

State of Colorado
Oil and Gas Conservation Commission

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



#5076

FOR OGCC USE ONLY

RECEIVED
7/20/2012

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): _____

OGCC Employee: _____

Spill Complaint
Inspection NOAV

Tracking No: _____

OGCC Operator Number: _____

Name of Operator: _____

Address: _____

City: _____ State: _____ Zip: _____

Contact Name and Telephone: _____

No: _____

Fax: _____

API Number: _____ County: _____

Facility Name: _____ Facility Number: _____

Well Name: _____ Well Number: _____

Location: (QtrQtr, Sec, Twp, Rng, Meridian): _____ Latitude: _____ Longitude: _____

TECHNICAL CONDITIONS

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

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.): _____

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

Potential receptors (water wells within 1/4 mi, surface waters, etc.): _____

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

Impacted Media (check): Extent of Impact: How Determined:

Soils _____ _____

Vegetation _____ _____

Groundwater _____ _____

Surface Water _____ _____

REMEDIALTION WORKPLAN

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

Describe how source is to be removed:

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.:

XTO
REM # 5076

FORM
27
Rev 6/99

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Page 2

REMEDIATION WORKPLAN (Cont.)

Tracking Number: _____
Name of Operator: _____
OGCC Operator No: _____
Received Date: _____
Well Name & No: PCU 296-7A
Facility Name & No: LOCATION ID # 335884

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 subliner material to confirm no groundwater impact potential exists (see Tables 1 through 3).

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 Freshwater, Reserve or Cuttings Pit (see Tables 1 through 3).

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

Freshwater, Reserve and Cuttings Pit contents and synthetic liners were removed and transported to an approved offsite disposal/recycling facility. Reserve Pit subliner impacts were excavated and mix/blend processed to below Table 910-1 concentration levels. This material will be used for on-site fill.

IMPLEMENTATION SCHEDULE

Date Site Investigation Began: <u>01/14/10</u>	Date Site Investigation Completed: <u>in progress</u>	Date Remediation Plan Submitted: <u>7/20/2012</u>
Remediation Start Date: <u>pending approval</u>	Anticipated Completion Date: <u>pending approval</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: Jessica Dooling

Signed: _____

Title: Environmental Coordinator

Date: 7/20/2012

OGCC Approved: _____

Title: FOR

Date: 07/24/2012

Chris Canfield
EPS NW Region

ATTACHMENT I

PCU 296-7A Pit Closure Workplan, Form 27 Page 1

Describe initial action taken:

- i. The site consists of Freshwater, Reserve and Cuttings Pits (see Figure 1).
- ii. Freshwater Pit contents and associated synthetic liners were removed and transported to an offsite permitted disposal/recycling facility.
- iii. Freshwater Pit subliner composite samples were collected and analyzed for full Table 910-1 parameters. Results were all below Table 910-1 concentration levels except for pH (9.41) and Arsenic (3.7 mg/kg).
- iv. Reserve Pit contents and associated synthetic liners were removed and transported to an offsite permitted disposal/recycling facility.
- v. Reserve pit subliner composite samples were collected on 2/9/12 and analyzed for full Table 910-1 parameters. Results were all below Table 910-1 concentration levels except for TPH (1,642 mg/kg), SAR (21.7), pH (10.22), and Arsenic (2.6 mg/kg).
- vi. Based on the elevated TPH concentration (1,642 mg/kg) in the Reserve Pit, five test pits (See Figure 2) were excavated to determine the vertical extent of the impacts. Results of the test pit samples indicated that only the north corner (TPH: 650 mg/kg from subliner surface to -2' below pit bottom) and the center (TPH: 789 mg/kg from subliner surface to -2' and 740 mg/kg from -4' to -6') exceeded Table 910-1 concentration levels.
- vii. The Reserve Pit subliner impacted soils in these two areas were excavated to approximately 2 feet below existing pit bottom grade in the north area and 6 feet below existing pit bottom grade in the center area. Composite confirmation samples were collected from each of these areas with TPH results both below Table 910-1 concentration levels. Excavated Reserve Pit subliner soils were crushed, mix/blend processed, and sampled for Table 910 compliance. Refer to Table 3 and Figures 2, 3, 3A, and 3B for details.
- viii. Areas of hydrocarbon staining were observed in the north sidewall of the Reserve Pit. Sidewall samples collected and submitted for laboratory analyses

exceeded Table 910-01 concentration levels (TPH 8,232 mg/kg). Impacted soils in the north sidewall were excavated and composite confirmation samples were subsequently collected from the sidewalls and bottom of the excavation with TPH results below Table 910-1 concentration levels. The excavated impacted soils from the north sidewall were combined with the Reserve Pit subliner impacted soils and remediated using the same method as described in item vii. Refer to Table 3 and Figures 2, and 3A for details.

- ix. Cuttings pit contents and associated synthetic liners were removed and transported to an offsite permitted disposal/recycling facility.
- x. Cuttings Pit subliner composite samples were collected and analyzed for full Table 910-1 parameters. Results were all below Table 910-1 concentration levels except for Electrical Conductivity (4.310), pH (9.32) and Arsenic (2.3 mg/kg).
- xi. Mix/blend processed Reserve Pit subliner material will be used onsite for backfill.
- xii. Refer to Tables 1, 2, and 3 for a summary of laboratory results and to Figures 1, 2, 3, 3A and 3B for layout of the pits and sample locations.
- xiii. Elevated arsenic levels above Table 910-1 concentration were detected beneath the Freshwater, Reserve and Cuttings Pits. Please refer to the associated sundry requesting consideration of background arsenic levels.

