District I 1635 NL EL Dr. Hutte Strong & E I E I I I I I I I I I I I I I	State of New Mexico rals and Natural Resources Department nservation Division outh St. Francis Dr. Santa Fe, NM 87505	Form C-144 July 21, 2008 For temporary pits, closed-loop systems, and below-grade tanks, submit to the appropriate NMOCD District Office. For permanent pits and exceptions submit to the Santa Fe Environmental Bureau office and provide a copy to the appropriate NMOCD District Office.
Pit, Closed-L	oop System, Below-Grade 7	Tank, or
Proposed Alternative	Method Permit or Closure F	Plan Application
Type of action:Permit of a pit, cExisting BGTClosure of a pit,Modification to aClosure plan onlybelow-grade tank, or proposed alternation	losed-loop system, below-grade tank, o closed-loop system, below-grade tank, an existing permit y submitted for an existing permitted or tive method	r proposed alternative method or proposed alternative method r non-permitted pit, closed-loop system,
Instructions: Please submit one application (Form	C-144) per individual pit, closed-loop syste	em, below-grade tank or alternative request
Please be advised that approval of this request does not relieve the environment. Nor does approval relieve the operator of its respon	operator of liability should operations result i sibility to comply with any other applicable go	n pollution of surface water, ground water or the overnmental authority's rules, regulations or ordinances.
I. Operator: XTO Energy, Inc.	OGRID #:	5380
Address: #382 County Road 3100, Aztec, NM 87410		
Facility or well name: JC Gordon D # 4E		
API Number: 30-045-25581	OCD Permit Number:	
U/L or Otr/Otr B Section 23 Towns	hip 27N Range 10W Co	ounty: San Juan
Center of Proposed Design: Latitude 36.565654	Longitude 107.862031	NAD: 1927 🔀 1983
Surface Owner: A Federal A State Private Tribal Tr	ust or Indian Allotment	
 2. Pit: Subsection F or G of 19.15.17.11 NMAC Temporary: Drilling Workover Permanent Emergency Cavitation P&A Lined Unlined Liner type: Thicknessn String-Reinforced Liner Seams: Welded Factory Other 	nil 🗌 LLDPE 🗌 HDPE 🗌 PVC 🗌 Of	ther
3.		
Closed-loop System: Subsection H of 19.15.17.11 NM Type of Operation: P&A Drilling a new well We intent) Drying Pad Above Ground Steel Tanks Haul-o Lined Unlined Liner type: Thickness Liner Seams: Welded Factory Other	AC orkover or Drilling (Applies to activities wh ff Bins Other mil ILLDPE HDPE PVC	ich require prior approval of a permit or notice of] Other
4.		
Below-grade tank: Subsection I of 19.15.17.11 NMAC	Decisional Water	
Volume: <u>120</u> bbl Type of fluid:	rroduced water	
1ank Construction material: Steel		useflau shut off
Secondary containment with leak detection U Visible	sidewalls, liner, 6-inch litt and automatic of	vernow snut-on
U Visible sidewalls and liner U Visible sidewalls only	Visible sidewalls, vaulted, autor	matic nign-level snut off, no liner
Liner type: Thicknessmil 🔲 HDF	PE PVC Other	
 5. Alternative Method: Submittal of an exception request is required. Exceptions methods 	nust be submitted to the Santa Fe Environme	ental Bureau office for consideration of approval.

Fencing: Subsection D of 19.15.17.11 NMAC (Applies to permanent pits, temporary pits, and below-grade tanks)

Chain link, six feet in height, two strands of barbed wire at top (Required if located within 1000 feet of a permanent residence, school, hospital, institution or church)

Four foot height, four strands of barbed wire evenly spaced between one and four feet

Alternate. Please specify Four foot height, steel mesh field fence (hogwire) with pipe top railing

Netting: Subsection E of 19.15.17.11 NMAC (Applies to permanent pits and permanent open top tanks)

Screen Netting Other Expanded metal or solid vaulted top

Monthly inspections (If netting or screening is not physically feasible)

Signs: Subsection C of 19.15.17.11 NMAC

8

9

10.

12"x 24", 2" lettering, providing Operator's name, site location, and emergency telephone numbers

Signed in compliance with 19.15.3.103 NMAC

Administrative Approvals and Exceptions:

Justifications and/or demonstrations of equivalency are required. Please refer to 19.15.17 NMAC for guidance.

Please check a box if one or more of the following is requested, if not leave blank:

Administrative approval(s): Requests must be submitted to the appropriate division district or the Santa Fe Environmental Bureau office for consideration of approval.

