District I	State of New Mexico	<b>F</b>
1625 N. French Dr., Hobbs, NM 88240	Energy Minerals and Natural Resources	Form C-144
District II	Department	July 21, 2008
1301 W. Grand Ave., Artesia, NM 88210	Oil Conservation Division	tanks, submit to the appropriate NMOCD District Office
District III	1220 South St. Francis Dr.	
1000 Rio Brazos Rd., Aztec, NM 87410	Santa Fe, NM 87505	For permanent pits and exceptions submit to the Sector
District IV 1220 S. St. Francis Dr., Santa Fe, NM 87505		Environmental Bureau office and provide a copy to the appropriate NMOCD District Office.
	Pit. Closed-Loon System Below Grad	• Text
Propos	sed Alternative Method Pormit on Clau	e lank, or
	The method remain or Closur	e Plan Application
Type of action:	X Permit of a pit, closed-loop system, below-grade ta	ank, or proposed alternative method
	Closure of a pit, closed-loop system below grade	tople or proposed alternative method
	Modification to an existing result	tank, or proposed alternative method
	Closure plan only submitted for an existing permit	ted or non-permitted pit, closed-loop system.
Instructions, Diana	below-grade tank, or proposed alternative method	,
instructions: Please submit one a	pplication (Form C-144) per individual pit, closed-loo	p system, below-grade tank or alternative request
Please be advised that approval o	f this request does not relieve the operator of liability should operations re-	sult in pollution of surface water ground water and
environment. Nor does approval reli	eve the operator of its responsibility to comply with any other applicable g	overnmental authority's rules, regulations or ordinances
Operator: Conces Philling C		
Addresse DO D tage	y	OGRID#: 217817
Address: PO Box 4289, Farmingto	n, NM 87499	
Facility or well name: MICHENER	LS 3	
API Number: 3	004507410	
U/I or Otr/Otr	OCD Permit Number:	
Criter CP	n: <u>15</u> Township: <u>28N</u> Range: 9V	W County: San Juan
Center of Proposed Design: Latitude	: 36.657638°N Longitude:	-107 781119W NAD: 1007
Surface Owner: X Federal	State Private Tribal Trust or Indian	Allotmont
2		Anothent
Pit: Subsection For Cof 10 15 17		
	III NMAC	
Temporary: Drilling Worke	over	
Permanent Emergency Ca	vitation P&A	
Lined Unlined Line	er type: Thickness mil Uppr	
String-Reinforced		OPE   PVC   Other
	-	
Liner Seams: Welded Fact	tory Other Volume: b	bl Dimensions I www.
3		x w x D
Closed-loop System: Subsection	H of 10 15 17 11 NB ( ) C	
Type of Operation: DP&A		
	Workover or Drilling (Applies to act	ivities which require prior approval of a permit or
Drving Pad Above Ground	Start T to T a start of intent)	
Lined United	Haul-off Bins Other	
Liner ty	pe: Thickness mil LLDPE HDP	E PVD Other
Liner Seams: Welded Facto	Ory Other	
4		
X Below-grade tank: Subsection Lof	19 15 17 11 00440	
Volume: 120	19.13.17.11 NMAC	
Tank Canada ii	Type of fluid: Produced Water	
Tank Construction material:	Metal	
Secondary containment with leak detect	tion X Visible sidewalls, liner 6-inch life and a to the	
Visible sidewalls and liner	Visible sidewalls only	c overriow shut-off
Liner Type: Thickness	mil UDDE Davis	
	INIT THOPE PVC X Other Unspe	cified
Alternative Method:		
Submittal of an exception request in		
	d. Exceptions must be submitted to the Santa Fe Environment	tal Bureau office for consideration of approval
Form C-144		
	Oil Conservation Division	Page 1 of 5
	12/201	2000
	12/22/	

6								
Fencing: Subsection D of 19.15.17.11 NMAC								
*								
Chain link, six feet in height, two strands of barbed wire at top (Required if located within 1000 feet of a new strands)								
Four foot height, four strands of barbed wire evenly spaced between one and four feet								
X Alternate. Please specify 4' hog wire fencing topped with two strands harbed wire								
7								
Netting: Subsection E of 19.15.17.11 NMAC (Applies to present the	and the second second second second							
X Screen Netting Other	and a second							
Monthly inspections (If netting or screening in second in the second								
g an periodic (i) neutring of screening is not physically feasible)								
8 Signer Subari Contractor								
12" X 24" 2" lettering and 15 0								
I a A 24 , 2 lettering, providing Operator's name, site location, and emergency telephone numbers								
A signed in compliance with 19.15.3.103 NMAC								
9								
Administrative Approvals and Exceptions:								
Please check a havi if one or more of the fill.								
X Administrative approved (a) D								
(Fencing/BGT Liner)	consideration of approval.							
Exception(s): Requests must be submitted to the Sonte Exception	- Free and							
10 Siting Critorio (recording to the second								
Instructions: The applicant must demonstrate compliance for the second s								
source material are provided below. Requests regarding changes to certain siting criteria may explication. Recommendations of acceptable								
appropriate district office or may be considered an exception which must be submitted to the Santa Fe Environmental Rureau Office for								
does not apply to drying pads or above grade-tanks associated with a closed large to 19.15.17.10 NMAC for guidance. Siting criteria								
Ground a to it is a second of the second of								
- NM Office of the State France With TEP 2								
Within 200 5 of the State Engineer - IWATERS database search; USGS; Data obtained from nearby wells								
lake (measured from the ordinary bick protection of 200 feet of any other watercourse, lakebed, sinkhole, or playa	Ves VINO							
- Topographic map; Visual inspection (certification) of the proposed in	LICS ANO							
Within 300 feet from a service of the service of the proposed site								
application.	Yes XINO							
(Applies to temporary, emergency, or constantion pits and by land								
- Visual inspection (certification) of the proposed site: A grief photo. See We	NA							
Within 1000 feet from a permanent residence school best in the interview of Satellite image								
(Applied to permanent site)	Yes No							
- Visual inspection (certification) of the annual in the interview of the second secon	XINA							
Within 500 horizonal fact of a minute have been site; Aerial photo; Satellite image								
purposes, or within 1000 horizontal feet of any other 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.	Yes XNo							
- NM Office of the State Engineer - iWATERS database search; Visual inspection (certification) of the proposed site								
Within incorporated municipal boundaries or within a defined municipal fresh water well field covered under a municipal ordinance								
- Written confirmation or verification from the municipality Weite	Yes XNo							
Within 500 feet of a wetland.								
- US Fish and Wildlife Wetland Identification map; Topographic map; Visual inspection (certification) of the	Yes X No							
Within the area overlying a subsurface mine.								
<ul> <li>written confirmation or verification or map from the NM EMNRD - Mining and Mineral Division</li> </ul>	Yes X No							
Within an unstable area.								
- Engineering measures incorporated into the design; NM Bureau of Geology & Mineral Resources: USGS: NM Geological	Yes X No							
Within a 100-year floodplain								
- FEMA map	Yes XINO							

