District I 1625 N. F- District I 1301 W District I 1000 Rio District I 1220 S. St. Francis Dr., Santa Fe, NM 87505	State of New Mexico nd Natural Resources urtment ation Division St. Francis Dr. Santa Fe, NM 87505 44	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, Cl	osed-Loop System, Below-Grade	<u>Tank, or</u>
Proposed Alter	native Method Permit or Closure I	Plan Application
Type of action: Permit Existing BGT Closure Modifie Closure below-grade tank, or propose	of a pit, closed-loop system, below-grade tank, c e of a pit, closed-loop system, below-grade tank, cation to an existing permit e plan only submitted for an existing permitted o ed alternative method	or proposed alternative method or proposed alternative method r non-permitted pit, closed-loop system,
Instructions: Please submit one applicat	ion (Form C-144) per individual pit, closed-loop syst	tem, below-grade tank or alternative request
Please be advised that approval of this request does not environment. Nor does approval relieve the operator of	relieve the operator of liability should operations result f its responsibility to comply with any other applicable go	in pollution of surface water, ground water or the overnmental authority's rules, regulations or ordinances.
	OCDID #.	5380
Operator: <u>XTO Energy, Inc.</u>	OORID #	
Address: <u>#382 County Road 5100, Aztec, N</u>	M 8/410	
A DI Number: 20.045 20522	OCD Permit Number	
API Number: <u>30-045-30322</u>	OCD Fermit Number	San Juan
0/L or Qtr/Qtr _K Section1410wh	$\frac{29N}{14W} = \frac{10828271}{14W} = \frac{10828271}{14W}$	
Center of Proposed Design: Latitude <u>36.72373</u>	Longnude108.28571NAD.	
Surface Owner: 🖾 Federal 📋 State 🗋 Private		
<ul> <li>2.</li> <li>Pit: Subsection F or G of 19.15.17.11 NMA Temporary: Drilling Workover</li> <li>Permanent Emergency Cavitation I Lined Unlined Liner type: Thickness</li> <li>String-Reinforced</li> <li>Liner Seams: Welded Factory Other</li> </ul>	C P&A mil □ LLDPE □ HDPE □ PVC □ O Volume:bt	Other D1 Dimensions: L x W x D
1		
<ul> <li>Closed-loop System: Subsection H of 19.15</li> <li>Type of Operation: P&amp;A Drilling a new wintent)</li> <li>Drying Pad Above Ground Steel Tanks</li> <li>Lined Unlined Liner type: Thickness Liner Seams: Welded Factory Other</li> </ul>	.17.11 NMAC vell Workover or Drilling (Applies to activities wh Haul-off Bins Other mil LLDPE HDPE PVC	hich require prior approval of a permit or notice of
4		
Below-grade tank:       Subsection I of 19.15.17         Volume:       120       bbl Type of f         Tank Construction material:       Steel         Secondary containment with leak detection       [         Visible sidewalls and liner       Visible sidewalls and liner milling         Liner type:       Thickness      milling	.11 NMAC         luid:	overflow shut-off omatic high-level shut off, no liner
5.		
Alternative Method:           Submittal of an exception request is required. Ex	ceptions must be submitted to the Santa Fe Environm	ental Bureau office for consideration of approval.

