District IV 1220 S. St. Franciscor, Santa Fe, NM 87505	ervation Division	Form C-144 July 21, 2008 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 1	Tank, or
Proposed A	Iternative Method Permit or Closure F	Plan Application
Existing BGT C M C C	ermit of a pit, closed-loop system, below-grade tank, o osure of a pit, closed-loop system, below-grade tank, odification to an existing permit osure plan only submitted for an existing permitted or oposed alternative method	or proposed alternative method
Instructions: Please submit one ap	plication (Form C-144) per individual pit, closed-loop syste	em, below-grade tank or alternative request
environment. Nor does approval relieve the oper	es not relieve the operator of liability should operations result is ator of its responsibility to comply with any other applicable go	
1. Operator: <u>XTO Energy, Inc</u> .	OGRID #:	5380
	lec, NM 87410	
Facility or well name: <u>Martin Gas Com G</u>		
API Number: <u>30-045-24205</u>	OCD Permit Number:	· · · · · · · · · · · · · · · · · · ·
U/L or Qtr/QtrJ Section14	Township <u>27N</u> Range <u>10W</u> Cou	inty: <u>San Juan</u>
Center of Proposed Design: Latitude 36.5	72270 Longitude 107.862239	NAD: 🔲 1927 🔀 1983
Surface Owner: 🛛 Federal 🗌 State 🗋 Priv	ate 🔲 Tribal Trust or Indian Allotment	
<ul> <li>2.</li> <li>Pit: Subsection F or G of 19.15.17.11</li> <li>Temporary: Drilling Workover</li> <li>Permanent Emergency Cavitation</li> <li>Lined Unlined Liner type: Thickn</li> <li>String-Reinforced</li> <li>Liner Seams: Welded Factory 0</li> </ul>	□ P&A essmil □ LLDPE □ HDPE □ PVC □ Ot	ther
intent) Drying Pad Above Ground Steel Ta	new well 🗋 Workover or Drilling (Applies to activities white the second	
Tank Construction material:       Steel         Secondary containment with leak detect       Visible sidewalls and liner         Visible sidewalls and liner       Visible	15.17.11 NMAC         e of fluid:       Produced Water         on       Visible sidewalls, liner, 6-inch lift and automatic ov         sidewalls only       Other       Visible sidewalls, vaulted, automatic	verflow shut-off natic high-level shut off, no liner
<ul> <li><u>Alternative Method</u>:</li> <li>Submittal of an exception request is required</li> </ul>	. Exceptions must be submitted to the Santa Fe Environme	ntal Bureau office for consideration of approval.

۲

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, hospital, 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

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)

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

## Administrative Approvals and Exceptions:

9

10.

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 office for consideration of approval.

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 acceptable source material are provided below. Requests regarding changes to certain siting criteria may require administrative approval from the appropriate district office or may be considered an exception which must be submitted to the Santa Fe Environmental Bureau office for consideration of approval. Applicant must attach justification for request. Please refer to 19.15.17.10 NMAC for guidance. Siting criteria does not apply to drying pads or above-grade tanks associated with a closed-loop system.

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
<ul> <li>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).</li> <li>Topographic map; Visual inspection (certification) of the proposed site</li> </ul>	🗌 Yes 🛛 No
<ul> <li>Within 300 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application.</li> <li>(Applies to temporary, emergency, or cavitation pits and below-grade tanks)</li> <li>Visual inspection (certification) of the proposed site; Aerial photo; Satellite image</li> </ul>	□ Yes ⊠ No □ NA
<ul> <li>Within 1000 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application.</li> <li>(Applies to permanent pits)</li> <li>Visual inspection (certification) of the proposed site; Aerial photo; Satellite image</li> </ul>	☐ Yes ☐ No ⊠ 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
<ul> <li>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.</li> <li>Written confirmation or verification from the municipality; Written approval obtained from the municipality</li> </ul>	🗌 Yes 🖾 No
<ul> <li>Within 500 feet of a wetland.</li> <li>US Fish and Wildlife Wetland Identification map; Topographic map; Visual inspection (certification) of the proposed site</li> </ul>	🗋 Yes 🛛 No
<ul> <li>Within the area overlying a subsurface mine.</li> <li>Written confirmation or verification or map from the NM EMNRD-Mining and Mineral Division</li> </ul>	🗌 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

