND	ND	ND	-	ND	ND	ND	0.17	-
Toluene (mg/Kg)	-	-	-	ND	-	-	ND	ND	ND	ND	-	ND	ND	ND	-	ND	ND	ND	85	-
Ethylbenzene (mg/Kg)	-	-	-	ND	-	-	ND	ND	ND	ND	-	ND	ND	ND	-	ND	ND	ND	100	-
Xylenes (total) (mg/Kg)	-	-	-	ND	-	-	ND	ND	ND	ND	-	ND	ND	ND	-	ND	ND	ND	175	-
Acenaphthene (mg/Kg)	-	-	-	ND	-	-	ND	-	-	-	-	-	-	-	-	-	-	-	1,000	-
Anthracene (mg/Kg)	-	-	-	ND	-	-	ND	-	-	-	-	-	-	-	-	-	-	-	1,000	-
Benzo(A)anthracene (mg/Kg)	-	-	-	ND	-	-	ND	-	-	-	-	-	-	-	-	-	-	-	0.22	-
Benzo(B)fluoranthene (mg/Kg)	-	-	-	ND	-	-	ND	-	-	-	-	-	-	-	-	-	-	-	0.22	-
Benzo(K)fluoranthene (mg/Kg)	-	-	-	ND	-	-	ND	-	-	-	-	-	-	-	-	-	-	-	2.2	-
Benzo(A)pyrene (mg/Kg)	-	-	-	ND	-	-	ND	-	-	-	-	-	-	-	-	-	-	-	0.022	-
Chrysene (mg/Kg)	-	-	-	ND	-	-	ND	-	-	-	-	-	-	-	-	-	-	-	22	-
Dibenzo(A,H)anthracene (mg/Kg)	-	-	-	ND	-	-	ND	-	-	-	-	-	-	-	-	-	-	-	0.022	-
Fluoranthene (mg/Kg)	-	-	-	ND	-	-	ND	-	-	-	-	-	-	-	-	-	-	-	1,000	-
Fluorene (mg/Kg)	-	-	-	ND	-	-	ND	-	-	-	-	-	-	-	-	-	-	-	1,000	-
Indo(1,2,3,C,D)pyrene (mg/Kg)	-	-	-	ND	-	-	ND	-	-	-	-	-	-	-	-	-	-	-	0.22	-
Napthalene (mg/Kg)	-	-	-	ND	-	-	ND	-	-	-	-	-	-	-	-	-	-	-	23	-
Pyrene (mg/Kg)	-	-	-	ND	-	-	ND	-	-	-	-	-	-	-	-	-	-	-	1,000	-
Electrical Conductivity (mmhos/cm)	-	-	-	0.167	-	-	0.149	-	-	-	-	-	-	-	-	-	-	-	4	-
Sodium Adsorption Ratio (SAR)	-	-	-	1.88	-	-	1.57	-	-	-	-	-	-	-	-	-	-	-	12	-
pH	-	-	-	9.52	-	-	9.57	-	-	-	-	-	-	-	-	-	-	-	6-9	-
Arsenic (mg/Kg)	-	-	-	1.6	-	-	4.2	-	-	-	-	-	-	-	-	-	-	-	0.39	17.6
Barium (mg/Kg)	-	-	-	134	-	-	132	-	-	-	-	-	-	-	-	-	-	-	15,000	-
Cadmium (mg/Kg)	-	-	-	<1.1	-	-	<1.1	-	-	-	-	-	-	-	-	-	-	-	70	-
Chromium (III) (mg/Kg)	-	-	-	27.8	-	-	32.7	-	-	-	-	-	-	-	-	-	-	-	120,000	-
Chromium (VI) (mg/Kg)	-	-	-	<0.45	-	-	<0.46	-	-	-	-	-	-	-	-	-	-	-	23	-
Copper (mg/Kg)	-	-	-	10.7	-	-	10.4	-	-	-	-	-	-	-	-	-	-	-	3,100	-
Lead (inorganic) (mg/Kg)	-	-	-	11.6	-	-	12.7	-	-	-	-	-	-	-	-	-	-	-	400	-
Mercury (mg/Kg)	-	-	-	<0.11	-	-	<0.11	-	-	-	-	-	-	-	-	-	-	-	23	-
Nickel (mg/Kg)	-	-	-	13.4	-	-	14.7	-	-	-	-	-	-	-	-	-	-	-	1,600	-
Selenium (mg/Kg)	-	-	-	<5.7	-	-	<5.7	-	-	-	-	-	-	-	-	-	-	-	390	-
Silver (mg/Kg)	-	-	-	<3.4	-	-	<3.4	-	-	-	-	-	-	-	-	-	-	-	390	-
Zinc (mg/Kg)	-	-	-	40.6	-	-	43.1	-	-	-	-	-	-	-	-	-	-	-	23,000	-
% Solids	85.2	85.8	85.9	87.0	84.7	84.8	85.7	80.4	86.6	82.1	80.5	85.6	87.5	87.0	78.4	85.5	86.9	86.3	-	-

