District I
1625 N French Dr., Hobbs, NM 88240
District II
1301 W. Grand Avenue, Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S St Francis Dr., Santa Fe, NM 87505

State of New Mexico Energy Minerals and Natural Resources Department Oil Conservation Division 1220 South St. Francis Dr. Santa Fe, NM 87505

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

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

4	44
7	50 ·

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

Type of action: X Permit of a pit, closed-loop system, below-grade tank, or proposed alternative method Closure of a pit, closed-loop system, below-grade tank, or proposed alternative method Modification to an existing permit Closure plan only submitted for an existing permitted or non-permitted pit, closed-loop system,						
below-grade tank, or proposed alternative method						
Instructions: Please submit one application (Form C-144) per individual pit, closed-loop system, below-grade tank or alternative request						
ease be advised that approval of this request does not relieve the operator of liability should operations result in pollution of surface water, ground water or the vironment. Nor does approval relieve the operator of its responsibility to comply with any other applicable governmental authority's rules, regulations or ordinary.	ances.					
Deerator: XTO Energy, Inc. OGRID #: 5380	_					
Address: #382 County Road 3100, Aztec, NM 87410						
Facility or well name: Bolack 28 #5						
API Number: 30-045-34891 OCD Permit Number:						
J/L or Qtr/Qtr J Section 28 Township 27N Range 11W County: San Juan						
Center of Proposed Design: Latitude 36.54345 Longitude 108.00501 NAD: ☐1927 ☑ 198.						
Surface Owner: Tederal State Private Tribal Trust or Indian Allotment	l					
Permanent ☐ Emergency ☐ Cavitation ☐ P&A X Lined ☐ Unlined Liner type: Thickness 20mil	2					
Subsection H of 19.15.17.11 NMAC Subsection H	of					
Liner Seams: Welded Factory Other						
Below-grade tank: Subsection I of 19.15.17.11 NMAC Volume:						
Alternative Method: Submittal of an exception request is required. Exceptions must be submitted to the Santa Fe Environmental Bureau office for consideration of approva	.1					
submittal of an exception request is required. Exceptions must be submitted to the same receivmental bureau office for consideration of approva	(

6. • 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,				
unstitution or church) [X] Four foot height, four strands of barbed wire evenly spaced between one and four feet				
Alternate. Please specify				
7.				
Netting: Subsection E of 19.15.17.11 NMAC (Applies to permanent pits and permanent open top tanks)				
☐ Screen ☐ Netting ☐ Other ☐ 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				
9. Administrative Approvals and Exceptions:				
Justifications and/or demonstrations of equivalency are required. Please refer to 19.15.17 NMAC for guidance.				
Please check a box if one or more of the following is requested, if not leave blank: Administrative approval(s): Requests must be submitted to the appropriate division district or the Santa Fe Environmental Bureau of	office for			
consideration of approval. Fencing- Hogwire Exception(s): Requests must be submitted to the Santa Fe Environmental Bureau office for consideration of approval.				
10.				
Siting Criteria (regarding permitting): 19.15.17.10 NMAC	table source			
Instructions: The applicant must demonstrate compliance for each siting criteria below in the application. Recommendations of accep material are provided below. Requests regarding changes to certain siting criteria may require administrative approval from the appropriate the complex control of the c	oriate district			
office or may be considered an exception which must be submitted to the Santa Fe Environmental Bureau office for consideration of applicant must attach justification for request. Please refer to 19.15.17.10 NMAC for guidance. Siting criteria does not apply to drying				
above-grade tanks associated with a closed-loop system.				
Ground water is less than 50 feet below the bottom of the temporary pit, permanent pit, or below-grade tank. - NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells	Yes No			
Within 300 feet of a continuously flowing watercourse, or 200 feet of any other significant watercourse or lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark).	☐ Yes ☐ No			
- Topographic map; Visual inspection (certification) of the proposed site	☐ Yes ☐ No			
Within 300 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application. (Applies to temporary, emergency, or cavitation pits and below-grade tanks) - Visual inspection (certification) of the proposed site; Aerial photo; Satellite image	□ NA			
Within 1000 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application. (Applies to permanent pits)	☐ Yes ☐ No☐ NA			
- Visual inspection (certification) of the proposed site; Aerial photo; Satellite image				
Within 500 horizontal feet of a private, domestic fresh water well or spring that less than five households use for domestic or stock watering purposes, or within 1000 horizontal feet of any other fresh water well or spring, in existence at the time of initial application. - NM Office of the State Engineer - iWATERS database search; Visual inspection (certification) of the proposed site	Yes No			
Within incorporated municipal boundaries or within a defined municipal fresh water well field covered under a municipal ordinance adopted pursuant to NMSA 1978, Section 3-27-3, as amended.	Yes No			
- Written confirmation or verification from the municipality; Written approval obtained from the municipality				
Within 500 feet of a wetland. - US Fish and Wildlife Wetland Identification map; Topographic map; Visual inspection (certification) of the proposed site	☐ Yes ☐ No			
Within the area overlying a subsurface mine. - Written confirmation or verification or map from the NM EMNRD-Mining and Mineral Division	☐ Yes ☐ No			
Within an unstable area. - Engineering measures incorporated into the design; NM Bureau of Geology & Mineral Resources; USGS; NM Geological Society; Topographic map	☐ Yes ☐ No			
Within a 100-year floodplain FEMA map	☐ Yes ☐ No			

