(Subsurface) Discharge Plan & Authorization to Inject APPLICATION

UIC-CL1-008



DISCHARGE PLAN APPLICATION AND APPLICATION FOR AUTHORIZATION TO INJECT, PER OIL CONSERVATION DIVISION FORM C-108, INTO CLASS I WELLS WDW-1, WDW-2 AND PROPOSED WDW-3

VOLUME I SECTIONS I THROUGH VII

NAVAJO REFINING COMPANY Artesia, New Mexico

Subsurface Project No. 60D5497

September 2003

Prepared By:

SUBSURFACE TECHNOLOGY, INC. Houston, Texas

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			•		
DATE IN	SUSPENSE	ENGINEER	LOGGED IN	TYPE	APP NO.

ABOVE THIS LINE FOR DIVISION USE ONLY

NEW MEXICO OIL CONSERVATION DIVISION

- Engineering Bureau -



		1220 South St. Francis Drive, Santa Fe, N	M 87505
		ADMINISTRATIVE APPLICA	TION CHECKLIST
ТН	IS CHECKLIST IS MA	NDATORY FOR ALL ADMINISTRATIVE APPLICATIONS FO WHICH REQUIRE PROCESSING AT THE DIVIS	OR EXCEPTIONS TO DIVISION RULES AND REGULATIONS
Applic	[DHC-Dow [PC-Po	s: ndard Location] [NSP-Non-Standard Proratio nhole Commingling] [CTB-Lease Comming	on Unit] [SD-Simultaneous Dedication] ling] [PLC-Pool/Lease Commingling]] [OLM-Off-Lease Measurement] re Maintenance Expansion] ion Pressure Increase]
[1]	TYPE OF AP [A]	PPLICATION - Check Those Which Apply for Location - Spacing Unit - Simultaneous Dec NSL NSP SD	
	Check [B]	One Only for [B] or [C] Commingling - Storage - Measurement DHC CTB PLC PC	OLS OLM
•	[C]	Injection - Disposal - Pressure Increase - En WFX PMX SWD II	
	[D]	Other: Specify Class I Injection	
[2]	NOTIFICAT [A]	ION REQUIRED TO: - Check Those Which Solver Working, Royalty or Overriding Royal	
	[B]	☐ Offset Operators, Leaseholders or Surfa	ace Owner
	[C]		blished Legal Notice
	[D]	Notification and/or Concurrent Approv. U.S. Bureau of Land Management - Commissioner of Public	al by BLM or SLO Lands, State Land Office
	[E]	For all of the above, Proof of Notificati	ion or Publication is Attached, and/or,
	[F]	☐ Waivers are Attached	
[3]		CURATE AND COMPLETE INFORMAT ATION INDICATED ABOVE.	ION REQUIRED TO PROCESS THE TYPE
	val is accurate a		submitted with this application for administrative also understand that no action will be taken on this nitted to the Division.
	Note:	Statement must be completed by an individual with r	nanagerial and/or supervisory capacity.
Print o	or Type Name	Signature Signature	Title Date 9/17/0
			e-mail Address

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

State of New Mexico Energy Minerals and Natural Resources

Oil Conservation Division 1220 South St. Francis Dr. Santa Fe, NM 87505 Submit Original
Plus 1 Copy
to Santa Fe
1 Copy to Appropriate
District Office

Revised June 10, 2003

DISCHARGE PLAN APPLICATION FOR SERVICE COMPANIES, GAS PLANTS, REFINERIES, COMPRESSOR, GEOTHERMAL FACILITES AND CRUDE OIL PUMP STATIONS

	(Refer to the OCD Guidelines for assistance in completing the application)									
	☐ New ☐ Renewal ☒ Modification									
1.	Type: Class I Injection Well Nos. WDW-1, WDW-2, and Proposed WDW-3									
2.	Operator: Navajo Refining Company									
	Address: Post Office Box 159, Highway 82 East, Artesia, New Mexico 88211									
	Contact Person: Darrell Moore Phone: 505-748-3311									
3.	Location: SE /4 SW /4 Section 1 Township 18S Range 27E Submit large scale topographic map showing exact location.									
4.	Attach the name, telephone number and address of the landowner of the facility site.									
)	Attach the description of the facility with a diagram indicating location of fences, pits, dikes and tanks on the facility.									
6.	Attach a description of all materials stored or used at the facility.									
7.	Attach a description of present sources of effluent and waste solids. Average quality and daily volume of waste water must be included.									
8.	Attach a description of current liquid and solid waste collection/treatment/disposal procedures.									
9.	Attach a description of proposed modifications to existing collection/treatment/disposal systems.									
10	Attach a routine inspection and maintenance plan to ensure permit compliance.									
11.	Attach a contingency plan for reporting and clean-up of spills or releases.									
12	Attach geological/hydrological information for the facility. Depth to and quality of ground water must be included.									
13.	Attach a facility closure plan, and other information as is necessary to demonstrate compliance with any other OCD rules, regulations and/or orders.									
14.	CERTIFICATIONI hereby certify that the information submitted with this application is true and correct to the best of my knowledge and belief.									
N	ame: Darrell Moore Title: Fay. Mgr. for Water Work									
S	ignature: Daul Mose Date: 9/17/03									
E	-mail Address: darrell@ navajo - retining, com									

DISCHARGE PLAN APPLICATION FOR SERVICE COMPANIES, GAS PLANTS, REFINERIES, COMPRESSOR, AND CRUDE OIL PUMP STATIONS

1. Type

Class I Wells WDW-1, WDW-2, and proposed WDW-3

2. Operator

Navajo Refining Company Post Office Box 159 Highway 82 East Artesia, New Mexico 88211

Contact

Darrell Moore Environmental Manager of Water and Waste Navajo Refining Company Post Office Box 159 Artesia, New Mexico 88211 505-748-3311

3. Location

The locations of WDW-1 and proposed WDW-2 and WDW-3 are detailed on accompanying Forms C-102. The well locations are shown on Attachment V-2 of the Application for Authorization to Inject, Per OCD Form C-108, Into Proposed WDW-1, WDW-2, and WDW-3 (the "Application to Inject").

4. Facility Ownership

Navajo Refining Company owns the site of WDW-1. The sites of WDW-2 and proposed WDW-3 are owned by the United States government. Navajo is applying to the Bureau of Land Management for a right-of-way permit to use the site of proposed WDW-3.

5. Facilities

The facilities currently planned for each wellsite include the wellhead, the well annulus monitoring system, and monitoring and recording instrumentation. The waste water to be injected will be delivered to each well from Navajo's refineries in Artesia and Lovington by pipeline systems. Tankage to store up to 10,000 barrels may be constructed at the site of WDW-1.



6. Materials Storage

No materials storage is planned.

7. Waste Stream

The waste stream to be injected is described in Section VII of the "Application to Inject."

8. Current Treatment and Disposal

The waste stream to be injected is currently managed in evaporation ponds at Navajo's refineries. A portion of the stream is sent to publicly owned treatment works.

9. Modifications

Not applicable; this application is for planned facilities.

10. Inspection and Maintenance Plan

Navajo will operate instrumentation that will monitor and record continuously the injection pressure, flow rate, flow volume, and casing-tubing annulus pressure.

The injection well system will be equipped with a pressure-limiting device that will prevent the wellhead pressure from exceeding the permitted maximum surface injection pressure.

A well annulus monitoring system will be installed and maintained at each wellsite to monitor for tubing and casing leaks.

Mechanical integrity testing will be conducted annually and any time the tubing is pulled or the packer is reseated, in accordance with OCD testing procedures.

11. Contingency Plan

Navajo will notify the OCD District Office in Artesia within 24 hours of failures of the tubing, casing, or packer and will correct failures in a timely manner.

12. Geological and Hydrological Information

Geological and hydrogeological information is included in Sections VIII and XI of the "Application to Inject."

13. Closure Plan

The proposed closure plan for the wells is included as Attachment III-4 of the "Application to Inject."



			•	r						
Submit To Appropriate Di State Lease - 6 copies Fee Lease - 5 copies	istrict Office	State of New M						SY	Form C-105	
District I 1625 N. French Dr., Hobb.	s, NM 87240	Ener	gy, Minerals and Nat	tural Reso	urces	ſ	WELL API			Revised March 25, 1999
District II 811 South First, Artesia, N	IM 87210	(1) SIL	CONSERVATIO	N DIVI	NOIS	<u> </u>	30-015-208			
District III 1000 Río Brazos Rd., Azte	sc, NM 87410		2040 South Pa		31011		5. Indicate		ease	- Federal
ict IV South Pacheco, Sant	a Fe, NM 87505	1)	Santa Fe, NM			<u> </u>	STA'		PEE X	
14/5:1.04		OD DECOM					State Oil &	Gas Lease	NO. NN	A 6832
	DMPLE HON (OR RECOM	PLETION REPOR							
la. Type of Well: OIL WEL	L GAS WELI	DRY =	OTHER Class I W	15 <i>16 1</i>	asal Wel	1	7. Lease Name	or Unit Agr	eement Na	ime
		_ Dict	OTTILLA GLASSI W	aste Disc	Sal wer	4	•	Refining (Compan	у .
b. Type of Comple NEW	etion: WORK —	PLUG	DIFF A		153	ļ	WDW-	2		
	OVER DEEPI		RESVR.	THER - Re	entry \					
2. Name of Operator			2	200	123		8. Well No.		•	
Navajo Ref 3. Address of Opera	ining Company		10) 29	XX 6	<u>- ,ω/</u>	-	9. Pool name of			
	Box 159, Artesia	a. New Mexico	88211		15				o-Canvo	n Injection Zone
4. Well Location			17.	.7.	30// -		Narajo [Ormo-PENN
Unit Letter	E : 1980	Feet From Th	e North Line and	658210	F		rom The	•	. رے LiıLiı	ne 96918
Section 1	12	Township 18 S	outh Range	27 East	N	MP)	м Eddy	•		County
	11. Date T.D. Reach		Compl. (Ready to Prod.)	13. E	levations (I	DF&	R(B. RT, GR,			Casinghead
July 18, 1973 15. Total Depth	August 27, 19		June 8, 1999 If Multiple Compl. How		3607 feet 18. Interva		, 3623 feet F	KKB	Cable T	609 feet GL
10,372 feet	8770	feet	Zones? 1	Maily	Drilled By		Al			N/A
19. Producing Interv			, Name np-Cisco-Canyon				. 2	0. Was Dire	ctional Su Y	*
21. Type Electric an		I ama Dual Ind	bration I atomalan		_	-	22. Was Well	Cored		
1	ed Neutron Form	•	luction Laterolog,						No	
23.			CASING REC	CORD	Report	t al	l strings s	et in we	11)	
CASING SIZE			DEPTH SET		E SIZE	\Box	CEMENTING		Al	MOUNT PULLED
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8-5/8" 5-1/2"	3:		1995' 8869'	11" 7-7/8"		\dashv	800 sacks of		 	None None
5-1/2		'	0007	1-1/0			1070 Suoks offertated		 	None
						-				
24.		L	INER RECORD		25.		. TUBING R		CORD	
SIZE	TOP	воттом	SACKS CEMENT	SCREEN		SIZE		DEPTH SI		PACKER SET
				<u></u>			3-1/2"	752	8'	7528'
26 Perforation rea	cord (interval, size, a	ad number)						l		
26. Perforation red	iora (miervar, size, ar	nd number)	·	DEPTH IN	TERVAL	_	AMOUNT AN	ID KIND M	ATERIAL	LISED
7570' to 7620',				DEPTH INTERVAL AMOUNT AND KIND MATERIAL USE 10,000 gallons of 15% HCl, plus						
7886' to 7904',	•			7570	to 8399'		of rock salt as diverter			
8096' to 8116',		304' to 8319',	8395' to 8399'							
(2 jspf for total of	or 398 notes).		nn.c		YON					
28 Date First Production	- p.	advation Mathad		DUCT			11V-11 Ct	/D / C!		
Date First Production N/A		oduction ividinou	(Flowing, gas lift, pumping N/A	g - Size ana	type pump)		Well Status	(Prod. or Shi	ut-in) N/A	
Date of Test	Hours Tested	Choke Size	Prod'n For Test Period	Oil – Bbl		Gas -	- MCF	Water - Bł	ol.	Gas - Oil Ratio
N/A Flow Tubing Press.	N/A Casing Pressure	N/A Calculated 24-	Oil - Bbl.	Gas - 1	ACE.	13	/ater - Bbl.	1000	envity - Al	PI - (Corr.)
		Hour Rate	-	ادمان		1 "	· DUI.		arity - M	
29. Disposition of G	as (Sold, used for fue	l, vented, etc.)					·	Test Witness	ed By	·
			N/A							
30. List Attachments			Deviati	ion Repor						
3 ereby certify	that the informati	on shown on bot	th sides of this form as t	rue and co	mplete to	the b	est of my kno	wledge and	belief	
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Signature	cuy " wo	INA	ane MITETT	~ C C III	c (0 ·	_	7	Da	<u>/</u>	

INSTRUCTIONS

This form is to be filed with the appropriate District Office of the Division not later than 20 days after the completion of any newly-drilled or deepened well. It shall be accompanied by one copy of all electrical and radio-activity logs run on the well and a summary of all special tests conducted, including drill stem tests. All depths reported shall be measured depths. In the case of directionally drilled wells, true vertical depths also be reported. For multiple completions, items 25 through 29 shall be reported for each zone. The form is to be filed in quintuplicate except on state land, where six copies are required. See Rule 1105.

INDICATE FORMATION TOPS IN CONFORMANCE WITH GEOGRAPHICAL SECTION OF STATE

		Southeas	tern New Mexico		Northwestern New Mexico					
T. Anhy	/		T. Canyon 8390	i	T. Ojo Al	amo		T. Penn. "B"		
T. Salt_			T. Strawn 8894		T. Kirtlan	d-Fruitl	and	T. Penn. "C"		
B. Salt_			T. Atoka		T. Picture	d Cliffs		T. Penn. "D"		
T. Yates	S		T. Miss		T. Cliff H	ouse		T. Leadville		
T. 7 Riv	ers		T. Devonian		T. Menefe	ee		T. Madison		
T. Quee	n		T. Silurian		T. Point L	ookout		T. Elbert		
T. Gray	burg		T. Montoya		T. Manco	s		T. McCracken		
T. San A	Andres	2005	T. Simpson		Γ. Gallup			T. Ignacio Otzte		
T. Glori	eta		T. McKee		Base Gree	nhorn		T. Granite		
T. Padd	ock		T. Ellenburger		T. Dakota	·		T		
T. Bline	bry		T. Gr. Wash	•	Γ. Morris	on		Ţ		
T.Tubb			T. Delaware Sand		T.Todilto			<u> </u>		
T. Drink	card		T. Bone Springs	<i>'</i>	T. Entrada	1		T.		
T. Abo		5506	T		Γ. Wingat	e		т		
T. Wolf	camp	6728			T. Chinle			T		
T. Penn			Т		Γ. Permia	n		T		
T. Cisco	(Bough	C) 7645	T		Γ. Penn ".	Α"		T.		
	` •	´						OIL OR GAS		
								SANDS OR ZONES		
No. 1, 1	from		to		No. 3, f	rom		to		
			to					to		
			IMPORT		-			5		
Inaluda	dota am	mata afirmta	r inflow and elevation to which	MIN I 99/	AIER S	JANU.	3			
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			to							
			to							
No. 3, f	rom		to				feet	*******		
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			THOUGH RECO							
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TELEPHONE (505) 748-3311





N.M. Oil Cons. Di. Jon REHIM MY 68203 MPANY

501 EAST MAIN STREET • P. O. BOX 159 ARTESIA, NEW MEXICO 88211-0159 FAX (505) 746-6410 ACCTG (505) 746-6155 EXEC (505) 748-9077 ENGR (505) 746-4438 P / L

12-183-27E 30-015-20894

May 10, 1999

Mr. Tim Gumm
State of New Mexico
Energy, Minerals and Natural
Resources Department
Oil Conservation Division
811 South First Street
Artesia, New Mexico 88210





RE: Re-Entry for Navajo Refining Company's Waste Disposal Well No. 2

Dear Mr. Gumm:

Navajo Refining Company (Navajo) has contracted Subsurface Technology, Inc. to re-enter, test and complete Waste Disposal Well No. 2 (WDW-2), formerly the Chukka Federal No. 2 operated by The Eastland Oil Company. The United States Department of the Interior, Bureau of Land Management approved the Application for Permit to Drill or Deepen on April 27, 1999. Subsequent approval from the State of New Mexico Oil Conservation Commission (OCD) was granted on Tuesday, May 4, 1999.

Navajo initiated field operations on Wednesday, May 5, 1999. The existing pumping equipment, rods, and tubing were removed from the wellbore. The perforations from 1446 feet to 1462 feet were squeezed using 100 sacks of Class 'H' cement (approximately 50 sacks of cement were displaced into the perforated interval). The cement was allowed to cure and drilled out to a total depth of 1922 feet (KB)(1911 feet below ground level).

On Sunday, May 9, 1999, the 8-5/8 inch surface casing, set from 1955 feet (KB) to surface, was pressure tested for internal mechanical integrity between 1922 feet (KB) and 30 feet (KB) using a packer set at 30 feet. The 8-5/8 inch surface casing was pressure tested to 660 pounds per square inch and monitored at the surface for one hour (Attachment A). The fluid used for testing was a clean fresh water fluid. A pressure loss of 1 psi (0.15%) was observed during the first 30 minutes of the test. A pressure loss of 2 psi (0.30%) was observed during the last 30 minutes of the test. The results from the pressure test confirmed internal mechanical integrity of the 8-5/8 inch surface casing from 1922 feet (KB) to 30 feet (KB).

1 Am

The 8-5/8 inch surface casing was originally set in an 11 inch open-hole to a depth of 1955 feet (KB) and cemented to surface using 700 sacks of Class 'H' cement with 2% gel and 100 sacks of Class 'H' neat. A total of 200 sacks of cement was recorded circulated to surface. The calculated volume between an 11 inch hole and 8-5/8 inch casing is (0.2407 cubic feet per foot X 1955 feet) 471 cubic feet. The volume of cement pumped is (1.18 cubic feet per sack X 800 sacks) 944 cubic feet for an excess of 473 cubic feet or 400 sacks circulated to surface. The calculated volume of cement and apparent volume of actual cement pumped indicated excess cement was circulated to surface.

On Sunday, May 9, 1999, Halliburton Logging Services completed a cement bond and microsiesmogram (same as a variable density log) logging survey within the 8-5/8 inch casing from a wireline total depth of 1919 feet (KB) to the surface (Attachment B). The results from the survey indicate a continuous column of cement from 1922 feet to surface with good bonding characteristics. The cement behind the 8-5/8 inch casing will provide an effective hydraulic seal to prevent the movement of groundwater fluids into the underground source of drinking water with a base at 473 feet.

Please review and approve the pressure testing and cement bond log results at your earliest convenience. Navajo will proceed with the mobilization of the drilling rig Wednesday, May 12, 1999 and begin re-entry of the WDW-2 wellbore according to the approved drilling program. Navajo will periodically contact the OCD, Artesia office with a status update of the re-entry operations. The Bureau of Land Management will be notified in sufficient time for a representative to witness the cementing of the 5-1/2 inch protection casing.

Should you have any questions or concerns, please call me at (505) 748-3311.

Sincerely yours,

Darrell Moore

Environmental Manager for Water and Waste

well Moore

c:

Mr. David Glass Bureau of Land Management Roswell Field Office 2909 West Second Street Roswell, New Mexico 88201

Mr. Brian Rogers Subsurface Technology, Inc. 7020 Portwest, Suite 100 Houston, Texas 77024

File: Injection Wells

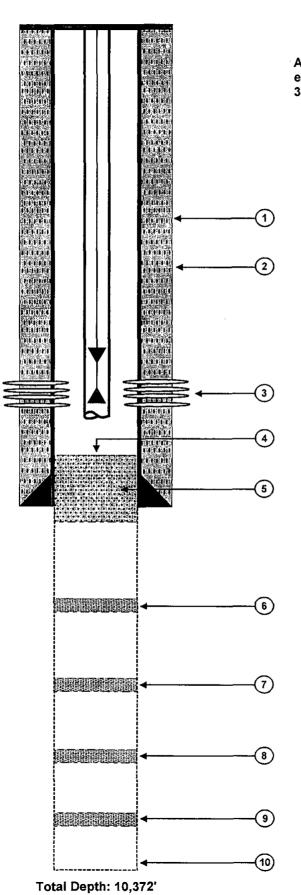
APPROVED

JUN 02 1999 (ORIG. SGD.) DAVID R. GLASS

AUTHORIZED OFFICER, MINERALS BUREAU OF LAND MANAGEMENT

SUBJECT TO LIKE APPROVAL BY STATE

PR-20-1	999 TUE	E 12:59	PM 713	880 32	48	- FAX	NÖ.				P. 02	18
District I 1625 N. French I District II	Or., Hobbs.	NIM 88240	E	Towns N	tate of New Ainerals & N	Intirni Decoure	es	•		Revise	Form C-101 ed March 12, 1999	4 .
811 South First, a District III 1000 itin Brazos			(DIL CON 2 Sa	NSERVATI 1040 South F anta Fe. NM	ON DIVISION RESOURCE PACHECO NO DIVISION RESOURCE PACHECO NO PACHE	21222	324 Su	binit to A	State	iate District Office e Lease - 6 Copies e Lease - 5 Copies	
District IV 2040 South Pache	eco, Santa F	e, NM 87505				ALEK DEEL	APR 199	9		AME	NDED REPORT	
APPLIC	ATION	FOR P	ERMIT	TO DRI	ILL, RE-EN	VIER DEEP	EN A	D UGBA	ÆK, C		D A ZONE	_
Navajo Refining Company Post Office Box 159 Artesia, New Mexico 88211 Operator Name und Address. OCD - ARTESIA OGRID Number 15694 API Number 30 - 015-20894												
Post Offic	e Box	159				768	4 9948	27		,	API Number	•
Artesia, N	lew Me	xico 882	ll							30 - 0	15-20894	
Prop	erty Code		•			Property Name	K.				Well No.	
23	592	<u> </u>	······································			WDW E	 _	·			2	
						Location						•
UL or lost no.	Section	Township	Runge	Lot Ida	Feet from the	North/South line	Foet fre		East/Wes		County	
E	12	18S	27E		1980	North		660		est	Eddy	
Const.	1					tion If Differe					10	,
UL or lot no.	Section	Township	Kunge	Lot Idn	Feet from the	North/South line	Feet fre	om ute	East/Wes	t line	County	·
Lower	Wolfea	. •	ed Pool 1 -Canyo	n Injectio	o n Zone	Navajo /	njec		Pern		918 Penn.	
" Work T	ype Code	.	Well Type	Code	Lable Cable	/Rolary	" Leas	e Type Cod	de (n Clon	nd Level Elevation	
E-Re	-	Cla	ass I Inj	ection	I	۲		ederal			GR, 3623' KB	
¹⁹ Mu	ltiple	1 ,	Proposed I	Depth	" For	Ormation Defractor				²⁶ Spud Date		
N	O .	İ	9200	,	Stra	awn					5/15/99	
-	-		1	Propos	sed Casing a	and Cement Pr	rogram					
Hole Sb	(e	Сцяп	<u> </u>		g weight/foot	Setting Depth Sacks of Cement				t Estimated TOC		
11"		8-5			12 lb/ft	1995 feet 800			00		Surface	
7-7/8		5-1			7 lb/ft	9200 feet			ol. +20°		Surface	
Describe the proposed program. If this application is to DEEPEN or PLUG BACK give the data on the present productive zone and proposed new productive zone. Describe the blowaut prevention program, if any. Use additional sheets if necessary. Proposed Reentry of The Eastland Oil Company (originally Fred Pool Drilling, Inc.) Chukka Federal No. 2 (PBTD 1912 feet, September 10, 1985) formerly Amoco Production Company Diamond Federal Gas Com. No. 1 (OTD 10,372 feet, P&A August 31, 1973). The well currently produces oil and gas from perforations from 1446 feet to 1462 feet (Penrose.) Navajo will squeeze the perforations from 1446 feet to 1462 feet, drill out cement plugs, and clean out the well to 9200 feet, set 5-									-			
Formations b	etween 7	270 feet ar	id 9200 f	eet, and co	onducted injec	te porous interva	als in the	e Lower	· Wolfca	mp, Cis	sco, and Canyon	
Attached are	the Well	Location I	lat and I	Drilling Pro	ogram.							
11 hereby certify i my knowledge and		maikin given al	ove is true a	nd complete to	o the best of	OIL	CONSI	ERVAT	TION I	DIVISI	ON	
Signature:	h	M M	A P A		Ap	proved by:	4	- 1 L	.1 2	2.	3 8/10	
Printed name:	hrce !	Moore	2		Tit	le:		Tite	w 5	yen	visor	;
Tille: Env. V	Mar. Fo	- Wate	r + Wa	iste	Ар	proval Date: 5 -	3-9	ا ۹ ز	Expiration D	^{1300:} 5	-3-0c	
Date: 4/21/9	1	<u> </u>		-748-3.	311 Co	nditions of Approval:	<u> </u>					



BELOW GROUND DETAIL

All depths are referenced to the kelly bushing elevation of 13 feet. The surface elevation is 3610 feet.

- 1. Base of the USDW at 473'.
- 2. Casing: 8-5/8", 32 lb/ft, set at 1995' in an 11" hole. Cemented to surface with 800 sacks of cement.
- 3. Perforations: 1446' 1462'.
- 4. PBTD: 1912'.
- 5. Cement Plug: 40 sacks from 1912' to 2045'.
- 6. Cement Plug: 50 sacks from 3620' to 3720'.
- 7. Cement Plug: 40 sacks from 5456' to 5556'.
- 8. Cement Plug: 50 sacks from 7435' to 7535'.
- 9. Cement Plug: 45 sacks from 9675' to 9775'.
- 10. Hole Size: 7-7/8".

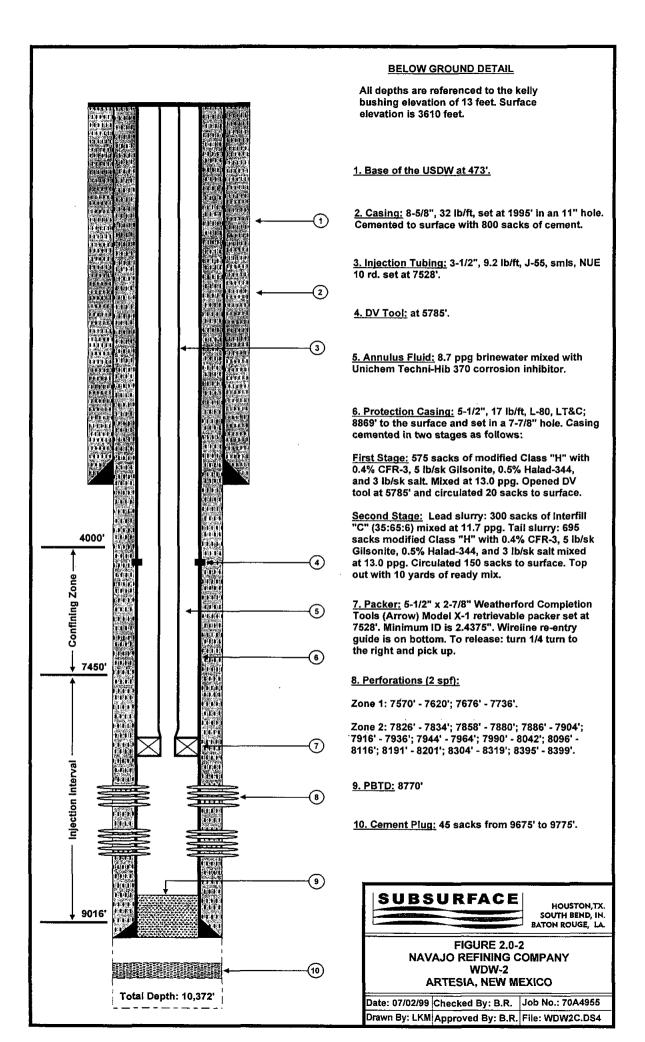


HOUSTON,TX. SOUTH BEND, IN. BATON ROUGE, LA.

FIGURE 2.0-1 THE EASTLAND OIL COMPANY PLUGGED-BACK WELLBORE CONFIGURATION CHUKKA FEDERAL No. 2

Job No.: 70A4955 Date: 07/02/99 Checked By: B.R.

Drawn By: LKM Approved By: B.R. File: WDW2B.DS4



Form 3160-5 (September 2001)

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT

FORM APPROVED OMB No. 1004-0135 Expires: January 31, 2004

	-
- (

SUNDRY NOTICES AND REPORTS ON WELLS Do not use this form for proposals to drill or to re-enter an abandoned well. Use Form 3160-3 (APD) for such proposals.

5.	Lease	Serial	No.

Env. Mgr. for Waters Waste

6. If Indian, Allottee or Tribe Name

SUBMIT IN TR	RPLICATE + Other instruc	tions on reverse s	ide *****	7. If Unit or CA/	Agreement, Name and/or No.
Oil Well Gas Well	Other TEMPORARILY ABA	NDONED	Ì	8. Well Name a	nd No.
2. Name of Operator	=			WDW-3	
NAVAJO REFINING COMPAN	NY		Ī	9. API Well No	<u></u>
3a. Address		3b. Phone No. (include ar	rea code)	30-015-26575	
PO BOX 159, ARTESIA, NM 8	88211	505- 748-3311		10. Field and Por	ol, or Exploratory Area
4. Location of Well (Footage, Sec.,				NAVAJO INJ	ECTION; PERMO-PENN
				11. County or Pa	rish, State
790' FSL, 2250' FWL, 1-18S-2'	:7E				
				EDDY	
12. CHECK AP	PPROPRIATE BOX(ES) TO I	NDICATE NATURE	OF NOTICE, RE	PORT, OR OT	THER DATA
TYPE OF SUBMISSION		TYPE	OF ACTION		
	Acidize	Deepen [Production (Start/	Resume)	Water Shut-Off
✓ Notice of Intent	Alter Casing	Fracture Treat	Reclamation		Well Integrity
D at an arrange	Casing Repair	New Construction	Recomplete	ñ	Other RECOMPLETE AS
Subsequent Report	Change Plans	Plug and Abandon	Temporarily Abar	ndon	CLASS I INJECTION
Final Abandonment Notice	Convert to Injection	Plug Back	✓ Water Disposal		WELL
If the proposal is to deepen dire Attach the Bond under which the following completion of the inv	ed Operation (clearly state all pertine ectionally or recomplete horizontally, the work will be performed or provid volved operations. If the operation re inal Abandonment Notices shall be fig for final inspection.)	give subsurface locations a de the Bond No. on file with sults in a multiple complet	and measured and true in BLM/BIA. Required ion or recompletion in	vertical depths of d subsequent report a new interval, a l	all pertinent markers and zones, rts shall be filed within 30 days Form 3160-4 shall be filed once
Original well name was CHALK	K BLUFF FEDERAL COM. NO.	1			
INJECTION-TEST PERFORAT DRILL OUT BRIDGE PLUGS A SQUEEZE-CEMENT PERFORAT DRILL OUT BRIDGE PLUG A'RUN CBL/VDL AND CALIPER PERFORATE 8540' - 8620' ANIRUN INJECTIVITY TEST, ANIRUN INJECTION/FALLOFF TRUN DIFFERENTIAL TEMPER RUN RADIOACTIVE TRACER INSTALL INJECTION TUBING	D 7660' - 8450'. ID ACIDIZE IF NECESSARY. EST. RATURE SURVEY.	7278' TO PLAN SQUEE DUT HOLE THROUGH ' - 7278', AND 7304' - 73 TOP OF LINER AT 905 7600'.	PERFS AT 7304'-7. 314'. 51'.		
14. I hereby certify that the foregoin	ing is true and correct				

Approved by (Signature)

Name (Printed/Typed)

Compions of approval, if any, are attached. Approval of this notice does not warrant or that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

Name (Printed/Typed)

Office

Date

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

Signature

GENERAL INSTRUCTIONS

This form is designed for submitting proposals to perform certain well operations, and reports of such operations when completed, as indicated on Federal and Indian lands pursuant to applicable Federal law and regulations. Any necessary special instructions concerning the use of this

form and the number of copies to be submitted, particularly with regard to local area, or regional procedures and practices, either are shown below or will be issued by, or may be obtained from the local Federal office.

SPECIFIC INSTRUCTIONS

Item 4 - Locations on Federal or Indian land should be described in accordance with Federal requirements. Consult the local Federal office for specific instructions.

Item 13 - Proposals to abandon a well and subsequent reports of abandonment should include such special information as is required by the local Federal office. In addition, such proposals and reports should include reasons for the abandonment; data on any former or present

productive zones, or other zones with present significant fluid contents not sealed off by cement or otherwise; depths (top and bottom) and method of placement of cement plugs; mud or other material placed below, between and above plugs; amount, size, method of parting of any casing, liner or tubing pulled and the depth to top of any left in the hole; method of closing top of well and date well site conditioned for final inspection looking to approval of the abandonment.

NOTICE

The Privacy Act of 1974 and the regulation in 43 CFR 2.48(d) provide that you be furnished the following information in connection with information required by this application.

AUTHORITY: 30 U.S.C. 181 et seq., 351 et seq., 25 U.S.C. 396; 43 CFR 3160.

PRINCIPAL PURPOSE: The information is used to: (1) Evaluate, when appropriate, approve applications, and report completion of subsequent well operations, on a Federal or Indian lease; and (2) document for administrative use, information for the management, disposal and use of National Resource lands and resources, such as: (a) evaluating the equipment and procedures to be used during a proposed subsequent well operation and reviewing the completed well operations for compliance with the approved plan; (b) requesting and granting approval to perform those actions covered by 43 CFR 3162.3-2, 3162.3-3 and 3162.3-4; (c) reporting the beginning or resumption of production, as required by 43 CFR 3162.4-1(c); and (d) analyzing future applications to drill or modify operations in light of data obtained and methods used.

ROUTINE USES: Information from the record and/or the record will be transferred to appropriate Federal, State, local or foreign agencies, when relevant to civil, criminal or regulatory investigations or prosecutions in connection with congressional inquiries or to consumer reporting agencies to facilitate collection of debts owed the Government.

EFFECT OF NOT PROVIDING THE INFORMATION: Filing of this notice and report and disclosure of the information is mandatory for those subsequent well operations specified in 43 CFR 3162.3-2, 3162.3-3, 3162.3-4.

The Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.) requires us to inform you that:

This information is being collected to evaluate proposed and/or completed subsequent well operations on Federal or Indian oil and gas leases.

Response to this request is mandatory.

BLM would like you to know that you do not have to respond to this or any other Federal agency-sponsored information collection unless it displays a currently valid OMB control number.

BURDEN HOURS STATEMENT

Public reporting burden for this form is estimated to average 25 minutes per response, including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding the burden estimate or any other aspect of this form to U.S. Department of the Interior, Bureau of Land Management (1004-0135), Bureau Clearance Officer, (WO-630), Mail Stop 401 LS, 1849 C St., N.W., Washington, D.C. 20240.

District I 1625 N. French Dr., Hobbs, NM 88240

District II

201 W. Grand Avenue, Artesia, NM 88210 ict III

00 Rio Brazos Rd., Aztec, NM 87410

District IV

1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico

Energy, Minerals & Natural Resources Department

OIL CONSERVATION DIVISION

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

Form C-102

Revised June 10, 2003

Submit to Appropriate District Office

State Lease - 4 Copies

Fee Lease - 3 Copies

3/303	•	`	AMENDED.	REPORT
WELL LOCATION AND AC	CREAGE DEDICATION	PLAT		

1	API Numbe	r		² Pool Code		³ Pool Name				
30	- 015 -265	575				Navajo Injection; Permo-Penn				
⁴ Property Code				⁵ Property Name				6 We	⁶ Well Number	
İ					WDW				3	
OGRID '	No.				⁸ Operator N	ame	·	, F	° Elevation	
	ļ			Navajo Refining Company				360	3609' GL;	
	į							362	25' KB	
La	•				¹⁰ Surface L	ocation	 			
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County	
N	1	18S	27E		790	South	2250	West	Eddy	
			11 Bott	om Hole	Location If	Different From	Surface			
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County	
12 Dedicated Acre	es Joint of	r Infill 14 Co	onsolidation C	ode 15 Orde	er No.					

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

				¹⁷ OPERATOR CERTIFICATION
				I hereby certify that the information contained herein is true
				and complete to the best of my knowledge and belief.
				Signature
				Signature
				Printed Name
				·
				Title and E-mail Address
	•			Date
				¹⁸ SURVEYOR CERTIFICATION
				I hereby certify that the well location shown on this plat was
				plotted from field notes of actual surveys made by me or under
				my supervision, and that the same is true and correct to the
				best of my belief.
			-	3 · · y - · · · · g
				Date of Survey
			· 	Signature and Seal of Professional Surveyor:
				Signature and Sear of Professional Surveyor.
2250 —	→ •			
	†			
	790			
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	▼			Certificate Number
L		<u> </u>		

REENTRY PROCEDURE

NAVAJO REFINING COMPANY'S WDW-3 (PROPOSED)

790'FSL and 2250' FWL, Section 1, T18S, R27E Eddy County, New Mexico Chalk Bluff Federal Com. No. 1, API No. 30-015-26575

All depths are in feet below well's original kelly bushing height (RKB) of 16 feet above ground level. The original KB elevation is 3625 feet above mean sea level. The ground level elevation is 3609 feet above mean sea level.

Tops of Geologic Formations (from RKB)

The base of the lowermost USDW is at 420 feet.

San Andres	1976 feet	Lower Wolfcamp	7303 feet
Yeso	4030 feet	Cisco	7650 feet
Abo	5380 feet	Canyon	8390 feet
Wolfcamp	6745 feet	Strawn	8894 feet

Depth of Plugs

7010 feet in 7-inch casing above perforations 7050 feet to 7102 feet

7208 feet in 7-inch casing above perforations 7262 feet to 7278 feet

7294 feet in 7-inch casing above perforations 7304 feet to 7314 feet

7600 feet in 7-inch casing above perforations 7676 feet to 7678 and 7826 feet to 7830 feet

9800 feet in 4-1/2-inch liner above perforations 9861 feet to 9967 feet

Anticipated Formation Pressure

The expected bottom-hole pressure is 3448 pounds per square inch absolute (psia) at 9000 feet, for a gradient of 0.383 pounds per square inch (psi) per foot, or an equivalent

mud weight of 7.36 pounds per gallon (ppg). The bottom-hole pressure was determined from the pressure measured in Navajo's WDW-2, or 2813 psia, at 7570 feet. Navajo's WDW-2 is completed in the same interval proposed for WDW-3 and is located in 12-T18S-R27E, 3200 feet southwest of proposed WDW-3. The average specific gravity of the fluid in the Cisco and Canyon Formations is expected to be 1.025, which is the specific gravity of the fluid swabbed from WDW-2 in June 1999 from the interval between 7826 feet and 8399 feet. The expected bottom-hole pressure at 9000 feet in proposed WDW-3 is calculated below:

BHP (9000 feet) =
$$2813 \text{ psia} + (9000 \text{ feet} - 7570 \text{ feet}) \times 0.433 \text{ psi/ft} \times 1.025$$

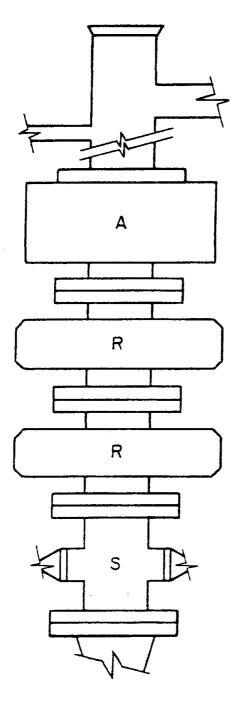
= 3448 psia

Reentry Procedure

- 1. Level location to accommodate a workover rig, pump, tanks, and ancillary equipment. Build a small working pit approximately 30 feet square and 3 feet deep with a plastic lining. Move in the rig, tank, shale shaker, and work string.
- 2. Install a 7-1/16-inch, 3000-psi double hydraulic blowout preventer (BOP) and a 7-1/16-inch, 3000-psi annular BOP (see Exhibit A for schematic). Pressure test the BOP stack and casing to 1500 psi for 30 minutes. Pick up a 6-1/8-inch bit, and sufficient 4-3/4-inch drill collars to drill out the cement plugs, on a 2-7/8-inch work string. Mix a tank of 8.5-ppg sodium chloride brine water for circulating fluid.
- 3. Run the bit to 7000 feet and circulate the wellbore fluid out of the casing into a frac tank for disposal. Drill out the cast iron bridge plug (CIBP), cement at 7010 feet, and clean out to the CIBP at 7208 feet. Circulate the hole clean and pump into the perforations from 7050 feet to 7102 feet to establish a rate and pressure for a pending squeeze cement job.
- 4. Drill out the CIBP at 7208 feet and clean out past the perforations from 7262 feet to 7278 feet and drill out the third CIBP at 7294 feet. Clean out below the perforations from 7304 feet to 7314 feet. Run a second injection test for injection rate and pressure comparison.

- 5. Pull the bit and run a retrievable squeeze packer on the work string. Set the packer at 7150 feet and test for communication between the perforations. Squeeze the perforations from 7262 feet to 7278 feet and 7304 feet to 7314 feet with approximately 100 sacks of neat cement (actual squeeze cement volume to be determined by the injection rate established previously), attempting to reach 1500 psi to 2000 psi squeeze pressure. Release the packer and reverse out any excess cement, then re-test the perforations to the squeeze pressure.
- 6. Re-set the packer at 6900 feet and squeeze the perforations from 7050 feet to 7102 feet as before.
- 7. Lay down the squeeze packer and drill out the cement to the CIBP at 7600 feet. Conduct a pressure test to 500 psi for 12 hours to confirm the squeeze cement will contain the annular fluid pressure required during injection operations.
- 8. Drill out the CIBP at 7600 feet and circulate to the top of the liner at 9051 feet. Circulate the casing clean with 8.5-ppg brine water. Pull the bit and lay down the drill collars.
- 9. Run a cement bond log with variable density (CBL/VDL) from the liner top to the surface, followed by a baseline multi-finger caliper log from the liner top to the surface.
- 10. Perforate the intervals 8540 feet to 8620 feet and 7660 feet to 8450 feet with 2 JSPF, using hollow steel carrier perforating guns.
- 11. Run the work string and retrievable packer to 7600 feet. Swab, or backflow, the perforated interval to recover a representative sample of the formation water for laboratory analysis. Monitor the recovered fluid for hydrogen sulfide.
- 12. Conduct a short injectivity test with 8.5-ppg brine water to determine the need for stimulation. If required, stimulate the perforations with acid (type and amount to be determined from injectivity results), followed by 500 barrels of 8.5-ppg brine water.

- 13. Pull the work string and lay it down. Run a surface readout pressure gauge, with memory backup, to 7600 feet. Conduct an injection test down the casing at 420 gallons per minute for 12 hours (7200 barrels). Shut the well in and record the pressure falloff for a minimum of 12 hours.
- 14. Pull the gauges and run a differential temperature survey from surface to 9100 feet. Run a radioactive tracer survey to demonstrate mechanical integrity.
- 15. Run a tubing conveyed injection packer on 4-1/2-inch, 11.60 lb/ft, K-55, LT&C, 8rd injection tubing. Set the packer at approximately 7600 feet. Fill the annular space with 8.5-ppg brine water containing oxygen scavenger and corrosion inhibitor. Land the injection tubing in the wellhead and install the upper section.
- 16. Pressure test the annulus as required by New Mexico regulations.
- 17. Install well annulus monitoring equipment and prepare the well for injection.



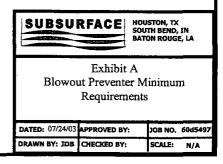
A = ANNULAR BLOWOUT PREVENTER 7-1/16", 3000 psi working pressure

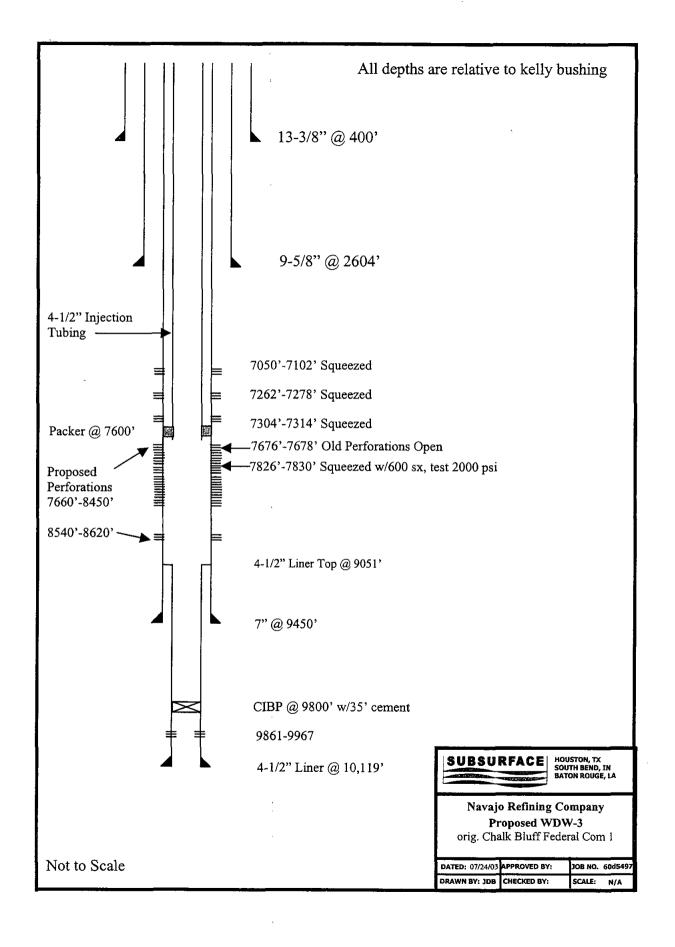
R = RAM TYPE BLOWOUT PREVENTER 7-1/16", 3000 psi working pressure

S = DRILLING SPOOL WITH SIDE OUTLETS 7-1/16", 3000 psi working pressure

Manual Choke Manifold 2", 3000 psi working pressure

Source: API RP 53, Recommended Practices for Blowout Prevention EquipmentSystems





SURFACE USE PLAN

NAVAJO REFINING COMPANY PROPOSED WDW-3 790' FSL, 2250' FWL, 1-T 18S-R27E EDDY COUNTY, NEW MEXICO

- 1. Existing Roads: Existing roads that lead to the proposed drillsite are shown on Exhibit A.
- 2. Access Roads To Be Constructed: No new access road is proposed.
- 3. <u>Location of Existing Wells</u>: Existing wells within one mile of proposed WDW-3 are shown on Exhibit B.
- 4. <u>Location of Proposed Facilities If Well Is Completed</u>: The well will be shut in after completion and testing.
- 5. <u>Location and Type of Water Supply</u>: Water for reentry, testing, and completion operations will be purchased from a commercial water hauler.
- 6. Source of Construction Materials: No construction materials will be required.
- 7. Methods of Handling Waste Disposal:
 - A. Drill cuttings will be disposed of in the drilling pits.
 - B. Drilling fluids will be allowed to evaporate in the drilling pits until the pits are dry.
 - C. Water produced during tests will be disposed of in the drilling pits.
 - D. Trash, waste paper, garbage, and junk will be buried in a trash pit and covered with a minimum of 24 inches of dirt. All waste material will be contained to prevent scattering by the wind.
 - E. All trash and debris will be buried or removed from the wellsite after finishing drilling and/or completion operations.

8. Ancillary Facilities: None anticipated.

9. Wellsite Layout:

- A. The existing well pad will be leveled to accommodate a workover rig, pump, tanks, and ancillary equipment.
- B. Existing topsoil to a depth of 6 inches will be lifted and stockpiled at the uphill end of the well pad. The stockpiled topsoil will be located uphill to avoid mixing with subsurface materials.
- C. The well pad will be surfaced with material found in place.
- D. A small working pit will be constructed to hold drilling fluids and cuttings. The approximate dimensions of the pit will be 30 feet x 30 feet x 3 feet.
- E. The working pit for drilling; fluids and cuttings will be lined with 6-mil plastic.

10. Plans for Restoration of Surface:

- A. After completion of drilling and/or completion operations, all equipment and other material not needed for operations will be removed. Pits will be filled and the location cleaned of all trash and junk.
- B. Any unguarded pits containing fluids will be fenced until they are filled.
- C. After abandonment, all equipment, trash, and junk will be removed and the location cleaned.
- D. The stockpiled topsoil will be spread over the surface of the location.
- 11. Surface Ownership: U.S. Department of Interior, Bureau of Land Management.
- 12. <u>Archaeological Survey</u>: Navajo Refining Company is conducting an archeological survey. The report of the survey will be submitted by Navajo under separate cover.
- 13. Operator's Representatives: Representatives responsible for assuring compliance with the approved Surface Use Plan:

Mr. Darrell Moore
Navajo Refining Company
Post Office Box 159
Artesia, New Mexico 88211
505/748-3311

Mr. Jim Bundy Subsurface Technology, Inc. 7020 Portwest Drive, Suite 100 Houston, Texas 77024 713/880-4640

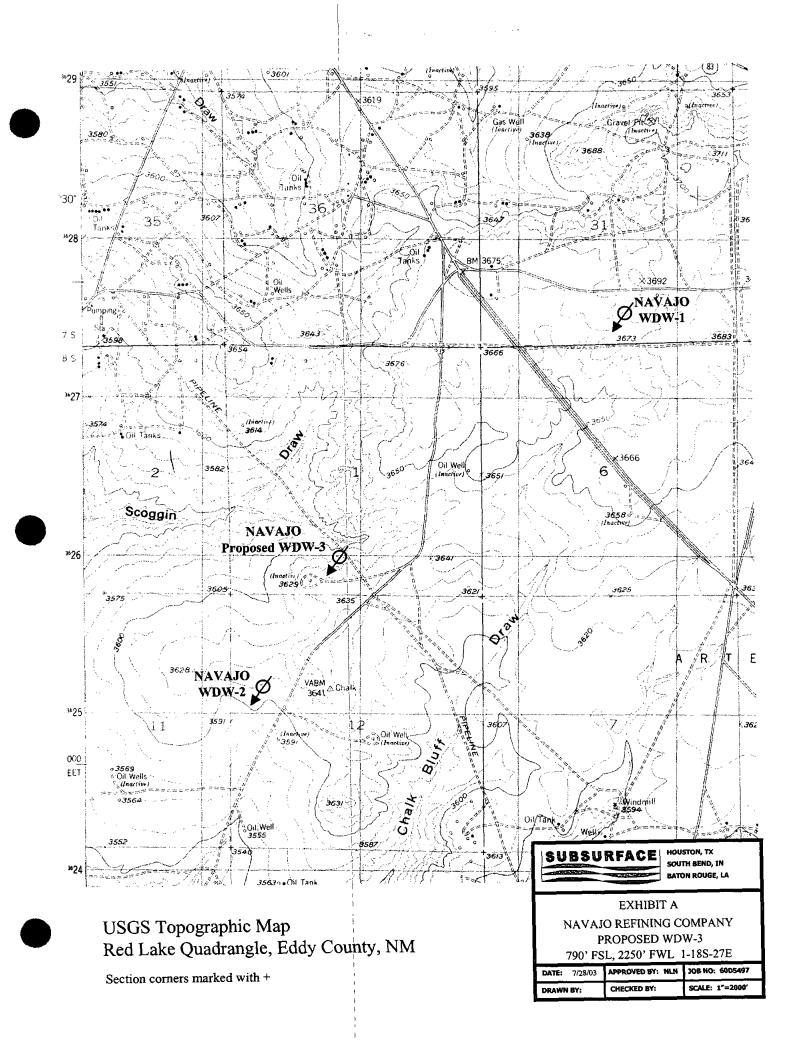
Exhibits

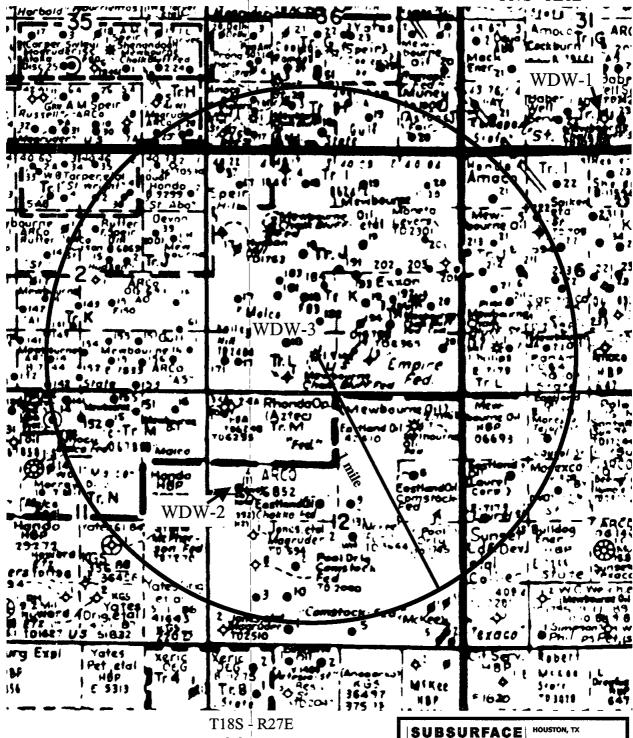
- A. Topographic Map
- B. Oil and Gas Map

14. Certification:

I hereby certify that I, or persons under my direct supervision, have inspected the proposed drillsite and access route; that I am familiar with the conditions that exist; that the statements made in this plan are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed by Navajo Refining Company and its contractors and subcontractors in conformity with this plan and the terms and conditions under which it is approved.

