Form C-144 July 21, 2008

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

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

Proposed Alternative Method Permit or Closure Plan Application
Type of action:  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
Please be advised that approval of this request does not relieve the operator of liability should operations result in pollution of surface water, ground water or the environment. Nor does approval relieve the operator of its responsibility to comply with any other applicable governmental authority's rules, regulations or ordinances.
Operator: Devon Energy Production Company, L.P. OGRID #: 6137
Address: 20 N. Broadway, Oklahoma City, OK 73102
Facility or well name:NEBU 49M
API Number: 30-045-33305 OCD Permit Number:
U/L or Qtr/Qtr H/ SE NE Section 30 Township 31N Range 7W County: San Juan
Center of Proposed Design:         Latitude         36.8706667         Longitude         -107.6035         NAD:         □ 1927 ⋈ 1983
Surface Owner:  Federal  State  Private  Tribal Trust or Indian Allotment
Pit: Subsection F or G of 19.15.17.11 NMAC   Temporary: Drilling Workover   Permanent Emergency Cavitation P&A   Lined Unlined Liner type: Thickness mil LLDPE   HDPE PVC Other   String-Reinforced   Liner Seams: Welded Factory Other Volume: bbl Dimensions: L x W x D
3.  Closed-loop System: Subsection H of 19.15.17.11 NMAC
Type of Operation: P&A Drilling a new well Workover or Drilling (Applies to activities which require prior approval of a permit or notice of intent)
☐ Drying Pad ☐ Above Ground Steel Tanks ☐ Haul-off Bins ☐ Other
☐ Lined ☐ Unlined Liner type: Thickness mil ☐ LLDPE ☐ HDPE ☐ PVC ☐ Other
Liner Seams:  Welded Factory Other
Below-grade tank: Subsection I of 19.15.17.11 NMAC
Volume: 80 bbl Type of fluid: Produced Water
Tank Construction material: Steel
Secondary containment with leak detection  Visible sidewalls, liner, 6-inch lift and automatic overflow shut-off
☐ Visible sidewalls and liner ☐ Visible sidewalls only ☐ Other
Liner type: Thicknessmil
5.
Alternative Method:

24

Submittal of an exception request is required. Exceptions must be submitted to the Santa Fe Environmental Bureau office for consideration of approval.

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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, institution or church)  Four foot height, four strands of barbed wire evenly spaced between one and four feet  Alternate. Please specify: Four Foot high, steel mesh field fence (hog wire) with pipe top railing.	hospital,
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)	
<ul> <li>Signs: Subsection C of 19.15.17.11 NMAC</li> <li>☐ 12"x 24", 2" lettering, providing Operator's name, site location, and emergency telephone numbers</li> <li>☑ Signed in compliance with 19.15.3.103 NMAC</li> </ul>	
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: Fencing  Administrative approval(s): Requests must be submitted to the appropriate division district or the Santa Fe Environmental Bureau consideration of approval.  Exception(s): Requests must be submitted to the Santa Fe Environmental Bureau office for consideration of approval.	office for
Siting Criteria (regarding permitting): 19.15.17.10 NMAC Instructions: The applicant must demonstrate compliance for each siting criteria below in the application. Recommendations of accept material are provided below. Requests regarding changes to certain siting criteria may require administrative approval from the appropriate or may be considered an exception which must be submitted to the Santa Fe Environmental Bureau office for consideration of a Applicant must attach justification for request. Please refer to 19.15.17.10 NMAC for guidance. Siting criteria does not apply to drying above-grade tanks associated with a closed-loop system.	priate district pproval.
Ground water is less than 50 feet below the bottom of the temporary pit, permanent pit, or below-grade tank.  - NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells	☐ Yes ⊠ No
Within 300 feet of a continuously flowing watercourse, or 200 feet of any other significant watercourse or lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark).  - Topographic map; Visual inspection (certification) of the proposed site	☐ Yes ⊠ No
Within 300 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application.  (Applies to temporary, emergency, or cavitation pits and below-grade tanks)  - Visual inspection (certification) of the proposed site; Aerial photo; Satellite image	☐ Yes ☑ No ☐ NA
Within 1000 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application.  (Applies to permanent pits)  - Visual inspection (certification) of the proposed site; Aerial photo; Satellite image	☐ Yes ☐ No ☑ NA
Within 500 horizontal feet of a private, domestic fresh water well or spring that less than five households use for domestic or stock watering purposes, or within 1000 horizontal feet of any other fresh water well or spring, in existence at the time of initial application.  - NM Office of the State Engineer - iWATERS database search; Visual inspection (certification) of the proposed site	☐ Yes ⊠ No
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

