District I

P

REGISTERED

District I

REGISTERED

1

1

1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico

Parals and Natural Resources
Department
Inservation Division
Outh St. Prancis Dr.

For temporary pits, closed-loop systems, and below-grade tanks, submit to the appropriate NMOCD District Office.
For permanent pits and exceptions submit to

for permanent pits and exceptions submit to the Santa Fe Environmental Bureau office and provide a copy to the appropriate NMOCD District Office.

### Pit, Closed-Loop System, Below-Grade Tank, or Proposed Alternative Method Permit or Closure Plan Application

Santa Fe, NM 87505

Type of action: Existing BGT	Permit of a pit, closed-loop system, below-grade tank, or proposed alternative method  Closure of a pit, closed-loop system, below-grade tank, or proposed alternative method
	Modification to an existing permit
	Closure plan only submitted for an existing permitted or non-permitted pit, closed-loop system,
below-grade tank	x, or proposed alternative method

Instructions: Please submit one application (Form C-144) per individual pit, closed-loop system, below-grade tank or alternative request

Please be advised that approval of this request does not relieve the operator of liability should operations result in pollution of surface water, ground water or the environment. Nor does approval relieve the operator of its responsibility to comply with any other applicable governmental authority's rules, regulations or ordinances.

Operator:         XTO Energy, Inc.         OGRID #:         5380
Address: #382 County Road 3100, Aztec, NM 87410
Facility or well name:UTE INDIAN A # 28
API Number: <u>30-045-29866</u> OCD Permit Number:
U/L or Qtr/Qtr I Section 02 Township 31N Range 14W County: San Juan
Center of Proposed Design: Latitude <u>36.92976</u> Longitude <u>108.27213</u> NAD: ☐ 1927 ☑ 1983
Surface Owner: Tederal State Private Tribal Trust or Indian Allotment
2.
Pit: Subsection F or G of 19.15.17.11 NMAC
Temporary:  Drilling  Workover
Permanent Emergency Cavitation P&A
Lined Unlined Liner type: Thicknessmil LLDPE HDPE PVC Other
☐ String-Reinforced
Liner Seams: Welded Factory Other Volume: bbl Dimensions: L x W x D
Closed-loop System: Subsection H of 19.15.17.11 NMAC   Type of Operation:
4.   ■ Below-grade tank: Subsection I of 19.15.17.11 NMAC
Volume: 120 bbl Type of fluid: Produced Water
Tank Construction material: Steel  Secondary containment with leak detection Visible sidewalls, liner, 6-inch lift and automatic overflow shut-off
☐ Visible sidewalls and liner ☐ Visible sidewalls only ☐ Other <u>Visible sidewalls, vaulted, automatic high-level shut off, no liner</u>
Liner type: Thicknessmil
5.  Alternative Method:

Submittal of an exception request is required. Exceptions must be submitted to the Santa Fe Environmental Bureau office for consideration of approval.

Fencing: Subsection D of 19.15.17.11 NMAC (Applies to permanent pits, temporary pits, and below-grade tanks)											
Chain link, six feet in height, two strands of barbed wire at top (Required if located within 1000 feet of a permanent residence, school, be invitation on almost.)	nospital,										
institution or church)  Four foot height, four strands of barbed wire evenly spaced between one and four feet											
Alternate. Please specify Four foot height, steel mesh field fence (hogwire) with pipe top railing											
7.											
Netting: Subsection E of 19.15.17.11 NMAC (Applies to permanent pits and permanent open top tanks)											
☐ Screen ☐ Netting ☐ Other Expanded metal or solid vaulted top											
Monthly inspections (If netting or screening is not physically feasible)											
8.											
Signs: Subsection C of 19.15.17.11 NMAC  12"x 24", 2" lettering, providing Operator's name, site location, and emergency telephone numbers											
☐ 12 x 24 , 2 Tettering, providing Operator's flame, site focation, and emergency telephone flumbers  ☐ Signed in compliance with 19.15.3.103 NMAC											
⊠ Signed in compnance with 19.15.5.103 NWAC											
Administrative Approvals and Exceptions:  Justifications and/or demonstrations of equivalency are required. Please refer to 19.15.17 NMAC for guidance.  Please check a box if one or more of the following is requested, if not leave blank:  Administrative approval(s): Requests must be submitted to the appropriate division district or the Santa Fe Environmental Bureau of consideration of approval.  Exception(s): Requests must be submitted to the Santa Fe Environmental Bureau office for consideration of approval.	office for										
Exception(s): Requests must be submitted to the Santa Fe Environmental Bureau office for consideration of approval.											
Instructions: The applicant must demonstrate compliance for each siting criteria below in the application. Recommendations of accept material are provided below. Requests regarding changes to certain siting criteria may require administrative approval from the appropriate or may be considered an exception which must be submitted to the Santa Fe Environmental Bureau office for consideration of applicant must attach justification for request. Please refer to 19.15.17.10 NMAC for guidance. Siting criteria does not apply to drying above-grade tanks associated with a closed-loop system.	priate district oproval. ng pads or										
Ground water is less than 50 feet below the bottom of the temporary pit, permanent pit, or below-grade tank.  - NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells	☐ Yes ☒ No										
Within 300 feet of a continuously flowing watercourse, or 200 feet of any other significant watercourse or lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark).  - Topographic map; Visual inspection (certification) of the proposed site	☐ Yes ☑ No										
Within 300 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application.  (Applies to temporary, emergency, or cavitation pits and below-grade tanks)  - Visual inspection (certification) of the proposed site; Aerial photo; Satellite image	☐ Yes ☑ No ☐ NA										
Within 1000 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application.  (Applies to permanent pits)  - Visual inspection (certification) of the proposed site; Aerial photo; Satellite image	Yes No										
Within 500 horizontal feet of a private, domestic fresh water well or spring that less than five households use for domestic or stock watering purposes, or within 1000 horizontal feet of any other fresh water well or spring, in existence at the time of initial application.  - NM Office of the State Engineer - iWATERS database search; Visual inspection (certification) of the proposed site	Yes No										
Within incorporated municipal boundaries or within a defined municipal fresh water well field covered under a municipal ordinance adopted pursuant to NMSA 1978, Section 3-27-3, as amended.  - Written confirmation or verification from the municipality; Written approval obtained from the municipality	☐ Yes ⊠ No										
Within 500 feet of a wetland.  - US Fish and Wildlife Wetland Identification map; Topographic map; Visual inspection (certification) of the proposed site	Yes No										
Within the area overlying a subsurface mine.  - Written confirmation or verification or map from the NM EMNRD-Mining and Mineral Division	☐ Yes ☒ No										
Within an unstable area.  - Engineering measures incorporated into the design; NM Bureau of Geology & Mineral Resources; USGS; NM Geological Society; Topographic map	☐ Yes ⊠ No										
Within a 100-year floodplain FEMA map	☐ Yes ☒ No										