Exception(s): Requests must be submitted to the Santa Fe Environmental Bureau office for consideration of approval.

Siting Criteria (regarding permitting): 19.15.17.10 NMAC

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

Ground water is less than 50 feet below the bottom of the temporary pit, permanent pit, or below-grade tank. - NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells	🗌 Yes 🛛 No
 Within 300 feet of a continuously flowing watercourse, or 200 feet of any other significant watercourse or lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark). Topographic map; Visual inspection (certification) of the proposed site 	🗋 Yes 🖾 No
 Within 300 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application. (Applies to temporary, emergency, or cavitation pits and below-grade tanks) Visual inspection (certification) of the proposed site; Aerial photo; Satellite image 	☐ Yes ⊠ No □ NA
 Within 1000 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application. (Applies to permanent pits) Visual inspection (certification) of the proposed site; Aerial photo; Satellite image 	Yes No
Within 500 horizontal feet of a private, domestic fresh water well or spring that less than five households use for domestic or stock watering purposes, or within 1000 horizontal feet of any other fresh water well or spring, in existence at the time of initial application. - NM Office of the State Engineer - iWATERS database search; Visual inspection (certification) of the proposed site	🗌 Yes 🛛 No
 Within incorporated municipal boundaries or within a defined municipal fresh water well field covered under a municipal ordinance adopted pursuant to NMSA 1978, Section 3-27-3, as amended. Written confirmation or verification from the municipality; Written approval obtained from the municipality 	🗌 Yes 🛛 No
Within 500 feet of a wetland. - US Fish and Wildlife Wetland Identification map; Topographic map; Visual inspection (certification) of the proposed site	🗆 Yes 🖾 No
 Within the area overlying a subsurface mine. Written confirmation or verification or map from the NM EMNRD-Mining and Mineral Division 	🗌 Yes 🖾 No
 Within an unstable area. Engineering measures incorporated into the design; NM Bureau of Geology & Mineral Resources; USGS; NM Geological Society; Topographic map 	🗌 Yes 🛛 No
Within a 100-year floodplain. - FEMA map	🗌 Yes 🛛 No

<u>Temporary Pits, Emergency Pits, and Below-grade Tanks Permit Application Attachment Ch</u> Instructions: Each of the following items must be attached to the application. Please indicate, b attached.	ecklist: Subsection B of 19.15.17.9 NMAC y a check mark in the box, that the documents are
 Hydrogeologic Report (Below-grade Tanks) - based upon the requirements of Paragraph (4) of Hydrogeologic Data (Temporary and Emergency Pits) - based upon the requirements of Paragraph Siting Criteria Compliance Demonstrations - based upon the appropriate requirements of 19.15 Design Plan, based upon the appropriate requirements of 19.15 	of Subsection B of 19.15.17.9 NMAC graph (2) of Subsection B of 19.15.17.9 NMAC 5.17.10 NMAC
Operating and Maintenance Plan - based upon the appropriate requirements of 19.15.17.11 NMAC	MAC
Closure Plan (Please complete Boxes 14 through 18, if applicable) - based upon the appropria and 19.15.17.13 NMAC	te requirements of Subsection C of 19.15.17.9 NMAC
Previously Approved Design (attach copy of design) API Number:	or Permit Number:
12.	
<u>Closed-loop Systems Permit Application Attachment Checklist</u> : Subsection B of 19.15.17.9 N Instructions: Fach of the following items must be attached to the application. Please indicate, b	MAC v a check mark in the box, that the documents are
attached.	y a check mark in the oby, that the abcuments are
Geologic and Hydrogeologic Data (only for on-site closure) - based upon the requirements o	f Paragraph (3) of Subsection B of 19.15.17.9
 Design Plan - based upon the appropriate requirements of 19.15.17.11 NMAC 	share requirements of 17.15.17.10 NWAC
Operating and Maintenance Plan - based upon the appropriate requirements of 19.15.17.12 N	MAC
and 19.15.17.13 NMAC	at requirements of Subsection C of 19.15.17.5 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)	
<u>Permanent Pits Permit Application Checklist</u>: Subsection B of 19.15.17.9 NMAC Instructions: Each of the following items must be attached to the application. Please indicate, b	v 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 15.17.10 NMAC
Climatological Factors Assessment	
Certified Engineering Design Plans - based upon the appropriate requirements of 19.15.17.1	NMAC
Leak Detection Design - based upon the appropriate requirements of 19.15.17.11 NMAC	19.15.17.11 NMAC
Liner Specifications and Compatibility Assessment - based upon the appropriate requirement	s of 19.15.17.11 NMAC
Quality Control/Quality Assurance Construction and Installation Plan	MAC
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	
Oil Field Waste Stream Characterization	
Monitoring and Inspection Plan	
 Erosion Control Plan Closure Plan - based upon the appropriate requirements of Subsection C of 19.15.17.9 NMA 	C and 19.15.17.13 NMAC
14	
Proposed Closure: 19.15.17.13 NMAC	
Instructions: Please complete the applicable boxes, Boxes 14 through 18, in regards to the prope	isea closure plan.
Type: Drilling Workover Emergency Cavitation P&A Permanent Pit	Below-grade Tank 📋 Closed-Ioop System
Proposed Closure Method: 🛛 Waste Excavation and Removal	
Waste Removal (Closed-loop systems only)	vstems)
In-place Burial On-site Trench Burial	ystenis)
Alternative Closure Method (Exceptions must be submitted to the S	Santa Fe Environmental Bureau for consideration)
15. <u>Waste Excavation and Removal Closure Plan Checklist:</u> (19.15.17.13 NMAC) Instructions: E	ach of the following items must be attached to the
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 Sub	osection 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 S 	Subsection H of 19,15,17,13 NMAC
Re-vegetation Plan - based upon the appropriate requirements of Subsection 1 of 19.15.17.13	NMAC
Site Reclamation Plan - based upon the appropriate requirements of Subsection G of 19.15.1	/.13 NMAC