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Temporary Pits, Emergency Pits, and Below-grade Tanks Permit Application Attachment Checklist: Subsection B of 19.15.17.9 NMAC  Instructions: Each of the following items must be attached to the application. Please indicate, by a check mark in the box, that the documents are 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
<ul> <li>□ Previously Approved Design (attach copy of design)</li> <li>□ Previously Approved Operating and Maintenance Plan</li> <li>□ API Number:</li></ul>
Permanent Pits Permit Application Checklist: Subsection B of 19.15.17.9 NMAC  Instructions: Each of the following items must be attached to the application. Please indicate, by a check mark in the box, that the documents are attached.  Hydrogeologic Report - based upon the requirements of Paragraph (1) of Subsection B of 19.15.17.9 NMAC  Siting Criteria Compliance Demonstrations - based upon the appropriate requirements of 19.15.17.10 NMAC  Climatological Factors Assessment  Certified Engineering Design Plans - based upon the appropriate requirements of 19.15.17.11 NMAC  Dike Protection and Structural Integrity Design - based upon the appropriate requirements of 19.15.17.11 NMAC  Leak Detection Design - based upon the appropriate requirements of 19.15.17.11 NMAC  Liner Specifications and Compatibility Assessment - based upon the appropriate requirements of 19.15.17.11 NMAC  Quality Control/Quality Assurance Construction and Installation Plan  Operating and Maintenance Plan - based upon the appropriate requirements of 19.15.17.12 NMAC  Freeboard and Overtopping Prevention Plan - based upon the appropriate requirements of 19.15.17.11 NMAC  Nuisance or Hazardous Odors, including H <sub>2</sub> S, Prevention Plan  Emergency Response Plan  Oil Field Waste Stream Characterization  Monitoring and Inspection Plan  Erosion Control Plan  Closure Plan - based upon the appropriate requirements of Subsection C of 19.15.17.9 NMAC 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 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 (Below Grade Tank) Waste Removal (Closed-loop systems only) On-site Closure Method (Only for temporary pits and closed-loop systems) In-place Burial On-site Trench Burial Alternative Closure Method (Exceptions must be submitted to the Santa Fe Environmental Bureau for consideration)
Waste Excavation and Removal Closure Plan Checklist: (19.15.17.13 NMAC) Instructions: Each of the following items must be attached to the closure plan. Please indicate, by a check mark in the box, that the documents are attached.  □ Protocols and Procedures - based upon the appropriate requirements of 19.15.17.13 NMAC □ Confirmation Sampling Plan (if applicable) - based upon the appropriate requirements of Subsection F of 19.15.17.13 NMAC □ Disposal Facility Name and Permit Number (for liquids, drilling fluids and drill cuttings) □ Soil Backfill and Cover Design Specifications - based upon the appropriate requirements of Subsection H of 19.15.17.13 NMAC □ Re-vegetation Plan - based upon the appropriate requirements of Subsection G of 19.15.17.13 NMAC

Waste Removal Closure For Closed-loop Systems That Utilize Above Ground Stee Instructions: Please indentify the facility or facilities for the disposal of liquids, drilli					
facilities are required.	socal Cacility Damnit Numbers				
	posal Facility Permit Number:				
	posal Facility Permit Number:				
Will any of the proposed closed-loop system operations and associated activities occur  Yes (If yes, please provide the information below)  No	on or in areas that will not be used for future serv	rice 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 requirements of Subsection I of Site Reclamation Plan - based upon the appropriate requirements of Subsection Countries of Subsect	19.15.17.13 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 closs provided below. Requests regarding changes to certain siting criteria may require ad considered an exception which must be submitted to the Santa Fe Environmental But demonstrations of equivalency are required. Please refer to 19.15.17.10 NMAC for g	ministrative approval from the appropriate disti reau office for consideration of approval. Justi	rict office or may be			
Ground water is less than 50 feet below the bottom of the buried waste.  - NM Office of the State Engineer - iWATERS database search; USGS; Data obt	ained 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; Data obt	ained from nearby wells	<ul><li>☐ Yes ☐ No</li><li>☐ NA</li></ul>			
Ground water is more than 100 feet below the bottom of the buried waste.  - NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells					
Within 300 feet of a continuously flowing watercourse, or 200 feet of any other signific lake (measured from the ordinary high-water mark).  - Topographic map; Visual inspection (certification) of the proposed site	ant watercourse or lakebed, sinkhole, or playa	Yes No			
Within 300 feet from a permanent residence, school, hospital, institution, or church in e  Visual inspection (certification) of the proposed site; Aerial photo; Satellite ima		☐ Yes ☐ No			
Within 500 horizontal feet of a private, domestic fresh water well or spring that less that watering purposes, or within 1000 horizontal feet of any other fresh water well or spring - NM Office of the State Engineer - iWATERS database; Visual inspection (certification)	g, in existence at the time of initial application.	Yes No			
Within incorporated municipal boundaries or within a defined municipal fresh water we adopted pursuant to NMSA 1978, Section 3-27-3, as amended.  - Written confirmation or verification from the municipality; Written approval of	•	☐ Yes ☐ No			
Within 500 feet of a wetland.  - US Fish and Wildlife Wetland Identification map; Topographic map; Visual instance.	pection (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 & Society; Topographic map	Mineral Resources; USGS; NM Geological	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 followy a check mark in the box, that the documents are attached.  Siting Criteria Compliance Demonstrations - based upon the appropriate requirements of Sub Construction/Design Plan of Burial Trench (if applicable) based upon the appropriate Construction/Design Plan of Temporary Pit (for in-place burial of a drying pad) - Protocols and Procedures - based upon the appropriate requirements of 19.15.17.  Confirmation Sampling Plan (if applicable) - based upon the appropriate requirements of Sub Disposal Facility Name and Permit Number (for liquids, drilling fluids and drill of Soil Cover Design - based upon the appropriate requirements of Subsection H of Re-vegetation Plan - based upon the appropriate requirements of Subsection I of Site Reclamation Plan - based upon the appropriate requirements of Subsection Constructions.	nents of 19.15.17.10 NMAC section F of 19.15.17.13 NMAC briate requirements of 19.15.17.11 NMAC based upon the appropriate requirements of 19. 13 NMAC nents of Subsection F of 19.15.17.13 NMAC section F of 19.15.17.13 NMAC cuttings or in case on-site closure standards cannot 19.15.17.13 NMAC	15.17.11 NMAC			