Date	•	Signature
	,	Name
		Title
		Navajo Refining Company
	+	Company





T18S - R27E EDDY COUNTY, NM

EXHIBIT B WELLS WITHIN 1 MILE OF NAVAJO REFINING COMPANY PROPOSED WDW-3 APPROVED BY: NLN JOB NO. 60D5497 **DATED:** 7/28/03

CHECKED BY:

DRAWN BY:

SOUTH BEND, IN BATON ROUGE, LA

SCALE:

N/A

Map courtesy of Midland Map Company

STATE OF NEW MEXICO ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

Oil Conservation Division 1220 South St. Francis Dr. Santa Fe, New Mexico 87505

FORM C-108 Revised June 10, 2003

APPLICATION FOR AUTHORIZATION TO INJECT

	DUDDOOF C
	PURPOSE:Secondary RecoveryPressure MaintenanceXDisposalStorage Application qualifies for administrative approval?YesXNo
II.	OPERATOR: Navajo Refining Company
	ADDRESS: P.O. Box 159, Highway 82 East, Artesia, NM 88211
	CONTACT PARTY: Darrell Moore, Environmental Manager-Water and Waste PHONE: 505-748-3311
III.	WELL DATA: Complete the data required on the reverse side of this form for each well proposed for injection. Additional sheets may be attached if necessary.
IV.	Is this an expansion of an existing project? X Yes No Revise WDW-3 location. If yes, give the Division order number authorizing the project: Discharge Plan Permit UIC-CL1-008-1
V.	Attach a map that identifies all wells and leases within two miles of any proposed injection well with a one-half mile radius circle drawn around each proposed injection well. This circle identifies the well's area of review.
VI.	Attach a tabulation of data on all wells of public record within the area of review which penetrate the proposed injection zone. Such data shall include a description of each well's type, construction, date drilled, location, depth, record of completion, and a schematic of any plugged well illustrating all plugging detail.
VII.	Attach data on the proposed operation, including:
	 Proposed average and maximum daily rate and volume of fluids to be injected; Whether the system is open or closed; Proposed average and maximum injection pressure; Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water; and, If injection is for disposal purposes into a zone not productive of oil or gas at or within one mile of the proposed well, attach a chemical analysis of the disposal zone formation water (may be measured or inferred from existing literature, studies, nearby wells, etc.).
*VIII.	Attach appropriate geologic data on the injection zone including appropriate lithologic detail, geologic name, thickness, and depth. Give the geologic name, and depth to bottom of all underground sources of drinking water (aquifers containing waters with total dissolved solids concentrations of 10,000 mg/l or less) overlying the proposed injection zone as well as any such sources known to be immediately underlying the injection interval.
IX.	Describe the proposed stimulation program, if any.
*X.	Attach appropriate logging and test data on the well: (If well logs have been filed with the Division, they need not be resubmitted).
*XI.	Attach a chemical analysis of fresh water from two or more fresh water wells (if available and producing) within one mile of any injection or disposal well showing location of wells and dates samples were taken.
XII.	Applicants for disposal wells must make an affirmative statement that they have examined available geologic and engineering data and find no evidence of open faults or any other hydrologic connection between the disposal zone and any underground sources of drinking water.
XIII.	Applicants must complete the "Proof of Notice" section on the reverse side of this form.
XIV.	Certification: I hereby certify that the information submitted with this application is true and correct to the best of my knowledge and belief.
	NAME: Darrell Moore TITLE: Env. Mgr. for Waters Waste
	NAME: Darrell Moore TITLE: EAV. Mgr. for Waters Waste SIGNATURE: DATE: 9/17/03
*	E-MAIL ADDRESS: Carrell Anayaid - refining. com If the information required under Sections VI, VIII, X, and XI above has been previously submitted, it need not be resubmitted. Please show the date and circumstances of the earlier submittal:

I. WELL DATA

- A. The following well data must be submitted for each injection well covered by this application. The data must be both in tabular and schematic form and shall include:
 - (1) Lease name; Well No.; Location by Section, Township and Range; and footage location within the section.
 - (2) Each casing string used with its size, setting depth, sacks of cement used, hole size, top of cement, and how such top was determined.
 - (3) A description of the tubing to be used including its size, lining material, and setting depth.
 - (4) The name, model, and setting depth of the packer used or a description of any other seal system or assembly used.

Division District Offices have supplies of Well Data Sheets which may be used or which may be used as models for this purpose. Applicants for several identical wells may submit a "typical data sheet" rather than submitting the data for each well.

- B. The following must be submitted for each injection well covered by this application. All items must be addressed for the initial well. Responses for additional wells need be shown only when different. Information shown on schematics need not be repeated.
 - (1) The name of the injection formation and, if applicable, the field or pool name.
 - (2) The injection interval and whether it is perforated or open-hole.
 - (3) State if the well was drilled for injection or, if not, the original purpose of the well.
 - (4) Give the depths of any other perforated intervals and detail on the sacks of cement or bridge plugs used to seal off such perforations.
 - (5) Give the depth to and the name of the next higher and next lower oil or gas zone in the area of the well, if any.

XIV. PROOF OF NOTICE

All applicants must furnish proof that a copy of the application has been furnished, by certified or registered mail, to the owner of the surface of the land on which the well is to be located and to each leasehold operator within one-half mile of the well location.

Where an application is subject to administrative approval, a proof of publication must be submitted. Such proof shall consist of a copy of the legal advertisement which was published in the county in which the well is located. The contents of such advertisement must include:

- (1) The name, address, phone number, and contact party for the applicant;
- (2) The intended purpose of the injection well; with the exact location of single wells or the Section, Township, and Range location of multiple wells;
- (3) The formation name and depth with expected maximum injection rates and pressures; and,
- (4) A notation that interested parties must file objections or requests for hearing with the Oil Conservation Division, 1220 South St. Francis Dr., Santa Fe, New Mexico 87505, within 15 days.

NO ACTION WILL BE TAKEN ON THE APPLICATION UNTIL PROPER PROOF OF NOTICE HAS BEEN SUBMITTED.

NOTICE: Surface owners or offset operators must file any objections or requests for hearing of administrative applications within 15 days from the date this application was mailed to them.

I. PURPOSE

Navajo Refining Company (Navajo) submits this application to construct and operate three nonhazardous Class I effluent disposal wells. The waste stream proposed for injection is exempt and nonexempt nonhazardous oilfield wastes that are generated exclusively by Navajo at its refinery in Artesia, New Mexico. The waste water will be transported to the injection wellsites by pipeline.

In February 1998, Navajo submitted an application to the New Mexico Oil Conservation Division (OCD) for permission to reenter, test, and complete the Mewbourne Oil Company's Chalk Bluff 31 State No. 1 well, which is located in Section 31, T17S, R28E, Unit Letter O, in Eddy County, New Mexico. Approval for the reentry and testing was granted by the OCD by letter dated May 21, 1998. The reentry and testing was completed on August 4, 1998. The reentry and completion report for Navajo's WDW-1 was prepared by Subsurface Technology, Inc. (Subsurface), formerly Envirocorp Services & Technology, Inc., and submitted to the OCD in September 1998.

On May 1, 1998, Navajo submitted the original version of this discharge plan application and application for authorization to inject. On July 14, 1998, OCD wrote "Approval of Discharge Plan UIC-CLI-008-1" for Navajo's proposed wells. The approval was revised by OCD on August 4, 1998.

In April 1999, Navajo requested a modification of the discharge plan to revise the location of proposed WDW-2. The location of proposed WDW-2 that was approved on July 14, 1998, was 2310 feet FNL and 1500 feet FWL of Section 6, T18S, and R28E. Instead, Navajo proposed to convert an existing well to proposed WDW-2, Eastland Oil Company's Chukka Federal No. 2 well (formerly Fred Pool Drilling, Inc., originally the Amoco Production Diamond Federal Gas Com. No. 1). The well is located 1980 feet FNL and 660 feet FWL of Section 12, T18S, R27E.

The permit modification to change the location of WDW-2 was approved by the OCD on May 3, 1999. In May and June 1999, Navajo recompleted WDW-2. The reentry and completion report for Navajo's WDW-2 was prepared by Subsurface and submitted to the OCD in July 1999.



Navajo now requests a modification of the discharge plan to revise the location of proposed WDW-3. The original permitted location of proposed WDW-3 is 778 feet FNL and 995 feet FWL of Section 6, T18S, R28E. Instead, Navajo proposes to convert an existing well to proposed WDW-3. The well is the Navajo Chalk Bluff Federal Com. No. 1 well (originally operated by Mewbourne Oil Company). The well is located 790 feet FSL and 2250 feet FWL of Section 1, T18S, R27E. The total depth of the well is 10,120 feet.

The injection zone consists of porous intervals in the lower Wolfcamp Formation and the Cisco and Canyon Formations between 7450 feet and 9016 feet below the kelly bushing (KB) elevation in WDW-1, between 7270 feet and 8894 feet below the KB elevation in WDW-2, and between 7303 feet and 8894 feet below KB in proposed WDW-3.



ATTACHMENT III-2

WDW-2 INJECTION WELL DATA SHEET AND WELL SCHEMATIC



ATTACHMENT III-2

INJECTION WELL DATA SHEET

OPERATOR: Navajo Refining Company LEASE: WDW-2 1980' FNL, 650' FWL 12 T18S **R27E** Footage Section Township Range WELL CONSTRUCTION DATA Surface Casing Size Cemented with 8-5/8" 800 sx TOC Surface feet determined by Circulated 200 sacks to surface 11" Hole Size Set at 1995 feet Long String Size 5-1/2" Cemented with TOC Surface feet determined by Cement bond log (5/28/99) Hole Size 7-7/8" Set at 8869 feet Total Depth 10,372', Plugged back to 8770' Injection Interval 7270 feet to 8894 feet, perforated

(perforated or open-hole; indicate which)

Perforations

Zone 1: 7570'-7620'; 7676'-7736'

Zone 2: 7826'-7834'; 7858-7880'; 7886-7904'; 7916'-7936'; 7944-7964'; 7990'-8042'; 8096'-8116'; 8191'-8201';

8304'-8319'; 8395'-8399'

Tubing size 3-1/2" lined with not lined set in a retrievable packer at 7528 feet. Other type of tubing/casing seal if applicable not applicable.



ATTACHMENT III-2 (Continued)

OTHER DATA

1.	Is this a new well drilled for injection? Yes _X_ No
	If no, for what purpose was the well originally drilled? The well was drilled in 1973 as an exploratory well.
2.	Name of the injection formation: Lower Wolfcamp, Cisco, and Canyon Formations
3.	Name of Field or Pool (if applicable): Navajo Injection; Permo-Penn
4.	Has the well ever been perforated in any other zones(s)? List all such perforated intervals and give plugging detail,
	i.e., sacks of cement or plug(s) used. Yes. 1446 feet to 1456 feet, 1459 feet to 1462 feet. Perforations were squeezed on May 5-8, 1999, when Navajo recompleted the well.
	squeezett on way 5-8, 1999, when way o recompleted the wen.
5.	Give the names and depths of any over or underlying oil or gas zones (pools) in the area:
	Within one mile: Queen and Grayburg (1450 feet to 2000 feet), San Andres (200 feet to 3600 feet),
	Abo (5400 feet to 6300 feet), and Morrow (9900 feet)



ATTACHMENT III-3

INJECTION WELL DATA SHEET

OPERATOR: Navajo Refi	ning Company		LEASE: WDW-3 (Proposed)	
790' FSL, 2250' FWL	1-T18S-R27E			
Footage Location	Section	Township	Range	
WELL CONSTRUCTION	DATA	•		
Surface Casing				
Size <u>13-3/8"</u>	Cemented wi	th 425 sacks + 200 s	acks by 1" line	
TOC Surface	feet determin	ed by Cementing thro	igh 1" line	
Hole Size <u>17-1/2</u>	Set at <u>400 fe</u>	eet	· 	
Intermediate Casing				
Size <u>9-5/8"</u>	Cemented wi	th 1025 sacks		
TOC Surface	feet determin	ed by <u>Circulating to st</u>	urface	
Hole Size <u>12-1/4"</u>	Set at <u>2604</u>	feet		
Long String				
Size	Cemented wi	th 1350 sacks		
TOC <u>1547</u>	feet determin	ed by <u>Calculation</u>		
Hole Size <u>8-1/2"</u>	Set at <u>9450</u>	feet	_	
Liner				
Size <u>4-1/2"</u>	Cemented wi	th 175 sacks		
TOC 9051	feet determin	ed by <u>Calculation</u>		
Hole Size 6"	Set at <u>9051</u>	to 10119 feet		
Total Depth 10120 feet				
Injection Interval				
7270 feet KB to	8890 feet KB,	perforated		
(perforated or open-hole; in	dicate which)			
Tubing size 4-1/2 lined w	rith <u>not lined</u> set	in a <u>retrievable</u> pac	ker at <u>approximately 6600</u> feet.	Other type of
tubing/casing seal if applicab	ole <u>latch-in seal ass</u>	sembly		



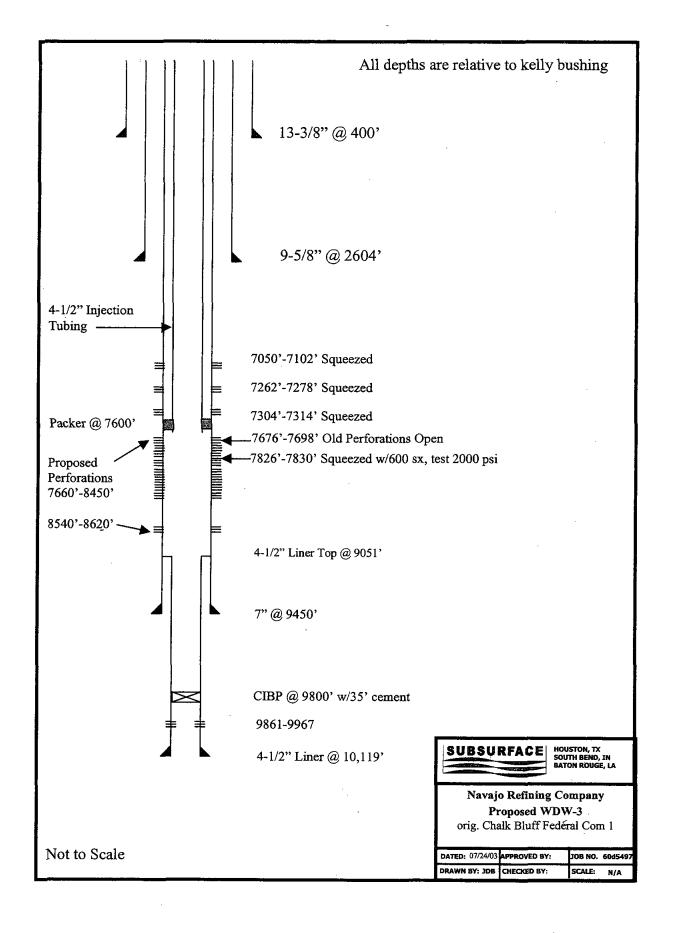
ATTACHMENT III-3 (Continued)

INJECTION WELL DATA SHEET

OTHER DATA

l.	Is this a new well drilled for injection? Yes _X_ No
2.	Name of the injection formation: <u>Lower Wolfcamp, Cisco, and Canyon Formations</u>
3.	Name of Field or Pool (if applicable): Navajo Injection; Permo-Penn
ł.	Has the well ever been perforated in any other zones(s)? List all such perforated intervals and give plugging detail, i.e., sacks of cement or plug(s) used. 9861' - 9882', CIBP at 9800' with 35' of cement; 7826' - 7830', squeezed with 600 sacks; 7676' - 7678', CIBP at 7600' with 35' of cement; 7304' - 7314', CIBP at 7294'; 7262' - 7278', CIBP at 7208'; 7050' - 7102', CIBP at 7010'
5.	Give the names and depths of any over or underlying oil or gas zones (pools) in the area:
	Within one mile: Yates (500 feet), Seven Rivers (600 feet), Grayburg (1600 feet to 1900 feet), San Andres (2000 feet), Abo (5400 feet to 6200 feet), and Morrow (9900 feet)





IV. EXISTING PROJECT

Navajo recompleted and tested WDW-1 in July and August 1998 in the Cisco portion of the injection zone. Navajo began injecting into WDW-1 on September 23, 1999.

Navajo recompleted and tested WDW-2 in May and June 1999, in the Lower Wolfcamp and Cisco portions of the injection zone. Injection into WDW-2 began on September 23, 1999.

Navajo intends to reenter, test, and recomplete a currently temporarily abandoned well, the Navajo Chalk Bluff Federal Com. No. 1 (formerly operated by Mewbourne Oil Company). Pending successful tests, Navajo proposes to convert the well to its effluent disposal well WDW-3.



VII. PROPOSED OPERATIONS

1. Proposed Injection Rate and Volume

The proposed maximum injection rate for WDW-1, WDW-2, and proposed WDW-3 combined is 1000 gpm or 34,286 bpd. The proposed maximum injection volume in any given month is that volume calculated by multiplying 1000 gpm by 60 minutes per hour by 24 hours per day by the number of days in the month.

The proposed maximum rate of injection into any one well is 500 gpm.

2. Whether the System Is Open or Closed

The operations for the proposed Class I wells will be restricted to injection from a closed system. Fluids to be injected will be generated on site at Navajo's refineries in Artesia and Lovington and will be transported to the injection wells by pipeline.

3. Proposed Surface Injection Pressure

The maximum injection pressure at the wellhead will not exceed 0.2 psi per foot of depth to the top of the injection zone, as required by OCD Proposed Rule 21.B(7), dated October 6, 1997. The maximum injection pressure at the wellhead may vary, depending on the depth of the injection formation. For example, if WDW-1 is completed at the top of the injection zone at 7450 feet, then the requested maximum surface injection pressure is 1490 psi, as calculated below:

Maximum Surface Injection Pressure

- = Depth of Top of the Injection Zone x 0.2 psi/ft
- = 7450 feet x 0.2 psi/ft
- = 1490 psi

If the top of the injection formation coincides with the top of the Cisco or Canyon Formations, both of which are deeper than the Wolfcamp Formation, then the proposed injection pressure will be higher. The proposed injection pressure for each injection formation is summarized in the following table:

	PROPOSED IN	JECTION PRESSURE	
Injection Formation	Top of Injection Formation	Maximum Injection Pressure Gradient	Proposed Injection Pressure
WDW-1			
Wolfcamp Cisco Canyon	7450 feet 7816 feet 8475 feet	0.2 psi/ft 0.2 psi/ft 0.2 psi/ft	1490 psi 1563 psi 1695 psi
WDW-2			
Wolfcamp Cisco Canyon	7270 feet 7645 feet 8390 feet	0.2 psi/ft 0.2 psi/ft 0.2 psi/ft	1454 psi 1529 psi 1678 psi
WDW-3			
Wolfcamp Cisco Canyon	7303 feet 7650 feet 8390 feet	0.2 psi/ft 0.2 psi/ft 0.2 psi/ft	1461 psi 1530 psi 1678 psi

4. Wastestream Information and Compatibility with the Injection Zone

Navajo proposes to inject exempt and nonexempt nonhazardous oilfield waste that is generated at its refineries in Artesia and Lovington. Waste waters from process units, cooling towers and boilers, streams from water purification units and desalting units, recovered and treated ground water, and general wash waters will be blended to make up the proposed waste stream.

Recent chemical analyses of the waste water are included as Attachment VII-1. Average concentration levels for major constituents are listed in Attachment VII-2, along with the expected pH range and specific gravity.

5. Injection Zone Fluid Analysis

The composition of the native formation fluid in the proposed Wolfcamp, Cisco, and Canyon injection zone is expected to be similar to that in these formations in other parts of southeastern New Mexico. The salinity of Wolfcamp, Cisco, and Canyon formation brines from hydrocarbon producing areas in northern Lea County, to the east of Eddy County, was reported by Meyer (1966, Table 4). Attachment VII-3 summarizes the salinity data reported by Meyer (1966, Table 4) for Wolfcamp, Cisco, and Canyon formation brines from limestones that were deposited in a shelf environment similar to that of the proposed injection site. The salinity of the formation brines range from 67,098 to 119,909 parts per million (ppm). The formation brines were produced from intervals that occur between 9001 feet and 10742 feet below ground. Also listed in Attachment VII-7 are data from Strawn limestones that were deposited in a platform environment and that occur at 7700 feet below ground; the salinity of the Strawn formation brine is 39,374 ppm. DST data from WDW-1 indicate that the salinity of fluid recovered from the Cisco Formation in DST No. 5 is 25,000 ppm (Attachment VIII-9).

Formation fluid samples were obtained from the Cisco injection interval upon completion of Navajo's WDW-1 in July 1998. The sample from the lower Cisco perforations (8220 feet to 8476 feet) had a TDS concentration of 33,000 mg/l. The sample from the upper Cisco perforations (7924 feet to 8188 feet) had a TDS concentration of 18,000 mg/l. The report of the chemical analysis is included as Attachment VII-4.

Formation fluid samples were obtained from the Cisco injection interval upon completion of Navajo's WDW-2 in June 1999. The sample from the lower Cisco perforations (7820 feet to 8392 feet) had a specific gravity of 1.0249 and a TDS concentration of 20,000 mg/l. The sample from the Lower Wolfcamp and upper Cisco perforations (7570 feet to 7736 feet) had a specific gravity of 1.0082 and a TDS concentration of 13,000 mg/l.

Navajo will attempt to retrieve a sample of formation brine during the well testing operations of proposed WDW-3. Formation brine samples will be retrieved prior to any stimulation treatments or injection into the wells.

ATTACHMENT III-3

INJECTION WELL DATA SHEET

LEASE: WDW-3 (Proposed)

OPERATOR: Navajo Refining Company

Hole Size __6"__

Injection Interval

Total Depth ____10120 feet

(perforated or open-hole; indicate which)

700' EST 2250' EWI	1-T18S-R27E		
			_
Footage Location	Section	Township	Range
WELL CONSTRUCTION DA	ATA		
Surface Casing			
Size <u>13-3/8"</u>	Cemented with _	425 sacks + 200 sacks	by 1" line
TOCSurface	feet determined b	y Cementing through 1	<u>"line</u>
Hole Size <u>17-1/2</u>	Set at 400 feet		
Intermediate Casing			
Size <u>9-5/8"</u>	Cemented with _	1025 sacks	
TOC Surface	feet determined by	y Circulating to surface	i .
Hole Size <u>12-1/4"</u>	Set at <u>2604 feet</u>		
Long String			
Size7"	Cemented with _	1350 sacks	
TOC1547	feet determined b	y <u>Calculation</u>	
Hole Size <u>8-1/2"</u>	Set at <u>9450 feet</u>		
Liner			
Size <u>4-1/2"</u>	Cemented with	175 sacks	
TOC _9051	feet determined by	y <u>Calculation</u>	

Set at __9051 to 10119 feet

Tubing size <u>4-1/2</u> lined with <u>not lined</u> set in a <u>retrievable</u> packer at <u>approximately 6600</u> feet. Other type of tubing/casing seal if applicable <u>latch-in seal assembly</u>

ATTACHMENT III-3 (Continued)

INJECTION WELL DATA SHEET

OTHER DATA

- 1. Is this a new well drilled for injection? ____ Yes _X_ No
- 2. Name of the injection formation: <u>Lower Wolfcamp, Cisco, and Canyon Formations</u>
- 3. Name of Field or Pool (if applicable): _Navajo Injection; Permo-Penn
- 4. Has the well ever been perforated in any other zones(s)? List all such perforated intervals and give plugging detail, i.e., sacks of cement or plug(s) used. __9861' 9882', CIBP at 9800' with 35' of cement; 7826' 7830', squeezed with 600 sacks; 7676' 7678', CIBP at 7600' with 35' of cement; 7304' 7314', CIBP at 7294'; 7262' 7278', CIBP at 7208'; 7050' 7102', CIBP at 7010'
- 5. Give the names and depths of any over or underlying oil or gas zones (pools) in the area:
 - Within one mile: Yates (500 feet), Seven Rivers (600 feet), Grayburg (1600 feet to 1900 feet),
 San Andres (2000 feet), Abo (5400 feet to 6200 feet), and Morrow (9900 feet)

VI. INJECTION ZONE WELLS

VI.A Protocol for Identifying Wells

Search Protocol for Non-Freshwater Artificial Penetrations

As Navajo's agent, Subsurface employed the services of Federal Abstract Company in the research and acquisition of data concerning non-freshwater wells. Federal Abstract understands the necessity for complete records and makes every diligent effort to complete this task. Subsurface and Federal Abstract examined public and private sources of data to identify producing and abandoned oil and gas wells and disposal wells in the AOR.

The Oil Conservation Division (OCD) is the primary agency in which files are researched for oil and gas well records. The OCD is the state repository for oil and gas well and Class II well records, as the state regulatory authority for the oil and gas industry. In order to retrieve well records, the following general procedure is used for researching each well within a given area.

Map Review

Before the retrieval process can begin, it is necessary to know the operator, lease name, county in which the well is located, and the township, range, and section in which the well is found. This information is normally found on commercially prepared oil and gas base maps. Maps are produced by commercial firms, who obtained the data to build the oil and gas bases from "scout" tickets (completion information received from individual oil companies) in the early years and then, in later years, from the OCD itself. The commercial firms continually update the maps by plotting information filed by oil and gas operators with the OCD. Changes in the status of existing wells are noted, as well as information on new wells. Attachment V-1 is a modified version of the oil and gas base map provided by Midland Map Company, a recognized commercial supplier of oil and gas base maps for southeastern New Mexico.



Well Records Review

The OCD filing system is the best source of oil and gas well data in New Mexico. Microfiche and microfilm files of historical well records are searched as well as the hard copy files of well records not yet placed on microfilm. These files are organized by quarter-quarter section, township, and range.

Scout Tickets

Scout tickets were available for the wells in the AOR from IHS Energy Group (formerly Petroleum Information Dwights LLC). Information about nearly every well in the AOR was available, including some wells for which records were not available from the OCD. Scout tickets were also available from The Subsurface Library, Midland, Texas.

OCD Online

Well information is also available for downloading from the website maintained by the OCD. The spreadsheet of information for wells in the Artesia district, which includes the Navajo vicinity, was used as the source for well API numbers and as a guide to current well status and operator. The specific file used was "artesia030521.xls." The file was downloaded from the OCD's FTP site on July 8, 2003.

VI.B Well Data Tabulations and Well Records

Two hundred ninety-five (295) well locations have been identified within or slightly beyond one mile of WDW-1, WDW-2, and proposed WDW-3. The well locations are shown in Attachment V-1. A tabulation of total depth, status, and drill date for all of the wells in the one-mile AOR is provided in Attachment VI-1. Wells in Attachment VI-1 are identified with Map ID numbers that are keyed to the map in Attachment V-1. Scout tickets for the wells in the AOR for which no records were available from the OCD are presented as Attachment VI-2A.



Well construction data for wells within the one-mile AOR that penetrate the Injection Zone are tabulated in Attachment VI-1A.

Wells That Do Not Penetrate the Injection Zone (264 Wells)

Two hundred sixty-four (264) of the wells are documented to have been drilled to depths of less than 7270 feet, which coincides with the top of the injection zone in WDW-2. The top of the injection zone in WDW-1 and proposed WDW-3 is 7450 feet and 7303 feet, respectively. The wells did not penetrate the proposed injection zone. These wells are:

Map ID Nos. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 82, 84, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 121, 122, 123, 125, 126, 127, 128, 129, 130, 131, 133, 135, 136, 138, 139, 140, 141, 142, 143, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 158, 159, 160, 162, 165, 166, 354, 355, 356, 358, 359, 595, 748, 749, 750, 751, 752, 753, 755, 756, 757, 758, 765, 766, 772, 773, 774, 779, 781, 785, 786, 789, 791, 793, 796, 797, 799, 800, 801, 802, 805, 806, 807, 808, 812, 813, 814, 836, 837, 838, 839, 840, 841, 842, 843, 844, 846, 849, 850, 852, 853, 854, 856, 857, 858, 859, 860, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 888, 895, 896, 897, 901, 910, 912, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 936, 938, 939, 940, and 943.

Mis-Plotted or Duplicate Locations (9 Well Spots)

Nine (9) well locations appear on Attachment V-1 for which well records could not be found in the files of the OCD and for which scout tickets were not available. All of these well locations are mis-plotted or duplicate locations.



Five (5) of these locations (Map ID Nos. 30, 108, 119, 132, and 137) appear only on a commercial base map prepared by the Midland Map Company (Attachment V-1). These locations do not appear on a commercial base map prepared by the Geomap Company or on the lease map prepared by Midland Map Company. A representative of Midland Map Company confirmed that four of the five well locations on the oil and gas base map, Map ID Nos. 108, 119, 132, and 137, are duplicate locations for existing wells. The Midland Map representative stated that the locations will be removed from the map. Map ID No. 30 is the incorrect, duplicate location plotted on the Midland Map base map for Map ID No. 14, the Arco Empire Abo Unit G No. 20 (formerly the Kersey Ramapo No. 5). The correct location of Map ID No. 14 is shown on the Midland Map lease map.

Four (4) well locations (Map ID Nos. 754, 792, 795, and 942) are mis-plotted on Attachment V-1. These mis-plotted locations are incorrect duplicate locations for other wells, as discussed below.

Map ID No. 754 is the incorrect location for Map ID No. 756, the ARCO Permian Empire Abo Unit K No. 17. The well spot on the Midland Map map for Map ID No. 754 is labeled "17." The form "Sundry Notices and Reports on Wells" that was filed on May 18, 1959, for Map ID No. 756 states that the form was "Filed to show change in well location..." A copy of the original "Notice of Intention to Drill" with the originally permitted location was not available from the files of the OCD in Santa Fe. The Midland Map Company's lease and oil and gas base maps show the incorrect location of the well as Map ID No. 754. Subsurface plotted the correct location for this well as Map ID No. 756 on Attachment V-1. A representative of Midland Map Company confirmed that Map ID No. 756 is the correct location for the well. The representative stated that the well will be correctly spotted on the company's new maps and that the well spot for Map ID No. 754 will be removed. Information to support the conclusion that Map ID No. 754 is mis-plotted is included in Attachment VI-2B.

Map ID No. 792 is an incorrect location on the Midland Map oil and gas base map for Map No. 814, the ARCO Permian Empire Abo Unit K No. 141. Midland Map Company's lease map shows Map ID No. 814 but not Map ID No. 792. A



representative of Midland Map Company confirmed that the correct location for the well is the location of Map ID No. 814. The representative said that the well spot for Map ID No. 792 will be removed from the oil and gas base map and that the location for Map ID No. 814 will be added to the oil and gas base map.

Map ID No. 795 is an incorrect location for Map ID No. 765. Midland Map shows the location of Map ID No. 795 on both their lease map and their oil and gas base map. Map ID No. 795 is labeled on Midland Map Company's lease map as Well No. 1. A representative of Midland Map Company concluded after examining their series of historical maps that Map ID No. 795 was permitted sometime between 1959 and 1960. Map ID No. 765 was permitted in 1959 as the William Hudson Hudson-State Abo No. 1. A discrepancy in the location of Map ID No. 765 is evident upon examination of the "Notice of Intention to Drill." The location for Map ID No. 765 was typed in on the "Notice of Intention to Drill" as 990 feet from the South line and 330 feet from the East line of the section, which is the location of Map ID No. 795. On this form, the word South was crossed out, and North was written in by hand. On the plat of the section in the upper left portion of the same form, the well is spotted at the location of Map ID No. 765. Map ID No. 795 was spotted by Midland Map Company on their maps at the typed-in location on the "Notice of Intention to Drill." The same well was also spotted at the correct location, that of Map ID No. 765. Information to support the conclusion that Map ID No. 795 is mis-plotted is included in Attachment VI-2C.

Map ID No. 942 is an incorrect location for Map ID No. 89. Map ID No. 942 is API No. 30-015-06250, included in the well data spreadsheet available on the OCD website on July 8, 2003, "artesia030521.xls." In the spreadsheet, this well is the Arco Oil and Gas Company Empire Abo UT I. No records are found in the OCD's files for this well in this location. The well records on file for Map ID No. 89 (API No. 30-015-02625) are included in Attachment VI-2D. The records include three sundry notices filed for API No. "30-015-0625." Map ID No. 89 was operated by ARCO Permian (and its predecessors and successors) as the Empire Abo Unit "I" No. 23 beginning in 1973. Because of the similarity in the API number, well name, and locations of the two wells, the API number and



location of Map ID No. 942 are considered to be incorrect. Map ID No. 942 is considered to be the same well as Map ID No. 89.

The mis-plotted well locations are:

Map ID Nos. 30, 108, 119, 132, 137, 754, 792, 795, and 942.

Expired Permits and Revised Locations (4 Wells)

Three wells, Map ID Nos. 934, 935, and 944, were permitted and never drilled. The permits were allowed to expire.

Map ID No. 120 is the original proposed location for Navajo's WDW-3. No well has been drilled at this location.

Proposed Locations (2 Wells)

Map ID Nos. 937 and 941 are permitted locations that have not yet been drilled.

Well with No Records (1 Well)

Map ID No. 778 was drilled to the Abo or shallower, and did not penetrate the injection zone. The well is shown as an oil well on the Midland Map. No records for the well are available from the OCD's files. Available information for the well is included in Attachment VI-2E. A representative of Midland Map Company stated that the well was drilled before 1957 by the Rutter & Wilbanks Bros. as the Hudson No. 2. However, the well does not appear on a 1959 location plat submitted for Map ID No. 785 (included in Attachment VI-2E). Rutter & Wilbanks Bros. drilled three wells in the vicinity of Map ID No. 778. Map ID No. 773, the Turner No. 1, was drilled in 1948 to 1742 feet in the Red Lake Queen-Grayburg-San Andres pool. Map ID No. 774, the Hudson No. 1, was drilled in 1948 to 1707 feet in the same pool. Map ID No. 779 was drilled in 1959 to 5884 feet in the Empire Abo pool. Because the well, if it exists, is shown as an oil well drilled by Rutter & Wilbanks Bros. (who drilled Abo and shallower wells nearby) that is surrounded by oil production from the Abo and shallower intervals, the well is not considered to have penetrated the Navajo injection zone.



Injection Zone Penetrations (15 Wells)

Fifteen (15) wells reached total depths of 7270 feet or greater and penetrated the proposed injection zone. Each of these wells is discussed in detail in Sections VI.C through VI.E. The wells that penetrated the injection zone are:

Map ID Nos. 59, 81, 83, 124, 134, 144, 157, 161, 167, 353, 848, 851, 855, 861, and 911.

Attachment VI-1A includes construction details, total depth, status, and drill date for the injection zone penetrations in the AOR. Well records available from the OCD for these wells are provided in Attachment VI-2.

VI.C Well Schematics

Schematics of all wells within one mile of WDW-1, WDW-2, and proposed WDW-3 that penetrate the injection zone are included with the well records in Attachment VI-2. For FART TOTAL WELLS

VI.D Condition of Artificial Penetrations 1/1

Each of the wells that penetrates the injection zone was evaluated to determine if it will allow movement of fluids into or between USDWs. For the purpose of this demonstration, the artificial penetrations may be categorized as follows:

Class I Waste Disposal Well (3 wells): (2) (NOT COUNTING WALL 3)

Map ID Nos. 59 and 861 are Navajo's Class I injection wells, WDW-1 and WDW-2. Map ID No. 157 is Navajo's proposed WDW-3.

Class II Saltwater Disposal Wells (1 well):

Map ID No. 83, the I&W Inc., Walter Solt SWD-1, is a Class II saltwater disposal well that is currently active. The well injects into the Wolfcamp in four sets of perforations: 7518 to 7534 feet, 7742 to 7756 feet, 7778 to 7787 feet, and 7810 to



7812 feet. The injection zone coincides with the shallowest formation proposed for injection by the proposed Navajo injection wells. The well has surface and intermediate or production casing set to prevent contamination of the USDW. The casing/formation annulus is cemented across the injection zone, as presented in Attachment VI-3. At the end of the well's useful life, the operator will plug and abandon the well according to OCD regulations with cement plugs set to protect the USDW and with heavy mud left in the wellbore. The Class II well in the AOR is listed below:

Map ID No. 83.

No corrective action is required for this well.

Active Producing Wells (9 wells):

Active producing wells include producing and temporarily abandoned oil and gas wells. These wells have surface and intermediate or production casing set to prevent contamination of the USDW. In all wells, the casing/formation annulus is cemented across the injection zone. Reported top of cement, where available, or calculated top of cement for each casing string in each well is presented in Attachment VI-3. At the end of the wells' useful lives, the operators will plug and abandon the wells according to OCD regulations with cement plugs set to protect the USDW and with heavy mud left in the wellbore. The active producing wells within the AOR are listed below:

Map ID Nos. 81, 124, 134, 144, 161, 167, 355, 855, and 911.

No corrective action is required for these wells.

Plugged and Abandoned Producing Wells (1 well):

Plugged and abandoned producing wells are former producing wells with surface and intermediate or production casing set that have been plugged with cement plugs and heavy mud. The cement plugs were placed between the injection zone and the





USDWs. The plugged and abandoned producing well within the AOR is listed below:

Map ID No. 848

No corrective action is required for this well.

Plugged and Abandoned Dry Holes (1 well):

Plugged and abandoned dry holes have surface casing and may have intermediate or long-string casing set through the injection zone. Dry holes were plugged with heavy mud and cement plugs. The cement plugs were placed between the requested injection zone and the USDWs. The plugged and abandoned dry hole is listed below:

Map ID No. 851.

No corrective action is required for this well.

VI.E Cone of Influence and Area of Review Determination

The cone of influence is defined here as the area within which increased injection zone pressures caused by injection of wastes would be sufficient to cause fluid movement through any well or other conduit into a USDW. This demonstration shows that the extremely conservative worst-case cone of influence of the proposed injection operations is smaller than the one-mile radius AOR in which artificial penetrations were investigated.

In the worst case, an undocumented abandoned well is imagined to be open to both the injection zone and the base of the USDW. In addition, the well is imagined to be filled to within 100 feet of the ground surface with formation brine from the injection zone and fresh water from the base of the USDW. The cone of influence can be calculated by comparing the hydraulic heads of the injection zone and the lowermost USDW. It is only where the injection zone head is above the USDW head that fluid movement from the injection zone into the USDW could occur. This worst-case



model of the potential effect of injection upon the USDW is extremely conservative, because no wells within one mile of the proposed injection wells are open to both the injection zone and the USDW and filled with brine.

The injection zone for Navajo's proposed injection wells has a native pressure such that the resulting hydraulic head is lower than the head of the lowermost USDW. The pre-injection pressure of the injection interval was measured on July 30, 1998, in Navajo's WDW-1 to be 2928 psia at 7924 feet (7911 feet below ground level, BGL) (Attachment VIII-9B).

A sample of fluid was retrieved from formation fluid swabbed on July 25, 1998, from the perforations of the deeper Cisco interval, from 8220 feet to 8476 feet in Navajo's WDW-1. The total dissolved solids (TDS) concentration of the sample was 33,000 mg/l, and the specific gravity of the sample at room temperature was 1.034. Formation fluid was swabbed on July 29, 1998, from the perforations of the shallower Cisco interval, from 7924 feet to 8188 feet in Navajo's WDW-1. The analysis of a sample of this fluid indicated that the TDS concentration of the sample was 18,000 mg/l, and the specific gravity at room temperature was 1.018. The chemical analysis of the formation fluid samples is included as Attachment VII-4. These values compare favorably with information from the analysis of fluid retrieved during drillstem test (DST) No. 5, which was conducted on August 26, 1993, in WDW-1 (see Attachment VIII-9). The salinity of the formation fluid retrieved during DST No. 5 was reported in Attachment VIII-9 as a chlorides concentration of 25,000 ppm. The formation fluid is therefore assumed to have a sodium chloride concentration of 25,000 ppm. The specific gravity of such a fluid is approximately 1.02.

The pre-injection pressure, P_i, at the top of the injection zone in proposed WDW-2 at 7270 feet BKB (7257 feet BGL) is 2640 psia, as calculated below, based on a formation fluid specific gravity of 1.018. Using the lightest specific gravity in this calculation yields a high P_i, which is conservative.



$$P_i(7257 \text{ feet}) = P_i(7911 \text{ feet}) - (7911 \text{ feet} - 7257 \text{ feet}) (0.433 \text{ psi/ft}) (1.018)$$

= 2928 psia - 288 psi
= 2640 psia

The head of the lowermost USDW is estimated to be 100 feet BGL. This estimate is reasonably conservative, as it is based on a static water level measurement of 81 feet in Water Well No. 18.28.8.330 (Attachment XI-1). The total depth of the well is unknown.

The critical pressure, P_c, at 7257 feet BGL that would be necessary to raise the hydrostatic head of the injection interval to the head of the lowermost USDW at 100 feet BGL is 3152 psia, as calculated below:

```
P<sub>c</sub> = (Top of Injection Zone - Base of USDW) (0.433 psi/ft)(1.018)
+ (Base of USDW - Head of USDW) (0.433 psi/ft)
= (7257 feet - 473 feet) (0.433 psi/ft) (1.018)
+ (473 feet - 100 feet) (0.433 psi/ft)
= 3152 psia
```

The critical increase in reservoir pressure, ΔP_c , above the native pressure, that is necessary to raise the hydrostatic head of the injection interval to the head of the lowermost USDW is, therefore, 512 psi, as calculated below:

$$\Delta P_c = P_c - P_i$$

= 3152 psia – 2640 psia
= 512 psi

An increase in reservoir pressure greater than 512 psi would be sufficient to raise the head of the injection zone above the head of the lowermost USDW. The cone of influence is the area around the injection wells within which the increase in reservoir pressure caused by injection is greater than 512 psi.

Contour plots of the predicted pressure increase in the injection zone (Attachment VI-5) were generated using historical injection rates and the maximum injection rates



permitted for WDW-1, WDW-2, and proposed WDW-3. A Visual Basic program, PREDICTW, was used to calculate the pressure increase throughout the injection zone at the end of 20 years of injection into the wells. The theoretical basis for PREDICTW is discussed in Attachment VI-6. The gridded pressure increases created by PREDICTW are contoured using SURFER, a commercial contouring software package.

Conservative values for reservoir thickness and permeability were used to overestimate the predicted increase in reservoir pressure. The reservoir was assumed to have a thickness of 85 feet. The permeability of the reservoir was assumed to be 250 md. The modeled kh, 21,250 md-ft (= 250 md x 85 feet), is less than 10% of the kh, 284,839 md-ft, that was determined from the pressure falloff test conducted in Navajo's WDW-1 on July 30, 1998 (See Section VIII and Attachment VIII-9B). Using a low kh will yield a predicted pressure increase that is much greater than expected and a cone of influence that is much larger than expected.

The porosity was assumed to be 10%.

The viscosity of the formation fluid with TDS concentration of 25,000 ppm at 130 °F is 0.53 cp (Attachment VI-7). The compressibility of the pore volume of the formation (Canyon Reef as shown on Attachment VI-8), c_r , is 5.5 x 10 ⁻⁶ psi ⁻¹. The compressibility of the formation fluid (distilled water as shown on Attachment VI-8), c_w , is 2.9 x 10 ⁻⁶ psi ⁻¹. The total compressibility ($c_t = c_r + c_w$) is 8.4 x 10 ⁻⁶ psi ⁻¹.

Historical injection data for WDW-1 and WDW-2 were used for the injection period from September 23, 1999 (initial injection into the wells) through June 30, 2003. WDW-1, WDW-2, and proposed WDW-3 are then modeled as injecting from July 1, 2003 through September 22, 2019, at a maximum total rate of 1000 gallons per minute (gpm) distributed among the three wells. The maximum per-well injection rate modeled is 500 gpm.

The I & W, Inc. Walter Solt SWD-1 (Map ID No. 83), a Class II well, injects into the lower Wolfcamp through four sets of perforations between 7518 and 7812 feet. Historical injection records available from the OCD for 1994 through 1997 indicate



that the average injection rate is 17.6 gpm. This rate is used for the historical injection period from June 1, 1988, through September 22, 1999. For the future injection period, from September 23, 1999 through September 22, 2019, the Walter Solt SWD-1 is expected to inject at 58.3 gpm, or 2000 barrels per day (bpd), the maximum rate requested by the original permit application for the Walter Solt SWD-1.

The 512-psi pressure-increase contour, which defines the outline of the worst-case cone of influence, is located less than one mile from WDW-1, WDW-2, and proposed WDW-3, as shown in Attachment VI-5. An improperly abandoned wellbore or other conduit filled with formation fluid that is located farther than one mile from the proposed wells would not transmit sufficient pressure from the injection zone to move fluids into the USDW. Navajo researched public and private sources of information about wells within the one-mile AOR. Only 15 of 295 wells drilled in the AOR penetrated the injection zone. Information was presented in Section VI.D that demonstrates that each of the injection zone penetrations is properly constructed to prevent migration of fluids into the USDW.