- Notes:
- 1) ND = not detectable to the laboratory detection limit.
  - 2) Results highlighted in yellow exceed Table 910-1 concentration levels. Results highlighted in Gray exceed Table 910-1, but are below background levels.
  - 3) "-" indicates no analysis.
  - 4) See Figure(s) for sample locations.
  - 5) This sample is for BH-02. The lab report mistakenly shows BH-01. Chain of Custody is correct.

**Table 2A**  
**Location: PCU 296-7A**  
**Lab Summary: Tank Area Vertical and Lateral Assessment**

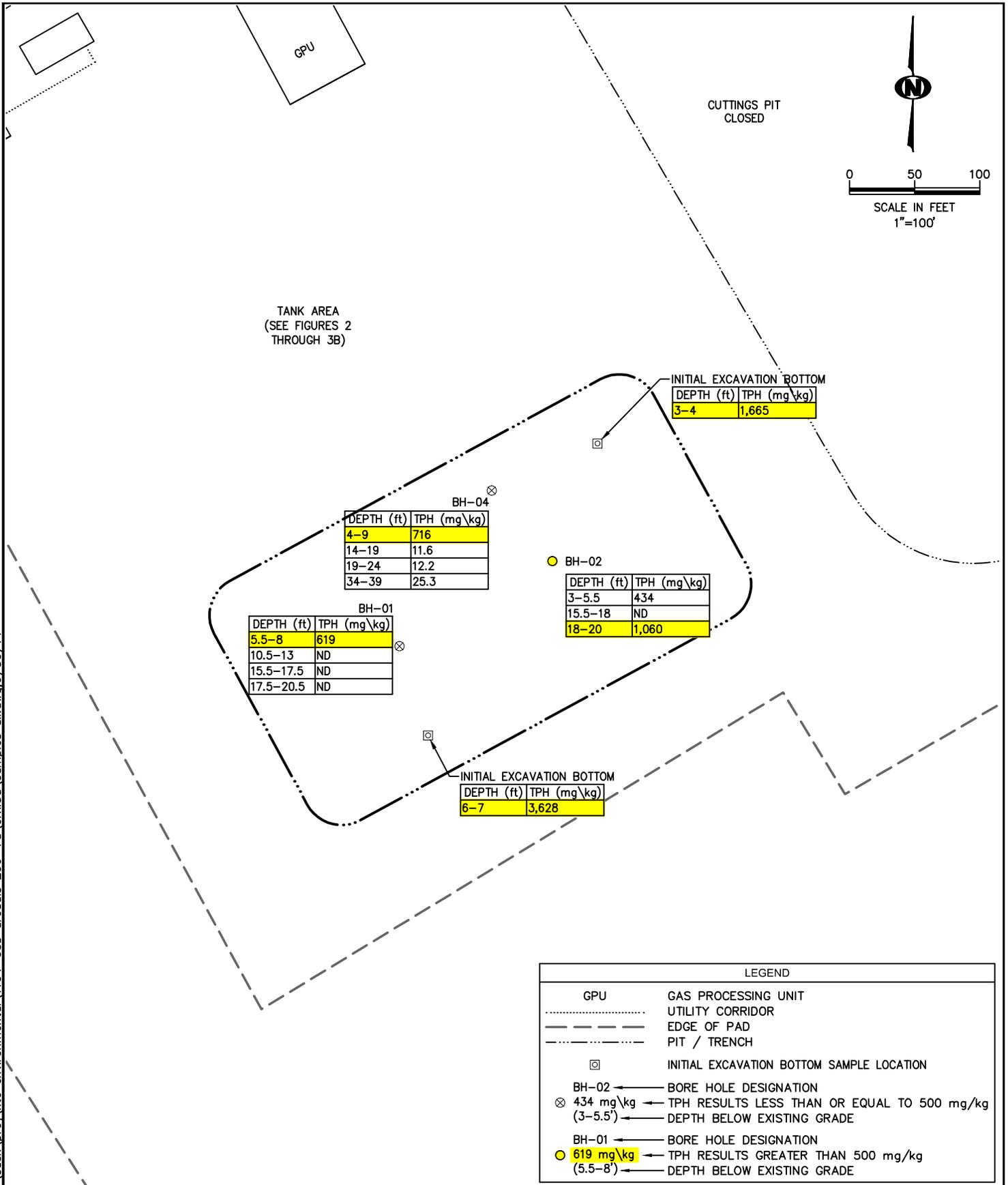
Last Updated: 6/25/2014

Analytical Parameter (with units)	Assessment Samples Boreholes 6 - 10											COGCC	Maximum based on Background
	BH-06 (24' - 29') (9/27/11)	BH-06 (29' - 34') (9/27/11)	BH-07 (24' - 29') (9/28/11)	BH-07 (34' - 39') (9/28/11)	BH-08 (19' - 24') (9/28/11)	BH-08 (39' - 44') (9/28/11)	BH-09 (3' - 8') (9/29/11)	BH-09 (28' - 33') (9/29/11)	BH-10 (34' - 39')	BH-10 (40' - 41')	BH-10 (42' - 44')	Table 910-1 Concentration Levels	
Accutest Job #	D28127				D28215				D28276 (9/29/11)			-	
Sample Type (Composite/Discrete)	D	D	D	D	D	D	D	D	D	D	D	-	
TPH (GRO) (mg/Kg)	ND	ND	ND	ND	ND	ND	7.64	ND	9.47	ND	ND	-	-
TPH (DRO) (mg/kg)	21.7	11.8	14.0	31.0	16.8	20.9	205	39.0	126	79.3	14.5	-	-
TPH (GRO + DRO) (mg/Kg)	21.7	11.8	14.0	31.0	16.8	20.9	213	39.0	135	79.3	14.5	500	-
Benzene (mg/Kg)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.17	-
Toluene (mg/Kg)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	85	-
Ethylbenzene (mg/Kg)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	100	-