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

Waste Removal Closure For Closed-loop Systems That Utilize Above Ground Instructions: Please indentify the facility or facilities for the disposal of liquids, facilities are required.		
Disposal Facility Name: Envirotech	Disposal Facility Permit Number:	NM01-0011
Disposal Facility Name: IEI	Disposal Facility Permit Number:	NM01-0010B
Will any of the proposed closed-loop system operations and associated activities of Yes (If yes, please provide the information below) ☒ No		
Required for impacted areas which will not be used for future service and operation Soil Backfill and Cover Design Specifications based upon the appropriate Re-vegetation Plan - based upon the appropriate requirements of Subsection Site Reclamation Plan - based upon the appropriate requirements of Subsection	e requirements of Subsection H of 19.15. I of 19.15.17.13 NMAC	17.13 NMAC
Siting Criteria (regarding on-site closure methods only): 19.15.17.10 NMAC Instructions: Each siting criteria requires a demonstration of compliance in the provided below. Requests regarding changes to certain siting criteria may require considered an exception which must be submitted to the Santa Fe Environmenta demonstrations of equivalency are required. Please refer to 19.15.17.10 NMAC	re administrative approval from the app l Bureau office for consideration of app	ropriate district office or may be
Ground water is less than 50 feet below the bottom of the buried waste. - NM Office of the State Engineer - iWATERS database search; USGS; Dat	a obtained from nearby wells	☐ Yes ☒ No ☐ NA
Ground water is between 50 and 100 feet below the bottom of the buried waste - NM Office of the State Engineer - iWATERS database search; USGS; Dat	a obtained from nearby wells	Yes X 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; Database search;	a obtained from nearby wells	☐ Yes☐ No☐ NA
Within 300 feet of a continuously flowing watercourse, or 200 feet of any other sig lake (measured from the ordinary high-water mark). - Topographic map; Visual inspection (certification) of the proposed site	mificant watercourse or lakebed, sinkhol	e, or playa Yes No
Within 300 feet from a permanent residence, school, hospital, institution, or church - Visual inspection (certification) of the proposed site; Aerial photo; Satellit		ation. Yes 🖾 No
Within 500 horizontal feet of a private, domestic fresh water well or spring that les watering purposes, or within 1000 horizontal feet of any other fresh water well or some NM Office of the State Engineer - iWATERS database; Visual inspection	spring, in existence at the time of initial a	
Within incorporated municipal boundaries or within a defined municipal fresh water adopted pursuant to NMSA 1978, Section 3-27-3, as amended. - Written confirmation or verification from the municipality; Written approx	•	ordinance Yes No
Within 500 feet of a wetland US Fish and Wildlife Wetland Identification map; Topographic map; Visu	al inspection (certification) of the propos	sed site
Within the area overlying a subsurface mine Written confirmation or verification or map from the NM EMNRD-Mining	g and Mineral Division	☐ Yes 🛭 No
Within an unstable area. - Engineering measures incorporated into the design; NM Bureau of Geolog Society; Topographic map	y & Mineral Resources; USGS; NM Geo	ological Yes 🛛 No
Within a 100-year floodplain FEMA map		☐ Yes 🏻 No
On-Site Closure Plan Checklist: (19.15.17.13 NMAC) Instructions: Each of the by a check mark in the box, that the documents are attached. Siting Criteria Compliance Demonstrations - based upon the appropriate requirements of Construction/Design Plan of Burial Trench (if applicable) based upon the a Construction/Design Plan of Temporary Pit (for in-place burial of a drying protocols and Procedures - based upon the appropriate requirements of 19.1 Confirmation Sampling Plan (if applicable) - based upon the appropriate requirements of Subsection Soil Cover Design - based upon the appropriate requirements of Subsection Re-vegetation Plan - based upon the appropriate requirements of Subsection Site Reclamation Plan - based upon the appropriate requirements of Subsection	quirements of 19.15.17.10 NMAC f Subsection F of 19.15.17.13 NMAC ppropriate requirements of 19.15.17.11 Nad) - based upon the appropriate require 5.17.13 NMAC quirements of Subsection F of 19.15.17.1 Subsection F of 19.15.17.13 NMAC drill cuttings or in case on-site closure sta H of 19.15.17.13 NMAC I of 19.15.17.13 NMAC	NMAC ements of 19.15.17.11 NMAC 3 NMAC

Operator Application Certification: I hereby certify that the information submitted with this application	is true, accurate and complete to the best of my knowledge and belief.			
Name (Print): Malia Villers .	Title: Permitting Tech.			
Signature: Maia Villera	Date: 3/15/2011			
e-mail address: malia_villers@xtoenergy.com	Telephone:(505) 333-3100			
OCD Approval: Permit Application (including closure plan) [OCD Representative Signature: Title: Compliance Office(Closure Plan (only) CCD Conditions (see attachment) Approval Date: 6/10/201 OCD Permit Number:			
Closure Report (required within 60 days of closure completion): Instructions: Operators are required to obtain an approved closur The closure report is required to be submitted to the division within section of the form until an approved closure plan has been obtain	re plan prior to implementing any closure activities and submitting the closure report. In 60 days of the completion of the closure activities. Please do not complete this			
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)			
	loop Systems That Utilize Above Ground Steel Tanks or Haul-off Bins Only: the liquids, drilling fluids and drill cuttings were disposed. Use attachment if more than Disposal Facility Permit Number:			
Disposal Facility Name: Disposal Facility Permit Number: Were the closed-loop system operations and associated activities performed on or in areas that <i>will not</i> be used for future service and operations?				
Yes (If yes, please demonstrate compliance to the items below Required for impacted areas which will not be used for future service Site Reclamation (Photo Documentation)	w) 🔲 No			
Soil Backfilling and Cover Installation Re-vegetation Application Rates and Seeding Technique				
mark in the box, that the documents are attached. □ Proof of Closure Notice (surface owner and division) □ Proof of Deed Notice (required for on-site closure) □ Plot Plan (for on-site closures and temporary pits) □ Confirmation Sampling Analytical Results (if applicable) □ Waste Material Sampling Analytical Results (required for on- □ Disposal Facility Name and Permit Number □ Soil Backfilling and Cover Installation □ Re-vegetation Application Rates and Seeding Technique □ Site Reclamation (Photo Documentation)				
On-site Closure Location: Latitude	Longitude NAD:			
belief. I also certify that the closure complies with all applicable clo	n this closure report is true, accurate and complete to the best of my knowledge and osure requirements and conditions specified in the approved closure plan.			
Name (Print).				
Signature:				
e-mail address:	Telephone:			