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.
<ul> <li>Hydrogeologic Report (Below-grade Tanks) - based upon the requirements of Paragraph (4) of Subsection B of 19.15.17.9 NMAC</li> <li>Hydrogeologic Data (Temporary and Emergency Pits) - based upon the requirements of Paragraph (2) of Subsection B of 19.15.17.9 NMAC</li> <li>Siting Criteria Compliance Demonstrations - based upon the appropriate requirements of 19.15.17.10 NMAC</li> <li>Design Plan - based upon the appropriate requirements of 19.15.17.12 NMAC</li> <li>Operating and Maintenance Plan - based upon the appropriate requirements of 19.15.17.12 NMAC</li> </ul>
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:
12. <u>Closed-loop Systems Permit Application Attachment Checklist</u> : 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.
<ul> <li>Geologic and Hydrogeologic Data (only for on-site closure) - based upon the requirements of Paragraph (3) of Subsection B of 19.15.17.9</li> <li>Siting Criteria Compliance Demonstrations (only for on-site closure) - based upon the appropriate requirements of 19.15.17.10 NMAC</li> <li>Design Plan - based upon the appropriate requirements of 19.15.17.11 NMAC</li> <li>Operating and Maintenance Plan - based upon the appropriate requirements of 19.15.17.12 NMAC</li> <li>Closure Plan (Please complete Boxes 14 through 18, if applicable) - based upon the appropriate requirements of Subsection C of 19.15.17.9 NMAC</li> <li>and 19.15.17.13 NMAC</li> </ul>
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         Quality Control/Quality Assurance Construction and Installation Plan         Operating and Maintenance 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
<u>Proposed Closure</u> : 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)
15.
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.

facilities are required.	osal of liquids, drilling fluids and drill cuttings. Use attachment 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 associ Yes (If yes, please provide the information below) No	ated activities occur on or in areas that will not be used for future ser	vice and operations?
Required for impacted areas which will not be used for future serv Soil Backfill and Cover Design Specifications based upo Re-vegetation Plan - based upon the appropriate requirement Site Reclamation Plan - based upon the appropriate requirement	n the appropriate requirements of Subsection H of 19.15.17.13 NMA ts of Subsection I of 19.15.17.13 NMAC	с
provided below. Requests regarding changes to certain siting cri	mpliance in the closure plan. Recommendations of acceptable sou teria may require administrative approval from the appropriate dist e Environmental Bureau office for consideration of approval. Just	rict office or may be
Ground water is less than 50 feet below the bottom of the buried w - NM Office of the State Engineer - iWATERS database sea		Yes No
Ground water is between 50 and 100 feet below the bottom of the - NM Office of the State Engineer - iWATERS database sea		□ Yes □ No □ NA
Ground water is more than 100 feet below the bottom of the buried - NM Office of the State Engineer - iWATERS database sea		☐ Yes ☐ No ☐ NA
Within 300 feet of a continuously flowing watercourse, or 200 feet lake (measured from the ordinary high-water mark). - Topographic map; Visual inspection (certification) of the p		🗌 Yes 🗌 No
Within 300 feet from a permanent residence, school, hospital, insti - Visual inspection (certification) of the proposed site; Aeria		Yes No
Within 500 horizontal feet of a private, domestic fresh water well of watering purposes, or within 1000 horizontal feet of any other fresh - NM Office of the State Engineer - iWATERS database; Vi	water well or spring, in existence at the time of initial application.	🗌 Yes 🗌 No
Within incorporated municipal boundaries or within a defined mun adopted pursuant to NMSA 1978, Section 3-27-3, as amended. - Written confirmation or verification from the municipality		🗌 Yes 🗌 No
Within 500 feet of a wetland. - US Fish and Wildlife Wetland Identification map; Topogra	phic 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 I	MNRD-Mining and Mineral Division	Yes No
<ul> <li>Within an unstable area.</li> <li>Engineering measures incorporated into the design; NM Be Society; Topographic map</li> </ul>	areau of Geology & Mineral Resources; USGS; NM Geological	🗋 Yes 🗌 No
Within a 100-year floodplain.		☐ Yes ☐ No

Siting Criteria Compliance Demonstrations - based upon the appropriate requirements of 19.15.17.10 NMAC

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 19.15.17.11 NMAC
 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
 Disposal Facility Name and Permit Number (for liquids, drilling fluids and drill cuttings or in case on-site closure standards cannot be achieved)
 Soil Cover Design - 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 I of 19.15.17.13 NMAC
 Site Reclamation Plan - based upon the appropriate requirements of Subsection G of 19.15.17.13 NMAC