Xylenes (total) (mg/Kg)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	175	-
Acenaphthene (mg/Kg)	-	-	-	-	-	-	-	-	-	-	-	1,000	-
Anthracene (mg/Kg)	-	-	-	-	-	-	-	-	-	-	-	1,000	-
Benzo(A)anthracene (mg/Kg)	-	-	-	-	-	-	-	-	-	-	-	0.22	-
Benzo(B)fluoranthene (mg/Kg)	-	-	-	-	-	-	-	-	-	-	-	0.22	-
Benzo(K)fluoranthene (mg/Kg)	-	-	-	-	-	-	-	-	-	-	-	2.2	-
Benzo(A)pyrene (mg/Kg)	-	-	-	-	-	-	-	-	-	-	-	0.022	-
Chrysene (mg/Kg)	-	-	-	-	-	-	-	-	-	-	-	22	-
Dibenzo(A,H)anthracene (mg/Kg)	-	-	-	-	-	-	-	-	-	-	-	0.022	-
Fluoranthene (mg/Kg)	-	-	-	-	-	-	-	-	-	-	-	1,000	-
Fluorene (mg/Kg)	-	-	-	-	-	-	-	-	-	-	-	1,000	-
Indo(1,2,3,C,D)pyrene (mg/Kg)	-	-	-	-	-	-	-	-	-	-	-	0.22	-
Napthalene (mg/Kg)	-	-	-	-	-	-	-	-	-	-	-	23	-
Pyrene (mg/Kg)	-	-	-	-	-	-	-	-	-	-	-	1,000	-
Electrical Conductivity (mmhos/cm)	-	-	-	-	-	-	-	-	-	-	-	4	-
Sodium Adsorption Ratio (SAR)	-	-	-	-	-	-	-	-	-	-	-	12	-
pH	-	-	-	-	-	-	-	-	-	-	-	6-9	-
Arsenic (mg/Kg)	-	-	-	-	-	-	-	-	-	-	-	0.39	17.6
Barium (mg/Kg)	-	-	-	-	-	-	-	-	-	-	-	15,000	-
Cadmium (mg/Kg)	-	-	-	-	-	-	-	-	-	-	-	70	-
Chromium (III) (mg/Kg)	-	-	-	-	-	-	-	-	-	-	-	120,000	-
Chromium (VI) (mg/Kg)	-	-	-	-	-	-	-	-	-	-	-	23	-
Copper (mg/Kg)	-	-	-	-	-	-	-	-	-	-	-	3,100	-
Lead (inorganic) (mg/Kg)	-	-	-	-	-	-	-	-	-	-	-	400	-
Mercury (mg/Kg)	-	-	-	-	-	-	-	-	-	-	-	23	-
Nickel (mg/Kg)	-	-	-	-	-	-	-	-	-	-	-	1,600	-
Selenium (mg/Kg)	-	-	-	-	-	-	-	-	-	-	-	390	-
Silver (mg/Kg)	-	-	-	-	-	-	-	-	-	-	-	390	-
Zinc (mg/Kg)	-	-	-	-	-	-	-	-	-	-	-	23,000	-
% Solids	88.9	87.3	86.6	88.3	86.5	86.1	86.7	87.6	86.5	85.3	84.8	-	-