ATTACHMENT VI-1 TABULATION OF WELLS WITHIN 1 MILE OF THE INJECTION WELLS

	API	OPERATOR, WELL NAME, NUMBER	SEC, TWP, RGE, UL	DEPTH	STATUS	COMP. DATE Plug date
-	30-015-00693	ASPEN OIL INC DELHI #001	36 17S 27E A 330N 330E	528	T/A 0	8/30/41
2	30-015-00694	DELHI OIL CORP. STATE #013	36 17S 27E A 990N 990E	1993	P&A O	6/24/48
ဇ	30-015-00646	ASPEN OIL INC DELHI #007	36 17S 27E A 990N 330E	. 540	T/A 0	4/21/50
4	30-015-00668	MCQUADRANGLE, LC SOUTH RED LAKE GRAYBURG UNIT #010	36 17S 27E G 1650N 2310E	1736	SHUT IN O	12/6/47
5	30-015-00690	ASPEN OIL INC CONKLIN #002	36 17S 27E G 1830N 2205E	532	ACTIVE O	3/6/49
9	30-015-00667	MCQUADRANGLE, LC SOUTH RED LAKE GRAYBURG UNIT #011	36 17S 27E G 2310N 2310E	1733	ACTIVE I	3/23/49
7	30-015-00666	ASPEN OIL INC CONKLIN #001	36 17S 27E G 2310N 2310E	533	ACTIVE O	1/10/42
80	30-015-00689	C E LARUE & B M MUNCY JR GATES STATE #001	36 17S 27E H 1650N 330E	557	ACTIVE O	8/4/50
6	30-015-00647	C E LARUE & B M MUNCY JR GATES STATE #002	36 17S 27E H 1650N 990E	551	SHUT IN O	10/10/52
10	30-015-00669	ASPEN OIL INC HOMAN #001	36 17S 27E H 2310N 330E	1804	SHUT IN O	6/20/49
11	30-015-00688	KERSEY & CO RAMAPO #001	36 17S 27E 1 2310S 330E	590	P&A O	10/28/41
12	30-015-00670	KERSEY & CO RAMAPO #003	36 17S 27E I 2970N 330E	1857	P&A O	1/3/50
13	30-015-00687	KERSEY & CO RAMAPO #002	36 17S 27E I 2310S 990E	1900	P&A G	5/7/48
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	API	OPERATOR, WELL NAME, NUMBER	SEC, TWP, RGE, UL	DEPTH	STATUS TYPE	COMP. DATE Plug date
14	30-015-00685	ARCO OIL & GAS EMPIRE ABO UNIT G #020	36 17S 27E 1 1650S 330E	5980	P&A O	7/10/89
15	30-015-00671	ROJO GRANDE COMPANY LLC RAMAPO #003	36 17S 27E J 2310S 2310E	591	ZONE ABAN O	2/13/42 1/24/00
16	30-015-01221	MCQUADRANGLE, LC SOUTH RED LAKE GRAYBURG UNIT #023	36 17S 27E J 2300S 2300E	1790	ZONE ABAN O	2/27/48 8/13/02
17		MARTIN YATES III DOOLEY STATE #3	36 17S 27E J	5865		4/22/61
18	30-015-05934	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #019A	36 17S 27E J 1650S 1650E	5970	ACTIVE O	2/26/61
19	30-015-01220	MCQUADRANGLE, LC SOUTH RED LAKE GRAYBURG UNIT #022	36 17S 27E K 2310S 2330W	1747	ZONE ABAN O	2/3/49 7/17/02
20	30-015-00674	ROJO GRANDE COMPANY LLC RAMAPO #002	36 17S 27E K 2310S 2310W	514	ACTIVE O	5/15/47
21	30-015-01219	MCQUADRANGLE, LC SOUTH RED LAKE GRAYBURG UNIT #021	36 17S 27E K 2310S 1650W	1710	ACTIVE 1	1/20/48
22	30-015-23913	MCQUADRANGLE, LC SOUTH RED LAKE GRAYBURG UNIT #043	36 17S 27E K 1650S 1650W	1785	ACTIVE O	12/11/81
23		MARTIN YATES III DOOLEY STATE ABO #3	36 17S 27E K	5865	ACTIVE O	4/19/61
24	30-015-00673	ROJO GRANDE COMPANY LLC RAMAPO #001	36 17S 27E K 1650S 2310W	510	ZONE ABAN O	10/16/41 1/24/00
25	30-015-00682	ROJO GRANDE COMPANY LLC RAMAPO #004	36 17S 27E N 990S 1650W	541	ZÖNE ABAN O	9/29/42 1/24/00
26	30-015-00683	MCQUADRANGLE, LC SOUTH RED LAKE GRAYBURG UNIT #028	36 17S 27E N 965S 1650W	1812	ACTIVE I	4/16/48
27	30-015-01218	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #018	36 17S 27E N 330S 2310W	5925	T/A O	2/2/60
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28 30-015-00684 BURNHAM OIL COMPANY STATE B-6961 NO. 1-A 29 30-015-01251 BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #019 32 30-015-01616 C F M OIL CO BLAKE STATE #001 33 30-015-01638 BEDINGFIELD, MALCO, RESLER STATE NO. 1 34 30-015-21594 RODNEY B WEBB DBA WEBB OIL CO POWCO STATE #001 35 30-015-01636 BEDINGFIELD, J E DELHI-STATE NO. 1 36 30-015-01636 BEDINGFIELD, J E DELHI-STATE NO. 1	ION COMPANY ON COMPANY RESLER WEBB OIL CO		1500 6200 615 2004	P&A O T/A O MISPLOT OF 14 O ACTIVE O ACTIVE	5/13/47 9/8/59 5/16/60 3/7/53 7/15/52
30-015-01251 30-015-00677 30-015-01616 30-015-21594 30-015-21594	ION COMPANY S RESLER S WEBB OIL CO	7.5 27E 1980E 7.5 27E 990E 7.5 28E 990E 7.5 28E 990E 7.5 28E 990E	6200 6013 615	T/A O MISPLOT OF 14 O ACTIVE O P&A O ACTIVE	9/8/59 5/16/60 3/7/53 7/15/52
30-015-00677 30-015-01616 30-015-01638 30-015-21594		\$ 27E \$ 27E 990E \$ 28E \$ 28E \$ 28E 990E \$ 28E 1650E	6013	MISPLOT OF 14 T/A O ACTIVE O ACTIVE	5/16/60 3/7/53 7/15/52
30-015-00677 30-015-01616 30-015-01638 30-015-21594		\$ 27E 990E \$ 28E 990E \$ 28E 990E \$ 28E 1650E	6013	T/A O ACTIVE O O ACTIVE	5/16/60 3/7/53 7/15/52
30-015-01616 30-015-01638 30-015-21594		\$ 28E 990E \$ 28E 990E \$ 28E 1650E	2004	ACTIVE O P&A O ACTIVE	3/7/53 7/15/52 11/15/75
30-015-01638 30-015-21594 30-015-01636	o, o,	S 28E 990E S 28E 1650E	2004	P&A O ACTIVE	7/15/52
30-015-21594		s 28E 1650E	i 1	ACTIVE	11/15/75
30-015-01636			652	>	
20 045 25624	31 17S 330N	7S 28E C I 2310E	637	P&A O	12/23/52
0-00	WEBB OIL CO 31 17S 980N 1	7S 28E B I 1620E	747	ACTIVE O	7/15/86
37 30-015-01633 ASPEN OIL INC ASTON & FAIR A #001	31 17S 330N	17S 28E D 1 330W	531	SHUT IN O	6/23/42
38 30-015-01634 ASTON & FAIR STATE 31 NO. 1X	31 17S 350N	17S 28E D I 345W	525	NO COMPL O	1/5/46
39 30-015-01645 MCLAUGHLIN, C T BEDINGFIELD STATE 1 NO. 1	31 17S NO. 1 990N	17S 28E F 1 990W	2307	P&A O	2/16/50
40 30-015-02666 HANSON ENERGY HUDSON SAIKIN STATE #001	31 17S #001 2310N	17S 28E E N 330W	1816	ACTIVE O	5/29/48
41 30-015-24887 HANSON ENERGY HUDSON SAIKIN STATE #002	31 17S #002 2310N	17S 28E E N 990W	1950	ACTIVE O	7/7/84

2	AP	OPERATOR, WELL NAME, NUMBER	SEC, TWP, RGE, UL	DEPTH	STATUS TYPE	COMP. DATE Plug date
42	30-015-01643	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #022	31 17S 28E F 2310N 2260W	5971	A/T O	09/2/9
43	30-015-01635	ASPEN OIL INC ASTON & FAIR #001Y	31 17S 28E F 2310N 2310W	1926	SHUT IN O	5/8/48
44	30-015-01637	ASPEN OIL INC MALCO STATE #001	31 17S 28E G 2310N 2310E	1852	ACTIVE O	10/12/53
45	30-015-01652	KERSEY & CO BOLING #001	31 17S 28E G 2288N 1625E	6025	ACTIVE O	8/10/60
46	30-015-10537	SDX RESOURCES INC NORTHWEST ARTESIA UNIT #004	31 17S 28E H 2277N 330E	6180	ACTIVE O	9/23/65
47	30-015-10833	SDX RESOURCES INC NORTHWEST ARTESIA UNIT #010	31 17S 28E 1 1980S 660E	1945	ACTIVE O	6/17/66
48	30-015-01644	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #024A	31 17S 28E 1 1650S 330E	6106	T/A 0	4/29/60
49	30-015-01642	HANSON ENERGY STATE FW #001	31 17S 28E J 1650S 2310E	1937	ACTIVE O	12/23/62
20	30-015-01650	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #023A	31 17S 28E J 1650S 1958E	6094	SHUT IN O	3/13/60
51	30-015-01651	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #022B	31 17S 28E K 1650S 2387W	6046	ACTIVE O	4/10/60
52	30-015-01640	HANSON ENERGY RAMPO #002	31 17S 28E L 2310S 330W	1996	ACTIVE	7/16/55
53	30-015-01648	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #021A	31 17S 28E L 1651S 1089E	5971	ZONE ABAN O	4/29/60 8/24/02
54	30-015-01639	HANSON ENERGY RAMPO #001	31 17S 28E M 990S 330W	1975	ACTIVE O	5/1/48
55	30-015-01647	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #021	31 17S 28E M 660S 660W	9009	T/A O	1/31/60
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	API	OPERATOR, WELL NAME, NUMBER	SEC, TWP, RGE, UL	ОЕРТИ	STATUS TYPE	COMP. DATE Plug date
26	30-015-01646	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #022A	31 17S 28E N 660S 2082W	6050	ACTIVE	1/22/60
22	30-015-10118	HANSON ENERGY STATE FV #001	31 17S 28E N 766S 2188W	1938	ACTIVE O	3/1/63
28	30-015-01653	OTIS A ROBERTS PARKER-STATE NO. 1	31 17S 28E O 990S 1650E	742	P&A O	1/18/42
29	30-015-27592	NAVAJO REFINING CO. PIPELINE DIVISION WDW #001	31 17S 28E 660S 2310E	10200	ACTIVE I	8/4/98
09	30-015-01649	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #023	31 17S 28E O 660S 1939E	6094	ACTIVE O	2/24/60
61	30-015-20042	SDX RESOURCES INC NORTHWEST ARTESIA UNIT #011	31 17S 28E P 990S 660E	2012	ACTIVE O	2/8/67
62	30-015-01641	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #024	31 17S 28E P 660S 660E	6122	ACTIVE O	3/12/60
63	30-015-01654	BEDINGFIELD, J E ASTON-STATE NO. 1	32 17S 28E D 330N 330W	651	P&A O	5/12/53
64	30-015-01671	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #025B	32 17S 28E E 2280N 978W	6013	T/A 0	9/13/60
65	30-015-01657	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #026	32 17S 28E F 2280N 1980W	6171	T/A O	8/24/60
99	30-015-10818	SDX RESOURCES INC NORTHWEST ARTESIA UNIT #008	32 17S 28E K 2310S 2105W	2003	ACTIVE O	99/8/9
29	30-015-01661	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #026B	32 17S 28E K 1650S 2310W	6083	ACTIVE O	3/27/60
89	30-015-10795	SDX RESOURCES INC NORTHWEST ARTESIA UNIT #009	32 17S 28E L 2310S 660W	1930	T/A O	5/15/66
69	30-015-01662	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #025A	32 17S 28E L 1650S 990W	6075	ACTIVE	4/13/60
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30-015-20043 SDX RESOURCES INC 30-015-01660 BP AMERICA PRODUCTION COMPANY 30-015-01660 BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #025 30-015-01659 BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #261 30-015-22009 BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #272 30-015-22697 BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #261 30-015-22607 BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #261 30-015-22607 BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #251 30-015-22750 BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #251 30-015-22750 BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #251 30-015-24485 CONOCOPHILLIPS COMPANY STATE E AI #001 30-015-24485 CONOCOPHILLIPS COMPANY BD AMERICA BOONIT ACOMPANY	32 17S 28E M 990S 760W			
		1998	T/A 0	2/9/67
	32 17S 28E M 660S 660W	6132	SHUT IN O	3/5/60
	32 17S 28E N 990S 2030W	1954	ACTIVE O	6/17/66
	32 17S 28E N 660S 1980W	6172	ACTIVE O	2/14/60
	32 17S 28E N 150S 1400W	6220	ACTIVE O	7/25/75
	32 17S 28E O 330S 2481E	6370	ACTIVE O	7/18/77
	5 18S 28E C 330N 1941W	6254	T/A 0	7/18/60
	5 18S 28E C 1080N 1914W	6350	ACTIVE O	1/4/79
	5 18S 28E D 660N 660W	6273	ACTIVE O	3/27/60
	5 18S 28E D 660N 150W	6250	SHUT IN O	1/12/79
	5 18S 28E E 1660N 330W	6265	ACTIVE O	5/10/60
	5 18S 28E E 1980N 990W	10450	ACTIVE G	8/10/83
	5 18S 28E F 1650N 1650W	6265	ACTIVE O	12/30/59
30-015-25522 I & W INC WALTER SOLT STATE #001	5 18S 28E L 2240S 400W	8500	ACTIVE S	8/12/83

	API	OPERATOR, WELL NAME, NUMBER	SEC, TWP, RGE, UL	DEPTH	STATUS	COMP. DATE Plug date
48	30-015-10244	MACK ENERGY CORP STATE AG #001	5 18S 28E L 2310S 330W	6365	ZONE ABAN O	8/25/63 3/27/01
87	30-015-20019	SDX RESOURCES INC NORTHWEST ARTESIA UNIT #016	6 18S 28E A 330N 330E	3280	ACTIVE O	3/14/67
88	30-015-02615	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #024B	6 18S 28E A 660N 660E	6241	ACTIVE O	2/29/60
83	30-015-02625	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #023C	6 18S 28E B 470N 2170E	6194	T/A 0	12/21/59
06	30-015-21542	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #231	6 18S 28E B 1260N 1580E	6250	ACTIVE O	11/1/75
91	30-015-02621	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #022E	6 18S 28E C 660N 1980W	6033	ACTIVE O	12/29/59
92	30-015-21626	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #231A	6 18S 28E G 1361N 2531E	6380	SHUT IN O	10/22/75
93	30-015-02613	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #021B	6 18S 28E D 990N 660W	6119	ACTIVE O	12/30/59
94	30-015-23116	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #213	6 18S 28E E 2050N 100W	6225	ACTIVE O	6/2/80
95	30-015-02619	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #021C	6 18S 28E E 1990N 660W	6202	ACTIVE O	10/30/59
96	30-015-22637	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #212	6 18S 28E E 2450N 400W	6267	ACTIVE O	12/28/78
26	30-015-21395	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #211	6 18S 28E E 2630N 1300W	6200	ACTIVE O	2/11/75
86	30-015-22012	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #222	6 18S 28E F 1350N 1572W	6303	ACTIVE O	3/13/77
66	30-015-02626	SARKIN, DAVID C & OLIVER, HENRY F STATE NO. 1	6 18S 28E F 1650N 1650W	705	P&A O	2/21/42
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	API	OPERATOR, WELL NAME, NUMBER	SEC, TWP, RGE, UL		STATUS	COMP. DATE
					TYPE	PLUG DATE
100	30-015-10107	HANSON ENERGY STATE FX #001	6 18S 28E F 1874N 1874W	1985	ACTIVE O	8/8/63
101	30-015-02620	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #022D	6 18S 28E F 1990N 2082W	6206	ACTIVE 0	11/26/59
102	30-015-22527	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #223	6 18S 28E F 2630N 1930W	6250	ACTIVE O	5/19/78
103	30-015-21746	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #221	6 18S 28E F 2610N 2713W	6305	ACTIVE O	4/23/76
104	30-015-22913	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #235	6 18S 28E G 1750N 1600E	6300	ACTIVE 0	7/8/79
105	30-015-22593	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #234	6 18S 28E G 1900N 2441E	6260	SHUT IN O	8/27/78
106	30-015-02614	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #023B	6 18S 28E G 1980N 1980E	6242	ACTIVE O	1/26/60
107	30-015-21737	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #232	6 18S 28E G 2253N 1576E	6345	SHUT IN O	4/13/76
108			6 18S 28Е Н		MISPLOT OF 107	
109	30-015-22490	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #233	6 18S 28E G 2550N 2050E	6300	T/A O	9/2/9
110	30-015-02616	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #024C	6 18S 28E H 1650N 990E	6253	ACTIVE	3/24/60
	30-015-23547	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #241	6 18S 28E H 1950N 660E	6386	ACTIVE O	4/12/81
112	30-015-02617	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #024K	6 18S 28E 1 2310S 990E	6350	ZONE ABAN O	8/24/60 12/12/02
113	30-015-22528	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #232A	6 18S 28E J 2300S 1570E	6350	T/A O	2/5/79
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	API	OPERATOR, WELL NAME, NUMBER	SEC, TWP, RGE, UI.	DEPTH	STATUS TYPE	COMP. DATE Plug date
114	30-015-02611	BARNEY COCKBURN STATE NO. 1	6 18S 28E J 2310S 2310E	2095	P&A O	8/15/49
115	30-015-02628	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #023D	6 18S 28E J 2260S 2270E	6310	ACTIVE O	5/23/79
116	30-015-22491	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #231B	6 18S 28E J 1700S 2350E	6350	T/A 0	8/13/78
117	30-015-02618	MILLER BROS OIL CO CAPITOL STATE NO. 1	6 18S 28E J 1647S 2076E	2396	P&A G	3/21/55
118	30-015-02623	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #022F	6 18S 28E K 2248S 2075W	6210	ACTIVE O	2/22/60
119			6 18S 28E K		MISPLOT	
120		NAVAJO REFINING COMPANY WDW-2 (ORIGINAL LOCATION)	6 18S 28E L			
121	30-015-02622	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #021D	6 18S 28E L 2219S 660W	6194	ACTIVE O	1/23/60
122	30-015-23548	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #211A	6 18S 28E L 1950S 1000W	6312	ACTIVE O	7/17/80
123	30-015-02627	PENROC OIL CORP STATE M-AI #002	6 18S 28E M 949S 990W	6225	ACTIVE O	10/21/60
124	30-015-26943	MEWBOURNE OIL CO CHALK BLUFF 6 STATE #001	6 18S 28E M 990S 730W	10200	ACTIVE	4/16/92
125	30-015-02610	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #022C	6 18S 28E N 955S 1750W	6243	ACTIVE O	8/5/60
126	30-015-02624	PAN AMERICAN PETROLEUM CO STATE CD NO. 1	6 18S 28E O 968S 2270E	6412	P&A O	5/1/61
127	30-015-25503	DICKSON PETROLEUM CO KIMBERLY STATE NO. 1	6 18S 28E P 660S 330E	1750	P&A O	12/30/85
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API	OPERATOR, WELL NAME, NUMBER	SEC, TWP, RGE, UL	DEPTH	STATUS TYPE	COMP. DATE Plug date
30-015-02612	D&HOILCO STATE NO. 1	6 18S 28E P 330S 330E	2246	P&A O	5/13/52
30-015-01215	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #020D	1 18S 27E A 667N 666E	6118	ACTIVE O	11/5/59
30-015-00708	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #019B	1 18S 27E B 660N 1980E	6078	ACTIVE O	7/7/59
	MALCO REFINERIES HILL #4	1 18S 27E C	1840	P & A	5/10/48
		1 18S 27E C		MISPLOT	
30-015-00710	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #018C	1 18S 27E C 660N 1980W	6173	ACTIVE O	9/16/59
30-015-26741	MEWBOURNE OIL CO CHALK BLUFF FEDERAL COM #002	1 18S 27E F 1650N 1350W	10140	ACTIVE G	8/24/91
30-015-00706	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #018A	1 18S 27E F 2310N 1980W	6087	ACTIVE O	5/31/59
30-015-00709	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #019C	1 18S 27E G 1980N 1980E	6205	ACTIVE O	8/2/59
		1 18S 27E G		MISPLOT	
30-015-21552	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #191	1 18S 27E G 2500N 2500E	6259	ACTIVE O	9/7/75
30-015-00711	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #020C	1 18S 27E H 1980N 660E	6218	ACTIVE O	10/13/59
30-015-21783	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #202	1 18S 27E H 2490N 1299E	6296	ACTIVE O	5/13/76
30-015-22656	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #203	1 18S 27E H 2400N 700E	6225	ACTIVE O	10/10/78

2	API	OPERATOR, WELL NAME, NUMBER	SEC, TWP, RGE, UL	DEPTH	STATUS TYPE	COMP. DATE Plug date
142		MANHATTAN OIL CRONIN #1	1 18S 27E Н	2900	P&A	4/1/25
143	30-015-21553	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #201	1 18S 27E H 2501N 20E	6225	ACTIVE O	7/19/75
144	30-015-27163	MEWBOURNE OIL CO CHALK BLUFF FEDERAL COM #003	1 18S 27E 1 1980S 990E	10150	ACTIVE G	1/16/93
145	30-015-00697	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #020K	1 18S 27E 1 1980S 660E	6185	ZONE ABAN O	9/29/59
146	30-015-22657	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #193	1 18S 27E J 2490S 2200E	6225	ACTIVE O	10/26/78
147	30-015-00696	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #019Q	1 18S 27E J 1980S 1980E	6180	ACTIVE O	8/20/59
148	30-015-22560	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #192	1 18S 27E J 220S 1390E	6250	ACTIVE 0	6/25/78
149	30-015-21873	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #191A	1 18S 27E J 1526S 1470E	6350	ACTIVE O	9/23/76
150	30-015-22658	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #194	1 18S 27E J 1500S 2130E	6325	ACTIVE O	11/14/78
151	30-015-22559	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #184	1 18S 27E K 2290S 2445W	6200	SHUT IN O	7/25/78
152	30-015-22096	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #183	1 18S 27E K 2370S 1510W	6210	ACTIVE O	7/24/77
153	30-015-21554	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #181	1 18S 27E K 1367S 1440W	6203	ZONE ABAN O	10/30/75 4/17/03
154	30-015-00707	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #018B	1 18S 27E K 1980S 1980W	6163	ACTIVE. O	5/22/59
155	30-015-21792	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #182	1 18S 27E K 1533S 2370W	6369	ACTIVE O	6/1/76
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2	API	OPERATOR, WELL NAME, NUMBER	SEC, TWP, RGE, UL	DEPTH	STATUS TYPE	COMP. DATE Plug date
156	30-015-00713	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #018D	1 18S 27E N 995S 1644W	6174	A/T O	12/5/59
157	30-015-26575	NAVAJO REFINING COMPANY WDW-3 (PROPOSED)	1 18S 27E N 790S 2250W	10120	T/A G	3/7/91
158	30-015-20394	HUMBLE OIL & REFINING CO EMPIRE ABO FEDERAL NO. 5	1 18S 27E O 953S 2197E	6300	P.8A O	4/9/71
159	30-015-00698	ARCO PERMIAN EMPIRE ABO UNIT #191	1 18S 27E O 660S 1980E	6365	Ф 8 0 8	11/8/59
160	30-015-00699	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #020B	1 18S 27E P 940S 330E	6250	ACTIVE O	12/2/61
161	30-015-26404	MEWBOURNE OIL CO FEDERAL T #001	12 18S 27E A 660N 990E	10141	T/A G	9/13/90
162	30-015-25099	EASTLAND OIL CO COMSTOCK FEDERAL #006	12 18S 27E H 1809N 990E	1652	ACTIVE O	9/11/85
165	30-015-25997	EASTLAND OIL CO LAUREL STATE #001	7 18S 28E C 940N 1757W	1690	ACTIVE O	2/23/87
166	30-015-25675	EASTLAND OIL CO LAUREL STATE #002	7 18S 28E E 940N 1757W	1690	ACTIVE O	11/10/88
167	30-015-25236	MOREXCO INC STATE BY #001	7 18S 28E F 1980N 1980W	10400	ACTIVE O	6/10/85
353	30-015-27286	MEWBOURNE OIL CO CHALK BLUFF 36 STATE #001	36 17S 27E M 660S 990W	10060	ACTIVE O	3/30/93
354	30-015-24612	PRONGHORN MANAGEMENT CORP STATE M #001	36 17S 27E M 790S 990W	1451	ACTIVE O	10/11/83
355	30-015-00676	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #017	36 17S 27E M 330N 990W	5797	ACTIVE O	
356	30-015-10184	ASPEN OIL INC STATE #006	36 17S 27E M 330S 920W	1343	ACTIVE O	·
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1/31/42		Occ	2 183 27E A 330N 610E	BRAINARU & GOT STATE 2		JG.
	0		000W	EMPIRE ABO UNIT #017B		
6/25/59	ACTIVE	6150	(0	BP AMERICA PRODUCTION COMPANY	30-015-00705	756
12/20/43				HILL #1		
	P&A	2404	1 18S 27E N	VALLEY REFINING CO	30-015-00714	755
	MISPLOT OF 756		1 18S 27E M			754
5/22/79	ACTIVE O	6300	1 18S 27E M 670S 330W	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #171	30-015-22815	753
5/22/95	ACTIVE O	6091	1 18S 27E L 1980S 660W	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #017A	30-015-00703	752
3/26/59	P&A O	2960	1 18S 27E E 1980N 660W	ARCO OIL & GAS EMPIRE ABO UNIT J NO. 17	30-015-00704	751
5/10/39	P&A O	481	1 18S 27E E 1650N 330W	JONES BRAINARD		750
1/24/87	P&A O	2900	1 18S 27E D 647N 667W	ARCO OIL & GAS EMPIRE ABO UNIT I NO. 17	30-015-00712	749
	ACTIVE O	1835	1 18S 27E D 330N 330W	MCQUADRANGLE, LC SOUTH RED LAKE GRAYBURG UNIT 37 WIW	30-015-00701	748
	ACTIVE I	1835	1 18S 27E D 330N 330W	MCQUADRANGLE, LC SOUTH RED LAKE GRAYBURG UNIT #037	30-015-00715	748
3/30/60	ACTIVE O	6261	5 18S 28E B 930N 2271E	BP AMERICA PRODUCTION UNIT EMPIRE ABO UNIT NO. 27 E	30-015-02605	595
10/15/42	P&A O	592	36 17S 27E M 330S 330W	ACREY, B L & F D STATE NO. 2	30-015-00662	359
	ACTIVE O	1366	36 17S 27E M 360S 455W	ASPEN OIL INC STATE #007	30-015-21623	358
COMP. DATE PLUG BATE	STATUS	DEPTH	ocu, IWF, Nac, UL	UPEKATOK, WELL NAME, NUMBEK	API	2

MCQUADRANGLE, LC SOUTH RED LAKE GRAYBURG UNIT #036 BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #016B MCQUADRANGLE, LC SOUTH RED LAKE GRAYBURG UNIT #038 H & S OIL LLC STATE H #001 S&J OPERATING COMPANY SOUTH RED LAKE GRAYBURG UNIT 39 WIW MCQUADRANGLE, LC SOUTH RED LAKE GRAYBURG UNIT #040 RUTTER & WILBANKS HUDSON #2 BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #015B MALCO REFINING CO STATE B-2 BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #016 BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #015 BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #143A 914 BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #143A 914 BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #143A 914 BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #161	D NO	API OPERATOR, WELL NAME, NUMBER	SEC, TWP, RGE, UL	DEPTH	STATUS TYPE	COMP. DATE Plug date
724 BP AMERICA PRODUCTION COMPANY 2 18S 27E 737 MCQUADRANGLE, LC 2 18S 27E SOUTH RED LAKE GRAYBURG UNIT #038 905N 1601E 745 H & S OIL LLC 2 18S 27E 742 S&J OPERATING COMPANY 2 18S 27E 740 MCQUADRANGLE, LC 2 18S 27E SOUTH RED LAKE GRAYBURG UNIT #040 1650N 2197E RUTTER & WILBANKS 2 18S 27E RUTTER & WILBANKS 2 18S 27E HUDSON #2 2 18S 27E AALCO REFINING CO 2 18S 27E STATE B-2 2310N 1650E 717 BP AMERICA PRODUCTION COMPANY 2 18S 27E STATE B-2 2310S 2310S THOBOS BP AMERICA PRODUCTION COMPANY 2 18S 27E BP AMERICA PRODUCTION COMPANY 2 18S 27E BP AMERICA PRODUCTION COMPANY 2 18S 27E BP AMERICA PRODUCTION COMPANY 2 18S 27E BP AMERICA PRODUCTION COMPANY 2 18S 27E BP AMERICA PRODUCTION COMPANY 2 18S 27E EMPIRE ABO UNIT #143A 1310S 2550W S14 BP AMERICA PRODUCTION COMPANY			S 27E 990E	1705	SHUT IN O	11/6/47
737 MCQUADRANGLE, LC 2 18S 27E SOUTH RED LAKE GRAYBURG UNIT #038 905N 1601E 745 H & SOIL LLC 2 18S 27E 574 S&J OPERATING COMPANY 2 18S 27E 740 MCQUADRANGLE, LC 2 18S 27E 740 MCQUADRANGLE, LC 2 18S 27E ROUTH RED LAKE GRAYBURG UNIT #040 1650N 2 19S 27E ROUTH RED LAKE GRAYBURG UNIT #040 1650N 2 18S 27E HUDSON #2 2310N 1650E 2 18S 27E BP AMERICA PRODUCTION COMPANY 2 18S 27E 2 18S 27E STATE B-2 218S 27E 2 18S 27E STATE B-2 218S 27E 2 18S 27E STATE B-2 218S 27E 2 18S 27E BP AMERICA PRODUCTION COMPANY 2 18S 27E BP AMERICA PRODUCTION COMPANY 2 18S 27E EMPIRE ABO UNIT #143A 1820S 2550W BP AMERICA PRODUCTION COMPANY<			330E	5920	ACTIVE	
745 H & S OIL LLC 2 18S 27E STATE H #001 1980N 660E 742 S&J OPERATING COMPANY 2 18S 27E 740 MCQUADRANGLE, LC 2 18S 27E SOUTH RED LAKE GRAYBURG UNIT #040 1650N 2 197E 741 BP AMERICA PRODUCTION COMPANY 2 18S 27E HUDSON #2 2310N 1980E 717 BP AMERICA PRODUCTION COMPANY 2 18S 27E STATE B-2 2310N 2 18S 27E STATE B-2 2310S 2 18S 27E T16 BP AMERICA PRODUCTION COMPANY 2 18S 27E BP AMERICA PRODUCTION COMPANY 2 18S 27E EMPIRE ABO UNIT #015 2 18S 256W S96 BP AMERICA PRODUCTION COMPANY 2 18S 256W 914 BP AMERICA PRODUCTION COMPANY 2 18S 256W <td< td=""><td></td><td></td><td>S 27E 1601E</td><td>1722</td><td>ACTIVE O</td><td>5/23/48</td></td<>			S 27E 1601E	1722	ACTIVE O	5/23/48
742 S&J OPERATING COMPANY 2 18S 27E SOUTH RED LAKE GRAYBURG UNIT #040 1650N 2 18S 27E 740 MCQUADRANGLE, LC 2 18S 27E SOUTH RED LAKE GRAYBURG UNIT #040 1650N 2 197E RUTTER & WILBANKS 2 18S 27E HUDSON #2 2310N 1980E 741 BP AMERICA PRODUCTION COMPANY 2 18S 27E MALCO REFINING CO 2 18S 27E STATE B-2 2310S 1980S 660E 717 BP AMERICA PRODUCTION COMPANY 2 18S 27E EMPIRE ABO UNIT #1015 1980S 1830E BP AMERICA PRODUCTION COMPANY 2 18S 27E EMPIRE ABO UNIT #143A 1820S 2550W 896 BP AMERICA PRODUCTION COMPANY 2 18S 27E EMPIRE ABO UNIT #143A 2 18S 27E EMPIRE ABO UNIT #161 2 18S 27E EMPIRE ABO UNIT #161 2 18S 27E			S 27E 660E	6140	ACTIVE O	3/9/59
740 MCQUADRANGLE, LC SOUTH RED LAKE GRAYBURG UNIT #040 1650N 2 197E RUTTER & WILBANKS 141 BP AMERICA PRODUCTION COMPANY 2 188 27E EMPIRE ABO UNIT #015B 747 BP AMERICA PRODUCTION COMPANY 176 BP AMERICA PRODUCTION COMPANY 2 188 27E EMPIRE ABO UNIT #016 1980S 660E 1980S 1830E 896 BP AMERICA PRODUCTION COMPANY 2 188 27E EMPIRE ABO UNIT #015 1980S 1830E EMPIRE ABO UNIT #143A 1820S 2550W 1310S 590E EMPIRE ABO UNIT #161 1310S 590E			2 18S 27E 1650N 990E	1742	P&A O	4/1/48 2/8/91
HUDSON #2 HUDSON			; 27E 2197E	1707	P&A 	5/13/48 7/10/02
## BP AMERICA PRODUCTION COMPANY 2 18S 27E ### BMALCO REFINING CO ### STATE B-2	78	RUTTER & WILBANKS HUDSON #2	27E 1650E		0	1/1/57
### MALCO REFINING CO			3 27E 1980E	5880	ACTIVE O	69/9/9
## BP AMERICA PRODUCTION COMPANY 2 18S 27E ## EMPIRE ABO UNIT #016 ## BP AMERICA PRODUCTION COMPANY 2 18S 27E ## BP AMERICA PRODUCTION COMPANY 2 18S 27E ## EMPIRE ABO UNIT #143A ## BP AMERICA PRODUCTION COMPANY 2 18S 27E ## EMPIRE ABO UNIT #161 ## BP AMERICA PRODUCTION COMPANY 2 18S 27E ## EMPIRE ABO UNIT #161 ## AMERICA PRODUCTION COMPANY 2 18S 27E ## BP AMERICA PRODUCTION COMPANY 3 18S 27E ## BP AMERICA PRODUCTION COMPANY 3 18S 27E ## BP AMERICA PRODUCTION COMPANY 3 18S 27E ## BP AMERICA PRODUCTION COMPANY 3 18S 27E ## BP AMERICA PRODUCTION COMPANY 3 18S 27E ## BP AMERICA PRODUCTION COMPANY 3 18S 27E ## BP AMERICA PRODUCTION COMPANY 3 18S 27E ## BP AMERICA PRODUCTION COMPANY 3 18S 27E ## BP AMERICA PRODUCTION COMPANY 3 18S 27E ## BP AMERICA PRODUCTION COMPANY 3 18S 27E ## BP AMERICA PRODUCTION COMPANY 3 18S 27E ## BP AMERICA PRODUCTION COMPANY 3 18S 27E ## BP AMERICA PRODUCTION COMPANY 3 18S 27E ## BP AMERICA PRODUCTION COMPANY 3 18S 27E ## BP AMERICA PRODUCTION COMPANY 3 18S 27E ## BP AMERICA PRODUCTION COMPANY 3 18S 27E ##	81	MALCO REFINING CO STATE B-2	40	4164	P&A 0	1/1/47
BP AMERICA PRODUCTION COMPANY 2 18S 27E				6114	ACTIVE O	2/6/95
896 BP AMERICA PRODUCTION COMPANY 2 18S 27E EMPIRE ABO UNIT #143A 1820S 2550W 914 BP AMERICA PRODUCTION COMPANY 2 18S 27E EMPIRE ABO UNIT #161 2 18S 27E				6100	ACTIVE O	3/23/59
914 BP AMERICA PRODUCTION COMPANY 2 18S 27E EMPIRE ABO UNIT #161 2 18S 27E 2 18S 27E 2 18S 27E 2 18S 27E			27E 2550W	6108	ACTIVE O	5/13/79
2 18S 27E				6225	ACTIVE O	9/13/79
	92				MISPLOT OF 814	
	Monday, July 28, 2003	03	ATTACHMENT VI-1			Page 14 of 22

2	АРІ	OPERATOR, WELL NAME, NUMBER	SEC, TWP, RGE, UL	DEPTH	STATUS TYPE	COMP. DATE Plug date
793	30-015-22609	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #143	2 18S 27E N 1200S 1900W	6093	ACTIVE O	12/20/78
795			2 18S 27E P		MISPLOT OF 765	
962	30-015-21544	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #151	2 18S 27E O 1110S 1322E	6285	T/A O	11/4/75
797	30-015-22885	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #155	2 18S 27E O 1040S 2025E	6202	T/A O	5/1/79
799	30-015-00722	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #016A	2 18S 27E P 660S 660E	6115	T/A O	1/20/59
800	30-015-22808	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #156	2 18S 27E O 600S 1330E	6225	ACTIVE O	4/12/79
801	30-015-00731	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #015A	2 18S 27E O 660S 1980E	6220	ACTIVE O	11/19/58
802	30-015-22669	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #154	2 18S 27E O 800S 2500E	6200	T/A O	12/4/78
805	30-015-22013	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #153	2 18S 27E O 90S 1456E	6303	T/A O	4/20/77
806	30-015-21825	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #152	2 18S 27E O 320S 2602E	6335	T/A O	6/17/76
807	30-015-22608	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #142	2 18S 27E N 100S 1950W	6200	ACTIVE O	1/12/79
808	30-015-21807	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #132	2 18S 27E M 275S 1243W	6200	ACTIVE O	7/1/76
812	30-015-00730	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #014	2 18S 27E N 660S 1980W	6112	ACTIVE O	10/21/58
813	30-015-00720	BP AMERICA PRODUCTION COMPANY RIVERWOLF UNIT #004	2 18S 27E A 990N 1650E	5881	ACTIVE O	10/21/59
day, J	Monday, July 28, 2003		ATTACHMENT VI-1			Page 15 of 22

2	API	OPERATOR, WELL NAME, NUMBER	SEC, TWP, RGE, UL	DEPTH	STATUS TYPE	COMP. DATE Plug date
814	30-015-22051	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #141A	2 18S 27E K 1370S 2445W	6203	ACTIVE O	5/17/77
836	30-015-00869	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #016C	11 18S 27E A 330N 653E	6211	ACTIVE O	7/1/59
837	30-015-22568	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #151B	11 18S 27E B 400N 1450E	6310	T/A O	8/1/78
838	30-015-22838	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #153B	11 18S 27E B 200N 1925E	6252	A/T O	5/6/79
839	30-015-00868	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #015C	11 18S 27E B 660N 1980E	6260	A/T 0	4/6/58
840	30-015-22569	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #152B	11 18S 27E B 560N 2588E	6300	T/A O	8/23/78
841	30-015-22834	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #141B	11 18S 27E C 225N 2280W	6225	SHUT IN O	5/21/79
842	30-015-00864	ARCO OIL & GAS EMPIRE ABO UNIT M NO. 14	11 18S 27E C 660N 1980W	6315	P&A O	9/5/57
843	30-015-22833	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #133B	11 18S 27E D 450N 1175W	6225	T/A O	5/23/79
844	30-015-00867	ARCO OIL & GAS EMPIRE ABO UNIT M NO. 13	11 18S 27E D 660N 660W	6114	P&A O	4/26/58
846	30-015-22556	ARCO OIL & GAS EMPIRE ABO UNIT M NO. 131	11 18S 27E D 1100N 1200W	6325	P&A O	7/10/78
848	30-015-20510	AMOCO PRODUCTION CO MALCO S NO. 1	11 18S 27E F 1650N 1653W	10168	P&A O	10/16/71
849	30-015-00865	ARCO OIL & GAS EMPIRE ABO UNIT N NO. 14	11 18S 27E F 1650N 1980W	6208	P&A 0	2/3/61
850	30-015-00866	ARCO OIL & GAS EMPIRE ABO UNIT N NO. 131	11 18S 27E E 1980N 660W	6120	P&A 0	3/27/58
Monday, `	Monday, July 28, 2003		ATTACHMENT VI-1			Page 16 of 22

851 30-015-00870 A		DEG, IMP, KGE, UL		TYPE	PLUG DATE
S	AMOCO PRODUCTION CO SMITH-MCPHERSON NO. 1	11 18S 27E J 1980S 1980E	7270	P&A O	9/1/56
852 30-015-01201 C	OSCAR HOWARD AN ETZ #3	11 18S 27E N	1828	P&A	4/15/27
853 30-015-01202 C	OSCAR HOWARD AN ETZ #2	11 18S 27E O	1827	P&A	214127
854 30.015-00863 E	B.R. POLK, JR. VICKERS #1	11 18S 27E N	1794	P&A	10/14/49
855 30-015-24857 F	RICKS EXPLORATION, INC. FEDERAL DH GAS COM #001	11 18S 27E M 700S 990W	11915	ACTIVE G	5/18/84
856 30-015-20535 F	ROBERT G COX FEDERAL EA 2	12 18S 27E D 330N 455W	6248	P&A O	11/27/71 8/7/73
857 30-015-00871 F	RHONDA OPERATING CO FEDERAL EA #001	12 18S 27E D 330N 330W	6253	P&A O	7/8/75 4/12/94
858 30-015-23115 F	RHONDA OPERATING CO FEDERAL EA NO. 3	12 18S 27E D 330N 380W	6295	D&A O	3/16/80
859 30-015-25738 E	EASTLAND OIL CO COMSTOCK FEDERAL #009	12 18S 27E G 2310N 2310E	1586	ACTIVE O	4/25/87
860 30-015-25270 E	EASTLAND OIL CO CHUKKA FEDERAL #001	12 18S 27E F 2310N 2310W	1600	ACTIVE O	4/23/85
861 30-015-20894 N	NAVAJO REFINING COMPANY WDW #002	12 18S 27E E 1980N 660W	10372	ACTIVE I	7/18/73
862 30-015-00874 E	EASTLAND OIL CO COMSTOCK FEDERAL #007	12 18S 27E J 2310S 2355E	3664	ACTIVE O	6/29/48
863 30-015-00872 N	MCKEE-JONES MAGRUDER NO, 1	12 18S 27E L 310S 990W	594	D&A O	2/18/43
864 30-015-25201 E	EASTLAND OIL CO COMSTOCK FEDERAL #002	12 18S 27E K 1650S 1770W	1600	ACTIVE O	3/16/85

2 2	API	OPERATOR, WELL NAME, NUMBER	SEC, TWP, RGE, UL	DEPTH	STATUS TYPE	COMP. DATE PLUG DATE
865	30-015-25649	FRED POOL DRILLING CO COMSTOCK FEDERAL NO. 8	12 18S 27E L 1650S 990W	2000	D&A O	10/10/86
966	30-015-25545	EASTLAND OIL CO COMSTOCK FEDERAL #003	12 18S 27E M 990S 990W	1530	ACTIVE	5/19/86
867	30.015-00873	R.E. McKEE ET AL MAGRUDER #2	12 18S 27E M	2510	P&A	2/27/45
868	30-015-26017	EASTLAND OIL CO COMSTOCK FEDERAL #010	12 18S 27E N 990S 1650W	2040	ZONE ABAN O	12/16/89
869	30-015-25100	EASTLAND OIL CO COMSTOCK FEDERAL #001	12 18S 27E N 330S 1650W	2400	ACTIVE O	12/10/84
870	30-015-25202	EASTLAND OIL CO COMSTOCK FEDERAL #005	12 18S 27E O 330S 2310E	1625	ACTIVE O	4/19/85
871	30-015-06171	PILCHER OIL & GAS MICHAEL CRONIN NO. 3	12 18S 27E 1 1069S 251E	2200	P&A 0	5/20/26
872		PILCHER OIL & GAS MICHAEL CRONIN #1	12 18S 27E P	2002	P&A	2/15/32
873	30-015-00875	CITIES SERVICE OIL CO MAGRUDER NO. B-4	12 18S 27E P 330S 330E	2000	P&A O	7/30/52
874	30-015-00876	ROBERT E MCKËE MAGRUDER NO. 5	12 18S 27E P 100S 500E	1994	P&A 0	2/8/54
875	30-015-06170	PILCHER OIL & GAS MICHAEL CRONIN NO. 2	12 18S 27E P 200S 200E	2004	P&A O	2/22/26
876	30-015-01200	HASSENFUSH-DONNELLY STATE NO. 1	13 18S 27E A 0 0	2030	P&A O	1/1/26
877	30-015-06137	EASTLAND OIL CO STATE NO. 2	13 18S 27E A 250N 990E	2696	D&A O	1/1/26
878	30-015-25394	EASTLAND OIL CO ARTESIA STATE #002	13 18S 27E C 330N 2310W	1613	ACTIVE O	9/28/85
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	API	OPERATOR, WELL NAME, NUMBER	SEC, TWP, RGE, UL	DEPTH	STATUS TYPE	COMP. DATE PLUG DATE
879	30-015-25241	EASTLAND OIL CO ARTESIA STATE #001	13 18S 27E C 330N 1650W	1575	ACTIVE O	4/13/85
880	30-015-00884	DALE RESLER STATE NO. 3	13 18S 27E C 990N 1650W	2047	P&A O	1/29/45
881	30-015-25370	CBS OPERATING CORP ARTESIA STATE UNIT #002A	13 18S 27E D 480N 940W	1608	ACTIVE O	8/27/85
882	30-015-00883	CBS OPERATING CORP ARTESIA STATE UNIT #001	13 18S 27E D 990N 990W	1950	ACTIVE O	12/11/44
883	30-015-00880	DALE RESLER - JONES STATE NO. 1	13 18S 27E E 1650N 990W	2353	P&A O	1/26/45
884	30-015-24881	DAVID G HAMMOND ANADARKO 13 FEDERAL #001	13 18S 27E F 1880N 1830W	3020	ACTIVE	6/18/84
885	30-015-00888	RALPH NIX & JERRY CURTIS PAGE NO. 1	13 18S 27E F 1980N 1650W	2000	P&A O	11/28/54
886	30-015-00879	DALE RESLER JONES-GOVT NO. 1	13 18S 27E F 2310N 1650W	2000	D&A 0	3/14/45
888	30-015-25078	DICKSON PETROLEUM, INC ANADARKO 13 FEDERAL NO. 1	13 18S 27E G 1724N 2279E	2150	D&A O	12/30/84
895	30-015-00891	ANADARKO PETROLEUM CORP ARTESIA STATE UNIT TRACT 4 NO. 1	14 18S 27E A 990N 330E	2060	P&A O	6/30/44
896	30-015-00893	RESLER STATE NO. 1	14 18S 27E G 1650N 1650E	2375	D&A O	1/1/00
897	30-015-00895	CBS OPERATING CORP ARTESIA STATE UNIT #001B	14 18S 27E H 1650N 330E	1888	ACTIVE O	2/8/45
901	30-015-00695	WILLIAM & EDWARD HUDSON HILL NO. 1	1 18S 27E L 1650S 330W	1763	D&A O	6/18/48
910	30-015-00744	COMPTON-SMITH STATE 1	2 18S 27E J 2310S 1640E	1080	P&A O	
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2	API	OPERATOR, WELL NAME, NUMBER	SEC, TWP, RGE, UL	DEPTH	STATUS	COMP. DATE
911	30-015-31123	SOUTHWESTERN ENERGY PRODUCTION C NO BLUFF 36 STATE COM #002	36 17S 27E H 1980N 760E	10050	ACTIVE	
912	30-015-31036	C E LARUE & B M MUNCY JR GATES STATE #003	36 17S 27E H 2310N 990E	614	ACTIVE O	
916	30-015-31592	ROJO GRANDE COMPANY LLC RAMAPO #007	36 17S 27E N 330S 2310E	612	P&A O	7/6/01 12/21/01
917	30-015-30784	SDX RESOURCES INC NW STATE #012	31 17S 28E A 330N 480E	3300	ACTIVE	
918	30-015-30893	SDX RESOURCES INC NW STATE #028	31 17S 28E A 973N 959E	2808	ACTIVE O	
919	30-015-32162	SDX RESOURCES INC ENRON STATE #004	31 17S 28E D 460N 990W	3460	NO COMPL O	4/3/03
920	30-015-30783	SDX RESOURCES INC NW STATE #011	31 17S 28E H 1650N 330E	3205	ACTIVE O	
921	30-015-30849	SDX RESOURCES INC NW STATE #009	31 17S 28E i 2310S 270E	3195	ACTIVE O	
922	30-015-30760	SDX RESOURCES INC NW STATE #010	31 17S 28E P 735S 330E	3210	ACTIVE O	
923	30-015-31920	SDX RESOURCES INC ENRON STATE #002	32 17S 28E D 990N 990W	4030	ACTIVE O	
924	30-015-30781	SDX RESOURCES INC NW STATE #005	32 17S 28E K 1900S 2146W	3190	ACTIVE O	
925	30-015-30777	SDX RESOURCES INC NW STATE #006	32 17S 28E L 2310S 990W	3204	ACTIVE O	
926	30-015-30685	SDX RESOURCES INC NW STATE #007	32 17S 28E M 990S 990W	3220	ACTIVE O	
927	30-015-30815	SDX RESOURCES INC NW STATE #008	32 17S 28E N 1090S 2126W	3310	ACTIVE O	
<u>جَ</u>	Monday, July 28, 2003		ATTACHMENT VI-1			Page 20 of 22

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	API	OPERATOR, WELL NAME, NUMBER	SEC, TWP, RGE, UL	DEPTH	STATUS TYPE	COMP. DATE PLUG DATE
928	30-015-32310	MARBOB ENERGY CORP AAO FEDERAL #004	1 18S 27E A 990N 990E	4000	PROPOSED O	
929	30-015-32309	MARBOB ENERGY CORP AAO FEDERAL #003	1 18S 27E B 330N 1690E	4125	NO COMPL 0	4/10/03
930	30-015-32308	MARBOB ENERGY CORP AAO FEDERAL #002	1 18S 27E C 430N 2310W	4150	ACTIVE O	9/19/02
931	30-015-32307	MARBOB ENERGY CORP AAO FEDERAL #001	1 18S 27E D 330N 990W	3851	ACTIVE O	12/10/02
932	30-015-22816	ARCO OIL & GAS EMPIRE ABO UNIT L #192	1 18S 27E O 1120S 1440E	6350	ABAN LOCATION O	6/28/80 6/23/80
933	30-015-20388	ARCO OIL & GAS EMPIRE ABO #5	1 18S 27E N 990S 2297E	6300	SAME AS 158 O	12/31/99
934	30-015-27719	MEWBOURNE OIL CO CHALK BLUFF 12 FED #001	12 18S 27E 1650S 990E		ABAN LOCATION G	
935	30-015-27437	YATES PETROLEUM CORPORATION BEAUREGARD ANP STATE COM #001	14 18S 27E B 660N 1980E	0	ABAN LOCATION G	
936	30-015-31086	MARBOB ENERGY CORP LP STATE #001	5 18S 28E E 1650N 990W	4503	ACTIVE O	•
937	30-015-31109	MARBOB ENERGY CORP LP STATE #002	5 18S 28E E 2301N 230W	0	PROPOSED 0	
938	30-015-30785	SDX RESOURCES INC NW STATE #015	6 18S 28E A 430N 330E	3225	ACTIVE O	
939	30-015-00264	BARNEY COCKBURN CAPITAL STATE NO. 1	6 18S 28E J 2310S 2310E	2095	SAME AS 114 O	5/23/79
940	30-015-31087	MARBOB ENERGY CORP LP STATE #003	6 18S 28E M 990S 330W	4466	ACTIVE O	7/15/00
941	30-015-31088	MARBOB ENERGY CORP LP STATE #004	6 18S 28E M 330S 990W	0	PROPOSED 0	
Monday,	Monday, July 28, 2003		ATTACHMENT VI-1			Page 21 of 22

COMP. DATE PLUG DATE

STATUS

DEPTH

SEC, TWP, RGE, UL

OPERATOR, WELL NAME, NUMBER

쿌

SAME AS 89

942 30-015-06250

SAME AS 89

0

1/31/01

ACTIVE

1630

ABAN LOCATION

6 18S 28E D

NAVAJO REFINING COMPANY WDW-3 (ORIGINAL LOC.)