Temporary Pits, Emergency Pits, and Below-grade Tanks Permit Application Attachment Checklist: Subsection B of 19.15.17.9 NMAC Instructions: Each of the following items must be attached to the application. Please indicate, by a check mark in the box, that the documents are
attached.  ☐ Hydrogeologic Report (Below-grade Tanks) - based upon the requirements of Paragraph (4) of Subsection B of 19.15.17.9 NMAC ☐ Hydrogeologic Data (Temporary and Emergency Pits) - based upon the requirements of Paragraph (2) of Subsection B of 19.15.17.9 NMAC ☐ Siting Criteria Compliance Demonstrations - based upon the appropriate requirements of 19.15.17.10 NMAC ☐ Design Plan - based upon the appropriate requirements of 19.15.17.12 NMAC ☐ Operating and Maintenance Plan - based upon the appropriate requirements of 19.15.17.12 NMAC ☐ Closure Plan (Please complete Boxes 14 through 18, if applicable) - based upon the appropriate requirements of Subsection C of 19.15.17.9 NMAC
and 19.15.17.13 NMAC
Previously Approved Design (attach copy of design) API Number: or Permit Number:
Closed-loop Systems Permit Application Attachment Checklist: Subsection B of 19.15.17.9 NMAC  Instructions: Each of the following items must be attached to the application. Please indicate, by a check mark in the box, that the documents are attached.  Geologic and Hydrogeologic Data (only for on-site closure) - based upon the requirements of Paragraph (3) of Subsection B of 19.15.17.9
Siting Criteria Compliance Demonstrations (only for on-site closure) - based upon the appropriate requirements of 19.15.17.10 NMAC  □ Design Plan - based upon the appropriate requirements of 19.15.17.11 NMAC  □ Operating and Maintenance Plan - based upon the appropriate requirements of 19.15.17.12 NMAC  □ Closure Plan (Please complete Boxes 14 through 18, if applicable) - based upon the appropriate requirements of Subsection C of 19.15.17.9 NMAC and 19.15.17.13 NMAC
Previously Approved Design (attach copy of design)  API Number:
Previously Approved Operating and Maintenance Plan API Number:(Applies only to closed-loop system that use
above ground steel tanks or haul-off bins and propose to implement waste removal for closure)
Permanent Pits Permit Application Checklist: Subsection B of 19.15.17.9 NMAC  Instructions: Each of the following items must be attached to the application. Please indicate, by a check mark in the box, that the documents are attached.  Hydrogeologic Report - based upon the requirements of Paragraph (1) of Subsection B of 19.15.17.9 NMAC  Siting Criteria Compliance Demonstrations - based upon the appropriate requirements of 19.15.17.10 NMAC  Climatological Factors Assessment  Certified Engineering Design Plans - based upon the appropriate requirements of 19.15.17.11 NMAC  Dike Protection and Structural Integrity Design - based upon the appropriate requirements of 19.15.17.11 NMAC  Leak Detection Design - based upon the appropriate requirements of 19.15.17.11 NMAC  Luiner Specifications and Compatibility Assessment - based upon the appropriate requirements of 19.15.17.11 NMAC  Quality Control/Quality Assurance Construction and Installation Plan  Operating and Maintenance Plan - based upon the appropriate requirements of 19.15.17.12 NMAC  Freeboard and Overtopping Prevention Plan - based upon the appropriate requirements of 19.15.17.11 NMAC  Nuisance or Hazardous Odors, including H <sub>2</sub> S, Prevention Plan  Emergency Response Plan  Oil Field Waste Stream Characterization  Monitoring and Inspection Plan  Erosion Control Plan  Closure Plan - based upon the appropriate requirements of Subsection C of 19.15.17.9 NMAC and 19.15.17.13 NMAC
Proposed Closure: 19.15.17.13 NMAC Instructions: Please complete the applicable boxes, Boxes 14 through 18, in regards to the proposed closure plan.  Type: Drilling Workover Emergency Cavitation P&A Permanent Pit Below-grade Tank Closed-loop System Alternative  Proposed Closure Method: Waste Excavation and Removal Waste Removal (Closed-loop systems only)  On-site Closure Method (Only for temporary pits and closed-loop systems)  In-place Burial On-site Trench Burial  Alternative Closure Method (Exceptions must be submitted to the Santa Fe Environmental Bureau for consideration)
Waste Excavation and Removal Closure Plan Checklist: (19.15.17.13 NMAC) Instructions: Each of the following items must be attached to the closure plan. Please indicate, by a check mark in the box, that the documents are attached.  ☑ Protocols and Procedures - based upon the appropriate requirements of 19.15.17.13 NMAC  ☑ Confirmation Sampling Plan (if applicable) - based upon the appropriate requirements of Subsection F of 19.15.17.13 NMAC  ☑ Disposal Facility Name and Permit Number (for liquids, drilling fluids and drill cuttings)  ☑ Soil Backfill and Cover Design Specifications - based upon the appropriate requirements of Subsection H of 19.15.17.13 NMAC  ☑ Re-vegetation Plan - based upon the appropriate requirements of Subsection I of 19.15.17.13 NMAC