19. Operator Application Certification: I hereby certify that the information submitted with this application i	s true, accurate and complete to t	the best of my knowledge and belief.
Name (Print): Kim Champlin	Title:	Environmental Representative
		02/02/2009
e-mail address: kim_champlin@xtoenergy.com	Telephone:	(505) 333-3100
20. OCD Assessed In Densit Asselfaction (including slavers slave)		
OCD Approval: Permit Application (including closure plan)		Conditions (see attachment)
OCD Representative Signature:		Approval Date:
Title:	OCD Permit Nun	nber:
21. <u>Closure Report (required within 60 days of closure completion)</u> : 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 obtaine	plan prior to implementing any 60 days of the completion of the	closure activities and submitting the closure report. e closure activities. Please do not complete this e been completed.
22.		
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)
<sup>23.</sup> <u>Closure Report Regarding Waste Removal Closure For Closed-lo</u> <i>Instructions: Please indentify the facility or facilities for where the</i> <i>two facilities were utilized.</i>		
Disposal Facility Name:	Disposal Facility F	Permit Number:
Disposal Facility Name:		Permit Number:
Were the closed-loop system operations and associated activities perf Yes (If yes, please demonstrate compliance to the items below		t be used for future service and operations?
Required for impacted areas which will not be used for future service         Site Reclamation (Photo Documentation)         Soil Backfilling and Cover Installation         Re-vegetation Application Rates and Seeding Technique	and operations:	
<ul> <li>24.</li> <li>Closure Report Attachment Checklist: Instructions: Each of the mark in the box, that the documents are attached.</li> <li>Proof of Closure Notice (surface owner and division)</li> <li>Proof of Deed Notice (required for on-site closure)</li> <li>Plot Plan (for on-site closures and temporary pits)</li> <li>Confirmation Sampling Analytical Results (if applicable)</li> <li>Waste Material Sampling Analytical Results (required for on-si</li> <li>Disposal Facility Name and Permit Number</li> <li>Soil Backfilling and Cover Installation</li> <li>Re-vegetation Application Rates and Seeding Technique</li> <li>Site Reclamation (Photo Documentation)</li> <li>On-site Closure Location: Latitude</li> </ul>	ite closure)	
25.		
Operator Closure Certification: I hereby certify that the information and attachments submitted with t belief. I also certify that the closure complies with all applicable clos		
Name (Print):	·	
Signature:	Date:	
e-mail address:	Telephone:	

STATE OF NEW MEXICO

•

•

#### ENERGY AND MINERALS DEPARTMENT

# OIL CONSERVATION DIVISION

P. O. BOX 2048

SANTA FE, NEW MEXICO 87501

Form C-107 Revised 10-1-78

	All distances must be fro	in the cuter boundaries ef	the Section.		
Operator		Lease			Well No.
AMOCO PRODUCTION COMPANY		MARTIN GAS CO	· · · · · · · · · · · · · · · · · · ·		<u>1-E</u>
	Fownship	Range	County		
J 14	27N	10₩	San Juan		
Actual Footage Location of Well:		181.0	Reat		
-p1 feet field the			et from the East		line coted Acreage:
Ground Level Elev. Producing Forms	It ion	Basin Dakota		E	320
6393 Dakota					Heres
<ol> <li>Outline the acreage dedicate</li> <li>If more than one lease is d interest and royalty).</li> </ol>					
<ul> <li>3. If more than one lease of difference dated by communitization, un</li> <li>X Yes No If ans</li> <li>If answer is "no," list the over this form if necessary.</li> <li>No allowable will be assigned</li> </ul>	itization, force-pooli wer is "yes," type o wners and tract desc	ng. etc? f consolidation riptions which have a	Communitizat	solidated.	(Use reverse side of
forced-pooling, or otherwise) o sion.	r until a non-standar	d unit, eliminating su	ch interests, has	been appr	oved by the Commis-
		⊙ I	tai be	ereby certily ned herein is t of my know D. C. C	that the information con- true and complete to the vedge and belief
+   		Amoco, et al Federal SF-077329	Posi Comj Date	DISTRICT	E ENGINEER RODUCTION COMPANY R 7, 1979
		-079596 		FEA2	A share the well location and state of the from field I surveys more by me or a social that the same present to the best of my belief.
	2310 2640 2000		N Regi and F	overaber stered Pole- or Land Star red B	200 LANG 7800