Waste Removal Closure For Closed-loop Systems That Utilize Above Ground Steel Tanks Instructions: Please indentify the facility or facilities for the disposal of liquids, drilling fluid	s or Haul-off Bins Only: (19.15.17.13.D NM ds and drill cuttings. Use attachment if more	MAC) e than t wo
facilities are required.		
Disposal Facility Name: Disposal Fa	cility Permit Number:	
Disposal Facility Name: Disposal Fa	cility Permit Number:	
Will any of the proposed closed-loop system operations and associated activities occur on or in Yes (If yes, please provide the information below) No	areas that will not be used for future service	and operations?
Required for impacted areas which will not be used for future service and operations: Soil Backfill and Cover Design Specifications based upon the appropriate requirement Re-vegetation Plan - based upon the appropriate requirements of Subsection I of 19.15.17 Site Reclamation Plan - based upon the appropriate requirements of Subsection G of 19.15.17	ts of Subsection H of 19.15.17.13 NMAC 7.13 NMAC 15.17.13 NMAC	
^{17.} Siting Criteria (regarding on-site closure methods only): 19.15.17.10 NMAC Instructions: Each siting criteria requires a demonstration of compliance in the closure plan provided below. Requests regarding changes to certain siting criteria may require administruc considered an exception which must be submitted to the Santa Fe Environmental Bureau off demonstrations of equivalency are required. Please refer to 19.15.17.10 NMAC for guidance	n. Recommendations of acceptable source n ative approval from the appropriate district fice for consideration of approval. Justifica 2.	naterial are office or may be tions and/or
Ground water is less than 50 feet below the bottom of the buried waste. - NM Office of the State Engineer - iWATERS database search; USGS; Data obtained fr	rom nearby wells] Yes 🗌 No] NA
Ground water is between 50 and 100 feet below the bottom of the buried waste - NM Office of the State Engineer - iWATERS database search; USGS; Data obtained fr	rom nearby wells] Yes 🗌 No] NA
Ground water is more than 100 feet below the bottom of the buried waste. - NM Office of the State Engineer - iWATERS database search; USGS; Data obtained fr	rom nearby wells] Yes 🗌 No] NA
 Within 300 feet of a continuously flowing watercourse, or 200 feet of any other significant water lake (measured from the ordinary high-water mark). Topographic map; Visual inspection (certification) of the proposed site 	ercourse or lakebed, sinkhole, or playa] Yes 🗌 No
Within 300 feet from a permanent residence, school, hospital, institution, or church in existence - Visual inspection (certification) of the proposed site; Aerial photo; Satellite image	e at the time of initial application.] Yes 🗌 No
Within 500 horizontal feet of a private, domestic fresh water well or spring that less than five he watering purposes, or within 1000 horizontal feet of any other fresh water well or spring, in exi - NM Office of the State Engineer - iWATERS database; Visual inspection (certification	ouseholds use for domestic or stock stence at the time of initial application.] Yes 🗌 No
Within incorporated municipal boundaries or within a defined municipal fresh water well field adopted pursuant to NMSA 1978, Section 3-27-3, as amended. - Written confirmation or verification from the municipality; Written approval obtained f	covered under a municipal ordinance] Yes 🗌 No
Within 500 feet of a wetland. - US Fish and Wildlife Wetland Identification map; Topographic map; Visual inspection	(certification) of the proposed site] Yes 🗌 No
Within the area overlying a subsurface mine. - Written confirmation or verification or map from the NM EMNRD-Mining and Minera	al Division	Yes 🗌 No
 Within an unstable area. Engineering measures incorporated into the design; NM Bureau of Geology & Mineral Society; Topographic map 	Resources; USGS; NM Geological] Yes 🗌 No
Within a 100-year floodplain. - FEMA map		Yes 🗌 No
18. On-Site Closure Plan Checklist: (19.15.17.13 NMAC) Instructions: Each of the following	items must be attached to the closure plan.	Please indicate,