Notes:

- 1) ND = not detectable to the laboratory detection limit.
- 2) Results highlighted in yellow exceed Table 910-1 concentration levels. Results highlighted in Gray exceed Table 910-1, but are below background levels.
- 3) "-" indicates no analysis.
- 4) See Figure(s) for sample locations.

\\hyper-v03\kwd-co\sdsk\pro\cto\_environmental\1104-03b\_arcadis\_296-7a\civil3d\samples all.dwg,6/30/14

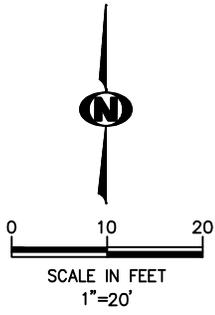
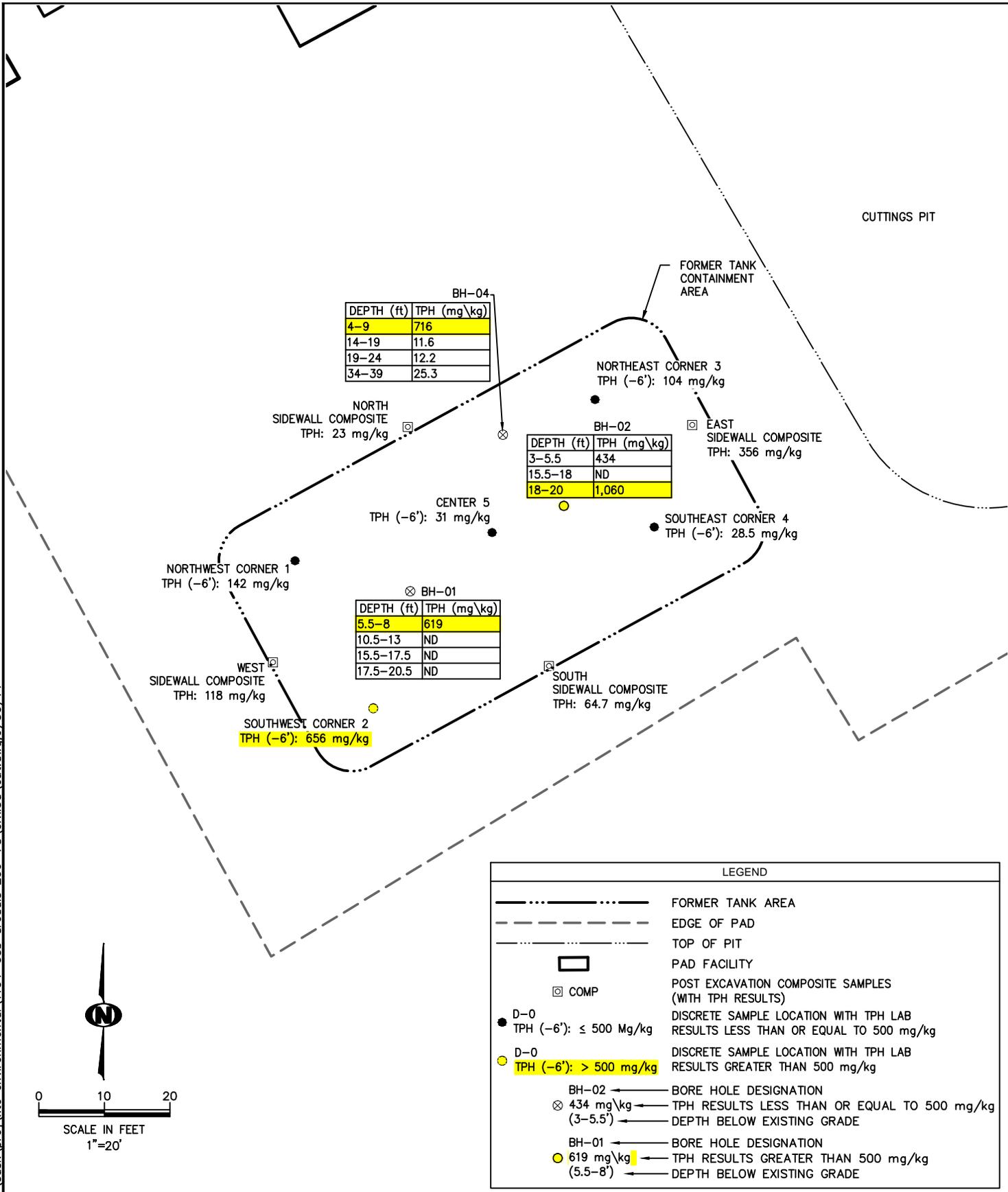