Oil Conservation Division

hi	<u>Temporary Pits, Emergency Pits and</u> Instructions: Each of the following items must be attached to the application. Please indicate, by a checkment Checklist: Subsection B of 19.15.17.9 NMAC
	X Hydrogeologic Report (Below-grade Tanks) - based upon the requirements of Paragraph (4) - 6 D land
	Hydrogeologic Data (Temporary and Emergency Pits) - based upon the requirements of Paragraph (4) of Subsection B of 19.15.17.9 NMAC
	X Siting Criteria Compliance Demonstrations - based upon the appropriate requirements of Paragraph (2) of Subsection B of 19.15.17.9
	X Design Plan - based upon the appropriate requirements of 10.15.17.10 NMAC
	X Operating and Maintenance Plan - based upon the appropriate requirements of 19.15.17.11 NMAC
	X Closure Plan (Please complete Boyes 14 theorem 10 is a straight of 19.15.17.12 NMAC
	19.15.17.9 NMAC and 19.15.17.13 NMAC
	Previously Approved Design (attach copy of design) API or Permit
	Closed-loop Systems Permit Application Attachment Checklist: Subsection B of 19.15.17.9 NMAC Instructions: Each of the following items must be attached to the application. Please indicate, by a check mark in the box, that the documents are attached. Geologic and Hydrogeologic Data (only for on-site closure) - based upon the requirements of Paragraph (3) of Subsection B of 19.15.17.9 Siting Criteria Compliance Demonstrations (only for on-site closure) - based upon the appropriate requirements of 19.15.17.10 NMAC Design Plan - based upon the appropriate requirements of 19.15.17.11 NMAC Operating and Maintenance Plan - based upon the appropriate requirements of 19.15.17.12 NMAC Closure Plan (Please complete Boxes 14 through 18, if applicable) - based upon the appropriate requirements of Subsection C of 19.15.17.9 NMAC and 19.15.17.13 NMAC Previously Approved Design (attach copy of design) API Previously Approved Operating and Maintenance Plan API
	13
	Permanent Pits Permit Application Checklist: Subsection P of 10 15 17 0 March
	Instructions: Each of the following items must be attached to the application Direction Directio
	Hydrogeologic Report - based upon the requirements of Personal (b) a check mark in the box, that the documents are attached.
	Siting Criteria Compliance Demonstrations - based upon the
	Climatological Factors Assessment
	Certified Engineering Design Plans - based upon the appropriate sequine and the terminate sequine
	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 to to the specifications
	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 H2S, Prevention Plan
	Emergency Response Plan
	Oil Field Waste Stream Characterization
	Monitoring and Inspection Plan
	Closure Disc. to a local design of the local d
L	Closure Plan - based upon the appropriate requirements of Subsection C of 19.15.17.9 NMAC and 19.15.17.13 NMAC
	14 Provention
	Proposed Closure: 19.15.17.13 NMAC Instructions: Please complete the applicable have D
	Type: Drilling Workeyer Dr.
	Alternative
	Proposed Closure Method: Waste Exception and D
	Waste Excavation and Removal (Below-Grade Tank)
	On-site Closure Method (col 5
	Use close Particle Pa
	In-place Burial On-site Trench
1	Alternative Closure Method (Exceptions must be submitted to the Santa Fe Environmental Bureau for consideration)
	IS Note Provide and the second s
	Vaste Excavation and Removal Closure Plan Checklist: (19.15.17.13 NMAC) Instructions: Each of the following items
-	X         Protocols and Procedures         based on the documents are attached.
	Confirmation Sampling Direction in the appropriate requirements of 19.15.17.13 NMAC
	X Disposal Facility Name and Dury is North State in the appropriate requirements of Subsection F of 19 15 17 13 NMAC
	Soil Backfill and Course Durine Course During Course Course Courses and Course During Course Course Courses Co
	Contraction and Cover Design Specifications - based upon the appropriate requirements of Subsection H of 19 15 17 13 NMAC
	Ke-vegetation Plan - based upon the appropriate requirements of Subsection I of 19.15.17.13 NMAC
	X Site Reclamation Plan - based upon the appropriate requirements of Subsection G of 19 15 17 13 NMAC