Waste Removal Closure For Closed-loop Systems That Utilize Above Ground Steel Tanks or Haul-off Bins Only: (19.15.17.) Instructions: Please indentify the facility or facilities for the disposal of liquids, drilling fluids and drill cuttings. Use attachment facilities are required.	3.D NMAC) if more than two
Disposal Facility Name: Disposal Facility Permit Number:	
Disposal Facility Name: Disposal Facility Permit Number:	
Will any of the proposed closed-loop system operations and associated activities occur on or in areas that will not be used for future   Yes (If yes, please provide the information below)  No	service and operations?
Required for impacted areas which will not be used for future service and operations:  Soil Backfill and Cover Design Specifications based upon the appropriate requirements of Subsection H of 19.15.17.13 NM Re-vegetation Plan - based upon the appropriate requirements of Subsection I of 19.15.17.13 NMAC Site Reclamation Plan - based upon the appropriate requirements of Subsection G of 19.15.17.13 NMAC	1AC
Siting Criteria (regarding on-site closure methods only): 19.15.17.10 NMAC Instructions: Each siting criteria requires a demonstration of compliance in the closure plan. Recommendations of acceptable sprovided below. Requests regarding changes to certain siting criteria may require administrative approval from the appropriate considered an exception which must be submitted to the Santa Fe Environmental Bureau office for consideration of approval. J demonstrations of equivalency are required. Please refer to 19.15.17.10 NMAC for guidance.	listrict office or may be
Ground water is less than 50 feet below the bottom of the buried waste.  - NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells	☐ Yes ☐ No ☐ NA
Ground water is between 50 and 100 feet below the bottom of the buried waste - NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells	☐ Yes ☐ No ☐ NA
Ground water is more than 100 feet below the bottom of the buried waste.  - NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells	☐ Yes ☐ No ☐ NA
Within 300 feet of a continuously flowing watercourse, or 200 feet of any other significant watercourse or lakebed, sinkhole, or play lake (measured from the ordinary high-water mark).  - Topographic map; Visual inspection (certification) of the proposed site	a ☐ Yes ☐ No
Within 300 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application.  - Visual inspection (certification) of the proposed site; Aerial photo; Satellite image	☐ Yes ☐ No
Within 500 horizontal feet of a private, domestic fresh water well or spring that less than five households use for domestic or stock watering purposes, or within 1000 horizontal feet of any other fresh water well or spring, in existence at the time of initial application.  NM Office of the State Engineer - iWATERS database; Visual inspection (certification) of the proposed site	n. Yes No
Within incorporated municipal boundaries or within a defined municipal fresh water well field covered under a municipal ordinance adopted pursuant to NMSA 1978, Section 3-27-3, as amended.  - Written confirmation or verification from the municipality; Written approval obtained from the municipality	☐ Yes ☐ No
Within 500 feet of a wetland.  - US Fish and Wildlife Wetland Identification map; Topographic map; Visual inspection (certification) of the proposed site	☐ Yes ☐ No
Within the area overlying a subsurface mine.  - Written confirmation or verification or map from the NM EMNRD-Mining and Mineral Division	☐ Yes ☐ No
<ul> <li>Within an unstable area.</li> <li>Engineering measures incorporated into the design; NM Bureau of Geology &amp; Mineral Resources; USGS; NM Geological Society; Topographic map</li> </ul>	☐ Yes ☐ No
Within a 100-year floodplain FEMA map	Yes No
On-Site Closure Plan Checklist: (19.15.17.13 NMAC) Instructions: Each of the following items must be attached to the closure by a check mark in the box, that the documents are attached.  Siting Criteria Compliance Demonstrations - based upon the appropriate requirements of 19.15.17.10 NMAC  Proof of Surface Owner Notice - based upon the appropriate requirements of Subsection F of 19.15.17.13 NMAC  Construction/Design Plan of Burial Trench (if applicable) based upon the appropriate requirements of 19.15.17.11 NMAC  Construction/Design Plan of Temporary Pit (for in-place burial of a drying pad) - based upon the appropriate requirements of Protocols and Procedures - based upon the appropriate requirements of 19.15.17.13 NMAC  Confirmation Sampling Plan (if applicable) - based upon the appropriate requirements of Subsection F of 19.15.17.13 NMAC  Waste Material Sampling Plan - based upon the appropriate requirements of Subsection F of 19.15.17.13 NMAC  Soil Cover Design - based upon the appropriate requirements of Subsection H of 19.15.17.13 NMAC  Re-vegetation Plan - based upon the appropriate requirements of Subsection G of 19.15.17.13 NMAC	19.15.17.11 NMAC

Operator Application Certification:  I hereby certify that the information submitted with this application	is true, accurate and complete to the	ne best of my knowledge and belief.
Name (Print): Kim Champlin	Title:	Environmental Representative
1. 1.		,
Signature: Kim Champlin	Date:	11-25-08
e-mail address: kim_champlin@xtoenergy.com	Telephone:	(505) 333-3100
OCD Approval: Permit Application (including closure plan)	Closure Plan (only) OCD	Conditions (see attachment)
OCD Representative Signature:		Approval Date:
Title:	OCD Permit Num	ber:
21. Closure Report (required within 60 days of closure completion): Instructions: Operators are required to obtain an approved closure The closure report is required to be submitted to the division within section of the form until an approved closure plan has been obtained	e plan prior to implementing any of the completion of the ed and the closure activities have	closure activities and submitting the closure report. closure activities. Please do not complete this been completed.
	☐ Closure Com	pletion Date:
Closure Method:  Waste Excavation and Removal On-Site Closure Method If different from approved plan, please explain.	☐ Alternative Closure Method	☐ Waste Removal (Closed-loop systems only)
23. Closure Report Regarding Waste Removal Closure For Closed-lo Instructions: Please indentify the facility or facilities for where the two facilities were utilized.		
Disposal Facility Name:	Disposal Facility P	ermit Number:
Disposal Facility Name:	Disposal Facility Po	ermit Number:
Were the closed-loop system operations and associated activities per Yes (If yes, please demonstrate compliance to the items below		be used for future service and operations?
Required for impacted areas which will not be used for future services  Site Reclamation (Photo Documentation)  Soil Backfilling and Cover Installation  Re-vegetation Application Rates and Seeding Technique	e and operations:	
Closure Report Attachment Checklist: Instructions: Each of the mark in the box, that the documents are attached.  Proof of Closure Notice (surface owner and division)  Proof of Deed Notice (required for on-site closure)  Plot Plan (for on-site closures and temporary pits)  Confirmation Sampling Analytical Results (if applicable)  Waste Material Sampling Analytical Results (required for on-site closures)  Disposal Facility Name and Permit Number  Soil Backfilling and Cover Installation  Re-vegetation Application Rates and Seeding Technique  Site Reclamation (Photo Documentation)	site closure)	
On-site Closure Location: Latitude	Longitude	NAD:
Operator Closure Certification:  I hereby certify that the information and attachments submitted with belief. I also certify that the closure complies with all applicable closure (Print):	sure requirements and conditions s	and complete to the best of my knowledge and specified in the approved closure plan.
Signature:	Date:	
e-mail address:	Telephone:	

Oistrict I PO. 80x 1980, Hobbs, NM 88241-1980

District II PO Orawer DD, Artesia, NM 88211-0719

District III 1000 Rio Brazos Rd., Aztec. NM 87410

Olstrict IV PO Box 2088, Santa Fe, NM 87504-2088 State of New Mexico Energy, Minerals & Natural Resources Department

OIL CONSERVATION DIVISION PO Box 2088 Santa Fe. NM 87504-2088 Form C-102
Revised February 21, 1994
Instructions on back
it to Appropriate District Office

Submit to Appropriate District Office State Lease - 4 Copies Fee Lease - 3 Copies

