## REGISTERED

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

2005 FEB 16

District IV

Ttate of New Mexico inerals and Natural Resources Department

Conservation Division 1220 South St. Francis Dr. Santa Fe, NM 87505

For temporary pits, closed-loop systems, and below-grade tanks, submit to the appropriate NMOCD District Office. 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
Type of action:  Existing BGT  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, 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: Fred Feasel J #1E
API Number: 30-045-24485 OCD Permit Number:
U/L or Qtr/Qtr O Section 34 Township 28N Range 10W County: San Juan
Center of Proposed Design:         Latitude36.61344         Longitude107.87949         NAD: ☐ 1927 ☒ 1983
Surface Owner: X Federal X State Private Tribal Trust or Indian Allotment
Pit: Subsection F or G of 19.15.17.11 NMAC     Temporary:   Drilling   Workover     Permanent   Emergency   Cavitation   P&A     Lined   Unlined Liner type: Thickness   mil   LLDPE   HDPE   PVC   Other     String-Reinforced     Liner Seams:   Welded   Factory   Other   Volume:   bbl Dimensions: L   x W   x D     3.   Closed-loop System: Subsection H of 19.15.17.11 NMAC     Type of Operation:   P&A   Drilling a new well   Workover or Drilling (Applies to activities which require prior approval of a permit or notice of intent)     Drying Pad   Above Ground Steel Tanks   Haul-off Bins   Other     Lined   Unlined Liner type: Thickness   mil   LLDPE   HDPE   PVC   Other     Liner Seams:   Welded   Factory   Other
☑ 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       Visible sidewalls, vaulted, automatic high-level shut off, no liner
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, h institution or church)	ospital,
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)	
internal was a server in the physically reasone)	
Signs: Subsection C of 19.15.17.11 NMAC	
12"x 24", 2" lettering, providing Operator's name, site location, and emergency telephone numbers	
☑ Signed in compliance with 19.15.3.103 NMAC	
9.	
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 o	office for
consideration of approval.	mice for
Exception(s): Requests must be submitted to the Santa Fe Environmental Bureau office for consideration of approval.	
Siting Criteria (regarding permitting): 19.15.17.10 NMAC 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 approp office 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 pproval.
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)	☐ Yes ☐ No ☑ NA
- Visual inspection (certification) of the proposed site; Aerial photo; Satellite image	□ Vas ☑ Na
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
	☐ Yes ☒ No
adopted pursuant to NMSA 1978, Section 3-27-3, as amended.  - Written confirmation or verification from the municipality; Written approval obtained from the municipality	
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 19.15.17.11 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: or Permit 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)
13.
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   Liner 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   Erosion Control 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 □ Site Reclamation Plan - based upon the appropriate requirements of Subsection G of 19.15.17.13 NMAC

Waste Removal Closure For Closed-loop Systems That Utilize Above Ground Steel Tanks or Haul-off Bins Only: (19.15.17.13. Instructions: Please indentify the facility or facilities for the disposal of liquids, drilling fluids and drill cuttings. Use attachment if	D NMAC) more than two
facilities are required.  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 ser  Yes (If yes, please provide the information below) No	
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 NMAC  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	C
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 sou provided below. Requests regarding changes to certain siting criteria may require administrative approval from the appropriate disconsidered an exception which must be submitted to the Santa Fe Environmental Bureau office for consideration of approval. Just demonstrations of equivalency are required. Please refer to 19.15.17.10 NMAC for guidance.	trict 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
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
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
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.  - 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	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 public acheck 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 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  Disposal Facility Name and Permit Number (for liquids, drilling fluids and drill cuttings or in case on-site closure standards cannot 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	.15.17.11 NMAC