	2	
Waste Removal Closure For Closed loop Surteen The First		
Instructions: Please identify the facility or facilities for the disposal of liquids, drilling	Tanks or Haul-off Bins Only: (19.15.17.13.D NMA	(C)
are required.	industand unit cuttings. Use attachment if more than	two facilities
Disposal Facility Name:	Disposal Facility Permit #	
Disposal Facility Name:	Disposal Facility Permit #:	
Will any of the proposed closed-loop system operations and associated activities	occur on or in areas that will not be used for future	re service and energian a
Required for impacted areas which will not be used for future service and operations:         Soil Backfill and Cover Design Specification - based upon the appropriate         Re-vegetation Plan - based upon the appropriate requirements of Subsection         Site Reclamation Plan - based upon the appropriate requirements of Subsection	e requirements of Subsection H of 19.15.17.13 N on I of 19.15.17.13 NMAC ection G of 19.15.17.13 NMAC	MAC
17 <u>Siting Criteria (Regarding on-site closure methods only:</u> 19.15.17.10 NMAC Instructions: Each siting criteria requires a demonstration of compliance in the closure plan. Rec certain siting criteria may require administrative approval from the appropriate district office or for consideration of approval. Justifications and/or demonstrations of equivalency are required.	commendations of acceptable source material are provided may be considered an exception which must be submitted to Please refer to 19.15.17.10 NMAC for unidance	below. Requests regarding changes to the Santa Fe Environmental Bureau offi
Ground water is less than 50 feet below the bottom of the buried waste	in Andree.	
<ul> <li>NM Office of the State Engineer - iWATERS database search; USGS: Data obtained</li> </ul>	d from nearby wells	Yes No
Ground water is between 50 and 100 feet below the bottom of the buried ment		
- NM Office of the State Engineer - iWATERS database search: USGS: Data abasis		Yes No
Ground water is more than 100 G and the second scarely, 0303, Data obtained	a from nearby wells	N/A
<ul> <li>NM Office of the State Engineer - iWATERS database search: USCS, Data ability</li> </ul>		Yes No
Vithin 300 feet of a continuously flowing watercourse or 200 feet of armster in 15	I from nearby wells	N/A
measured from the ordinary high-water mark).	watercourse or lakebed, sinkhole, or playa lake	Yes No
- Topographic map; Visual inspection (certification) of the proposed site		
Vithin 300 feet from a permanent residence, school, hospital, institution, or church in exist	ence at the time of initial application	
- Visual inspection (certification) of the proposed site; Aerial photo; satellite image	and of mital application.	Yes No
Vithin 500 horizontal feet of a private, domestic fresh water well or spring that less than fix urposes, or within 1000 horizontal fee of any other fresh water well or spring, in existence - NM Office of the State Engineer - iWATERS database; Visual inspection (certification	the households use for domestic or stock watering at the time of the initial application.	Yes No
(thin incorporated municipal boundaries or within a defined municipal fresh water well fursuant to NMSA 1978, Section 3-27-3, as amended. Written confirmation or verification from the section of the section.	eld covered under a municipal ordinance adopted	Yes No
ithin 500 feet of a wetland	from the municipality	
- US Fish and Wildlife Wetland Identification man: Tono much		
ithin the area overlying a subsurface mine	(certification) of the proposed site	
- Written confiramtion or verification or map from the NM EMNRD-Mining and Minera	l Division	Yes No
thin an unstable area.		
Topographic map	Resources; USGS; NM Geological Society;	
ithin a 100-year floodplain.		
- FEMA map		Yes
de la companya de la		
-Site Closure Plan Checklist: (19.15.17.13 NMAC) Instructions: Each of the	following items must bee attached to the closure	nlan Please indicate
Siting Criteria Compliance Demonstration		prant rieuse inaicate,
Proof of Surface Owner Notice bernonstrations - based upon the appropriate requi	rements of 19.15.17.10 NMAC	
Construction (Design Plan in the standard upon the appropriate requirements of S	ubsection F of 19.15.17.13 NMAC	
Construction/Design Plan of Burial Trench (if applicable) based upon the appr	opriate requirements of 19.15.17.11 NMAC	
Construction/Design Plan of Temporary Pit (for in place burial of a drying pad	) - based upon the appropriate requirements of the	16.17.11.11.1
Protocols and Procedures - based upon the appropriate requirements of 19.15.1	7.13 NMAC	15.17.11 NMAC
Confirmation Sampling Plan (if applicable) - based upon the appropriate requir	ements of Subsection F of 19 15 17 13 NMAG	
Waste Material Sampling Diag	19.13.17.13 NMAC	

rial 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 H of 19.15.17.13 NMAC 

Re-vegetation Plan - based upon the appropriate requirements of Subsection I of 19.15.17.13 NMAC

Site Reclamation Plan - based upon the appropriate requirements of Subsection G of 19.15.17.13 NMAC