Operator Application Certification:  I hereby certify that the information submitted with this application is true, acc	urate and complete to the	best of my knowledge and belief.
Name (Print): Katie Baird	Title:	Field Technician
Signature: Hatil Baird	Date: 05	3.05.09
e-mail address: <u>katie.baird@dvn.com</u>	Telephone:	(505) 324-5621
OCD Approval: Permit Application (including closure plan) Closure	Plan (only) OCD C	Conditions (see attachment)
OCD Representative Signature:		Approval Date:
Title:	OCD Permit Numbe	or:
21.  Closure Report (required within 60 days of closure completion): Subsection  Instructions: Operators are required to obtain an approved closure plan prion  The closure report is required to be submitted to the division within 60 days of section of the form until an approved closure plan has been obtained and the	r to implementing any clo f the completion of the clo closure activities have be	osure activities and submitting the closure report. osure activities. Please do not complete this een completed.
	☐ Closure Comple	etion Date:
22. Closure Method:  ☐ Waste Excavation and Removal ☐ On-Site Closure Method ☐ Alter ☐ If different from approved plan, please explain.	native Closure Method [	☐ Waste Removal (Closed-loop systems only)
Closure Report Regarding Waste Removal Closure For Closed-loop System Instructions: Please indentify the facility or facilities for where the liquids, detwo facilities were utilized.	rilling fluids and drill cut	ttings were disposed. Use attachment if more than
Disposal Facility Name:		mit Number:
Disposal Facility Name:		mit Number:
Yes (If yes, please demonstrate compliance to the items below) \( \subseteq \text{No} \)	of in areas that will not be	a used for future service and operations:
Required for impacted areas which will not be used for future service and open    Site Reclamation (Photo Documentation)   Soil Backfilling and Cover Installation   Re-vegetation Application Rates and Seeding Technique	ations:	
24.		
Closure Report Attachment Checklist: Instructions: Each of the following 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)	e)	
On-site Closure Location: Latitude Long	gitude	NAD: □1927 □ 1983
Operator Closure Certification:  I hereby certify that the information and attachments submitted with this closure belief. I also certify that the closure complies with all applicable closure requires.		
Name (Print):	Title:	
Signature:	Date:	, 
e-mail address:	Telephone:	

## NEBU #47N 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 north-central San Juan Basin near Navajo Lake. The predominant geologic formation is the San Jose Formation of Tertiary age, which underlies surface soils and is often exposed (Dane and Bachman, 1965). Deposits of Quaternary alluvial and aeolian sands occur 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 San Jose Formation lies at the surface and overlies the Nacimiento Formation. Thickness of the San Jose ranges from 200 to 2700 feet, thickening from west to east across the region of interest (Stone et al., 1983). Aquifers within the coarser and continuous sandstone bodies of the San Jose Formation are between 0 and 2700' 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. More locally, groundwater flow is controlled by Navajo Lake. Little specific hydrogeologic data is available for the San Jose Formation system, but "numerous wells and springs used for stock and domestic supplies" draw their water from the San Jose Formation (Stone et al., 1983).

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.

Regional weather further prohibits active recharge. The climate is arid, averaging almost 13 inches of rainfall annually. As is typical of the southwestern United States monsoonal weather patterns, most precipitation falls from July through September. The heaviest rainfall occurs in the summer in isolated, intense cloudbursts. September through June is relatively dry. Snow generally falls from December to mid-February and averages less than one-half inch in depth. The most active recharge occurs during the winter snowmelt periods from the upper elevations (Western Regional Climate Center www.wrcc.dri.edu).

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

#### Site Specific Hydrogeology

Depth to groundwater at the site is estimated to be greater than 100'. 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 and observations made during a site visit are also taken into consideration.

The region is dominated by Navajo Lake and its associated canyons and gullies as evidenced on the attached topographic map and aerial photo. Relatively large, flat-topped mesas composed of thick sandstone sequences surround the perimeter of the lake and are often over 200 feet higher in elevation than the lake. Canyons and gullies erode into the sandstone and are filled with alluvium. This particular site is located on a mesa top only 852 feet away from Navajo Reservoir, but over 280 feet higher in elevation than the surface of the lake water. To the north and south lies a first order tributary to the lake.

The massive sandstone outcrops, upon which the site in question is situated, is part of the San Jose Formation. Beds of water-yielding sandstone are present in the San Jose Formation, which are fluvial in origin and are interbedded with mudstone, siltstone & shale. Porous sandstones form the principal aquifers in the area, while relatively impermeable shales and mudstones form confining units between the aquifers (Stone et al., 1983). "Extensive intertonguing" of different members of this formation is reported (Stone et al, 1983). Local aquifers exist within the San Jose Formation at depths greater than 100 feet and thicknesses of the aquifer can be up to several hundred feet (USGS, Groundwater Atlas of the US; Stone et al, 1983).