ł	by a check	mark in the box,	that the documents	are attached.			
	Sitin:	g Criteria Compli	ance Demonstration:	s - based upon the ar	opropriate requirem	ents of 19.15.17.10	NMAC

Sitting Criteria Comphance Demonstrations - based upon the appropriate requirements of 19.19.17.10 Huntee
Proof of Surface Owner Notice - based upon the appropriate requirements of Subsection F of 19.15.17.13 NMAC

Construction/Design Plan of Burial Trench (if applicable) based upon the appropriate requirements of 19.15.17.11 NMAC

Protocols and Procedures - based upon the appropriate requirements of 19.15.17.13 NMAC

Confirmation Sampling Plan (if applicable) - based upon the appropriate requirements of Subsection F of 19.15.17.13 NMAC

Waste Material Sampling Plan - based upon the appropriate requirements of Subsection F of 19.15.17.13 NMAC

Disposal Facility Name and Permit Number (for liquids, drilling fluids and drill cuttings or in case on-site closure standards cannot be achieved)

Soil Cover Design - based upon the appropriate requirements of Subsection 1 of 19.15.17.13 NMAC
 Re-vegetation Plan - based upon the appropriate requirements of Subsection G of 19.15.17.13 NMAC
 Site Reclamation Plan - based upon the appropriate requirements of Subsection G of 19.15.17.13 NMAC

Operator Application Certification:	
I hereby certify that the information submitted with this application is true, accura	ate and complete to the best of my knowledge and belief.
Name (Print): Kim Champlin	Title: Environmental Representative
Signature: Kun Champlin	Date: 02/02/2009
e-mail address: kim_champlin@xtoenergy.com	Telephone: (505) 333-3100
20.	
OCD Approval: Permit Application (including closure plan) Closure Pla	lan (only) OCD Conditions (see attachment)
OCD Representative Signature:	Approval Date:
Title:	OCD Permit Number:
^{21.} <u>Closure Report (required within 60 days of closure completion)</u> : Subsection I Instructions: Operators are required to obtain an approved closure plan prior to The closure report is required to be submitted to the division within 60 days of th section of the form until an approved closure plan has been obtained and the clo	K of 19.15.17.13 NMAC o implementing any closure activities and submitting the closure report. he completion of the closure activities. Please do not complete this osure activities have been completed.
77	
Closure Method: Waste Excavation and Removal On-Site Closure Method Alternat If different from approved plan, please explain.	ative Closure Method 🗌 Waste Removal (Closed-loop systems only)
23. Closure Report Regarding Waste Removal Closure For Closed-loop Systems Instructions: Please indentify the facility or facilities for where the liquids, drill two facilities were utilized.	That Utilize Above Ground Steel Tanks or Haul-off Bins Only: ling 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 performed on or Yes (If yes, please demonstrate compliance to the items below)	in areas that will not be used for future service and operations?
Required for impacted areas which will not be used for future service and operation Site Reclamation (Photo Documentation) Soil Backfilling and Cover Installation Re-vegetation Application Rates and Seeding Technique	ons:
 24. Closure Report Attachment Checklist: Instructions: Each of the following ite mark in the box, that the documents are attached. Proof of Closure Notice (surface owner and division) Proof of Deed Notice (required for on-site closure) Plot Plan (for on-site closures and temporary pits) Confirmation Sampling Analytical Results (if applicable) Waste Material Sampling Analytical Results (required for on-site closure) Disposal Facility Name and Permit Number Soil Backfilling and Cover Installation Re-vegetation Application Rates and Seeding Technique Site Reclamation (Photo Documentation) 	ems must be attached to the closure report. Please indicate, by a check
On-site Closure Location: Latitude Longitu	ude NAD: 1927 1983
 25. Operator Closure Certification: I hereby certify that the information and attachments submitted with this closure rebelief. I also certify that the closure complies with all applicable closure requirements 	eport is true, accurate and complete to the best of my knowledge and tents and conditions specified in the approved closure plan.
Name (Print):	Title:
Signature:	Date:
e-mail address:	Telephone:

STATE OF NEW MEXICO.