GPS: DK	CHECKED: JH	<b>FIGURE</b>  1	DATE	REVISIONS
DATE: 6/30/14	DRAWN: DC			
FILE NAME: samples all	SHEET NO. 1 of 6			
PROJECT NO. 1104-03B	SCALE: 1" = 20'			

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

FIGURE 1  
PICEANCE CREEK  
PCU 296-7A  
FORMER TANK CONTAINMENT  
AREA ASSESSMENT  
PREPARED FOR XTO ENERGY

\\hyper-v03\kwd-co\sdsk\proj\cto\_environmental\1104-03b\_arcadis\_296-7a\civil\3d\cut.dwg,6/30/14



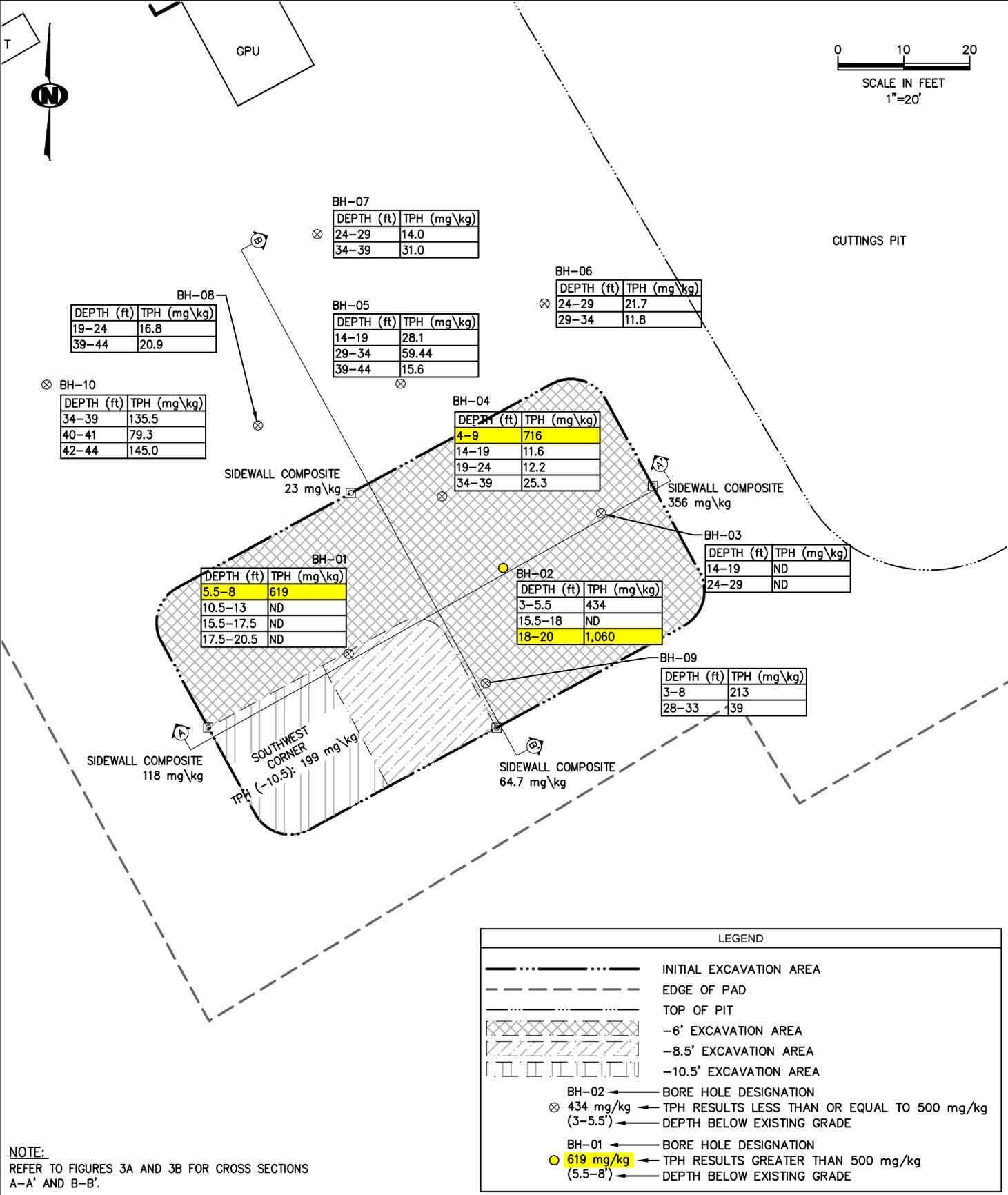
LEGEND	
— · · · · · —	FORMER TANK AREA
— — — — —	EDGE OF PAD
— · · · · · —	TOP OF PIT
□	PAD FACILITY
⊗ COMP	POST EXCAVATION COMPOSITE SAMPLES (WITH TPH RESULTS)
● D-0	DISCRETE SAMPLE LOCATION WITH TPH LAB RESULTS LESS THAN OR EQUAL TO 500 mg/kg
● D-0	DISCRETE SAMPLE LOCATION WITH TPH LAB RESULTS GREATER THAN 500 mg/kg
⊗ BH-02	BORE HOLE DESIGNATION
⊗ 434 mg/kg	TPH RESULTS LESS THAN OR EQUAL TO 500 mg/kg (3-5.5')
⊗	DEPTH BELOW EXISTING GRADE
⊗ BH-01	BORE HOLE DESIGNATION
⊗ 619 mg/kg	TPH RESULTS GREATER THAN 500 mg/kg (5.5-8')
⊗	DEPTH BELOW EXISTING GRADE