		D1. D 11	Client:	XTO Energy				
Lodestar Service	s, Inc.	Pit Permit	Project:	tank permitting				
PO Ber 4465, Durant		Siting Criteria	Revised:	25-Jan-09				
V		Information	Prepared by:	Trevor Ycas				
AP1#:[	3	0-045-24205	USPLSS:	27N 10W 14 J				
Name:	MARTIN GA	AS COM G No. 001E	Lat/Long:	36.572270°, -107.862239°				
ſ			Geologic					
Depth to groundwater:		depth > 100'	formation:	Nacimiento Formation (Tn)				
Distance to closest continuously flowing watercourse:	~8.9 miles	N to 'San Juan River';	site elevation: 1955m/6414'					
Distance to closest significant watercourse, lakebed, playa lake, or sinkhole:	~2000' E to '	Armenta Canyon' channel;						
A. F.			Soil Type:	Alfisol / Entisol				
Permanent residence, school, hospital, institution or church within 300'		NO						
			Annual Precipitation:	Navajo Reservoir: 11.90", Aztec: 9.77", Farmington (FAA): 8.21", Bloomfield: 8.71				
Domestic fresh water			Precipitation	Historical daily max. precip.: 4.0"				
well or spring within 500'		NO	Notes:	(Bloomfield)				
Any other fresh water well or spring within 1000'		NO						
Within incorporated municipal boundaries		NO	Attached Documents:	26N09W_iWaters.pdf, 26N10W_iWaters.pdf, 26N11W_iWaters.pdf, 27N09W_iWaters.pdf, 27N10W_iwaters.pdf, 27N11W_iwaters.pdf, 28N09W_iWaters.pdf, 28N10W_iWaters.pdf, 28N11W_iWaters.pdf				
Within defined municipal fresh water well field		NO	FM3500640550B_30- 045-24205.jpg	30-045-24205_gEarth-iWaters.jpg, 30-045-24205_gEarth- PLS.jpg ,30-045-24205_topo-PLS.jpg				
Wetland within 500'		NO	Mining Activity:	None Near				
	3			NM_NRD-MMD_MinesMillQuarries_30-045-24205.jpg				
Within unstable area		NO	1					
Within 100 year flood plain	NO	FEMA Zone 'X'						
Additional Notes:								
drains to 'San Juan River' via 'Armenta Canyon'		op a small mesa, <92m earest stream channel		headwaters of Armenta Canyon, NE of Angel Peak & W of Harris Mesa				

•

## MARTIN GAS COM G No.001 E API#: 30-045-24205 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 Armenta 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 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 <u>www.wrcc.dri.edu</u>). The predominant vegetation is sagebrush and grasses with a more restricted pinon-juniper association (Dick-Peddie, 1993). However, vegetation is very sparse and discontinuous.

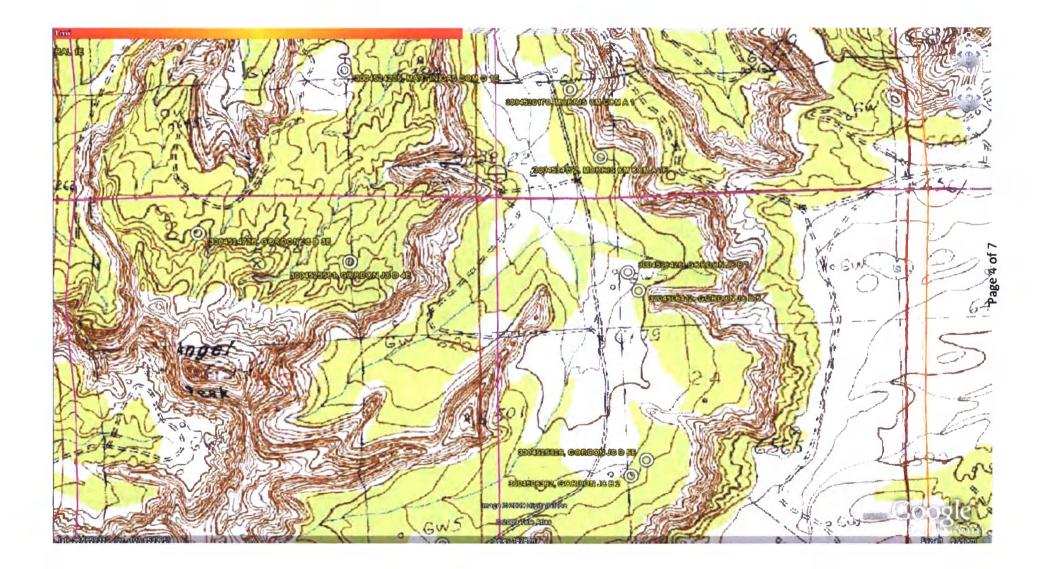
#### Site Specific Hydrogeology

Depth to groundwater is estimated to be greater than 100 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 atop a small mesa, near the edge of 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 is situated at an elevation of approximately 6415 feet. The proposed site is located approximately 1200 feet northwest of the Armenta tributary system, and 200 feet west of Armenta Canyon Wash.