ATTACHMENT II

PCU 296-7A Pit Closure Workplan, Form 27 Page 2

REMEDIATION WORKPLAN

Describe Reclamation Plan:

1. Fresh Water Pit

- The pit will be backfilled with mix/blended, native onsite material or material transported to the site.

2. Reserve Pit

- Impacted subliner soils were removed, crushed, mix/blend processed and sampled for Table 910-1 compliance.
- The pit will be backfilled with mix/blended, native onsite material or material transported to the site.

3. Cuttings Pit

- The pit will be backfilled with mix/blended, native onsite material or material transported to the site.
- Elevated arsenic levels above the Table 910-1 concentration level were detected beneath the Freshwater, Reserve and Cuttings Pits. Please refer to associated sundry requesting consideration of background arsenic levels.
- Please refer to Tables 1, 2, and 3 for a summary of laboratory results. Laboratory analytical reports are attached.
- Any remaining elevated levels of Electrical Conductivity, SAR and pH detected beneath the pits 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.
- Material used to fill the top 3 feet of each pit will be found onsite.
- Reclamation activities will be as specified in the Surface use Plan and BLM Conditions of Approval.

Table 1
Location: PCU 296-7A
Lab Summary

Last update 7/19/2012

Analytical Parameter	Freshwater Pit		Reserve Pit		Cuttings #1		Background (1/14/10)						COGCC	Maximum based on Background
(with units)	FW Pit Contents (1/14/10)	FW Pit Subliner (3/10/11)	RES Pit Contents (1/14/10)	RES Pit Subliner ⁵ (2/9/12)	CUT Pit Contents (1/14/10)	CUT Pit Subliner (2/16/11)	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 #	D10402	D21712	D10402	D31778	D10402	D21155	D10402							
Sample type (Composite/Discrete)	C	C	C	C	C	C	D	D	D	D	D	D		
TPH (GRO) (mg/Kg)	2.82	ND	ND	21.9	ND	ND	-	-	-	-	-	-	-	-
TPH (DRO) (mg/Kg)	92200	215	172000	1620	946	37.4	-	-	-	-	-	-	-	-
TPH (GRO + DRO) (mg/Kg)	92203	215	172000	1642	946	37.4	-	-	-	-	-	-	500	-
Benzene (mg/Kg)	ND	ND	ND	ND	ND	0.0508	-	-	-	-	-	-	0.170	-
Toluene (mg/Kg)	ND	ND	ND	ND	ND	0.169	-	-	-	-	-	-	85	-
Ethylbenzene (mg/Kg)	ND	ND	ND	ND	ND	0.0466	-	-	-	-	-	-	100	-
Xylenes (total) (mg/Kg)	0.0417	0.077	ND	0.216	ND	0.176	-	-	-	-	-	-	175	-
Acenaphthene (mg/Kg)	ND	ND	ND	ND	ND	ND	-	-	-	-	-	-	1000	-
Anthracene (mg/Kg)	ND	ND	ND	ND	ND	ND	-	-	-	-	-	-	1000	-
Benzo(A)anthracene (mg/Kg)	ND	ND	ND	ND	ND	ND	-	-	-	-	-	-	0.22	-
Benzo(A)pyrene (mg/Kg)	ND	ND	ND	ND	ND	ND	-	-	-	-	-	-	0.22	-
Benzo(B)fluoranthene (mg/Kg)	ND	ND	ND	ND	ND	ND	-	-	-	-	-	-	2.2	-
Benzo(K)fluoranthene (mg/Kg)	ND	ND	ND	ND	ND	ND	-	-	-	-	-	-	0.022	-
Chrysene (mg/Kg)	ND	ND	ND	ND	ND	ND	-	-	-	-	-	-	22	-
Dibenzo(A,H)anthracene (mg/Kg)	ND	ND	ND	ND	ND	ND	-	-	-	-	-	-	0.022	-
Fluoranthene (mg/Kg)	ND	ND	ND	ND	ND	ND	-	-	-	-	-	-	1000	-
Fluorene (mg/Kg)	ND	0.0462	ND	0.48	ND	ND	-	-	-	-	-	-	1000	-
Indeno(1,2,3-cd)pyrene (mg/Kg)	ND	ND	ND	ND	ND	ND	-	-	-	-	-	-	0.22	-
Napthalene (mg/Kg)	174.000	ND	ND	0.326	ND	ND	-	-	-	-	-	-	23	-
Pyrene (mg/Kg)	ND	ND	ND	ND	ND	ND	-	-	-	-	-	-	1000	-
Electrical Conductivity (mmhos/cm)	5.360	2.160	2.300	3.840	7.180	4.310	0.281	0.626	0.495	1.440	0.230	0.503	4	-
Sodium Adsorption Ratio (SAR)	30.3	8.38	26.0	21.7	23.5	4.20	0.921	0.794	1.12	6.85	0.243	1.90	12	-
pH	9.07	9.41	9.23	10.22	8.39	9.32	8.99	8.40	7.79	9.40	8.93	9.22	6-9	-
Arsenic (mg/kg)	3.5	3.7	3.6	2.6	15.1	2.3	5.8	5.0	6.5	16.0	6.2	5.3	0.39	17.6
Barium (mg/kg)	6670	1450	14200	3460	3640	1490	-	-	-	-	-	-	15000	-
Cadmium (mg/kg)	<0.91	<1.3	<1.2	<1.2	11.6	<1.4	-	-	-	-	-	-	70	-
Chromium (III) (mg/Kg)	49.5	33.0	29.7	44.6	10.5	29.3	-	-	-	-	-	-	120000	-
Chromium (VI) (mg/Kg)	<2.3	0.66	<2.1	0.56	<2.2	<0.52	-	-	-	-	-	-	23	-
Copper (mg/kg)	63.9	9.1	34.3	11.4	29.2	8.9	-	-	-	-	-	-	3100	-
Lead (inorganic) (mg/kg)	19.7	9.0	12.0	9.8	16.4	12.0	-	-	-	-	-	-	400	-
Mercury (mg/kg)	71.6	<0.12	1.8	<0.12	<0.097	<0.12	-	-	-	-	-	-	23	-
Nickel (mg/kg)	16.0	13.8	12.5	19.1	12.5	12.7	-	-	-	-	-	-	1600	-
Selenium (mg/kg)	<4.5	<6.4	<6.1	<6.0	<4.4	<6.8	-	-	-	-	-	-	390	-
Silver (mg/kg)	<2.7	<3.8	<3.7	<3.6	<2.7	<4.1	-	-	-	-	-	-	390	-
Zinc (mg/kg)	148	37.4	43.7	42.9	52.4	38.8	-	-	-	-	-	-	23000	-
% Solids	86.8	81.2	59.6	80.6	87.4	74.0	82.4	90.3	85.3	86.4	86.5	85.2		