944

EASTLAND OIL CO LAUREL STATE #003

943 30-015-31319

W266 N877

7 18S 28E 2310N 330W

470S 2170E

6 18S 28E

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ATTACHMENT VI-1A

CONSTRUCTION DATA FOR WELLS THAT PENETRATE THE INJECTION ZONE WITHIN 1 MILE OF THE INJECTION WELLS

		11	_	_	_	_		T			_		=	_	_	-		_	=	_	_		-	-	_	_		-	-
	REMARKS				Perfs:	10172 - 10184 feet	10070 - 10075 feet	Perfs:	7518 - 7534 feet	7632 - 7642 feet (cemented)	7742 - 7756 feet	7778 - 7787 feet	7810 - 7812 feet	Perfs: 10084 - 10092 feet						Perfs: 9999 - 10024 feet				Perfs:	9950 - 9954 feet	9957 - 9972 feet			
ATA	MUD WEIGHT (Ib/gal)	NA			NA			ΑN						NA						NA				AN					
MUD DATA	FILLED (Y/N)	ΝΑ			NA A			Ϋ́A						NA						NA		·		ΝΑ					
BING	SX OF CEMENT	45			٧×			Ϋ́N						NA						ΑN				NA					
PLUGGING	DEPTH (ft)	9734			NA		-	ΑN		,				NA						¥				NA					
	DATE COMPLETED OR PLUGGED	6/6/63	Recompleted	8/4/98	8/10/83			8/12/83						4/16/92						8/24/91				1/16/93					
	SX OF CEMENT	525	1000	1370	059	1400	2007	350	650	520				200	1100	1895	175			450	1025	1020		100	250	1200	200		
CASING	ОЕРТН (A)	390	2555	9094	663	4000	10450 9922	354	1745	8466	7500			400	2600	9445	- 2406	10198	0666	416	2610	10148	9939	400	2600	8968	- 0098	10150	6200
	DIAMETER (in)	13-3/8	8/5-6	7	13-3/8	8-5/8	5-1/2	13-3/8	8-5/8	5-1/2	2-7/8			13-3/8	8/5-6	7	4-1/2		2-3/8	13-3/8	8/5-6	5-1/2	2-7/8	8/6-61	8/5-6	7	4-1/2		2,3/8
	TOTAL DEPTH (ft)	10200	PB 9004		10450			8500						10200						10140				10150					
	TYPE	Active	Class I		Active	Gas		Active	SWD					Active	Gas					Active	Gas			Active	Gas				
	OPERATOR/LEASE	Navajo Refining Company WDW-1	31-17S-28E Unit O	= :-	Phillips Oil Company	Illinois Camp A Com No. 1	Empire Penn Gas Field 5-18S-28E Unit E	Metek Pipe & Supply (original)	I&W, Inc.	Walter Solt State No. 1	5-18S-28E Unit L			Mewbourne Oil Company	Chalk Bluff 6 State No. 1	North Illinois Camp Morrow	6-18S-28E Unit M			Меwbourne Oil Company	Chalk Bluff Federal Com No. 2	North Illinois Camp Morrow	1-18S-27E Unit F	Mewbourne Oil Company	Chalk Bluff Federal Com No. 3	North Illinois Camp Morrow	1-18S-27E Unit I		_
-	9 S	59			8			83	•	•				124						134		-		<u>‡</u>					

ATTACHMENT VI-1A (Continued)

CONSTRUCTION DATA FOR WELLS THAT PENETRATE THE INJECTION ZONE WITHIN 1 MILE OF THE INJECTION WELLS

				 	,		
	REMARKS			Perfs: 10116 - 10124 feet (cemented) 1627 - 46 feet	Perfs: 7164-72.77 feet 8528-8572 feet 9466-9484 feet 9842-9856 feet	Cement plug is present at the top of the liner, which is set above the top of the injection zone.	Injection zone is not cased and is mud-filled.
MUD DATA	MUD WEIGHT (lb/gal)	NA		Unknown	NA		
QOM	FILLED (Y/N)	NA A		>	NA	X	>
SING	SX OF CEMENT	NA		35, CIBP 100' 100' 100'	NA	NA 25 15 40 350	30 30 40 50 60
PLUGGING	DEPTH (ft)	NA		10050 7050 5950 2600	8300	9495 7863-7613 6995 5350-5250 1050-950 Surface	4119-3735 3040-2900 2040-1922 1010-910 602-502 Surface
	DATE COMPLETED OR PLUGGED	3/7/91	9/13/90	6/10/85 12/20/95 Recompleted to Grayburg	3/30/93	10/16/71 12/03/85	.99/0/20
	SX OF CEMENT	425 1025 1350 175	450 900 430 80	500 1150 1000	530 1150 1620 225	970 300 855	700 250 NA
CASING	DЕРТН (ft)	400 2604 9450 9051 - 10119	472 2589 9473 10140 (liner)	418 2600 10400 1706	399 2603 9253 8439- 10057	1000 6348 6277-10138	572 960-1790 2990-4500
	DIAMETER (in)	13-3/8 9-5/8 7 4-1/2	13-3/8 8-5/8 5-1/2 4	13-3/8 8-5/8 5-1/2 2-7/8	13-3/8 9-5/8 7 4-1/2	11-3/4 8-5/8 5-1/2	13-3/8 9-5/8 4-1/2
	TOTAL DEPTH (ft)	10120	10141	10400	10060	10168	07.70
	TYPE	Proposed Class I	Active Shut In	Active Oil	Active Gas	P&A	P&A
	OPERATOR/LEASE	Navajo Refining Company WDW-3 Mewbourne Oil Company (original) Chalk Bluff Fed. Com No. 1 North Illinois Camp Morrow 1-182-27E Lunit N	Newboune Oil Company Federal T No. 1 North Illinois Camp Morrow 12-18S-27E Unit A	ARCO Oil & Gas Company Morexco, Inc. State BY No. 1 Artesia Q-GB-SA 7-18S-28E Unit F	Mewbourne Oil Company Chalk Bluff 36 State No. 1 36-175-27E Unit N	Amoco Production Company Malco S'No. 1 11-18S-27E Unit F	Amoco Production Company Smith-McPherson No. 1 (was Stanolind Oil and Gas Co. Ruth C. McPherson No. 1) 11-18S-27E Unit J
	<u>8</u>	157	<u>ē</u>	167	353	848	851

ATTACHMENT VI-1A (Continued)

CONSTRUCTION DATA FOR WELLS THAT PENETRATE THE INJECTION ZONE WITHIN I MILE OF THE INJECTION WELLS

		B			•		_				Ι		
	REMARKS	Long-string casing is cemented	from total depth to above the	top of the confining zone.	Perfs (Strawn, Morrow):	9295-9308 feet	9789-9846 feet				Perfs:	9927-9964 feet	
MUD DATA	MUD WEIGHT (lb/gal)							ΝΑ			NA NA		
QUM.	(N/X) CX/N)							Ϋ́			ĄZ		
PLUGGING	SX OF CEMENT	55	55					NA			NA		
PLUG	DEPTH (ft)	11610	10700					NA			Ϋ́		
	DATE COMPLETED OR PLUGGED	05/18/84						07/18/73	Recompleted	66/8/9	4/28/01		
	SX OF CEMENT	700	1400	2720				Surface	800	1570	465	650	553
CASING	DEPTH (ft)	502	2200	11915			•	4	1995	6988	425	2002	10050
	DIAMETER (in)	13-3/8	8/5-6	5-1/2				13-3/8	8-5/8	5-1/2	13-3/8	8-5/8	5-1/2
	TOTAL DEPTH (ft)	11915						10372	PB 8770		10050		
	TYPE	Oil						Active	Class I		Active Gas		
	OPERATOR/LEASE	Amoco Production Company	Federal DH Gas Com. No. 1	11-18S-27E Unit M				Navajo Refining Company, WDW-2	12-18S-27E Unit E		Southwest Energy Production Co.	No. Bluff 36 State Comm. No. 2	36-175-27E Unit H
	5 G	855						198			116		

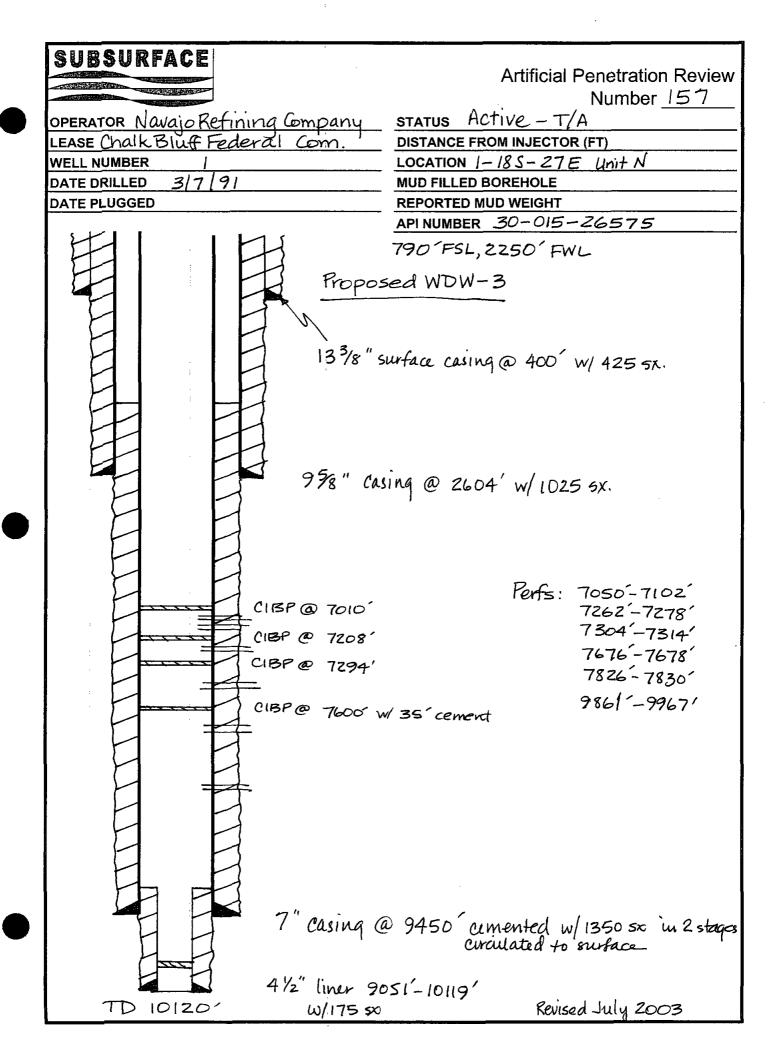
NA - Not applicable

MAP ID NO. 157

NAVAJO REFINING COMPANY NO. 1 CHALK BLUFF FEDERAL COM.

PROPOSED WDW-3



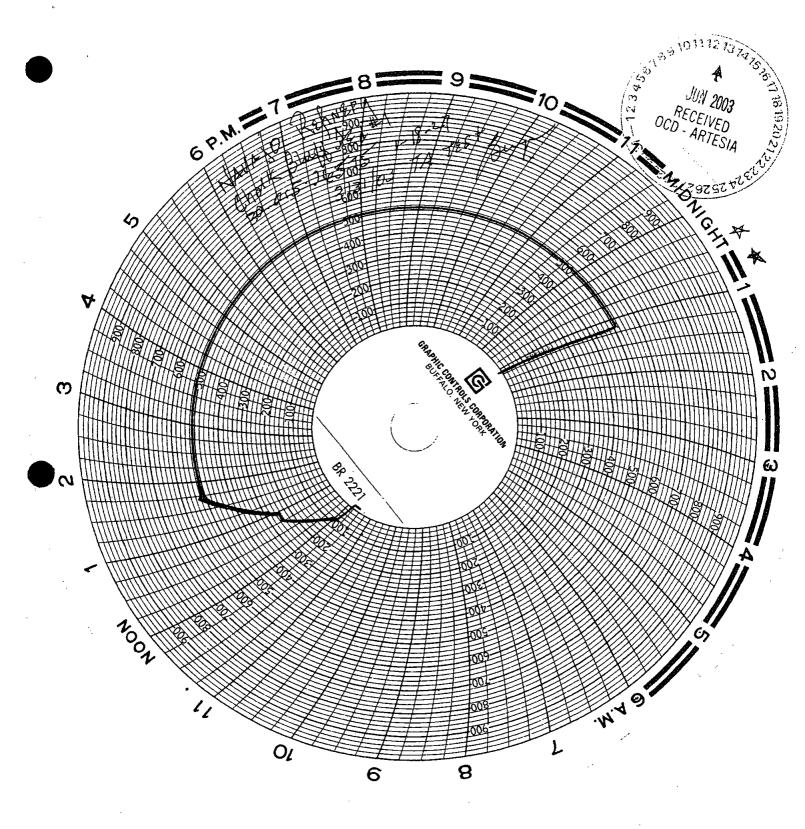


OCD-Artosia

3160-5 member,1994)	UNITED STATE DEPARTMENT OF THE	1112137475 B	F O E	ORM APPROVED MB No. 1004-0135 xpires July 31, 1996	
CUMPL	BUREAU OF LAND MAN	ADEMENT 55 C	1475	5. Lease Serial	
JUNDA	RY NOTICES AND REPO	DHIS ON WEDLS	4 05/	NMO.	
DO NOT USE TI abandoned w	his form for proposals to rell. Use Form 3160-3 (AP	D) for such proposals	2003 3	o. manana.	llottee or Tribe Name
CALL SECTION AND THE REPORT OF THE PARTY OF	IIPECATE - Other Instr	。1933年18日本 1954年18日本	supplication in the same of th	7. If Unit or C.	WAgreement, Name and/or No.
1. Type of Wall Oil Well Gas Well	T Other	18 S. S. S. S. S. S. S. S. S. S. S. S. S.	200/	8. Well Name	J XI
	- Odici		770764	_i	
2. Name of Operator Navaio	Refining Co.		165.00.30	9. API Well No	luff Fed. Com. #1
3a. Address		3b. Phone No. (include	area code)	30-015-	
P.O. Drawer 159, 4. Location of Well (Footage, Sec	Artesia, NM 88211	505-748-33	•	10. Field and Po	ol, or Exploratory Area
·	., 1., K., M., Or Garey Description	·•/	•	11. County or Pa	arish, State
N-1-18s-27e	790 FSL43	USO FUL		Eddy	·
12. CHECK AF	PPROPRIATE BOX(ES) T	O INDICATE NATUR	RE OF NOTICE, RI	EPORT, OR O	THER DATA
Type of submission		TYI	PE OF ACTION		
Notice of Intent	Acidize Alter Casing	Deepen Practure Treat	Production (Start	Resume)	
Subsequent Report	Casing Repair	New Construction	Recomplete	u	Other
Final Abandonment Notice	Change Plans	Plug and Abandon	Temporarily Aba	andon	
	Convert to Injection	Plug Back	Water Disposal		· · · · · · · · · · · · · · · · · · ·
If the proposal is to deepen dire Attach the Bond under which the	ed Operation (clearly state all pertictionally or recomplete horizonta he work will be performed or provided operations. If the operation and Abandonment Notices shall be for final inspection.)	lly, give subsurface location wide the Bond No. on file.	is and measured and true with BLM/BIA. Require eletion or recompletion is	ic vertical depths of red subsequent rep in a new interval.	of all pertinent markers and zone onts shall be filed within 30 day a Form 3160-4 shall be filed one
injection well. W	orarily abandoned. e ran an MIT on it nessed by the New	on March 31, 2	it for futur 003 (chart er	ce use as a aclosed) an	a waste water nd it passed.
•		TA A	revered for 1	•	Period

	· · · · · · · · · · · · · · · · · · ·
14. I hereby certify that the foregoing is true and correct Name (PrintedTyped)	Title
Darrell Mosre	Env. Mgr. for Water & Waste
Signature aud Mosce	Date 5/13/03
THIS SPACE FOR FEDERA	L OR STATE OFFICE USE
ed by ADDIG. SCO.) LOE B. LARA	Title Parishers Emphrose Coll 103
Conditions of approval, if any, we attached. Approval of this notice does not warrecrify that the applicant holds legal or equitable title to those rights in the subject which would entitle the applicant to conduct operations thereon.	ant or Office

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.



District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 South First, Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
10 South Pacheso, Santa Fe, NM 87505

State of New Mexico Energy Minerals and Natural Resources

Form C-104A
August 11, 2000

Oil Conservation Division 2040 South Pacheco Santa Fe, NM 87505 Submit 1 copy of the final affected wells list along with 2 copies of this form per number of wells on that list to appropriate District Office

Change of Operator

	Change	or Operator	
Prev	ious Operator Information:		ew Operator Information:
		Effective Date:	
	14744	New Ogrid:	
	Mewbourne Oil Company	New Name:	Navajo Refining Company
	P. O. Box 7698		100 Crescent Court, Ste-1
Address:	m 1 my Denii		P.O. Box 159
City, State, Zip:	Tyler, TX 75711	City, State, Zip:	Dallas, TX 75201
			Artesia, NM 88211
Title: _	Darrell Moore Env. Mgr. For Water 12/5/00 Phone: 505-74		
Previous operator	complete below:		NMOCD Approval
Previous		1	
Operator: Me	ewbourne Oil Company	Signature:	in W. Sum
Previous	- 	Printed	
OGRID: 1	4744	Name: 0	to the second
Signature:	Monty Whetere	District:	NOV 2. 7 2000
Printed Name:		D	ZOUU
Mo	onty Whetstone	Date:	

27021- property code - Walk Bluff Jederal Com #1 30-015-26575-API Humber 1-185-27E

OPERATOR Meubourne Oil Company LEASE Chalk Bluff 36 State DATE DRILLED 3/30/93 DATE PLUGGED 13 3/8" Casing at 2603', Cement to surface, 150 5x Perfs: 7164-7277' 8528-8572' 9466-9484' 9382'-9836' 9864-9886' Bridge Plug @ 8300' 7"Casing at 9253', Cement to surface, 1/620 & 41/2" liner 8439'-10057'		
Artificial Penetration Review Number 353 OPERATOR Mewbourne Oil (ompany LEASE Chalk Bluff 36 State WELL NUMBER DATE PLUGGED DATE PLUGGED 13 3/8" Casing at 393', Cement to surface, 13 3/8" casing at 2603', Cement to surface, 150 sx Perfs: 7164-7277' 8528-8572' 9466-9484' 9836' Bridge Plug @ 8300' 7" Casing at 9253', Cement to surface, 1/620 & 4/2' Inner 8439'-10057'	SUBSURFACE	
DPERATOR Membourne Oil Company LEASE Chalk Blutt 36 State WELL NUMBER DATE PRILLED 3/50/93 DATE PLUGGED DATE PLUGGED DATE PLUGGED DATE PLUGGED 13 3/9" Casing at 399'. Cement to surface, 530 00 95/8" casing at 2603', Cement to surface, 1/50 sx Perfs: 7/64-7277' 8528'.8572' 9466-9484' 9382'-9886' Bridge Plug @ 8300' 7"Casing at 9253', Cement to surface, 1/620 & 4/2" liner 8439'-10057'		Artificial Penetration Review
DPERATOR Membourne Oil Company LEASE Chalk Blutt 36 State WELL NUMBER DATE PRILLED 3/50/93 DATE PLUGGED DATE PLUGGED DATE PLUGGED DATE PLUGGED 13 3/9" Casing at 399'. Cement to surface, 530 00 95/8" casing at 2603', Cement to surface, 1/50 sx Perfs: 7/64-7277' 8528'.8572' 9466-9484' 9382'-9886' Bridge Plug @ 8300' 7"Casing at 9253', Cement to surface, 1/620 & 4/2" liner 8439'-10057'		Number 353
DISTANCE FROM INJECTOR (FT)	OPERATOR Membourne Dil Company	
DATE PRILLED 3/30/93 MUD FILLED BOREHOLE	LEASE Chalk Bluff 3/2 State	
DATE DRILLED 3/30/93 DATE PLUGGED 13 3/8" Casing at 399', Dement to surface, 150 sx 13 3/8" casing at 2603', Dement to surface, 1750 sx 142 7277' 8258-8572' 9466-9484' 9342'-9886' 9886' 9886' 9886' 8360' 142" liner 8439'-10057'		
DATE PLUGGED REPORTED MUD WEIGHT APINUMBER 30-015-27286 13 3/8" casing at 399', cement to surface, 530 00 95/8" casing at 2603', cement to surface, 1150 sx Perfs: 7164-7277' 8528-8572' 9466-9484' 9446-9484' 9446-9484' 9446-9486' Bridge Plug @ 8300' 7" casing at 9253', cement to surface, 1620 & 41/2" liner 8439'-10057'		, , , , , , , , , , , , , , , , , , , ,
APINUMBER 30-015-27286 1338" casing at 399', cement to surface, 530 90 95/8" casing at 2603', cement to surface, 1150 sx Perfs: 7164-7277' 8528-8572' 9466-9484' 9342'-9836' 9864'-9886' Bridge Plug @ 8300' 7"casing at 9253', cement to surface, 1620 & 4½" liner 8439'-10057'		
13 3/8" casing at 399' cement to surface, 530 00 95/8" casing at 2603', Cement to surface, 1150 sx Perfs: 7164-7277' 8528-8572' 9466-9484' 9842'-9856' 8764-9886' Bridge Plug @ 8300' 7" casing at 9253', Cement to surface, 1620 & 4/2' liner 8439'-10057'	DATE PLUGGED	
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9864'-9886' Bridge Plug @ 8300' 7"casing at 9253', Cement to surface, 1620 & 4/2" liner 8439'-10057'	9842'-	9856 ^
7" casing at 9253', cement to surface, 1620 & 4/2" liner 8439'-10057'	9864'-9	9886°
7" casing at 9253', cement to surface, 1620 & 4/2" liner 8439'-10057'	Bridge Plan	O Canal
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4/2" liner 8439'- 10057'		
4/2" liner 8439'- 10057'	7"raxing at	9253 CRIMENT to SULFACE 1620 er
	4/2" liner 8	439'- 10057'
		· · - ·

District I PO Box 1980, Hobbs, NM 88241-1980

Previous Operator Signature

District II 811 South First, Artesia, NM 88210

State of New Mexico
Energy, Minerals & Natural Resources Department

OIL CONSERVATION DIVISION

SV 353 Form C-104 Revised October 18, 1994 Instructions on back Submit to Appropriate District Office

000 Rio Brazo	os Rd., Aztec	, NM 87410				0 South Pa						•	5 Copies	
istrict IV 040 South Pa	echaco. Santr	- Fe. NM 87	505		Sam	nta Fe, NM	87505					AME	NDED REPORT	
•				TOV	VABLE	AND AU	THORI:	ZAT	NOF	TO TRAI	NSPO	RT		
			¹ Operator nan								² OGRID	Number	r	
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Hobbs, Nev		38241						Ī		3 R	eason for	Filing Co	ode	
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⁴ Al	PI Number	1				⁵ Pool Na	ame				Τ,	~ "P	ool Code	
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7 PR	roperty Code					Property N	lame				T	۰W	fell Number	
	7871		Chalk Bluff:	36 State	e								1	
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II. Oil at	nd Gas		OFTERS 19 Transporter N			7 20	POD	27 0/	2		POD ULS	-TP Loc	-Ai- p	
OGRID III			and Address				P00	""	$^{\prime}\perp$			STR Loca escription		
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	Completi	ion Dat	a											
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complied w	with and that t	the information	Oil Conservation ion given above	is true a	n have been and complet	, i	i i		CON	ISERVATI	ON D	ivisi(NC	
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Defa:			Phone:								SEP	6_	2001	
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* II UIIS IS A C	iange ui oper		e Cordo numb	er and n	ame or me	previous operat	JOT .							

Printed Name

Date

Submit to Appropriate District Office, State Lesse - 6 copies Fee Lesse - 5 copies

State of New Mexico Energy, Minerals and Natural Resources Department

Form C-105 Revised 1-1-89 354

DIVISION

DISTRICT I P.O. Box 1980, Hobbs, NM 88240	OIL CONSERVA		1 DIV
	2040 Pache	co St.	
P.O. Drawer DD, Artesia, NM 88210	Santa Fe,	NM	87505
RICT III			

WELL API NO. 30-015-27286	
5. Indicate Type of Lease STATE	FEE .
6. State Oil & Gas Lease No.	
E-379-4	

Rio Brazos Rd, A	Rio Brazos Rd, Aztec, NM 87410								E-379-4						
WELL CO	OMPLETIO	N OR REC	OMPLETI	ON REP	ORT AN	D LOG						2 3 7 .			
1a. Type of Well: OIL WELL	GAS	WELL	DRY	OTHER	_			7.	Lease Name	or Unit Agre	ement Nan	ne 6	16.0 10.11.12.13.14.16.76.76.76.76.76.76.76.76.76.76.76.76.76		
b. Type of Completion:									halk Bluff	36 State	.0	To			
NEW WORK WELL OVER	DEEPEN	PLUG BACK	DIF RES	F SVR OTH	HER				riaik Diuli	25.50 25.00	On REC	EP 2001	ا بنا النا النا		
2. Name of Operator								8.	Well No.	52	UD - K	RIED	27:		
Mewbourne Oil Co	ompany							1		1001 / 64		"IESIA	7/		
3. Address of Operator	hha blace 84.	io 0004s	i					9.	ogan Drai	w Wolfcar			V2)/		
PO Box 5270, Hol	DDS, IVEW IVE	exico 8824°							ogan Dia	A AAOIICANI	\€≥ t≥n	261811	2/		
Unit Letter _	<u>M</u> :	660 Fee	et From The	Sou	ıth	Line and	d	990	Feet	From The _	W		Line		
Section	36	Town	nship 17	7S	Range	28E		NMP	M		Edd	y Co	unty		
10. Date Spudded	11. Date T.D. I		12. Date Con		o Prod.)			•	RKB, RT, G	R, etc.)	14. Elev	. Casinghea	ad		
02/03/93	03/19/9		07/17/				5' GL					3635'			
15. Total Depth 10060	16. Pk	g Back T.D. 8300	1	7. If Muttiple Many Zon		٧	18, Int Dri	tervals lied By	Rotary Too		Cable To	ools			
 19. Producing Interval(s) 7164-7277 	, of this comple	tion - Top, Bott	om, Name							20. Was Di	rectional : No	Survey Mad	le		
21. Type Electric and Ot CBL, DN & DLL	her Logs Run	· ·							22. Was W	ell Cored	No				
23.		CAS	SING RE	CORD ((Report	all strin	gs s	et in v	vell)						
SING SIZE	WEIGH	HT LB/FT.	DEPTH	SET		E SIZE		CEI	MENTING F	RECORD	AM	OUNT PUI	LED		
13 3/8"		48# 	399			1/2"			530 sk			N/A			
9 5/8" 7"		36#	260			2 1/4"			1150 sk			N/A			
		26#	925	03	8	3/4"			1620 sk	(S		N/A			
24.		LINE	R RECOR	<u>:</u> D				25.	TL	JBING RE	CORD	·			
SIZE	TOP	ВО	TTOM S	SACKS CE	MENT	SCREEN	-		SIZE	DEPTH		PACKER	SET		
4 1/2"	8439'	1	0057'	225		"			2 7/8"	73	52	TAC @	7190'		

26. Perforation record)							, CEMEN			TC.		
7164-7277', 58.3	88" diameter	holes			Ŀ	DEPTH IN				AND KIND					
					-	/164	-72 <u>7</u>	1	5000	gals 20%	Ne-Fe &	bali seale	'S		
					-						·				
28,			P	RODUC	CTION										
Date First Production 07/17/01			on Method (Flow	wing, gas lift,		Size and typ	е рит	ib)		Well St	•	d. or Shut-i ucing	n)		
Date of Test	Hours Teste		hoke Size	Prod'n Fo	r Oil	- BbL.		Gas - MC	F	Water - BbL.		as - Oil Ratio			
07/22/01	24	,	N/A	Test Perio	od 1	88		88	1	78		1000]		
Flow Tubing Press. N/A	Casing Pres		alculated 24- our Rate	Оіі - Вы 88		Gas - M0 88		Water	7- BbL. 78	Oil Grav	vity - API -	<i>(Corr.)</i> 38			
29. Disposition of Gas (S Sold	old, used for fu	el, vented, etc.)	•			•			Test W	itnessed By					
30. List Attachments									1 3. 30	, r -					
C-103 & C104.													-		
31 Aboreby certify that the	he information s	shown on both :	sides of this for	n is true and	complete to	the best of	my kn	owledge	and belief						
Signature	M. May			Printed Name N.M	M. Young			Title	District N	/lanager	Date	08/24/0	<u>)1</u>		
	7		<u></u>	·											

INSTRUCTIONS

This form is to be filed with the appropriate District Office of the Division not later than 20 days after the completion of any newly-drilled or deepened well. It shall be accompanied by one copy of all electrical and radio-activity logs run on the well and a summary of all specific tests conducted, including drill stem tests. All depths reported shall be measured depths. In the case of directionally drilled wells, true vertical depths shall also be reported. For multiple completions, Items 25 through 29 shall be reported for each zone. The form is to be filed in quintuplicate except on state land, where six copies are required. See Rule 1105.

INDICATE FORMATION TOPS IN CONFORMANCE WITH GEOGRAPHICAL SECTION OF STATE

			New Mexico				orthwestern		-
T. Anh	V	Т.	Canyon	8327.0 T	. Ojo	Alamo	T.	Pen	n. "B" n. "C" n. "D"
T. Salt		T.	Strawn	8820.0	. Kirtl	and-Fru	itland T.	Pen	n. "C"
B. Salt		T.	Atoka	9380.0	. Pict	ured Clif	ffs T.	Pen	n. "D"
T. Yate	es	328.0 T	Miss	10040.0 T	Cliff	House	T.	Lead	dville ison
T. 7 Ri	vers _	464.0 T.	Devonian	T	. Mer	refee	<u>T</u> .	Mad	ison
T. Que	en	1008.0 T	Silurian		. Poir	nt Looko	ut	Elbe	rt
T. Gray	yburg	1360.0	Montoya		. Mar	icos	i.	MCC	racken
T. San	Andre	s <u>1785.0</u> T	Simpson	<u>T</u>	. Gall	up	<u>T</u> .	Igna	cio Otzte
T. Glor	ieta _	<u>3155.0</u> T.	McKee	<u></u>	Base (ireenho	rn <u>1</u> .	Gran	nite
T. Pad	dock _		Ellenburger	<u></u>	. Dak	ota	<u> </u>		·
I. Bline	ebry _	[,	Gr. wasn	┆	. Mor	rison			
I. Iubi	D	4025.0 1 .	Delaware Sand	<u></u>	. 10a	IIIO	<u> </u>		
T. Aba	кага _	4855.0 I.	Bone Springs _	0404 O T	. ENU	ada			
T Mol	foomn	6702.0 T	IAIOITOAA	<u> </u>	. VVIII	yale	¦·		
T Don	rcamp	8210.0 T		¦	. Ullii Don	noin			
T. Cisc	n (Pour	- 0210.0 T		\	. Pon	n "Δ"	' .		
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			to						
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140. 3, 1			to						•••••
		LITHOLO	GY RECOR	RD (Attac	h add	itional s	heet if necess	ary)	
From	То	Thickness	Lithology	Fr	om	То	Thickness		Lithology
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District | PO Box 1980, Hobbs, NM 88241-1980

District III 1000 Rio Brazos Rd., Aztec, NM 87410

District IV 2040 South Pacheco, Santa Fe, NM 87505

District II 811 South Fivet, Artesia, NM 88210

State of New Mexico Energy, Minerals & Natural Resources Department

Form C-101 Revised October 18, 1994 Instructions on back

Submit to Appropriate District Office State Lease - 6 Copies

Fee Lease - 5 Copies

OIL CONSERVATION DIVISION 2040 South Pacheco Santa Fe NM 87505

AMENDED REPOR	रा
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				O.	anta i e, i	14141 07 303			۱		DED INE. OIL	
APPLICA	TION	FOR P	ERMIT	TO DR	ILL, RE-E	NTER, DE	ERE			, OR A	DD A ZON	
Mewboume PO Box 5270 Hobbs, N.M. 505-393-590	882 4 1	any /	₁Opera	itor Name an	d Address	31-1230	OCD R	A JUN 2001 ECEIVED	12 16 17 18	3/	14744 API Number 5-27286	
₄Property 787		C	halk Bluff	36 State 1	-	perty Name S	<u> </u>	ARTESIA	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\		eWell No. 1	
					-Surfac	e Location	Ê<<≥9;	592 4265gg	7			
UL or lot no.	Section 36	Township 17S	28É	Lot Idn	Feet from the			Feet from the 990	East	West Line W	County Eddy	
	I	,Prop	osed E	ottom l	Hole Loca	tion If Diffe	erent	From Surf	face		- . 	
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South	line	Feet from the	East	West Line	County	
	<u> </u>	₃Propose	ed Pool 1					10Propos	sed Pool :	2		
	<u> </u>				<u> </u>					· · ·		
11Work Typ			12Well Type	Code	13Cal	ble/Rotary R		14Lease Type Coo	le	15Grou	nd Level Elevatio 3625	
uMar	ltiple ·		17Proposed	-		ormation Volfcamp	ТВ/	19Contractor			_∞ Spud Date	
<u> </u>			₂₁ F	ropose	d Casing	and Ceme	nt P	rogram				
Hole Siz	e	Casing	Size	Casing	weight/foot	Setting Dep	th	Sacks of Cer	ment	Es	stimated TOC	
										<u> </u>		
											:	
							·····					
² Describe the pr Describe the blo	oposed prog wout preven	gram. If this tion program	application n, if any. Us	is to DEEPE e additional :	N or PLUG BAC sheets if necess	CK give the data on sary.	the pre	esent productive z	one and	proposed ne	ew productive zor	
above top	perforatio	ns. Cap C	IBP w/ 35	cement.	Attempt a co	ions. Mewbour impletion in the he Wolfcamp @	Cany	on @ +/- 8550		to set a C	IBP 100'	
During ope	erations of	^r plugbaci	c & testing	, а 7 1/16	x 3000 psi B	OP w/ 2 3/8"ra	ms &	blinds will be u	sed.			
I hereby certify t			n above is tr	ue and comp	plete to the	156X) O	IL C	ONSERVA	TION	DIVIS	ION	
ignature:							Approved By: Level W. Sum					
rinted name:	I.M. Youn	9)				Title:		Wistered	tsy	esers	ov.	
itle: District	vlanager					Approval Date:	AUG	2 9 2001	Expirat	on Date:	AUG 2 9	

OIL CONSERVATION DIVISION

P.O. Box 2088

Santa Fe, New Mexico 87504-2088

DISTRICT P.O. Drawer DD, Artesia, NM 88210

DISTRICT I P.O. Box 1980, Hobbs, NM 88240

660

990

1320

1650

WELL LOCATION AND ACREAGE DEDICATION PLAT

1000 Rio Brazos Rd., Aztec, NM 87410 All Distances must be from the outer boundaries of the section Operator Well No. MEWBOURNE OIL COMPANY CHALK BLUFF 36 STATE Unit Letter Section Township County 17 SOUTH 27 EAST EDDY **NMPM** Actual Footage Location of Well: feet from the SOUTH 660 line and line feet from the Ground level Elev. Dedicated Acreage: Producing Formation 3635 Illinois Camp Morrow North 320 1. Outline the acreage dedicated to the subject well by colored pencil or hachure marks on the plat below. 2. If more than one lease is dedicated to the well, outline each and identify the ownership thereof (both as to working interest and royalty). 3. If more than one lease of different ownership is dedicated to the well, have the interest of all owners been consolidated by communitization, unitization, force-pooling, etc.? Yes <u>Communitization</u> If answer is "yes" type of consolidation If answer is "no" list the owners and tract descriptions which have actually been consolidated. (Use reverse side of this form if neccessary. No allowable will be assigned to the well until all interests have been consolidated (by communitization, unitization, forced-pooling, or otherwise) or until a non-standard unit, eliminating such interest, has been approved by the Division. OPERATOR CERTIFICATION I hereby certify that the information contained herein in true and complete to the best of my knowledge and belief. Printed Name Bill Pierce Drilling Superintendent Company Mewbourne Oil Company <u> October 27, 1992</u> SURVEYOR CERTIFICATION I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervison, and that the same is true and correct to the best of my browledge and belief. Date Surveyed 10/19/92 Signature & Seal of Professional Surveyor 990'

2640

1980 2310

2000

1500

1000

500

0

Type of Well: WELL

Well Location

State of New Mexico Energy, Minerals and Natural Resources Department

Form C-103 Revised 1-1-89

DISTRICT I P.O. Box 1980, Hobbs, NM 88240

DISTRICT II
P.O. Drawer DD, Artesia, NM 88210

1000 Rio Brazos Rd., Aztec, NM 87410

₂Name of Operator Mewbourne Oil Company

PO Box 5270, Hobbs, New Mexico 88241

660

Address of Operator

Unit Letter _

DITIONS OF APPROVAL, IF ANY:

OIL CONSERVATION DIVISION

2040 Pacheco St. Santa Fe, NM 87505

OTHER

South

Line and

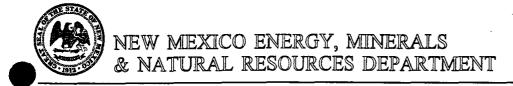
SUNDRY NOTICES AND REPORTS ON WELLS

DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)

Feet From The

WELL API NO. 30-015-27286 sindicate Type of Lease STATE FEE «State Oil & Gas Lease No. E-379-4 (DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A 7Lease Name or Unit Agreement Name Chalk Bluff 36 State «Well No. 1 Pool name or Wildcat Logan Draw Atoka 990 West Feet From The Line 27

Section	36	Township	17S	Range	R 28E	NMPM	Eddy	County	
in the state of th		10Elevation 3635' GL	(Show whether DF	, RKB, RT, GR,	etc.)				×
11 (Check Appr	opriate Box t	o Indicate N	ature of No	otice, Repo	ort, or Othe	r Data		
NOTICE	E OF INTE	ENTION TO:			SUBSI	EQUENT I	REPORT O	F:	
PERFORM REMEDIAL WORK		PLUG AND ABA	ANDON	REMEDIAL V	NORK		ALTERING C	ASING	
TEMPORARILY ABANDON		CHANGE PLAN	s	COMMENCE	DRILLING OPN	is.	PLUG AND A	NBANDONMENT	
PULL OR ALTER CASING				CASING TES	ST AND CEMEN	T JOB			
o k :				OTHER: PI	B Atoka. Test &	plug off Canyon	. Test & Produce V	Volfcamp	X
12Describe Proposed or Complet work) SEE RULE 1103.	ed Operations (C	clearly state all pertin	ent details, and giv	re pertinent dates	s, including estim	nated date of star	ting any proposed		
7/05/01POOH. RIH &	on @ 8528-7 set 7" RBP @	72' (12'. 2 spf. 24	holes). Acidiza est to 1000 ps	e w/ 2100 gal i. OK. New Pl	ls 20% Ne-Fe BTD @ 8300	e & ball sealer '. Perforate W s. Swab test.	s. Swab test. /olfcamp @ 716	§ 4- 7277'	
7/16/01POOH w/ test	equipment. Rı	un tbg & rods &	put well on pro	duction.	1526272829303	AUTES.	TIA IST		
I hereby certify that the informat	ion above is true	and complete to the	best of my knowle	dge and belief.	1	۸۰	31113		
SIGNATURE			т	TLE District N	/lanager		DATE 08-	24-01	
TYPE OR PRINT NAME N.M. YO	rung						TELEPHONE NO.	505-393-590	5
(This space for State Use) VED BY	Sim	w.s.	em) "	Distr	itsipe	wisso	DATE	° 6 2001	



OIL CONSERVATION DIVISION DISTRICT II ARTESIA 811 S. FIRST ST. ARTESIA, NM 88210 (505) 748-1283 FAX (505) 748-9720

Jennifer A. Salisbury

January 28, 2000

Mewbourne Oil Company P.O. Box 5270 Hobbs, NM 88241

Re: Well Placed In Pool

Gentlemen/Madams:

As the result of Division Order 11300, the following described gas well has been placed in the pool shown below. This change in nomenclature has been made in our files. Please change your records to reflect the proper pool name. All subsequent reports must show this nomenclature until further notice.

Logan Draw; Atoka, Southeast Gas Pool Chalk Bluff '36' State #1 Unit M, Section 36, Township 17 South, Range 27 East, NMPM Poolcode: 96979

Transporters are advised by copy of this letter, to change their records to reflect the pool name as established by this order, effective October 1, 1999.

Sincerely.

Bryan Arrant District Geologist

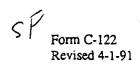
Cc: Amoco Pipeline Company

Transwestern Pipeline Company

Arrens

Santa Fe Mae Well File Submit in duplicate to appropriate district office See Rule 401 & Rule 1122

State of New Mexico Energy, Minerals and Natural Resources Department



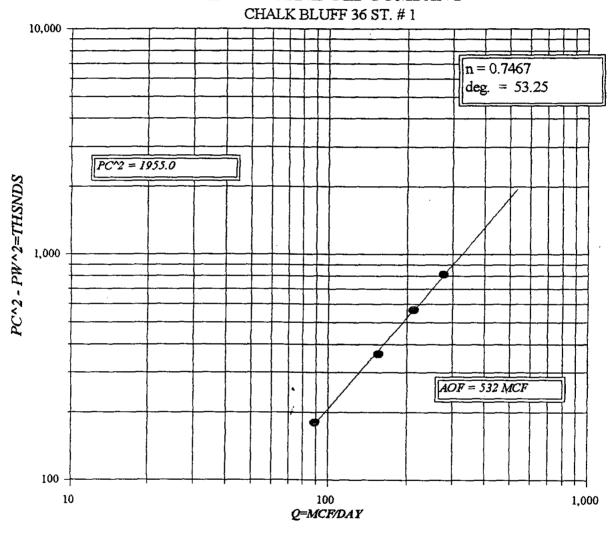
OIL CONSERVATION DIVISION

P.O. Box 2088

Santa Fe, New Mexico 87504-2088

		MU	LTIPO	OINT A	ND ON	E PC	DINT BACK				OR GA	s w	ELL		
Oper	ator Mewl	oourne	Oil	Compan	v			L	ease or	Unit Name halk Blu	iff 36	Sta	te		
Туре	Test			-		.,		T	est Dat	0/27/99		Well I	No.	•	
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Tbg.	Size	Wt.	d	Se	t At	Pert	orations:					Pool	SE Lo	gan	Draw
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Туре	Well - Single	:-Bradenh Single	ead - G.G	. or G.O. M	/ultiple		Packer Set	At 9385				Forma	tion toka		
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3.	3.068 x			27		.00	77	1165				11		1	hr
4.	3.068 x	0.875	5	29	95	.00	68	1055				11		1	hr
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2.	3.650		35.			0.2	- :: :	905		199	-T	004		156	
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2.	.06	530		1.39	.993	2	Specific Gravity S	eparator Ga	s	<u>.696</u>	-		XX	XXX	XXXX
3.	.06	537		1.40	.99	2	Specific Gravity F Critical Pressure_	-	d		XXXX		7.1		
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2.		1262		593.9	361.1		AOF = Q	₽ D2	***	n =	532				
3. l		1178 1069		389.5 143.4	565.5 811.6		AOF = Q	7 c	 _	==	<u>. JJ2</u>				
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	* Corr	ected	to 4.	586% C	02										
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••	•				-	vic	es, Inc.	Bob M		v			Murray	7	

MEWBOURNE OIL COMPANY



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	%C02	: 4.586	8N2		H2S		•	DATE	:10 27 99			1262.5 *
	ď			:0.018231		: 6532.0			: 27			1178.8 +
				:::::::::			:::::::::::	========	**=*=====	1141.1		1069.3 *
												*
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	VOL 2			: 1262.2						361.1		1593.9 *
	VOL 3			: 1178.2			SHUT-IN PR	= 1398.2		565.5	•	1389.5 *
	VOL 4			: 1068.2						811.6		1143.4 *
												*
				PCR	: 652					<u>n</u> =	0.747	±i i
				TCR	: 381							*
										Pc2/(Pc2-Pw2) =	10.862	*
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		.j	j	j	j			i	.ii	•		*]]
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	2 TW	534	534	534	534	534	534	534	534	[Pc2/Pc2-Pw2]n =	5.936	*
	3 T s	627.9	627.9	627.9	627.9	627.9	627.9	627.9	627.9		3.529	*
	4 T	580.9	580.9	580.9	580.9	580.9	580.9	580.9	580.9		2.525	*
	PR (est)	2.04		1.94		1.81]	1.64	1	į	1.928 -	
	5 Z(est)	0.809	0.793	0.815	0.799	0.824	0.807	0.835				*
	6 TZ	469.9	460.5	473.7	464.1	478.5	468.9	485.3	476.0	AOF= Q	0.528	*
	7 GH/TZ	13.901	14.185	13.790	14.074	13.650	13.929	13.458	13.724	1	0.551	*
	8 e\$	1.584	1.702	1.677	•		1.686	1.656	1.673	}	0.535	*
	9 l-e-S	0.406	0.413	0.404	0.410	0.401	0.407	0.396	0.402		0.532	*11
	lO Pt	1332.2	1332.2	1262.2	1262.2	1178.2	1178.2	1068.2	1068.2			*
	l1 Pt2 /1000											*
	l2 Fr	0.018231	0.018231	0.018231	[0.018231	0.018231	0.018231	0.018231	0.0182311			*[]
4	Fc=FrTZ	•	,	•	•	•	•	8.848	8.677	1		*
,	FcQm	0.76	•	1.35					2.39			*
	5 L/H(FcQm)											*[[
									2.3073869	1		*[]
		•	•	1593.9		•	•	•	1143.4			*
	.8 Ps2	2989.4	3021.4	•	•	•	•	1894.0		l .		*[[
	l9 Ps	1729.0	•	•	•	•	1530.6			1		*[]
	10 P	1530.6	•	1448.6	•	•	•	1222.2		•		*
	1 Pr	2.35	•	•	•		•	•	,			*[[
	12 Tr	1.52	•	1.52	•	•	•	•	•	•		*
	.3 Z	0.793	0.792	0.799	0.799	0.807					ORM C122-	
=	=========			=======	========	:::::::::::	========	========	=========		=======	======*

State of New Mexico

Form C-103

to Appropriate Revised 1-1-89 Energy, Minerals and Natural Resources Department District Office OIL CONSERVATION DIVISION <u>DISTRICT I</u> P.O. Box 1980, Hobbs, NM 88240 WELL API NO. 2040 Pacheco St. 30-015-27286 Santa Fe, NM 87505 DISTRICT II sindicate Type of Lease P.O. Drawer DD, Artesia, NM 88210 STATE FEE DISTRICT III «State Oil & Gas Lease No. 1000 Rio Brazos Rd., Aztec, NM 87410 E-379-4 SUNDRY NOTICES AND REPORTS ON WELLS (DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A Lease Name or Unit Agreement Name DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" Chaik Bluff 36 State (FORM C-101) FOR SUCH PROPOSALS.) Type of Well: OIL __ GAS «Well No. 2Name of Operator Mewbourne Oil Company Address of Operator »Pool name or Wildcat PO Box 5270, Hobbs, New Mexico 88240 Wildcat Atoka ₄Well Location 660 South M 990 West Unit Letter Feet From The I lne and Feet From The Line 36 17s Eddy 27e Section Range **NMPM** County 10Elevation (Show whether DF, RKB, RT, GR, etc.) 3625 GL Check Appropriate Box to Indicate Nature of Notice, Report, or Other Data 11 NOTICE OF INTENTION TO: SUBSEQUENT REPORT OF: PLUG AND ABANDON PERFORM REMEDIAL WORK REMEDIAL WORK ALTERING CASING EMPORARILY ABANDON CHANGE PLANS PLUG AND ANBANDONMENT COMMENCE DRILLING OPNS. FULL OR ALTER CASING CASING TEST AND CEMENT JOB X OTHER: OTHER: Test Atoka naDescribe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work) SEE RULE 1103.

9-21-99...POOH w/ Tbg.

9-22-99...Set RBP over Morrow perfs. Perforate Atoka perfs @ 9466-84. GIH w/ Pkr & tbg.

9-24-99...Acidize new Atoka perfs w/ 3000 gals 7 1/2% HCL adding N2 w/ Ball Sealers. Swap & Flow test.

10-16-99...Frac Atoka perfs w/ 30,000 gais 70 Quality Foam using 10,000 lbs 20/40 Interprop. Flow back & clean-up

10-19-99...Turn to sales.

			्ट्राम पावा वा भारत
1.4	imprimation above is true and cor	mplete to the best of my knowledge and belief. TITLE ONS U TRE	DATE 11-01-99
TYPE OR PRINT NAME	MMYOUNG		TELEPHONE NO. 393-5905
APPROVED BY	Sim W.	Gem Ristrict Super	DATE // 5 . 9 9
CONDITIONS OF APPROV	AL, IF ANY:		•

District 1 PO Box 1980, Hobbs, NM 88241-1980

District II 811 South First, Artesia, NM 88210

District III 1000 Rio Brazos Rd., Aztec, NM 87410

State of New Mexico
Energy, Minerals & Natural Resources Department

GIL CONSERVATION DIVISION 2040 South Pacheco

SP Form C-10 Revised October 18, 199
Instructions on bac
Submit to Appropriate District Offic

5 Copie

District IV 2040 South !								, NM 87						ED REPOR
<u>l</u>		RE	QUEST				E AN	D AUT	HORIZA	ATIO	N TO TRA			· · · · · · · · · · · · · · · · · · ·
Mewboun	ne Oil Co	mpa	ny 🗸	¹ Operator nan	ne and	Address						² OGRID N 14744	lumber	
P. O. Box Hobbs, N										-	3 [leason for F	ilina Code	
110000, 14	181 0024											Plug Bad	_	
	API Numb	o r	7				,	Pool Name				7	°Pool C	ode
30 - 0 15	5-27286 Property C		-(1	Wildow Atol	ca Ga	s-Peol	يحط	an l	maw;	Ar	<u> وادمر 32</u>		469	19
.,	7871	oue		Chalk Bluff "	'36" S	itate	• •	openy nen	ie >		_	1	°Weil No 1	mper
11. 10	Surfac	e L	ocation						······································		·····			
Ul or lot no.			Township	Range	Lot lo	in	Feet from	n the	North/Sout	h Line	Feet from the	East/Wes	tine Cor	unty
М	36		178	27E			6	60	South	h	990	Wes	it	Eddy
			ole Loc		1 -41		I m	44 .	D		1= -2 - 2	1 =		
UI or lot no.	Section	1	Township	Range	Lot to	ın	Feet from	n the	North/Sout	h Line	Feet from the	East/Wes	l line Cot	unty
12 Lse Code	13 Prod	lucing	Method Co	de 14 Gas	Conne	ction Date	150	-129 Perm	it Number	,	16 C-129 Effective I	Date	17 C-129 E	xpiration Date
		Flo	wing	1	0/24/	94								•
		ıs T	ranspor											
18 Transp OGRI	orter D		16	Transporter No and Address	ame			2º PO	D Z	O/G	2	POD ULST and Des		
4000				e Company				40220		0				
1386	48	Tuisa	a, OK				1072	19238 [,]	10				_	
											(3)	181920	27223	
2222		Trans	swestern	Pipeline Con	pany		0.500.00	`204.05		G	125	4	17.3	2
00099	1	Hous	ston, TX					28195	23	G	3.74	1167	_3a	25/ 26/
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								AND SERVE		SARANA .	10	ARTE	SIA .	\$/
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												9 ₉ t E Z	Maria Caranta	
IV. Prod	duced \	Nate	er								ži			
	POD		1				 -	24 POD UL	STR Location	and D	Резстірtіоп			····
19	23850										·			
		letic	on Data		·				78 000000		- MD-4-		10 50 10	. 50 10
•	ud Date /03/93			Ready Date 09/24/99			²⁷ TD 10060		2ª PB1D 9780		²⁰ Perfora 9466-94	i	~ DHC	C, DC, MC
	31 Hole S	ilze			asing &	Tubing S				epth Se			4 Sacks Cer	ment
	17-1/2	2"				3-3/8"				399'			530	
	12-1/4	, "			9.	-5/8"			2	603'			1150	,
	8-3/4	н				7"			9	253'			1620	
	6-1/8'				4-	-1/2"			10	0057'			225	
VI. We	eli Test	Da	ta											
35 Date	New Oil		³⁴ Ga∍ D	elivery Date	T	37 Test [Date	3	Test Length		≫ Thg. Pre	SSUTO	40 Cs	g. Pressure
	24/99			24/99		10/18			24 hours		45			Packer
	ke Size /64"		•	2 Oi		43 Wat			44 Gas 317		45 AOF	•	ı	st Method Sold
47 I hereby	certify that	the ru	les of the O	il Conservation	Divisio	n have be	een	Γ'					<u>. </u>	
to the be	st of my kn	owied	e imomatio ige and beli	n given above i ef.	s true :	ano comp	1919			_	DNSERVATI	_		
Signature:	(Thou	n c	90.					Approved	l by:	Lu	mi wi	rem	B	\$/
Printed name	Jefo	Eigi	in ():					Title:	<u> </u>	0	n W.	pervi	wi	· · · · · · · · · · · · · · · · · · ·
Title: Dist	rict Mana	ager	 _					Approval			10-27-5	ς		
D-4	0/20/99			Phone:	505	-393-59	905	 			<u>-</u>	1.		
48 if this is a	change of	opera	tor fill in the	OGRID numbe	r and i	name of ti	he previou	operator						
									<u> </u>				<u> </u>	
	Previo	us Or	erator Sign	ature				Printed	Name			Tit	le	Date

Submit to Appropriate District Office

State of New Mexico

Form C-105 Revised 1-1-se

State Lease - 6 copies	.	Energy, Minerals and Natural Resources Dep										Revis	sed 1-1-89
Fee Lease - 5 copies <u>DISTRICT I</u> P.O. Box 1980, Hobbs	, NM 88240	OIL	CONS	ERVAT	TION	l DI\	/ISIO	N.		API NO. 15-2728	6		
DISTRICT II O. Drawer DD, Artes	ia, NM 88210		Si	040 Pache anta Fe	8492	BU 50	5		5. Indi	cate Type	of Lease STA	ATE X	FEE .
DISTRICT III				45		4	105/				as Lease N	lo.	
1000 Rio Brazos Rd,				/W		-	127		E-37	9-4			
	OMPLETI	ON OR REC	COMPLET	101	ORT A	NDJL	- 4						
1a. Type of Well: OiL WELL] G/	S WELL 🛛	DRY	OFHER OCA	RECEI D - AD	VED	27;		7. Leas	se Name o	r Unit Agreer	nent Nar	ne
b. Type of Completion: NEW WORK WELL OVER	、 _	PLUG EN BACK		HFF COLOT	ハバ) HER	ESIA	روم روم/		Chail	k Bluff "3	6" State		
2. Name of Operator		-			र एहर				8. Well	No.	•		
Mewbourne Oil C							 		1				
3. Address of Operator P. O. Box 5270, F		88241									Vildcat <i>S'E</i> Gas Poc		Ptoka
4. Well Location		000		_					_				
Unit Letter	<u> </u>	660 Fee	et From The _	Sou	ıth	L	ine and _	99	0	_ Feet Fr	om The	W	est Line
Section	36		·		Range		27E		MPM			Edd	<u> </u>
10. Date Spudded	11. Date T.D		I	ompl. (Ready t	to Prod.)	i		•	F & RKB	, RT, GR,	etc.)	14. Elev	. Casinghead
02/03/93	03/19/		09/2		Communication 1		3635' 0						3635'
15. Total Depth 10060'		lug Back T.D. 9780'		17. If Multiple Many Zoi		NA NA		Intervals Orilled By		tary Tools		Cable To	
19. Producing Interval(s 9466-9470' & 94		•	om, Name							2	0. Was Dire	ctional No	Survey Made
21. Type Electric and O	ther Logs Run		<u> </u>						22.	Was Well		No	
23		CAS	SING RI	CORD	(Repo	ort all	strings	set ir	well)	······································		
CASING SIZE	WEIG	HT LB/FT.	DEPT	H SET	Н	OLE SI	ZE	(EMEN	TING RE	CORD	AN	OUNT PULLED
13-3/8"		48#	3	99'		17-1 <i>/</i> 2	2"		530 :	sks Clas	s C		None
9-5/8"		36#		303'		12-1/4				sks Clas			None
7"		26#	92	253'		8-3/4	··		1620	sks Clas	s H		None
			 		-							+	
24.		LINE	R RECO	RD	'			25	:	TLIF	BING RE	CORD	
SIZE	TOP		TTOM	SACKS CE	MENT	SC	REEN	- -	SIZE		DEPTH		PACKER SET
4-1/2"	8439'	1	0057'	225					2-3/		940		9407'
26. Perforation record	•					27. <i>F</i>	ACID, SI	HOT, I	FRAC	TURE,	CEMENT	r, sql	JEEZE, ETC.
9466-9484', 0.44	" entry hole	diameter, 56	holes total			DEI	TH INTE				AND KIND		
						—	9466-94	84'	- F	racture s	stimulated	with 18	0000# IP 20/40
						-							
28.				PRODU	CTIO	NI.			L				
Date First Production		Product		lowing, gas lift			and type p	ump)			Well Sta	tus (Pro	od. or Shut-in)
09/24/99		Flowing											ducing
Date of Test 10/18/99	Hours Tes	sted C	hoke Size 24/64"	Prod'n Fo		Oil - Bb	L. 2	Gas-	MCF 17	w	ater - BbL. 2		as - Oil Ratio 158500
Flow Tubing Press.	Casing Pr	essure (Calculated 24-				as - MCF		/ater - Bi	<u> </u>	Oil Grav	•	· (Corr.)
45		ikei j		2			317		2	2	<u> </u>	- 6	33.8
29. Disposition of Gas (Sold	sola, used for	ruei, vented, etc.								Test Witt	nessed By ller		
30. List Attachments											_		

31. I hereby certify that the information shown on both sides of this form is true and complete to the best of my knowledge and belief

Signature

Printed Jerry Elgin

_____ Title ____ District Manager 10/19/99 District I PO Box 1980, Hobbs, NM 88241-1980

District II 811 South First, Artesia, NM 88210

District (II

1000 Rio Brazos Rd., Aztec, NM 87410

District IV 2040 South Pacheco, Santa Fe, NM 87505

State of New Mexico

Energy, Minerals & Natural Resources Department

Form C-101 Revised October 18, 1994 Instructions on back

Submit to Appropriate District Office State Lease - 6 Copies

Fee Lease - 5 Copies

OIL CONSERVATION DIVISION 314157677 Santa Fe, NM 87505

MENDED REPORT PLUGBACK OR ADD A ZONE APPLICATION FOR PERMIT TO DRILL, RE-ENTER, DEEPEN

Mewbourne Oil Company P. O. Box 5270	Operator Name and Address	OCD ARTESIA	20GRID Number 14744
Habbs, NM 88241		120000 11 36 15 17 1	3API Number 30 - 015-27286
4Property Code	sProperty N Chalk Bluff "36" State	ame	«Well No.