Operator Application Certification:  I hereby certify that the information submitted with this application is	true, accurate and complete to the best of my knowledge and belief.
	Title: Environmental Representative
Signature: Kim Champlin	Date:01/23/09
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 Number:
Closure Report (required within 60 days of closure completion):  Instructions: Operators are required to obtain an approved closure p The closure report is required to be submitted to the division within 6 section of the form until an approved closure plan has been obtained	plan prior to implementing any closure activities and submitting the closure report. 60 days of the completion of the closure activities. Please do not complete this I and the closure activities have been completed.
	Closure Completion 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-loo Instructions: Please indentify the facility or facilities for where the li two facilities were utilized.	op Systems That Utilize Above Ground Steel Tanks or Haul-off Bins Only: iquids, drilling fluids and drill cuttings were disposed. Use attachment if more than
Disposal Facility Name:	Disposal Facility Permit Number:
Disposal Facility Name:	Disposal Facility Permit Number:
Were the closed-loop system operations and associated activities perform Yes (If yes, please demonstrate compliance to the items below)	rmed on or in areas that <i>will not</i> be used for future service and operations?  No
Required for impacted areas which will not be used for future service a  Site Reclamation (Photo Documentation)  Soil Backfilling and Cover Installation  Re-vegetation Application Rates and Seeding Technique	und operations:
	following items must be attached to the closure report. Please indicate, by a check
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-sit  Disposal Facility Name and Permit Number  Soil Backfilling and Cover Installation  Re-vegetation Application Rates and Seeding Technique  Site Reclamation (Photo Documentation)  On-site Closure Location: Latitude	te closure)LongitudeNAD:
25. Operator Closure Certification:	
I hereby certify that the information and attachments submitted with the belief. I also certify that the closure complies with all applicable closure	is closure report is true, accurate and complete to the best of my knowledge and are requirements and conditions specified in the approved closure plan.
Name (Print):	Title:
Signature:	Date:
e-mail address:	Telephone:

## OIL CONSERVATION DIVISION

STATE OF NEW MEXICO ENERGY AND MINERALS DEPARTMENT

## P. O. BOX 2088 SANTA FE, NEW MEXICO 87501

Form C-10? kevised 10-1-78

Att distances must be from the cuter houndaries of the Section.

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Operator			Lease			
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ANOCO PRODUCTION COMPANY    Section   Township   Townsh						
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	8	Sec.	SF-046563		MAY 7,	1980
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A			Client:	XTO Energy
Lodestar Service	s, Inc.	<b>Pit Permit</b>	Project:	Pit Permits
PO Box 4465, Durane	-	Siting Criteria	Revised:	21-Jan-09
V		Siting Criteria	Prepared by:	Brooke Herb
API#:	30	)-045-24485	USPLSS:	T28N,R10W,S340
				22 21211 127 27212
Name:	FEAS	EL FRED J #1E	Lat/Long:	36.61344, -107.87949
Depth to groundwater:		< 50'	Geologic formation:	Nacimiento Formation
Distance to closest continuously flowing watercourse:	5.77 miles	S of San Juan River		
Distance to closest significant watercourse, lakebed, playa lake, or	Canyon Wash; 6	ndary tributary of Armenta 570' W of Armenta Canyon; f concrete lined irrigation ditch		
sinkhole:			Soil Type:	Entisols
Permanent residence, school, hospital, institution or church within 300'		No	Jon Type:[	Entisois
			Annual Precipitation:	8.71 inches (Bloomfield)
Domestic fresh water well or spring within 500'		No	Precipitation Notes:	Historical Daily Max Bloomfield 4.19"
Any other fresh water well or spring within 1000'		No		
Within incorporated municipal boundaries		No	Attached Documents:	Groundwater report and Data; FEMA Flood Zone Map
Within defined municipal fresh water well field		No		Aerial Photo, Topo Map, Mines Mills and Quarries Map
Wetland within 500'		No	Mining Activity:	
Within unstable area	,	No		None Near
Within 100 year flood plain	No - FEN	//A Flood Zone 'X'		
Additional Notes:	*		<u> </u>	
				}

## FEASEL FRED J #1E Below Ground Tank Hydrogeologic Report for Siting Criteria

## 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 pit location will be located in the southern Kutz Canyon region of the San Juan Basin. The predominant geologic formation is the Nacimiento Formation of Tertiary age, which underlies surface soils and is often exposed (Dane and Bachman, 1965). Deposits of Quaternary alluvial and aeolian sands occur prominently near the surface of the area, 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). In most of the proposed area, the Nacimiento Formation lies at the surface and grades into the Animas Formation to the west. Thickness of the Nacimiento ranges from 418 to 2232 feet (Stone et al., 1983). Aquifers within the coarser and continuous sandstone bodies of the Nacimiento Formation are between 0 and 1000' deep in this section of the basin (Stone et al., 1983). Groundwater within these aquifers flows toward the San Juan River.