Name (Print):	Crustal Tafa	curate and complete to the	e best of my knowledge and belief.	
Signature	Crystal Taroya	Title:	Regulatory Technician	
e-mail address:	- motal Japaya	Date:	12/22/2008	
	crystal taloya & conocophillip & con	Telephone:	505-326-9837	
20				
OCD Approval:	Permit Application (including closure plan)	Spsure Pan (only	OCD Conditions (see attachment)	
OCD Representative	Signature:			
Title:			Approval Date: 12/16/20	
		OCD Per	nit Number:	
structions: Operators an	red within 60 days of closure completion): Sub	section K of 19.15.17.13 NMA	C	
port is required to be su	bmitted to the division within 60 days of the completi	ion of the closure activitie	ure activities and submitting the closure report. The closure s. Please do not complete this section of the form	
proved crossive plan has	been obtained and the closure activities have been c	completed.	an and the new complete this section of the form until an	
		Closur	e Completion Date:	
losure Method				
Waste Excavation	and Removal			
If different from an	Deroved plan, please explain	Alternative Closure	Method Waste Removal (Closed-loop systems only)	
	r print preuse explain.			
osure Report Regarding	g Waste Removal Closure For Closed-loop System	That Hall		
structions: Please identij	fy the facility or facilities for where the liquids, drill	ing fluids and drill cuttin	ound Steel Tanks or Haul-off Bins Only:	
Disposal Facility Name:			is were usposed. Use attachment if more than two facilities	5
Disposal Facility Name:		Disposal Facility	Permit Number:	
Were the closed-loop sy	stem operations and associated activity	Disposal Facility	Permit Number:	
Yes (If yes, please d	lemonstrate compliane to the items below)	on or in areas that will not	be used for future service and opeartions?	
Required for impacted a	reas which will not be used for former	INO		
Site Reclamation (P	hoto Documentation)	erations:		
Soil Backfilling and	Cover Installation			
Re-vegetation Applie	cation Rates and Seeding Technique			
Section 200				
Closure Report Attac	hment Checklist: Instructions: Each of the follow	ving items must be attach	to the closure area Dian in the	
Proof of Closure N	nts are attached.	and mass of unut	ted to the closure report. Please indicate, by a check mark in	2
Proof of Dood Not	otice (surface owner and division)			
Plot Plan (for on ait	ce (required for on-site closure)			
Confirmation Sa	e closures and temporary pits)			
Waste Material Samp	ling Analytical Results (if applicable)			
Disposal Eacility N	ipling Analytical Results (if applicable)			
Soil Bookfilling and	ime and Permit Number			
Re-vegetation Appli	Cover Installation			
Site Reclamation (Pl	hoto Doguranteria			
On-site Closure Loc	ation: Latitude:			
		Longitude:	NAD 1927 1983	
ator Closure Certific	ation:			
by certify that the inform	ation and attachments submitted with this closure and	mont in the		
osure complies with all a	pplicable closure requirements and conditions specif	ied in the approved closu	complete to the best of my knowledge and belief. I also certify	that
(Print):		T:-	e prure	
		litle:		
11701		Date		
ture:				
address:		Telephone		

Page 5 of 5

New Mexico Office of the State Engineer

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Page	1	of	1
5-	•	C. K.	

New Mexico Office of the State Engineer POD Reports and Downloads
Township: 28N Range: 09W Sections:
NAD27 X: Y: Zone: Search Radius:
County: Basin: Number: Suffix:
Owner Name: (First) (Last) C Non-Domestic C Domestic @ All
POD / Surface Data Report Avg Depth to Water Report Water Column Report
Clear Form iWATERS Menu Help

WATER COLUMN REPORT 08/21/2008

202	(quarter (quarter	s ar	e 1=) e big	NW 99	2	=NE t to	3=SW 4=SE) smallest)			Donth	D1		
SJ 03746 POD1	Tws 28N	Rng	Sec	1	P	a	Zone	x	Y	Well	Water	Water Column	(in
SJ 00018	28N	09W	20	1	4	3				190	40	150	
SJ 02800	28N	09W	24	4	2	3				135 200	71	64	

Record Count: 3





# Mines, Mills and Quarries Web Map

MICHENER LS 3 Unit Letter: M, Section: 15, Town: 028N, Range: 009W



MICHENER L> 5



# **MICHENER LS3**

Site Specific Hydrogeology

A visual site inspection confirming the information contained herein was performed on the well 'MICHENER LS 3', which is located at 36.657638 degrees North latitude and 107.78111 degrees West longitude. This location is located on the Blanco 7.5' USGS topographic quadrangle. This location is in section 15 of Township 28 North Range 9 West of the Public Land Survey System (New Mexico Principal Meridian). This location is located in San Juan County, New Mexico. The nearest town is Blanco, located 5.3 miles to the northwest. The nearest large town (population greater than 10,000) is Farmington, located 24.1 miles to the west (National Atlas). The nearest highway is US Highway 64, located 4.8 miles to the north. The location January 2008. This location is in the Blanco Canyon. New Mexico, Sub-basin. This location is located 1833 meters or 6012 feet above sea level and receives 11.5 inches of rain each year. The vegetation at this location is classified as Colorado Plateau Mixed Bedrock Canyon and Tableland as per the Southwest Regional Gap Analysis Program.

The estimated depth to ground water at this point is 171 feet. This estimation is based on the data published on the New Mexico Engineer's iWaters Database website and water depth data from ConocoPhillips' cathodic wells. Groundwater data available from the NM State Engineer's iWaters Database for wells near the proposed site are attached. The nearest stream is 262 feet to the south and is classified by the USGS as an intermittent stream. The nearest perennial stream is 2,959 feet to the northeast. The nearest water body is 9,067 feet to the north. It is classified by the USGS as an intermittent lake and is 0.1 acres in size. The nearest spring is 8,426 feet to the east. All stream, river, water body and spring information was determined as per the USGS Hydrographic Dataset (High Resolution), downloaded 3/2008. The nearest water well is 7,663 feet to the north. The nearest wetland is a 23.9 acre Ravine located 3,358 feet to the northeast. The slope at this location is 1 degree to the southeast as calculated from USGS 30M National Elevation Dataset. This information is also discerned from the aerial and topographic map included. The surface geology at this location is NACIMIENTO FORMATION--Shale and sandstone with a Shale dominated formations of all ages substrate. The soil at this location is 'Blancot-Notal association, gently sloping' and is well drained and not hydric with moderate erosion potential as taken from the NRCS SSURGO map unit, downloaded January 2008. The nearest underground mine is 22.0 miles to the north as indicated on the Mines, Mills and Quarries Map of New Mexico provided.