AMENDED REPORT

			WELL	LOCATI	ON AND	ACREAGE DED	ICATION PL	_AT		
	PI Number	39862	/	*Pool Cod 86720	<b>)</b>		PDO1 NAM UTE DOME D	e AKOTA	EX	T
*Property	-	1/02	0			ty Name				ell Number
224	15					DIANS A				28
OĞRID N	10.				*Operati	or Name			•1	levation
15706	57		CF	ROSS T	IMBERS O	PERATING CO	MPANY			5038
						Location		5	ant line	County
uL or lot no.	Section	Township 31N	Aange 14W	Lot Idn	Feat from the	SOUTH	Feet from the 2220		est line	SAN JUAN
0	3			U=lo l	l		From Suri		<del></del>	10000
UL or lot no.	Section	Township	Range	Hole L	ocation Feet from the	If Different North/South line	Feet from the		est line	County
12 Dedicated Acres		Duint or In	fill <sup>14</sup> Cons	olidation Code	<sup>25</sup> Order No.		<u> </u>			
161	2									
NO ALLOW	ABLE W	ILL BE A	ASSIGNE NON-S1	D TO TH	IS COMPLET UNIT HAS I	ION UNTIL ALL BEEN APPROVED	INTERESTS H BY THE DIVI	HAVE BE	EEN CO	NSOLIDATED
16			528	30.00						IFICATION
				1	and the second second of the second	-1	I hereby cer true and com	tify that the	e information of my	on contained herein is knowledge and belief
			3		<u></u>	20				
4			5	1	_	5 1999 5 1999				
		i			- 12 C	The same				
				1	OFE	5 1999	1	17.	Much	letter
					IN WAY	6000	Signatu	e	•	
				,	13. ** 	William !		Mari	kesta	<u></u>
					` ذ	G STE	Printed		ant / 1	Production
							Title	7165101	ent / t	Production
		i						12/21	198	
96			•	22			O Date	11		
m —				رستم	The same of the sa			_		IFICATION
528				1			was plotted	SUDERY 15 10/1	notes of act and that the	tion shown on this plat wal surveys made by me he same is true and
u,		1		4			great to	the best of	my Delier.	
						1				
				#				OBER	15.	1998
							Date of	Survey	EDU	Service.
						2220'	7		MEX	18
				-				W/ W/	18	5/0/
1					χ̈́		gr. 1	2 (8	857	15
				-	4					7
		1		-	125		68	A STATE OF THE STA	-	18
			52	82 54			Centifi	cate Ma	OF ESSION	
				Section 1	A CONTRACTOR OF THE PARTY OF TH	4	√T			

Lodestar Service 10 Bas 4465, Durang		Pit Permit Siting Criteria Information Sheet	Client: Project: Revised: Prepared by:	XTO Energy Pit Permits 9/26/2008 Daniel Newman
Υ ΑΡΙ#:[		3004529866	USPLSS:	T31N,R14W,02I
Name:	UI	E INDIAN A#28	Lat/Long:	36.92976 / -10827213
Depth to groundwater:	9-146 T. (1933)	>100	Geologic formation:	A STRUCTURE ROSE TO SEE THE SECOND SE
Distance to closest continuously flowing watercourse:	4.7 mile	s east to the La Plata River		
Distance to closest significant watercourse, lakebed, playa lake, or sinkhole:	2,200' ea	st to the Craig Arroyo		
Permanent residence, school, hospital, institution or church	Comments (See See See See See See See See See Se	No	Soil Type:	Entisols
within 300°		San San San	Annual Precipitation:	8.21" Farmington FAA Airport
Domestic fresh water well or spring within 500'		No	Precipitation Notes:	3.82" largest daily rainfall on record
Any other fresh water well or spring within 1000'		No		
Within incorporated municipal boundaries	_	No	Attached Documents:	
Within defined municipal fresh water well field		No		Topo map, ground water data map, ariel photo, mines and quarries map,
				The state of the s
Wetland within 500'	er a er e	No	Mining Activity:	No
Within unstable area	14 <u>2</u> 1	No		
Within 100 year flood plain	No FE	MA data availble		

**Additional Notes:** 

Corrected tosnship/range from T31N,R14W,03O to T31N,R14W,02I

### **Ute Indians A#28 Below Grade Tank Siting Criteria and Closure Plan**

### General Geology and Hydrology

The San Juan Basin is a typical Rocky Mountain basin with a gently dipping southern flank and a steeply dipping northern flank. Asymmetrically layered Tertiary sandstones and shales, along with Quaternary alluvial deposits dominate surficial geology (Dane and Bachman, 1965). The proposed below ground tank location will be located in the northwest corner of the San Juan Basin, where the Hogback monocline ends. Thicker sequences common throughout the central basin begin to pinch out and older units of Cretaceous Age are exposed, specifically components of the Late Cretaceous Mesaverde Group (Point Lookout Sandstone, Menefee Formation and Cliff House Sandstone; (Brister and Hoffman, 2002). The resistant Point Lookout and Cliff House sandstones form prominent cliff bands, while shales and smaller sandstones of the Menefee Formation are exposed at lower, more eroded elevations. The stratigraphic section reflects deposition in a transgressive marine to coastal plain environment and consists of gray, brownish and tank sandstone interbedded with dark, carbonaceous shales and coal beds. Also, deposits of Quaternary alluvial and aeolian sands occur prominently near the surface, especially near streams and washes.

Cretaceous and Tertiary sandstones, as well as Quaternary alluvial deposits serve as the primary aquifers in the San Juan basin (Stone et al., 1983). The Cliff House Sandstone ranges from 20 to 245 feet in thickness and is very fine to fine-grained. In areas where the sandstone is less than 200 feet thick (such as the proposed location), transmissivity is approximately 2 ft<sup>2</sup>/d (Stone et al., 1983). Specific conductance is high and water from thicker portions of the unit can produce high yields (Stone et al., 1983).

The prominent soil type at the proposed site is rockland, which are basically little to no soils that do not show any profile development. Soils that are present are unaltered from their parent rock. Miles of arroyos, washes and intermittent streams exist as part of the drainage network towards the La Plata River (www.emnrd.state.nm.us). These features often cut into soil and other unconsolidated materials, contributing to sedimentation downstream. The sudden influx of water from storm events easily erodes the soils that cover the area and prohibits effective recharge to the underlying aquifers.

Dry and arid weather further prohibit active recharge. The climate of the region is arid, averaging just over 8 inches of rainfall annually. As is typical of the southwestern United States monsoonal weather patterns, most precipitation falls from August through October. The heaviest rainfall occurs in the summer in isolated, intense cloudbursts. November through June is relatively dry. Snow generally falls from December to mid-February and averages less than one-half inch in depth. However, most recharge occurs during the winter months during snowmelt periods from the upper elevations (Western Regional Climate Center www.wrcc.dri.edu).