The prominent soil type at the proposed site are entisols and aridisols, which are defined as soils that exhibit little to no any profile development (www.emnrd.state.nm.us). Soils are basically unaltered from their parent rock. Miles of arroyos, washes and intermittent streams exist as part of the drainage network towards the San Juan River. 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. 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 8 to 12 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). However, vegetation is very sparse and discontinuous.

## Site Specific Hydrogeology

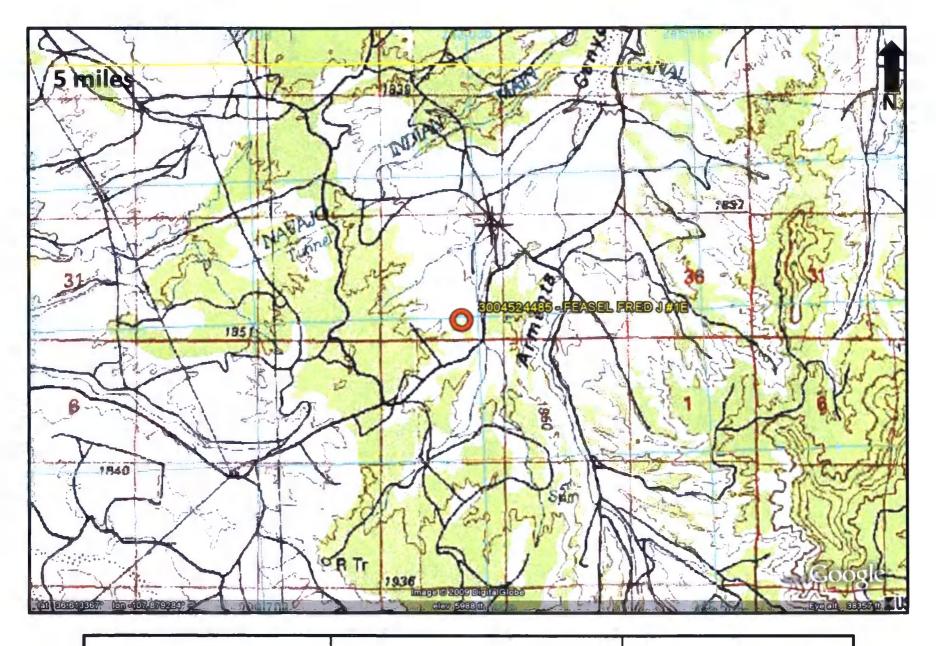
Depth to groundwater is estimated to be less than 50 feet. This estimation is based on data from Stone and others (1983), the USGS Groundwater Atlas of the United States and depth to groundwater data published on the New Mexico State Engineer's iWaters Database website. Local topography and proximity to surface hydrologic features are also taken into consideration.

Beds of water-yielding sandstone are present in the Nacimiento Formation, which are fluvial in origin and are interbedded with siltstone, shale and coal. Porous sandstones form the principal aquifers, while relatively impermeable shales form confining units between the aquifers (Stone et al., 1983). Local aquifers exist within the Nacimiento Formation at depths greater than 100 feet and thicknesses of the aquifer can be up to 3500 feet (USGS, Groundwater Atlas of the US).

The site in question is located near Armenta Canyon, where deeply eroded sandstone-capped mesas and slope-forming mudstones occur in a sparsely vegetated and arid badlands-type setting. Broad shalely hills are interspersed with occasional sandstone outcrops, and systems of dry washes and their tributaries are evident on the attached aerial image.