## Regional Geological context:

The Nacimiento Formation is of Paleocene age (Baltz, 1967, p. 35). It crops out in a broad band inside the southern and western margins of the central basin and in a narrow band along the west face of the Nacimiento Uplift. The Nacimiento is a nonresistant unit and typically erodes to low, rounded hills or forms The Nacimiento The Nacimiento I and the source of the badland topography.

The Nacimiento Formation occurs in approximately only the southern two-thirds of the San Juan Basin where it conformably overlies and intertongues with the Ojo Alamo Sandstone (Fassett, 1974, p. 229). The Nacimiento Formation grades laterally into the main part of the Animas Formation (Fassett and Hinds, 1971, p. 34); thus, in this area, the two formations occupy the same stratigraphic interval.

Strata of the Nacimiento Formation were deposited in lakebeds in the central basin area with lesser deposition in stream channels (Brimhall, 1973, p. 201). In general, the Nacimiento consists of drab, interbedded black and gray shale with discontinuous, white, medium- to very coarse grained arkosic sandstone (Stone e al., 1983, p.30). Stone et al. indicated that the formation may contain more sandstone than commonly reported because some investigators assume the slope-forming strata in the unit area shales, whereas in many places the strata actually are poorly consolidated sandstones. Total thickness of the Nacimiento Formation ranges from about 500 to 1,300 feet. The unit generally

thickens from the basin margins toward the basin center (Steven et al., 1974). The sandstone deposits within the Nacimiento Formation are much thinner than the total thickness of the formation because their environment of deposition was localized stream channels (Brimhall, 1973, p. 201). The thickness of the combined San Jose, Animas, and Nacimiento Formations ranges from 500 to more than 3.500 feet.

### Hydraulic Properties:

Reported well yields for 53 wells completed in either the Animas or Nacimiento Formations range from 2 to 90 gallons per minute and the median yield is 7.5 gallons per minute. The primary use of water from Nacimiento and Animas Formations is domestic and livestock supplies. There are no known aquifer tests 2.30 gallons per minute per foot of drawdown (Levings et al., 1990).

The Animas and Nacimiento Formations are in many ways hydrologically similar to the San Jose Formation because sands in both units produce approximately the same quantities of water. However, the greater percentage of fine materials in the Animas and Nacimiento Formations may restrict downward vertical leakage to the Ojo Alamo Sandstone or Kirtland Shale. The poorly cemented fine material is highly erodible, forms a badland terrain, and supports only spotty vegetation. These conditions are more conductive to

#### References:

Baltz, E.H., 1967, Stratigraphy and regional tectonic implications of part of Upper Cretaceous rocks, eastcentral San Juan Basin, New Mexico: USGS Professional Paper 552, 101 p.

Brimhall, R.M., 1973, Ground-water hydrology of Tertiary rocks of the San Juan Basin, New Mexico, in Fassett, J.E., ed., Cretaceous and Tertiary rocks of the Southern Colorado Plateau: Four Corners Geological Society Memoir, p. 197-207.

Fassett, J.E., 1974, Cretaceous and Tertiary rocks of the eastern San Juan Basin, New Mexico and Colorado, in Guidebook of Ghost Ranch, central-northern New Mexico: New Mexico Geological Society, 25th Field Conference, p. 225-230.

Fassett, J.E., and Hinds, J.S., 1971, Geology and fuel resources of the Fruitland Formation and Kirtland Shale of the San Juan Basin, New Mexico and Colorado: USGS Professional Paper 676, 76 p.

Levings, G.W., Craigg, S.d., Dam, W.L., Kernodle, J.M., and Thorn, C.R., 1990, Hydrogeology of the San Jose, Nacimiento, and Animas Formations in the San Juan structural basin, New Mexico, Colorado, Arizona, and Utah: USGS Hydrologic Investigations Atlas HA-720-A, 2 sheets.

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

# ConocoPhillips Company San Juan Basin Below Grade Tank Design and Construction

In accordance with NMAC 19.15.17 the following information describes the design and construction of below grade tanks on ConocoPhillips Company (COPC) locations. This is COPC'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. COPC will design and construct a properly sized and approved BGT which will contain liquids and should prevent contamination of fresh water to protect the public health and environment.
- COPC signage will comply with 19.15.3.103 NMAC when COPC is the operator. If COPC is not the operator it will comply with 19.15.17.11NMAC. COPC includes Emergency Contact information on all signage.
- 3. COPC has approval to use alternative fencing that provides better protection. COPC constructs fencing around the BGT using 4 foot hog wire fencing topped with two strands of barbed wire, or with a pipe top rail. A six foot chain link fence topped with three strands of barbed wire will be use if the well location is within 1000 feet of permanent residence, school, hospital, institution or church. COPC ensures that all gates associated with the fence are closed and locked when responsible personnel are not onsite.
- 4. COPC will construct a screened, expanded metal covering, on the top of the BGT.
- 5. COPC shall ensure that a below-grade tank is constructed of materials resistant to the below-grade tank's particular contents and resistant to damage from sunlight as shown on design drawing and specification sheet.
- 6. The COPC below-grade tank system 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 liner or tank bottom as shown on design drawing.
- 7. COPC shall operate and install the below-grade tank to prevent the collection of surface water run-on. COPC has built in shut off devices that do not allow a below-grade tank to overflow. COPC constructs berms and corrugated retaining walls at least 6" above ground to keep from surface water run-on entering the below grade tank as shown on the design plan.
- 8. COPC will construct and use a below-grade tank that does not have double walls. The below-grade tank's side walls will be open for visual inspection for leaks, the below-grade tank's bottom is elevated a minimum of six inches above the underlying ground surface and the below-grade tank is underlain with a geomembrane liner to divert leaked liquid to a location that can be visually inspected.