<ul> <li>6.</li> <li>Fencing: Subsection D of 19.15.17.11 NMAC (Applies to permanent pits, temporary pits, and below-grade tanks).</li> <li>Chain link, six feet in height, two strands of barbed wire at top (Required if located within 1000 feet of a permanent residence, school, institution or church)</li> <li>Four foot height, four strands of barbed wire evenly spaced between one and four feet</li> <li>Alternate. Please specify Four foot height, steel mesh field fence (hogwire) with pipe top railing</li> </ul>	hospital,
<ul> <li>7.</li> <li>Netting: Subsection E of 19.15.17.11 NMAC (Applies to permanent pits and permanent open top tanks)</li> <li>Screen Netting Other Expanded metal or solid vaulted top</li> <li>Monthly inspections (If netting or screening is not physically feasible)</li> </ul>	
<ul> <li>signs: Subsection C of 19.15.17.11 NMAC</li> <li>12"x 24", 2" lettering, providing Operator's name, site location, and emergency telephone numbers</li> <li>Signed in compliance with 19.15.3.103 NMAC</li> </ul>	
<ul> <li>9. <u>Administrative Approvals and Exceptions:</u> Justifications and/or demonstrations of equivalency are required. Please refer to 19.15.17 NMAC for guidance.</li> <li><i>Please check a box if one or more of the following is requested, if not leave blank:</i> Administrative approval(s): Requests must be submitted to the appropriate division district or the Santa Fe Environmental Bureau consideration of approval.</li> <li>Exception(s): Requests must be submitted to the Santa Fe Environmental Bureau office for consideration of approval.</li> </ul>	office for
<sup>10.</sup> 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 appro office or may be considered an exception which must be submitted to the Santa Fe Environmental Bureau office for consideration of a Applicant must attach justification for request. Please refer to 19.15.17.10 NMAC for guidance. Siting criteria does not apply to dry above-grade tanks associated with a closed-loop system.	ptable source priate district pproval. ing pads or
Ground water is less than 50 feet below the bottom of the temporary pit, permanent pit, or below-grade tank. - NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells	🛛 Yes 🗌 No
<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
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
<ul> <li>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.</li> <li>NM Office of the State Engineer - iWATERS database search; Visual inspection (certification) of the proposed site</li> </ul>	🗌 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.	🗌 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
<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

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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
<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> <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> </ul>
and 19.15.17.13 NMAC  Previously Approved Design (attach copy of design) API Number: or Permit Number:
<ul> <li>Closed-loop Systems Permit Application Attachment Checklist: Subsection B of 19.15.17.9 NMAC</li> <li>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.</li> <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> </ul>
<ul> <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         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 Besign - 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         Closure Plan - based upon the appropriate requirements 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
<ul> <li>☐ Alternative</li> <li>Proposed Closure Method:  Waste Excavation and Removal</li> <li>☐ Waste Removal (Closed-loop systems only)</li> <li>☐ On-site Closure Method (Only for temporary pits and closed-loop systems)</li> <li>☐ In-place Burial  ☐ On-site Trench Burial</li> </ul>
Alternative Closure Method (Exceptions must be submitted to the Santa Fe Environmental Bureau for consideration)
<ul> <li>15.</li> <li>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.</li> <li>Protocols and Procedures - based upon the appropriate requirements of 19.15.17.13 NMAC</li> <li>Confirmation Sampling Plan (if applicable) - based upon the appropriate requirements of Subsection F of 19.15.17.13 NMAC</li> <li>Disposal Facility Name and Permit Number (for liquids, drilling fluids and drill cuttings)</li> <li>Soil Backfill and Cover Design Specifications - based upon the appropriate requirements of Subsection H of 19.15.17.13 NMAC</li> <li>Re-vegetation Plan - based upon the appropriate requirements of Subsection G of 19.15.17.13 NMAC</li> <li>Site Reclamation Plan - based upon the appropriate requirements of Subsection G of 19.15.17.13 NMAC</li> </ul>