Pit Permit Siting Criteria Information Sheet

Client:	XTO Energy	
Project:		
Revised:	2/25/2011	
epared by:	Dustin Held	

F 970.385	Information Sheet	Prepared by:	Dustin Held
a 0141.			-
API#:	NA NA	USPLSS:	T27N, R11W, S28J
Name:	Bolack 28 #5	Lat/Long:	36.54345, -108.00501
Depth to groundwater:	Greater than 100 feet	Geologic formation:	Nacimiento Formation
Distance to closest	10.79 miles north to the San Juan		The state of the second contract the second of the second
continuously flowing	River; 3,754 feet northwest to	*	
watercourse:	irrigation ditch	1	
Distance to closest	1.20 miles southwest to Cedar Canyon; 550 feet southeast to 2nd order tributary of Cedar		1. 1.2
significant watercourse,	Canyon; 980 feet northwest to		
lakebed, playa lake, or	2nd order tributary of Cedar		
sinkhole:	Canyon		
		Soil Type:	Entisols
		, son Type.	Entisois
Permanent residence,		1	
school, hospital,	NO	i ·	
institution or church		•	
within 300'			· · · · · · · · · · · · · · · · · · ·
		Annual Precipitation:	8.71" - Bloomfield; Otis 10.41"
Domestic fresh water well or spring within 500'	NO	Precipitation Notes:	no significant precipitation events on record
Any other fresh water well or spring within 1000'	NO		
Within incorporated municipal boundaries	NO	Attached Documents:	Hydrogeologic Report Figure 1: Topographic Map Figure 2: Aerial Photo
Within defined municipal fresh water well field	NO		Figure 3: Mines, Mills and Quarries Map Figure 4: Water Well and Surface Water Features Figure 5: Municipal Boundaries Map Figure 6: FEMA Flood Zone Map IWaters Data
Wetland within 500'	NO	Mining Activity:	none in the surrounding area
Within unstable area	NO		الماليونية المستوية المالية الم
Within 100 year flood plain	NO		
Additional Notes:			

1625 N. Fench Dr., Hobbs, N.M. 88240

State of New Mexico Energy, Minerals & Natural Resources Department

Form C-102 Revised October 12, 2005

Instructions on back

State Lease - 4 Copies Fee Lease - 3 Copies

Submit to Appropriate District Office

DISTRICT II 1301 W. Grand Avenue, Artesia, N.M 88210

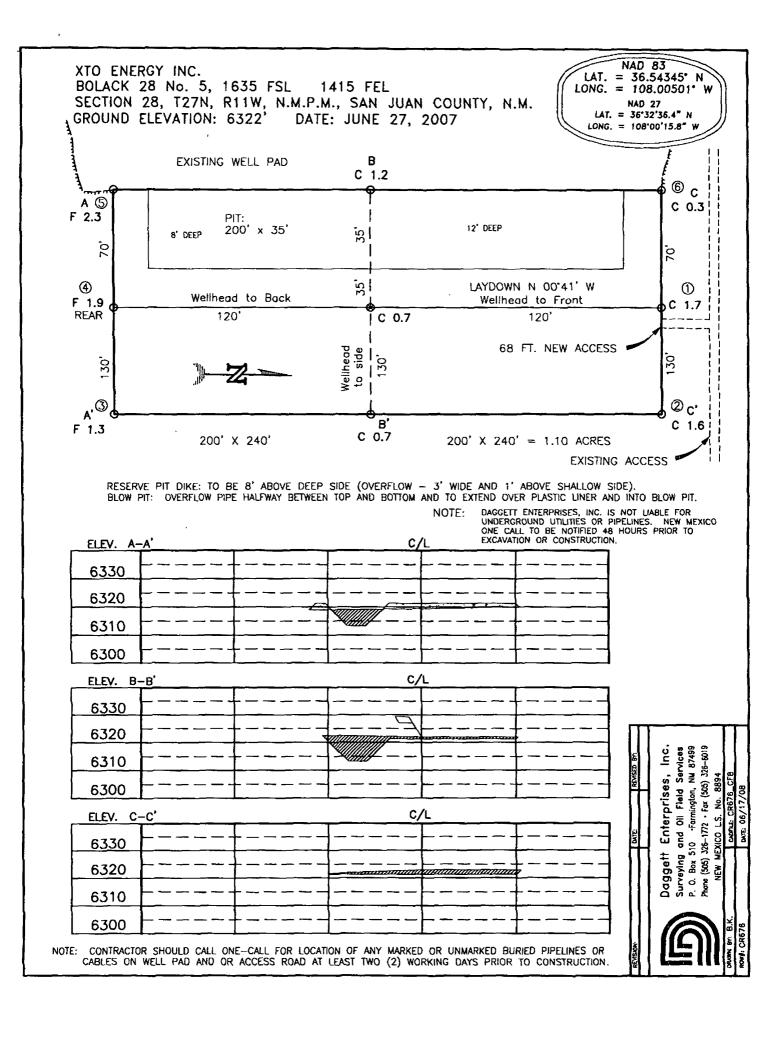
DISTRICT III 1000 Rio Brozos Rd., Aztec, N.M. 87410

DISTRICT IV 1220 South St. Francis Dr., Santa Fe, NM 87505

OIL CONSERVATION DIVISION 1220 South St. Francis Dr. Santa Fe, NM 87504-2088

☐ AMENDED REPORT

			ELL LO		N AND AC	REAGE DEDI	CAT				
APr I	Number	² Pool Code ³ Pool Name									
⁴ Property Coc	đe	⁵ Property Name							⁶ Well Number		
OGRID No	·	BOLACK 28								5	
OGRID NO					*Operator XTO ENERG					* Elevation 6322*	
L						Location					
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet	from the	Egst/Wes	st line	County
J	28	27-N	11-W		1635	SOUTH	<u> </u>	1415	EA	ST	SAN JUAN
<u> </u>		T = -7.		om Hole		If Different Fro			7	 -	
UL or lot na.	Section	Township	Range	Lot idn	Feet from the	North/South line	Feet	from the	East/We:	st line	County
¹² Dedicated Acres	1	13 11	oint or Infill	<u> </u>	14 Consolidation Co	ode	15 Orde	er No.	- L	·	
		1									
NO ALLOW	ABLE V					ON UNTIL ALL				EEN CO	DNSOLIDATED
		OR A N	ION-STA	ANDARD	UNIT HAS B	EEN APPROVE	D BY	THE DI	VISION		
16						FO. 2 1/2" 6 G.L		17 (OPERAT	OR CE	RTIFICATION
						6.6					on contained herein of my knowledge and
	-						-	belief, and	that this or	ganization e	ither owns a working
	į							interest or unleased mineral interest in the land including the proposed bottom hole location or has right to drill this well at this location pursuant to a			e location or has a
								contract w	ith an owner	of such c	mineral or working agreement or a
											e entered by the
				SU	RFACE:		≥ _				
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)			56.4" N. (N	·		200	Signature	•	D	ate
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	}										surveys made by me e same is true and
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FD. 2 1/2" BC. G.L.O.			4'25" W 10' (M)			FD. 1/2" R W/ CAP L.S.		Certificate N		J 4	
						L					