- 9. COPC has equipped the below-grade tanks with the ability to detect high level in the tank and provide alarm notification and shutdown process streams into the tank. Once high level is detected RTU logic closes the inlet separator sales valve and does not permit vent valve to open. This shutdown of the sales valve and gagging of the vent valves prevents any hydrocarbon process streams from entering the pit tank once a high level is detected. Furthermore, an electronic page is sent to the COPC MSO for that well site and to the designated contract "Water-Hauling" Company indicating a high level and that action must be taken to address this alarm. The environmental drain line from COPC's compressor skid under normal operating conditions is in the open position. The environmental drain line is in place to capture any collected rain water or spilled lubricants from our compressor skids. The swab drain line is a manually operated drain and by normal operating procedures is in the closed position. The tank drain line is also a manually operated drain and during normal operations it is in the closed position.
- 10. The geomembrane liner consists of a 45-mil flexible LLDPE material manufactured by Raven Industries as J45BB. This product is a four layer reinforced laminated containing no adhesives. The outer layers consist of a high strength polyethylene film manufactured using virgin grade resins and stabilizers for UV resistance in exposed applications. The J45BB is reinforced with 1300 denier (minimum) tri-directional scrim reinforcement. It exceeds ASTMD3083 standard by 10%. J45BB has a warranty for 20 years from Raven Industries and is attached. It is typically used in Brine Pond, Oilfield Pit liner and other industrial applications. The manufacture specific sheet is attached and the design attached displays the proper installation of the liner.
- 11. The general specification for design and construction are attached in the COPC document.



**ConocoPhillips** 

PRODUCED WATER PIT TANK OPEN TOP GRAVITY FLOW TANK INTERNALLY COATED WITH 12-14 MILS AMERON AMERCOAT 385

San Juan Business Unit

#### SAR PROPERTIES TEST METHOD J30BB J36BE Min. Roll Typical Roll Min. Roll Typical Roll Averages Averages Min. Roll Averages Appearance Averages Averages Black/Black Black/Black Thickness

R

Thickness	ACTUD FICE		1	Bla	ick/Black	Black/Black		
Weight I have been	ASTM D 5199	27 mil	30 mil	32 mil	36 mil	10		
(oz/yd²)	ASTM D 5261	126 lbs (18,14)	140 lbs	151 lbs	168 lbs	189 lbs	45 mil	
Construction		**	(20.10)	(21.74)	(24.19)	(27.21)	(30.24)	
Ply Adhesion	ASTM D 412	EX	Trusion laminate	ed with encapsu	sulated tri-directional scrim reinforcement			
	NOTWD 413	16 lbs	20 lbs	19 lbs	24 lbs	25 lbs	24.11	
1" Tensile Strength	ASTM D 7003	88 lbf MD 63 lbf DD	110 lbf MD	90 lbf MD	113 lbf MD	110 lbf MD	138 lbf MD	
1" Tensile Elongation @	6		10 101 00	70 IDF DD	87 lbf DD	84 lbf DD	105 lbf DD	
Break % (Film Break)	ASTM D 7003	550 MD 550 DD	750 MD 750 DD	550 MD 550 DD	750 MD	550 MD	750 MD	
Peak % (Scrim Break)	ASTM D 7003	20 MD	33 MD	20 MD	30 MD	550 DD	750 DD	
A state to a state of the		20 00	33 DD	20 DD	31DD	20 MD 20 DD	36 MD	
Tongue Tear Strength	ASTM D 5884	75 lbf MD 75 lbf DD	97 lbf MD 90 lbf DD	75 lbf MD	104 lbf MD	100 lbf MD	117 lbf MD	
Grah Tanaila			0010100		92 lbf DD	100 lbf DD	118 lbf DD	
Crag Tensile	ASTM D 7004	180 lbf MD 180 lbf DD	218 lbf MD 210 lbf DD	180 lbf MD 180 lbf DD	222 lbf MD	220 lbf MD	257 lbf MD	
Trapezoid Tear	ASTM D 4500	120 lbf MD	146 166 140		223 101 00	220 lbf DD	258 lbf DD	
	ASTIVI D 4533	120 lbf DD	140 Ibf MD	130 lbf MD	189 lbf MD	160 lbf MD	193 lbf MD	
* Dimensional Stability	ASTM D 1204	<1	-0.5		172 lbf DD	160 lbf DD	191 lbf DD	
Puncture Resistance	ASTM D 4922		<0.5	<1	<0.5	<1	<0.5	
Maximum Use Temperature	10110 4033	50 lbf	64 lbf	65 lbf	83 lbf	80 lbf	99 lbf	
Minimum Use Temperature		180° F	180° F	180° F	180° F	180° F	180° F	
D = Machine Direction		-70° F	-70° F	-70° F	-70° F	-70° F	-70° F	

DD = Diagonal Directions

Note: Minimum Roll Averages are set to take into account product variability in addition to testing variability between laboratories.

\*Dimensional Stability Maximum Value

\*\*DURA-SKRIM J30BB, J36BB & J45BB are a four layer reinforced laminate containing no adhesives. The outer layers consist of a high strength polyethylene film manufactured using virgin grade resins and stabilizers for UV resistance in exposed applications. DURA-SKRIM J30BB, J36BB & J45BB are reinforced with a 1300 denier (minimum) tri-directional scrim reinforcement.

Note: RAVEN INDUSTRIES MAKES NO WARRANTIES AS TO THE FITNESS FOR A SPECIFIC USE OR MERCHANTABILITY OF PRODUCTS REFERRED TO, no guarantee of satisfactory results from reliance upon contained information or recommendations and disclaims all liability for resulting loss or damage.