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<sup>16.</sup> Waste Removal Closure For Closed-loop Systems That Utilize Above Ground St Instructions: Please indentify the facility or facilities for the disposal of liquids, dri	eel Tanks or Haul-off Bins Only: (19.15.17.13.D NMAC) illing fluids and drill cuttings. Use attachment if more than two	
facilities are required.		
Disposal Facility Name: D	visposal Facility Permit Number:	
Disposal Facility Name: D	bisposal Facility Permit Number:	
Will any of the proposed closed-loop system operations and associated activities occur Yes (If yes, please provide the information below) No	Ir on or in areas that will not be used for future service and operat	tions?
Required for impacted areas which will not be used for future service and operations <ul> <li>Soil Backfill and Cover Design Specifications based upon the appropriate re</li> <li>Re-vegetation Plan - based upon the appropriate requirements of Subsection I of Site Reclamation Plan - based upon the appropriate requirements of Subsection</li> </ul>	: equirements of Subsection H of 19.15.17.13 NMAC of 19.15.17.13 NMAC n G of 19.15.17.13 NMAC	
<sup>17.</sup> Siting Criteria (regarding on-site closure methods only): 19.15.17.10 NMAC Instructions: Each siting criteria requires a demonstration of compliance in the clo provided below. Requests regarding changes to certain siting criteria may require a considered an exception which must be submitted to the Santa Fe Environmental E demonstrations of equivalency are required. Please refer to 19.15.17.10 NMAC for	osure plan. Recommendations of acceptable source material ar administrative approval from the appropriate district office or n Bureau office for consideration of approval. Justifications and/ r guidance.	re nay be for
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 of	bbtained from nearby wells	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 of	bbtained from nearby wells	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 of the State Engineer - iWATERS database	bbtained from nearby wells	No
<ul> <li>Within 300 feet of a continuously flowing watercourse, or 200 feet of any other signilake (measured from the ordinary high-water mark).</li> <li>Topographic map; Visual inspection (certification) of the proposed site</li> </ul>	ficant watercourse or lakebed, sinkhole, or playa	No
Within 300 feet from a permanent residence, school, hospital, institution, or church in - Visual inspection (certification) of the proposed site; Aerial photo; Satellite i	n existence at the time of initial application. Yes	No
Within 500 horizontal feet of a private, domestic fresh water well or spring that less t watering purposes, or within 1000 horizontal feet of any other fresh water well or spr - NM Office of the State Engineer - iWATERS database; Visual inspection (co	than five households use for domestic or stock ring, in existence at the time of initial application.	No
<ul> <li>Within incorporated municipal boundaries or within a defined municipal fresh water adopted pursuant to NMSA 1978, Section 3-27-3, as amended.</li> <li>Written confirmation or verification from the municipality; Written approval</li> </ul>	well field covered under a municipal ordinance Yes Yes Sobtained from the municipality	No
Within 500 feet of a wetland. - US Fish and Wildlife Wetland Identification map; Topographic map; Visual	inspection (certification) of the proposed site	No
Within the area overlying a subsurface mine. - Written confirmation or verification or map from the NM EMNRD-Mining a	and Mineral Division	No
<ul> <li>Within an unstable area.</li> <li>Engineering measures incorporated into the design; NM Bureau of Geology Society; Topographic map</li> </ul>	& Mineral Resources; USGS; NM Geological 🛛 Yes 🗌	No
Within a 100-year floodplain. - FEMA map	□ Yes □	No
<ul> <li>18.</li> <li>On-Site Closure Plan Checklist: (19.15.17.13 NMAC) Instructions: Each of the by a check mark in the box, that the documents are attached.</li> <li>Siting Criteria Compliance Demonstrations - based upon the appropriate requirements of S</li> <li>Construction/Design Plan of Burial Trench (if applicable) based upon the appropriate requirements of S</li> <li>Construction/Design Plan of Temporary Pit (for in-place burial of a drying pau</li> <li>Protocols and Procedures - based upon the appropriate requirements of 19.15.</li> <li>Confirmation Sampling Plan (if applicable) - based upon the appropriate requirements of S</li> <li>Disposal Facility Name and Permit Number (for liquids, drilling fluids and dri Soil Cover Design - based upon the appropriate requirements of Subsection H</li> <li>Re-vegetation Plan - based upon the appropriate requirements of Subsection I</li> </ul>	following items must be attached to the closure plan. Please ind irements of 19.15.17.10 NMAC Subsection F of 19.15.17.13 NMAC propriate requirements of 19.15.17.11 NMAC d) - based upon the appropriate requirements of 19.15.17.11 NMA 17.13 NMAC irements of Subsection F of 19.15.17.13 NMAC subsection F of 19.15.17.13 NMAC ill cuttings or in case on-site closure standards cannot be achieved of 19.15.17.13 NMAC of 19.15.17.13 NMAC	dicate, AC i)