Groundwater is expected to be shallow within Armenta Wash. The elevation change of approximately 300 feet from the wash to the pit suggests that groundwater at the proposed site is deeper than 100 feet. State iWaters data points are sparsely distributed in this region. There are two iWaters data points approximately 3.5 miles to the northwest of the site, at an elevation of approximately 5985 feet. Depth to groundwater within the wells is 60 feet and 170 feet below ground surface. A map showing the location of wells in reference to the proposed pit location is attached.





	Fownship: 28	N Range: 10W	Sections:		
NA	D27 X:	Y:	Zone:	Search R	adius:
County:	E	Basin:	d	Number:	Suffix:
Owner Name:	(First)	(Last)		─ ○ Non-Dom	estic ODomestic  All
	POD / Surface	Data Report Avg	Depth to Water F	Report Water Co	olumn Report

	(quarters are 1=NW 2=NE	3=SW 4=SE)						
	(quarters are biggest to	smallest)			Depth	Depth	Water (in fee	t)
POD Number	Tws Rng Sec q q q	Zone	х	Y	Well	Water	Column	

No Records found, try again

. '

1	Township: 28N Ra	ange: 09W	Sections:		
NAI	027 X:	Y:	Zone:	Search Rac	lius:
County:	Basin:			Number:	Suffix:
Owner Name:	(First)	(Last)		- ONOn-Domes	stic ODomestic 💿
	POD / Surface Data R	eport Avg D	epth to Water R	eport Water Colu	ımn Report

#### (quarters are 1=NW 2=NE 3=SW 4=SE) (quarters are biggest to smallest) Water (in feet) Depth Depth Well POD Number Tws Rng Sec q q q Zone х Y Water Column SJ 03746 POD1 28N 09W 20 1 2 3 190 40 150 SJ 00018 28N 09W 20 3 1 4 135 71 64 SJ 02800 28N 09W 24 4 2 3 200

Record Count: 3

	Fownship: 27N	Range: 11W	Sections:		
NA	D27 X:	Y:	Zone:	Search R	adius:
County:	B	asin:	Ľ.	Number:	Suffix:
Owner Name:	(First)	(La	st)	── ○ Non-Dom	nestic ODomestic @All
	POD / Surface	Data Report A	vg Depth to Water	Report   Water C	olumn Report

						3=SW 4=SE smallest			Depth	Depth	Water	(in feet)
POD Number	Tws	Rng	Sec	qq	P	Zone	х	Y	Well	Water	Column	
SJ 01787	27N	11W	07	2 2					650			
SJ 00077	27N	11W	26	2 1	3				1102	550	552	

Record Count: 2

. ·

	Fownship: 27	N Range: 10W	Sections:		
NA	D27 X:	Y:	Zone:	Search I	Radius:
County:	121	Basin:		Number:	Suffix:
Owner Name:	(First)	(La	st)	○ Non-Dor	nestic ODomestic @Al
	POD / Surfac	e Data Report A	vg Depth to Water	Report   Water C	Column Report

#### (quarters are 1=NW 2=NE 3=SW 4=SE) (quarters are biggest to smallest) Water (in feet) Depth Depth POD Number Tws Rng Sec q q q Х Y Well Water Column Zone SJ 00032 27N 10W 08 2 2 3 235 60 175 SJ 00033 10W 08 2 2 3 204 27N SJ 00034 27N 10W 08 2 2 3 235 170 65

Record Count: 3

. •

	Fownship: 27N	Range: 10W	Sections:		
NA	D27 X:	Y:	Zone:	Search R	Ladius:
County:	B	asin:		Number:	Suffix:
Owner Name:	(First)	(Las	t)	── ○Non-Dom	nestic ODomestic  Al
	POD / Surface	Data Report Av	vg Depth to Water	Report Water C	olumn Report

AVERAGE DEPTH OF WATER REPORT 08/06/2008

								(Depth	Water in	Feet)
Bsn	Tws	Rng	Sec	Zone	х	Y	Wells	Min	Max	Avg
SJ	27N	10W	08				2	60	170	115

Record Count: 2

. •

.