DIL CONSERVATION DIVIS'ON

P. O. HOX 2088

- 102 : 10-1-78 12"RGY AID MINERALS DEPARTMENT SANTA FE, NEW MEXICO 87501 All distances must be from the outer boundaries of the Section. Operator Well No. Lease J. C. GORDON "D" LE AMOCO PRODUCTION COMPANY Range Section Township County Unit Letter 10W San Juan 23 27N B Actual Foctage Location of Well: 850 1670 East North feet from the line and fect from the line Ground Level Elev: Producing Fermation Poel Dedicated Acreage: Basin Dakota 6459 Dakota **E** 320 Acres 1. Outline the acreage dedicated to the subject well by colored pencil or hachure marks on the plat below. 2. If more than one lease is dedicated to the well, outline each and identify the ownership thereof (both as to working interest and royalty). 3. If more than one lease of different ownership is dedicated to the well, have the interests of all owners been consolidated by communitization, unitization, force-pooling. etc? If answer is "yes," type of consolidation Joint Owner Acreage - All owners approved X Yes No No drilling of well If answer is "no," list the owners and tract descriptions which have actually been consolidated. (Use reverse side of this form if necessary.). No allowable will be assigned to the well until all interests have been consolidated (by communitization, unitization, forced-pooling, or otherwise) or until a non-standard unit, eliminating such interests, has been approved by the Commission. CERTIFICATION 8501 I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief. 1670' Nome D.H. SHOEMAKER Position District Engineer Company Amoco Production Company Date Sec. JANUARY 7, 1983 I hereby certify that the well location on this plat was plotted from field 23 of actual surveys made by me or RECEIN my supervision, and that the same 50% JAN 24 1933 is true and carrect to the best of my knowledge and belief. O OGICAL SUR EY

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Scale: 1"=1000"

Date Surve

Dec Reals

Fre Certifica

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FORM 24-11

1		Dia Dannaia	Client:	XTO Energy				
A Lodestar Service	s, Inc.	Pit Permit	Project:	tank permitting				
70 Box 4465, Durang	a, CO 81302	Siting Criteria	Revised:	25-Jan-09				
V		Information	Prepared by:	Trevor Ycas				
API#:	3	0-045-25581	USPLSS:	27N 10W 23 B				
Name:	I C GORDO	N D No. 004E	Lat/Long:	36.565654°, -107.862031°				
Depth to groundwater:	. (depth > 100'	Geologic formation:	Nacimiento Formation (Tn)				
Distance to closest continuously flowing watercourse:	9.6 miles	N to 'San Juan River';	site elevation: 1972m/6470'					
Distance to closest significant watercourse, lakebed, playa lake, or sinkhole:	~2540' E to ' ~1.8 mi. W t	Armenta Canyon' channel; o 'Kutz Canyon' (East Fork) wash channel						
		-	Soil Type:	Alfisol / Entisol				
Permanent residence, school, hospital, institution or church within 300'		NO						
			Annual Precipitation:	Navajo Reservoir: 11.90", Aztec: 9.77", Farmington (FAA): 8.21", Bloomfield: 8.71'				
Domestic fresh water well or spring within		NO	Precipitation Notes:	Historical daily max. precip.: 4.0" (Bloomfield)				
Any other fresh water well or spring within 1000'		NO						
Within incorporated municipal boundaries		NO	Attached Documents:	26N09W_iWaters.pdf, 26N10W_iWaters.pdf, 26N11W_iWaters.pdf, 27N09W_iWaters.pdf, 27N10W_iwaters.pdf, 27N11W_iwaters.pdf, 28N09W_iWaters.pdf, 28N10W_iWaters.pdf, 28N11W_iWaters.pdf				
Within defined municipal fresh water well field		NO	FM3500640550B_30- 045-25581.jpg	30-045-25581_gEarth-iWaters.jpg, 30-045-25581_gEarth PLS.jpg ,30-045-25581_topo-PLS.jpg				
Wetland within 500'		NO	Mining Activity:	None Near				
Within unstable area		NO		NM_NRD-MMD_MinesMillQuarries_30-045-25581.jpg				
Within 100 year flood plain		NO						
Additional Notes:	<u></u>	· · · ·		an a suite second 18 a				
drains to 'San Juan River' via 'Armenta Canyon'	located at above ne	op a small mesa, ~250' earest stream channel		headwaters of Armenta Canyon, NW of Angel Peak & W of Harris Mesa				