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<ul> <li>Operator Application Certification:</li> <li>I hereby certify that the information submitted with this application is t</li> </ul>	true, accurate and complete to the best of my knowledge and belief.
Name (Print): Kim Champlin	Title: Environmental Representative
Signature: Kim Champler	Date:11/25/08
e-mail address: kim_champlin@xtoenergy.com	Telephone: (505) 333-3100
20. OCD Approval: Permit Application (including closure plan)	Closure Plan (only) OCD Conditions (see attachment)
OCD Representative Signature:	Approval Date:
Title:	OCD Permit Number:
<sup>21.</sup> <u>Closure Report (required within 60 days of closure completion)</u> : S Instructions: Operators are required to obtain an approved closure p. The closure report is required to be submitted to the division within 60 section of the form until an approved closure plan has been obtained	Subsection K of 19.15.17.13 NMAC blan prior to implementing any closure activities and submitting the closure report. O days of the completion of the closure activities. Please do not complete this and the closure activities have been completed. Closure Completion Date:
<ul> <li>22.</li> <li>Closure Method:</li> <li>Waste Excavation and Removal On-Site Closure Method</li> <li>If different from approved plan, please explain.</li> </ul>	Alternative Closure Method 🗌 Waste Removal (Closed-loop systems only)
<sup>23.</sup> <u>Closure Report Regarding Waste Removal Closure For Closed-loo</u> <i>Instructions: Please indentify the facility or facilities for where the li</i> <i>two facilities were utilized.</i>	p 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 perfor Yes (If yes, please demonstrate compliance to the items below)	rmed on or in areas that will not be used for future service and operations?
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	and operations:
24. Closure Report Attachment Checklist: Instructions: Each of the for	ollowing items must be attached to the closure report. Please indicate, by a check
<ul> <li>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-site Disposal Facility Name and Permit Number</li> <li>Soil Backfilling and Cover Installation</li> <li>Re-vegetation Application Rates and Seeding Technique</li> </ul>	te closure)
On-site Closure Location: Latitude	Longitude NAD: 1927 1983
25.	
Operator Closure Certification: I hereby certify that the information and attachments submitted with th 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 ire requirements and conditions specified in the approved closure plan.
Name (Print):	Title:
Signature:	Date:
e-mail address:	Telephone:

### State of New Mexico Energy, Minerals & Mining Resources Department

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### OIL CONSERVATION DIVISION 2040 South Pacheco Santa Fe. NM 87505

AMENDED REPORT

#### WELL LOCATION AND ACREAGE DEDICATION PLAT



NO ALLOWABLE WILL ASSIGNED TO THIS COMPLETION UNTL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNT HAS BEEN APPROVED BY THE DIVISION



A	Pit Permit		Client:	XTO Energy		
A Lodestar Service	s, Inc.	PIT Permit	Project:	Pit Permits		
PO Box 4465, Durang	o, CO 81302	Siting Criteria	Revised:	11/13/2008		
V		Information Sheet	Prepared by:	Daniel Newman		
API#:		3004530522	USPLSS:	T29N,R14W,14K		
Name:		benally 14 #3	Lat/Long	36.72373° / 108.28371°		
Depth to groundwater:		<50'	Geologic formation:	Kirtland and Fruitland Formations		
Distance to closest continuously flowing watercourse:	2,821' :	south of the San Juan River				
Distance to closest significant watercourse, lakebed, playa lake, or sinkhole:	2,036'	west of an unnamed arroyo				
			Soil Type:	Entisols		
Permanent residence, school, hospital, institution or church within 300'		No				
			Annual Precipitation:	8.08 inches average		
Domestic fresh water well or spring within 500'		No	Precipitation Notes:	no significant precipatation events		
Any other fresh water well or spring within 1000'		No				
		The second second second second second		the state of the s		
Within incorporated municipal boundaries		No:	Attached Documents:			
Within defined municipal fresh water well field		No		Topo map, ground water data map, ariel photo, mines and quarries map, FEMA map		
Wetland within 500'	12 AA. AA	No	Mining Activity:	No		
Within unstable area		No				
Within 100 year flood plain		Zone X				
Additional Notes:	in the said	<u>na serie de la composition de la compo</u>	<u>, and an </u>	a where reacting is presented in the set of the set of the set		

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## Benally 14 #3 Below Ground Tank Hydrogeologic Report for Siting Criteria

#### **General Geology and Hydrology**

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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 situated near the San Juan River between Farmington and Kirtland, NM.

The predominant geologic formation is the Fruitland Formation/Kirtland Shale of Late Cretaceous age, which underlies surface soils and is often exposed as broad shalely hills (Dane and Bachman, 1965). Deposits of Quaternary alluvial sands also occur prominently near the surface of the area, especially near streams and washes. The Fruitland Formation consists of interbedded sandy shale, carbonaceous shale, sandstone and coal units. The Kirtland Shale is divided into a lower shale member, a middle sandstone unit and an upper sandy shale member. The two formations are difficult to differentiate and are often treated together. The combined thickness of the Fruitland-Kirtland interval ranges from 100 to 2000 feet (Stone et al., 1983).