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 site map for sample locations.
- 5) See Table 2 and 3 for Reserve Pit remediation details.

Table 2
Location: PCU 296-7A
Lab Summary - Reserve Pit Assessment

Last update 7/19/2012

Analytical Parameter	Subliner	Test Pit 1 (North Corner)				Test Pit 2 (West Corner)				Test Pit 3 (South Corner)			Test Pit 4 (East Corner)			Test Pit 5 (Center)			COGCC	Maximum based on Background
(with units)	RES Pit Subliner 02/9/12	RP TP-1 (0') - (-2') 02/22/12	RP TP-1 (-2') - (-4') 02/22/12	RP TP-1 (-4') - (-5.5') 02/22/12	RP TP-1 (-8') - (-10') 02/23/12	RP TP-2 (0') - (-2') 02/23/12	RP TP-2 (-4') - (-6') 02/23/12	RP TP-2 (-6') - (-8') 02/23/12	RP TP-2 (-8') - (-10') 02/23/12	RP TP-3 (0') - (-2') 02/23/12	RP TP-3 (-2') - (-4') 02/23/12	RP TP-3 (-4') - (-6') 02/23/12	RP TP-4 (0') - (-2') 02/23/12	RP TP-4 (-2') - (-4') 02/23/12	RP TP-4 (-4') - (-6') 02/23/12	RP TP-5 (0') - (-2') 02/23/12	RP TP-5 (-2') - (-4') 02/23/12	RP TP-5 (-4') - (-6') 02/23/12	Table 910-1 Concentration Levels	
Accutest Job #	D31778	D32164				D32216				D32216			D32216			D32216				
Sample type (Composite/Discrete)	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
TPH (GRO) (mg/Kg)	21.9	7.47	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	7.63	ND	6.87	-	-
TPH (DRO) (mg/Kg)	1620	643	210	274	281	113	181	234	385	12.2	21.0	ND	41.7	29.9	47.7	781	483	733	-	-
TPH (GRO + DRO) (mg/Kg)	1642	650	210	274	281	113	181	234	385	12.2	21.0	ND	41.7	29.9	47.7	789	483	740	500	-
Benzene (mg/Kg)	ND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.170	-
Toluene (mg/Kg)	ND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	85	-
Ethylbenzene (mg/Kg)	ND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100	-
Xylenes (total) (mg/Kg)	0.216	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	175	-
Acenaphthene (mg/Kg)	ND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1000	-
Anthracene (mg/Kg)	ND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1000	-
Benzo(A)anthracene (mg/Kg)	ND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.22	-
Benzo(A)pyrene (mg/Kg)	ND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.022	-
Benzo(B)fluoranthene (mg/Kg)	ND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.22	-
Benzo(K)fluoranthene (mg/Kg)	ND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.2	-
Chrysene (mg/Kg)	ND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	22	-
Dibenzo(A,H)anthracene (mg/Kg)	ND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.022	-
Fluoranthene (mg/Kg)	ND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1000	-
Fluorene (mg/Kg)	0.48	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1000	-
Indeno(1,2,3-C,D)pyrene (mg/Kg)	ND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.22	-
Naphthalene (mg/Kg)	0.326	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	23	-
Pyrene (mg/Kg)	ND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1000	-
Electrical Conductivity (mmhos/cm)	3.840	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-
Sodium Adsorption Ratio (SAR)	21.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12	-
pH	10.22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6-9	-
Arsenic (mg/kg)	2.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.39	17.6
Barium (mg/kg)	3460	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15000	-
Cadmium (mg/kg)	<1.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	70	-
Chromium (III) (mg/Kg)	44.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	120000	-
Chromium (VI) (mg/Kg)	0.56	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	23	-
Copper (mg/kg)	11.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3100	-
Lead (inorganic) (mg/kg)	9.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	400	-
Mercury (mg/kg)	<0.12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	23	-
Nickel (mg/kg)	19.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1600	-
Selenium (mg/kg)	<6.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	390	-
Silver (mg/kg)	<3.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	390	-
Zinc (mg/kg)	42.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	23000	-
% Solids	80.6	83.4	83.2	85.3	85.2	83.7	85.2	83.9	85.0	85.0	85.2	85.7	85.7	86.1	85.6	82.8	84.4	83.8		

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 site map for sample locations.