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JC GORDON D No.004 E API#: 30-045-25581 Below Ground Tank Hydrogeologic Report for Siting Criteria

General Geology and Hydrology

The San Juan Basin is a typical Rocky Mountain basin with a gently dipping southern flank and a steeply dipping northern flank. Asymmetrically layered Tertiary sandstones and shales, along with Quaternary alluvial deposits, dominate surficial geology (Dane and Bachman, 1965). The proposed pit location will be located in the southern Armenta Canyon region of the San Juan Basin. The predominant geologic formation is the Nacimiento Formation of Tertiary age, which underlies surface soils and is often exposed (Dane and Bachman, 1965). Deposits of Quaternary alluvial and aeolian sands occur prominently near the surface of the area, especially near streams and washes. Cretaceous and Tertiary sandstones, as well as Quaternary alluvial deposits serve as the primary aquifers in the San Juan basin (Stone et al., 1983). In most of the proposed area, the Nacimiento Formation lies at the surface and grades into the Animas Formation to the west. Thickness of the Nacimiento ranges from 418 to 2232 feet (Stone et al., 1983).

Aquifers within the coarser and continuous sandstone bodies of the Nacimiento Formation are between 0 and 1000' deep in this section of the basin (Stone et al., 1983). Groundwater within these aquifers flows toward the San Juan River. The prominent soil type at the proposed site are entisols and aridisols, which are defined as soils that exhibit little to no any profile development (www.emnrd.state.nm.us). Soils are basically unaltered from their parent rock. Miles of arroyos, washes and intermittent streams exist as part of the drainage network towards the San Juan River. These features often cut into soil and other unconsolidated materials, contributing to sedimentation downstream.

The sudden influx of water from storm events easily erodes the soils that cover the area and prohibits effective recharge to the underlying aquifers. Dry and arid weather further prohibit active recharge. The climate of the region is arid, averaging 8 to 12 inches of rainfall annually. As is typical of the southwestern United States monsoonal weather patterns, most precipitation falls from August through October. The heaviest rainfall occurs in the summer in isolated, intense cloudbursts. November through June is relatively dry. Snow generally falls from December to mid-February and averages less than one-half inch in depth. However, most recharge occurs during the winter months during snowmelt periods from the upper elevations (Western Regional Climate Center <u>www.wrcc.dri.edu</u>). The predominant vegetation is sagebrush and grasses with a more restricted pinon-juniper association (Dick-Peddie, 1993). However, vegetation is very sparse and discontinuous.

Site Specific Hydrogeology

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

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

The site in question is located atop a small mesa, near the edge of Armenta Canyon, where deeply eroded sandstone-capped mesas and slope-forming mudstones occur in a sparsely vegetated and arid badlands-type setting. Broad shalely hills are interspersed with occasional sandstone outcrops, and systems of dry washes and their tributaries are evident on the attached aerial image. The pit is situated at an elevation of approximately 6470 feet. The proposed site is located approximately 900 feet northwest of the Armenta tributary system, and 2540 feet west of Armenta Canyon Wash.

Groundwater is expected to be shallow within Armenta Wash. The elevation change of approximately 250 feet from the wash to the pit suggests that groundwater at the proposed site is deeper than 100 feet. State iWaters data points are sparsely distributed in this region. There are two iWaters data points approximately 3.5 miles to the northwest of the site, at an elevation of approximately 5985 feet. Depth to groundwater within the wells is 60 feet and 170 feet below ground surface. A map showing the location of wells in reference to the proposed pit location is attached.