Depth to groundwater data is extremely limited in this region. Groundwater data available from the NM State Engineer's iWaters Database for wells near the below grade tank are attached and are plotted on the iWaters Groundwater Data Map. The nearest permitted well lies 1.15 miles northeast (SJ 03355). The water is used for livestock watering, as are many others in the surrounding area. Depth to groundwater in the permitted water well is recorded as 470 feet. Other wells located near Navajo Lake at similar elevations to the site in question contain groundwater at depths in excess of 400 feet.

The elevation difference of over 200 feet between the site and Navajo Lake, the lack of other surface water features and groundwater depths greater than 400 feet deep in nearby permitted water wells is enough to suggest that groundwater at the site is 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 Vegeation – 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).

Western Region Climate Center, 2008, New Mexico climate summaries: Desert Research Institute at <a href="http://www.wrcc.dri.edu/summary/climsmnm.html">http://www.wrcc.dri.edu/summary/climsmnm.html</a>.

New Mexico Energy, Minerals and Natural Resources Department, <a href="www.emnrd.state.nm.us">www.emnrd.state.nm.us</a>



### **Pit Permit Siting Criteria** Information Sheet

Client:	Devon Energy	
Project:	Pit Permits	
Revised:	4/23/2009	
Prepared by:	Brooke Herb	

V			
API#:	30-045-33305	USPLSS:	T31N, R07W, S30H
Name:	NEBU #49M	Lat/Long:	36.8706667, -107.6035
Depth to groundwater:	>100'	Geologic formation:	San Jose Formation
Distance to closest continuously flowing watercourse:	852' E of Los Pinos River/ Navajo Reservoir		
Distance to closest significant watercourse, lakebed, playa lake, or sinkhole:	1400' S of 1st order tributary of Reservoir; 1460' N-NW of first order tributary of the Reservoir; 2.00 miles W of Dick Earl Canyon		
	Company of the Compan	Soil Type:	Entisols
Permanent residence, school, hospital, institution or church within 300'	NO	Son Type:[	Entisols
		Annual Precipitation:	12.95 inches (weather station at Navajo Dam)
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:	Site Visit Survey Hydrogeologic Report Topographic Map
Within defined municipal fresh water well field	NO		Aerial Photo Mines, Mills and Quarries Map FEMA Flood Zone Map
Wetland within 500'	NO	Mining Activity:	None identified in the vicinity
Within unstable area	NO		
Within 100 year flood	NO - located within Zone X		

Additional Notes: All ranges and bearings from the site to identified hydrogeologic features were measured from the aerial photo and confirmed during a site visit. The aerial photo is dated July 30, 2005. More recent aerial photos are available (2007), but show lower lake levels. The 2005 photo aids reviewers by allowing assessment during wetter conditions.

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

### WATER COLUMN REPORT 12/05/2008

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

	( dame oc-				_			-,						
	(quarter	s are	big	gge	est	to	smalles	t)		Depth	Depth	Water	(in	feet)
POD Number	Tws	Rng	Sec	q	q	P	Zone	X	Y	Well	Water	Column		
SJ 03685 POD1	31N	06W	07	1	2	4				460	310	150		
SJ 00011	31N	06W	32							610				
07.03640	2111	07W	02	1	4					600	300	300		
SJ 03649	31N	U/W	UZ	T	4					600				
SJ 03426	31N	07W	14	1	2	4				540	420	120		
SJ 03355	31N	07W	28	1	1	1				570	470	100		
SJ 03117	32N	07W	07	2	2	2				240				
SJ 01612	32N	07W	34	3						800				

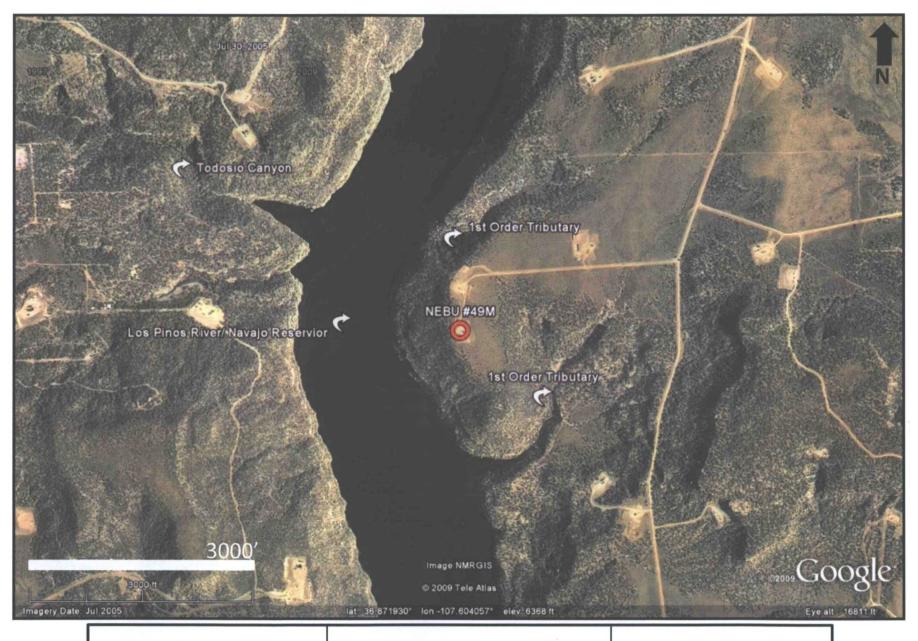
### New Mexico Office of the State Engineer POD Reports and Downloads