2243 Main Avenue, Suite 3 Durango, Colorado 81301 T 970 385 1096 / F 970 385 1873

Bolack 28 #5

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 the surficial geology (Dane and Bachman, 1965). The proposed pit location will be in the Bisti region of the San Juan Basin (Figure 1). The predominant geologic formation is the Nacimiento Formation, which underlies surface soils or is often exposed (Dane and Bachman, 1965). Deposits of Quaternary alluvial and aeolian sands also occur near the surface of the area, especially near streams and washes.

Cretaceous and Tertiary sandstones and 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 feet deep in this section of the basin (Stone et al., 1983). Groundwater within these aquifers flows regionally to the southwest, toward the San Juan River

The prominent soil types at the proposed site are entisols and aridisols, which are defined as soils exhibiting 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.

The climate 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. Most recharge occurs during the winter months during snowmelt periods within the upper elevations (Western Regional Climate Center, www.wrcc.dri.edu).

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

Site-Specific Hydrology

Depth to groundwater at the site 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, proximity to adjacent channels and springs 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 at an elevation of approximately 6,322 feet and is approximately 4.76 miles east of Gallegos Canyon. The well site is approximately 436 feet higher in elevation than Gallegos Canyon, and 166 higher in elevation than Cedar Canyon, a first order tributary of Gallegos Canyon.

Lined channels associated with the Navajo Irrigation Project supply water for the fields surrounding the proposed site, which are characterized by center-pivot irrigation patterns. During spring and summer, irrigation practices often produces shallow perched aquifers that are not defined in published literature. These shallow zones of water are not continuous and are not saturated year round

Groundwater data available from the NM State Engineer's iWaters Database for wells near the proposed site are attached. The closest well to the site is located 1.89 miles to the northeast and is 123 feet higher in elevation (SJ00077). Depth to groundwater within the well is 550 feet below ground surface. A map showing the location of wells in reference to the proposed pit location is attached. Based on this information, depth to groundwater is estimated to be greater than 100 feet.