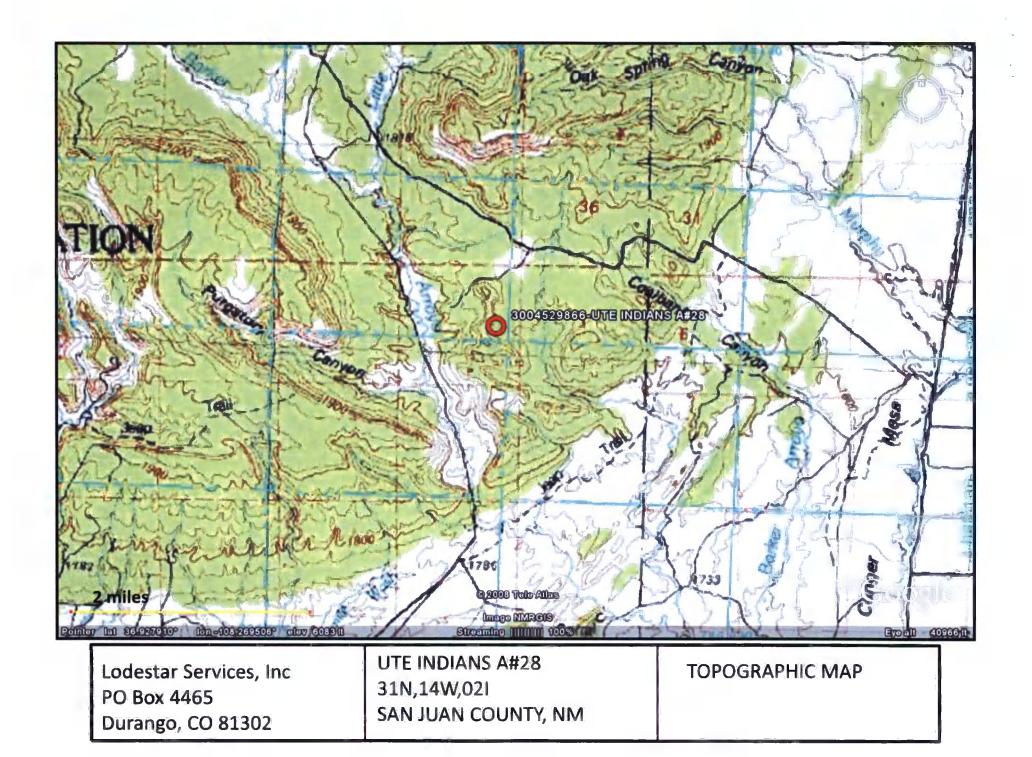
The predominant vegetation is sagebrush and grasses with a more restricted pinon-juniper association (Dick-Peddie, 1993).

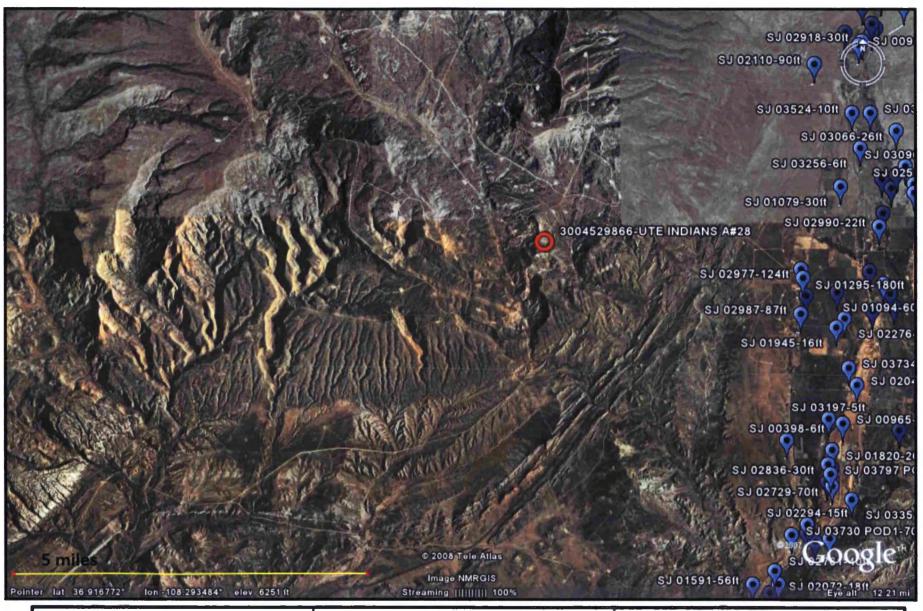
### Site Specific Hydrogeology

Depth to groundwater is estimated to be greater than 100 feet. This estimation is based on data from Stone and others, 1983 and depth to groundwater data published on the New Mexico State Engineer's iWaters Database website. Local topography and proximity to surface hydrologic features are also taken into consideration.

Groundwater within the Cliff House Sandstone, occurs at approximately 5500 feet in this region (Stone et al., 1983). The site in question is located on the top of a thin cliff band that is heavily dissected by dry washes. Nearby canyons include Barker Arroyo to the southwest. The floor of Barker Arroyo, where ground water may be shallow, is over 300 feet below the site. Within the arroyo, only thin layers of sandstone are visibly exposed: thick shales dominate. The observed lithology suggests no regional aquifers occur within 100 feet below the site.

Groundwater data available from the NM State Engineer's iWaters Database for wells near the proposed site are attached. A map showing the location of wells in reference to the proposed pit location is attached. Pinpoints show locations of wells and the labels for each pinpoint indicate depth to groundwater in feet. Wells are clustered near populated areas along the La Plata River east of the proposed site. These sites contain shallow groundwater, but topographic and hydrographic conditions are not representative of the site in question. Many data points exist east of the site and indicate groundwater at 10-180 feet in depth. These groundwater wells are located approximately 300 feet lower in elevation than the proposed site, suggesting groundwater is greater than 100 feet deep at the proposed location.





Lodestar Services, Inc PO Box 4465 Durango, CO 81302 UTE INDIANS A#28 31N,14W,02I SAN JUAN COUNTY, NM