Township:	31N Range:	V80	Sections:	

### WATER COLUMN REPORT 12/11/2008

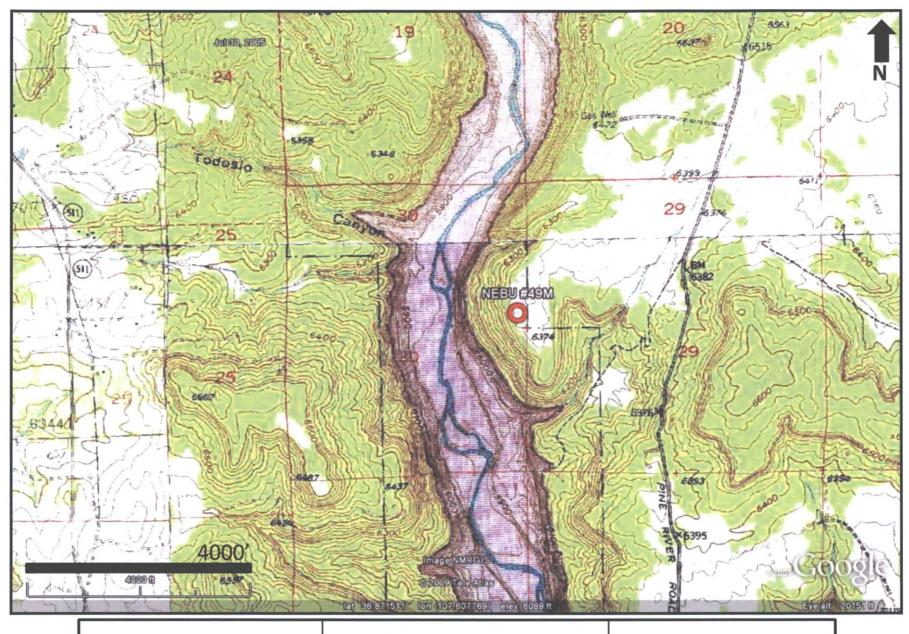
#### (quarters are 1=NW 2=NE 3=SW 4=SE) (quarters are biggest to smallest) Depth Depth Water (in feet) POD Number Tws Rng Sec qqq Zone X Well Water Column SJ 01167 31N 08W 24 4 4 3 465 390 75 SJ 03306 31N 08W 25 600 500 100 SJ 01822 31N 08W 25 550 500 50 SJ 00012 31N 08M 30 1021 475 546 SJ 00198 31N 08W 32 2003

Record Count: 5



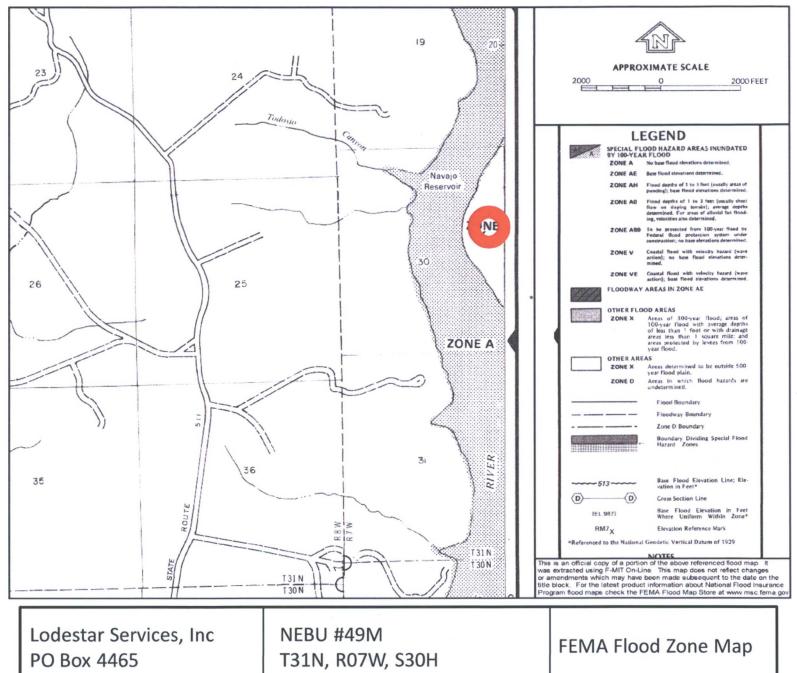
NEBU #49M T31N, R07W, S30H San Juan County, NM