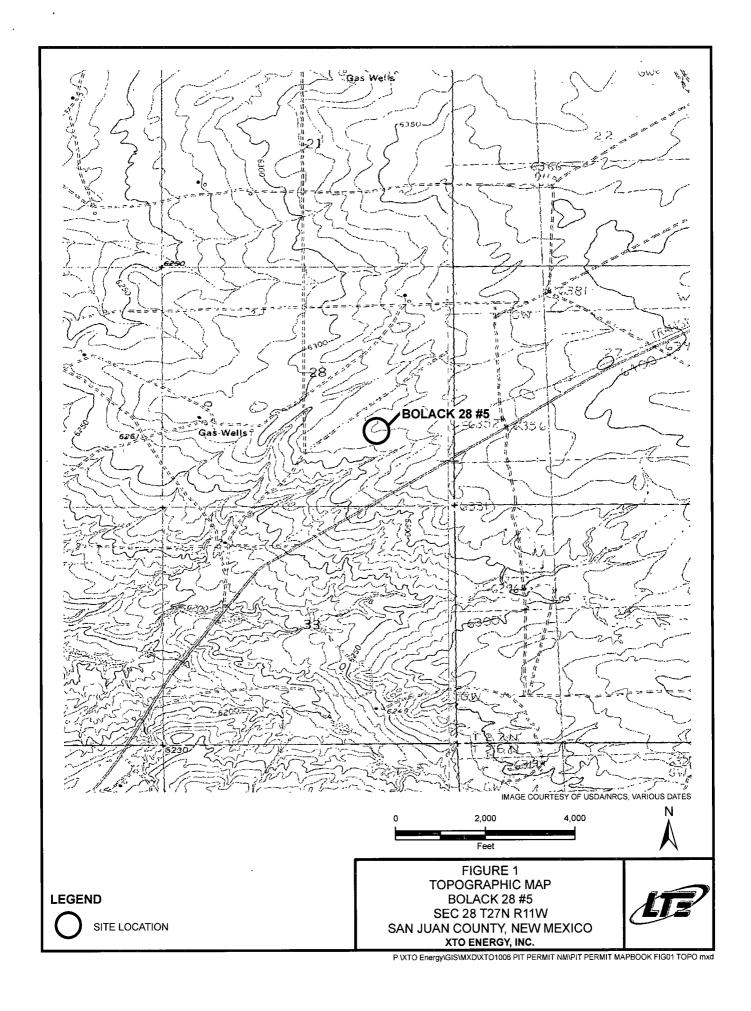
References

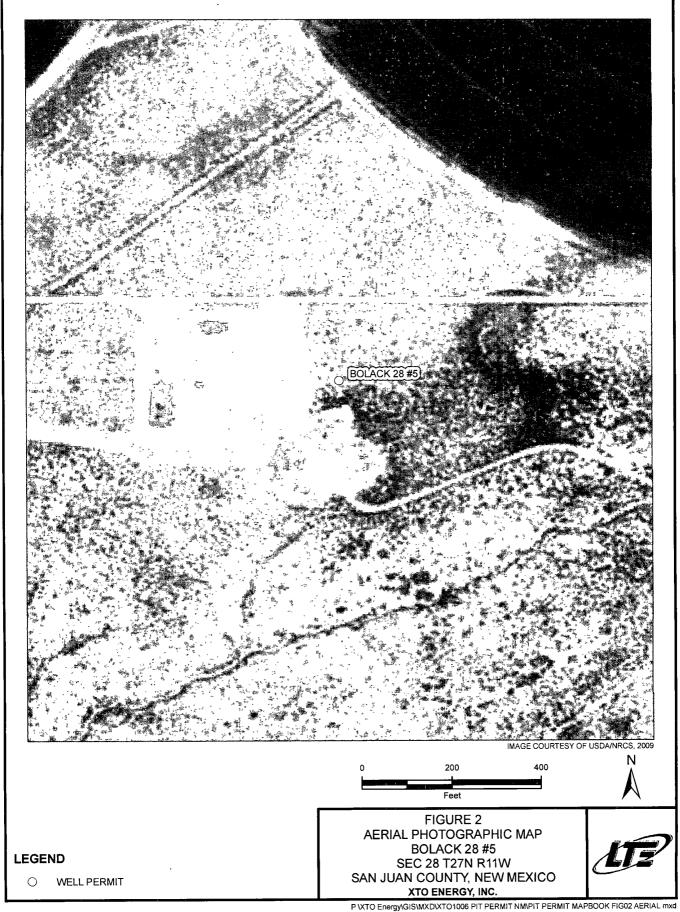
Dane, C.H. and Bachman, G. O., 1965, Geologic Map of New Mexico: U.S. Geological Survey, 1 sheet, scale 1:500,000.

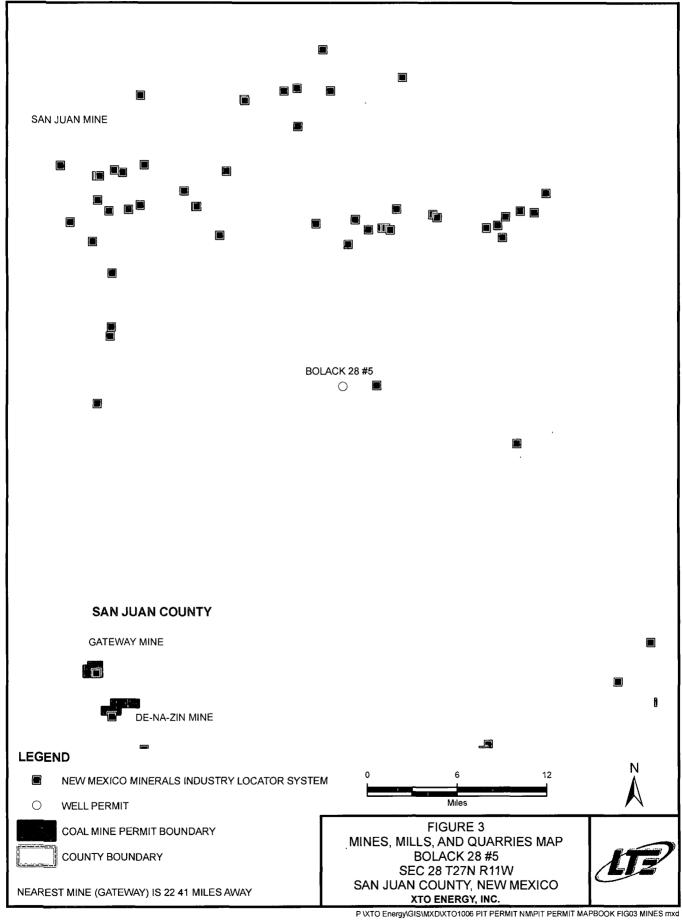
Dick-Peddie, W.A., 1993, New Mexico Vegetation – Past, Present and Future: Albuquerque, New Mexico, University of New Mexico Press, 244 p.

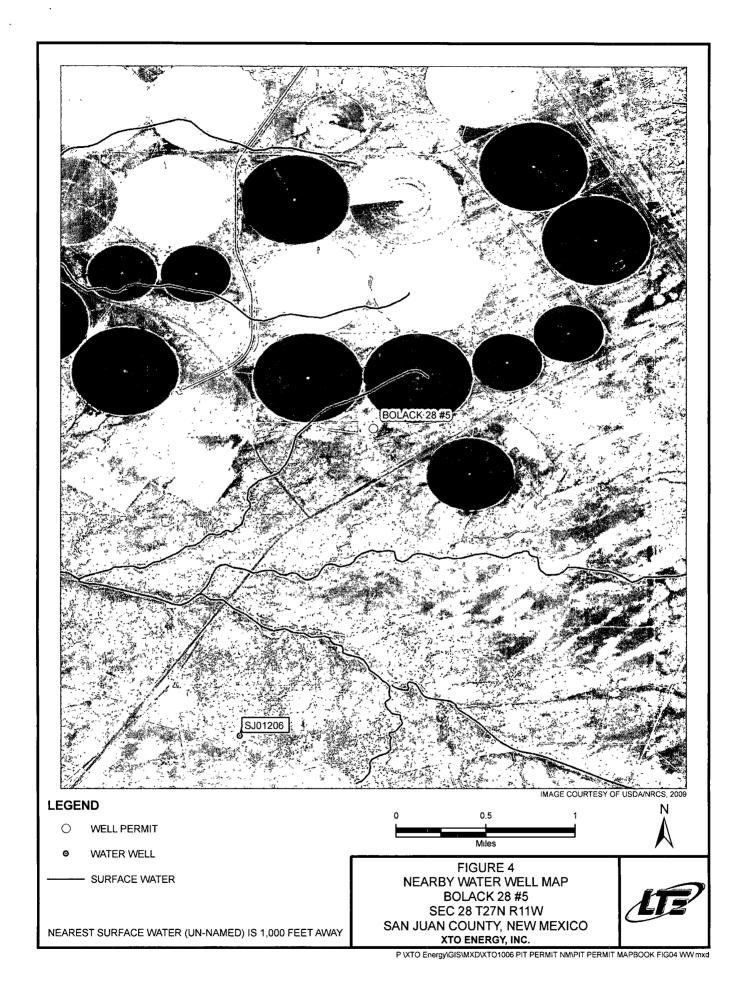
Stone, W.J., Lyford, F. P., Frenzel, P.F., Mizell, N.H. and Padgett, E.T., 1983, Hydrogeology and water resources of the San Juan Basin, New Mexico: HR-6 New Mexico Bureau of Geology and Mineral Resources Hydrology Report 6.