i-Waters Ground Water Data Map

### New Mexico Office of the State Engineer POD Reports and Downloads WATER COLUMN REPORT 09/16/2008

							3=SW 4=SE)							
_					281	to	smallest)			Depth	Depth	Water	(in	feet)
POD Number	Tws		Sec		q	P	Zone	X	Y	Well	Water	Column		
SJ 01187 CLW226675		13M		3	4	4				24	9	15		
SJ 01187	32N	-31	10	3	4	4				24	5	15		
SJ 01353	32N	13W	10	4	3						38			
SJ 01439	32N	137	10	4	3					4.5	2.5	20		
SJ 02068	32N	137	15	2						4.5	1€	29		
SJ 01549	32N	13%	15	2	1					47	28	19		
SJ 02985	32N	13W	15	2	1	2				47	25	22		
SJ 02865	32N	137	15	- 2	3	2				44	29	15		
SJ 02558	32N	137	15	3	2	4				4.1	23	18		
SJ 02934	32N	137	15	4	š	1				34	18	16		
SJ 02890	32N	137	15	4	1	2				55	30	2.5		
SJ 02705	32N	13W	22	1	4	2				2.5	12	13		
SJ 02704	32N	13W	22	1	4	2				25	12	13		
SJ 03111	32N	137	22	2	1	4				19	€	13		
SJ 02848	32N	13W	22	2	4	3				€08	50	558		
SJ 00922	32N	1377	22	3	I	4				27	12	15		
SJ 00906 X	32N	137	22	3	4					8.6	26	60		
SJ 02918	32N	137	22	3	4	2				51	30	21		
SJ 00736	32N	13W	22	4	I					40	15	25		
SJ 00339	32N	137	22	4	1	1				50	12	38		
SJ 00340	32N	137	22	4	1	3				50	12	38		
SJ 02847	BZN	137	22	4	4	1				1255		1255		
SJ 03524	32N	137	27	3	4	1				33	10	23		
SJ 03525	32N			4	3	1				71	12	59		
SJ 03256	32N	137		1	4	2				21	€	15		
SJ 03066	32N		34	2	2	2				41	28	13		
SJ 01079	32N	13W		3	3	_				100	30	70		
SJ 01943	32N	13W		4	_					8	3	5		
SJ 03635	32N	13W		4	2	4				44	35	9		
SJ 02577	32N	137		4	4	•				30	15	15		
SJ 03090	32N	13W		3	1	7				59	47	12		
SJ 02589	32N	137		3	3	2				€0	35	25		
SJ 02783	32N	13W		3	3	4				62	48	14		

### New Mexico Office of the State Engineer POD Reports and Downloads

### WATER COLUMN REPORT 09/22/2008

				3=SW 4=SE) smallest)			Depth	Depth	Water	(in	feet)
POD Number	Tws	Rng Sec	qqq	Zone	X	Y	Well	Water	Column	•	
SJ 02590	31N	13W 02	1 2 3				114	70	44		
SJ 00835	31N	13W 02	2 2				34	19	15		
SJ 03386	31N	13W 03	2				80	11	69		
SJ 02990	31N	13W 03	2 3 4				100	22	78		
SJ 01295	31N	13W 09	2 1 1				230	180	50		
SJ 02977	31N	13W 09	2 1 3				325	124	201		
SJ 02755	31N	13W 09	2 3 4				60	40	20		
SJ 02987	31N	13W 09	4 1 3				250	87	163		
SJ 02717	31N	13W 10	1 3				42	22	20		
SJ 01094	31N	13W 10	2				130	60	70		
SJ 00798	31N	13W 10	2				125	€5	60		
SJ 00089	31N	13W 10	2 1 1				80	18	62		
SJ 01952	31N	13W 10	2 4				1€	ê	10		
SJ 01944	31N	13W 10	2 4				20	4	16		
SJ 02276	31N	13W 10	3				24	19	5		
SJ 01945	31N	13W 10	3 3				31	16	15		
SJ 00729	31N	13W 10	4 1				43	10	33		
SJ 01950	31N	13W 10	4 1				21	11	10		
SJ 02637	31N	13W 10	4 2 2				20	É	14		
SJ 03734 POD1	31N	13W 15	1 4 3				40	10	30		
SJ 02048	31N	13W 15	3 2 4				54	24	30		
SJ 00398	31N	13W 21					104	€	98		
SJ 00965	31N	13W 22	1				115	30	35		
SJ 03197	31N	13W 22	1 1 3				11	5	õ		
SJ 01820	31N	13W 22	3 1				50	20	30		
SJ 02737	31N	13W 22	3 3				79	40	<b>3</b> 8		
SJ 02836	31N	13W 22	3 3 1				100	30	70		
SJ 03797 POD1	31N	13W 22	3 3 3				220	20	200		
SJ 03611	31N	13W 23	1 3 1				24	14	10		
SJ 02729	31N	13W 27	1 1				100	70	30		

SJ 02753	31N	13W 27	1	1	1	74	40	34
SJ 02832	31N	13W 27	1	1	1	80	20	60
SJ 03351	31N	13W 27	1	4	2	42	20	22
SJ 02761	31N	13W 27	3	3		80	40	40
SJ 02294	31N	13W 28	4	2	3	42	15	27
SJ 02724	31N	13W 28	4	2	3	40	5	35
SJ 03730 POD1	31N	13W 28	4	3	1	190	70	120
SJ 02811	31N	13W 28	4	4	1	50	2	43
SJ 02766	31N	13W 28	4	4	4	50	12	33
SJ 02072	3.1N	13W 33	1	4		42	18	24
SJ 01591	31N	13W 33	3	1	1	70	5€	14
SJ 03083	31N	13W 33	3	2	2	25	14	11
SJ 02374	31N	13W 33	3	2	3	18	ć	12



Lodestar Services, Inc PO Box 4465 Durango, CO 81302 UTE INDIAN A#28 31N,14W,02I SAN JUAN COUNTY, NM **AERIAL PHOTOGRAPH** 



Lodestar Services, Inc PO Box 4465 Durango, CO 81302 UTE INDIANS A#28 31N,14W,02I SAN JUAN COUNTY, NM

Mines and Quarries Map

# XTO Energy Inc. San Juan Basin (Northwest New Mexico) General Design and Construction Plan For Below-Grade Tanks

In accordance with Rule 19.15.17.11 NMAC the following information describes the design and construction of below-grade tanks on XTO Energy Inc. (XTO) locations. This is XTO's standard procedure for all below-grade tanks. A separate plan will be submitted for any below-grade tank which does not conform to this plan.