Cretaceous and Tertiary sandstones, as well as Quaternary alluvial deposits serve as the primary aquifers in the San Juan Basin (Stone et al., 1983). Aquifers within the Fruitland-Kirtland Formations are primarily limited to the Farmington Sandstone Member, which is the middle unit within the Kirtland Shale. Reported discharge from stock wells is about 10 gallons per minute (Stone et al., 1983). The aquifer supplies low yielding stock wells.

The prominent soil type at the proposed site is enitsols, which are defined as soils that exhibit little to no 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 just over 8 inches of rainfall annually. As is typical of the southwestern United States monsoonal weather patterns, most precipitation falls from August through October. The heaviest rainfall occurs in the summer in isolated, intense cloudbursts. November through June is relatively dry. Snow generally falls from December to mid-February and averages less than one-half inch in depth. However, most recharge occurs during the winter months during snowmelt periods from the upper elevations (Western Regional Climate Center www.wrcc.dri.edu).

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

### Site Specific Hydrogeology

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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 primarily confined to the Farmington Sandstone Member of the Fruitland Formation, which is 20-480 feet thick (Stone et al., 1983). The site is located in a shalely unit of the Fruitland Formation, as evidenced by the relatively flat topography that is easily eroded by arroyos. The eroded surfaces of the arroyos do not expose thick sequences of sandstone outcrops, the presence of which might indicate a water-bearing unit within the immediate subsurface.

This rural site location is within the city limits of Farmington, NM. Groundwater data available from the NM State Engineer's iWaters Database for wells near the proposed site are attached. Wells located at similar elevations and distances from the San Juan River contain groundwater at depths ranging from 6 to 90 feet. The site in question is located on a relatively flat area at an elevation of approximately 5,241 feet. The closest well to the proposed site sits at an elevation of approximately 5,209 feet, at a distance if approximately one mile to the northeast. This site puts distance to groundwater at 6 feet below the surface.

Exposures of shale at the surface and within channel cuts of arroyos suggest groundwater is restricted to deeper sandstone units. However, proximity of the site to the San Juan River should also be considered. Groundwater data recorded from wells drilled at similar distances from the San Juan River and within comparable topographic settings is less than 50 feet. Therefore, depth to groundwater is estimated to be less than 50 feet.





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

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AVERAGE DEPTH OF WATER REPORT 10/21/2008

								(Depth	Water in	Feet)
Bsn	Tws	Rng	Sec	Zone	X	Y	Wells	Min	Max	Avg
RG	29N	13W	19				1	30	30	30
RG	29N	13W	29	С			1	ć	ê	ê
SJ	29N	13W	Ũ1				4	18	40	28
SJ	29N	13W	02				7	17	90	34
SJ	29N	13W	04				2	10	16	13
SJ	29N	13W	05				4	10	20	16
SJ	29N	13W	06				1	12	12	12
SJ	29N	13W	08				2	4	30	17
SJ	29N	13W	09				13	9	50	17
SJ	29N	13W	10				15	9	38	20
SJ	29N	13W	11				9	10	39	19
SJ	29N	13W	14				33	4	30	ē
SJ	29N	13W	15				2	4	25	15
SJ	29N	13W	18				3	21	35	27
SJ	29N	13W	17				2	8	20	14
SJ	29N	13W	13				1	11	11	11
SJ	29N	13W	21				3	ê	20	11
SJ	29N	13W	21		261218	2079099	1	5	5	.5
SJ	29N	13W	22				28	7	35	16
SJ	29N	13W	22		261533	2080965	1	15	15	15
SJ	29N	13W	23				7	ē	30	15
SJ	29N	13W	24				1	32	32	32
SJ	29N	13W	25				1	75	75	75

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		AVER	GE	DEPTH (	OF WATER	REPORT	1	0/21/200	8		
									(Depth	Water in	Feet)
Bsn	Tws	Rng	Sec	zone	X	Y	Y	Wells	Min	Max	Avg
SJ	29N	14W	05					1	90	90	90
SJ	29N	14W	Ûέ					2	30	52	41
SJ	29N	14W	07					ē	ê	50	24
SJ	29N	14W	03					3	50	275	132
SĴ	29N	14W	12		259584	2086850	0	1	20	.20	20
SJ	29N	14W	13					2	4	10	7
SJ	29N	14W	13		259540	2085841	1	1	ć	ê	ē
SJ	29N	14W	17					7	3	28	13
SJ	29N	14W	18					ĉ	7	25	17