# PLANT LOCATION

Sioux Falls, South Dakota

# SALES OFFICE

P.O. Box 5107 Sioux Falls, SD 57117-5107 (605) 335-0174 (605) 331-0333 FAX **800-635-3456** 

**J45BB** 

Typical Roll

Averages

# RAVEN INDUSTRIES INC. EXPOSED GEOMEMBRANE LIMITED WARRANTY

Raven Industries Inc. warrants Dura-Skrim J30BB, J36BB, and J45BB to be free from manufacturing defects and to be able to withstand normal exposure to sunlight for a period of 20 years from the date of sale for normal use in approved applications in the U.S and Canada, excluding Hawaii. This warranty is effective for products sold and shipped from January 1, 2008 to December 31, 2008.

This Limited Warranty does not include damages or defects in the Raven geomembrane resulting from acts of God, casualty or catastrophe including but not limited to: earthquakes, floods, piercing hail, or tornadoes. The term "normal use" as used herein does not include, among other things improper handling during transportation, unloading, storage or installation, the exposure of Raven geomembranes to harmful chemicals, atypical atmospheric conditions, abuse of Raven geomembranes by machinery, application or installation. Raven geomembrane material warranty is intended for commercial use only and is not in effect for the that the sale hereunder is for commercial or industrial use only.

Should defects or premature loss of use within the scope of the above Limited Warranty occur, Raven Industries Inc. will, at its option, repair or replace the Raven geomembrane on a pro-rata basis at the then current price in such manner as to charge the Purchaser/User only for that portion of the warranted life which has elapsed since purchase of the material. Raven Industries Inc. will, at its will have the right to inspect and determine the cause of any alleged defect in the Raven geomembrane and to take appropriate steps to repair or replace the Raven geomembrane if a defect exists which is covered under this warranty. This Limited Warranty materials furnished or installed by others in connection with the intended use of the Raven geomembranes.

Any claim for any alleged breach of this warranty must be made in writing, by certified mail, to the General Manager of Engineered Films Division of Raven Industries Inc. within ten (10) days of becoming aware of the alleged defect. Should the required notice not be given, the defect and all warranties are waived by the Purchaser, and Purchaser shall not have any rights under this warranty. Raven Industries Inc. shall not be obligated to perform repairs or replacements under this warranty unless and until the area to be replacement of Raven geomembrane to be free from all water, dirt, sludge, residuals and liquids of any kind. If after inspection it is associated with the site inspection.

In the event the exclusive remedy provided herein fails in its essential purpose, and in that event only, the Purchaser shall be entitled to a return of the purchase price for so much of the material as Raven Industries Inc. determines to have violated the warranty provided herein. Raven Industries Inc. shall not be liable for direct, indirect, special, consequential or incidental damages resulting from a breach of this warranty including, but not limited to, damages for loss of production, lost profits, personal injury or property damage. Raven Industries Inc. shall not be obligated to reimburse Purchaser for any repairs, replacement, modifications or alterations made by Purchaser unless Raven Industries Inc. specifically authorized, in writing, said repairs, replacements, modifications or alteration in advance of them having been made. Raven Industry's liability under this warranty shall in no event exceed the replacement cost of the material sold to the Purchaser for the particular installation in which it failed.

Raven Industries Inc. neither assumes nor authorizes any person other than the undersigned of Raven Industries Inc. to assume for it any other or additional liability in connection with the Raven geomembrane made on the basis of the Limited Warranty. The Limited Warranty on the Raven geomembrane herein is given in lieu of all other possible material warranties, either expressed or This Limited Warranty may only be modified by written document mutually executed by Owner and Raven Industries Inc.

Limited Warranty is extended to the purchaser/owner and is non-transferable and non-assignable; i.e., there are no third-party beneficiaries to this warranty.

Purchaser acknowledges by acceptance that the Limited Warranty given herein is accepted in preference to any and other possible materials warranties.

THIS LIMITED WARRANTY SHALL BE GOVERNED BY SOUTH DAKOTA LAW AND VENUE FOR ALL LEGAL PROCEEDINGS IN CONNECTION WITH THIS LIMITED WARRANTY SHALL BE IN MINNEHAHA COUNTY, SOUTH DAKOTA. RAVEN INDUSTRIES INC. MAKES NO WARRANTY OF ANY KIND OTHER THAN THAT GIVEN ABOVE AND HEREBY DISCLAIMS ALL WARRANTIES, BOTH EXPRESSED OR IMPLIED, OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THIS IS THE ONLY WARRANTY THAT APPLIES TO THE MATERIALS REFERRED TO HEREIN AND RAVEN INDUSTRIES INC. DISCLAIMS ANY LIABILITY FOR ANY WARRANTIES GIVEN BY ANY OTHER PERSON OR ENTITY, EITHER WRITTEN OR ORAL.

RAVEN INDUSTRIES' WARRANTY BECOMES AN OBLIGATION OF RAVEN INDUSTRIES INC. TO PERFORM UNDER THE WARRANTY ONLY UPON RECEIPT OF FINAL PAYMENT AND EXECUTION BY A DULY AUTHORIZED OFFICER OF RAVEN INDUSTRIES INC.

# ConocoPhillips Company San Juan Basin Below Grade Tank Maintenance and Operating Plan

In accordance with Rule 19.15.17 the following information describes the operation and maintenance of Below Grade Tank (BGT) on ConocoPhillips Company (COPC) locations. This is COPC's standard procedure for all BGT. A separate plan will be submitted for any BGT which does not conform to this plan.