Aerial Photograph



NEBU #49M T31N, R07W, S30H San Juan County, NM

Topographic Map



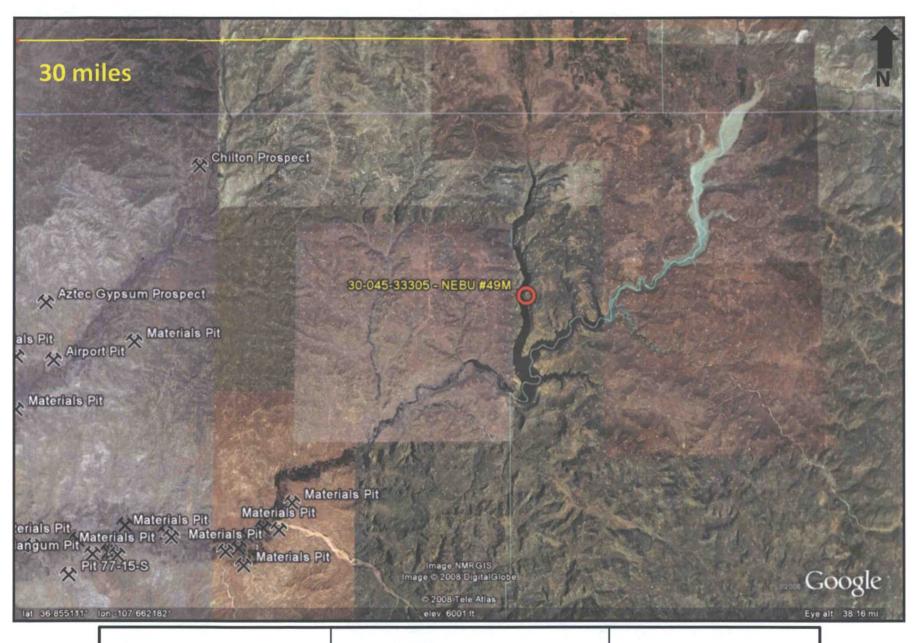
Durango, CO 81302

San Juan County, NM



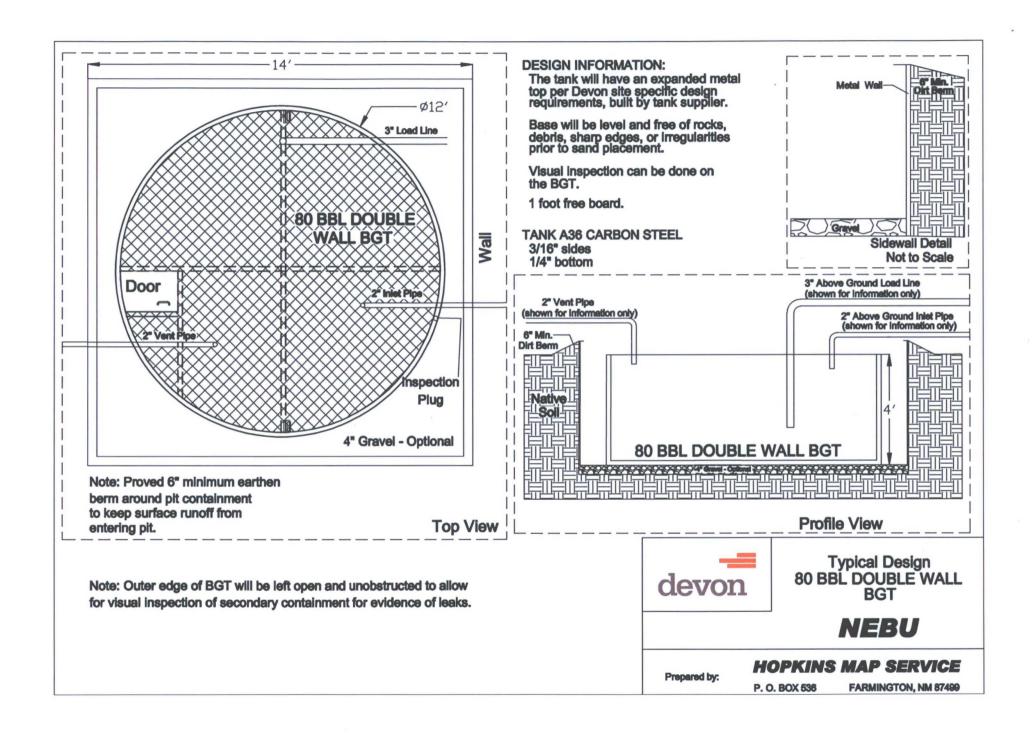
NEBU #49M T31N, R07W, S30H San Juan County, NM

iWaters Groundwater Data Map



NEBU #49M T31N, R07W, S30H San Juan County, NM

Mines, Mills, and Quarries Map



## Devon Energy Production Company, L.P. San Juan Basin Below Grade Tank Design and Construction Plan

In accordance with Rule 19.15.17 NMAC the following information describes the design and construction of below grade tanks on Devon Energy Production Company, L.P. locations. This is Devon Energy's standard procedure for all below grade tanks (BGT). A separate plan will be submitted for any BGT which does not conform to this plan.

### **General Plan**

- 1) Devon will design and construct a BGT to contain liquids to prevent contamination of fresh water and protect public health and the environment.
- 2) Devon will post a well sign, in compliance with 19.15.16.8 NMAC, on the existing well site operated by Devon Energy where the existing BGT 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) Devon is requesting approval of an alternative fencing to be used on BGT locations. BGT locations will be fenced utilizing 48" steel mesh field-fence (hog wire) 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 limit or 1/4mile of a permanent residence, school, hospital, institution, or church. BGTs located within 1000' of a permanent residence, school, hospital, institution, or church will be fenced by a 6' chain link fence with at least 2 strands of barbed wire at the top. All gates associated with BGTs will remain closed when responsible individuals are not on site.
- 4) Devon will construct BGT with an expanded metal covering or solid vaulted top on the top of the BGT.
- 5) Devon shall ensure that a BGTs are constructed of materials resistant to the BGT's particular contents and resistant to damage from sunlight. Tanks will be constructed of A36 carbon steel with 3/16" sides and 1/4" bottom. (see attached drawing)
- 6) Devon shall 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 tank bottom
- 7) Devon shall construct a BGT to prevent overflow and the collection of surface water runon. Devon Energy's free board is set at 1 foot from the top of the tank. We have berms set to prevent any surface water run-on.
- 8) Devon will construct and use BGT's having double walls. The BGT side walls will be open with a plug for visual inspection for leaks. The bottom shall be elevated with the use of gravel to raise the BGT above the underlying ground surface to prevent damage to the bottom of the BGT.
- 9) The general specification for design and construction are attached in the Devon document.