Table 3
Location: PCU 296-7A
Lab Summary - Reserve Pit Excavation

Last update 7/19/2012

Analytical Parameter	Subliner	Remediation Excavation										RP Excavated Material Post Crusher					RP Excavated Material Post Mix/Blending (MB)					COGCC	Maximum based on Background
(with units)	RES Pit Subliner 02/9/12	RP Subliner (north area) ⁵ -6' 3/13/12	RP Subliner Sidewall East 3/13/12	RP Subliner Sidewall West 3/13/12	RP Subliner Sidewall South 3/13/12	RP Subliner 2' 4/12/12	RP North Sidewall ⁶ +2' 3/13/12	North Sidewall Excavation Face West 4/13/12	North Sidewall Excavation Bottom West 4/13/12	North Sidewall Excavation Face East 4/13/12	North Sidewall Excavation Bottom East 4/13/12	RP Crushed Material Day 1 (5/21) 5/24/12	RP Crushed Material Day 2 (5/22) 5/24/12	RP Crushed Material Day 3 (5/23) 5/24/12	RP Crushed Material Day 4 (5/24) 5/24/12	RP Crushed Material Day 5 (5/29) 5/30/12	RP Day 1 MixBlend (6/27) 6/27/12	RP Day 2 MixBlend (6/26) 6/27/12	RP Day 3 MixBlend (6/21) 6/25/12	RP Day 4 MixBlend (6/20) 6/21/12	RP Day 5 MixBlend (6/6) 6/7/12	Table 910-1 Concentration Levels	
Accutest Job #	D31778	D32748					D33671	D32749	D33716				D34860			D34957	D36007		D35850	D35769	D35266		
Sample type (Composite/Discrete)	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
TPH (GRO) (mg/Kg)	21.9	ND	ND	ND	ND	ND	142	ND	ND	63.0	ND	9.56	11.1	7.35	ND	6.62	ND	ND	ND	ND	6.31	-	
TPH (DRO) (mg/Kg)	1620	48.9	39.2	96.0	ND	32.4	8,090	11.6	426	164	128	1,720	1,540	986	800	1,410	322	429	462	415	286	-	
TPH (GRO + DRO) (mg/Kg)	1642	48.9	39.2	96.0	ND	32.4	8,232	11.6	426	227	128	1,730	1,551	993	800	1,417	322	429	462	415	292	500	
Benzene (mg/Kg)	ND	-	-	-	-	-	ND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.170	
Toluene (mg/Kg)	ND	-	-	-	-	-	ND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	85	
Ethylbenzene (mg/Kg)	ND	-	-	-	-	-	ND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100	
Xylenes (total) (mg/Kg)	0.216	-	-	-	-	-	0.142	-	-	-	-	-	-	-	-	-	-	-	-	-	-	175	
Acenaphthene (mg/Kg)	ND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1000	
Anthracene (mg/Kg)	ND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1000	
Benzo(A)anthracene (mg/Kg)	ND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.22	
Benzo(A)pyrene (mg/Kg)	ND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.022	
Benzo(B)fluoranthene (mg/Kg)	ND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.22	
Benzo(K)fluoranthene (mg/Kg)	ND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.2	
Chrysene (mg/Kg)	ND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	22	
Dibenzo(A,H)anthracene (mg/Kg)	ND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.022	
Fluoranthene (mg/Kg)	ND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1000	
Fluorene (mg/Kg)	0.48	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1000	
Indeno(1,2,3-C,D)pyrene (mg/Kg)	ND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.22	
Naphthalene (mg/Kg)	0.326	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	23	
Pyrene (mg/Kg)	ND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1000	
Electrical Conductivity (mmhos/cm)	3.840	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	
Sodium Adsorption Ratio (SAR)	21.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12	
pH	10.22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6-9	
Arsenic (mg/kg)	2.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.39	
Barium (mg/kg)	3460	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15000	
Cadmium (mg/kg)	<1.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	70	
Chromium (III) (mg/Kg)	44.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	120000	
Chromium (VI) (mg/Kg)	0.56	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	23	
Copper (mg/kg)	11.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3100	
Lead (inorganic) (mg/kg)	9.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	400	
Mercury (mg/kg)	<0.12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	23	
Nickel (mg/kg)	19.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1600	
Selenium (mg/kg)	<6.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	390	
Silver (mg/kg)	<3.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	390	
Zinc (mg/kg)	42.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	23000	
% Solids	80.6	87.6	88.1	88.6	87.4	88.2	85.3	84.9	85.6	88.1	84.9	90.3	89.5	86.6	86.5	89.2	92.0	93.5	91.5	93.1	91.3		