# General Plan:

- 1. COPC will operate and maintain a BGT to contain liquids and solids and maintain the integrity of the liner, liner system and secondary containment system to prevent contamination of fresh water and protect public health and environment. COPC will accomplish this by performing an inspection on a monthly basis, installing cathodic protection, and automatic overflow shutoff devices as seen on the design plan.
- 2. COPC will not discharge into or store any hazardous waste in the BGT.
- 3. COPC shall operate and install the below-grade tank to prevent the collection of surface water run-on. COPC has built in shut off devices that do not allow a below-grade tank to overflow. COPC constructs berms and corrugated retaining walls at least 6" above ground to keep from surface water run-on entering the below grade tank as shown on the design plan.
- 4. As per 19.17.15.12 Subsection D, Paragraph 3, COPC will inspect the below-grade tank at least monthly reviewing several items which include 1) containment berms adequate and no oil present, 2) tanks had no visible leaks or sign of corrosion, 3) tank valves, flanges, and hatches had no visible leaks and 4) no evidence of significant spillage of produced liquids. In addition, COPC's multi-skilled operators (MSOs) are required to visit each well location once per week. If detected on either inspection, COPC shall remove any visible or measurable layer of oil from the fluid surface of a below-grade tank in an effort to prevent significant accumulation of oil overtime. The written record of the monthly inspections will include the items listed above and will be maintained for five years.
- 5. COPC shall require and maintain a 10" adequate freeboard to prevent overtopping of the below-grade tank.
- 6. If the below grade tank develops a leak, or if any penetration of the pit liner or below grade tank, occurs below the liquid's surface, then COPC shall remove all liquid above the damage or leak line within 48 hours. COPC shall notify the appropriate district office. COPC shall repair or replace the pit liner or below grade tank, within 48 hours of discovery. If the below grade tank or pit liner does not demonstrate integrity, COPC shall promptly remove and install a below grade tank or pit liner that complies with Subsection I of 19.15.17.11 NMAC. COPC shall notify the appropriate district office of a discovery of leaks less than 25 barrels as required pursuant to Subsection B of 19.15.3.116 NMAC shall be reported within twenty-four (24) hours of discovery of leaks greater than 25 barrels. In addition, immediate verbal notification pursuant to Subsection B, Paragraph (1), and Subparagraph (d) of 19.15.3.116 NMAC shall be reported to the division's Environmental Bureau Chief.

# ConocoPhillips Company 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 Below Grade Tanks (BGTs) on ConocoPhillips Company locations hereinafter known as COPC locations. This is COPC's standard procedure for all BGTs. A separate plan will be submitted for any BGT which does not conform to this plan.

## General Requirements:

- COPC shall close a below-grade tank within the time periods provided in Subsection A of 19.15.17.13 NMAC. This will include a) below-grade tanks that do 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 o f19.15.17.11 NMAC within five years, if not retrofitted to comply with Paragraphs (1) through (4) of Subsection I of 19.15.17.11 NMAC; b) permitted below-grade tanks within 60 days of cessation of the below-grade tank's operation., or c) an earlier date that the division requires because of imminent danger to fresh water, public health or the environment. For any closure, COPC will file the C144 Closure Report as required.
- 2. COPC shall remove liquids and sludge from a below-grade tank prior to implementing a closure method and shall dispose of the liquids and sludge in a division-approved facility. The facilities to be used will be Basin Disposal (Permit #NM-01-005) and Envirotech Land Farm (Permit #NM-01-011). The liner after being cleaned well (Subsection D, Paragraph 1, Subparagraph (m) of 19.15.9.712 NMAC) will be disposed of at the San Juan County Regional Landfill located on CR 3100.
- 3. COPC will receive prior approval to 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 approves. Documentation of how the below-grade tank was disposed of or recycled will be provided in the closure report.
- If there is any on-site equipment associated with a below-grade tank, then COPC shall remove the equipment, unless the equipment is required for some other purpose.
- 5. COPC shall test the soils beneath the below-grade tank to determine whether a release has occurred. COPC shall collect, at a minimum, a five point, composite sample; collect individual grab samples from any area that is wet, discolored or showing other evidence of a release; and analyze for BTEX, TPH and chlorides to demonstrate that the benzene concentration, as determined by EPA SW-846 methods 8021B or 8260B or other 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 100 mg/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. COPC shall notify the division of its results on form C-141.

- 6. If COPC or the division determines that a release has occurred, then COPC shall comply with 19.15.3.116 NMAC and 19.15.1.19 NMAC, as appropriate.
- 7. 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, then COPC shall 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 will be given prior to closure to the Aztec Division office between 72 hours and one week via email or verbally. The notification of closure will include the following:
  - i. Operator's name
  - ii. Location by Unit Letter, Section, Township, and Range. Well name and API number.
- The surface owner shall be notified of COPC's closing of the below-grade tank prior to closure as per the approved closure plan via certified mail, return receipt requested.
- 10. Re-contouring of location will match fit, shape, line, form and texture of the surrounding. 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 place in areas where needed to prevent erosion on a large scale. Final re-contour shall have a uniform appearance with smooth surface, fitting the natural landscape.
- 11. COPC shall seed the disturbed areas the first growing season after the operator closes the pit. Seeding will be accomplished via drilling on the contour whenever practical or by other division-approved methods. BLM stipulated seed mixes will used on federally jurisdicted lands and division-approved seed mixtures (administratively approved if required) will be utilized on all State or private 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. If alternate seed mix is required by the state, private owner or tribe, it will be implemented with administrative approval if needed. COPC will repeat seeding or planting will be continued until successful vegetative growth occurs.
- 12. 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.
- 13. 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 below-grade tank. Closure report will be filed on C-144 and incorporate the following:
  - Soil Backfilling and Cover Installation
  - Re-vegetation application rates and seeding techniques
  - Photo documentation of the site reclamation
  - Confirmation Sampling Results
  - Proof of closure notice