## Devon Energy Production Company, L.P. San Juan Basin Below Grade Tank Maintenance and Operating Plan

In accordance with Rule 19.15.17 NMAC the following information describes the maintenance and operation of below grade tanks on Devon Energy Production Company, L.P. locations. This is Devon Energy's standard procedure for all below grade tanks. A separate plan will be submitted for any BGT which does not conform to this plan.

### **General Plan**

- 1) Devon will operate and maintain a BGT to contain liquids and solids as well as prevent contamination of fresh water to 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 BGT systems.
- 2) Devon shall not allow a BGT to overflow or allow surface water run-on to enter the BGT. See attached drawing of vault design and placement of diversion berms.
- 3) Devon shall continuously remove any visible or measurable layer of oil from the fluid surface of a BGT in an effort to prevent significant accumulation of oil overtime.
- 4) Devon shall inspect the BGT at least once a month and maintain a written record of each inspection for five years. Monthly inspections will consist of documenting the following: (see attached template)
  - Well name
  - Section, Township, Range
  - Latitude longitude coordinates
  - Signature of inspector
  - Inspection date
  - Plug in place
  - Outer side wall ok
  - Fluid between walls
  - Measurable quantity oil
  - Comments
- 5) Devon shall maintain 1 foot free board to prevent overtopping of the BGT.
- 6) Devon will not discharge into or store any hazardous waste in any BGT.
- 7) If a BGT develops a leak or if any penetration of a BGT below the liquid surface on the outer wall, Devon will remove all liquids above the damage or leak within 48 hours, notify the appropriate division district office within 48 hours of the discovery and repair the damage or replace the BGT.

## Devon Energy Production Company, L.P. San Juan Basin Below Grade Tank Closure Plan

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

### **General Plan**

- 1) Devon shall close a BGT within the time periods provided in 19.15.17.13 NMAC, or by an earlier date that the division requires because of imminent danger to fresh water, public health or the environment.
- 2) Devon will close a BGT that does not meet the requirements of Paragraphs 1-4 of the 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 1-4 of the Subsection I of the 19.15.17.11 NMAC.
- 3) Devon shall close a permitted BGT within 60 days of cessation of the BGT 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 C-144.
- 4) 72 Hour notice of Closure will be given via email, or verbally to the Aztec Division office prior to any closure activity. The notification of closure will include the following:
  - > Operator's Name
  - Location by Unit Letter, Section, Township, and Range. Well name and API number

The Surface owner shall be notified prior to the implementation of any closure operations of BGT's as per the approved closure plan using certified mail, return receipt requested.

- 5) Devon shall remove liquids and sludge from a BGT prior to implementing a closure method and shall dispose of the liquids and sludge in a division-approved facility.
  - Envirotech Permit No. NM01-0011 and IEI Permit No. NM 01-0010B
     Soil contamination by exempt petroleum hydrocarbons
     Produced sand, pit sludge and contaminated bottoms from storage of exempt wastes
  - Basin Disposal Permit No. NM01-005
     Produced water
  - Middle Mesa SWD#1 30-045-27341

Produced water

Middle Mesa SWD #2 30-045-28553

Produced water

Pump Mesa SWD 30-045-27340

Produced water

Sims Mesa SWD 30-039-24236

Produced water

- 6) Devon will obtain prior approval from the OCD to dispose, recycle, reuse or reclaim the BGT and provide documentation of the final disposition of the BGT in the closure report.
- 7) If there is any on-site equipment associated with a BGT, then Devon shall remove the equipment, unless the equipment is required for some other purpose.
- 8) Devon will test the soils beneath the BGT to determine whether a release has occurred. At a minimum a five point composite soil sample will be taken. As well as notifying the Aztec

District office of the results on form C-141. Devon Energy will take separate individual discrete soil samples from any area that is wet, discolored or showing any other visible signs of release. All samples will be tested for the items listed in the chart below. Should it be determined that a release has occurred Devon shall comply with 19.15.29 NMAC and 19.15.30 NMAC, as appropriate.