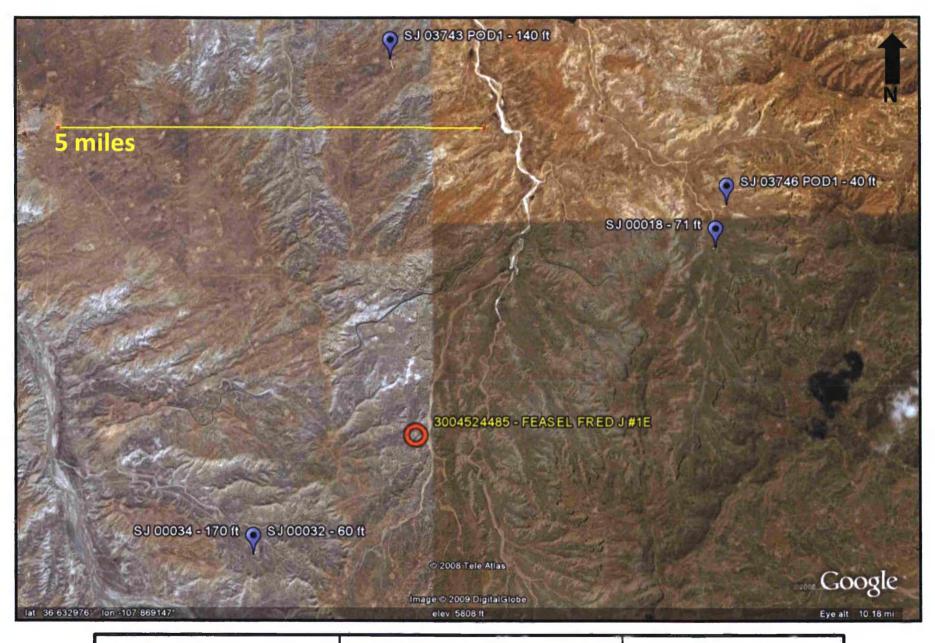
The pit will be located on a relatively flat mesa top at an elevation of approximately 6022 feet. It will be approximately 800 feet from the Armenta Canyon tributary system and 670 feet west of Armenta Wash. Groundwater is expected to be shallow within Armenta Wash. The small distance between the Canyon and the site, as well as an elevation difference of only 32 feet suggests groundwater is less than 50 feet at the proposed site.

State iWaters data points are sparsely distributed in this region, but there is an iWaters data point approximately 2.28 miles to the south-southwest of the site. Depth to groundwater within the well is 170 feet below ground surface. A map showing the location of wells in reference to the proposed pit location is attached (SJ00034).



FEASEL FRED J #1E T28N, R10W, S34O San Juan County, NM

Topographic Map



FEASEL FRED J #1E T28N, R10W, S34O San Juan County, NM

iWaters Groundwater Data Map

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

	200	-		
Township:	29N Range: 10	Sections:	1	

## WATER COLUMN REPORT 10/27/2008

							3=SW 4=SE) smallest)			Depth	Depth	Water	(in feet)
POD Number	Tws	Rng					Zone	X	Y	Well	Water	Column	(221: 2000)
RG 36732 DCL	29N-	10%		2	7	1			_	500	450	50	
SJ 00785 S	29N	10W		2	4 3	2				20			
SJ 00680	29N	10W	13	2	2					40	10	30	
SJ 00785 NEW	29N	10W	13	4						60	20	40	
SJ 00785 S-2	29N	10W	13	4						60	20	40	
SJ 03023	2,9N	10W	18	1	3 :	L				90	65	25	
SJ 03502	29N	10%	18	1	3 :	1				150			
SJ 03081	29N	10W	18	3	1 4	1				20			
SJ 02078	29N	10W	19	3	1 :	L				40	9	31	
SJ 00303	29N	10W	19	3	3					20	5	15	
SJ 02860	29N	10W	19	4	4 4	4				21	2	19	
SJ 02900	29N	10W	20	3	1 :	2				70			
SJ 01140	29N	10W	20	3	2 3	2				25	6	19	
SJ 01990	29N	10%	20	4	1					40	12	28	
SJ 02548	29N	TOM	20	4	4					12	2	10	
SJ 02547	29N	10W	20	4	4					12	2	10	
SJ 03535	29N	10W	21	3	2 3	3				15			
SJ 03455	29N	10W	21	3	3 .	L				20	17	3	
SJ 03456	29N	1.0W	21	3	3	2				20	17	3	
SJ 03441	29N	10%	21	4	3 :	3				40	30	10	
SJ 03470	29N	10W	21	4	3 4	4				201	7	13	
SJ 01474	29N	10W	21	4.	4					25			
SJ 03180	29N	100		4	-	4				50	15	35	
SJ 03713 POD1	29N		22	2	3					265	20	245	
SJ 02820	29N	10W	23	$\frac{4}{2}$	1	1				82	16	66	
SJ 02896	29N	10%	24	1	4	1				110	34	7€	
SJ 02275	29N	10W	24	1	4 :	2				40	20	20	