GPS: DK	CHECKED: JH	FIGURE 2	DATE	REVISIONS
DATE: 6/30/14	DRAWN: DC			
FILE NAME: cut	SHEET NO. 2 of 6			
PROJECT NO. 1104-03B	SCALE: 1" = 20'			

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

**FIGURE 2**  
PICEANCE CREEK  
PCU 296-7A  
FORMER TANK CONTAINMENT AREA  
ASSESSMENT  
PREPARED FOR XTO ENERGY





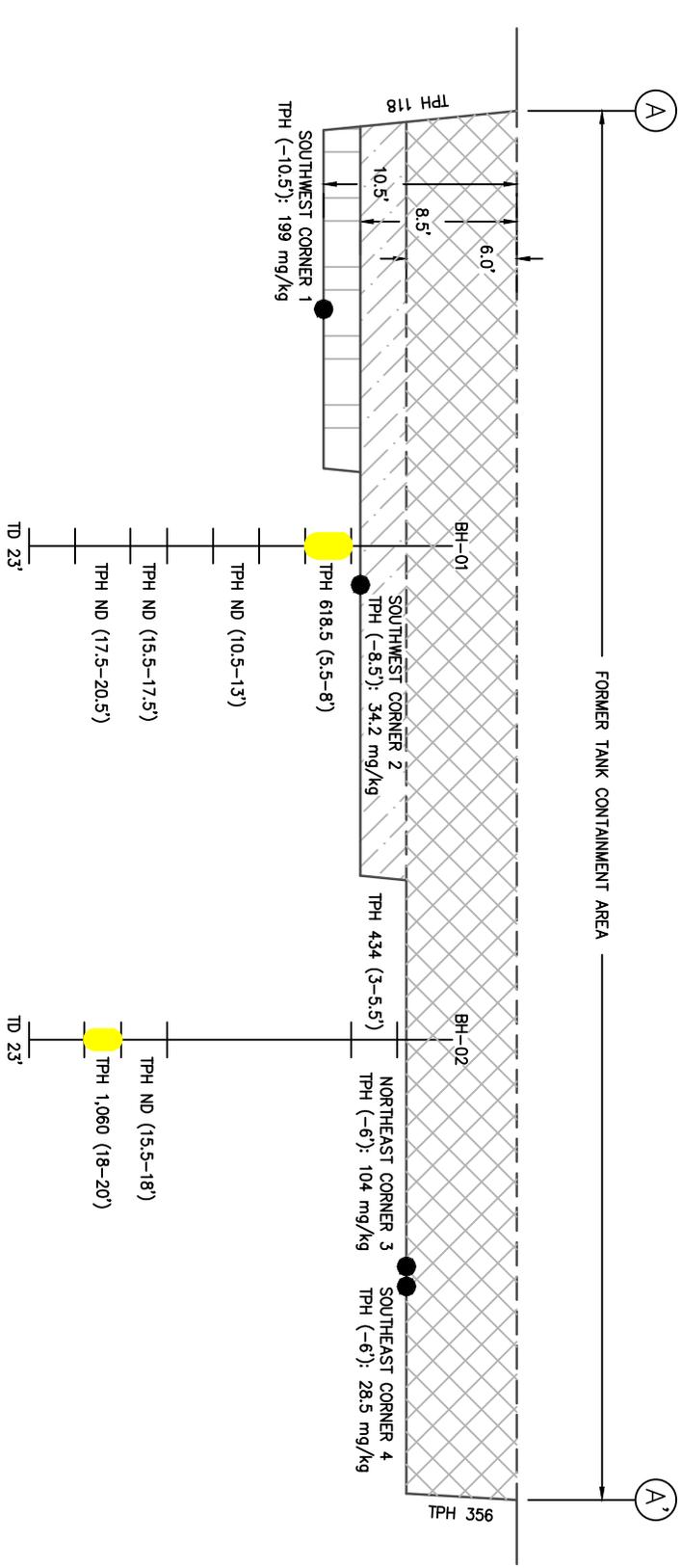
**NOTE:**  
REFER TO FIGURES 3A AND 3B FOR CROSS SECTIONS  
A-A' AND B-B'.

DESIGNED: DK	CHECKED: JH	<b>FIGURE</b> 3	NOTES:	
DATE: 9/26/11	DRAWN: DC		DATE	REVISIONS
FILE NAME: drill samples	SHEET NO. 4 of 6			
PROJECT NO. 1104-03B	SCALE: 1"=20'			

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

**FIGURE 3**  
PICEANCE CREEK  
PCU 296-7A  
FORMER TANK CONTAINMENT AREA  
DRILL ASSESSMENT  
PREPARED FOR XTO ENERGY

\\hyper-v03\lkwd-co\sdk\proj\cto\_environmental\1104-03b\_arcadis\_296-7a\civil3d\drill\_samples.dwg,6/30/14



- NOTES:**
- LAB DATA REPORTED = TPH (GRO AND DRO) IN mg/kg WITH SAMPLE DEPTHS BELOW EXISTING GROUND SURFACE.
  - BOTTOM OF EXCAVATION SAMPLES / SIDEWALL SAMPLES / COMPOSITE SAMPLES COLLECTED FOLLOWING INITIAL IMPACTED SOILS REMOVAL.
  - DEEPER EXCAVATION WAS BACKFILLED WITH CLEAN SOILS TO SHALLOW EXCAVATION DEPTH TO ALLOW DRILLING RIG ACCESS.
  - APPROXIMATE EXTENT OF IMPACTED SOILS >800 mg/kg SHOWN ARE PER TABLE 910-1 CONCENTRATION LEVELS.
  - BOREHOLES LOCATED INSIDE EXCAVATION AREA WERE STARTED 3.5' BELOW GROUND AFTER INITIAL SOILS EXCAVATION.