Township: 27N Range: 199W Sections:
NAD27 X: Y: Zone: Scarch Radius:
County: Basin: Number: Suffix:
Owner Name: (First) (Läst) ONon-Domestic ODomestic @ All
POD / Suiface Data Report Avg Depth to Water Report Water Column Report
Clear Form IWATERS Menu Help

	POD / SURFACE DATA REPORT (	08/12/2008											
			(quarters are	a 1=NW :	2=NE 3=SW 4=SE)								
	(acre ft per annum)		(quarters are	a bigge	st to smallest	X Y are	in Feet		UTM are in Meters)	Start	Finish	Depth	Dept
DB Film Nbr	Use Diversion Owner	POD Number	Source	Tws	Rng Sec q q q	Zone	х	¥	UTM Zone Easting Northing	Date	Date	Well	Water

No Records found, try again

• •

Townshi	p: 26N Range: 11W	Sections:	
NAD27 X	Y:	Zone:	Search Radius:
County:	Basin:		Number: Suffix:
Owner Name: (First)	(Last)		─ ○Non-Domestic ○ Domestic ● A
POD / S	urface Data Report Avg	Depth to Water R	eport Water Column Report

							3=SW 4=SE) smallest)			Depth	Depth	Water	(in feet)
POD Number	Tws	Rng	Sec	P	q	P	Zone	x	Y	Well	Water	Column	
SJ 01626	26N	11W	16	4	3					255	200	55	
SJ 02734	26N	11W	.35	4	3	2				275	165	110	

Record Count: 2

•

Тс	wnship: 26N	Range: 10W	Sections:		
NAD	27 X:	Y:	Zone:	Search R	adius:
County:	Ba	sin:		Number:	Suffix:
Owner Name: (	First)	(Last)		○ Non-Dom	estic ODomestic
F	OD / Surface D	ata Report   Avg	Depth to Water	Report Water Co	lumn Report

- ---

### WATER COLUMN REPORT 08/08/2008

#### (quarters are 1=NW 2=NE 3=SW 4=SE) (quarters are biggest to smallest) Water (in feet) Depth Depth POD Number Tws Rng Sec q q q Zone Х Y Well Column Water SJ 00193 26N 10W 13 4 2 2287 500 1787 SJ 00194 26N 10W 25 4 1 2105 500 1605

Record Count: 2

Towns	hip: 26N 1	Range: 09W	Sections:		
NAD27	X:	Y:	Zone:	Search R	adius:
County:	Basin:			Number:	Suffix:
Owner Name: (First	)	(Last)		○ Non-Dom	estic ODomestic @All
POD	Surface Data	Report Avg	Depth to Water I	Report Water Co	lumn Report

							3=SW 4=SE) smallest)			Depth	Depth	Water	(in feet)	
POD Number	Tws	Rng	Sec	q	q q	[	Zone	Х	Y	Well	Water	Column		
SJ 02961	26N	09W	01	2	2 3					1500				
SJ 02962	26N	09W	01	3	2 3					1500				
SJ 01756	26N	09W	11	2	2 3					75	40	35		
SJ 03811 POD1	26N	09W	12	3	3 3					348	175	173		
SJ 00412	26N	09W	16	4	2					202	65	137		
SJ 00214	26N	09W	26	2	4 2					946	230	716		
SJ 00064	26N	09W	26	4	2 1					490	215	275		
SJ 00063	26N	09W	26	4	2 3					479	234	245		