SJ 00092	29N	10W 24	2	4	2				33		
SJ 02802	29N	10W 24	3	1	2				132	30	102
SJ 02907	29N	10W 24	3	2	3				60		
SJ 02122	29N	10W 25	4	1					60	12	48
SJ 01019	29N	10W 26	4	3	3				50	4	46
SJ 01056	29N	10W 27	3	2					50	31	19
SJ 02216	29N	10W 28	1	2					30	7	23
SJ 03582	29N	10W 28	1	3	3				10	4	ć
SJ 02151	29N	10W 28	2	1	2	W	484600	2075600	37	20	17
SJ 03652	29N	10W 28	2	2	1				34	ε	28
SJ 03142	29N	10W 28	2	2	2				38	22	1€
SJ 03637	29N	10W 28	2	3	1				21	10	11
SJ 03582 POD2	29N	10W 28	2	3	3				28	5	23
SJ 02840	29N	10W 28	3	4	1				55	32	23
SJ 00506	29N	10W 28	4	3					78	55	23
SJ 00662	29N	10W 28	4	4	3				93	70	23
SJ 00497	29N	10W 29	3	2	3				85	35	50
SJ 03777 POD1	29N	10W 29	4	4	2.		270344	2071311	100	50	50
SJ 00473	29N	10W 30	2	4					58	10	48
SJ 03743 POD1	29N	10W 33	4	4	3				490	140	350
SJ 01051	29N	10W 35	2	2	2				90	30	60
SJ 01050	29N	10W 36	1	4					8 <b>5</b>	38	47

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

Township: 29h Range: 09W Sections: 3.4.5.8.7.8.9.10

## WATER COLUMN REPORT 10/24/2008

	(quarter	B are	1=1	NW	2=	=NB	3=SW 4=SE)						
	(quarter	s are	e bi	gg	eat	t to	smallest)			Depth	Depth	Water	(in feet
POD Number	Tws	Rng	Sec	P	q	q	Zone	X	Y	Well	Water	Column	
SJ 02369 CLW	29N	0.9W	03	1	2	4				13	10	3	
SJ 02376	29%	0 9W	03	1	2	4				13	10	3	
SJ 02369	29N	0 9W	03	1	2	4				23			
SJ 02103	29%	0.9W	03	1	3					21	4	17	
SJ 01494	29N	0.9W	03	2	2					12	5	7	
SJ 03300	29N	0.9W	03	2	2	2				21	4	1.7	
SJ 03362 POD2	29N	0.9W	03	2	2	4				21	€	15	
SJ 03362	29N	0.9W	0.3	2	2	4				36	12	26	
SJ 02567	29N	0 9W	0.3	2	4	1				14	2	12	
SJ 03200	29N	0.9W	03	3	1	1				2.8	13	15	
SJ 02946	29%	0.9W	03	4	2	1				95	4.0	5.5	
SJ 03490	29N	0.9W	04	1	1	3				42	20	22	
SJ 03491	29N	0.9W	04	1	1	3				7.0			
SJ 03566	293	0.9W	04	1	3	4				3.0			
SJ 03531	29N	0.9W	04	1	4	1				30			
SJ 03530	29N	0.97/	04	1	4	3				3.0			
SJ 03466	29N	0.9W	0.4	2	1	3				40			
SJ 02554	29N	0.9W	0.4	2	1	4				13	5	8	
SJ 03118	29N	0.9W	05	2	2	3				250			
SJ 03092	29N	0.9W	05	4	1	1				40	1€	24	
SJ 03102	29N	09W	05	4	1	3				42	18	24	
SJ 03599	29N	0.99	05	4	1	1				42	20	22	
SJ 00504	29N	0.9W	06	3	4					143	4.0	103	
SJ 00785	29N	0.9W	07	3	4	2				€0			
SJ 03389	29N	09W	07	4	4	2				20			
SJ 03536	29N	0.9W	07	4	4	2				19	€	13	
SJ 01176	29N	097	98	1	I					150	70	90	

SJ 02922	29N	0.57	0.8	.1	1	3	100		
SJ 00436	2.9N	0 9W	0.8	1	3		150	100	5.0
SJ 03534	29N	0.97	0/8	3	1.	3	41	24	1/7
J 02279	29N	0.97	0.9	1	1	4	3.0	6	24
SJ 00102	29N	0 9W	0.9	1	2	1	20	3	.15