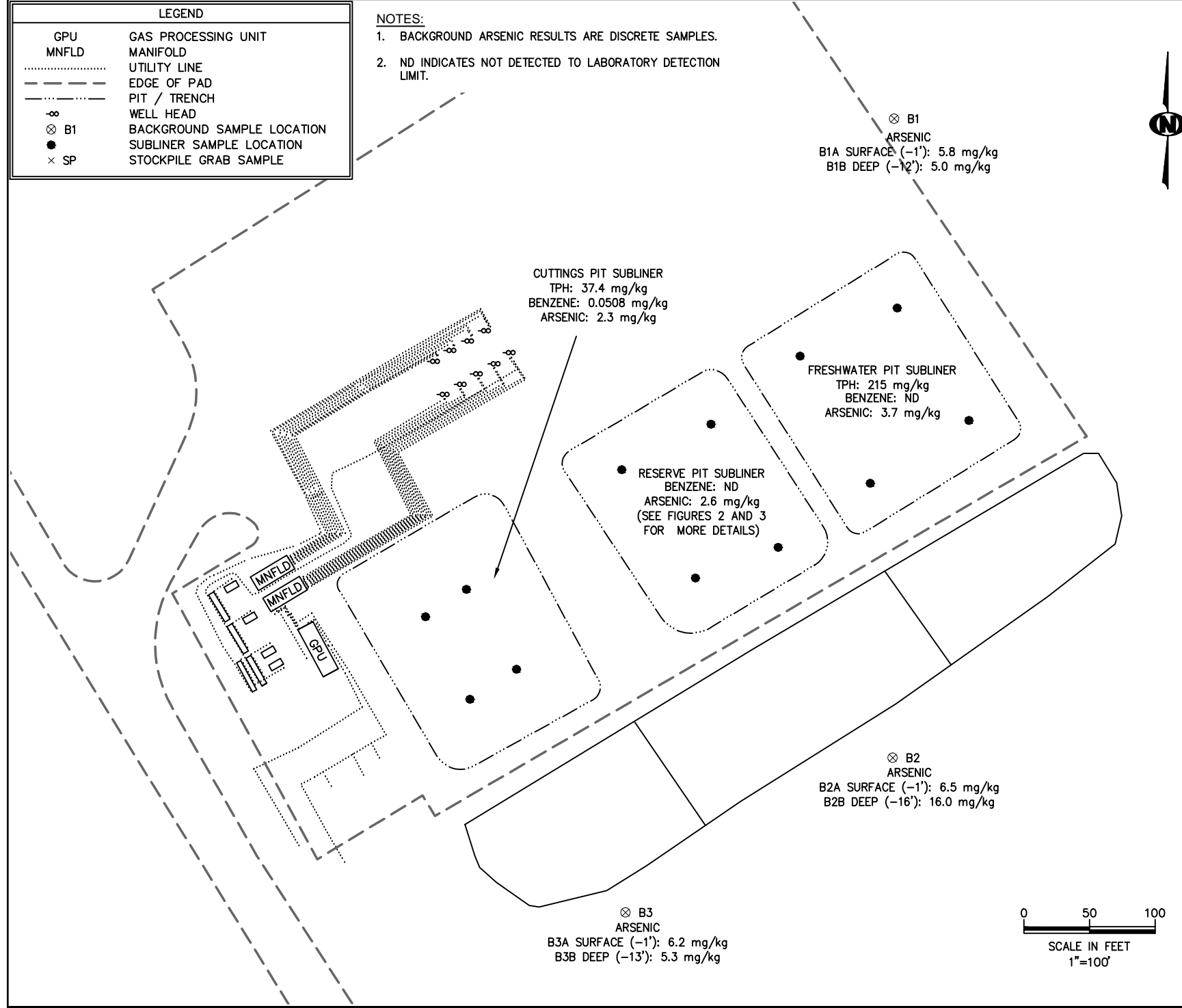
Notes:

- 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 site map for sample locations.
- 5) The RP Subliner (north area) -6' is called RP Subliner -6' Center at TP-5 on the Chain of Custody document.
- 6) The RP North sidewall +2' sample was collected at an elevation approx. 2' above the bottom of the pit in the north sidewall.

LEGEND	
GPU	GAS PROCESSING UNIT
MNFLD	MANIFOLD
.....	UTILITY LINE
-----	EDGE OF PAD
- - - - -	PIT / TRENCH
~	WELL HEAD
⊗ B1	BACKGROUND SAMPLE LOCATION
●	SUBLINER SAMPLE LOCATION
× SP	STOCKPILE GRAB SAMPLE

NOTES:

1. BACKGROUND ARSENIC RESULTS ARE DISCRETE SAMPLES.
2. ND INDICATES NOT DETECTED TO LABORATORY DETECTION LIMIT.



DESIGNED:		CHECKED:		FIGURE		NOTES:	
I		GK		1		FIGURE 1	
DATE:		DRAWN:		SHEET NO.		PICEANCE CREEK	
7/19/12		DRF		1 of 5		PCU 296-7A	
FILE NAME:		PROJECT NO.		SCALE:		SAMPLE LOCATIONS WITH	
samples all		1007-02		1"=100'		ARSENIC LEVELS	
PROJECT NO.		SCALE:		1"=100'		PREPARED FOR XTO ENERGY	