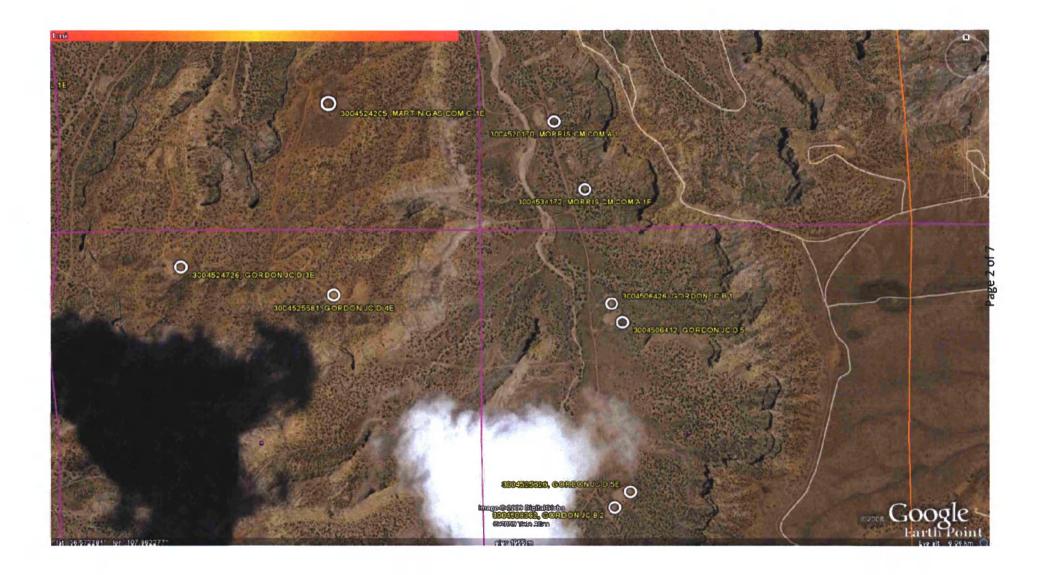
Record Count: 8

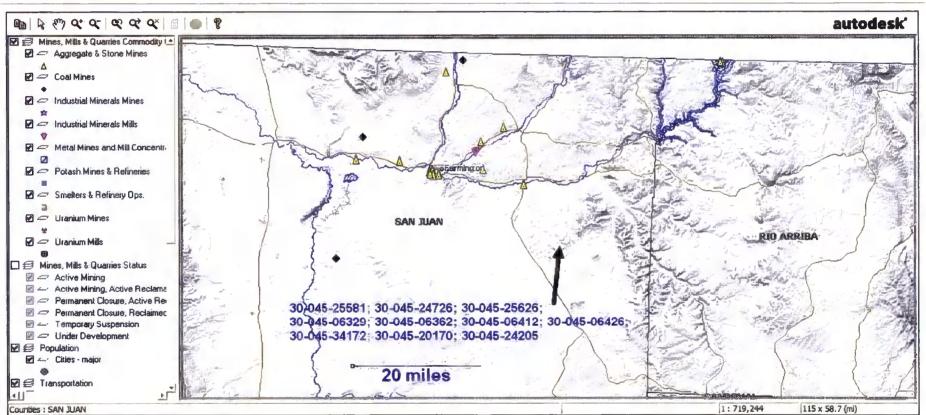
	Fownship: 28N	Range: 11W	Sections:		
NA	D27 X:	Y:	Zone:	Search R	adius:
County:	Bas	in:		Number:	Suffix:
Owner Name:	(First)	(Last)		─ ○Non-Dom	estic O Domestic  All
	POD / Surface Da	ata Report   Avg	Depth to Water R	eport   Water Co	olumn Report

# (quarters are 1=NW 2=NE 3=SW 4=SE)

	(quarter	s are	e big	gge	est	to:	smallest)			Depth	Depth	Water	(in feet)
POD Number	Tws	Rng	Sec	q	q	q	Zone	X	Y	Well	Water	Column	
SJ 03193	28N	11W	07	3	4	3				80	35	4 5	
SJ 02916	28N	11W	07	3	4	4				98	70	2.8	