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	100
Chlorides	EPA 300.1	250 or Background

- 9) If the sampling results demonstrate that there has been no release or that a release does not exceed the concentrations specified in Paragraph (4) of Subsection E of 19.15.17.13 NMAC, then Devon shall backfill the excavation with compacted, non-waste containing, earthen material; construct a division prescribed soil cover; re-contour and re-vegetate the site.
- 10) Re-contouring of the location will match fit, shape, line, form and texture of the surrounding area. Re-shaping will include drainage control to 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.
- 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. 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.
- 12) Devon shall seed the disturbed areas the first growing season after the operator closes the pit. Seeding will be accomplished via drilling when topography permits. BLM of Forest Service stipulated seed mixes will be used on all 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. Devon Energy will notify the Division of Seeding and Revegetation when we have seeded and when we have achieved revegitation. Repeat seeding or planting will be continued until successful vegetative growth occurs.
- All closure activities will include proper documentation and be available for review upon request and will be submitted to OCD within 60 days of closure of the BGT. Closure report will be filed on C-144 and incorporate the following:
  - Proof of the closure notice to the division and the surface owner
  - > Inspection Reports
  - > Sampling Results
  - > Disposal facility and permit/API numbers
  - > Soil backfilling and cover installation
  - > Re-vegetation application rates and reseeding techniques (or approved alternative to re-vegetation requirements if applicable)
  - > Photo documentation of the site reclamation

### **Monthly Below Grade Pit Inspection**

### NEBU 49M Pit Number 1

### **80bbl Steel DW**

Sec. 30, 31N, 7W

Lat. N36° 8706667 - Long W107° 6035

Date	Plug in Place	Outer Sidewall Ok	Fluid Between Walls	Measurable Qty Oil	Comments	Signature of Inspector
	□ Yes □ No	「Yes □No □N/A	┌ Yes ┌ No	┌ Yes ┌ No		
	☐ Yes ☐ No	□ Yes □ No □ N/A	Г Yes Г No	Г Yes Г No		
	□ Yes □ No	□ Yes □ No □ N/A	┌ Yes ┌ No	□ Yes □ No		
	□ Yes □ No	□ Yes □ No □ N/A	☐ Yes ☐ No.	ГYes ГNo		
	□ Yes □ No	□ Yes □ No □ N/A	┌ Yes ┌ No	ГYes ГNo		
	□ Yes □ No	□ Yes □ No □ N/A	□ Yes □ No	「Yes 「No		
	□ Yes □ No	□ Yes □ No □ N/A	「Yes 「No	「Yes 「No		
	□ Yes □ No	□ Yes □ No □ N/A	F Yes F No	┌Yes ┌No		
	□ Yes □ No	「Yes 「No 「N/A	□ Yes □ No	┌ Yes ┌ No		
	□ Yes □ No	□ Yes □ No □ N/A	☐ Yes ☐ No	☐ Yes ☐ No		
	□ Yes □ No	□ Yes □ No □ N/A	┌ Yes ┌ No	┌ Yes ┌ No		
	☐ Yes ☐ No	□ Yes □ No □ N/A	□ Yes □ No	□ Yes □ No		

### PROPOSED PIT/BELOW GROUND TANK LOCATION SITE VISIT OBSERVATIONS

**NEBU 49M** 

GROUNDWATER	
Estimate depth to groundwater (if possible)	☐ less than 50 feet ☐ between 50 and 100 feet ☐ greater than 100 feet ☐ unknown
Comments:	
SURFACE WATER  Distance to continuously flowing watercourse	☐ less than 300 feet
	greater than 300 feet
Name of Water Feature: Navajo Lake	
Distance to other <i>significant</i> watercourse, lakebed, sinkhole or playa lake	☐ less than 200 feet ☐ greater than 200 feet
Name of Water Feature (if known):	
Distance to wetlands (look for clusters of cottonwoods, green shrubbery, reeds)	☐ less than 500 feet ☐ greater than 500 feet
Comments: None observed	
PUBLIC FACILITIES	
Distance to permanent residence, school, hospital, institution or church	☐ less than 300 feet ☐ greater than 300 feet
Distance to private or domestic fresh water well or spring (look for windmills, pump houses or small structures with power running to them)	☐ less than 500 feet ☐ greater than 500 feet
Distance to freshwater well or spring (look for clusters of cottonwoods, green shrubbery, reeds)	☐ less than 1000 feet ☐ greater than 1000 feet
Is site located within an incorporated municipal boundary or municipal fresh water field?	☐ yes ☑ no
Comments:	
SITE STABILITY	
Are there any known mines in the vicinity?	yes
	⊠ no
If yes, how close?	
Mine Name: Mine Type:	
Does the site appear to be unstable?	□ yes
(any loose rocks, boulders, evidence of landslide)	⊠ no
Comments:	
Additional Comments:	
I certify the above observations are true and accurate to the best of	
Signature: Date: Printed Name: Steve Zink Title:	Superintendent

# OCD Aztec District III Devon Production Checklist Below Grade Tank Registration

19.15.17.9 Permit application Signed C-144 (Page 5 of C-144) Site Specific Hydrogeology Figure Citation List
19.15.17.10 Siting requirements  Pit Siting Criteria Ground water (NM State Engineer) Proximity to Water courses (Topo Map) Proximity to Flood Plain map (Aerial Map) Proximity to Water Wells (Aerial Map) Proximity to Wetlands (Aerial Map) Proximity to Subsurface Mines Map (Aerial Map) Proximity to Municipal Boundary (Structure Map)
19.15.17.11 Design Plan Contents  Below Grade Tank Design and Construction Plan.
19.15.17.12 Operating and Maintenance Plan  Below Grade Tank Operating and Maintenance Plan
19.15.17.13 Closure Plan  Below Grade Tank Closure Plan
Requirements:
Registration Date: 5/15/2018