Surface Location

UL	or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West Line	County
	М	36	178	27E		660	South	990	West	Eddy

.Proposed Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot idn	Feet from the	North/South line	Feet from the	East/West Line	County
بيرو	At	•Proposed oka Gas P		· · · · · · · · · · · · · · · · · · ·			₁₀Propos	ed Pool 2	

11Work Type Code	₁₂Weil Type Code G	13Cable/Rotary R	14Lease Type Code S	15Ground Level Elevation 3635
18 M ultiple No	17Proposed Depth 10060	18Formation Atoka	10Contractor Key Energy Services	₂₀ Spud Date 09-15-99

21 Proposed Casing and Cement Program

Hole Size	Casing Size	Casing weight/foot	Setting Depth	Sacks of Cement	Estimated TOC	
17-1/2"	13-3/8"	48#	399	530·	Surface	
12-1/4"	9-5/8"	36#	2603	1150	Surface	
8-3/4"	7"	26#	9253	1620	Surface	
6"	4-1/2" Liner	11.6#	10057	225	TOL @ 8439'	
					 	

²²Describe the proposed program. If this application is to DEEPEN or PLUG BACK give the data on the present productive zone and proposed new productive zone. Describe the blowout prevention program, if any. Use additional sheets if necessary.

- 1) Temporarily abandon Morrow perforations 9842-9856' and 9864-9886' by setting a cast iron bridge plug at 9800' and dumping 20' cement plug on top.
- 2) Test the Atoka Formation through perforations 9442-9446' and 9452-9464'.
- 3) File for commingling permit if well conditions warrant.

6" 5000 psi WP dual hydraulic BOP's will be utilized on this project. Any produced fluids will be diverted through a 5000 psi WP adjustable choke to a steel tank via 2" steel lines

²³ I hereby certify that the information given above is true and complete to the best of my knowledge and belief.	OIL CONSERVATION DIVISION				
Signature: Asaly Elin	Approved By:	v W. Bum BGX			
Printed name: Jerry-Elgin	Title:	trut Supervisor			
Title: District Manager	Approval Date: 8-/7-99	Expiration Date: 8 - /7 - cc			

District I PO Box 1980, Hobbs, NM 88241-1980

State of New Mexico Energy, Minerals & Natural Resources Department

Form C-102 Revised October 18, 1994

Submit to Appropriate District Office

Instructions on back

811 South First, Artesia, NM 88210

District III

State Lease - 4 Copies Fee Lease - 3 Copies

1000 Rio Brazos Rd., Aztec, NM 87410

2040 South Pacheco, Santa Fe, NM 87505

OIL CONSERVATION DIVISION 2040 South Pacheco Santa Fe, NM 87505

MENDED REPORT

:API Numb 30-015-27	er	₂ Pool Code		is Camp Atoka Gas	Roof Name	
4Property Code	Chalk Bluff "36"	State	sProperty Name	\$02 821Z8	37.97.40	₃Weli Number 1
70GRID No. 14744	Mewbourne Oil	Company	₀Operator Name			₃Elevation 3635

"Surface Location

Ì	UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West Line	County
	M	36	178	27E		660	South	990	West	Eddy

"Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West Line	County
12Dedicated Ac	res 13Joint	or infili	·•Consolidat	on Code	15Order No.		· · · ·		<u> </u>
320.00		ŀ	С						

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED

	OK A NON-STA	NUARU UNIT HAS I	SEEN APPROVED E	T THE DIVISION
16			·	17 OPERATOR CERTIFICATION I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief
		<i></i>		Signature Jetry Eigin
				Printed Name District Manager Title 08-13-99
				Date
	(//////////	,,,,,,,,,,		18 SURVEYOR CERTIFICATION I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.
				10-19-92 Date of Survey Signature and Seal of Professional Surveyer.
990'				Signature and Sear of Professional Surveyer.
660				Original signed by Herschel Jones Certificate Number
111111111	(11/1/1/1/	1/1/1////	111111111	- `

HOISIVIG NE \mathcal{E}^{R} \mathcal{E}^{O} Energy, Minerals and Natural Resources Department State of New Mexico Submit 3 Copies
Appropriate District Office CONSER
DISTRICT
P.O. Box 1980, Hobbs, NM 88240 Form C-104 Revised 1-1-89 See Instruction W. LIVEL. ANOTE CONSERVATION DIVISION at Bottom of Page DISTRICT II P.O. Drawer DD, Antonia, NEW 288210 迎餐 丰芸 担告 P.O. Box 2088 Santa Fe, New Mexico 87504-2088 DISTRICT III 1000 Rio Brazos Rd., Aziec, NM 87410 C. C. D. REQUEST FOR ALLOWABLE AND AUTHORIZATION TO TRANSPORT OIL AND NATURAL GAS Well API No. Mewbourne Oil Company 30-015-27286 P.O. Box 5270 Hobbs, New Mexico 88241 Reason(s) for Filing (Check pr Other (Please explain) New Well ge in Transporter of: П Recompletion Dry Gan Change in Operator If change of operator give name and address of previous operator II. DESCRIPTION OF WELL AND LEASE Well No. | Pool Name, Including Formation Kind of Leas Lease No. E-379-4 Chalk Bluff "36" State N. Illinois Camp Morrow 990 Feet From The South 660 West Line and М Feet From The Township 17S Range 27E Eddy 36 . NMPM County III. DESIGNATION OF TRANSPORTER OF OIL AND NATURAL GAS Name of Authorized Transporter of Oil Address (Give address to which approved copy of this form is to be sent) Oil Tender Dept. Box 702068 Tulsa, Ok 74170-2068 Amoco Pipeline ICT Name of Authorized Transporter of Casinghead Gas or Dry Gas 💢 Address (Give address to which approved copy of this form is to be sent) P.O. Box 1188 Houston, Texas 77251 Transwestern Pipeline Company is gas actually connected? Yes If well produces oil or liquids, Unit **Twp**: 17s Rge. 27E When ? 03/30/93 give location of tanks. М 36 If this production is commingled with that from any other lease or pool, give commingling order number: IV. COMPLETION DATA Oil Wall Gas Well New Well Workover Deepen Plug Back Same Res'v Diff Res'v Designate Type of Completion - (X) Total Depth Date Spudded Date Compl. Ready to Prod. PRTD. 03/30/93 10,060' 10,012' 02/02/93 Top Oil/Gas Pay Elevations (DF, RKB, RT, GR, etc.) Name of Producing Formation **Tubing Depth** 3650 KB 3635 GR 9,803' 9,842' Morrow Depth Casing Shoe 9842'-9856', 9864'-9886' TUBING, CASING AND CEMENTING RECORD CASING & TUBING SIZE SACKS CEMENT HOLE SIZE DEPTH SET 399 17-1/2" 13-3/8" sx. Class "C

TEST DATA AND REQUEST FOR ALLOWABLE

Date of Test	Producing Method (Flow, pump, gas lift, etc.)		
Tubing Pressure	Casing Pressure	Choke Size	
Oil - Bbis.	Water - Bbis.	Gas- MCF	
	Tubing Pressure	Tubing Pressure Casing Pressure	

26031

9253' 10057

GAS WELL

12-1/4"

Actual Prod. Test - MCF/D	Length of Test	Bbls. Condensate/MMCF	Gravity of Condensate
1500	24 Hours	6.6	55
Testing Method (pitot, back pr.)	Tubing Pressure (Shut-in)	Casing Pressure (Shut-in)	Choke Size
Back Pressure	. 2700#	Packer	1/4"

VI. OPERATOR CERTIFICATE OF COMPLIANCE

I hereby certify that the rules and regulations of the Oil Conservation Division have been complied with and that the information given above

1993

April 5,

is true and o	Somplete is the)	To they know	repoge and	better.	
Signature	Erick	₩.	Nelson		Engineer	
Printed Nam 04/02/	93			(505)	Title 393-5905	

OIL CONSERVATION DIVISION

APR 2 6 1993 Date Approved ORIGINAL SIGNED BY By MIKE WILLIAMS SUPERVISOR, DISTRICT IT

1150 sx. Class "C"

1620 sx. Class 225 sx. Class

"Č"

INSTRUCTIONS: This form is to be filed in compliance with Rule 1104

1) Request for allowable for newly drilled or deepened well must be accompanied by tabulation of deviation tests taken in accordance

Title

2) All sections of this form must be filled out for allowable on new and recompleted wells.

Talephone No.

9-5/8"

3) Fill out only Sections I, II, III, and VI for changes of operator, well name or number, transporter, or other such changes. 4) Separate Form C-104 must be filed for each pool in multiply completed wells.

State Lease - Screen SER UN DIVISION Energy State of New Mexico Form C-105 Energy, Minerals and Natural Resources Department Revised 1-1-89 WELL API NO. OE CONSERVATION DIVISION DISTRICT I P.O. Box 1980, Hobbs. NM, 88240 AMPRICE IN GUILL AND SECTION OF THE P.O. Drawer DD, Artesia, NM 88210 30-015-27286 P.O. Box 2088 **記しいりを**り 5. Indicate Type of Lease Santa Fe. New Mexico 87504-2088 STATE X मञ्ज APR 15 1995 6. State Oil & Gas Lease No. DISTRICT III 1000 Rio Brazos Rd., Aztec, NM 87410 E-379-4 WELL COMPLETION OR RECOMPLETION REPORT AND LOG " " " 7. Lease Name or Unit Agreement Name la. Type of Well: DRY 🗔 GAS WELL X OIL WELL OTHER b. Type of Completion: Chalk Bluff "36" State DIPP RESVR WORK WELL X OTHER DEEPEN 2. Name of Operator 8. Well No. <u>Mewbourne Oil Company</u> 9. Pool name or Wildcat Address of Operator N. Illinois Camp Morrow Box 5270 Hobbs, New Mexico 990 Feet From The 660 South West Unit Letter _ Line and Feet From The Line 27E Eddy 17S Section Township **NMPM** County 10. Date Spudded 12. Date Compi. (Ready to Prod.) 13. Elevations (DF& RKB, RT, GR, etc.) 14. Elev. Casinghead 11. Date T.D. Reached 3650' KB 3635' GR 3635' GR 02/02/93 03/30/93 03/17/93 15. Total Depth 16. Plug Back T.D. 17. If Multiple Compt. How Many Zones? Cable Tools 18. Intervals Drilled By Rotary Tools 10.060' 10.012' 19. Producing Interval(s), of this completion - Top, Bottom, Name 20. Was Directional Survey Made 9842'-9886': Lower Morrow Yes 21. Type Electric and Other Logs Run 22. Was Well Cored SDL-DSN. DLL-MSFL-GR. Sonic. CBL No CASING RECORD (Report all strings set in well) **CASING SIZE** WEIGHT LB/FT. DEPTH SET HOLE SIZE CEMENTING RECORD AMOUNT PULLED 13-3/8" 399' 17-1/2" 530 sx. Class "C" Circulated 48#/ft. 9-5/8" 1150 sx. Class 26031 12-1/4" Circulated 36#/ft<u>.</u> 8-3/4" 711 92531 Circulated 1620 sx. Class 26#/ft. 24. LINER RECORD TUBING RECORD SIZE TOP BOTTOM SACKS CEMENT SCREEN DEPTH SET SIZE PACKER SET 9702 4-1/2" 10.057 225 sx. 2-7/8-2-3/8" 98031 84391 ACID, SHOT, FRACTURE, CEMENT, SQUEEZE, ETC. Perforation record (interval, size, and number) DEPTH INTERVAL AMOUNT AND KIND MATERIAL USED 9842'-9856' 4 spf 49 holes 221 4 spf 80 holes 9864'-9886' <u>PRODUCTION</u> Well Status (Prod. or Shut-in) Date First Production Production Method (Flowing, gas lift, pumping - Size and type pump) U3/3U/Q3 Flowing Producing Date of Test Hours Tested Choke Size Prod'n For Oii - Bbl. Gas - MCF Water - Bbl. Gas - Oil Ratio 1/4" 03/31/93 24 Hours Test Period 1500 150 MCF/BBL Calculated 24 Oil - BbL Gas - MCF Water - Bbl. Oil Gravity - API - (Corr.) Flow Tubing Press. Casing Pressure Hour Rate 10 1500 1500# Packer 55.0 Test Witnessed By 29. Disposition of Gas (Sold, used for fuel, vented, etc.) Erick W. Nelson Sold b. List Attachments 31. I hereby certify that the information shown on both sides of this form is true and complete to the best of my knowledge and belief Date 04/05/93 Printed Erick W. Nelson Engineer Title Signature Name

State of New Mexico Energy, Minerals and Natural Resources Department

Revised 1-1-89

Submit to Appropriate
District Office
State Lease — 6 copies
Fee Lease — 5 copies
CONSER.

QIL CONSERVATION DIVISION

ΡI	NO.	(assigned	by OCD	on New	Wells)
	30	- 9,4 -	2720	,	

DISTRICT I	REGE
P.O. Box 1980, Hobbs, N	IM 88240

P.O. Box 1980, Hobbs, NM 88240 DISTRICT II 'Q3 A 1 2 A 1
P.O. Drawer DD, Artesia NM 88210 DISTRICT III 1000 Rio Brazos Rd., Aziec, NM 87410 APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK Ia. Type of Work: DRILL RE-ENTER DEEPEN PLUG BACK b. Type of Well: OIL OIL OIL OTHER DRILL SINGLE SINGLE ZONE P.O. Box 5270 Hobbs, New Mexico 88241 STATE FEE 6. State Oil & Gas Lease No. E-379-4 7. Lease Name or Unit Agreement Name Chalk Bluff "36" State Chalk Bluff "36" State 9. Pool name or Wildcat Illinois Camp Morrow North 4. Well Location
APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK
APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK Type of Work: DRILL RE-ENTER DEEPEN PLUG BACK
1a. Type of Work: DRILL X RE-ENTER DEEPEN PLUG BACK b. Type of Well: OIL GAS WELL X OTHER 2. Name of Operator Mewbourne 0il Company 3. Address of Operator P.O. Box 5270 Hobbs, New Mexico 88241 7. Lease Name or Unit Agreement Name Chalk Bluff "36" State 8. Well No. 9. Pool name or Wildcat Illinois Camp Morrow North
DRILL X RE-ENTER DEEPEN PLUG BACK b. Type of Well: OIL GAS WELL X OTHER 20NE X MULTIPLE ZONE Chalk Bluff "36" State Chalk Bluff "36" State 8. Well No. Mewbourne Oil Company 3. Address of Operator P.O. Box 5270 Hobbs, New Mexico 88241 4. Well Location
b. Type of Well: OIL GAS WELL X OTHER 2. Name of Operator Mewbourne Oil Company 3. Address of Operator P.O. Box 5270 Hobbs, New Mexico 88241 4. Well Location MULTIPLE ZONE X MULTIPLE ZONE Chalk Bluff "36" State 8. Well No. 1 9. Pool name or Wildcat Illinois Camp Morrow North
Oil Well OTHER SONE MAILTELE Chalk Bluff "36" State 2. Name of Operator 8. Well No.
Mewbourne Oil Company 3. Address of Operator P.O. Box 5270 Hobbs, New Mexico 88241 4. Well Location
3. Address of Operator P.O. Box 5270 Hobbs, New Mexico 88241 9. Pool name or Wildcat 111 Inois Camp Morrow North
P.O. Box 5270 Hobbs, New Mexico 88241 Illinois Camp Morrow North 4. Well Location
4. Well Location
Unit Letter M: 990 Feet From The West Line and 660 Feet From The South Line
Section 36 Township 17S Range 27E NMPM Eddy County
Section 36 Township 1/5 Range 2/E NIMPM Eddy County
10. Proposed Depth 11. Formation 12. Rotary or C.T.
//////////////////////////////////////
13. Elevations (Show whather DF, RT, GR, etc.) 14. Kind & Status Plug. Bond 15. Drilling Contractor 16. Approx. Date Work will start
3635' G.R. Blanket on file WEK Drilling Jan. 31, 1993
PROPOSED CASING AND CEMENT PROGRAM
SIZE OF HOLE SIZE OF CASING WEIGHT PER FOOT SETTING DEPTH SACKS OF CEMENT EST. TOP
$17-1/2$ " $13-3/8$ " $48\#$ 400^{17} 400 sks. Girc. $12-1/4$ " $9-5/8$ " $36\#$ 2.600^{17} 700 sks. Tie back into s
$ \begin{array}{c cccccccccccccccccccccccccccccccc$
of Abo
Mud Program:
0' - 400' Spud mud w/fresh water gel, LCM as needed.
400' - 2,600' Fresh water gel & lime. LCM as needed.
,600' - 9,200' Cut brine with lime for pH control. WL-NC.
,200' - 10,300' Cut brine w/Drispac, salt gel, lime, soda ash and starch. Wt. 9.2-9.6 ppg,
WL 10 cc or less, Vis. 32-36. Raise wt. accordingly if abnormal pressures
BOP Program:
1500 Series Double Ram Hydraulic BOP w/900 Series Hydril from Intermediate
csg. to T.D. 900 Series Hydril on Surface csg. to Intermediate csg. point.
PVT system, mud-gas seperator, rotating head from Wolfcamp to T.D.
Gas is not dedicated.
IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: IF PROPOSAL IS TO DEEPEN OR FLUG BACK, GIVE DATA ON PRESENT PRODUCTIVE ZONE AND PROPOSED NEW PRODUCTIVE ZONE. GIVE BLOWOUT PREVENTER PROGRAM, IF ANY.
I hereby certify that the information above us true and complete to the cest of my knowledge and belief.
SURVATURE Sell trend Drilling Superintendent DATE 01/18/93
TYPE OR PRINT NAME Bill Pierce TELEPHONE NO. 393-5905
(This space for State Use)

CONDITIONS OF APPROVAL, IF ANY:

NOTIFY N.M.O.C.D. IN CUFFICIENT TIME TO WITHERS CHARRITING THE

Submit to Appropriate District Office State Lease - 4 copies Fee Lease - 3 copies

State of New Mexico Energy, Minerals and Natural Resources Department



OIL CONSERVATION DIVISION

P.O. Box 2088

Santa Fe, New Mexico 87504-2088

DISTRICT I P.O. Box 1980, Hobbs, NM 88240 IRICT II Drawer DD, Artesia, NM 88210

DISTRICT III
1000 Rio Brazos Rd., Aziec, NM 87410

WELL LOCATION AND ACREAGE DEDICATION PLAT

rator		Lease	Well No.	
EWBOURNE OIL COMP.	ANY	CHALK BLUFF 3	6 STATE 1	÷
Letter Section	Township	Range	County	
м 36	17 SOUTH	27 EAST	NMPM EDDY	·
al Footage Location of Well:	1		IWMAN	
990 feet from the	WEST time :	and 660	feet from the SOUTH lin	e
	ducing Formation	Pool	Dedicates	Acreage:
3635 Mori	°OW	Illinois Camp	Morrow North 320	Acres
If more than one lease in the more than one lease in the more problem.	of different ownership is dedicated to see. 7	h and identify the ownership thereof	(both as to working interest and royalty).	2.
this form if neccessary. No allowable will be assigned.	wners and tract descriptions which	have actually been consolidated. (I	Jac reverse side of tization, unitization, forced-pooling, or other	wise)
OF COLUMN RICHARD ST.	I, entransung som interest, has oed	a approved by the Dividor.		
			OPERATOR CER	
<u>, </u>			I hereby certify to contained herein in true best of my knowledge and	and complete to th
! 1	·		Signature),
		į	Printed Name	cerce
		-	Bill Pierce Position	
i			Drilling Superi	intendent
		·	Mewbourne Oil (Company
į			October 27, 199	92
			SURVEYOR CE	RTIFICATION
. j			I hereby certify that the on this plat was plotted	l from field notes
		i	actual surveys made b supervison, and that th	,
	i i	1		
			correct to the best of belief.	
			correct to the best of	
			correct to the best of belief. Date Surveyed	
990			correct to the best of belief. Date Surveyed 10/19/92 Signature & Seal of	

MAP ID NO. 861

NAVAJO REFINING COMPANY, WDW-2

SEE DIVIDER LABELED
"WDW-2: OCD AND BLM FORMS"



SUBSURFACE	
	Artificial Penetration Review
	Number 911
OPERATOR Southwest Energy Production Co.	
LEASE No. Bluff 36 State Com	DISTANCE FROM INJECTOR (FT)
WELL NUMBER 2	LOCATION 36-17S-27E, H
DATE DRILLED 4/28/01	MUD FILLED BOREHOLE
DATE PLUGGED	REPORTED MUD WEIGHT
	API NUMBER 30-015-31123
	1980 FNL, 760 FEL
	P, calc. Surface 61 16/94 Casing at 425' w/465 sx.
Cement to	Pu calc. 616'
85/8", 32	.16/ft casing at 2002' w/ 650 8x
- cement top,	CAIC 7241'
Perfs: 9927	'-9964'
5/2", 17 16	/A casing at 10050' w/553 sx
TD 10050'	

District I

1625 N. French Dr., Hobbs, NM 88240

District II

811 South First, Artesia, NM 88210

District III

1000 Rio Brazos Road, Aztec, NM 87470 COVED

District IV

2040 South Pacheco, Santa Fe, NM 87505

State of New Mexico Energy Minerals and Natural Resources

Oil Conservation Division 2040 South Pacheco Santa Fe, NM 87505 Form C-101
Revised March 17, 1999
Submit appropriate District Office
State Lease - 6 Copies

Fee Lease - 5 Copies

AMENDED REPORT

APPLICATION FOR PERMIT TO DRILL, RE-ENTER, DEEPEN, PLUGBACK, OR ADD A ZONE Operator Name and Address OGRID Number Southwestern Energy Production Company 148111 2350 North Sam Houston Parkway East, Suite 300 Houston, TX 77032 3 API Number 30 - 015 - 31123 Property Code ⁵ Property Name Well No. 25858 No Bluff "36" State Com. 2 Surface Location Township East/West line UL or lot no Range Lot Idn Feet from the North/South line Feet from the Section County 27E 1980 178 North 760 36 East Eddy Proposed Bottom Hole Location If Different From Surface UL or lot no. Township Lot Idn Feet from the North/South line Section Feet from the East/West line County 9 Proposed Pool 1 16 Proposed Pool 2 Wildcat (Mississippian)

11 Work Type Code N	12 Well Type Code G	13 Cable/Rotary R	¹⁴ Lease Type Code S	15 Ground Level Elevation 3634
¹⁶ Multiple	17 Proposed Depth	18 Formation	19 Contractor	20 Spud Date
N	10,050'	Mississippian	UTI	04/01/01 (est.)

²¹ Proposed Casing and Cement Program

Hole Size	Casing Size	Casing weight/foot	Setting Depth	Sacks of Cement	Estimated TOC
26"	20"	•	40'	Ready Mix	Surface
17 – ½"	13 – 3/8"	61#	425'	1500	Surface
12 – ¼"	8 5/8"	32#	2,000'	1,495	Surface
7 7/8"	5 ½"	17#	10,100'	860	8,000'

Describe the proposed program. If this application is to DEEPEN or PLUG BACK, give the data on the present productive zone and proposed new productive zone. Describe the blowout prevention program, if any. Use additional sheets if necessary.

SEE ATTACHMENT

NOTE: SL changed from 1980' FNL, 660' FEL to 1980' FNL, 760' FEL

best of my knowledge and belieft Signature:	tion given above is true ar.d complete to the	OIL CONSERVATION DIVISION		
Printed name: Cathy Rowan		Approved by: ORIGINAL SIGNED BY TIM W. GUM DISTRICT II SUPERVISOR		
Title: Sr. Engineering Technician	1	Approval Date: AR 8 2001 Expiration DMAR - 8 200	·	
Date: March 1, 2001	Phone: 281-618-4733	Conditions of Approval: Attached		

GENERAL DRILLING PROGRAM- Attachment to Form C-101

Southwestern Energy Production Company- No Bluff "36" State Com. #2 1980' FNL 760' FEL Section 36-T17S-R27E Eddy County, New Mexico

Elevation: 3630' GR

Proposed Total Depth: 10,100'

Estimated Formation Tops

Yates	320'
7 Rivers	460'
Queen	1000'
Grayburg	1300'
San Andres 'D'	1784'
Glorieta	3160'
Wolfcamp	6470'
Strawn	8870'
Atoka	9430'
Morrow Lime	9544'
Morrow Clastics	9724'
Missippian	10,040'

Casing/Cement Program

Hole Size	Casing Size/Weight/Grade	Setting Depth	Cement	Est. TOC
	20" Conductor pipe	40'	ready mix	surface
17-1/2"	13-3/8" 61# J-55 ST&C	425'	550 sx 15:85 Poz: Class C + 0.25 pps D29+2% S1+2% D20	surface
12-1/4"	8-5/8" 32# J-55 ST&C	1900'	Lead:700 sx 35:65 Poz: Class C + 6% D20+ 0.25 pps D29 Tail: 235 sx Class C+ 2% S1 +0.25 pps D29	surface
7-7/8"	5-1/2" 17# N-80 LT&C	10,050'	860 sx 50:50 Poz: Class H + 6% D44 +2% D20+0.4% D59	8000'

Drilling Fluids Program

Depth	Mud Weight	Viscosity	Fluid Loss	Comments
0-425'	8.4-8.6	32-34	NC	spud mud
425'-1900'	9.0-9.2	28-29	NC	cut brine water,paper,caustic
1900'-9300'	8.4-9.3	28-29	NC	cut brine,caustic,paper
9300'-10,050'	9.3-9.6	34-38	<15 cc	xantham gum, starch

District 1 1625 N. French Dr., Hobbs, NM 88240

Previous Operator Signature

State of New Mexico Energy, Minerals & Natural Resources

Form C-104 Revised March 25, 1999

PORT
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Date
-
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93031
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ure
od
M

Printed Name

Title.

Date

Arrant, Bryan

From:

Arrant, Bryan

Sent:

Monday, July 15, 2002 1:37 PM

To:

Jones, William V

Cc:

Gum, Tim

Subject:

RE: No Bluff "36" State Com Well No. 2 API: 30-015-31123

Will.

I briefly looked into the area surrounding the Bluff 36 State Com. #2 well and I see that there is Abo production immediately to the south of this well.

The operator should had brought cement to cover the Abo. As you indicated with operators permitting Glorieta-Yeso wells in this area, possibly cement up though these formations also. Once you issue an order, we will take steps and have SW Energy perf and squeeze their production casing to meet OCD requirements. If you have other plans or concerns, please advice.

Bryan

----Original Message-----

From:

Jones, William V

Sent:

Thursday, July 11, 2002 8:50 AM

To:

Gum, Tim

Cc:

Arrant, Bryan; Catanach, David

Subject:

No Bluff "36" State Com Well No. 2 API: 30-015-31123

Hello Tim:

I thought I would send an email with all the facts as I have found them:

This well was drilled and 5.5 inch set to 10050' (to the Mississippian) on 4/16/01. They only used 553 sx of cement and calc cement top at 7,350'. Many operators in this area to this depth have used 2 stage tools and cemented 2000 sacks total in 3 stages. I see OCD instructions in the file 5/3/2000 for the operator (Southwestern Energy Production Company) to "cover all oil, gas, and water bearing zones".

I think there are other productive zones. For instance, the Jeffers 36 St #003 (api: 30-015-31541) and other wells have been permitted to 4000' in this area with the Glorieta or SA as the objective. There is also some 500' shallow Yates production that is played out already.

The reason I found this:

I am looking at an SWD application from Mack Energy. They have drilled a new well and want to complete the Beech Federal #003 for SWD in the Abo at 5000'. The No Bluff 36 State Com #2 is in the Area of Review with cement top below the Abo.

Please let me know what action you will take on this - so I can determine how to proceed with Mack's application.

Regards,

Will Jones

Pismet ! 1625 N. French Dr., Hobbs, NM 88240 District II 811 South First, Artesia, NM 88210 District III 1000 Rio Brazos Road, Aztec, NM 87410 District IV

Date: May 2, 2000

Phone: 281-618-4733

State of New Mexico
Energy Minerals and Natural Resources

Oil Co

Oil Conservation Division 2040 South Pacheco

RECEIVED OCD - ARTESIA

NAY 2005 abmit to appropriate District Office State Lease - 6 Copies Fee Lease - 5 Copies

2040 South Pacheco, Santa F	•				а ге, N		/خنر) } } } } } } } } } } } } } } } } } } }	LLOS		NDED RE	
	outhweste:	PERMIT Decrator Name as rn Energy Prom Houston Pa Houston, TX		R, DE	EPEN,		OGRIDN	lumber	A ZON	Œ		
						30- 015	³ API Nu	mber 112	3			
³ Property Code ⁵ Property 2585 8 No Bluff "36"						om.				⁶ Well 1	No.	
			, .	⁷ Surface	Locati	on			,,			
UL or lot no. Section T	Township	Range	Lot 1	ldn Fe	t from the	North/S	outh line	Feet from the	East/We	st line	Coun	ty
G 36	17S	27E	<u></u>		1980	4	orth [1980	Eas	t	Edd	y
	F	Proposed B	ottom]	Hole Loca	tion If	Differe	nt Fron	n Surface				
UL or lot no. Section T	'ownship	Range	Lot	kin Pe	t from the	North/S	outh line	Feet from the	East/We	st line	Coun	ty
		oposed Pool 1			<u></u>			10 Propos	sed Pool 2			
	Wildcan	t (Mississippian)				I			·- <u></u>			
N Work Type Code		12 Well Type Cod	le	13 C	able/Rotary							tion
¹⁶ Multiple N		¹⁷ Proposed Dept 10,100'	h	,	Formation issippia	1			Spud Date 5/00 (est	 .)		
		²¹ P	ropose	d Casing	and Cer	nent P	ogram			-		
Hole Size	Casing	g Size		weight/foot		Setting De		Sacks of Cement		E	stimated TO)C
26"	20		Minimum WOC time		по Дрга.		Ready Mix		Surface		;	
17 – ½"	13 –	3/8"		61#	(,	<u>→ 425'</u>		1500		Surface		
12 – ¼"	8 5			32#		2,000'			1,495		Surface	
7 7/8"	5 1/			17#	- -	10,10	<u>)' </u>	860			4,0003	*
22 Describe the proposed propo		this application		PEN or PLUC	BACK, gi		ta on the p	resent productive z Notify OCD a no witness ce	at SPU mention	D &	TIME	tive
²³ I hereby certify that the information best of my knowledge/and beling Signature:	_	ven above is true	e and com	plete to the		<u>-</u>		DNSERVATI				
					Appro	ved by:		lion W.	-Gel	ليدو	D6X	
Printed name: Cathy Rowal Title: Drilling Technician	n .				-	val Date:	WAY 4	VAPONIOR.	SISTRIC	T#	AY n =	Zine Zine

Conditions of Approval:

Attached

GENERAL DRILLING PROGRAM- Attachment to Form C-101

Southwestern Energy Production Company- No Bluff "36" State Com. #2 1980' FNL 1980' FEL Section 36-T17S-R27E Eddy County, New Mexico

Elevation: 3639' GR

Proposed Total Depth: 10,100'

Estimated Formation Tops

San Andres	1851'
Glorietta	3355?
Wolfcamp	6670'
Strawn	9030'
Morrow Clastics	9770'
Missippian	10,000'

Casing/Cement Program

Hole Size	Casing Size/Weight/Grade	ing Size/Weight/Grade Setting Depth Cement		Est. TOC
	20" Conductor pipe	40'	ready mix	surface
17-1/2"	13-3/8" 61# J-55 ST&C	425'	1500 sx 15:85 Poz: Class C + 0.25 pps D29+2% S1+2% D20	surface
12-1/4"	8-5/8" 32# J-55 ST&C	2000'	Lead: 1260 sx 35:65 Poz: Class C + 6% D20+ 0.25 pps D29 Tail: 235 sx Class C+ 2% S1 +0.25 pps D29	surface
7-7/8"	5-1/2" 17# N-80 LT&C	10,100'	860 sx 50:50 Poz: Class H + 6% D44 +2% D20+0.4% D59	8000'

Drilling Fluids Program

Depth	Mud Weight	Viscosity	Fluid Loss	Comments
0-425'	8.4-8.6	32-34	NC .	spud mud
425'-2000'	9.0-9.2	28-29	NC	cut brine water,paper,caustic
2000'-9300'	8.4-9.3	28-29	NC	cut brine,caustic,paper
9300'-10,100'	9.3-9.6	34-38	<15 cc	xantham gum, starch

Blowout Prevention Program- Attachment to Form C-101

0'-425'

None

425'-2000'

20" 2000# annular preventer system.

2000'-10,100'

13-5/8" 5000# double ram type preventers, 5000# annular preventer and rotating head body. Test all rams choke manifold, kill line upper and lower kelly valves to 3000 psi. A choke manifold and 120 gallon accumulator with floor and remote operating stations and auxiliary power system.

Any equipment failing to test satisfactorily, will be repaired or replaced. Results of the BOP test will be recorded in the Driller's Log.

The BOP's will be maintained ready for use until drilling operations are completed. BOP drills will be conducted as necessary to assure that equipment is operational and each crew is properly trained to carry out emergency duties.

Accumulator shall maintain a pressure capacity reserve at all times to provide for the close-open-close sequence of the blind and pipe rams of the hydraulic preventers.

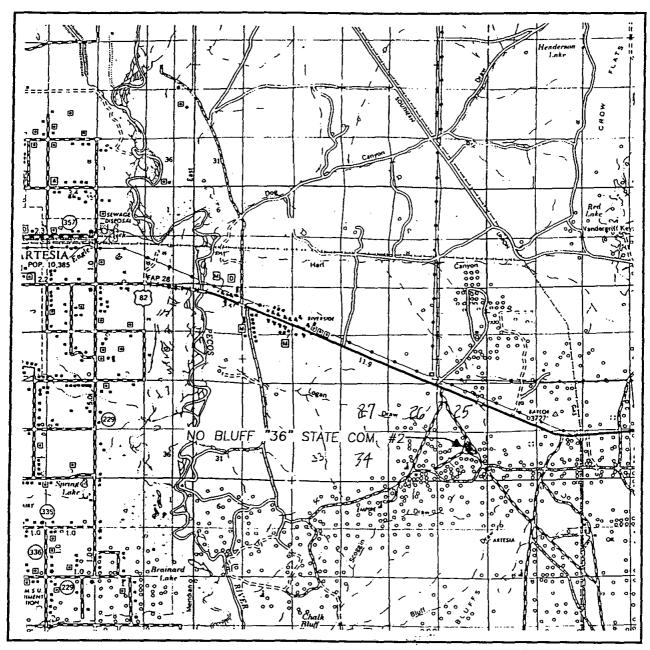
00-11-0509

3239 12641 12185

Certificate No. RONALD I EDSON GARY EIDSON MACON MedONALD

DISTRICT I P.O. Box 1980, Hobbe, NM 68241-16 DISTRICT II P.O. Drawer IID, Artesia, NM 88211		OII		, Minerals and 1	Natural)	W Mexico Resources Department	A PECEIVE	456 For Revised Vebruar to Appropriate Discusser Fee Hease	trict Office - 4 Copies
STRICT III b Rio Brazos Rd., Aztec, Na DISTRICT IV P.O. BOX 2088, SANTA FE, N.M. 875	04-2088		Santa 1	P.O. E Fe, New 1	Box 2 Mexic		27 SOSON	SIA SAMENDEI	REPORT
API Number Property Code			Pool Code		ty Nam		Pool Name	Weil Num	aber
OGRID No.	Operator Name Eleva							2 Elevation 3639	
				Surface	Loca	tion	<u> </u>		
UL or lot No. Section G 36	Township 17 S	Range 27 E	Lot ldn	Feet from		North/South line NORTH	Peet from the	East/West line EAST	County
		Bottom	Hole Lo	cation If	Diffe	rent From Sur	face		
UL or lot No. Section	Township	Range	Lot Idn	Feet from	the	North/South line	Feet from the	East/West line	County
320 NO ALLOWABLE W.	ILL BE AS	SSIGNED 'NON-STAN	ro this	NIT HAS E	EEN	APPROVED BY T	ESTS HAVE BE	EEN CONSOLIDA	ATED
				1980.		1980'	I hereby contained herein best of my know best of my know Signature Cathy Row Printed Name Drilling Title May 2, 20 Date SURVEYO I hereby certify on this plat we actual surveys	Technician	TON Ton shown Totes of under my

VICINITY MAP

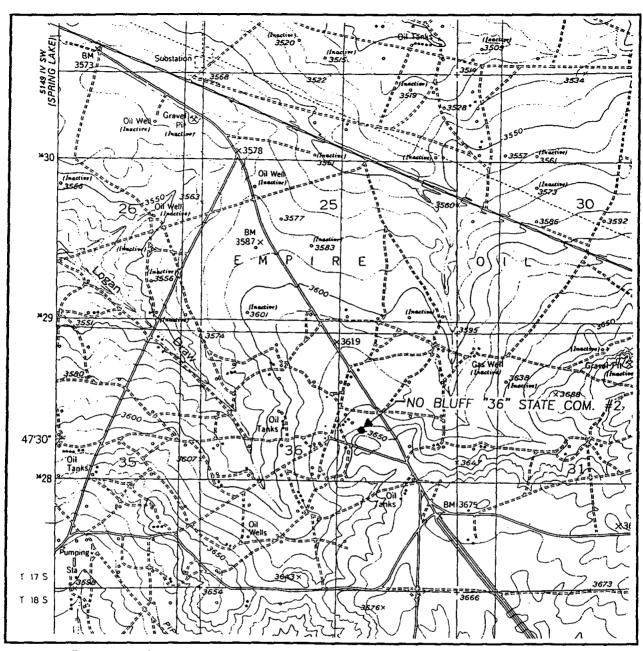


SCALE: 1" = 2 MILES

SEC. 36 TV	VP. <u>17-S</u> RGE. <u>27-E</u>
SURVEY	N.M.P.M.
COUNTY	EDDY
DESCRIPTION	1980' FNL & 1980' FEL
ELEVATION	3639
	OUTHWESTERN ENERGY PRODUCTION CO.
NO E	DILLEE "36" STATE CON

JOHN WEST SURVEYING HOBBS, NEW MEXICO (505) 393-3117

LOCATION VERFICATION MAP



SCALE: 1" = 2000'

SEC. 36 TWP. 17-S RGE. 27-E

SURVEY N.M.P.M.

COUNTY____EDDY

DESCRIPTION 1980' FNL & 1980' FEL

ELEVATION 3639

SOUTHWESTERN ENERGY OPERATOR PRODUCTION CO.

LEASE NO BLUFF "36" STATE COM.

U.S.G.S. TOPOGRAPHIC MAP

RED LAKE, N.M.

CONTOUR INTERVAL: RED LAKE, N.M. - 10'

JOHN WEST SURVEYING HOBBS, NEW MEXICO (505) 393-3117

ATTACHMENT VI-2D

MAP ID NO. 942 (Same as Map ID No. 89)

RECORDS FOR MAP ID NO. 89



District & FO Descript BO Desc	labba, NM CONSER Artada, N		VICION	Sta Earry, Man		rd Reserv	m Departm		Suba	Rov	Form C- ised February 10, 1 Instructions on to propriate District Of	
PO Box 2088 5 Copies Copies												
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ARCO Permian Operator same and Address O00990												
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P.O. Box 1710 Hobbs, NM 88240 6-1-94 CH												
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I hereby certify that the rules of the Oil Conservation Division have been complied with and that the information given shove is true and complete to the best of my throwledge and belief.						OIL	CON	ISERVATI	ON DIV	VISION		
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rinted aarne: Kellie D	. Murr	ish	(Tide:						
Records	Clerk	11	Phone:			Approval	Detr:	JUL	27 1994			
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 	Previous O	perator Signal	ite			Printed	Name		·	Tkie	Dele	

Submit 3 Copies Form C-103 Energy, Minerals and Natural Resources Department to Appropriate District Office Revised 1-1-89 OIL CONSERVATION DIVISION DISTRICT WELL API NO. P.O. Box 1980, Hobbs, NM 88240 P.O. Box 2088 30-015-0625 OIL (SantaCFe; NewiMehico 87504-2088 DISTRICT P.O. Drawer DD, Artesia, NM \$8210 5. Indicate Type of Lease RECEIVED. STATE FEE ISTRICT III 000 Rio Brizos Rd., Aziec, NM 87410 6. State Oil & Gen Lease No. 294 AP4 14 AM 8 50 SUNDRY NOTICES AND REPORTS ON WELLS (DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A 7. Lease Name or Unit Agreement Name DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.) 1. Type of Well: WELL T Empire Abo Unit "I" WELL. Xonea Gas Injection 2. Name of Operator & Well No. ARCO OIL AND GAS COMPANY 3. Address of Operator 9. Pool name or Wildow P.O. 1710 HOBBS N.M. 88240 Empire Abo 4 Well Location 2170 East __: _470__ Feet From The _ North Unit Letter B Feet From The Line Eddy 18S Section Township Range County NMPM 10. Elevation (Show whether DF, RKB, RT, GR, etc.) 3669.6 GL Check Appropriate Box to Indicate Nature of Notice, Report, or Other Data 11. NOTICE OF INTENTION TO: SUBSEQUENT REPORT OF: PERFORM REMEDIAL WORK PLUG AND ABANDON REMEDIAL WORK ALTERING CASING CHANGE PLANS TEMPORARILY ABANDON COMMENCE DRILLING OPNS. PLUG AND ABANDONMENT **BULL OR ALTER CASING** CASING TEST AND CEMENT JOB OTHER: Convert to gas injection OTHER: 12. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work) SEE RULE 1103. TD 6194' PE PERFS 5985-6130' PBD 6184 03/10/94: Add perfs 5985-6080, set pkr @ 5943.85'. Acidize 5985-6130' w/3000 gals 15% NEFE acid. 03/19/94: Load casing w/l bbl 8.6# brine w/TH-377 chemical. Pressure test to 640#, held for 30 mins. Test chart attached.

Thereby certify that the information above is true and complete to the best of my knowledge and belief.

SKONATURE RECORDS Clerk II

DATE 03/29/94

TYPE OR PRINT NAME Kellie D. Murrish

TELEPHONE NO. 391-1649

(This space for State Use)

PRIOVED BY

SUPERVISOR, DISTRICT II

_ APR

8 1994

CONDITIONS OF AFFROVAL, IF ANY:

Submit 3 Copies to Appropriate District Office

State of New Mexico vergy, Minerals and Natural Resources Depart.

Form C-163	
Revised 1-1-89	١

DISTRICT! P.O. Box 1980, Hobbi, NM 88240

DISTRICT II P.O. Drewer DD, Artesia, NM \$8210

OIL CONSERVATION DIVISION

P.O. Box 2088 Santa Fe, New Mexico × 27504/2088

WELL API	NO.
	30-015-0625

Indicate Type of Les	STATE X	FEE [

SUNDRY NOTICES AND REPORTS ON WELL'S SUNDRY NOTICES AND REPORTS ON WELL'S (DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PILUG BACK TO A DIFFERENT RESERVOIR USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.) 1. Type of Well: ONE OAS ON GAS INJECTION 2. Name of Operator ARCO OIL AND GAS COMPANY 1. Lease Name or Unit A DEMPIRE ABO USE WELL OTHER GAS INJECTION 2. Name of Operator P.O. 1710 HOBBS N.M. 88240 4. Well Location Unit Letter B: 470 Fost From The NORTH Line and Fost From The Section 6 Township 18S Range 28E NMPM 10. Evaluation (Show whether DF, RKB, RT, GR, etc.) 3669.6 GL 11. Check Appropriate Box to Indicate Nature of Notice, Report, or Other Date NOTICE OF INTENTION TO: SUBSEQUENT REPORTS ALTE	STATEX	FEE 🗌			
1000 Rio Brazos Rd., Aziec, NM \$7410	,,	· · · · · · · · · · · · · · · · · · ·	6 State ON & G	es Lesse No.	;
(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL DIFFERENT RESERVOIR, USE "APPL	L OR TO DEEPEN JCATION FOR PE	L'S OR PLUG BACK TO A	7. Lease Name of	r Unit Agreement Name	
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1 Section 10MHEMB	Ra	ng¢	NMP M	EDDY	County
10. Elevi	stice (Show whether 3669.6	DF, RKB, RT, GR, etc.) GL			
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NOTICE OF INTENTION TO:		SUB	SEQUENT F	REPORT OF:	
PERFORM REMEDIAL WORK PLUG AND A	BANDON	REMEDIAL WORK		ALTERING CASING	
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OTHER: CONVERT TO GAS INJECTION	🔀	OTHER:		-	[
12 Describe Proposed or Completed Operations (Clearly state all work) SEE RULE 1103.	pertinent details, an	d give pertinent dates, includ	ling estimated date of	starting any proposed	
·), PKR 6025				
NOTIFY NMOCD PRIOR TO STARTING V	JORK.				
LOAD CSG W/TREATED FLUID, TEST (CSG TO 500#	FOR 20 MIN, ANI	D START GAS	INJECTION.	

	formation above is true and complete to the book	•	
SONATURE		OPERATION COORDINATOR	DATE 9-16-93
TYPE OF PRINT HAME	JAMES COGBURN		ТЕЛЕРНОНЕ NO. 391-162

-- IIILE --

IF GAS INJECTION LESS THAN 2 MMCFPD ADD PERFS WITHIN ABO INTERVAL 6070-6120

ORIGINAL SIGNED BY (This spect for State Use) MIKE WILLIAMS

SUPERVISOR, DISTRICT IT

UCT 1 9 1993

AND THE PROPERTY AND ENGINEERS

Submit 3 Copies to Appropriate District Office

State of New Mexico Energy, Minerals and Natural Resources Department

Form C-103 Revised 1-1-89

DISTRICT I P.O. Box 1980, Hobbs, NM 88240

DISTRICT

OIL CONSERVATION DIVISION

P.O. Box 2088 RECEIVED Santa Fe, New Mexico 87504-2088

WELL API NO. 30-015-0625 5. Indicate Type of Lease

P.O. Drawer DD, Artesia, NM 88210 MAY 1 4 1992 STATE X FEE DISTRICT III
1000 Rio Brazos Rd., Aztoc, NM 87410 6. State Oil & Gas Lease No. O. C. D. SUNDRY NOTICES AND REPORTS ON WELLS (DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A 7. Lease Name or Unit Agreement Name DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.) 1. Type of Well: WELL [EMPIRE ABO UNIT "I" WELL X OTHER Name of Operator 8. Well No. ARCO OIL AND GAS COMPANY 9. Pool same or Wildcat EMPIRE ABO Address of Operator BOX 1710, HOBBS, NEW MEXICO 88240 Well Location B: 470 Feet From The NORTH 2170 Feet From The EAST Line and 185 Range 28E **EDDY NMPM** Section 10. Elevation (Show whether DF, RKB, RT, GR, etc.) 3669.6' GL Check Appropriate Box to Indicate Nature of Notice, Report, or Other Data 11. NOTICE OF INTENTION TO: SUBSEQUENT REPORT OF: PERFORM REMEDIAL WORK PLUG AND ABANDON REMEDIAL WORK **ALTERING CASING** CHANGE PLANS COMMENCE DRILLING OPNS. TEMPORARILY ABANDON PLUG AND ABANDONMEN **PULL OR ALTER CASING** CASING TEST AND CEMENT JOB L TEMPORARILY ABANDON -OTHER: OTHER: 12. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work) SEE RULE 1103. TA & HOLD WELL BORE FOR BHP MONITOR TD 6194'; PBD 6182'; PERFS: 6120-6130' SET PKR w/13000# COMPRESSION. LOAD & PRESSURE CSG TO 500# w/8.6# BRINE & WT-675 CHEMICAL. HELD FOR 25 MIN. OK. PKR SET @ 6025.83'. WELL TA 4/29/92. CHART ATTACHED. This Approval of Temporary 5797 Abandonment Expires Abandonment Expires I hereby certify that the information above is true and complete to the best of my knowledge and belief.

TYPE OF PRINT NAME

CONDITIONS OF APPROVAL, IF ANY:

James D. Cogburn

Operations Coordinator

391-1600

DATE 5/13/92

TELEPHONE NO.