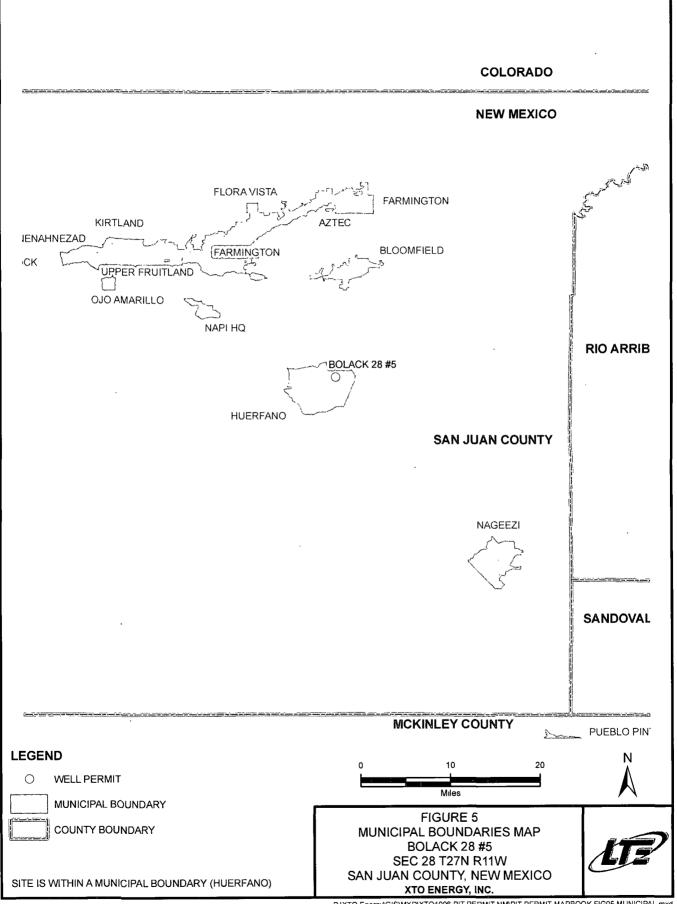
USGS, Groundwater Atlas of the United States: Arizona, Colorado, New Mexico, Utah, HA 730-C: (http://www.pubs.usgs.gov).











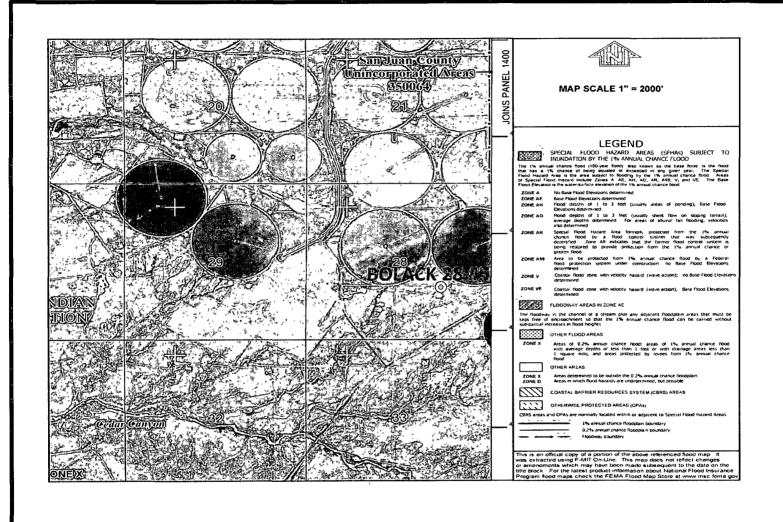


FIGURE 6 FEMA FLOOD ZONE MAP **BOLACK 28 #5 SEC 28 T27N R11W** SAN JUAN COUNTY, NEW MEXICO

XTO ENERGY, INC.





New Mexico Office of the State Engineer Water Column/Average Depth to Water

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

(quarters are smallest to largest) (NAD83 UTM in meters)

(In feet)

Sub QQQ Depth Depth Water
POD Number basin Use County 64 16 4 Sec Tws Rng X Y Well WaterColumn

SJ 00077 IND SJ 3 1 2 26 27N 11W

233964 4049155* 1102 550

Average Depth to Water: 550 feet

Minimum Depth: 550 feet

Maximum Depth: 550 feet

Record Count: 1

Basin/County Search:

County: San Juan

PLSS Search:

Section(s): 26

Township: 27N

Range: 11W



Malia Villers/FAR/CTOC 03/15/2011 09:17 AM

To Arvin Trujillo

CC

bcc

Subject Bolack 28 #5 New Well Site

RE: Bolack 28 #5

Sec. 28 (J), T27N-R11W, San Juan County

Dear Mr. Trujillo,

This submittal is pursuant to Rule 19.15.17.13 requiring operators to notify surface owners of on site burial of temporary pits. XTO Energy Inc. (XTO) is hereby providing written documentation of our intention to close the temporary pit associated with the aforementioned location by means of in place burial.

Should you have any questions or require additional information please feel free to contact me at your earliest convenience (505) 333-3100.