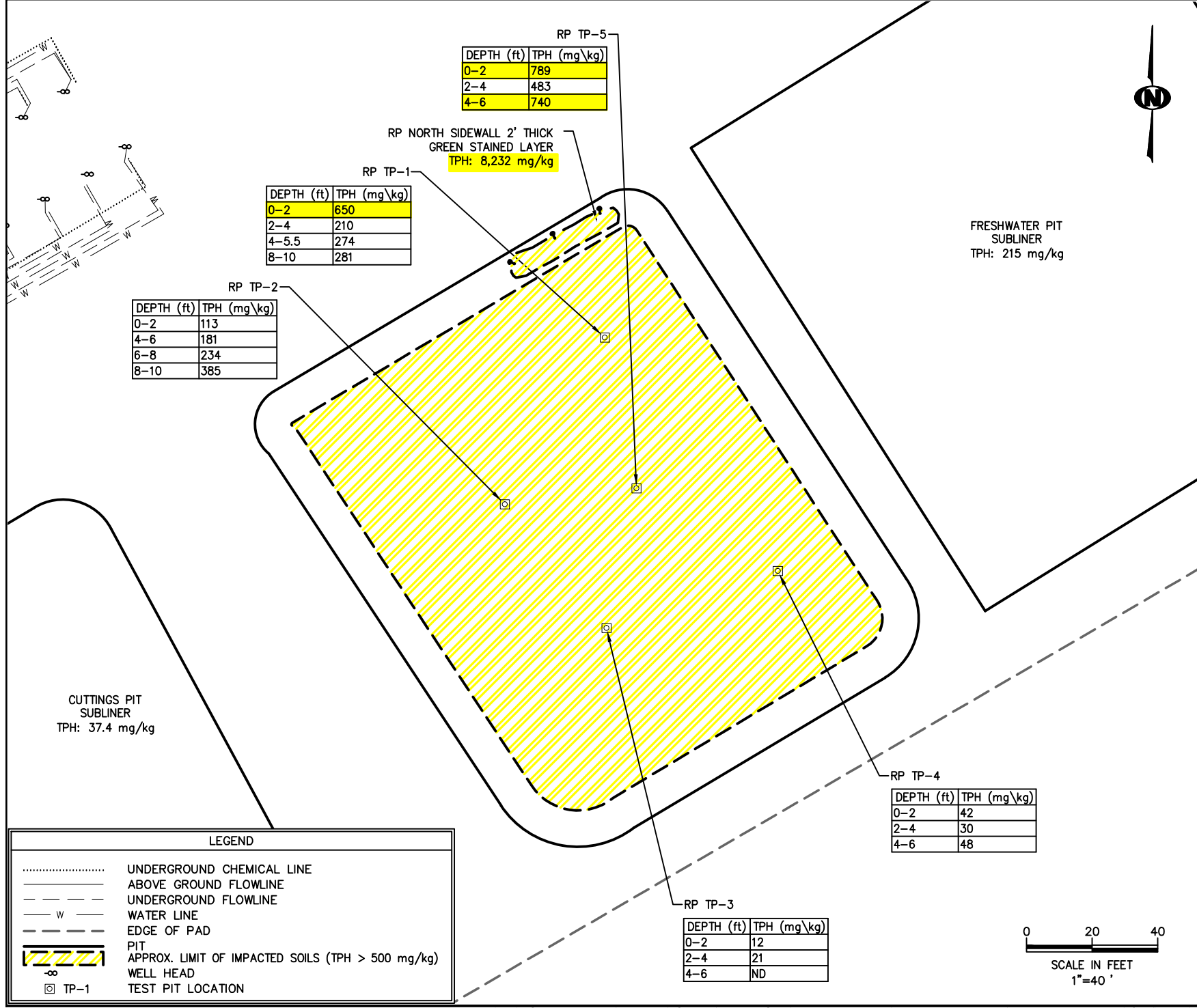
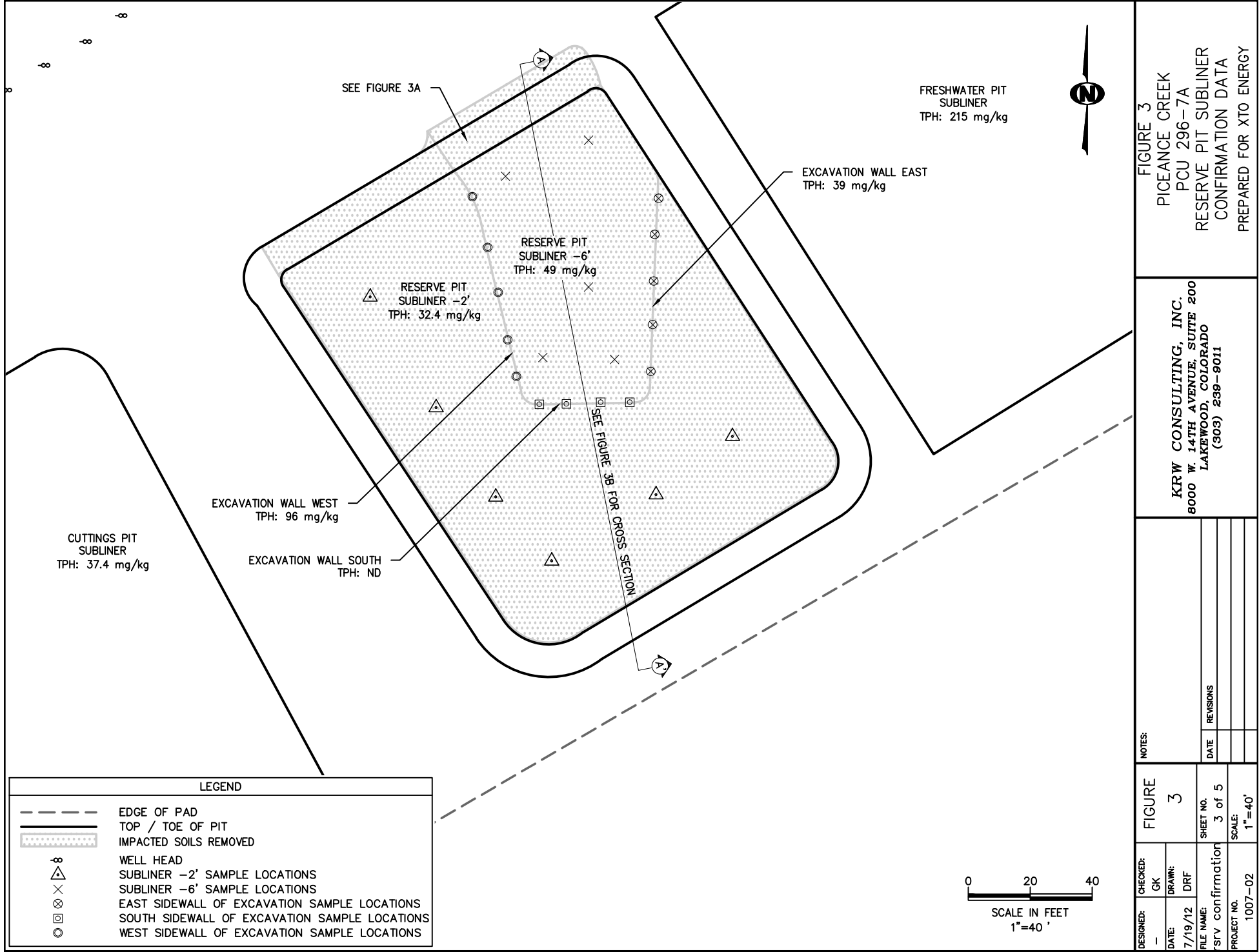