X

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	ANTA FE		CONSIDERVATION CO. TIMER ST FOR ALLOWABLE AND	Form C-1814 Supersedes Old C-104 Ellective 1-1-65
	S.G.S.	AUTHORIZATION TO T	RANSPORT OIL AND NATURAL	GAS RECEIVED
	TRANSPORTER GAS 1	<u> </u>		RECEIVEL
1.	PROBATOR 1			SEP 2 6 1973
	Atlantic Richfield Con	npany		Q. C. C.
	P. O. Box 1710, Hobbs,	N.M. 88240		
	Reason(s) for filing (Check proper bo New Well Hecompletion	Change in Transporter of: Oil Dry	— ionana da taras	ire Abo Unit eff:10/0 name from State #1.
	Change in Ownership X		dansate	
	If change of awarenhip give name and address of previous owner	Resler and Sheldon, Bo	ox 2053,S. Padre Island,	TX
II.	DESCRIPTION OF WELL AND	Well No. Pool Name, Including	Cornellon Kind of Le	Ose Leg
	Empire Abo Unit I	23 Empire Abo	State, Fed	ergi or Fee State
	,	70 Feel From The North	line and 2170 Feet Fro	m The East
	Line of Section 6 To	ownship 18S Hange	28Е , нмрм,	Eddy c
ш.	DESIGNATION OF TRANSPOR	THR OF OIL AND NATURAL O	Arians Give address to which app 2300 Continental Bk.	
	AMOCO Pipe Line Compai Name of Authorized Transporter of Co	ny na na na na na na na na na na na na na n	Fort Worth, TX 76102 Address (Give address to which app	roved copy of this form is to be sen
	Phillips Petroleum Com	mpany Unit Sec. Two. Page.	Phillips Bldg.,4th &	Washington, Odessa, TX
	li well produces oil or liquids, give location of lanks.	B 6 18S 28E	Yes	August 1960
IV.	If this production is commingled wi	ith that from any other lease or poo		
	Designate Type of Completi	on $=(X)$ On Well Gas Well	New Well Workover Despen	Plug Back Same Resty. Diff.
	Date Spudded	Date Compl. Ready to Prod.	Total Depth	P.8,T.D.
	Elevations (DF, RKB, RT, GK, etc.)	Name of Producing Formation	Τομ Osi/Gas Pay	Tubing Depth
	Perforations			Depth Casing Shoe
		TUBING, CASHIG, A	ND CEMENTING RECORD	
	HOLE SIZE	CASING & TUBING SIZE	DEPTH SET	SACKS CEMENT
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i				
V.	TEST DATA AND REQUEST F	OR ALLOWABLE (Test mus: be able for thin	after recovery of total volume of load of depth or be for full 24 hours)	il and must be equal to or exceed to
i	Date Fire! New Oil Run To Tanks	Date of Test	Producing Method (Flow, pump, gas	lift, etc.)
	Length of Test	Tubing Pressure	Casing Pressure	Choice Size
ļ	Actual Prod. During Test	Oii-Spis.	Water-Bois.	Gqa - MCF
	GAS WELL	<u> </u>		
í	GAS WELL Actual Prod. Test-MCF/D	Length of Tost	Bols. Condensate/MMCF	Gravity of Condensate
	Tooling Method (pitot, back pr.)	Tubing Pressure (Skut-in)	Coming Pressure (Shut-in)	; Choke Size
vi.	CERTIFICATE OF COMPLIAN	CE	OIL CONSERV	YATION COMMISSION

VI.

I hereby certify that the rules and regulations of the Oil Conservation Commission have been complied with and that the information given above is true and complete to the best of my knowledge and belief.

Senior Accounting Clerk

(Title) September 26, 1973

(Date)

This form is to be filed in compliance with RULE 1104.

If this is a request for allowable for a newly drilled or dee well, this form must be accompanied by a tabulation of the dev tosts taken on the well in accordance with RULE !!!.

TITLE OIL AND GAS INSPECTOR

All sections of this form must be fliled out completely for able on new and recompleted wells.

Fill out only Sections I, II, III, and VI for changes of a weil name or number, or transporter or other such change of con-Separate Forms C-104 must be filed for each pool in m

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NEW MEXICO OIL CONSERVATION COMMESSION

Santa Fe, New Mexico

MAIN OFFICE OCC.

HAM OFFICE OCC WELL RECORD

c.l.o.;

DEC 2 8 1959

O. C. C.

1959 DEC 30 M 8:20

Mail to District Office, Oil Conservation Commission later than twenty days after completion of well. Folloof the Commission. Submit in QUINTUPLICATE.

	ARSA 600 CATE WELL	CRES CORRECTLY						
Drilling Commenced October 8 19.59 Drilling was Completed. Name of Drilling Contractor. Carper Drilling Company Address. 200 Carper Rldgs, Artesia, New Mexico. Elevation above sea level at Top of Tubing Head. 3668 The information of Tubing Head. OUL SANDS OR SONES No. 1, from 5608 to 6120 No. 4, from No. 5, from No. 5, from No. 5, from No. 6, from No. 6, from No. 6, from No. 1, from to which water rose in hole. No. 1, from to formation to which water rose in hole. No. 1, from to formation to from to formation to formation to formation to formation to formation to formation to formation to formation to formation formation formation formation formation formation formation formation formation for formation formation formation for formation formation for formation formation for formation formation for formation fo	State.							
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NEW EXICO OIL CONSERVATION COM Senta Fe, New Menico

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1. Is the Operator the only owner in the dedicated acreage outlined on the plat below? YES NO ("Ouner" means the who has the right to drill into and to produce from any pool and to appropriate the production either for himself or for binnelf and another. (63-3-19 (e) NMSA 1935 Comp.) If the answer to quention one is "no," have the interests of all the owners been consolidated by communitization agreement or o wise? YES NO I have not interest of all the owners and their respective interests below: Owner Land Description								DIE		W c	4
Operator Realer and Sheldon Unit Lesses Section A County Section Section of Vell: Ly70 feet from the porth line and 2170 feet from the gang line Cround Level Elev. Producing Formation Crayburg Artesia Lase Section of Vell: Ly70 feet from the porth line and 2170 feet from the gang line Cround Level Elev. Producing Formation Crayburg Artesia Lase Section of Vell: Ly70 feet from the porth line and 2170 feet from the gang line Cround Level Elev. Producing Formation Crayburg Artesia Lase Operator the only owner in the dedicated acreage outlined on the plat below? YES I NO		WELI	~					4.00	petai.	78.84 1959	
Operator Resiler and Sheldon Township 189 Range 26g County May Township 189 Range 26g County Reddy Richard Foregoe Location of Well: 1970 feet from the porth line and 2170 feet from the porth line and 2170 Artesia I. Is the Operator the only owner in the dedicated acreage outlined on the plat below? YES NO	# 15 Å 1	41					the state of the s				
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Unit Letter B Section Township B 188 Range Country B 188 C	70-21				Lease	Oh-A-			Wel	I No.	
Execution of Will: 1670 feet from the					Ran		County				246.
tyro feet from the north line and 2170 feet from the east line round Level Elev. Producing Fornation Pool Artonia Dedicated Acreage Line Crayburg Artonia Dedicated Acreage Line Crayburg Artonia Dedicated Acreage Line Crayburg Artonia Dedicated Acreage Line Crayburg Artonia Dedicated Acreage Line Crayburg Mark 1935 Comp. If an aware to increase of all the owners been consolidated by communitization agreement or owise? YES NO If answer is "yes," Type of Consolidation If the answer to question two is "no," list all the owners and their respective interests below: SECTION 8			<u> </u>	188		•	<u> </u>	Eddy			deg
Tound Level Elev. Producing Formation Grayburg Artesia Is the Operator the only owner in the dedicated acreage outlined on the plat below? YES_NO						. ,			.,		3. 3
Is the Operator the only owner in the dedicated acreage outlined on the plat below? YES NO ("Ouner" means the sub that right to drill into and to produce from any pool and to appropriate the production either for himself or for himself and emother. (63-3-29 (e) NMAS 1935 Comp.) If the answer to question one is "no," have the intercats of all the owners been connolidated by communitisation agreement or owner? YES NO I manwer is "yea," Type of Consolidation If the answer to question two is "no," list all the owners and their respective intercats below: Land Description CERTIFICATION Ibereby certify that the information in SECTION A above is true and plete to the beat of any layoring belief Name Partner				Tipe end		O les	t itom the	east		Acresse	<u>. 121</u>
who has the right to drill into and to produce from any pool and to appropriate the production either for himself or for himself and emother. (63-3-29 (e) NMSA 1935 Comp.) If the answer to question one is "ao," have the interests of all the owners been consolidated by communitization agreement or a wise? YES_NO If answer is "yes," Type of Consolidation If the answer to question two is "no," list all the owners and their respective interests below: Land Description Land Description		•		}		Artesia			_		Acres
I hereby certify that the information shows and their respective interests below: Land Description	s the right to d . (65–3–29 (d pswer to quest	drill into and (e) NMSA 193 tion one is "	to produce 35 Comp.) 30," have t	/rom any pool he interests o	and to a	owners been co	production	either for him	self or for	bimself a	nd
Land Description SECTION B CERTIFICATION I hereby certify that the information SECTION A above is true and plete to the best of my knowledge belief. Name Partner Position Realer and Shelds Company October 5, 1959 Date I hereby certify that the well located whom on the plat is SECTION B plotted from field sores of actual surveys made by me or under my supervision, and that the same is and correct to the best of my known and belief. Date Surveyed October 5, 1959 Registered Professional Engineer							rests belov	r:	······································		
I bereby certify that the information in SECTION A above is true and plete to the best of my knowledge belief. Partner Position Realer and Shelds Company October 5, 1959 Date I hereby cettify that the well local shown on the plat in SECTION Belotted from field notes of actual surveys made by me or under my supervision, and that the same is and correct to the best of my knowledge and belief. Date Surveyed October 5, 1959 Registered Professional Engineer				,	1						
I bereby certify that the information SECTION A above is true and plete to the best of my knowledge belief. Partner Position Realer and Shelds Company October 5, 1959 Date I hereby certify that the well local shown on the plat in SECTION Belotted from field notes of artual surveys made by me or under my supervision, and that the same is and correct to the best of my known and belief. Date Surveyed October 5, 1959 Registered Professional Engineer							 			·	1 4
I bereby certify that the information SECTION A above is true and plete to the best of my knowledge belief. Partner Position Realer and Shelds Company October 5, 1959 Date I hereby certify that the well local shown on the plat in SECTION Belotted from field notes of artual surveys made by me or under my supervision, and that the same is and correct to the best of my known and belief. Date Surveyed October 5, 1959 Registered Professional Engineer			• •					: .			
in SECTION A above is true and plete to the best of my knowledge belief. Name Partner Position Realer and Shelds Company October 5, 1959 Date 1 hereby cettify that the well loca shown on the plat in SECTION B plotted from field notes of actual surveys made by me or under my supervision, and that the same is and correct to the best of my know and belief. Date Surveyed October 5, 1959 Registered Professional Engineer	1		SECTI	ОИ. В		l		ł			
Resler and Sheld Company October 5, 1959 Date I hereby cettify that the well loca shown on the plat in SECTION B-plotted from field nores of actual surveys made by me or under my supervision, and that the same is and correct to the best of my known and belief. Date Surveyed October 5, 1959 Registered Professional Engineer				ેં}∈_		em (e.)	· · · · · · ·	in SECTIOn plete to the belief. Name	N A above best of m	is true a	nd com-
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ATTACHMENT VI-2E

MAP ID NO. 778

NOTE FROM MIDLAND MAP COMPANY 1959 MAP OF WELLS IN 2-18S-27E



Midland Map Co.



□ Urge	nt	x For Review	☐ Please Comment	☐ Please Reply	Please Recycle
Re:	EDDY	COUNTY WELLS	α:	<u></u>	<u> </u>
Phone:	·····		Pages:	1	
Fax:	(713)	880-3248	Date:	March 12, 1999	
To:	NANC	Y NIEMANN	From:	DOREEN DEVORE	

Comments: AFTER INVESTIGATING YOUR FAX, I AM ONLY ABLE TO GIVE YOU PART OF THE INFORMATION YOU REQUESTED. AS I TOLD YOU BEFORE, WE DON'T HAVE PERMIT AND COMPLETION INFORMATION FOR NEW MEXICO, SO I CAN ONLY GIVE YOU BASIC INFORMATION ABOUT THE WELLS YOU REQUESTED. I SUGGEST THAT YOU CONTACT EITHER THE SUBSURFACE LIBRARY HERE IN MIDLAND AT (915) 683-5588 (THIS IS WHERE I FOUND YOUR INFORMATION YESTERDAY) OR CALL HERROLDS AT (915) 682-7773 AND ASK FOR "DOC". I AM NOT CERTAIN WHETHER THEY WILL OR WILL NOT CHARGE YOU FOR THE INFORMATION.

MAP ID NO.

1.) 2-18S-27E 2310FN, 1650FE

WELL#: 2, ORIG. OPERATOR: RUTTER & WILBANKS FEE: Hudson

THIS WELL WAS COMPLETED BEFORE 1957

795 2.) 2-18S-27E 990FS, 330FE

WELL#: 1 ORIG. OPERATOR: ATLANTIC RICHFIELD (ARCO) FEE: State "AS"

THIS WELL WAS PERMITTED SOMEWHERE BETWEEN 1959-1960

754 3.) 1-18S-27E 660FS, 660FW

WELL#: 17 ORIG. OPERATOR: HONDO OR PAM AM FEE: Malco

THIS WELL WAS COMPLETED SOMEWHERE AROUND 1975

I WISH YOU LUCK IN YOUR INVESTIGATION.

NEW MEXICO OIL CONSERVATION COMMISSION

Well Location and Acreage Dedication Flat

March 25, 1959 Date

				Company			"AO"		
				Section				18 South Range 27 E	
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TOP OF CEMENT IN INJECTION ZONE WELLS IN THE AREA OF REVIEW

				\mathcal{V}																							
Top of Cement (feet below ground)	Surface	Surface 256	Surface	Surface	62501	Surface	Surface	Surface	Top of Liner	Surface	Surface	6594	273	1898	1943	Top of Liner	Surface	Surface	1547	Top of Liner	Surface	0.29	£0009	Top of Liner	Surface	Surface	5321
Cement Height (feet)	823	4846 10194	443	2250	ł	633	3091	23491	1635	570	2880	3554	127	702	7025	1869	538	2880	7903	1635	570	1919	1	1291	633	3981	5079
Hole Rugosity	8.0	× ×	0.8	8.0	t j	8.0	0.8	9.0	8.0	8.0	8.0	0.8	8.0	9.0	8.0	0.8	8.0	8.0	8.0	0.8	8.0	8.0	ı	0.8	8.0	8.0	9.0
Cement Factor (cu ft/sacks)	1.1	1.1	1.1	1.1	;	1.1	1:1	1:1	1.1	1.1	1:1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1:1	1.1	1.1	1.1	1	1.1	1.1	1.1	1.1
Hole Diameter (inches)	17.5	7.875	17.5	.11	7.875	17.5	12.25	7.875	6.125	17.5	12.25	8.75	17.5	12.25	8.75	6.125	17.5	12.25	8.75	6.125	17.5	12.25	7.875	5.5	17.5	11	7.875
Cement Volume (sacks)	059	2007	350	650	520	200	1100	1895	175	450	1025	1020	100	250	1200	200	425	1025	1350	175	450	006	430	80	200	1150	1000
Setting Depth (feet)	.663	4000 10450	354	1745	8466	400	2600	9445	10198	416	2610	10148	400	2600	8968	10150	400	2604	9450	10119	472	2589	9473	10140	418	2600	10400
Casing Diameter (inches)	13.375	8.623	13.375	8.625	5.5	13.375	9.625	7	4.5	13.375	9.625	5.5	13.375	9.625	7	4.5	13.375	9.625	7	4.5	13.375	8.625	5.5	4.5	13.375	8.625	5.5
Map ID No.	81		831			1242				134			144				157				161				167		

TOP OF CEMENT IN INJECTION ZONE WELLS IN THE AREA OF REVIEW

																			4	
Top of Cement	(feet below	ground)	Surface	Surface	Surface	Top of Liner	69	54004	68504	Surface	1088	Unknown	Surface	Surface	Surface	Surface ⁵	Surface ⁵	Surface	616	7241
Cement	Height	(feet)	671	3231	9483	2103	931	ı	l	887	702	ı	288	3934	13816	i i	ł	589	1386	2809
	Hole	Rugosity	0.8	8.0	0.8	0.8	8.0	ı	I	0.8	0.8	1	8.0	0.8	0.8	1	ł	8.0	0.8	8.0
Cement	Factor	(cu ft/sacks)	1.1	1.1	1.1	1.1	1.1	1	ŀ	1.1	1.1		1.1	1.1	1.1	1		1.1	1.1	1.1
Hole .	Diameter	(inches)	17.5	12.25	8.75	6.125	17.5	12.25	7.875	17.5	12.25	6.125	17.5	12.25	7.875	11.000	7.875	17.5	12.25	7.875
Cement	Volume	(sacks)	530	1150	1620	225	026	300	855	700	250	Unknown	200	1400	2720	800	1570	465	959	553
Setting	Depth	(feet)	399	2603	9253	10057	1000	6348	10138	572	1790	4500	502	2200	11,915	1995	6988	425	2002	10050
Casing	Diameter	(inches)	13.375	9.625	7	4.5	11.75	8.625	5.5	13.375	9.625	5.5	13.375	9.625	5.5	8.625	5.5	13.375	8.625	5.5
	Map ID	No.	353				848			851			855			8615		911		

Cement Height = Cement Volume * Cement Factor * Hole Rugosity * 1/(PJ*(Hole Radius^2 - Casing Radius^2))

×

Navajo/60D5497_Permit/Attachment VI-3

For Map ID No. 83, cement volume for 5-1/2 inch casing includes squeezes. Top of cement per temperature survey conducted on May 9, 1991.

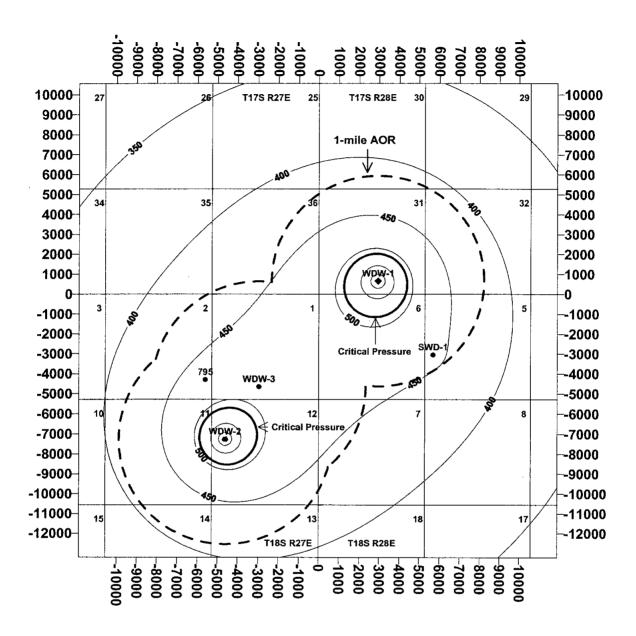
For Map ID No. 124, hole diameter for 4-1/2 inch liner was not reported; 6.125 inches is estimated.

For Map ID No. 161, per cement bond log on July 20, 1993. Log is included in Attachment VI-2.

For Map ID No. 848, top of cement for 8-5/8 inch casing is 5100 feet per operator's well schematic. Top of cement for 5-1/2 inch liner is 6850 feet per operator's well schematic. ⁵ Map ID No. 861 is Navajo's WDW-2. Cement was circulated to the surface per operator.

NAVAJO REFINING COMPANY

PRESSURE INCREASE MODELING RESULTS



Critical Pressure Increase = 512 psi

k = 250 md h = 85 feet

WDW-1 at Historical Rates 09/23/1999 to 06/30/2003

WDW-1 at 500 gpm 07/01/2003 to 09/22/2019

WDW-2 at Historical Rates 09/23/1999 to 06/30/2003

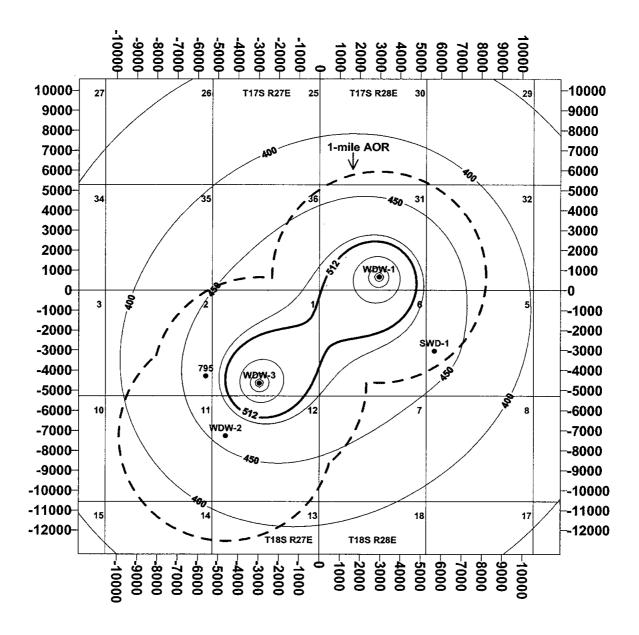
WDW-2 at 500 gpm 07/01/2003 to 09/22/2019

WDW-3 at 0 gpm 07/01/2003 to 09/22/2019

SWD-1 at 17.6 gpm 06/01/1998 to 09/22/1999 SWD-1 at 58.3 gpm 09/23/1999 to 09/22/2019

NAVAJO REFINING COMPANY

PRESSURE INCREASE MODELING RESULTS



Critical Pressure Increase = 512 psi

k = 250 md h = 85 feet

WDW-1 at Historical Rates 09/23/1999 to 06/30/2003 WDW-1 at 500 gpm 07/01/2003 to 09/22/2019

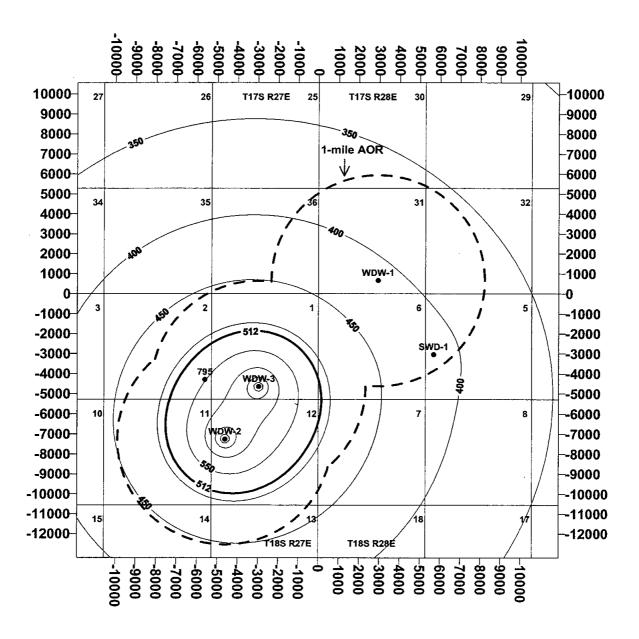
WDW-2 at Historical Rates 09/23/1999 to 06/30/2003 WDW-2 at 0 gpm 07/01/2003 to 09/22/2019

WDW-3 at 500 gpm 07/01/2003 to 09/22/2019

SWD-1 at 17.6 gpm 06/01/1998 to 09/22/1999 SWD-1 at 58.3 gpm 09/23/1999 to 09/22/2019

NAVAJO REFINING COMPANY

PRESSURE INCREASE MODELING RESULTS



Critical Pressure Increase = 512 psi

k = 250 mdh = 85 feet

WDW-1 at Historical Rates 09/23/1999 to 06/30/2003

WDW-1 at 0 gpm 07/01/2003 to 09/22/2019

WDW-2 at Historical Rates 09/23/1999 to 06/30/2003

WDW-2 at 500 gpm 07/01/2003 to 09/22/2019

WDW-3 at 500 gpm 07/01/2003 to 09/22/2019

SWD-1 at 17.6 gpm 06/01/1998 to 09/22/1999

SWD-1 at 58.3 gpm 09/23/1999 to 09/22/2019



VII. PROPOSED OPERATIONS

1. Proposed Injection Rate and Volume

The proposed maximum injection rate for WDW-1, WDW-2, and proposed WDW-3 combined is 1000 gpm or 34,286 bpd. The proposed maximum injection volume in any given month is that volume calculated by multiplying 1000 gpm by 60 minutes per hour by 24 hours per day by the number of days in the month.

The proposed maximum rate of injection into any one well is 500 gpm.

2. Whether the System Is Open or Closed

The operations for the proposed Class I wells will be restricted to injection from a closed system. Fluids to be injected will be generated on site at Navajo's refineries in Artesia and Lovington and will be transported to the injection wells by pipeline.

3. Proposed Injection Pressure

The maximum injection pressure at the wellhead will not exceed 0.2 psi per foot of depth to the top of the injection zone, as required by OCD Proposed Rule 21.B(7), dated October 6, 1997. The maximum injection pressure at the wellhead may vary, depending on the depth of the injection formation. For example, if WDW-1 is completed at the top of the injection zone at 7450 feet, then the requested maximum injection pressure is 1490 psi, as calculated below:

Maximum Injection Pressure at the Top of the Injection Zone

- = Top of the Injection Zone x 0.2 psi/ft
- = 7450 feet x 0.2 psi/ft
- = 1490 psi

If the top of the injection formation coincides with the top of the Cisco or Canyon Formations, both of which are deeper than the Wolfcamp Formation, then the proposed injection pressure will be higher. The proposed injection pressure for each injection formation is summarized in the following table:



PROPOSED INJECTION PRESSURE										
Injection Formation	Top of Injection Formation	Maximum Injection Pressure Gradient	Proposed Injection Pressure							
WDW-1										
Wolfcamp Cisco Canyon	7450 feet 7816 feet 8475 feet	0.2 psi/ft 0.2 psi/ft 0.2 psi/ft	1490 psi 1563 psi 1695 psi							
WDW-2 Wolfcamp Cisco Canyon	7270 feet 7645 feet 8390 feet	0.2 psi/ft 0.2 psi/ft 0.2 psi/ft	1454 psi 1529 psi 1678 psi							
WDW-3										
Wolfcamp Cisco Canyon	7303 feet 7650 feet 8390 feet	0.2 psi/ft 0.2 psi/ft 0.2 psi/ft	1461 psi 1530 psi 1678 psi							

4. Wastestream Information and Compatibility with the Injection Zone

Navajo proposes to inject exempt and nonexempt nonhazardous oilfield waste that is generated at its refineries in Artesia and Lovington. Waste waters from process units, cooling towers and boilers, streams from water purification units and desalting units, recovered and treated ground water, and general wash waters will be blended to make up the proposed waste stream.

Recent chemical analyses of the waste water are included as Attachment VII-1. Average concentration levels for major constituents are listed in Attachment VII-2, along with the expected pH range and specific gravity.

5. Injection Zone Fluid Analysis

The composition of the native formation fluid in the proposed Wolfcamp, Cisco, and Canyon injection zone is expected to be similar to that in these formations in other parts of southeastern New Mexico. The salinity of Wolfcamp, Cisco, and



Canyon formation brines from hydrocarbon producing areas in northern Lea County, to the east of Eddy County, was reported by Meyer (1966, Table 4). Attachment VII-3 summarizes the salinity data reported by Meyer (1966, Table 4) for Wolfcamp, Cisco, and Canyon formation brines from limestones that were deposited in a shelf environment similar to that of the proposed injection site. The salinity of the formation brines range from 67,098 to 119,909 parts per million (ppm). The formation brines were produced from intervals that occur between 9001 feet and 10742 feet below ground. Also listed in Attachment VII-7 are data from Strawn limestones that were deposited in a platform environment and that occur at 7700 feet below ground; the salinity of the Strawn formation brine is 39,374 ppm. DST data from WDW-1 indicate that the salinity of fluid recovered from the Cisco Formation in DST No. 5 is 25,000 ppm (Attachment VIII-9).

Formation fluid samples were obtained from the Cisco injection interval upon completion of Navajo's WDW-1 in July 1998. The sample from the lower Cisco perforations (8220 feet to 8476 feet) had a TDS concentration of 33,000 mg/l. The sample from the upper Cisco perforations (7924 feet to 8188 feet) had a TDS concentration of 18,000 mg/l. The report of the chemical analysis is included as Attachment VII-4.

Formation fluid samples were obtained from the Cisco injection interval upon completion of Navajo's WDW-2 in June 1999. The sample from the lower Cisco perforations (7820 feet to 8392 feet) had a specific gravity of 1.0249 and a TDS concentration of 20,000 mg/l. The sample from the Lower Wolfcamp and upper Cisco perforations (7570 feet to 7736 feet) had a specific gravity of 1.0082 and a TDS concentration of 13,000 mg/l.

Navajo will attempt to retrieve a sample of formation brine during the well testing operations of proposed WDW-3. Formation brine samples will be retrieved prior to any stimulation treatments or injection into the wells.



ATTACHMENT VII-1 CHEMICAL ANALYSES OF INJECTED WASTE WATER



RECENT CHEMICAL ANALYSES OF WASTE WATER FROM NAVAJO'S REFINERY IN LOVINGTON, NM



Sample ID 71197 Sample Point Wasle Water Sample Date 28-May-03 Log In 3-Jun-03 Log Out 261 11 13 33 240 <0.01 0.36 <0.01 0.09 0.009 0.0	Analysts: Eric Vidacovich	6/1/2/2003		
Sample ID 71197				
Sample Point Sample Date Log In Log Out Total, mg/L Total, mg/L HCO3, mg/L HCO3, mg/L H, mg/L				
RUN Log Out Log In Log In Log In Log Col Log C				
FUN Log Out Total, mg/L FO3, mg/L O3, mg/L H, mg/L H, mg/L Y ICP, mg/L al by ICP, mg/L al by ICP, mg/L it by ICP, mg/L it by ICP, mg/L it by ICP, mg/L it by ICP, mg/L				
Total, mg/L Total, mg/L Total, mg/L HCO3, mg/L HCO3, mg/L H, m				
Total, mg/L Total, mg/L Total, mg/L HCO3, mg/L H, mg/L				
Total, mg/L Total, mg/L ICO3, Total, mg/L ICO3, mg/L				
Total, mg/L Total, mg/L Total, mg/L HCO3, mg/L HCO3, mg/L HCO3, mg/L H, mg/L H, mg/L FIA, mg/L FIA, mg/L sy ICP, mg/L al by ICP, mg/L al by ICP, mg/L al by ICP, mg/L al by ICP, mg/L al by ICP, mg/L al by ICP, mg/L				
Total, mg/L Total, mg/L Total, mg/L acO3, Total, mg/L HCO3, mg/L H, mg/L H, mg/L L L L L L L Y Y CP, mg/L y Y CP, mg/L y Y CP, mg/L a) by ICP, mg/L a) by ICP, mg/L a) by ICP, mg/L a) by ICP, mg/L a) by ICP, mg/L a) by ICP, mg/L a) by ICP, mg/L				
Total, mg/L Total, mg/L Total, mg/L HCO3, mg/L CO3, mg/L L L L L L Ny ICP, mg/L sy ICP, mg/L at by ICP, mg/L at by ICP, mg/L at by ICP, mg/L at by ICP, mg/L at by ICP, mg/L at by ICP, mg/L at by ICP, mg/L at by ICP, mg/L				
Total, mg/L Total, mg/L aCO3, Total, mg/L HCO3, mg/L CO3, mg/L H, mg/L L L L L Ny ICP, mg/L sy ICP, mg/L al by ICP, mg/L al by ICP, mg/L d, lab)				
Total, mg/L Total, mg/L aCO3, Total, mg/L CO3, mg/L CO3, mg/L CO3, mg/L by FIA, mg/L by ICP, mg/L al by ICP, mg/L al by ICP, mg/L al by ICP, mg/L al by ICP, mg/L al by ICP, mg/L al by ICP, mg/L al by ICP, mg/L al by ICP, mg/L al by ICP, mg/L al by ICP, mg/L al by ICP, mg/L				
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J.L. J.L. mg/L. mg/L. mg/L.				
ng/l. 1.09/l. 1.09/l. 1.09/l. 1.09/l.				
IA, mg/L , mg/L PP, mg/L Y ICP, mg/L ICP, mg/L				
i mg/L P, mg/L SP, mg/L y ICP, mg/L ICP, mg/L ICP, mg/L				
mg/L P, mg/L P, mg/L y ICP, mg/L ICP, mg/L				
il. mg/L mg/L mg/L				
			-	
P Alkalinily as CaCO3, mg/L				
T Alkalinity as CaCO3, mg/l.				
nhos/cm				
cm				
0				
Total Anions, men, Calculated				

Work Order: 3061622

Page Number: 1 of 4 Lovington,NM

Summary Report

Darrell Moore

Navajo Refining

501 E. Main

Artesia, NM 88210

Report Date: June 27, 2003

Work Order:

3061622

Project Location: Lovington, NM

			Date	Time	Date
Sample	Description	Matrix	Taken	Taken	Received
10309	Lovington City WW	water	2003-06-13	13:00	2003-06-16

Sample: 10309 - Lovington City WW

Param	Flag	Result	Units	RL
Total Silver		< 0.0125	$_{ m mg/L}$	0.0125
Total Aluminum		< 0.100	$_{ m mg/L}$	0.100
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1.00
Carbonate Alkalinity	•	<1.00	mg/L as CaCo3	1.00
Bicarbonate Alkalinity		108	mg/L as CaCo3	4.00
Total Alkalinity		108	mg/L as CaCo3	4.00
Total Arsenic		0.0500	mg/L	0.0100
Total Boron		0.455	$_{ m mg/L}$	0.00500
Total Barium		0.204	mg/L	0.0100
Total Beryllium		< 0.00250	m mg/L	0.00250
Total Cadmium		< 0.00500	mg/L	0.00500
Total Cobalt		< 0.0200	mg/L	0.0200
Specific Conductance		2830	μMHOS/cm	0.00
Total Chromium	•	< 0.0100	mg/L	0.0100
Total Copper		< 0.0250	mg/L	0.0250
Total Iron		0.512	${ m mg/L}$	0.0500
Total Mercury		< 0.000200	${ m mg/L}$	0.000200
Chloride		660	mg/L	0.500
Sulfate		206	$_{ m mg/L}$	0.500
Total Manganese		0.0580	mg/L	0.0250
Total Molybdenum		< 0.0500	mg/L	0.0500
Total Nickel		< 0.0250	mg/L	0.0250
Total Lead		< 0.0100	$_{ m mg/L}$	0.0100
pH		7.00	s.u.	0.00
Reactivity		non-reactive		0.00
Hydrogen Sulfide		<10.0	$_{ m mg/L}$	10.0
Hydrogen Cyanide		< 2.50	$_{ m mg/L}$	2.50
Corrosivity		non-corrosive	mm/yr	0.00
pH		7.20	s.u.	0.00
Ignitability		non-ignitable		0.00
Dissolved Calcium		213	${ m mg/L}$	0.500
Dissolved Magnesium		26.9	m mg/L	0.500
Dissolved Potassium		9.32	mg/L	0.500

continued ...

Work Order: 3061622

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sample 10309 continued ...

Param	Flag Result	Units	RL
Dissolved Sodium	269	mg/L	0.500
Total Selenium	0.0700	mg/L	0.0100
Pyridine	< 0.00500	m mg/L	5.00
n-Nitrosodimethylamine	< 0.00500	mg/L	5.00
2-Picoline	< 0.00500	mg/L	5.00
Methyl methanesulfonate	< 0.00500	${ m mg/L}$	5.00
Ethyl methanesulfonate	< 0.00500	$_{ m mg/L}$	5.00
Phenol	< 0.00500	mg/L	5.00
Aniline	< 0.00500	$_{ m mg/L}$	5.00
bis(2-chloroethyl)ether	< 0.00500	m mg/L	5.00
2-Chlorophenol	< 0.00500	mg/L	5.00
1,3-Dichlorobenzene (meta)	< 0.00500	mg/L	5.00
1,4-Dichlorobenzene (para)	< 0.00500	mg/L	5.00
Benzyl alcohol	< 0.00500	$_{ m mg/L}$	5.00
1,2-Dichlorobenzene (ortho)	< 0.00500	mg/L	5.00
2-Methylphenol	< 0.00500	mg/L	5.00
bis(2-chloroisopropyl)ether	<0.00500	m mg/L	5.00
4-Methylphenol / 3-Methylphenol	<0.00500	mg/L	5.00
n-Nitrosodi-n-propylamine	<0.00500	mg/L	5.00
Hexachloroethane	<0.00500	mg/L	5.00
Acetophenone	<0.00500	mg/L	5.00
Nitrobenzene	<0.00500	mg/L	5.00
n-Nitrosopiperidine	<0.00500	mg/L	5.00
Isophorone	<0.00500	mg/L	5.00
2-Nitrophenol	< 0.00500	mg/L	5.00
2,4-Dimethylphenol	< 0.00500	mg/L	5.00
bis(2-chloroethoxy)methane	< 0.00500	mg/L	5.00
2,4-Dichlorophenol	<0.00500	$_{ m mg/L}$	5.00
1,2,4-Trichlorobenzene	<0.00500	$_{ m mg/L}^{- m s,-}$	5.00
Benzoic acid	<0.00500	mg/L	5.00
Naphthalene	<0.00500	mg/L	5.00
a,a-Dimethylphenethylamine	<0.00500	mg/L	5.00
4-Chloroaniline	<0.00500	mg/L	5.00
2,6-Dichlorophenol	< 0.00500	mg/L	5.00
Hexachlorobutadiene	<0.00500	mg/L	5.00
n-Nitroso-di-n-butylamine	<0.00500	mg/L	5.00
4-Chloro-3-methylphenol	< 0.00500	$_{ m mg/L}$	5.00
2-Methylnaphthalene	< 0.00500	mg/L	5.00
1-Methylnaphthalene	< 0.00500	mg/L	5.00
1,2,4,5-Tetrachlorobenzene	< 0.00500	mg/L	5.00
Hexachlorocyclopentadiene	< 0.00500	$\frac{-s}{mg/L}$	5.00
2,4,6-Trichlorophenol	< 0.00500	mg/L	5.00
2,4,5-Trichlorophenol	< 0.00500	mg/L	5.00
2-Chloronaphthalene	< 0.00500	mg/L	5.00
1-Chloronaphthalene	< 0.00500	mg/L	5.00
2-Nitroaniline	<0.00500	mg/L	5.00
Dimethylphthalate	< 0.00500	mg/L	5.00
Acenaphthylene	<0.00500	mg/L	5.00
2,6-Dinitrotoluene	< 0.00500	$m_{ m g/L}$	5.00
3-Nitroaniline	<0.00500	mg/L	5.00
Acenaphthene	<0.00500	mg/L	5.00
2,4-Dinitrophenol	<0.00500	mg/L	5.00
Dibenzofuran	< 0.00500	mg/L	5.00
Pentachlorobenzene	< 0.00500	mg/L	5.00
4-Nitrophenol	< 0.00500	mg/L	5.00
	< 0.00500	.mg/L	5.00

continued ...

Work Order: 3061622

Page Number: 3 of 4 Lovington,NM

sample 10309 continued ...

Param	Flag	Result	Units	RL
1-Naphthylamine	•	< 0.00500	mg/L	5.00
2,3,4,6-Tetrachlorophenol		< 0.00500	$_{ m mg/L}$	5.00
2-Naphthylamine		< 0.00500	$_{ m mg/L}$	5.00
Fluorene		< 0.00500	mg/L	5.00
4-Chlorophenyl-phenylether		< 0.00500	$\frac{-3}{mg/L}$	5.00
Diethylphthalate		< 0.00500	mg/L	5.00
4-Nitroaniline		<0.00500	mg/L	5.00
Diphenylhydrazine	į	<0.00500	mg/L	5.00
4,6-Dinitro-2-methylphenol		<0.00500		5.00
7 7		<0.00500	$egin{array}{l} egin{array}{l} 5.00	
Diphenylamine		<0.00500		5.00
4-Bromophenyl-phenylether	ı		mg/L	
Phenacetin		< 0.00500	$_{ m mg/L}$	5.00
Hexachlorobenzene		<0.00500	$_{ m mg/L}$	5.00
4-Aminobiphenyl		< 0.00500	$_{ m mg/L}$	5.00
Pentachlorophenol		< 0.00500	$_{ m mg/L}$	5.00
Anthracene		< 0.00500	${ m mg/L}$	5.00
Pentachloronitrobenzene	•	< 0.00500	$_{ m mg/L}$	5.00
Pronamide		< 0.00500	${ m mg/L}$	5.00
Phenanthrene		< 0.00500	${ m mg/L}$	5.00
Di-n-butylphthalate		< 0.00500	${f mg/L}$	5.00
Fluoranthene		< 0.00500	${ m mg/L}$	5.00
Benzidine		< 0.00500	mg/L	5.00
Pyrene		< 0.00500	mg/L	5.00
p-Dimethylaminoazobenzene		< 0.00500	mg/L	5.00
Butylbenzylphthalate		< 0.00500	mg/L	5.00
Benzo(a)anthracene		< 0.00500	$_{ m mg/L}$	5.00
3,3-Dichlorobenzidine		< 0.00500	$_{ m mg/L}$	5.00
Chrysene		< 0.00500	mg/L	5.00
bis(2-ethylhexyl)phthalate		< 0.00500	$_{ m mg/L}$	5.00
Di-n-octylphthalate		< 0.00500	$_{ m mg/L}^{- m s,-}$	5.00
Benzo(b)fluoranthene		< 0.00500	$_{ m mg/L}^{-c}$	5.00
Benzo(k)fluoranthene		< 0.00500	mg/L	5.00
7,12-Dimethylbenz(a)anthracene		< 0.00500	mg/L	5.00
Benzo(a)pyrene		< 0.00500	mg/L	5.00
3-Methylcholanthrene		< 0.00500	mg/L	5.00
Dibenzo(a,j)acridine		< 0.00500	mg/L	5.00
Indeno(1,2,3-cd)pyrene		< 0.00500		5.00
Dibenzo(a,h)anthracene		< 0.00500	mg/L	
Benzo(g,h,i)perylene		< 0.00500	mg/L	5.00
Total Dissolved Solids			mg/L	5.00
		1702	mg/L	10.00
Total Vana Vana		<0.0200	mg/L	0.0200
Total Vanadium		< 0.0250	mg/L	0.0250
Bromochloromethane		<1.00	$\mu { m g/L}$	1.00
Dichlorodifluoromethane		<1.00	$\mu { m g}/{ m L}$	1.00
Chloromethane (methyl chloride)		<1.00	$\mu { m g}/{ m L}$	1.00
Vinyl Chloride		<1.00	$\mu { m g}/{ m L}$	1.00
Bromomethane (methyl bromide)		< 5.00	$\mu { m g}/{ m L}$	5.00
Chloroethane		<1.00	$\mu { m g}/{ m L}$	1.00
Trichlorofluoromethane		<1.00	$\mu { t g}/{ t L}$	1.00
Acetone		<10.0	$\mu {f g}/{f L}$	10.0
Iodomethane (methyl iodide)		< 5.00	$\mu { m g}/{ m L}$	5.00
Carbon Disulfide		1.08	$\mu { m g}/{ m L}$	1.00
Acrylonitrile		<1.00	$\mu_{ t g}/{ t L}$	1.00
2-Butanone (MEK)		< 5.00	$\mu { m g}/{ m L}$	5.00
4-Methyl-2-pentanone (MIBK)		<5.00	$\mu {\sf g}/{ m L}$	5.00
2-Hexanone		< 5.00	$\mu { m g}/{ m L}$	5.00
				continued

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Page Number: 4 of 4 Lovington,NM

sample 10309 continued ...

Param	Flag	Result	Units	RL
trans 1,4-Dichloro-2-butene		<10.0	$\mu { m g}/{ m L}$	10.0
1,1-Dichloroethene		<1.00	$\mu { m g}/{ m L}$	1.00
Methylene chloride		< 5.00	$\mu { m g}/{ m L}$	5.00
MTBE		<1.00	$\mu {\sf g}/{ m L}$	1.00
trans-1,2-Dichloroethene		<1.00	$\mu { m g}/{ m L}$	1.00
1,1-Dichloroethane		<1.00	$\mu { m g}/{ m L}$	1.00
cis-1,2-Dichloroethene		<1.00	$\mu { m g}/{ m L}$	1.00
2,2-Dichloropropane		<1.00	$\mu { m g}/{ m L}$	1.00
1,2-Dichloroethane (EDC)		<1.00	$\mu_{ m g}/{ m L}$	1.00
Chloroform		<1.00	$\mu { m g}/{ m L}$	1.00
1,1,1-Trichloroethane		<1.00	μg/L	1.00
1,1-Dichloropropene		<1.00	$\mu_{ m g}/{ m L}$	1.00
Benzene		<1.00	$\mu_{f g}/{f L}$	1.00
Carbon Tetrachloride		<1.00	$\mu { m g}/{ m L}$	1.00
1,2-Dichloropropane		<1.00	$\mu { m g}/{ m L}$	1.00
Trichloroethene (TCE)		<1.00	$\mu_{ m g}/{ m L}$	1.00
Dibromomethane (methylene bromide)		<1.00	$\mu { m g}/{ m L}$	1.00
Bromodichloromethane		<1.00	$\mu { m g}/{ m L}$	1.00
2-Chloroethyl vinyl ether		<5.00	$\mu_{ m g}/{ m L}$	5.00
cis-1,3-Dichloropropene		<1.00	$\mu {f g}/{f L}$	1.00
trans-1,3-Dichloropropene		<1.00	$\mu_{ m g/L}$	1.00
Toluene		<1.00	$\mu \mathrm{g}/\mathrm{L}$	1.00
1,1,2-Trichloroethane		<1.00	$\mu_{ m g}/{ m L}$	1.00
1,3-Dichloropropane		<1.00	$\mu_{ m g}/{ m L}$	1.00
Dibromochloromethane		<1.00	$\mu \mathrm{g}/\mathrm{L}$	1.00
1,2-Dibromoethane (EDB)		<1.00	$\mu \mathrm{g}/\mathrm{L}$	1.00
Tetrachloroethene (PCE)		<1.00	$\mu_{\mathbf{g}}/\mathbf{L}$	1.00
Chlorobenzene		<1.00	$\mu_{ m g}/{ m L}$	1.00
1,1,1,2-Tetrachloroethane		<1.00	$\mu \mathrm{g}/\mathrm{L}$	1.00
Ethylbenzene		1.36	$\mu g/L$	1.00
m,p-Xylene		<1.00	$\mu_{ m g}/{ m L}$	1.00
Bromoform		<1.00	$\mu \mathrm{g}/\mathrm{L}$	1.00
Styrene		<1.00	$\mu \mathrm{g}/\mathrm{L}$	1.00
o-Xylene		1.17	$\mu \mathrm{g}/\mathrm{L}$	1.00
1,1,2,2-Tetrachloroethane		<1.00	$\mu_{ m g/L}$	1.00
2-Chlorotoluene		<1.00	$\mu_{ m g/L}$	1.00
1,2,3-Trichloropropane		<1.00	$\mu_{ m g}/{ m L}$	1.00
Isopropylbenzene		<1.00	$\mu_{ m g}/{ m L}$	1.00
Bromobenzene		<1.00	$\mu \mathrm{g}/\mathrm{L}$	1.00
n-Propylbenzene		<1.00	$\mu_{ m g}/{ m L}$	1.00
1,3,5-Trimethylbenzene		<1.00	$\mu_{ m g}/{ m L}$	1.00
tert-Butylbenzene		<1.00	$\mu \mathrm{g}/\mathrm{L}$	1.00
1,2,4-Trimethylbenzene		<1.00	$\mu g/L$	1.00
1,4-Dichlorobenzene (para)		<1.00	$\mu_{ m g}/{ m L}$	1.00
sec-Butylbenzene		<1.00	$\mu_{ m g}/{ m L}$	1.00
1,3-Dichlorobenzene (meta)	1	<1.00	$\mu_{ m g/L}$	1.00
p-Isopropyltoluene		<1.00	$\mu_{ m g/L}$	1.00
4-Chlorotoluene		<1.00	$\mu_{\mathbf{g}}/\mathbf{L}$	1.00
1,2-Dichlorobenzene (ortho)		<1.00	$\mu_{ m g/L}$ $\mu_{ m g/L}$	1.00
n-Butylbenzene		<1.00	$\mu_{ m g/L}$ $\mu_{ m g/L}$	1.00
1,2-Dibromo-3-chloropropane		<5.00	$\mu_{ m g/L}$ $\mu_{ m g/L}$	5.00
1,2,3-Trichlorobenzene		<5.00	$\mu_{ m g/L}$ $\mu_{ m g/L}$	5.00 5.00
1,2,4-Trichlorobenzene		<5.00		5.00 5.00
Naphthalene		<5.00 <5.00	$\mu { m g}/{ m L}$	5.00 5.00
Hexachlorobutadiene		<5.00	$\mu_{ m g/L}$	5.00 5.00
Total Zinc		0.173	$\mu \mathrm{g}/\mathrm{L}$	
TOUGH ZIME		0.113	mg/L	0.0250

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6701 Aberdeen Avenue, Ste. 9 Tel (806) 794-1296 Fax (806) 794-1298 1 (800) 378-1296 ubbock, Texas 79424

TraceAnalysis, Inc

Tel (915) 585-3443 Fax (915) 585-4944 1 (888) 588-3443

55 McCutcheon, Suite H El Paso, Texas 79932

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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LAB Order ID#

ANALYSIS REQUEST

Fax #:

(Street, City, Zip)

Address:

Company Name:

900 🛭

(Circle or Specify Method No.)

Hq ,2ST ,GOB Pesticides 8081A/608 PCB's 8062/608 3C/MS Semi. Vol. 8270C/625 CC/W2 API 8560B/654

SAMPLING

PRESERVATIVE METHOD

MATRIX

FIELD CODE

(LAB USE)

AEA

LABA

N

Project Location:

If different from above)

Project #:

Invoice to:

Contact Person:

Sampler Signature:

Project Name:

Time Around Time if different from standard

Ag As Ba Cd Cr Pb Se Hg 6010B/200.7

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585-748-

Need results ryshed !!!

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07/11/70

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TCLP Semi Volatiles

TOLP Metals Ag As Ba Cd Cr Pb Se Hg

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CONTAINERS M

OLAVAN



DISCHARGE PLAN APPLICATION AND APPLICATION FOR AUTHORIZATION TO INJECT, PER OIL CONSERVATION DIVISION FORM C-108, INTO CLASS I WELLS WDW-1, WDW-2 AND PROPOSED WDW-3

VOLUME II SECTIONS VIII THROUGH REFERENCES

NAVAJO REFINING COMPANY Artesia, New Mexico

Subsurface Project No. 60D5497

September 2003

Prepared By:

SUBSURFACE TECHNOLOGY, INC. Houston, Texas

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VIII. GEOLOGY

VIII.A Injection Zone Lithology, Depth, Thickness, Porosity, and Permeability

The proposed injection zones are porous carbonates of the lower portion of the Wolfcamp Formation and the Cisco and Canyon Formations. These formations occur in WDW-1, WDW-2, and proposed WDW-3 at the depths shown in the table below. The injection zone is shown on the logs of WDW-1, WDW-2, and proposed WDW-3 in Attachments VIII-1, VIII-1A, VIII-2, and VIII-2A, VIII-2B, and VIII-2C, and in cross sections in Attachments VIII-3 and VIII-4.

	WD' (KB height =)W-2 = 3623 feet)	PROPOSEI (KB heigh fee	t = 3625
Injection Zone Formation	Measured Depth below KB (feet)	Subsea Depth (feet)	Measured Depth below KB (feet)	Subsea Depth (feet)	Measured Depth below KB (feet)	Subsea Depth (feet)
Lower Wolfcamp	7450	-3757	7270	-3647	7303	-3678
Cisco	7816	-4123	7645	-4022	7650	-4025
Canyon	8475	-4782	8390	-4767	8390	-4765
Base of Injection Zone (base of Canyon)	9016	-5323	8894	-5271	8894	-5269

The lower portion of the Wolfcamp Formation (the Lower Wolfcamp) is the shallowest porous unit in the proposed injection interval. The Wolfcamp Formation (Permian - Wolfcampian age) consists of light brown to tan, fine- to medium-grained, fossiliferous limestones with variegated shale interbeds (Meyer, 1966, page 69). The top of the Wolfcamp Formation was correlated for this study to be below the base of the massive, dense dolomites of the overlying Abo Formation. The base of the Wolfcamp coincides with the top of the Cisco Formation. Attachment VIII-5 shows that the thickness of log porosity greater than 5% in the entire Wolfcamp Formation ranges from 0 feet to 295 feet in a band 3 miles wide that trends northeast-southwest across the study area. Attachment VIII-5 indicates that the



Wolfcamp will have porosity at proposed WDW-3 that is similar to that at Navajo's WDW-1 and WDW-2.