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#### AVERACE DEPTH OF WATER REPORT 10/21/2008

Bsn	Tws	Rng	Sec	Zone	x	Y	Wells	(Depth Min	Water in Max	Peet) Avg
SJ	2 SN	15W	04				1	22	22	22
53	2 SN	15W	06				1	14	14	14
SJ	2 SN	15W	11				6	4	4.5	15
SJ	2 SN	15W	11	W	33.6000	2052200	L	25	25	25
SJ	2 9N	15W	12				E	E	110	38
SJ	2 9 N	15W	13				2	12	20	16

AVERAGE DEPTH OF WATER REPORT 10/20/2008 (Depth Water in Feet) Ban Tws Rng Sec Zone X Y Wells Min Max Avg RG 30N 13W 30 45 45 45 1 27 27 SJ 30N 13W 01 1 27 2 27 SJ 30N 13W 05 3 46 27 18 SJ 30N 13W 08 3 56 SJ30N 13W 09 3 32 140 91 SJ 30N 13W 11 1 58 58 58 25 SJ 30N 13W 17 3 9 45 81 SJ 30N 13W 26 230 350 286 13W 27 SJ 250 250 30N 250 2 SJ 30N 13W 28 306 30€ 306 SJ 30N 13W 29 10 15 65 31 SJ30N 13W 30 1 21 21 21 4 SJ 30N 13W 32 1018 14 SJ 30N 13W 35 1 200. 200 200

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		AVER	GE	DEPTH OI	WATER H	REPORT 1	0/20/20	80		
								(Depth	Water in	Feet)
Ban	Twa	Rng	Sec	Zone	x	Y	Wells	Min	Max	Avg
SJ	3 0 N	14W	03				1	5	5	5

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		AVER	AGE I	EPTH (	OF WATER	REPORT	10/21/20	08		
								(Depth	Water in	Feet)
Bsn	Tws	Rng	Sec	Zone	X	Y	Wells	Min	Max	Avg
SJ	30N	15W	29		254738	2105417	1	12	12	12
SJ	30N	15W	36	Nº.	342253	2100399	2	1.02	131	117

Record Count: 3









# 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.



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

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

#### General Plan

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

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

Well Nan	ne:				API No.:			
Legals	Sec:		Township:		Range:			
XTO Inspector's Name	Inspection Date	Inspection Time	Any visible liner tears (Y/N)	Any visible signs of tank overflows (Y/N)	Collection of surface run on (Y/N)	Visible layer of oil (Y/N)	Any visible signs of a tank leak (Y/N)	Freeboar Est. (ft)
Notes;	Provide De	tailed Descri	ption:					
Misc:								

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

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

#### General Plan

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

Envirotech Permit No. NM01-0011 and IEI Permit No. NM 01-0010B Soil contaminated by exempt petroleum hydrocarbons Produced sand, pit sludge and contaminated bottoms from storage of exempt wastes

- Basin Disposal Permit No. NM01-005 Produced water
- 5. XTO will remove the below-grade tank and dispose of it in a division approved facility or recycle, reuse, or reclaim it in a manner that the appropriate division district office has approved prior to removal. Any associated liners will be removed, properly cleaned and disposed of per 19.15.9.712 NMAC at San Juan County Landfill. Documentation of the final disposition will be included in the closure report.
- 6. XTO will remove any on-site equipment associated with a below-grade tank unless the equipment is required for some other purpose.
- 7. XTO will test the soils beneath the below-grade tank to determine whether a release has occurred. At a minimum 5 point composite sample will be collected along with individual grab samples from any area that is wet, discolored or showing other evidence of a release. Samples will be

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

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

- 8. If XTO or the division determines that a release has occurred, XTO will comply with 19.15.3.116 NMAC and 19.15.1.19NMAC as appropriate.
- 9. If the sampling program demonstrates that a release has not occurred or that any release does not exceed the concentrations specified in Paragraph (4) of Subsection E of 19.15.17.13 NMAC, XTO will backfill the excavation with compacted, non-waste containing, earthen material; construct a division prescribed soil cover; recontour and re-vegetate the site.
- 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

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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.