Page 3 of 7

	Township: 28N	Range: 10W	Sections:			
N	AD27 X:	Y:	Zone:	Search	Radius:	
County:	Ba	sin:		Number:	Suffix:	
Owner Name	: (First)	(Last)		ONon-Do	mestic ODomestic 🧕	All
	POD / Surface D	ata Report Avg	Depth to Water	Report Water	Column Report	
		Clear Form	iWATERS Me	nu Help		
	10 M TO 10	COLINGI DEDODU	08/08/2008			

No Records found, try again

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	Township: 28N	Range: 09W	Sections:		
NA	D27 X:	Y:	Zone:	Search Radius:	
County:	Bas	sin:		Number: Suffix:	
Owner Name:	(First)	(Last)		○Non-Domestic ○Domes	tic 💿 All
	POD / Surface D	ata Report Avg	Depth to Water	Report Water Column Report	

WATER COLUMN REPORT 08/06/2008

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

Record Count: 3

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Tov	vnship: 27N Range:	11W Sections:		
NAD2	X : Y :	Zone:	Search Radius:	
County:	Basin:		Number: Suffix:	
Owner Name: (F	irst)	(Last)	─ ○Non-Domestic ○Domestic	All
PC	D / Surface Data Report	Avg Depth to Water	Report Water Column Report	

WATER COLUMN REPORT 08/06/2008

	(quarter: (quarter:	s are s are	1=1 big	w Jge	2=NE st t	3=SW 4=SE) o smallest)			Depth	Depth	Water	(in feet)
POD Number	Tws	Rng	Sec	q	P P	Zone	x	Y	Well	Water	Column	
SJ 01787	27N	11W	07	2	2				650			
SJ. 00077	27N	11W	26	2	1 3				1102	550	552	

Record Count: 2

Township:	7N Range: 10W	Sections:		
NAD27 X:	Y:	Zone:	Search Radius:	
County:	Basin:	- 7	Number: Suffix:	
Owner Name: (First)	(Last)	ONON-Domestic ODomes	tic All
POD / Surfa	ce Data Report Av	g Depth to Water	Report Water Column Report	

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WATER COLUMN REPORT 08/06/2008

	(quarter (quarter	s are s are	a 1=3 a bi	NW gge	2= est	=NE t to	3=SW 4=SI smalles	E) E)		Depth	Depth	Water	(in feet)
POD Number	Tws	Rng	Sec	q	q	q	Zone	x	Y	Well	Water	Column	
SJ 00032	27N	10W	80	2	2	3				235	60	175	
SJ 00033	27N	10W	08	2	2	3				204			
SJ 00034	27N	10W	08	2	2	3				235	170	65	

Record Count: 3

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POD Reports and Downloads
Township: 27N Range: 09W Sections:
NAD27 X: Y: Zone: Search Radius:
County: Basin: Number: Suffix:
Owner Name: (First) (Last) C'Non-Domestic ODomestic @ All
POD / Surface Data Report Avg Depth to Water Report Water Column Report
Clear Form WATERS Menu Help

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

No Records found, try again

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	Fownship: 26N	Range: 11W	Sections:		
NA	D27 X:	Y:	Zone:	Search R	adius:
County:	Bas	sin:	1	Number:	Suffix:
Owner Name:	(First)	(Last)	<u> </u>	○ Non-Dom	estic ODomestic OA
	POD / Surface D	ata Report Avg	Depth to Water	Report Water Co	lumn Report

WATER COLUMN REPORT 08/11/2008

	(quarter (quarter	s are s are	1= big	J J J J J J J J J J J J J J	2=1 est	NE 3	3=SW 4=SE) smallest)			Depth	Depth	Water	(in feet)
POD Number	Tws	Rng	Sec	q	q d	F	Zone	x	Y	Well	Water	Column	
SJ 01626	26N	11W	16	4	3					255	200	55	
SJ 02734	26N	11W	35	4	3 2	2				275	165	110	

Record Count: 2

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	ownship: 26N	Range: 10W	Sections:		
NA	027 X:	Y:	Zone:	Search I	Radius:
County:	Basi	n:		Number:	Suffix:
Owner Name:	(First)	(Last)	<u> </u>	- Non-Dor	nestic ODomestic OA
	POD / Surface Da	ta Report Avg	Depth to Water F	Report Water C	olumn Report

WATER COLUMN REPORT 08/08/2008

	(quarter (quarter	s are s are	1=1 big	Jge	2=NE st to	3=SW 4=SH smallest	E) =)		Depth	Depth	Water	(in feet)
POD Number	Tws	Rng	Sec	P	q q	Zone	х	Y	Well	Water	Column	
SJ 00193	26N	10W	13	4	2				2287	500	1787	
SJ 00194	26N	10W	25	4	1				2105	500	1605	

Record Count: 2

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Township: 26	N Range: 09W	Sections:		
NAD27 X:	Y:	Zone:	Search R	Ladius:
County:	Basin:		Number:	Suffix:
Owner Name: (First)	(Las	it)		nestic ODomestic @All
POD / Surface	Data Report A	vg Depth to Water	Report Water C	olumn Report