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

NAD27 X:	Y: Zone:	Search Radius:	
County:	Basin:	Number:	Suffix:
Owner Name: (First)	(Last)	Non-Domestic	Domestic All

## WATER COLUMN REPORT 10/30/2008

	32 27N 10W 08 2 2 3 235 60 175												
POD Number	Tws	Rng	Sec	q	q	q	Zone	x	Y	Well	Water	Column	
SJ 00032	27N	100	08	2	2	3				235	60	175	
SJ 00033	2710	$\pm 0 \mathrm{W}$	08	-2	2	3				204			
SJ 00034	27N	100	08	2	2	3				235	170	68	

Record Count: 3

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

Township: 27h Range: 11V Sections:

POD / Surface Data ReportAvg Depth to Water ReportWater Column Report

### WATER COLUMN REPORT 10/30/2008

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are biggest to smallest)

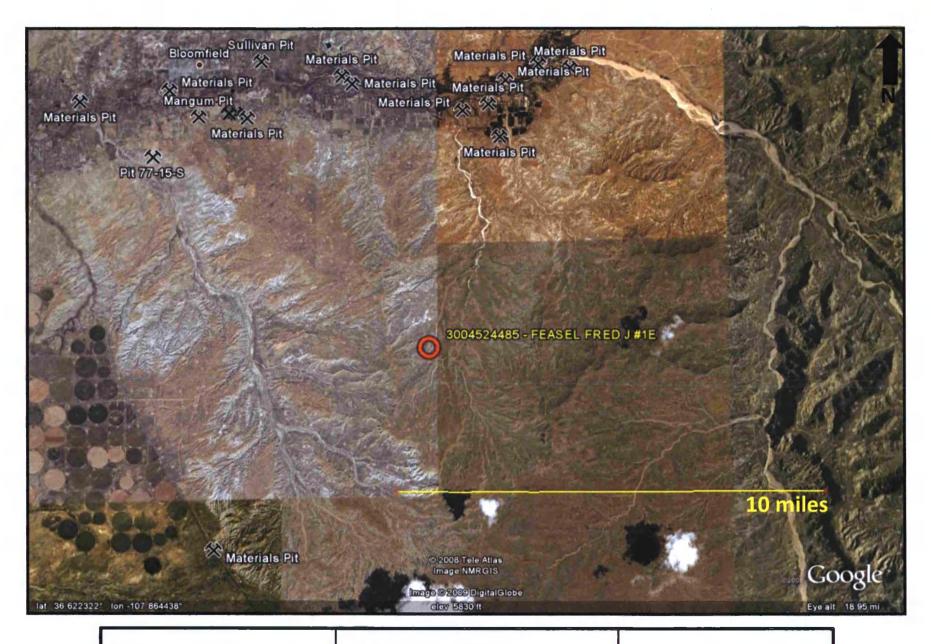
	(quarter	s ar	e bi	gg	<b>e</b> 8:	t to	smalles	it)		Depth	Depth	Water	(in feet
POD Number	Tws	Rng	Sec	q	q	q	Zone	x	Y	Well	Water	Column	
SJ 01787	27N	117	07	2	2					€50			
SJ 00077	27%	11W	26	2	1	3				1102	5.50	552	

Record Count: 2



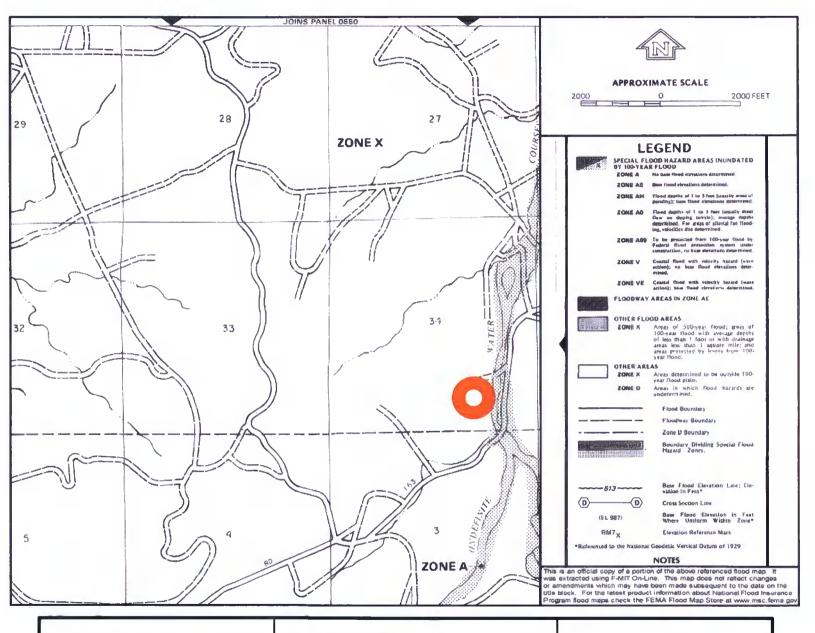
FEASEL FRED J #1E T28N, R10W, S34O San Juan County, NM