LEGEND	
	-6' EXCAVATION AREA
	-8.5' EXCAVATION AREA
	-10.5' EXCAVATION AREA

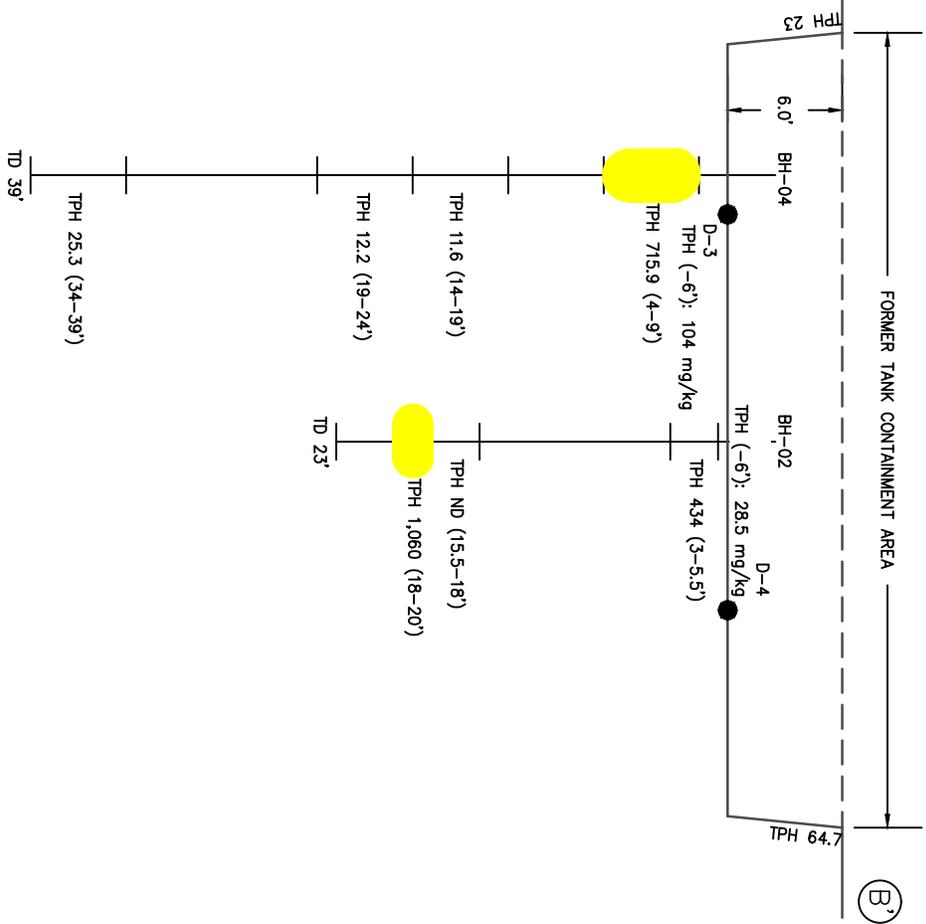
DESIGNED: DK	CHECKED: JH	FIGURE 3A	NOTES:
DATE: 6/30/14	DRAWN: DC		
FILE NAME: drill samples	SHEET NO. 5 of 6	SCALE: 1"=10'	DATE
PROJECT NO. 1104-03B			REVISIONS

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

FIGURE 3A  
 PICEANCE CREEK  
 PCU 296-7A  
 FORMER TANK CONTAINMENT AREA  
 DRILL ASSESSMENT  
 CROSS SECTION A-A'  
 PREPARED FOR XTO ENERGY

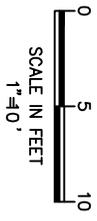
(B)

(B)



**NOTES:**

1. LAB DATA REPORTED = TPH (GRO AND DRO) IN mg/kg WITH SAMPLE DEPTHS BELOW EXISTING GROUND SURFACE.
2. BOTTOM OF EXCAVATION SAMPLES / SIDEWALL SAMPLES / COMPOSITE SAMPLES COLLECTED FOLLOWING INITIAL IMPACTED SOILS REMOVAL.
3. BOREHOLES LOCATED INSIDE EXCAVATION AREA WERE STARTED 3.5' BELOW GROUND AFTER INITIAL SOILS EXCAVATION.



hyper-v03\lkwd-co\sdk\proj\environmental\1104-03b arcadis 296-7a\civil3d\drill\_samples.dwg,6/30/14

DESIGNED: DK	CHECKED: JH	FIGURE 3B	NOTES:	
DATE: 6/30/14	DRAWN: DC		DATE	REVISIONS
FILE NAME: drill samples	SHEET NO. 6 of 6	SCALE: 1"=10'		
PROJECT NO. 1104-03B				

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

FIGURE 3B  
 PICEANCE CREEK  
 PCU 296-7A  
 FORMER TANK CONTAINMENT AREA  
 DRILL ASSESSMENT  
 CROSS SECTION B-B'  
 PREPARED FOR XTO ENERGY