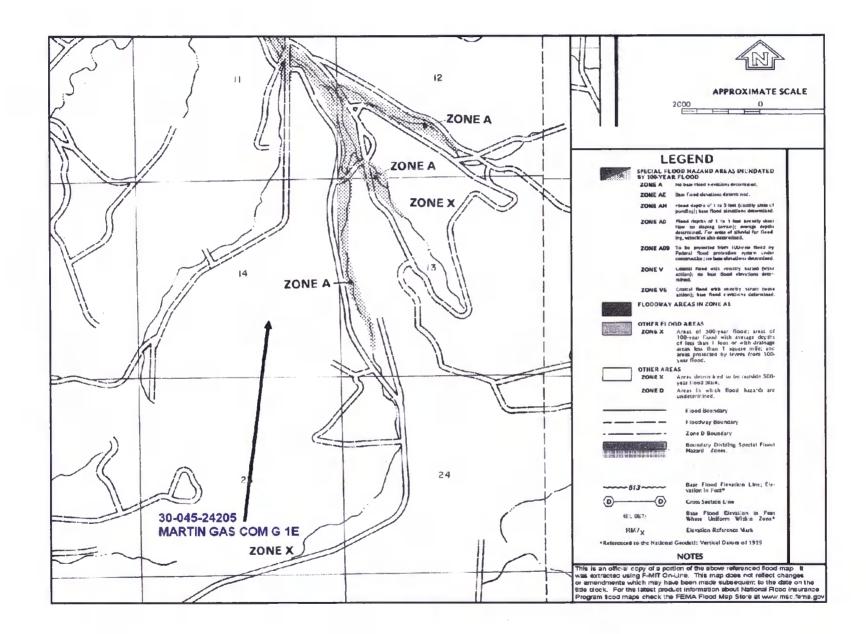
Record Count: 2





## Mines, Mills and Quarries Web Map

Page 6 of 7



. .

## 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.

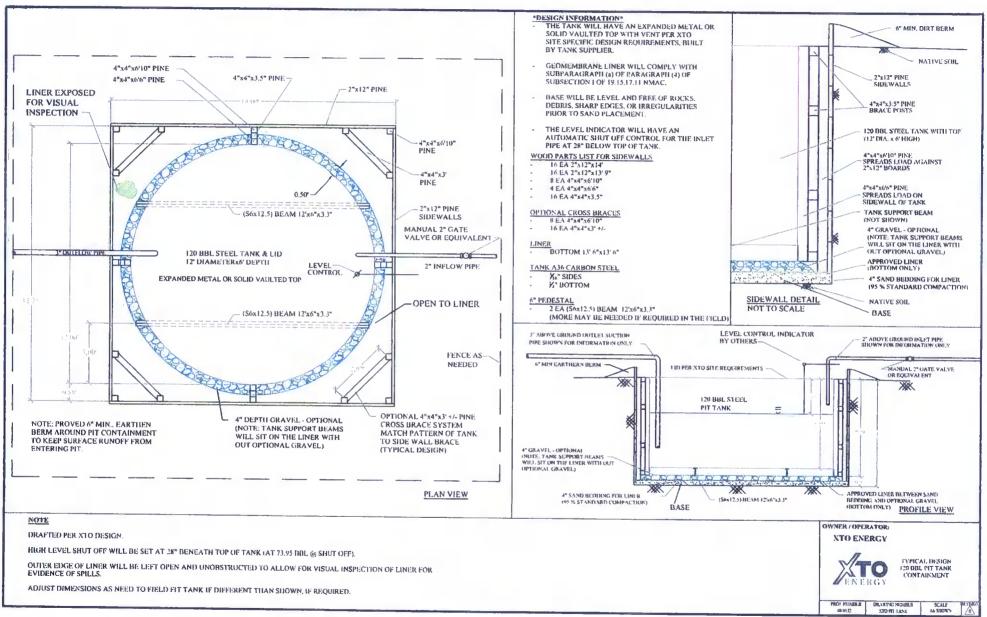
## **General Plan**

- 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 ¼" 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.
- 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.



Z.SmCUTD\_PITEANOCADPTyneal Designs VTO PIT TANK dog NTO PITT WK dog

## 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.
  - 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 Name:

API No.:

Legals	Sect		Township:		Range:			
regais	Jec.		Township.		- Kange.			
XTO Inspector's	Inspection	Inspection	Any visible liner	Any visible signs of	Collection of surface	Visible layer	Any visible signs	Freeboard
Name	Date	Time	tears (Y/N)	tank overflows (Y/N)	run on (Y/N)	of oil (Y/N)	of a tank leak (Y/N)	Est. (ft)
· · · · · · · · · · · · · · · · · · ·								
Notes:	Provide De	tailed Descri	otion:					
			•					
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**

۰.

- 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.
- 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.

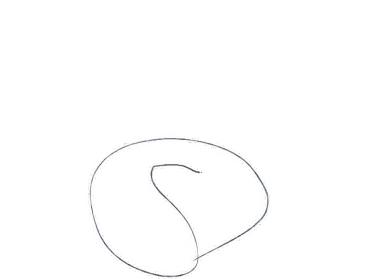
- 11. Re-contouring of location will match fit, shape, line, form and texture of the surrounding area. Re-shaping will include drainage control, prevent ponding, and prevent erosion. Natural drainages will be unimpeded and water bars and/or silt traps will be placed in areas where needed to prevent erosion 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 divisionapproved 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

۰.

· .

- 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.



a fer

ų <sup>16</sup>