The upper portion of the Wolfcamp Formation from 6890 feet to 7450 feet in WDW-1, has low permeability, as indicated by DSTs run in WDW-1 in 1993 (see Section VIII.B). Logs of the upper portion of the Wolfcamp in proposed WDW-2 show that it includes bands of low porosity, such as the interval from 7120 feet to 7180 feet. The upper portion of the Wolfcamp Formation is not included in the proposed injection zone.

The Lower Wolfcamp is the same interval used for injection in the I&W, Inc., Walter Solt SWD-1 (Map ID No. 83), which is completed between 7518 feet and 7812 feet in that well. The caliper log run in WDW-1 in 1993 in the Lower Wolfcamp (Attachment VIII-1A) shows several intervals of hole enlargement in carbonates, for example from 7640 feet to 7670 feet. These intervals may have sufficient permeability and lateral extent to accept injected fluids. In WDW-2, the lower 80 feet of the Lower Wolfcamp, from 7565 feet to 7645 feet, is porous carbonate that is similar in log character to the underlying Cisco Formation. Navajo has demonstrated that the Cisco Formation has injection capacity in WDW-1.

The Cisco Formation (Pennsylvanian - Virgilian age) of the Northwest Shelf is described by Meyer (1966, page 59) as consisting of uniform, light-colored, chalky, fossiliferous limestones interbedded with variegated shales. Meyer (1966, page 59) also describes the Cisco at the edge of the Permian Basin as consisting of biohermal (mound) reefs composed of thick, porous, coarse-grained dolomites. Locally, the Cisco consists of porous dolomite that is 745 feet thick in WDW-2, 659 feet thick in WDW-1, and 720 feet in proposed WDW-3. The total thickness of intervals with log porosity greater than 5% is approximately 310 feet in WDW-1, 580 feet in WDW-2, and 572 feet in proposed WDW-3. The total thickness with log porosity greater than 10% is approximately 100 feet in WDW-1, 32 feet in WDW-2, and 65 feet in proposed WDW-3. Attachment VIII-6 shows that the thickness of the porous intervals in the Cisco ranges from 0 feet in the northwestern part of the study area to nearly 700 feet in a band 3 miles wide that trends northeast-southwest.



The Canyon Formation (Pennsylvanian - Missourian age) consists of white to tan to light brown fine-grained, chalky, fossiliferous limestone with gray and red shale interbeds (Meyer, 1966, page 53). Locally, the Canyon occurs between the base of the Cisco dolomites and the top of the Strawn Formation of Pennsylvanian (Desmoinesian) age. The total thickness of intervals with log porosity greater than 5% is 34 feet in WDW-1, 30 feet in WDW-2, and 10 feet in proposed WDW-3. No intervals appear to have log porosity greater than 10% in any of the three injection wells.

Permeability measurements that range from less than 100 md to 2733 md are available for the Lower Wolfcamp-Cisco-Canyon injection zone. Permeability measurements from hydrocarbon-producing intervals in the Wolfcamp, Cisco, and Canyon from Meyer (1966, Table 4) are summarized in Attachment VIII-7. Meyer reported permeabilities in the Cisco of up to 114 millidarcies (md), up to 38 md in the Canyon, and up to 200 md in the Wolfcamp.

Permeability was estimated to be 597 md from DST No. 5 conducted in WDW-1 on August 26, 1993. DST No. 5 was conducted near the top of the Cisco Formation from 7817 feet to 7851 feet. Test data for DST No. 5 and calculation of permeability are included in Attachments VIII-9 and VIII-9A, respectively.

A pressure buildup/pressure falloff test was conducted in WDW-1 on July 30 and 31, 1998, after WDW-1 was recompleted to the Cisco injection zone. The transmissibility (kh, or product of permeability and thickness) determined from the pressure falloff test data was 284,839 md-ft. The average permeability of the Cisco injection zone is determined by dividing kh by the thickness of the interval that was perforated, as shown below:

$$k = \frac{kh}{h}$$

$$= \frac{284,839 \text{ md-ft}}{253 \text{ feet}}$$

$$= 1126 \text{ md}$$



where,

k = permeability

kh = transmissibility from pressure falloff test

h = thickness of perforated interval

The WDW-1 pressure buildup/pressure falloff test data and analysis are included as Attachment VIII-9B.

A pressure buildup/pressure falloff test was conducted in WDW-2 on June 4 and 5, 1999, after WDW-2 was recompleted to the Lower Wolfcamp and Cisco injection zone. The transmissibility (kh, or product of permeability and thickness) determined from the pressure falloff test data was 817,018 md-ft. The average permeability of the injection zone was determined by dividing kh by the thickness of the interval that was perforated, 299 feet, to be 2733 md.

In summary, permeability values in the proposed injection zone from producing fields in the region range up to 200 md, as discussed above. Based on test data for WDW-1 and WDW-2, however, permeability values as high as 2733 md or higher occur in intervals in the injection zone. Permeabilities of 250 md and greater are also expected in the injection zone in proposed WDW-3.

VIII.B Confining Zone

The confining zone extends from 4000 feet to 7450 feet in WDW-1, from 4120 feet to 7270 feet in WDW-2, and from 4030 feet KB to 7303 feet KB in proposed WDW-3. The confining zone includes massive low-porosity carbonate beds and layers of shale in the Upper Wolfcamp, Abo, and Yeso Formations that will confine the injected fluids to the proposed injection zone (Lower Wolfcamp, Cisco, and Canyon Formations). The formations that comprise the confining zone are described below. The confining zone extends throughout the AOR, as shown in the cross sections in Attachments VIII-3 and VIII-4.



The proposed injection zone is directly overlain by the confining layers of the upper portion of the Wolfcamp Formation. Three (3) DSTs were conducted in the upper portion of the Wolfcamp in WDW-1, in the interval from 7016 feet to 7413 feet, that indicate that the interval has low permeability and can confine injected fluids to the injection zone. The DSTs, DST Nos. 2, 3, and 4, are summarized in the daily drilling reports in Attachment VIII-8. Reports of the data from DST Nos. 3 and 4 are presented in Attachment VIII-9. Although the data from DST No. 4 are not analyzable, an average permeability of 0.36 md was calculated from the data from DST No. 3, as shown below:

$$k = 162.6 \frac{\text{q B } \mu}{\text{mh}}$$

$$= 162.6 \frac{(20 \text{ bbl/89 min x 1440 min/day})(1)(0.53 \text{ cp})}{(570.883 \text{ psi/cycle})(7382 \text{ feet - 7230 feet})}$$

$$= 162.6 \frac{(323.6 \text{ bpd})(1)(0.53 \text{ cp})}{(570.883 \text{ psi/cycle})(152 \text{ feet})}$$

$$= 0.36 \text{ md}$$

A permeability on the order of 0.1 md is at the low end of the permeability range for carbonates, and is at the high end of the permeability range for shales, according to Freeze and Cherry (1979, p. 29). Therefore, the low-permeability carbonates of the upper Wolfcamp will provide the first level of confinement for the injection zone.

The Abo Formation overlies the Wolfcamp and extends from 5400 feet to 6890 feet in WDW-1, from 5506 feet to 6728 feet in WDW-2, and from 5380 feet KB to 6745 feet KB in proposed WDW-3. Although the Abo is well known as a major oil producer in the AOR, the producing intervals lie in the upper Abo, whose equivalents are above 6100 feet in WDW-1 and above 6200 feet in proposed WDW-2. The deepest Abo test well in the AOR, Map ID No. 126, located 6000 feet east (downdip) of proposed WDW-3, was drilled to 6412 feet. No Abo production in the AOR has been established below 6298 feet, the producing interval in Map ID No. 112, located 3800 feet southeast (downdip) of WDW-1. The base of



the producing interval within the Abo Formation in the AOR, therefore, is over 900 feet above the top of the proposed injection zone. The lower 600 feet of the Abo Formation (below the deepest producing interval in the AOR), consisting primarily of dolomite with average porosity less than 5% and interbedded shale, will serve as the secondary confining layer above the proposed injection zone.

The Yeso Formation, which will provide additional confining capabilities, directly overlies the Abo Formation. The top of the Yeso is not consistently identified in the AOR, according to well records submitted to the OCD and available scout tickets. However, the top of the confining zone can be considered to extend to the top of the low-porosity limestone interval below the higher-porosity dolomites below the Glorieta Member of the San Andres Formation (at 4000 feet in WDW-1, 4120 feet in WDW-2, and 4030 feet KB in proposed WDW-3). The Yeso consists of low-porosity carbonates and clastic beds. The Tubb shale, a shale interval that is up to 150 feet thick in some wells in the study area, also occurs in this interval. Although no faults are known to exist in the confining zone within the AOR, the Tubb shale will serve to prevent movement of fluids through a hypothetical unknown fault.

VIII.C Structure

The proposed injection well is located on the southern flank of the Artesia-Vacuum anticline (also called the Vacuum Arch), which trends east-west across the study area. The Vacuum Arch is shown clearly on Attachment VIII-10, a structure map drawn on the Rio Bonito member of the San Andres Formation. The top of the Rio Bonito member occurs at approximately 2260 feet in WDW-1 and at 2320 feet in WDW-2, or 300 feet to 320 feet below the top of the San Andres Formation, and over 4600 feet above the top of the proposed injection interval (Lower Wolfcamp, Cisco, and Canyon Formations). The general structure of the injection zone is shown on Attachment VIII-11, a regional structure map of the Strawn Formation, drawn on a horizon that is approximately 375 feet below the top of the Strawn (base of the proposed injection zone), as it is recognized in records and scout tickets for wells in the local study area. The top of the proposed injection zone is conformable with the structure of the Strawn Formation. Attachment VIII-11 shows the trend of the Vacuum arch, as well as the southeasterly dip of the beds at approximately 100 feet per mile in the vicinity of the proposed injection wells. No faults exist in the



USDWs. The plugged and abandoned producing well within the AOR is listed below:

Map ID No. 848

No corrective action is required for this well.

Plugged and Abandoned Dry Holes (1 well):

Plugged and abandoned dry holes have surface casing and may have intermediate or long-string casing set through the injection zone. Dry holes were plugged with heavy mud and cement plugs. The cement plugs were placed between the requested injection zone and the USDWs. The plugged and abandoned dry hole is listed below:

Map ID No. 851.

No corrective action is required for this well.

VI.E Cone of Influence and Area of Review Determination

The cone of influence is defined here as the area within which increased injection zone pressures caused by injection of wastes would be sufficient to cause fluid movement through any well or other conduit into a USDW. This demonstration shows that the extremely conservative worst-case cone of influence of the proposed injection operations is smaller than the one-mile radius AOR in which artificial penetrations were investigated.

In the worst case, an undocumented abandoned well-is imagined to be open to both the injection zone and the base of the USDW. In addition, the well is imagined to be filled to within 100 feet of the ground surface with formation brine from the injection zone and fresh water from the base of the USDW. The cone of influence can be calculated by comparing the hydraulic heads of the injection zone and the lowermost USDW. It is only where the injection zone head is above the USDW head-that fluid movement from the injection zone into the USDW could occur. This worst-case



model of the potential effect of injection upon the USDW is extremely conservative, because no wells within one mile of the proposed injection wells are open to both the injection zone and the USDW and filled with brine.

The injection zone for Navajo's proposed injection wells has a native pressure such that the resulting hydraulic head is lower than the head of the lowermost USDW. The pre-injection pressure of the injection interval was measured on July 30, 1998, in Navajo's WDW-1 to be 2928 psia at 7924 feet (7911 feet below ground level, BGL) (Attachment VIII-9B).

A sample of fluid was retrieved from formation fluid swabbed on July 25, 1998, from the perforations of the deeper Cisco interval, from 8220 feet to 8476 feet in Navajo's WDW-1. The total dissolved solids (TDS) concentration of the sample was 33,000 mg/L and the specific gravity of the sample at room temperature was 1.034. Formation fluid was swabbed on July 29, 1998, from the perforations of the shallower Cisco interval, from 7924 feet to 8188 feet in Navajo's WDW-1. The analysis of a sample of this fluid indicated that the TDS concentration of the sample-was 18,000 mg/l, and the specific gravity at room temperature was 1.018. The chemical analysis of the formation fluid samples is included as Attachment WII-4. These values compare favorably with information from the analysis of fluid retrieved during drillstem test (DST) No. 5, which was conducted on August 26, 1993, in WDW-1 (see Attachment VIII-9). The salinity of the formation fluid retrieved during DST No. 5 was reported in Attachment VIII-9 as a chlorides concentration of 25,000 ppm. The formation fluid is therefore assumed to have a sodium chloride concentration of 25,000 ppm. The specific gravity of such a fluid is approximately 1.02.

The pre-injection pressure, P_i, at the top of the injection zone in proposed WDW-2 at 7270 feet BKB (7257 feet BGL) is 2640 psia, as calculated below, based on a formation fluid specific gravity of 1.018. Using the lightest specific gravity in this calculation yields a high P_i, which is conservative.



$$P_i(7257 \text{ feet}) = P_i(7911 \text{ feet}) - (7911 \text{ feet} - 7257 \text{ feet}) (0.433 \text{ psi/ft}) (1.018)$$

= 2928 psia - 288 psi
= 2640 psia

The head of the lowermost USDW is estimated to be 100 feet BGL. This estimate is reasonably conservative, as it is based on a static water level measurement of 81 feet in Water Well No. 18.28.8.330 (Attachment XI-1). The total depth of the well is unknown.

The critical pressure, P_c, at 7257 feet BGL that would be necessary to raise the hydrostatic head of the injection interval to the head of the lowermost USDW at 100 feet BGL is 3152 psia, as calculated below:

```
P<sub>c</sub> = (Top of Injection Zone - Base of USDW) (0.433 psi/ft)(1.018)
+ (Base of USDW - Head of USDW) (0.433 psi/ft)
= (7257 feet - 473 feet) (0.433 psi/ft) (1.018)
+ (473 feet - 100 feet) (0.433 psi/ft)
= 3152 psia
```

The critical increase in reservoir pressure, ΔP_c , above the native pressure, that is necessary to raise the hydrostatic head of the injection interval to the head of the lowermost USDW is, therefore, 512 psi, as calculated below:

$$\Delta P_c = P_c - P_i$$

= 3152 psia – 2640 psia
= 512 psi

An increase in reservoir pressure greater than 512 psi would be sufficient to raise the head of the injection zone above the head of the lowermost USDW. The cone of influence is the area around the injection wells within which the increase in reservoir pressure caused by injection is greater than 512 psi.

Contour plots of the predicted pressure increase in the injection zone (Attachment VI-5) were generated using historical injection rates and the maximum injection rates



permitted for WDW-1, WDW-2, and proposed WDW-3. A Visual Basic program, PREDICTW, was used to calculate the pressure increase throughout the injection zone at the end of 20 years of injection into the wells. The theoretical basis for PREDICTW is discussed in Attachment VI-6. The gridded pressure increases created by PREDICTW are contoured using SURFER, a commercial contouring software package.

Conservative values for reservoir thickness and permeability were used to overestimate the predicted increase in reservoir pressure. The reservoir was assumed to have a thickness of 85 feet. The permeability of the reservoir was assumed to be 250 md. The modeled kh, 21,250 md-ft (= 250 md x 85 feet), is less than 10% of the kh, 284,839 md-ft, that was determined from the pressure falloff test/conducted in Navajo's WDW-1 on July 30, 1998 (See Section VIII and Attachment VIII-9B). Using a low kh will yield a predicted pressure increase that is much greater than expected and a cone of influence that is much larger than expected.

The porosity was assumed to be 10%.

The viscosity of the formation fluid with TDS concentration of 25,000 ppm at 130°F is 0.53 cp (Attachment VI-7). The compressibility of the pore volume of the formation (Canyon Reef as shown on Attachment VI-8), c_r , is 5.5 x 10⁻⁶ psi⁻¹. The compressibility of the formation fluid (distilled water as shown on Attachment VI-8), c_w , is 2.9 x 10⁻⁶ psi⁻¹. The total compressibility ($c_t = c_r + c_w$) is 8.4 x 10⁻⁶ psi⁻¹.

Historical injection data for WDW-1 and WDW-2 were used for the injection period from September 23, 1999 (initial injection into the wells) through June 30, 2003. WDW-1, WDW-2, and proposed WDW-3 are then modeled as injecting from July 1, 2003 through September 22, 2019, at a maximum total rate of 1000 gallons per minute (gpm) distributed among the three wells. The maximum per-well injection rate modeled is:500 gpm.

The I & W, Inc. Walter Solt SWD-1 (Map ID No. 83), a Class II well, injects into the lower Wolfcamp through four sets of perforations between 7518 and 7812 feet. Historical injection records available from the OCD for 1994 through 1997 indicate



that the average injection rate is 17.6 gpm. This rate is used for the historical injection period from June 1, 1988, through September 22, 1999. For the future injection period, from September 23, 1999 through September 22, 2019, the Walter Solt SWD-1 is expected to inject at 58.3 gpm, or 2000 barrels per day (bpd), the maximum rate requested by the original permit application for the Walter Solt SWD-1.

The 512-psi pressure-increase contour, which defines the outline of the worst-case cone of influence, is located less than one mile from WDW-1, WDW-2, and proposed WDW-3, as shown in Attachment VI-5. An improperly abandoned wellbore or other conduit filled with formation fluid that is located farther than one mile from the proposed wells would not transmit sufficient pressure from the injection zone to move fluids into the USDW. Navajo researched public and private sources of information about wells within the one-mile AOR. Only-15-of-295-wells—drilled-in-the AOR penetrated the injection-zone. Information was presented in Section—VI.D that demonstrates that each of the injection-zone penetrations is properly-constructed to prevent-migration of fluids into the USDW.



study area, and faulting occurs no closer than 16 miles to the proposed injection wells. The nearest fault is the K-M fault, which is located 6 miles northwest of Artesia and trends northeast-southwest, as shown on Attachment VIII-10. Attachments VIII-12, VIII-13, VIII-14, and VIII-15 are local structure maps drawn on the Wolfcamp, Cisco, Canyon, and Strawn Formations.

VIII.D Underground Sources of Drinking Water (USDWs)

The base of the USDWs, in which the total dissolved solids (TDS) concentration of the formation water is less than 10,000 milligrams/liter (mg/l) or the equivalent, 10 g/l, occurs at approximately 3200 feet above sea level at WDW-1 and 3150 feet above sea level at WDW-2 and proposed WDW-3, as shown on Attachment VIII-16. In WDW-1, the base of the USDWs occurs at a measured depth of 493 feet below kelly bushing (KB; 493 feet KB = 3693 feet - 3200 feet, where 3693 feet is the elevation of the kelly bushing of WDW-1), or the base of the Tansill Formation (Permian - Guadalupean age). In WDW-2, the base of the USDWs occurs at a measured depth of 473 feet below KB (473 feet KB = 3623 feet - 3150 feet). In proposed WDW-3, the base of the Tansill Formation occurs at 420 feet KB. In the eastern part of the study area, at depth, the Tansill Formation is overlain by the Salado Formation (Permian - Ochoan age). The Salado consists of halite, polyhalite, anhydrite, and potassium salts, which are soluble. The Salado is overlain by the Rustler Formation (Permian - Ochoan age). In the AOR, which straddles the outcrop area of the Salado, and to the east, the Salado has been removed by solution by ground water flowing through the Rustler.

To the east, where the Rustler is present, the Rustler is the USDW. To the west, where the Rustler has been removed by erosion and the Salado has been removed by solution, the Tansill is the USDW. The Tansill Formation and the underlying Yates Formation comprise the Three Twins Member of the Chalk Bluff Formation known in outcrops in the region (Hendrickson and Jones, 1952, page 20), and listed as a freshwater-producing interval in Attachment XI-1. The proposed injection zone (Lower Wolfcamp, Cisco, and Canyon Formations) is separated from the USDWs by 6957 feet (6957 feet = 7450 feet - 493 feet, where 7450 feet is the depth of the top of the injection zone) of carbonates, siltstones, and shales in WDW-1. In WDW-2, the USDWs are separated from the injection zone by 6797 feet (= 7270)



feet - 473 feet). In proposed WDW-3, the USDWs are separated from the injection zone by 6883 feet (= 7303 feet - 420 feet).

VIII.E Compatibility Issues

The integrity of the carbonates of the injection zone and the confining zone is not threatened by the injected waste. The monitoring system and physical limitations on injection established by state and federal regulations are adequate checks to identify and address any problems that may arise. Operating limits on maximum injection pressure and monitoring requirements for well annular pressure versus injection pressure and annular fluid volume force the operator to be as protective of his wellbore and the injection zone as is possible. Furthermore, events such as tubing failures and packer failures that are caused by the injection of corrosive materials would require that the well be shut down and that a workover be performed. The proposed monitoring methods are capable of detecting wellbore integrity and injection problems before they could threaten human health and the environment.

The proposed waste stream will have a pH range of 6.0 to 9.0, that is, near neutral to slightly alkaline. The reactions of alkaline solutions with carbonates are slow or non-existent, so no significant loss of formation is expected from injection of this waste stream. Therefore, no chemical incompatibility between the proposed waste stream and the formation is expected to occur that could allow wastes to migrate out of the injection zone.



ATTACHMENT VIII-2B RESISTIVITY LOG OF PROPOSED WDW-3



ATTACHMENT VIII-2C POROSITY LOG OF PROPOSED WDW-3



X. LOGGING AND TESTING

<u>WDW-1</u>: Two (2) formation fluid samples were retrieved from the Cisco injection interval when WDW-1 was completed in July 1998. The sampling procedure was detailed in the "Reentry and Completion Report, Waste Disposal Well No. 1" (the completion report was submitted to the OCD in September 1998). The results of the analysis of the fluid samples are also discussed in Section VI.E and included as Attachment VII-4 of this application.

No cores were taken from WDW-1.

The WDW-1 logging program is described fully in the completion report, and the logs are included in the completion report. The logs run in WDW-1 are listed below:

TYPE OF LOG	TYPE OF HOLE LOGGED	INTERVAL (ft)
	Intermediate Casing	
Cement Bond Log Variable Density Log Gamma Ray	Cased Hole	0 to 2548
	Long-String Casing	
Dual Laterolog Gamma Ray Micro-Spherically Focused Electric Log	Open Hole	2546 to 10,182
Spectral Density Dual Spaced Neutron Log Gamma Ray	Open Hole	350 to 10,139
Compensated Sonic Log Gamma Ray	Open Hole	350 to 10,181
Formation Microscanner Imaging Results	Open Hole	4000 to 9143
Caliper Log Gamma Ray	Open Hole	2553 to 9143
Cement Bond Log Variable Density Log Gamma Ray	Cased Hole	0 to 8990
Casing Evaluation Log w/Multi-Finger Caliper Tool w/Electromagnetic Casing Caliper Thickness Tool	Cased Hole	0 to 8997
Temperature Log	Cased Hole	0 to 8997
Temperature Log	Cased Hole	0 to 8997



The mechanical integrity of WDW-1 was demonstrated by the use of: a casing inspection log, a casing pressure test, and a cement bond log of the 7-inch casing; a cement bond log of the 9-5/8 inch casing; and a radioactive tracer survey, an annulus pressure test, and a differential temperature survey. These tests are detailed in the completion report for WDW-1.

<u>WDW-2</u>: Details of the logging and testing conducted during the reentry and recompletion of WDW-2 in May and June 1999 were provided in the document "Reentry and Completion Report, Waste Disposal Well No. 2," prepared by Subsurface and submitted to the OCD by Navajo in July 1999.

<u>Proposed WDW-3</u>: A formation fluid sample will be retrieved from the injection zone in proposed WDW-3. Navajo will conduct injectivity testing in permeable intervals of proposed WDW-3.

The proposed logging program is described below:



HOLE/CASING	OPEN-HOLE LOGS	CASED-HOLE LOGS
Proposed WDW-3		
17-1/2-inch Surface Borehole (13-3/8 inch Casing) 400 feet		Log run on 1/29/91: Gamma Ray
12-1/4-inch Intermediate Borehole (9-5/8-inch Casing) 2604 feet		Log run on 1/29/91: Gamma Ray
8-3/4-inch Long-String Borehole (7-inch Casing) 9450 feet	Logs Run on 1/29/91: Gamma Ray Caliper Dual Laterolog Micro SFL Spectral Density Dual Spaced Neutron	Logs Proposed on Reentry: Cement Bond/Variable Density Casing Inspection Log Differential Temperature Log Radioactive Tracer Survey
6-inch Liner Borehole (4-1/2-inch Liner) 9051 feet to 1019 feet	Logs Run on 1/29/91: Gamma Ray Caliper Dual Laterolog Micro SFL Spectral Density Dual Spaced Neutron	



ATTACHMENT A

REVISIONS TO THE DISCHARGE PLAN APPLICATION

ADMINISTRATIVE APPLICATION CHECKLIST

Updated.

DISCHARGE PLAN APPLICATION FORM

Updated.

APPLICATION FORMS

Replaced OCD Forms C-101 and C-102 for proposed WDW-3 to show new location.

Updated forms for WDW-2, which was completed in May and June 1999. Updated Form

C-108.

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Updated.

SECTION I: PURPOSE

Updated to include that WDW-2 was completed and that the location of proposed WDW-3 has been changed.

SECTION III: WELL DATA

Updated to include information about WDW-2 and new information about proposed WDW-3.

SECTION IV: EXISTING PROJECT

Updated.

ATTACHMENT A (Continued)

SECTION V: AREA OF REVIEW

Updated Attachment V-1 to show the locations of non-freshwater wells in the vicinity of

Navajo's WDW-1, WDW-2, and proposed WDW-3.

SECTION VI: WELLS IN THE AREA OF REVIEW

Updated information about wells in the 1-mile-radius area of review of WDW-1, WDW-2,

and proposed WDW-3. The predicted pressure buildup caused by the proposed injection

operations and the size of the cone of influence was modified to include the revised location

of proposed WDW-3.

SECTION VII: PROPOSED OPERATIONS

Revised to update the maximum surface injection pressure in proposed WDW-3. Updated

to include the analysis of formation fluid samples retrieved from WDW-2 in June 1999.

SECTION VIII: GEOLOGY

Revised to add information about the injection zone that was obtained by testing WDW-2.

Injection zone data from WDW-2 support the reservoir model in Section VI.E. Revised to

add site-specific geological information for proposed WDW-3.

SECTION X: LOGGING AND TESTING

Revised to specify the logging program planned for proposed WDW-3.

ATTACHMENT B

INSTRUCTIONS FOR UPDATING THE DOCUMENT "DISCHARGE PLAN AND APPLICATION FOR AUTHORIZATION TO INJECT," SUBMITTED BY NAVAJO ON MAY 1, 1998, AND REVISED IN APRIL 1999 AND SEPTEMBER 1999

VOLUME I

Remove and discard the title page, and replace with enclosed.

Remove and discard the Table of Contents, and replace with enclosed.

Add enclosed Administrative Application Checklist.

Add enclosed Discharge Plan Application.

Add the enclosed OCD Form C-105 and schematics for WDW-2 behind the divider that reads "WDW-2: OCD and BLM Forms."

Behind the divider that reads "WDW-3: Forms C-101 and C-102," remove and discard the existing forms, and replace with enclosed.

Add enclosed Form C-108.

SECTION I: Remove and discard the text of Section I, and replace with enclosed.

SECTION III: Remove and discard cover sheet and well data sheet for WDW-2 and

replace with enclosed (keep schematics). Remove Drilling Program.

Remove and discard Attachment III-3, and replace with enclosed.

SECTION IV: Remove and discard the text of Section IV, and replace with enclosed.

SECTION V: Remove and discard Attachment V-1, and replace with enclosed.

SECTION VI: Remove and discard the text of Section VI, and replace with enclosed.

Remove and discard Attachment VI-1, and replace with enclosed.

Remove and discard Attachment VI-1A, and replace with enclosed.

For Map ID No. 157, remove the existing well schematic, and add the well records for Map ID No. 157 (proposed WDW-3) behind the divider in Attachment VI-2.

Add the well records for Map ID No. 353, with tabbed divider, to Attachment VI-2.

Behind the divider for Map ID No. 861, add new cover sheet.

Add the well records for Map ID No. 911, with tabbed divider.

Add new Attachments VI-2D and VI-2E.

Remove and discard Attachments VI-3 through VI-5, and replace with enclosed. Note that Attachment VI-4 is not used.

SECTION VII: Remove and discard the text of Section VII, and replace with enclosed.

Add chemical analyses of Lovington refinery waste at the end of Attachment VII-1.

VOLUME II

Remove and discard title page and Table of Contents, and replace with enclosed.

SECTION VIII: Remove and discard the text of Section VIII, and replace with enclosed.

Add new Attachments VIII-2B and VIII-2C.

SECTION X: Remove and discard the text of Section X, and replace with enclosed.

ATTACHMENT C

LEASEHOLD OPERATORS WITHIN 1 MILE OF NAVAJO REFINING COMPANY'S PROPOSED WDW-3

Map ID Nos. 354, 356, and 358

Aspen Oil, Inc. PO Box 2674 Hobbs, NM 88241-2674

Map ID Nos. 27, 93, 94, 95, 96, 97, 102, 118, 121, 122, 125, 129, 130, 135, 136, 138, 139, 140, 141, 143, 146, 147, 148, 149, 150, 151, 152, 154, 155, 156, 160, 355, 752, 753, 756, 765, 779, 785, 786, 789, 791, 796, 797, 799, 800, 801, 802, 805, 806, 813, 814, 836, 837, 838, 839, 840, and 841

BP America Production Company PO Box 3092 Houston, TX 77253

Map ID Nos. 162, 165, 166, 859, 860, 862, 864, 866, 869, 870, and 943

The Eastland Oil Company PO Drawer 3488 Midland, Texas 79702

Map ID No. 772

H & S Oil, L.L.C. PO Box 186 Artesia, NM 88211-0168

Map ID No. 100

Hanson Energy R 342 South Haldeman Rd. Artesia, NM 88210

ATTACHMENT C (Continued)

Map ID Nos. 928, 929, 930, 931, 940, and 941

Marbob Energy Company PO Box 227 Artesia, NM 88211-0227

Map ID Nos. 748, 758, and 766

McQuadrangle, L.C. 7008 Salem Lubbock, TX 79424

Map ID No. 124, 134, 144, 161, and 353

Mewbourne Oil Company PO Box 7698 Tyler, Texas 75711

Map ID NO. 167

MOREXCO, Inc. PO Box 1591 Roswell, NM 88202-1591

Map ID No. 123

Penroc Oil Corporation PO Box 2769 Hobbs, NM 88241-2769

Map ID No. 354

Pronghorn Management Corporation PO Box 1772 Hobbs, NM 88241

Map ID Nos. 131, 142, 145, 153, 158, 159, 359, 749, 750, 751, 755, 757, 773, 774, 781, 856, 857, 858, 863, 865, 868, 871, 872, 901, 910

P&A'd Wells

ATTACHMENT C (Continued)

Map ID Nos. 119, 132, 137, 754, 792, 795, and 933

Mis-spotted and duplicate well locations

Map ID Nos. 120, 932, 934, 944

Abandoned Locations

Map ID No. 778

Inactive Well (no information in OCD files)

All Wells on Federal Land

Bureau of Land Management New Mexico State Office Post Office and Federal Building Post Office Box 1449 Santa Fe, New Mexico 87504-1449

Bureau of Land Management Roswell Field Office 2909 West Second Street Roswell, New Mexico 88201 Attn: Mr. David Glass

Bureau of Land Management Carlsbad Field Office Post Office Box 1778 Carlsbad, New Mexico 88221-1778 Attn: Mr. Joe Lara

3



DISCHARGE PLAN APPLICATION AND APPLICATION FOR AUTHORIZATION TO INJECT, PER OIL CONSERVATION DIVISION FORM C-108, INTO CLASS I WELLS WDW-1, WDW-2 AND PROPOSED WDW-3

VOLUME I SECTIONS I THROUGH VII

NAVAJO REFINING COMPANY Artesia, New Mexico

Subsurface Project No. 60D5497

September 2003

Prepared By:

SUBSURFACE TECHNOLOGY, INC. Houston, Texas

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DATE IN	SUSPENSE	ENGINEER	LOGGED IN	TYPE	APP NO.

ABOVE THIS LINE FOR DIVISION USE ONLY

NEW MEXICO OIL CONSERVATION DIVISION

- Engineering Bureau



		1220 South St. Francis Drive, Santa Fe, NM 87505
		ADMINISTRATIVE APPLICATION CHECKLIST
		NDATORY FOR ALL ADMINISTRATIVE APPLICATIONS FOR EXCEPTIONS TO DIVISION RULES AND REGULATIONS WHICH REQUIRE PROCESSING AT THE DIVISION LEVEL IN SANTA FE
Applica	[DHC-Dowi	idard Location] [NSP-Non-Standard Proration Unit] [SD-Simultaneous Dedication] Inhole Commingling] [CTB-Lease Commingling] [PLC-Pool/Lease Commingling] Inhole Commingling] [OLS - Off-Lease Storage] [OLM-Off-Lease Measurement] INFX-Waterflood Expansion] [PMX-Pressure Maintenance Expansion] ISWD-Salt Water Disposal] [IPI-Injection Pressure Increase] Illied Enhanced Oil Recovery Certification] [PPR-Positive Production Response]
[1]	TYPE OF AP [A]	PLICATION - Check Those Which Apply for [A] Location - Spacing Unit - Simultaneous Dedication NSL NSP SD
	Check [B]	One Only for [B] or [C] Commingling - Storage - Measurement DHC CTB PC CD OLS CD OLM
	[C]	Injection - Disposal - Pressure Increase - Enhanced Oil Recovery WFX PMX SWD IPI EOR PPR
	[D]	Other: Specify Class I Injection
[2]	NOTIFICATI [A]	ION REQUIRED TO: - Check Those Which Apply, or □ Does Not Apply Working, Royalty or Overriding Royalty Interest Owners
	[B]	☐ Offset Operators, Leaseholders or Surface Owner
	[C]	Application is One Which Requires Published Legal Notice
	[D]	Notification and/or Concurrent Approval by BLM or SLO U.S. Bureau of Land Management - Commissioner of Public Lands, State Land Office
	[E]	For all of the above, Proof of Notification or Publication is Attached, and/or,
	[F]	Waivers are Attached
[3]		CURATE AND COMPLETE INFORMATION REQUIRED TO PROCESS THE TYPE ATION INDICATED ABOVE.
[4] approv applica	al is <mark>accurate</mark> a	FION: I hereby certify that the information submitted with this application for administrative nd complete to the best of my knowledge. I also understand that no action will be taken on this quired information and notifications are submitted to the Division.
	Note:	Statement must be completed by an individual with managerial and/or supervisory capacity.
Da Print or	rell Moor	Fax. Mgr. for Water a Wester 9/17/03 Title Title
,	· -	· ·

darrellanavajo - relining. com e-mail Address

District I
1625 N. French Dr., Hobbs, NM 88240
District II
1301 W. Grand Avenue, Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV

1220 S. St. Francis Dr., Santa Fe, NM 87505

1. Type: ____

State of New Mexico Energy Minerals and Natural Resources

Oil Conservation Division 1220 South St. Francis Dr. Santa Fe, NM 87505

Modification

Submit Original
Plus 1 Copy
to Santa Fe
1 Copy to Appropriate
District Office

Revised June 10, 2003

DISCHARGE PLAN APPLICATION FOR SERVICE COMPANIES, GAS PLANTS, REFINERIES, COMPRESSOR, GEOTHERMAL FACILITES AND CRUDE OIL PUMP STATIONS

(Refer to the OCD Guidelines for assistance in completing the application)

☐ Renewal

Class I Injection Well Nos. WDW-1, WDW-2, and Proposed WDW-3

☐ New

2.	2. Operator: Navajo Refining Company	
	Address: Post Office Box 159, Highway 82 East, Artesia, New Mexico 882	211
	Contact Person: Darrell Moore Phone: 505-7	48-3311
3.	3. Location: SE /4 SW /4 Section 1 Township 18S Submit large scale topographic map showing exact locations.	
4.	4. Attach the name, telephone number and address of the landowner of the facility site	
5.	 Attach the description of the facility with a diagram indicating location of fences, prefacility. 	its, dikes and tanks on the
6.	6. Attach a description of all materials stored or used at the facility.	
7.	 Attach a description of present sources of effluent and waste solids. Average qualit water must be included. 	y and daily volume of waste
8.	8. Attach a description of current liquid and solid waste collection/treatment/disposal part of the solid waste collection and so	procedures.
9.	9. Attach a description of proposed modifications to existing collection/treatment/disp	osal systems.
10	10. Attach a routine inspection and maintenance plan to ensure permit compliance.	
11	11. Attach a contingency plan for reporting and clean-up of spills or releases.	
12	12. Attach geological/hydrological information for the facility. Depth to and quality of	f ground water must be included.
13	 Attach a facility closure plan, and other information as is necessary to demonstrate rules, regulations and/or orders. 	compliance with any other OCD
14	14. CERTIFICATIONI hereby certify that the information submitted with this application of my knowledge and belief.	
N	Name: Darrell Moore Title: Env. Mgr.	for Watern Woste
s	Signature: Date: 9/17/0)3
E	E-mail Address: darrella navajo-retining.com	

DISCHARGE PLAN APPLICATION FOR SERVICE COMPANIES, GAS PLANTS, REFINERIES, COMPRESSOR, AND CRUDE OIL PUMP STATIONS

1. Type

Class I Wells WDW-1, WDW-2, and proposed WDW-3

2. Operator

Navajo Refining Company Post Office Box 159 Highway 82 East Artesia, New Mexico 88211

Contact

Darrell Moore
Environmental Manager of Water and Waste
Navajo Refining Company
Post Office Box 159
Artesia, New Mexico 88211
505-748-3311

3. Location

The locations of WDW-1 and proposed WDW-2 and WDW-3 are detailed on accompanying Forms C-102. The well locations are shown on Attachment V-2 of the Application for Authorization to Inject, Per OCD Form C-108, Into Proposed WDW-1, WDW-2, and WDW-3 (the "Application to Inject").

4. Facility Ownership

Navajo Refining Company owns the site of WDW-1. The sites of WDW-2 and proposed WDW-3 are owned by the United States government. Navajo is applying to the Bureau of Land Management for a right-of-way permit to use the site of proposed WDW-3.

5. Facilities

The facilities currently planned for each wellsite include the wellhead, the well annulus monitoring system, and monitoring and recording instrumentation. The waste water to be injected will be delivered to each well from Navajo's refineries in Artesia and Lovington by pipeline systems. Tankage to store up to 10,000 barrels may be constructed at the site of WDW-1.



6. Materials Storage

No materials storage is planned.

7. Waste Stream

The waste stream to be injected is described in Section VII of the "Application to Inject."

8. Current Treatment and Disposal

The waste stream to be injected is currently managed in evaporation ponds at Navajo's refineries. A portion of the stream is sent to publicly owned treatment works.

9. Modifications

Not applicable; this application is for planned facilities.

10. Inspection and Maintenance Plan

Navajo will operate instrumentation that will monitor and record continuously the injection pressure, flow rate, flow volume, and casing-tubing annulus pressure.

The injection well system will be equipped with a pressure limiting device that will prevent the wellhead pressure from exceeding the permitted maximum surface injection pressure.

A well annulus monitoring system will be installed and maintained at each wellsite to monitor for tubing and casing leaks.

Mechanical integrity testing will be conducted annually and any time the tubing is pulled or the packer is reseated, in accordance with OCD testing procedures.

11. Contingency Plan

Navajo will notify the OCD District Office in Artesia within 24 hours of failures of the tubing, casing, or packer and will correct failures in a timely manner.

12. Geological and Hydrological Information

Geological and hydrogeological information is included in Sections VIII and XI of the "Application to Inject."

13. Closure Plan

The proposed closure plan for the wells is included as Attachment III-4 of the "Application to Inject."



				,				,	
Submit To Appropriate D State Lease - 6 copies	istrict Office	1	State of New M	Mexico				<\f	Form C-105
Fee Lease - 5 copies District I		Energ	gy, Minerals and Na					R	evised March 25, 1999
T625 N. French Dr., Hobbs, NM 87240 District II						WELL API N			
811 South First, Artesia, NM 87210 District III District III					_	30-015-20894 5. Indicate T			
1000 Rio Brazos Rd., Aztec, NM 87410 2040 South Pacheco				1	STAT		eee X	- Federal	
South Pacheco, Sant	a Fe, NM 87505	No	Santa Fe, NM	87505		State Oil & G		No. NM	
WELL CO	DMPLETION C	R RECOMP	PLETION REPO	RT AND LOG					
la. Type of Well:				15167 Vaste Disposal We		7. Lease Name o	r Unit Agree	ment Na	me
OIL WEL	L GAS WELL	□ _{DRY} □	OTHER CIRSS I V	Vaste Disposal We	<u>ell</u>	Navaio R	efining C	omnany	, .
b. Type of Comple			\2\cdot\2	. 83/		WDW-2	orming C	ompuny	
NEW WELL	WORK DEEPE	N BACK	DIFF.	THER - Reentry	Ì				·
2. Name of Operator	[2.1011		C. 62	- 18	B. Well No.	•		
	ining Company		10 3	(C) (G)		WDW-2			
3. Address of Opera	^{tor} Box 159, Artesia,	New Mexico	88211		9	Pool name or V		-Canso	n Injection Zon e
4. Well Location	DOX 159, Attesta	, INCW INICARCO	00211	430/		Varajo I			Ormo-Penn
Unit Letter	E : 1980	Feet From The	North Line an	\$ 660 660		rom The	-	ر کے Lin_	96915
Section]	12	Township 18 Sc	outh Range	27 East	NMPN	и Eddy			County
• ,	11. Date T.D. Reache		Compl. (Ready to Prod.)			R(B. RT, GR, etc			Casinghead
July 18, 1973 15, Total Depth	August 27, 19'		June 8, 1999 If Multiple Compl. How			, 3623 feet RK Rotary Tools	CB	Cable To	609 feet GL
10,372 feet			Zones? 1	Drilled B		· All	1	Capie It	N/A
19. Producing Interv	19. Producing Interval(s), of this completion - Top, Bottom, Name L. Wolfcamp-Cisco-Canyon 20. Was Directional Survey Made Yes								
21. Type Electric an						22. Was Well Co	ored		
	nder and Caliper L		action Laterolog,		ļ			No	·
	ed Neutron Forma	tion Density	CACING DE	CODD (D					
23. CASING SIZE	WEIGHT	LD /ET	DEPTH SET	HOLE SIZE	rt all				1OUNT PULLED
13-3/8"	N/A		40'	N/A	+	CEMENTING IN/A	RECORD	Alv	None
8-5/8"	32		1995'	11"		800 sacks circulated None			
5-1/2"	17		8869'	7-7/8"		1570 sacks circulated			None
								···	
	<u></u>		DIED DECORD		125		2216 226		
SIZE	TOP	BOTTOM	NER RECORD SACKS CEMENT	SCREEN	25. SIZE		BING REC		PACKER SET
				7	10,22	3-1/2"	7528		7528'
26. Perforation rec	cord (interval, size, and	d number)	,						
7570' to 7620',	7676' to 7736', 78	326' to 7834',	7858' to 7880',	DEPTH INTERVAL		AMOUNT AND			lus 4600 pounds
7886' to 7904',	7916' to <mark>7936',</mark> 79	944' to 7964',	7990' to 8042',	7570' to 8399	"	of rock salt a		rici, p	ius 4000 pourius
	8191' to 8201', 83	304' to 8319',	8395' to 8399'						
(2 jspf for total of	of 598 holes).		- DD	Drice					
28 Date First Productio	- D-0	dusting Mathod /	Flowing, gas lift, pumpin	ODUCTION		Well Charles (D			
N/A		duction Method (1	N/A	g - size ana type pump	יי	Weil Status (P.		- <i>in)</i> N/A	
Date of Test N/A	Hours Tested N/A	Choke Size N/A	Prod'n For Test Period	Oil – Bbl	Gas -	MCF	Water - Bbl.		Gas - Oil Ratio
Flow Tubing Press.	Casing Pressure	Calculated 24- Hour Rate	Oil - Bbl.	Gas - MCF	ı w	ater - Bbl.	Oil Gra	vity - AP	I - (Corr.)
29. Disposition of G	as (Sold. used for fuel,		<u> </u>		Д.,	· TA	st Witnesse	d Bv	
	(===================================		N/A			"		- - ,	
30. List Attachments	5	<u> </u>		ion Dancet					
3 ereby certify	that the informatio	n shown on both	Deviat sides of this form as	ion Report true and complete to	the b	est of my know	ledge and t	pelief	
	, nA	Prin					_		, ,
Signature	well Moor	l Nar	ne Varrell	Mooreritle Eau	M	gr.	Date	ןר ַ:	19 99

INSTRUCTIONS

This form is to be filed with the appropriate District Office of the Division not later than 20 days after the completion of any newly-drilled or deepened well. It shall be accompanied by one copy of all electrical and radio-activity logs run on the well and a summary of all special tests conducted, including drill stem tests. All depths reported shall be measured depths. In the case of directionally drilled wells, true vertical depths also be reported. For multiple completions, items 25 through 29 shall be reported for each zone. The form is to be filed in quintuplicate except on state land, where six copies are required. See Rule 1105.

INDICATE FORMATION TOPS IN CONFORMANCE WITH GEOGRAPHICAL SECTION OF STATE

		Southeast	ern New Mexico			Northweste	rn New Mexico	
T. Anhy		· ·	T. Canyon 8390	T. Ojo Ala	ımo		T. Penn. "B"	
T. Salt			T. Strawn 8894	T. Kirtland	T. Kirtland-Fruitland		T. Penn. "C"	
B. Salt			T. Atoka	T. Pictured	T. Pictured Cliffs		T. Penn. "D"	
T. Yate	s		T. Miss	T. Cliff Ho	ouse		70 T 1 111	
T. 7 Ri	vers		T. Devonian	T. Menefe		···	T. Madison	
T. Que			T. Silurian	T. Point L			T. Elbert	
T. Gray			T. Montoya				T. McCracken	
	Andres	2005	T. Simpson	T. Gallup			T. Ignacio Otzte	
T. Glor	_		T. McKee				T. Granite	
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TELEPHONE (505) 748-3311





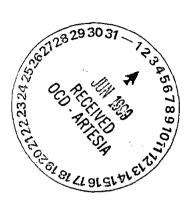
N.M. Oil Cons. Di. Jon 811 S. 1st Street REFILM, NMC8210391PANY

501 EAST MAIN STREET • P. O. BOX 159 ARTESIA, NEW MEXICO 88211-0159 FAX; (505) 746-6410 ACCTG (505) 746-6155 EXEC (505) 748-9077 ENGR (505) 746-4438 P / L

12-183-27E 30-015-20894

May 10, 1999

Mr. Tim Gumm State of New Mexico Energy, Minerals and Natural Resources Department Oil Conservation Division 811 South First Street Artesia, New Mexico 88210





RE: Re-Entry for Navajo Refining Company's Waste Disposal Well No. 2

Dear Mr. Gumm:

Navajo Refining Company (Navajo) has contracted Subsurface Technology, Inc. to re-enter, test and complete Waste Disposal Well No. 2 (WDW-2), formerly the Chukka Federal No. 2 operated by The Eastland Oil Company. The United States Department of the Interior, Bureau of Land Management approved the Application for Permit to Drill or Deepen on April 27, 1999. Subsequent approval from the State of New Mexico Oil Conservation Commission (OCD) was granted on Tuesday, May 4, 1999.

Navajo initiated field operations on Wednesday, May 5, 1999. The existing pumping equipment, rods, and tubing were removed from the wellbore. The perforations from 1446 feet to 1462 feet were squeezed using 100 sacks of Class 'H' cement (approximately 50 sacks of cement were displaced into the perforated interval). The cement was allowed to cure and drilled out to a total depth of 1922 feet (KB)(1911 feet below ground level).

On Sunday, May 9, 1999, the 8-5/8 inch surface casing, set from 1955 feet (KB) to surface, was pressure tested for internal mechanical integrity between 1922 feet (KB) and 30 feet (KB) using a packer set at 30 feet. The 8-5/8 inch surface casing was pressure tested to 660 pounds per square inch and monitored at the surface for one hour (Attachment A). The fluid used for testing was a clean fresh water fluid. A pressure loss of 1 psi (0.15%) was observed during the first 30 minutes of the test. A pressure loss of 2 psi (0.30%) was observed during the last 30 minutes of the test. The results from the pressure test confirmed internal mechanical integrity of the 8-5/8 inch surface casing from 1922 feet (KB) to 30 feet (KB).

1 Am

The 8-5/8 inch surface casing was originally set in an 11 inch open-hole to a depth of 1955 feet (KB) and cemented to surface using 700 sacks of Class 'H' cement with 2% gel and 100 sacks of Class 'H' neat. A total of 200 sacks of cement was recorded circulated to surface. The calculated volume between an 11 inch hole and 8-5/8 inch casing is (0.2407 cubic feet per foot X 1955 feet) 471 cubic feet. The volume of cement pumped is (1.18 cubic feet per sack X 800 sacks) 944 cubic feet for an excess of 473 cubic feet or 400 sacks circulated to surface. The calculated volume of cement and apparent volume of actual cement pumped indicated excess cement was circulated to surface.

On Sunday, May 9, 1999, Halliburton Logging Services completed a cement bond and microsiesmogram (same as a variable density log) logging survey within the 8-5/8 inch casing from a wireline total depth of 1919 feet (KB) to the surface (Attachment B). The results from the survey indicate a continuous column of cement from 1922 feet to surface with good bonding characteristics. The cement behind the 8-5/8 inch casing will provide an effective hydraulic seal to prevent the movement of groundwater fluids into the underground source of drinking water with a base at 473 feet.

Please review and approve the pressure testing and cement bond log results at your earliest convenience. Navajo will proceed with the mobilization of the drilling rig Wednesday, May 12, 1999 and begin re-entry of the WDW-2 wellbore according to the approved drilling program. Navajo will periodically contact the OCD, Artesia office with a status update of the re-entry operations. The Bureau of Land Management will be notified in sufficient time for a representative to witness the cementing of the 5-1/2 inch protection casing.

Should you have any questions or concerns, please call me at (505) 748-3311.