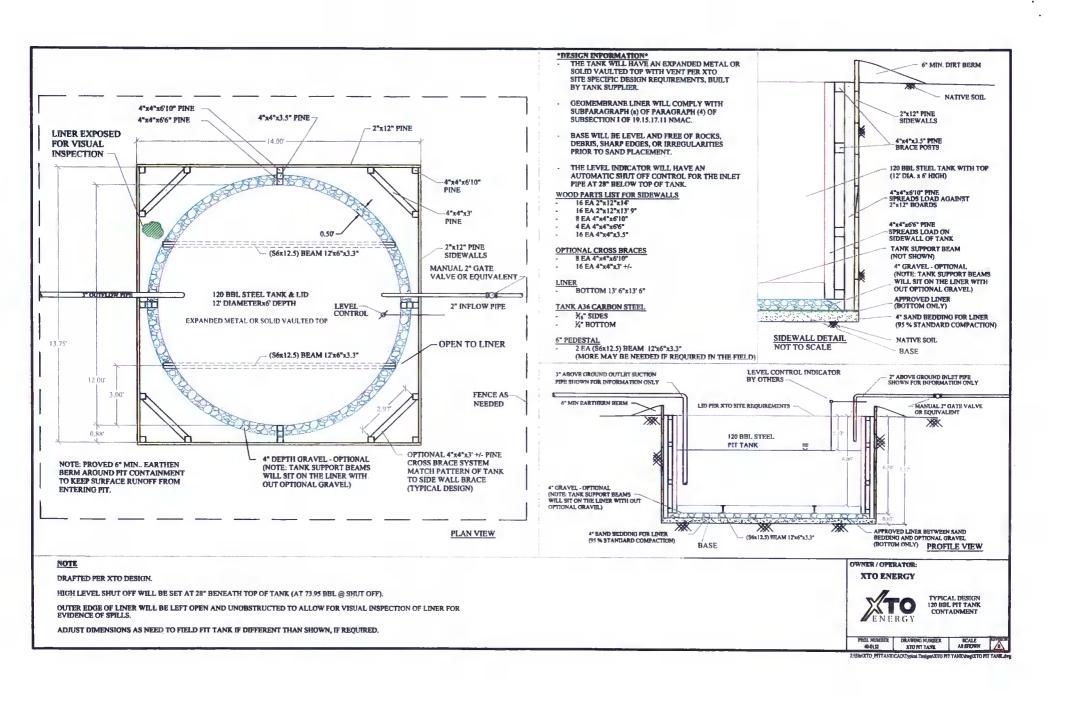
#### General Plan

- 1. XTO will design and construct below-grade tanks to contain liquids and solids and prevent contamination of fresh water and protect public health and environment.
- 2. XTO will post a well sign, in compliance with 19.15.3.103 NMAC, on the existing well site operated by XTO where the existing below-grade tank is located. The sign will list the Operator on record as the operator, the location of the well site by unit letter, section, township, range, and emergency telephone numbers.
- 3. XTO is requesting approval of an alternative fencing to be used on below-grade tank locations. Below-grade tank locations will be fenced utilizing 48" steel mesh field-fence (hogwire) with pipe railing along the top. A 6' chain link fence will be utilized around the well pad if the well site is within a city limits or ¼ mile of a permanent residence, school, hospital, institution or church. Below-grade tanks located within 1000' of a permanent residence, school, hospital, institution or church will be fenced by 6' chain link fence with at least two strands of barbed wire at the top. All gates associated with below-grade tanks will remain closed and locked when responsible individuals are not on site.
- 4. XTO shall construct below-grade tanks with an expanded metal covering or solid vaulted top on the top of the below-grade tank.
- 5. XTO will ensure that below-grade tanks are constructed of materials resistant to the below-grade tank's particular contents and resistant to damage from sunlight. Tanks will be constructed of A36 carbon steel with 3/16" sides and '4" bottom. (See attached drawing).
- 6. The below-grade tank system will have a properly constructed foundation consisting of a level base free of rocks, debris, sharp edges or irregularities to prevent punctures, cracks or indentations of the liner or tank bottom. Sand bedding (4") will be placed on top of a level foundation to ensure prevention of punctures, cracks or indentations of the liner or tank bottom.
- 7. XTO will construct a berm and/or diversion ditch in a manner that prevents the collection of surface water run-on. Below-grade tanks will be equipped with automatic high level shut-off devices as well as manually operated shut-off valves. (See attached drawing).
- 8. XTO will construct and use below-grade tanks that do not have double walls. The below-grade tank sidewalls will be open for visual inspection for leaks. The sidewalls of the cellar will be constructed with 2" X 12" pine sidewalls and 4" X 4" pine brace posts. The below-grade tank

XTO Energy Inc.
San Juan Basin (Northwest New Mexico)
General Design and Construction Plan
For Below-Grade Tanks
Page 2

bottom will be elevated a minimum of 6" above the underlying ground surface and the below-grade tank will be underlain with a geomembrane liner to divert leaked liquid to a location that can be visually inspected. (See attached drawing).

- 9. XTO will equip below-grade tanks designed in this manner with a properly functioning automatic high-level shut-off control device and manual controls to prevent overflows. (See attached drawing).
- 10. XTO will demonstrate to the OCD that the geomembrane liner complies with the specifications of Subparagraph (a) of Paragraph (4) of Subsection I of 19.15.17.11 NMAC and obtain approval from OCD prior to the installation of the design. The geomembrane liner shall have a hydraulic conductivity no greater than 1 x 10-9 cm/sec. The geomembrane liner shall be composed of an impervious, synthetic material that is resistant to petroleum hydrocarbons, salts and acidics and alkaline solutions. The liner material shall be resistant to ultraviolet light. Liner compatibility shall comply with EPA SW-846 method 9090A. (See attached drawing).
- 11. The general specifications for design and construction are attached.



## XTO Energy Inc. San Juan Basin (Northwest New Mexico) General Maintenance and Operating Plan For Below-Grade Tanks

In accordance with Rule 19.15.17.12 NMAC the following information describes the operation and maintenance of below-grade tanks on XTO Energy Inc. (XTO) locations. This is XTO's standard procedure for all below-grade tanks. A separate plan will be submitted for any below-grade tank which does not conform to this plan.

#### General Plan

- 1. XTO will operate and maintain below-grade tanks to contain liquids and solids, maintain the integrity of the liner and secondary containment system, prevent contamination of fresh water and protect public health and the environment. Fluid levels will be monitored weekly and high levels will be removed as necessary. Monthly inspections will be conducted to monitor integrity of below-grade tank systems and below-grade tanks will be equipped with automatic high-level shut-off devices.
- 2. XTO will not allow below-grade tanks to overflow and will use berms and/or diversion ditch to prevent surface run on to enter the below-grade tank. Below-grade tanks will be equipped with automatic high-level shut-off control devices as well as manually operated shut-off valves. See attached drawing for vault design and placement of diversion berms and shut-off devices.
- 3. XTO will continuously remove any visible or measurable layer of oil from the fluid surface of below-grade tanks in order to prevent significant accumulation of oil.
  - 4. XTO will inspect the below-grade tank monthly and maintain written records for five years. Monthly inspections will consist of documenting the following: (see attached template),

Well Name API #

Sec., Twn., Rng.

XTO Inspector's name

Inspection date and time

Visible tears in liner

Visible signs of tank overflow

Collection of surface run on

Visible layer of oil

Visible signs of tank leak

Estimated freeboard

- 5. XTO will maintain adequate freeboard to prevent over topping of the below-grade tank. High level shut-off devices control the freeboard at an average of 28" beneath the top of the tank.
- 6. XTO will not discharge into or store any hazardous waste in any below-grade tank.
- 7. If a below-grade tank develops a leak, or if any penetration of a below-grade tank occurs below the liquids surface, XTO will remove all liquids above the damage or leak line within 48 hours,

XTO Energy Inc.
San Juan Basin (Northwest New Mexico)
General Maintenance and Operating Plan
For Below-Grade Tanks
Page 2

notify the appropriate division district office within 48 hours of the discovery and repair the damage or replace the below-grade tank. If an existing below-grade tank does not meet current requirements of Paragraphs 1-4 of Subsection I of 19.15.17.11 NMAC the tank will be modified or retrofitted to comply. If compliance can not be achieved XTO will implement the approved closure plan.