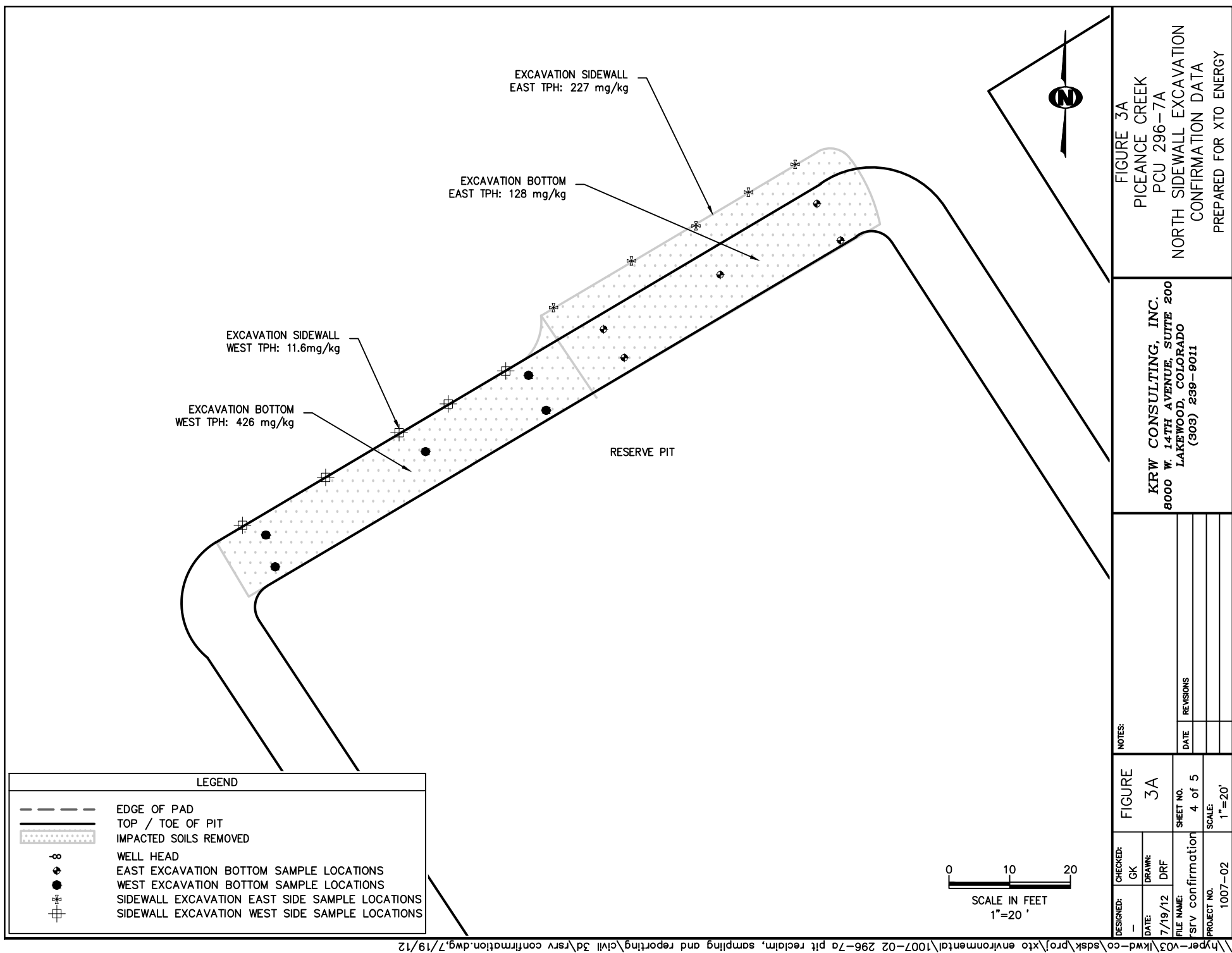
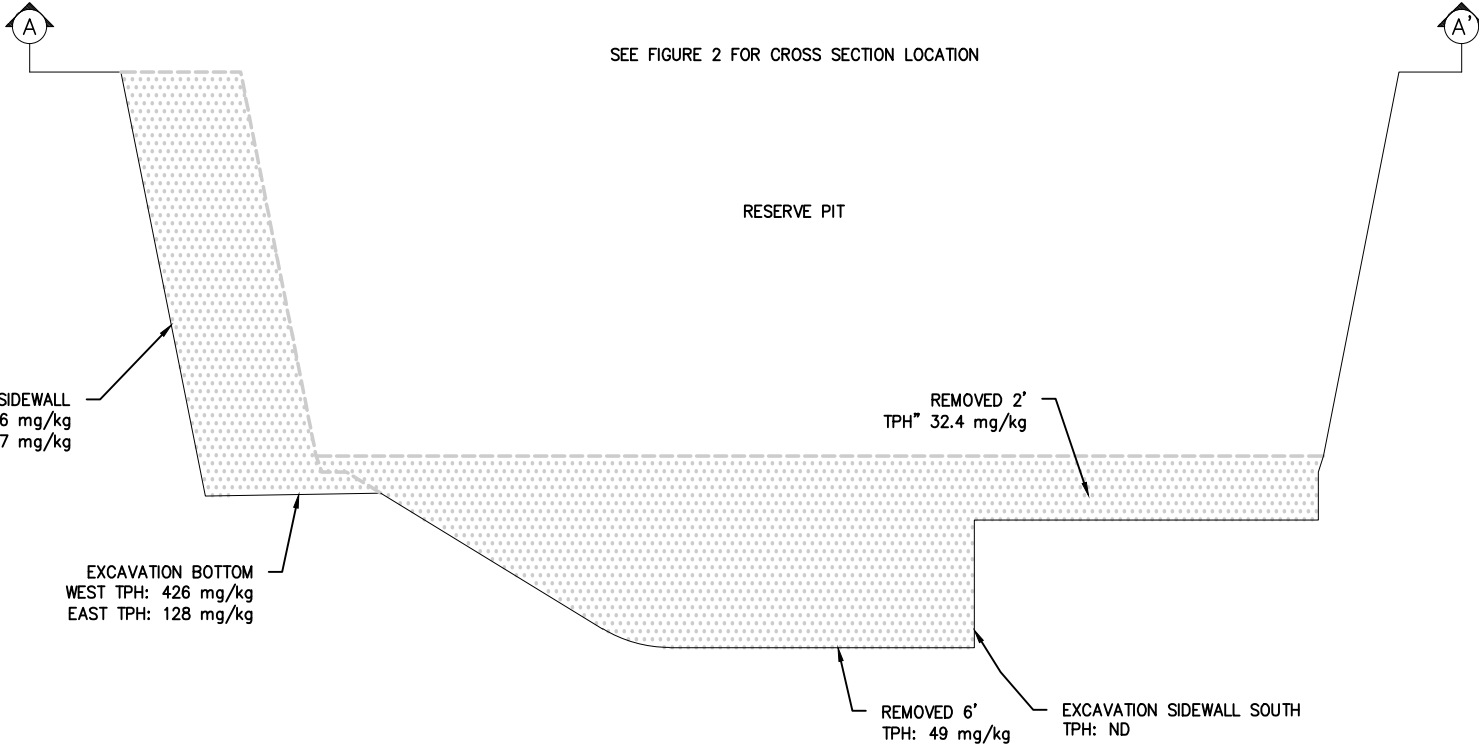