Malia Villers
Permitting Tech.
XTO Energy a subsidiary of ExxonMobil

Office: 505-333-3698 Cell: 505-787-7700

malia_villers@xtoenergy.com

XTO Energy Inc. San Juan Basin Pit Design and Construction Plan

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

General Plan

- 1. XTO will design and construct a temporary pit to contain liquids and solids and prevent contamination of fresh water and protect public heath and environment.
- 2. Prior to constructing the pit, topsoil will be stockpiled in the construction zone for later use in restoration.
- 3. XTO will post a well sign, in compliance with 19.15.3.103 NMAC, on the well site prior to construction of the temporary pit. 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.
- 4. XTO shall construct all new fences utilizing 48" steel mesh field-fence (hogwire) on the bottom with a single strand of barbed wire on top. T-posts shall be installed every 12 feet and corners shall be anchored utilizing a secondary T-post. Temporary pits will be fenced at all times excluding drilling or workover operations, when the front side of the fence will be temporarily removed for operational purposes.
- 5. XTO shall construct the temporary pit so that the foundation and interior slopes are firm and free of rocks, debris, sharp edges or irregularities to prevent liner failure.
- 6. XTO shall construct the pit so that the slopes are no steeper than two horizontal feet to one vertical foot.
- 7. Pit walls will be walked down by a crawler type tractor following construction.
- 8. All temporary pits will be lined with a 20-mil, string reinforced, LLDPE liner, complying with EPA SW-846 method 9090A requirements.
- 9. Geotextile will be installed beneath the liner when rocks, debris, sharp edges or irregularities cannot be avoided.
- All liners will be anchored in the bottom of a compacted earth-filled trench at least 18 inches deep.
- 11. XTO will minimize liner seams and orient them up and down, not across a slope. Factory seams will be used when possible. XTO will ensure all field seams are welded by qualified personnel. Field seams will be overlapped four to six inches and will be oriented parallel to the line of maximum slope. XTO will minimize the number of field seams in corners and irregularly shaped areas.
- 12. The liner shall be protected from any fluid force or mechanical damage through the use of mud pit slides, or a manifold system.
- 13. The pit shall be protected from run-off by constructing and maintaining diversion ditches around the location or around the perimeter of the pit in some areas.
- 14. The volume of the pit shall not exceed 10 acre-feet, including freeboard.

XTO Energy Inc. San Juan Basin Maintenance and Operating Plan

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

General Plan

- 1. XTO will operate and maintain a temporary pit to contain liquids and solids and prevent contamination of fresh water and protect public health and environment.
- 2. XTO will conserve drilling fluids by transmitting liquids to pits ahead of the rigs whenever possible. All drilling fluids will be disposed at Basin Disposal Inc, Permit # NM-01-005.
- 3. XTO will not discharge or store any hazardous waste in any temporary pit.
- 4. If any pit liner integrity is compromised, or if any penetration of the liner occurs above the liquid surface, then XTO shall notify the Aztec Division office by phone or email within 48 hours of the discovery and repair the damage or replace the liner.
- 5. If a leak develops below the liquid level, XTO shall remove all liquids above the damaged liner within 48 hours and repair the damage or replace the liner. XTO shall notify the Aztec Division office by phone or email within 48 hours of the discovery for leaks less than 25 barrels. XTO shall notify the Aztec Division office as required pursuant to Subsection B of 19.15.3.116 NMAC within twenty-four (24) hours of discovery of leaks greater than 25 barrels. In addition, immediate verbal notification pursuant to Subsection B, Paragraph (1), and Subparagraph (d) of 19 15 3 116 NMAC shall be reported to the division's Environmental Bureau Chief.
- 6. The liner shall be protected from any fluid force or mechanical damage through the use of mud pits slides, or a manifold system.
- 7. The pit shall be protected from run-off by constructing and maintaining diversion ditches around the location or around the perimeter of the pit in some cases.
- 8. XTO shall immediately remove any visible layer of oil from the surface of the temporary pit after cessation of a drilling or workover operation. Oil absorbent booms will be utilized to contain and remove oil from pits surface. An oil absorbent boom will be stored on-site until closure of pit.
- 9. Only fluids generated during the drilling or workover process will be discharged into a temporary pit.
- 10. XTO will maintain the temporary pit free of miscellaneous solid waste or debris.
- During drilling or workover operations, XTO will inspect the temporary pit at least once daily to ensure compliance with this plan. Inspections will be logged and logs maintained for review. XTO will file this log with the Aztec Division office upon closure of the pit.
- 12. After drilling or workover operations, XTO will inspect the temporary pit weekly so long as liquids remain in the temporary pit. A log of the inspections will be stored at XTO's office electronically and will be filed with the Aztec Division office upon closure of the pit.
- 13. XTO shall maintain at least two feet of freeboard for a temporary pit.
- 14. XTO shall remove all free liquids from a temporary pit within 30 days from the date the operator releases the drilling or workover rig.

XTO Energy Inc. San Juan Basin Closure Plan

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

All closure activities will include proper documentation and be available for review upon request and will be submitted to OCD within 60 days of pit closure. Closure report will be filed on C-144 and incorporate the following:

- Details on Capping and Covering, where applicable.
- Plot Plan (Pit Diagram)
- Inspection Reports
- Sampling Results
- C-105
- Copy of Deed Notice will be filed with County Clerk

General Plan:

- 1. All free standing liquids will be removed at the start of the pit closure process from the pit and disposed of in a division-approved facility or recycled, reused, or reclaimed in a manner that the Aztec Division office approves.
- 2. The preferred method of closure for all temporary pits will be on-site, in-place burial, assuming that all criteria listed in sub-section (B) of 19.15.17.13 are met.
- 3. The surface owner shall be notified of XTO proposed closure plan using a means that provides proof of notice i.e., Certified mail, return receipt requested.
- 4. Within 6 months of the Rig Off status occurring XTO will ensure that temporary pits are closed, re-contoured, and reseeded.
- 5. Notice of Closure will be given to the Aztec Division office between 72 hours and one week of closure via email, or verbally. The notification of closure will include the following:
 - i. Operators Name
 - ii. Location by Unit Letter, Section, Township, and Range. Well name and API number.
- 6. Liner of temporary pit shall be removed above "mud level" after stabilization. Removal of liner will consist of manually or mechanically cutting liner at mud level and removing all remaining liner. Care will be taken to remove "ALL" of the liner i.e., edges of liner entrenched or buried. All excessive liver will be disposed of at a licensed disposal facility.
- 7. Pit contents shall be mixed with non-waste containing, earthen material in order to achieve appropriate solidification. The solidification process will be accomplished using a combination of natural drying and mechanically mixing. Pit contents will be mixed with non-waste, earthen material to a consistency that is deemed a safe and stable. The mixing ratio shall not exceed 3 parts clean soil to 1 part pit contents.
- 8. A five point composite sample will be taken of the pit using sampling tools and all samples tested per Subsection B of 19.15.17.13(B)(1)(b). In the event that the criteria are not met, all contents will be handled per Subparagraph (a) of Paragraph (1) of Subsection B of 19.15.17.13 i.e., Dig and haul. Disposal facility to be utilized should this method be required will be Envirotech, Permit No. NM01-0011 or IEI, Permit No. NM01-0010B.