Well Nan	ne:				API No.:	<del></del>		
Legals	Sec:		Township:		Range:			
XTO Inspector's Name	Inspection Date	Inspection Time	Any visible liner tears (Y/N)	Any visible signs of tank overflows (Y/N)	Collection of surface run on (Y/N)	Visible laver	Any visible signs of a tank leak (Y/N)	Freeboa
					Tail on (The)	01 011 (17/14)	or a tank leak (Y/N)	Est. (f
Notes:	Provide De	tailed Descri	ption:					
Misc:								

## XTO Energy Inc. San Juan Basin (Northwest New Mexico) General Closure Plan For Below-Grade Tanks

In accordance with Rule 19.15.17.13 NMAC the following information describes the closure requirements of below-grade tanks on XTO Energy Inc. (XTO) locations. This is XTO's standard procedure for all below-grade tanks. A separate plan will be submitted for any below-grade tank which does not conform to this plan.

#### General Plan

- 1. XTO will close below-grade tanks within the time periods provided in 19.15.17.13 NMAC, or by an earlier date that the division requires because of imminent danger to fresh water, public health or the environment
- XTO will close a below-grade tank that does not meet the requirements of Paragraphs (1) through (4) of Subsection I of 19.15.17.11 NMAC or is not included in Paragraph (5) of Subsection I of 19.15.17.11 NMAC within five years after June 16, 2008, if not retrofitted to comply with Paragraphs (1) through (4) of Subsection I of 19.15.17.11 NMAC.
- 3. XTO will close a permitted below-grade tank within 60 days of cessation of the below-grade tank's operation or as required by the transitional provisions of Subsection B of 19.15.17.17 NMAC in accordance with a closure plan that the appropriate division district office approves. The closure report will be filed on form C-144.
- 4. XTO will remove liquids and sludge from below-grade tanks prior to implementing a closure method and will dispose of the liquids and sludge in a division-approved facility. Approved facilities and waste streams include:

Envirotech Permit No. NM01-0011 and IEI Permit No. NM 01-0010B

Soil contaminated by exempt petroleum hydrocarbons

Produced sand, pit sludge and contaminated bottoms from storage of exempt wastes

Basin Disposal Permit No. NM01-005 Produced water

- 5. XTO will remove the below-grade tank and dispose of it in a division approved facility or recycle, reuse, or reclaim it in a manner that the appropriate division district office has approved prior to removal. Any associated liners will be removed, properly cleaned and disposed of per 19.15.9.712 NMAC at San Juan County Landfill. Documentation of the final disposition will be included in the closure report.
- 6. XTO will remove any on-site equipment associated with a below-grade tank unless the equipment is required for some other purpose.
- 7. XTO will test the soils beneath the below-grade tank to determine whether a release has occurred. At a minimum 5 point composite sample will be collected along with individual grab samples from any area that is wet, discolored or showing other evidence of a release. Samples will be

XTO Energy Inc.
San Juan Basin (Northwest New Mexico)
General Closure Plan
For Below-Grade Tanks
Page 2

analyzed for BTEX, TPH and chlorides to demonstrate that the benzene concentration, as determined by EPA SW-846 methods 8021B or 8260B or EPA method that the division approves, does not exceed 0.2 mg/kg; total BTEX concentration, as determined by EPA SW-846 methods 8021B or 8260B or other EPA method that the division approves, does not exceed 50 mg/kg; the TPH concentration, as determined by EPA method 418.1 or other EPA method that the division approves, does not exceed 100mg/kg; and the chloride concentration, as determined by EPA method 300.1 or other EPA method that the division approves, does not exceed 250 mg/kg, or the background concentration, whichever is greater. XTO will notify the division of its results on form C-141.

- 8. If XTO or the division determines that a release has occurred, XTO will comply with 19.15.3.116 NMAC and 19.15.1.19NMAC as appropriate.
- 9. If the sampling program demonstrates that a release has not occurred or that any release does not exceed the concentrations specified in Paragraph (4) of Subsection E of 19.15.17.13 NMAC, XTO will backfill the excavation with compacted, non-waste containing, earthen material; construct a division prescribed soil cover; recontour and re-vegetate the site.
- 10. Notice of Closure operations will be given to the Aztec Division District III office between 72 hours and one week prior to the start of closure activities via email or verbally. The notification will include the following:
  - i. Operator's name
  - ii. Well Name and API Number
  - iii. Location by Unit Letter, Section, Township, and Range

The surface owner shall also be notified prior to the implementation of any closure operations of below-grade tanks as per the approved closure plan using certified mail, return receipt requested.

- 11. Re-contouring of location will match fit, shape, line, form and texture of the surrounding area. Re-shaping will include drainage control, prevent ponding, and prevent erosion. Natural drainages will be unimpeded and water bars and/or silt traps will be placed in areas where needed to prevent erosion on a large scale. Final re-contour shall have a uniform appearance with smooth surface, fitting the natural landscape.
- 12. A minimum of 4 feet of cover shall be achieved and the cover shall include 1 foot of suitable material to establish vegetation at the site, or the background thickness of topsoil, whichever is greater. Soil cover will be constructed to the site's existing grade and ponding of water and erosion of the cover material will be prevented with drainage control, natural drainages and silt traps where needed.
- XTO will seed the disturbed areas the first growing season after the operator closes the pit. Seeding will be accomplished via drilling on the contour whenever practical or by other division-approved methods. BLM or Forest Service stipulated seed mixes will be used on federal lands. Vegetative cover will equal 70% of the native perennial vegetative cover (un-impacted) consisting of at least three native plant species, including at least one grass, but not including noxious weeds, and maintain that cover through two successive growing seasons. Repeat seeding or planting will be continued until successful vegetative growth occurs.

XTO Energy Inc.
San Juan Basin (Northwest New Mexico)
General Closure Plan
For Below-Grade Tanks
Page 3

- 14. All closure activities will include proper documentation and be available for review upon request and will be submitted in closure report form to OCD within 60 days of closure of the below-grade tank. Closure report will be filed on form C-144 and incorporate the following:
  - i. Proof of closure notice to division and surface owner;
  - ii. Details on capping and covering, where applicable;
  - iii. Inspection reports;
  - iv. Confirmation sampling analytical results;
  - v. Disposal facility name(s) and permit number(s);
  - vi. Soil backfilling and cover installation;
  - vii. Re-vegetation application rates and seeding techniques, (or approved alternative to re-vegetation requirements if applicable);
  - viii. Photo documentation of the site reclamation.