FIGURE 2 PICEANCE CREEK PCU 296-7A SUBLINER TEST PIT SAMPLE LOCATIONS PREPARED FOR XTO ENERGY			
KRW CONSULTING, INC. 8000 W. 14TH AVENUE, SUITE 200 LAKEWOOD, COLORADO (303) 239-9011			
NOTES:		DATE	
FIGURE 2		SHEET NO. 2 of 5	
CHECKED: GK		DRAWN: DRF	
DATE: 7/19/12		FILE NAME: reserve r1	
PROJECT NO. 1007-02		SCALE: 1"=40'	







SEE FIGURE 2 FOR CROSS SECTION LOCATION

RESERVE PIT

EXCAVATION SIDEWALL
WEST TPH: 11.6 mg/kg
EAST TPH: 227 mg/kg

EXCAVATION BOTTOM
WEST TPH: 426 mg/kg
EAST TPH: 128 mg/kg

REMOVED 2'
TPH: 32.4 mg/kg

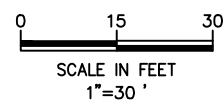
REMOVED 6'
TPH: 49 mg/kg

EXCAVATION SIDEWALL SOUTH
TPH: ND

HORIZONTAL SCALE: 1"=30'
VERTICAL SCALE: 1"=6'

LEGEND AND NOTES:

1. TPH RESULTS (mg/kg) FROM SELECT INTERVALS.
2. ND INDICATES NOT DETECTED WITHIN LABORATORY DETECTION LIMITS.
3. SHADED AREA REPRESENTS EXCAVATED MATERIALS, DURING TWO SEPARATE EVENTS.



DESIGNED: I	CHECKED: GK	FIGURE 3B	NOTES:
DATE: 7/19/12	DRAWN: DRF	SHEET NO. 5 of 5	DATE
FILE NAME: Confirmation	PROJECT NO. 1007-02	SCALE: SHOWN	REVISIONS

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

FIGURE 3B
PICEANCE CREEK
PCU 296-7A
RESERVE PIT SUBLINER
CROSS SECTION
PREPARED FOR XTO ENERGY