WATER COLUMN REPORT 08/08/2008

	(quarter	s are	ə 1≓	NW 2	=NE	3=SW 4=SE)						
	(quarter	s are	a bi	gges	t to	o smallest)			Depth	Depth	Water	(in feet)
POD Number	Tws	Rng	Sec	qq	PI	Zone	х	Y	Well	Water	Column	
SJ 02961	26N	09W	01	2 2	3				1500			
SJ 02962	26N	09W	01	3 2	3				1500			
SJ 01756	26N	09W	11	2 2	3				75	40	35	
SJ 03811 POD1	26N	09W	12	3 3	3				348	175	173	
SJ 00412	26N	09W	16	4 2					202	65	137	
SJ 00214	26N	09W	26	2 4	2				946	230	716	
SJ 00064	26N	09W	26	4 2	1				490	215	275	
SJ 00063	26N	09W	26	4 2	3				479	234	245	

Record Count: 8

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Township: 28M	Range: 11W	Sections:		
NAD27 X:	Y:	Zone:	Search F	Radius:
County: E	asin:		Number:	Suffix:
Owner Name: (First)	(Last)		- Non-Don	nestic ODomestic All
POD / Surface	Data Report Avg	Depth to Water	Report Water C	olumn Report

WATER COLUMN REPORT 08/06/2008

(quarters are 1=NW 2=NE 3=SW 4=SE) (quarters are biggest to smallest)								Depth	Depth	Water	(in	feet)		
POD Number	Tws	Rng	Sec	P	P	P	Zone	х	Y	Well	Water	Column		
SJ 03193	28N	11W	07	3	4	3				80	35	45		
SJ 02916	2:8 N	11W	07	3	4	4				98	70	28		

Record Count: 2

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Mines, Mills and Quarries Web Map





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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.
- 7. XTO will construct a berm and/or diversion ditch in a manner that prevents the collection of surface water run-on. Below-grade tanks will be equipped with automatic high level shut-off devices as well as manually operated shut-off valves. (See attached drawing).
- 8. XTO will construct and use below-grade tanks that do not have double walls. The below-grade tank sidewalls will be open for visual inspection for leaks. The sidewalls of the cellar will be constructed with 2" X 12" pine sidewalls and 4" X 4" pine brace posts. The below-grade tank

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

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

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



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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

- XTO will operate and maintain below-grade tanks to contain liquids and solids, maintain the integrity of the liner and secondary containment system, prevent contamination of fresh water and protect public health and the environment. Fluid levels will be monitored weekly and high levels will be removed as necessary. Monthly inspections will be conducted to monitor integrity of below-grade tank systems and below-grade tanks will be equipped with automatic high-level shut-off devices.
- 2. XTO will not allow below-grade tanks to overflow and will use berms and/or diversion ditch to prevent surface run on to enter the below-grade tank. Below-grade tanks will be equipped with automatic high-level shut-off control devices as well as manually operated shut-off valves. See attached drawing for vault design and placement of diversion berms and shut-off devices.
- 3. XTO will continuously remove any visible or measurable layer of oil from the fluid surface of below-grade tanks in order to prevent significant accumulation of oil.
 - XTO will inspect the below-grade tank monthly and maintain written records for five years. Monthly inspections will consist of documenting the following: (see attached template), Well Name
 - API # Sec., Twn., Rng. XTO Inspector's name Inspection date and time Visible tears in liner Visible signs of tank overflow Collection of surface run on Visible layer of oil Visible signs of tank leak Estimated freeboard
- 5. XTO will maintain adequate freeboard to prevent over topping of the below-grade tank. High level shut-off devices control the freeboard at an average of 28" beneath the top of the tank.
- 6. XTO will not discharge into or store any hazardous waste in any below-grade tank.
- 7. If a below-grade tank develops a leak, or if any penetration of a below-grade tank occurs below the liquids surface, XTO will remove all liquids above the damage or leak line within 48 hours,

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

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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.

MONTHLY BELOW GRADE TANK INSPECTION FORM									
Well Nan	ne:				API No.:				
Legals	Sec:		Township:		Range:				
XTO Inspector's Name	Inspection Date	Inspection Time	Any visible liner tears (Y/N)	Any visible signs of 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)	Freeboard Est. (ft)	
Notes:	Provide De	tailed Descri	ption:						
Misc:									
						-			

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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.
- 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.

- 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

- 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.