**Aerial Photograph** 



FEASEL FRED J #1E T28N, R10W, S34O San Juan County, NM

Mines, Mills, and Quarries Map



FEASEL FRED J #1E T28N, R10W, S34O San Juan County, NM

FEMA Flood Zone 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.

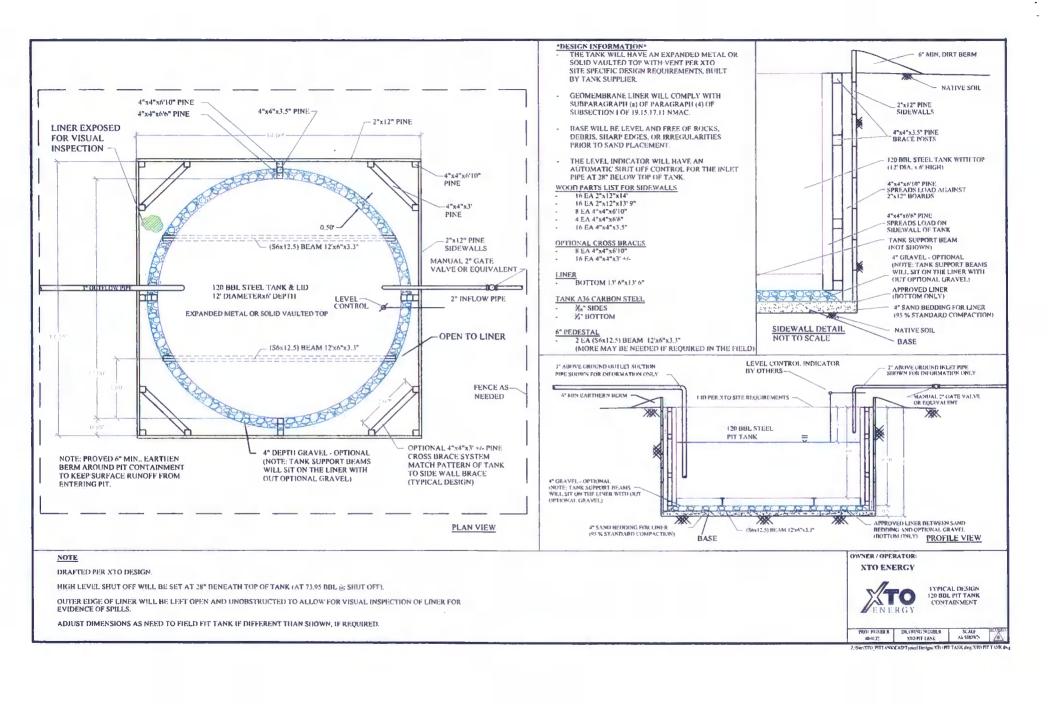
## General Plan

- 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 \( \lambda'' \) 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 belowgrade 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

- 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.

MONTHLY BELOW GRADE TANK INSPECTION FORM													
Well Nan	ne:			API No.:									
Legals Sec:			Township:	Range:									
XTO Inspector's Name	Inspection Date	Inspection Time	Any visible liner tears (Y/N)	Any visible signs of	Collection of surface run on (Y/N)	Visible layer	Any visible signs of a tank leak (Y/N)	Freeboard Est. (ft)					
Notes:	Provide De	tailed Descri	iption:										
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.
- 2. 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.
- 13. 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.