Components	Test Method	Limit (mg/Kg)
Benzene	EPA SW-846 8021B or 8260B	0.2
BTEX	EPA SW-846 8021B or 8260B	50
TPH	EPA SW-846 418.1	2500
GRO/DRO	EPA SW-846 8015M	500
Chlorides	EPA 300.1	500 or background

- 9. Upon completion of solidification and testing, the pit area will be backfield with compacted, non-waste containing, earthen material. A minimum of four feet of cover shall be achieved and the cover shall include one foot of suitable material to establish vegetation at the site, or the background thickness of topsoil, whichever is greater.
- 10. Re-contouring of location will match fit, shape, line, form and texture of the surrounding area. Re-shaping will include drainage control, ponding prevention, and erosion prevention. 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.
- 11. Notification will be sent to OCD when the reclaimed area is seeded.
- XTO shall seed the disturbed areas the first growing season after the operator closes the pit. Seeding will be accomplished via drilling on the contour whenever practical or by other division-approved methods. BLM of 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.
- The temporary pit will be located with a steel marker, no less than four inches in diameter, cemented in a hole three feet deep in the center of the onsite burial upon the abandonment of all the wells on the pad. The marker will be flush with the ground to allow access of the active well pad and for safety concerns. The marker will include a threaded collar to be used for future abandonment. The top of the marker will contain a welded steel 12" square plate that indicates the onsite burial of the temporary pit. The plate will be easily removable and a four foot tall riser will be threaded into the top of the collar marker and welded around the base with the operator's information at the time all wells on the pad are abandoned. The operator's information will include the following: Operators Name, Lease Name, Well Name and Number, Unit Number, Section, Township, Range and an indicator that the marker is an onsite burial location.

XTO Energy Inc. San Juan Basin Closed-Loop System Design and Construction Plan

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

General Plan

Our closed-loop system will not entail a drying pad, temporary pit, below grade tank or sump. It will entail an above ground tank suitable for holding the cuttings and fluids for rig operations. The tank will be of sufficient volume to maintain a safe free board between disposal of the liquids and solids from rig operations.

- 1. Fencing is not required for an above ground closed-loop system.
- 2. It will be signed in compliance with 19.15.3.103 NMAC.

XTO Energy Inc. San Juan Basin Closed-Loop Systems Maintenance and Operating Plan

In accordance with Rule 19.15.17.11 NMAC the following information describes the operation and maintenance of closed-loop systems on XTO Energy Inc. (XTO) locations. This is XTO's standard procedure for all closed-loop systems. A separate plan will be submitted for any closed-loop system which does not conform to this plan.

General Plan

The closed-loop tank will be operated and maintained; to contain liquids and solids, to aid in the prevention of contamination of fresh water sources, in order to protect public health and the environment. To attain the goal the following steps will be followed:

- 1. The liquids will be vacuumed out and disposed of at the Basin Disposal, Inc. facility (Permit Number NM01-005). An alternative if available for liquids disposal, will be to move the liquids forward to a XTO temporary pit constructed in accordance with all specifications in NMAC Rule 19.15.17 for a well yet to be drilled. All specifications, limitations, and rules within the New Mexico Administrative Code regulating this transfer of liquids will be strictly adhered to. As a third alternative, if Basin Disposal turns away the fluids because of capacity reasons, and the second transfer option is not available, XTO may elect to haul fluids to IEI (Permit Number NM01-0010B) for final disposition.
- Solids in the closed-loop tank will be vacuumed out and disposed of at Envirotech (Permit Number NM01-0011) or IEI (Permit Number NM01-0010B) on a periodic basis to prevent over topping.
- 3. No hazardous waste, miscellaneous solids, waste, or debris will be discharged into, or stored in the tank. Only fluids or cutting used or generated by rig operations will be placed or stored in the tank.
- 4. The division district office will be notified within 48 hours of the discovery of compromised integrity of the closed-loop tank. Upon discovery of the compromised tank, repairs will be enacted immediately.
- 5. All of the above operations will inspected and a log will be signed and dated daily during rig operations.

XTO Energy Inc. San Juan Basin Closed-Loop System Closure Plan

In accordance with Rule 19.15.17.11 NMAC the following information describes the closure requirements of closed-loop systems on XTO Energy Inc. (XTO) locations. This is XTO's standard procedure for all closed-loop systems. A separate plan will be submitted for any closed-loop system which does not conform to this plan.

General Plan

XTO will close a drying pad used for a closed-loop system within six months from the date that XTO released the drilling or workover rig. XTO will not the date of the drilling or workover rig's release on form C-105 or C-103, riled with the division, upon the well's or workover's completion.

The closed-loop tank will be closed in accordance with 19.15.17.13 NMAC. This will be done by transporting cuttings and all remaining sludges to Envirotech (Permit Number NM01-0011) or IEI (Permit Number NM01-0010B) immediately following rig operations.

All remaining liquids will be transported and disposed of at the Basin Disposal, Inc facility (Permit Number NM 01-005). As an alternative (in the event Basin Disposal refused liquids because of capacity considerations, and if proper inventory space is available for liquids transfer while meeting free board requirements), the liquids will be moved forward to a XTO temporary pit constructed in accordance with all specifications in NMAC Rule 19.15.17 for a well yet to be drilled. All specifications, limitations, and rules within the New Mexico Administrative Codes regulating this transfer of liquids will be strictly adhered to. As a third alternative, if Basin Disposal turns away the fluids because of capacity reasons, and the second transfer option is not available, XTO may elect to haul the fluids to IEI (Permit Number 01-0010B) for final disposition.

The tanks will be removed from the location as part of the rig move. At the time of well abandonment the site will be reclaimed and re-vegetated to pre-existing conditions when possible.

XTO Energy Inc. San Juan Basin Closed-Loop System Closure Plan

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