Sincerely yours,

Darrell Moore

Environmental Manager for Water and Waste

well Moore

c: Mr. David Glass

Bureau of Land Management Roswell Field Office 2909 West Second Street

Roswell, New Mexico 88201

Mr. Brian Rogers
Subsurface Technology, Inc.
7020 Portwest, Suite 100
Houston, Texas 77024

File: Injection Wells

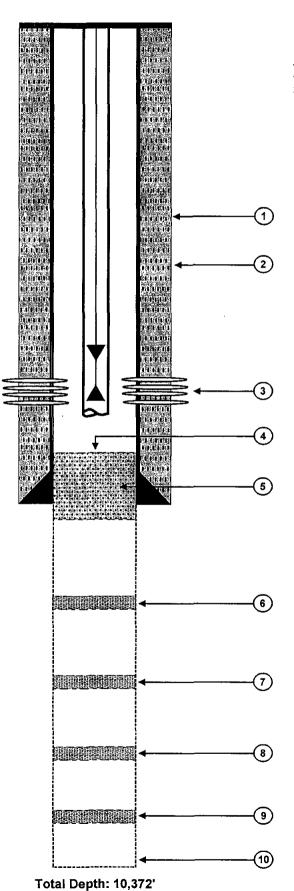
APPROVED

JUN 02 1999 (ORIG. SGD.) DAVID R. GLASS

AUTHORIZED OFFICER, MINERALS BUREAU OF LAND MANAGEMENT

SUBJECT TO LIKE APPROVAL BY STATE

Energy, Minerals & Natural Resources Revised March 12, 1999 Bill Swith First, Artsala, NM 82310 DOIL CONSERVATION DIVISION State Lease - 6 Copies Proposed Hochies, Santa Fe, NM 87305 AMENDED REPORT APPLICATION FOR PERMIT TO DRILL, RE-ENTER Operator Name and Address. Operat	PR-20-1	999 TUE	E 12:59	PM 713	880 324	48 .	- FA	X NO.				•	P. 0	12
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BELOW GROUND DETAIL

All depths are referenced to the kelly bushing elevation of 13 feet. The surface elevation is 3610 feet.

- 1. Base of the USDW at 473'.
- 2. Casing: 8-5/8", 32 lb/ft, set at 1995' in an 11" hole. Cemented to surface with 800 sacks of cement.
- 3. Perforations: 1446' 1462'.
- 4. PBTD: 1912'.
- 5. Cement Plug: 40 sacks from 1912' to 2045'.
- 6. Cement Plug: 50 sacks from 3620' to 3720'.
- 7. Cement Plug: 40 sacks from 5456' to 5556'.
- 8. Cement Plug: 50 sacks from 7435' to 7535'.
- 9. Cement Plug: 45 sacks from 9675' to 9775'.
- 10. Hole Size: 7-7/8".

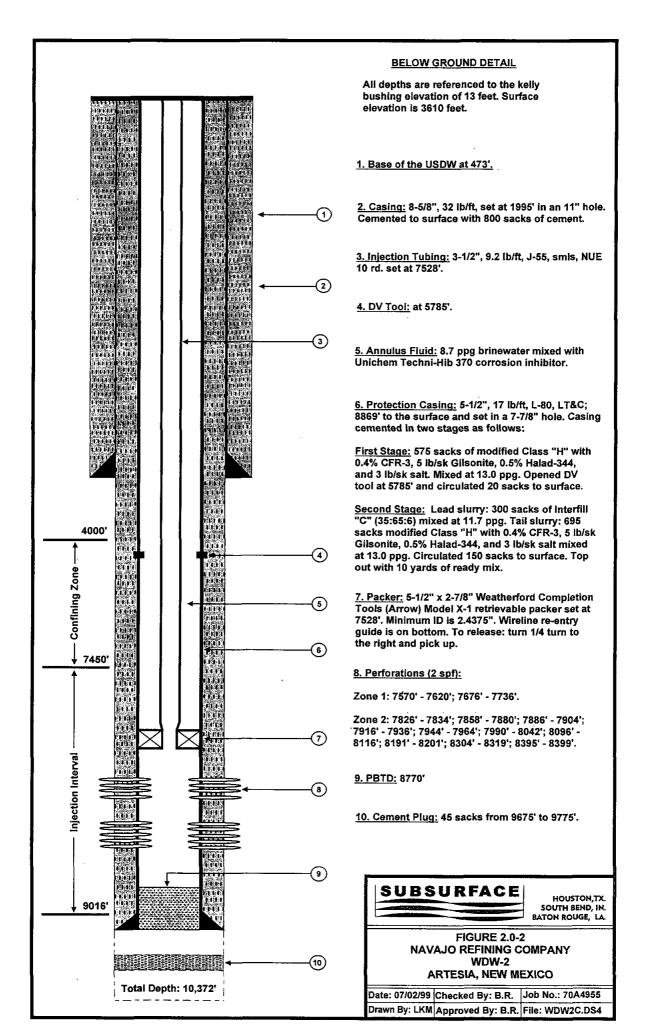


HOUSTON,TX.
SOUTH BEND, IN.
BATON ROUGE, LA.

FIGURE 2.0-1
THE EASTLAND OIL COMPANY
PLUGGED-BACK WELLBORE CONFIGURATION
CHUKKA FEDERAL No. 2

Date: 07/02/99 Checked By: B.R. Job No.: 70A4955

Drawn By: LKM Approved By: B.R. File: WDW2B.DS4



Form 3160-5 (September 2001)

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT

FORM APPROVED
OMB No. 1004-0135
Expires: January 31, 200

5.	Lease	Serial	No.

4	
•	

SUNDRY NOTICES AND REPORTS ON WELLS Do not use this form for proposals to drill or to re-enter an abandoned well. Use Form 3160-3 (APD) for such proposals.

6. If Indian, Allottee or Tribe Name

	,	·						
1100 1100	SUBMIT IN TRIPLICATE - Other instructions on reverse side						ement, Name and/or No.	
1. Type of Well	los memberary	ANDONED			0. 37-11.37			
Oil Well Gas Well	Other TEMPORARILY ABA	ANDONED			8. Well Name and No.			
Name of Operator NAVAJO REFINING COMPAN	rv				WDW-3 9. API Well No.			
3a. Address		3b. Phone N	lo. (include area	code)	30-015-265			
	0011	1	•	0040)			Exploratory Area	
PO BOX 159, ARTESIA, NM 8: 4. Location of Well (Footage, Sec.,		505-748-33	11				ON; PERMO-PENN	
4. Location of Well (Foolage, Sec.,	1, K., M., Of Survey Description)				11. County or			
790' FSL, 2250' FWL, 1-18S-27	E				EDDY			
12. CHECK API	PROPRIATE BOX(ES) TO	INDICATE	NATURE O	F NOTICE, RE	PORT, OR	OTHE	R DATA	
TYPE OF SUBMISSION			TYPE O	F ACTION				
	Acidize	Deepen		Production (Start/	Resume)	Wate	er Shut-Off	
Notice of Intent	Alter Casing	Fracture T	reat 🔲	Reclamation		Well	Integrity	
Subsequent Report	Casing Repair	New Cons	struction [Recomplete	Ε	Othe	r RECOMPLETE AS	
	Change Plans	Plug and A	Abandon 🔲	Temporarily Aba	ndon	CLA	ASS I INJECTION	
Final Abandonment Notice	Convert to Injection	Plug Back	: \B	Water Disposal		WE	LL	
Original well name was CHALK DRILL OUT BRIDGE PLUG AT INJECTION-TEST PERFORATI DRILL OUT BRIDGE PLUGS A SQUEEZE-CEMENT PERFORA DRILL OUT BRIDGE PLUG AT RUN CBL/VDL AND CALIPER PERFORATE 8540' - 8620' AND RUN INJECTIVITY TEST, AND RUN INJECTION/FALLOFF TE RUN DIFFERENTIAL TEMPER RUN RADIOACTIVE TRACER INSTALL INJECTION TUBING INSTALL WELL ANNULUS MO	BLUFF FEDERAL COM. NO. 7 7010' AND CLEAN OUT TO ONS AT 7050' - 7102', 7262' - T 7208' AND 7294'. CLEAN O. TIONS AT 7050' - 7102', 7262 T 7600' AND CLEAN OUT TO FROM 9051' TO SURFACE. T 7660' - 8450'. ACIDIZE IF NECESSARY. ST. ATURE SURVEY. SURVEY. AND PACKER TO APPROX.	7208'. 7278' TO PL OUT HOLE !' - 7278', AN TOP OF LII	THROÙGH PE ID 7304' - 7314 NER AT 9051'.	ERFS AT 7304'-7 '.				
14. I hereby certify that the foregoing Name (PrintedlTyped)	g is true and correct							
Trame (1 remeast ypea)			Title					
Signature			Date					
7 7 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	THIS SPACE FO	REDERA	L'OR STATE	OFFICEUSE	100		The state of the s	
Approved by (Signature)			Name (Printed/Ty	ped)	Ti	itle		
Compas of approval, if any, are a certaint the applicant holds lega which would entitle the applicant to company to compa	rant or Office			D	Pate			

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

GENERAL INSTRUCTIONS

This form is designed for submitting proposals to perform certain well operations, and reports of such operations when completed, as indicated on Federal and Indian lands pursuant to applicable Federal law and regulations. Any necessary special instructions concerning the use of this

form and the number of copies to be submitted, particularly with regard to local area, or regional procedures and practices, either are shown below or will be issued by, or may be obtained from the local Federal office.

SPECIFIC INSTRUCTIONS

Item 4 - Locations on Federal or Indian land should be described in accordance with Federal requirements. Consult the local Federal office for specific instructions.

Item 13 - Proposals to abandon a well and subsequent reports of abandonment should include such special information as is required by the local Federal office. In addition, such proposals and reports should include reasons for the abandonment; data on any former or present

productive zones, or other zones with present significant fluid contents not sealed off by cement or otherwise; depths (top and bottom) and method of placement of cement plugs; mud or other material placed below, between and above plugs; amount, size, method of parting of any casing, liner or tubing pulled and the depth to top of any left in the hole; method of closing top of well and date well site conditioned for final inspection looking to approval of the abandonment.

NOTICE

The Privacy Act of 1974 and the regulation in 43 CFR 2.48(d) provide that you be furnished the following information in connection with information required by this application.

AUTHORITY: 30 U.S.C. 181 et seq., 351 et seq., 25 U.S.C. 396; 43 CFR 3160.

PRINCIPAL PURPOSE: The information is used to: (1) Evaluate, when appropriate, approve applications, and report completion of subsequent well operations, on a Federal or Indian lease; and (2) document for administrative use, information for the management, disposal and use of National Resource lands and resources, such as: (a) evaluating the equipment and procedures to be used during a proposed subsequent well operation and reviewing the completed well operations for compliance with the approved plan; (b) requesting and granting approval to perform those actions covered by 43 CFR 3162.3-2, 3162.3-3 and 3162.3-4; (c) reporting the beginning or resumption of production, as required by 43 CFR 3162.4-1(c); and (d) analyzing future applications to drill or modify operations in light of data obtained and methods used.

ROUTINE USES: Information from the record and/or the record will be transferred to appropriate Federal, State, local or foreign agencies, when relevant to civil, criminal or regulatory investigations or prosecutions in connection with congressional inquiries or to consumer reporting agencies to facilitate collection of debts owed the Government.

EFFECT OF NOT PROVIDING THE INFORMATION: Filing of this notice and report and disclosure of the information is mandatory for those subsequent well operations specified in 43 CFR 3162.3-2, 3162.3-3, 3162.3-4.

The Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.) requires us to inform you that:

This information is being collected to evaluate proposed and/or completed subsequent well operations on Federal or Indian oil and gas leases.

Response to this request is mandatory.

BLM would like you to know that you do not have to respond to this or any other Federal agency-sponsored information collection unless it displays a currently valid OMB control number.

BURDEN HOURS STATEMENT

Public reporting burden for this form is estimated to average 25 minutes per response, including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding the burden estimate or any other aspect of this form to U.S. Department of the Interior, Bureau of Land Management (1004-0135), Bureau Clearance Officer, (WO-630), Mail Stop 401 LS, 1849 C St., N.W., Washington, D.C. 20240.

<u>District I</u> 1625 N. French Dr., Hobbs, NM 88240

<u>District II</u> 1301 W. Grand Avenue, Artesia, NM 88210

rict III

000 Rio Brazos Rd., Aztec, NM 87410

District IV

1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico

Energy, Minerals & Natural Resources Department

OIL CONSERVATION DIVISION

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

Form C-102

Revised June 10, 2003

Submit to Appropriate District Office

State Lease - 4 Copies

Fee Lease - 3 Copies

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number			² Pool Code		³ Pool Name						
30 -	- 015 -265	575				Nava	ajo Injection; P	'ermo-Penn			
⁴ Property Code				 	⁵ Property Na	ame		' We	'Well Number		
ļ	i				3						
7OGRID	No.				8 Operator Na	ame		, i	, Elevation		
				360	3609' GL;						
			363	3625' KB							
	•				¹⁰ Surface L	ocation					
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County		
N	1	18S	27E		790	South	2250	West	Eddy		
			11 Bott	tom Hole	Location If	Different From	Surface				
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County		
12	111 -	v mn 14 m		7.4. 15 0.4.							
Dedicated Acre	s 3 Joint of	r Infill "C	onsolidation C	Code 15 Orde	er No.						

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

			***************************************	12"
				¹⁷ OPERATOR CERTIFICATION
				I hereby certify that the information contained herein is true
				and complete to the best of my knowledge and belief.
				Signature
				Signame
				Printed Name
				·
				Title and E-mail Address
				Date
				¹⁸ SURVEYOR CERTIFICATION
				I hereby certify that the well location shown on this plat was
				plotted from field notes of actual surveys made by me or under
				my supervision, and that the same is true and correct to the
				best of my belief.
	į			
				Date of Survey
				Signature and Seal of Professional Surveyor:
2250	_			
2250	•			
	T			
	790			
	₩			Certificate Number
		,		

REENTRY PROCEDURE

NAVAJO REFINING COMPANY'S WDW-3 (PROPOSED)

790'FSL and 2250' FWL, Section 1, T18S, R27E Eddy County, New Mexico Chalk Bluff Federal Com. No. 1, API No. 30-015-26575

All depths are in feet below well's original kelly bushing height (RKB) of 16 feet above ground level. The original KB elevation is 3625 feet above mean sea level. The ground level elevation is 3609 feet above mean sea level.

Tops of Geologic Formations (from RKB)

The base of the lowermost USDW is at 420 feet.

San Andres	1976 feet	Lower Wolfcamp	7303 feet
Yeso	4030 feet	Cisco	7650 feet
Abo	5380 feet	Canyon	8390 feet
Wolfcamp	6745 feet	Strawn	8894 feet

Depth of Plugs

7010 feet in 7-inch casing above perforations 7050 feet to 7102 feet

7208 feet in 7-inch casing above perforations 7262 feet to 7278 feet

7294 feet in 7-inch casing above perforations 7304 feet to 7314 feet

7600 feet in 7-inch casing above perforations 7676 feet to 7678 and 7826 feet to 7830 feet

9800 feet in 4-1/2-inch liner above perforations 9861 feet to 9967 feet

Anticipated Formation Pressure

The expected bottom-hole pressure is 3448 pounds per square inch absolute (psia) at 9000 feet, for a gradient of 0.383 pounds per square inch (psi) per foot, or an equivalent

mud weight of 7.36 pounds per gallon (ppg). The bottom-hole pressure was determined from the pressure measured in Navajo's WDW-2, or 2813 psia, at 7570 feet. Navajo's WDW-2 is completed in the same interval proposed for WDW-3 and is located in 12-T18S-R27E, 3200 feet southwest of proposed WDW-3. The average specific gravity of the fluid in the Cisco and Canyon Formations is expected to be 1.025, which is the specific gravity of the fluid swabbed from WDW-2 in June 1999 from the interval between 7826 feet and 8399 feet. The expected bottom-hole pressure at 9000 feet in proposed WDW-3 is calculated below:

BHP (9000 feet) =
$$2813 \text{ psia} + (9000 \text{ feet} - 7570 \text{ feet}) \times 0.433 \text{ psi/ft} \times 1.025$$

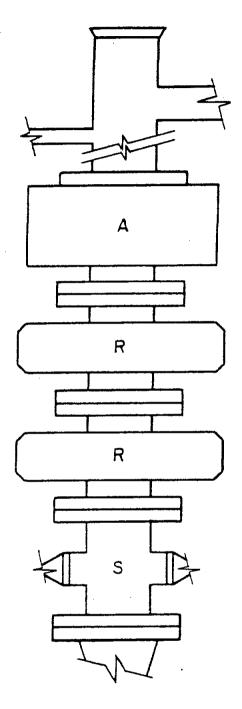
= 3448 psia

Reentry Procedure

- 1. Level location to accommodate a workover rig, pump, tanks, and ancillary equipment. Build a small working pit approximately 30 feet square and 3 feet deep with a plastic lining. Move in the rig, tank, shale shaker, and work string.
- 2. Install a 7-1/16-inch, 3000-psi double hydraulic blowout preventer (BOP) and a 7-1/16-inch, 3000-psi annular BOP (see Exhibit A for schematic). Pressure test the BOP stack and casing to 1500 psi for 30 minutes. Pick up a 6-1/8-inch bit, and sufficient 4-3/4-inch drill collars to drill out the cement plugs, on a 2-7/8-inch work string. Mix a tank of 8.5-ppg sodium chloride brine water for circulating fluid.
- 3. Run the bit to 7000 feet and circulate the wellbore fluid out of the casing into a frac tank for disposal. Drill out the cast iron bridge plug (CIBP), cement at 7010 feet, and clean out to the CIBP at 7208 feet. Circulate the hole clean and pump into the perforations from 7050 feet to 7102 feet to establish a rate and pressure for a pending squeeze cement job.
- 4. Drill out the CIBP at 7208 feet and clean out past the perforations from 7262 feet to 7278 feet and drill out the third CIBP at 7294 feet. Clean out below the perforations from 7304 feet to 7314 feet. Run a second injection test for injection rate and pressure comparison.

- 5. Pull the bit and run a retrievable squeeze packer on the work string. Set the packer at 7150 feet and test for communication between the perforations. Squeeze the perforations from 7262 feet to 7278 feet and 7304 feet to 7314 feet with approximately 100 sacks of neat cement (actual squeeze cement volume to be determined by the injection rate established previously), attempting to reach 1500 psi to 2000 psi squeeze pressure. Release the packer and reverse out any excess cement, then re-test the perforations to the squeeze pressure.
- 6. Re-set the packer at 6900 feet and squeeze the perforations from 7050 feet to 7102 feet as before.
- 7. Lay down the squeeze packer and drill out the cement to the CIBP at 7600 feet. Conduct a pressure test to 500 psi for 12 hours to confirm the squeeze cement will contain the annular fluid pressure required during injection operations.
- 8. Drill out the CIBP at 7600 feet and circulate to the top of the liner at 9051 feet. Circulate the casing clean with 8.5-ppg brine water. Pull the bit and lay down the drill collars.
- 9. Run a cement bond log with variable density (CBL/VDL) from the liner top to the surface, followed by a baseline multi-finger caliper log from the liner top to the surface.
- 10. Perforate the intervals 8540 feet to 8620 feet and 7660 feet to 8450 feet with 2 JSPF, using hollow steel carrier perforating guns.
- 11. Run the work string and retrievable packer to 7600 feet. Swab, or backflow, the perforated interval to recover a representative sample of the formation water for laboratory analysis. Monitor the recovered fluid for hydrogen sulfide.
- 12. Conduct a short injectivity test with 8.5-ppg brine water to determine the need for stimulation. If required, stimulate the perforations with acid (type and amount to be determined from injectivity results), followed by 500 barrels of 8.5-ppg brine water.

- 13. Pull the work string and lay it down. Run a surface readout pressure gauge, with memory backup, to 7600 feet. Conduct an injection test down the casing at 420 gallons per minute for 12 hours (7200 barrels). Shut the well in and record the pressure falloff for a minimum of 12 hours.
- 14. Pull the gauges and run a differential temperature survey from surface to 9100 feet. Run a radioactive tracer survey to demonstrate mechanical integrity.
- 15. Run a tubing conveyed injection packer on 4-1/2-inch, 11.60 lb/ft, K-55, LT&C, 8rd injection tubing. Set the packer at approximately 7600 feet. Fill the annular space with 8.5-ppg brine water containing oxygen scavenger and corrosion inhibitor. Land the injection tubing in the wellhead and install the upper section.
- 16. Pressure test the annulus as required by New Mexico regulations.
- 17. Install well annulus monitoring equipment and prepare the well for injection.



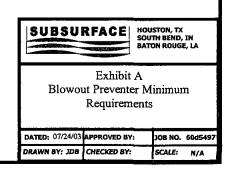
A = ANNULAR BLOWOUT PREVENTER 7-1/16", 3000 psi working pressure

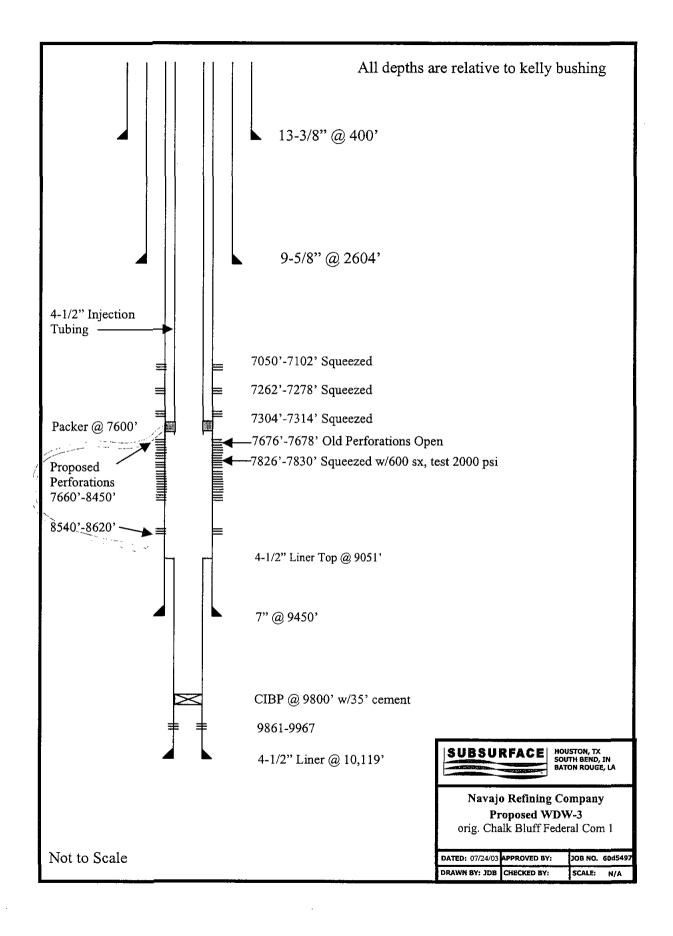
R = RAM TYPE BLOWOUT PREVENTER 7-1/16", 3000 psi working pressure

S = DRILLING SPOOL WITH SIDE OUTLETS 7-1/16", 3000 psi working pressure

Manual Choke Manifold 2", 3000 psi working pressure

Source: API RP 53, Recommended Practices for Blowout Prevention EquipmentSystems





SURFACE USE PLAN

NAVAJO REFINING COMPANY PROPOSED WDW-3 790' FSL, 2250' FWL, 1-T 18S-R27E EDDY COUNTY, NEW MEXICO

- 1. Existing Roads: Existing roads that lead to the proposed drillsite are shown on Exhibit A.
- 2. Access Roads To Be Constructed: No new access road is proposed.
- 3. <u>Location of Existing Wells</u>: Existing wells within one mile of proposed WDW-3 are shown on Exhibit B.
- 4. <u>Location of Proposed Facilities If Well Is Completed</u>: The well will be shut in after completion and testing.
- 5. <u>Location and Type of Water Supply</u>: Water for reentry, testing, and completion operations will be purchased from a commercial water hauler.
- 6. Source of Construction Materials: No construction materials will be required.
- 7. <u>Methods of Handling Waste Disposal</u>:
 - A. Drill cuttings will be disposed of in the drilling pits.
 - B. Drilling fluids will be allowed to evaporate in the drilling pits until the pits are dry.
 - C. Water produced during tests will be disposed of in the drilling pits.
 - D. Trash, waste paper, garbage, and junk will be buried in a trash pit and covered with a minimum of 24 inches of dirt. All waste material will be contained to prevent scattering by the wind.
 - E. All trash and debris will be buried or removed from the wellsite after finishing drilling and/or completion operations.

8. Ancillary Facilities: None anticipated.

9. Wellsite Layout:

- A. The existing well pad will be leveled to accommodate a workover rig, pump, tanks, and ancillary equipment.
- B. Existing topsoil to a depth of 6 inches will be lifted and stockpiled at the uphill end of the well pad. The stockpiled topsoil will be located uphill to avoid mixing with subsurface materials.
- C. The well pad will be surfaced with material found in place.
- D. A small working pit will be constructed to hold drilling fluids and cuttings. The approximate dimensions of the pit will be 30 feet x 30 feet x 3 feet.
- E. The working pit for drilling fluids and cuttings will be lined with 6-mil plastic.

10. Plans for Restoration of Surface:

- A. After completion of drilling and/or completion operations, all equipment and other material not needed for operations will be removed. Pits will be filled and the location cleaned of all trash and junk.
- B. Any unguarded pits containing fluids will be fenced until they are filled.
- C. After abandonment, all equipment, trash, and junk will be removed and the location cleaned.
- D. The stockpiled topsoil will be spread over the surface of the location.
- 11. Surface Ownership: U.S. Department of Interior, Bureau of Land Management.
- 12. <u>Archaeological Survey</u>: Navajo Refining Company is conducting an archeological survey. The report of the survey will be submitted by Navajo under separate cover.
- 13. <u>Operator's Representatives</u>: Representatives responsible for assuring compliance with the approved Surface Use Plan:

Mr. Darrell Moore Navajo Refining Company Post Office Box 159 Artesia, New Mexico 88211 505/748-3311 Mr. Jim Bundy Subsurface Technology, Inc. 7020 Portwest Drive, Suite 100 Houston, Texas 77024 713/880-4640

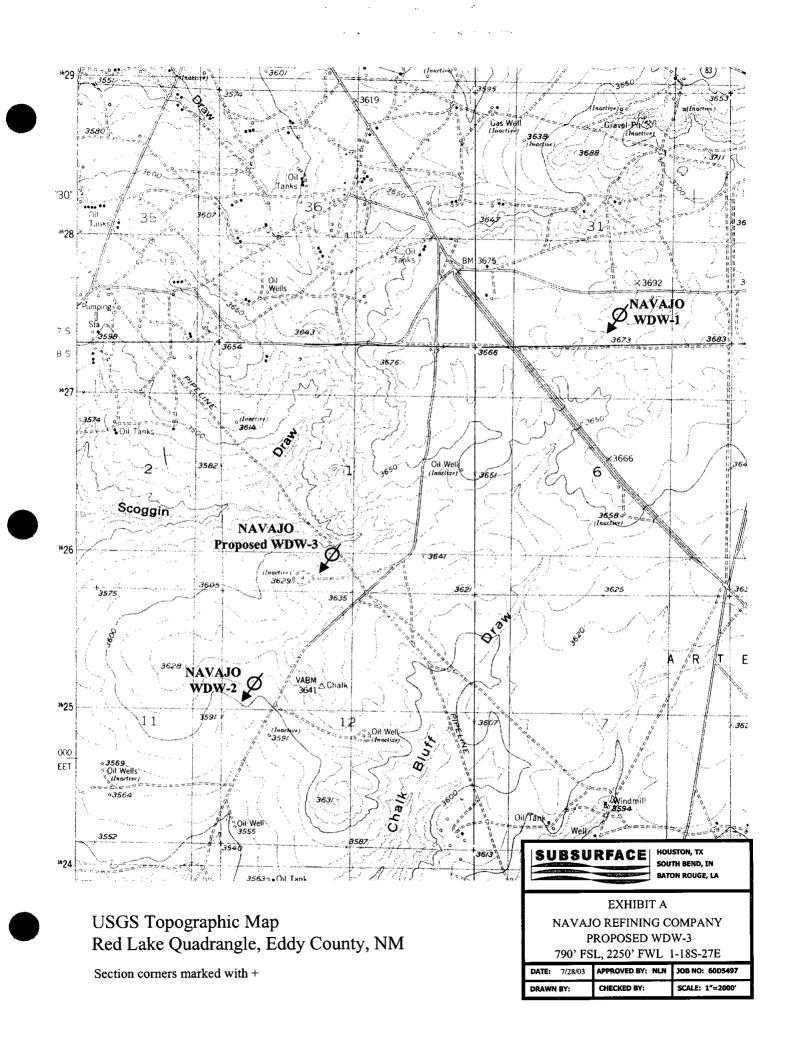
Exhibits

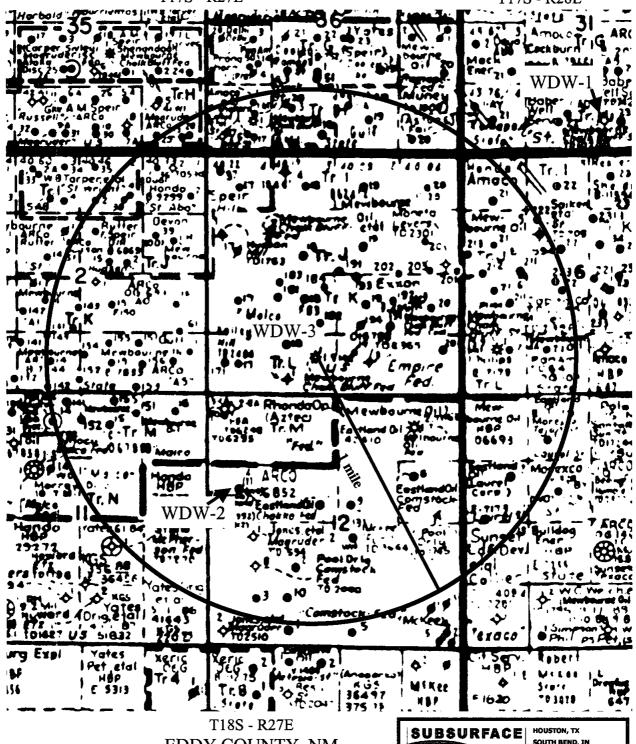
- A. Topographic Map
- B. Oil and Gas Map

14. Certification:

I hereby certify that I, or persons under my direct supervision, have inspected the proposed drillsite and access route; that I am familiar with the conditions that exist; that the statements made in this plan are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed by Navajo Refining Company and its contractors and subcontractors in conformity with this plan and the terms and conditions under which it is approved.

Date	Signature
	Name
	Title
	Navajo Refining Company
	Company





EDDY COUNTY, NM

EXHIBIT B WELLS WITHIN 1 MILE OF NAVAJO REFINING COMPANY PROPOSED WDW-3 DATED: 7/28/03 APPROVED BY: NLN JOB NO.

CHECKED BY:

DRAWN BY:

BATON ROUGE, LA

SCALE:

Map courtesy of Midland Map Company

Oil Conservation Division 1220 South St. Francis Dr. Santa Fe, New Mexico 87505

FORM C-108 Revised June 10, 2003

APPLICATION FOR AUTHORIZATION TO INJECT

	PURPOSE: Secondary Recovery Pressure Maintenance X Disposal Storage
	Application qualifies for administrative approval? Yes X No
II.	OPERATOR: Navajo Refining Company
	ADDRESS: P.O. Box 159, Highway 82 East, Artesia, NM 88211
	CONTACT PARTY: Darrell Moore, Environmental Manager-Water and Waste PHONE: 505-748-3311
III.	WELL DATA: Complete the data required on the reverse side of this form for each well proposed for injection. Additional sheets may be attached if necessary.
IV.	Is this an expansion of an existing project? X Yes No Revise WDW-3 location. If yes, give the Division order number authorizing the project: Discharge Plan Permit UIC-CL1-008-1
V.	Attach a map that identifies all wells and leases within two miles of any proposed injection well with a one-half mile radius circle drawn around each proposed injection well. This circle identifies the well's area of review.
VI.	Attach a tabulation of data on all wells of public record within the area of review which penetrate the proposed injection zone. Such data shall include a description of each well's type, construction, date drilled, location, depth, record of completion, and a schematic of any plugged well illustrating all plugging detail.
VII.	Attach data on the proposed operation, including:
	 Proposed average and maximum daily rate and volume of fluids to be injected; Whether the system is open or closed; Proposed average and maximum injection pressure; Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water; and, If injection is for disposal purposes into a zone not productive of oil or gas at or within one mile of the proposed well, attach a chemical analysis of the disposal zone formation water (may be measured or inferred from existing literature, studies, nearby wells, etc.).
*VIII	Attach appropriate geologic data on the injection zone including appropriate lithologic detail, geologic name, thickness, and depth. Give the geologic name, and depth to bottom of all underground sources of drinking water (aquifers containing waters with total dissolved solids concentrations of 10,000 mg/l or less) overlying the proposed injection zone as well as any such sources known to be immediately underlying the injection interval.
IX.	Describe the proposed stimulation program, if any.
*X.	Attach appropriate logging and test data on the well. (If well logs have been filed with the Division, they need not be resubmitted)
*XI.	Attach a chemical analysis of fresh water from two or more fresh water wells (if available and producing) within one mile of any injection or disposal well showing location of wells and dates samples were taken.
XII.	Applicants for disposal wells must make an affirmative statement that they have examined available geologic and engineering data and find no evidence of open faults or any other hydrologic connection between the disposal zone and any underground sources of drinking water.
XIII.	Applicants must complete the "Proof of Notice" section on the reverse side of this form.
XIV.	Certification: I hereby certify that the information submitted with this application is true and correct to the best of my knowledge and belief.
	NAME: Darrell Moore TITLE: EAV. Mgr. for Waters Waite SIGNATURE: DATE: 9/17/03
	SIGNATURE: DATE: 9/17/03
*	E-MAIL ADDRESS: Carrel Prayago - refining. com If the information required under Sections VI, VIII, X, and XI above has been previously submitted, it need not be resubmitted. Please show the date and circumstances of the earlier submittal:

I. WELL DATA

- A. The following well data must be submitted for each injection well covered by this application. The data must be both in tabular and schematic form and shall include:
 - (1) Lease name; Well No.; Location by Section, Township and Range; and footage location within the section.
 - (2) Each casing string used with its size, setting depth, sacks of cement used, hole size, top of cement, and how such top was determined.
 - (3) A description of the tubing to be used including its size, lining material, and setting depth.
 - (4) The name, model, and setting depth of the packer used or a description of any other seal system or assembly used.

Division District Offices have supplies of Well Data Sheets which may be used or which may be used as models for this purpose. Applicants for several identical wells may submit a "typical data sheet" rather than submitting the data for each well.

- B. The following must be submitted for each injection well covered by this application. All items must be addressed for the initial well. Responses for additional wells need be shown only when different. Information shown on schematics need not be repeated.
 - (1) The name of the injection formation and, if applicable, the field or pool name.
 - (2) The injection interval and whether it is perforated or open-hole.
 - (3) State if the well was drilled for injection or, if not, the original purpose of the well.
 - (4) Give the depths of any other perforated intervals and detail on the sacks of cement or bridge plugs used to seal off such perforations.
 - (5) Give the depth to and the name of the next higher and next lower oil or gas zone in the area of the well, if any.

XIV. PROOF OF NOTICE

All applicants must furnish proof that a copy of the application has been furnished, by certified or registered mail, to the owner of the surface of the land on which the well is to be located and to each leasehold operator within one-half mile of the well location.

Where an application is subject to administrative approval, a proof of publication must be submitted. Such proof shall consist of a copy of the legal advertisement which was published in the county in which the well is located. The contents of such advertisement must include:

- (1) The name, address, phone number, and contact party for the applicant;
- (2) The intended purpose of the injection well; with the exact location of single wells or the Section, Township, and Range location of multiple wells;
- (3) The formation name and depth with expected maximum injection rates and pressures; and,
- (4) A notation that interested parties must file objections or requests for hearing with the Oil Conservation Division, 1220 South St. Francis Dr., Santa Fe, New Mexico 87505, within 15 days.

NO ACTION WILL BE TAKEN ON THE APPLICATION UNTIL PROPER PROOF OF NOTICE HAS BEEN SUBMITTED.

NOTICE: Surface owners or offset operators must file any objections or requests for hearing of administrative applications within 15 days from the date this application was mailed to them.

I. PURPOSE

Navajo Refining Company (Navajo) submits this application to construct and operate three nonhazardous Class I effluent disposal wells. The waste stream proposed for injection is exempt and nonexempt nonhazardous oilfield wastes that are generated exclusively by Navajo at its refinery in Artesia, New Mexico. The waste water will be transported to the injection wellsites by pipeline.

In February 1998, Navajo submitted an application to the New Mexico Oil Conservation Division (OCD) for permission to reenter, test, and complete the Mewbourne Oil Company's Chalk Bluff 31 State No. 1 well, which is located in Section 31, T17S, R28E, Unit Letter O, in Eddy County, New Mexico. Approval for the reentry and testing was granted by the OCD by letter dated May 21, 1998. The reentry and testing was completed on August 4, 1998. The reentry and completion report for Navajo's WDW-1 was prepared by Subsurface Technology, Inc. (Subsurface), formerly Envirocorp Services & Technology, Inc., and submitted to the OCD in September 1998.

On May 1, 1998, Navajo submitted the original version of this discharge plan application and application for authorization to inject. On July 14, 1998, OCD wrote "Approval of Discharge Plan UIC-CLI-008-1" for Navajo's proposed wells. The approval was revised by OCD on August 4, 1998.

In April 1999, Navajo requested a modification of the discharge plan to revise the location of proposed WDW-2. The location of proposed WDW-2 that was approved on July 14, 1998, was 2310 feet FNL and 1500 feet FWL of Section 6, T18S, and R28E. Instead, Navajo proposed to convert an existing well to proposed WDW-2, Eastland Oil Company's Chukka Federal No. 2 well (formerly Fred Pool Drilling, Inc., originally the Amoco Production Diamond Federal Gas Com. No. 1). The well is located 1980 feet FNL and 660 feet FWL of Section 12, T18S, R27E.

The permit modification to change the location of WDW-2 was approved by the OCD on May 3, 1999. In May and June 1999, Navajo recompleted WDW-2. The reentry and completion report for Navajo's WDW-2 was prepared by Subsurface and submitted to the OCD in July 1999.



Navajo now requests a modification of the discharge plan to revise the location of proposed WDW-3. The original permitted location of proposed WDW-3 is 778 feet FNL and 995 feet FWL of Section 6, T18S, R28E. Instead, Navajo proposes to convert an existing well to proposed WDW-3. The well is the Navajo Chalk Bluff Federal Com. No. 1 well (originally operated by Mewbourne Oil Company). The well is located 790 feet FSL and 2250 feet FWL of Section 1, T18S, R27E. The total depth of the well is 10,120 feet.

The injection zone consists of porous intervals in the lower Wolfcamp Formation and the Cisco and Canyon Formations between 7450 feet and 9016 feet below the kelly bushing (KB) elevation in WDW-1, between 7270 feet and 8894 feet below the KB elevation in WDW-2, and between 7303 feet and 8894 feet below KB in proposed WDW-3.

BLM SUNDRY NOTICE?



ATTACHMENT III-2

WDW-2 INJECTION WELL DATA SHEET AND WELL SCHEMATIC



ATTACHMENT III-2

INJECTION WELL DATA SHEET

OPERATOR: Navajo Refining Company LEASE: WDW-2

1980' FNL, 650' FWL 12 T18S

Footage Section Township Range

WELL CONSTRUCTION DATA

Surface Casing

Size 8-5/8" Cemented with 800 sx

TOC Surface feet determined by Circulated 200 sacks to surface

Hole Size 11" Set at 1995 feet

Long String

Size 5-1/2" Cemented with 1570 sx

TOC Surface feet determined by Cement bond log (5/28/99)

Hole Size 7-7/8" Set at <u>8869 feet</u>

Total Depth 10,372', Plugged back to 8770'

Injection Interval

7270 feet to 8894 feet, perforated

(perforated or open-hole; indicate which)

Perforations

Zone 1: 7570'-7620'; 7676'-7736'

Zone 2: 7826'-7834'; 7858-7880'; 7886-7904'; 7916'-7936'; 7944-7964'; 7990'-8042'; 8096'-8116'; 8191'-8201';

8304'-8319'; 8395'-8399'

Tubing size 3-1/2" lined with not lined set in a retrievable packer at 7528 feet. Other type of tubing/casing seal if applicable not applicable.



R27E

ATTACHMENT III-2 (Continued)

OTHER DATA

1.	Is this a new well drilled for injection? Yes _X No
	If no, for what purpose was the well originally drilled? The well was drilled in 1973 as an exploratory well.
2.	Name of the injection formation: Lower Wolfcamp, Cisco, and Canyon Formations
3.	Name of Field or Pool (if applicable): Navajo Injection; Permo-Penn
4	Has the well ever been perforated in any other zones(s)? List all such perforated intervals and give plugging detail,
	i.e., sacks of cement or plug(s) used. Yes. 1446 feet to 1456 feet, 1459 feet to 1462 feet. Perforations were squeezed on May 5-8, 1999, when Navajo recompleted the well.
5.	Give the names and depths of any over or underlying oil or gas zones (pools) in the area:
	Within one mile: Queen and Grayburg (1450 feet to 2000 feet), San Andres (200 feet to 3600 feet),
	Abo (5400 feet to 6300 feet), and Morrow (9900 feet)



ATTACHMENT III-3

INJECTION WELL DATA SHEET

790' FSL, 2250' FWL	1-T18S-R27E				
Footage Location	Section	Township	Range		
WELL CONSTRUCTION	N DATA	•			
Surface Casing					
Size <u>13-3/8"</u>			sacks by 1" line		
TOC <u>Surface</u>	feet determin	ned by <u>Cementing thro</u>	ugh 1" line		
Hole Size <u>17-1/2</u>	Set at <u>400</u> :	feet			
Intermediate Casing					
Size <u>9-5/8"</u>	Cemented w	ith 1025 sacks			
TOC <u>Surface</u>	feet determi	ned by Circulating to s	urface		
Hole Size <u>12-1/4"</u>	Set at <u>2604</u>	feet			
Long String					
Size <u>7"</u>	Cemented w	ith 1350 sacks			
TOC <u>1547</u>	feet determin	ned by <u>Calculation</u>	_		
Hole Size <u>8-1/2"</u>	Set at <u>9450</u>	feet			
Liner					
Size <u>4-1/2"</u>	Cemented w	ith <u>175 sacks</u>	_		
TOC <u>9051</u>	feet determi	ned by <u>Calculation</u>	_		
Hole Size 6"	Set at <u>905</u>	1 to 10119 feet	_		
Total Depth 10120 feet	<u>; </u>				
Injection Interval					
feet KB to	8890 feet KE	, perforated			
(perforated or open-hole; in	dicate which)				
Tubing size _4-1/2 _ lined v	with <u>not lined</u> se	t in a <u>retrievable</u> pa	cker at <u>approximately</u>	v 6600 feet. Other type	o!
tubing/casing seal if applical	ble latch-in seal as	sembly			



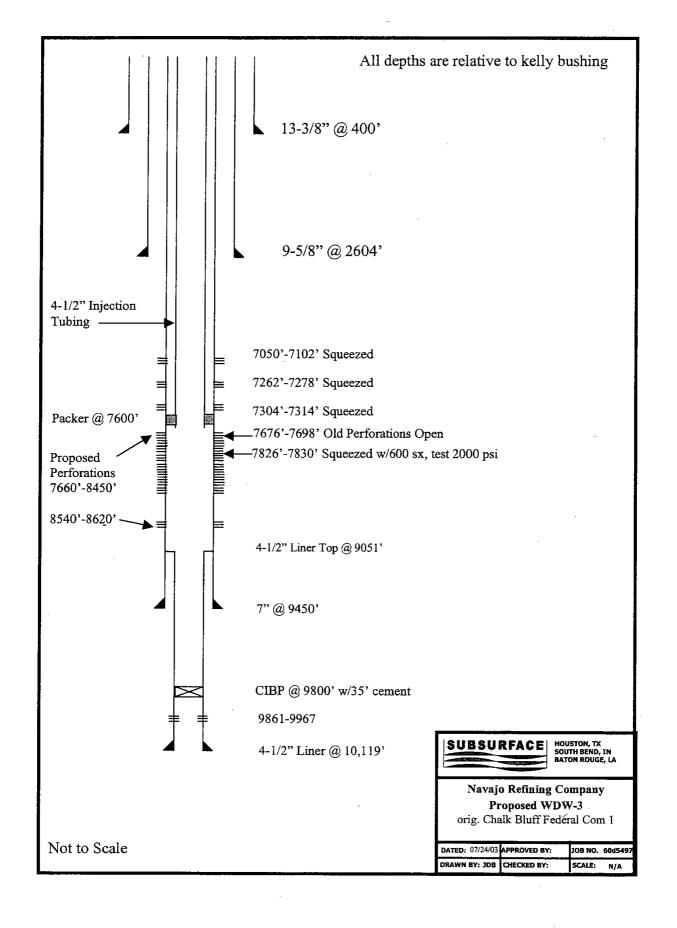
ATTACHMENT III-3 (Continued)

INJECTION WELL DATA SHEET

OTHER DATA

l.	Is this a new well drilled for injection? Yes X_ No
2.	Name of the injection formation: <u>Lower Wolfcamp, Cisco, and Canyon Formations</u>
3.	Name of Field or Pool (if applicable): <u>Navajo Injection; Permo-Penn</u>
ł .	Has the well ever been perforated in any other zones(s)? List all such perforated intervals and give plugging detail i.e., sacks of cement or plug(s) used. 9861' - 9882', CIBP at 9800' with 35' of cement; 7826' - 7830', squeezed with 600 sacks; 7676' - 7678', CIBP at 7600' with 35' of cement; 7304' - 7314', CIBP at 7294'; 7262' - 7278', CIBP at 7208'; 7050' - 7102', CIBP at 7010'
5.	Give the names and depths of any over or underlying oil or gas zones (pools) in the area:
	Within one mile: Yates (500 feet), Seven Rivers (600 feet), Grayburg (1600 feet to 1900 feet),
	San Andres (2000 feet), Abo (5400 feet to 6200 feet), and Morrow (9900 feet)





IV. EXISTING PROJECT

Navajo recompleted and tested WDW-1 in July and August 1998 in the Cisco portion of the injection zone. Navajo began injecting into WDW-1 on September 23, 1999.

Navajo recompleted and tested WDW-2 in May and June 1999, in the Lower Wolfcamp and Cisco portions of the injection zone. Injection into WDW-2 began on September 23, 1999.

Navajo intends to reenter, test, and recomplete a currently temporarily abandoned well, the Navajo Chalk Bluff Federal Com. No. 1 (formerly operated by Mewbourne Oil Company). Pending successful tests, Navajo proposes to convert the well to its effluent disposal well WDW-3.



VI. INJECTION ZONE WELLS

VI.A Protocol for Identifying Wells

Search Protocol for Non-Freshwater Artificial Penetrations

As Navajo's agent, Subsurface employed the services of Federal Abstract Company in the research and acquisition of data concerning non-freshwater wells. Federal Abstract understands the necessity for complete records and makes every diligent effort to complete this task. Subsurface and Federal Abstract examined public and private sources of data to identify producing and abandoned oil and gas wells and disposal wells in the AOR.

The Oil Conservation Division (OCD) is the primary agency in which files are researched for oil and gas well records. The OCD is the state repository for oil and gas well and Class II well records, as the state regulatory authority for the oil and gas industry. In order to retrieve well records, the following general procedure is used for researching each well within a given area.

Map Review

Before the retrieval process can begin, it is necessary to know the operator, lease name, county in which the well is located, and the township, range, and section in which the well is found. This information is normally found on commercially prepared oil and gas base maps. Maps are produced by commercial firms, who obtained the data to build the oil and gas bases from "scout" tickets (completion information received from individual oil companies) in the early years and then, in later years, from the OCD itself. The commercial firms continually update the maps by plotting information filed by oil and gas operators with the OCD. Changes in the status of existing wells are noted, as well as information on new wells. Attachment V-1 is a modified version of the oil and gas base map provided by Midland Map Company, a recognized commercial supplier of oil and gas base maps for southeastern New Mexico.



Well Records Review

The OCD filing system is the best source of oil and gas well data in New Mexico. Microfiche and microfilm files of historical well records are searched as well as the hard copy files of well records not yet placed on microfilm. These files are organized by quarter-quarter section, township, and range.

Scout Tickets

Scout tickets were available for the wells in the AOR from IHS Energy Group (formerly Petroleum Information Dwights LLC). Information about nearly every well in the AOR was available, including some wells for which records were not available from the OCD. Scout tickets were also available from The Subsurface Library, Midland, Texas.

OCD Online

Well information is also available for downloading from the website maintained by the OCD. The spreadsheet of information for wells in the Artesia district, which includes the Navajo vicinity, was used as the source for well API numbers and as a guide to current well status and operator. The specific file used was "artesia030521.xls." The file was downloaded from the OCD's FTP site on July 8, 2003.

VI.B Well Data Tabulations and Well Records

Two hundred ninety-five (295) well locations have been identified within or slightly beyond one mile of WDW-1, WDW-2, and proposed WDW-3. The well locations are shown in Attachment V-1. A tabulation of total depth, status, and drill date for all of the wells in the one-mile AOR is provided in Attachment VI-1. Wells in Attachment VI-1 are identified with Map ID numbers that are keyed to the map in Attachment V-1. Scout tickets for the wells in the AOR for which no records were available from the OCD are presented as Attachment VI-2A.



Well construction data for wells within the one-mile AOR that penetrate the Injection Zone are tabulated in Attachment VI-1A.

Wells That Do Not Penetrate the Injection Zone (264 Wells)

Two hundred sixty-four (264) of the wells are documented to have been drilled to depths of less than 7270 feet, which coincides with the top of the injection zone in WDW-2. The top of the injection zone in WDW-1 and proposed WDW-3 is 7450 feet and 7303 feet, respectively. The wells did not penetrate the proposed injection zone. These wells are:

Map ID Nos. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 82, 84, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 121, 122, 123, 125, 126, 127, 128, 129, 130, 131, 133, 135, 136, 138, 139, 140, 141, 142, 143, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 158, 159, 160, 162, 165, 166, 354, 355, 356, 358, 359, 595, 748, 749, 750, 751, 752, 753, 755, 756, 757, 758, 765, 766, 772, 773, 774, 779, 781, 785, 786, 789, 791, 793, 796, 797, 799, 800, 801, 802, 805, 806, 807, 808, 812, 813, 814, 836, 837, 838, 839, 840, 841, 842, 843, 844, 846, 849, 850, 852, 853, 854, 856, 857, 858, 859, 860, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 888, 895, 896, 897, 901, 910, 912, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 936, 938, 939, 940, and 943.

Mis-Plotted or Duplicate Locations (9 Well Spots)

Nine (9) well locations appear on Attachment V-1 for which well records could not be found in the files of the OCD and for which scout tickets were not available. All of these well locations are mis-plotted or duplicate locations.



Five (5) of these locations (Map ID Nos. 30, 108, 119, 132, and 137) appear only on a commercial base map prepared by the Midland Map Company (Attachment V-1). These locations do not appear on a commercial base map prepared by the Geomap Company or on the lease map prepared by Midland Map Company. A representative of Midland Map Company confirmed that four of the five well locations on the oil and gas base map, Map ID Nos. 108, 119, 132, and 137, are duplicate locations for existing wells. The Midland Map representative stated that the locations will be removed from the map. Map ID No. 30 is the incorrect, duplicate location plotted on the Midland Map base map for Map ID No. 14, the Arco Empire Abo Unit G No. 20 (formerly the Kersey Ramapo No. 5). The correct location of Map ID No. 14 is shown on the Midland Map lease map.

Four (4) well locations (Map ID Nos. 754, 792, 795, and 942) are mis-plotted on Attachment V-1. These mis-plotted locations are incorrect duplicate locations for other wells, as discussed below.

Map ID No. 754 is the incorrect location for Map ID No. 756, the ARCO Permian Empire Abo Unit K No. 17. The well spot on the Midland Map map for Map ID No. 754 is labeled "17." The form "Sundry Notices and Reports on Wells" that was filed on May 18, 1959, for Map ID No. 756 states that the form was "Filed to show change in well location..." A copy of the original "Notice of Intention to Drill" with the originally permitted location was not available from the files of the OCD in Santa Fe. The Midland Map Company's lease and oil and gas base maps show the incorrect location of the well as Map ID No. 754. Subsurface plotted the correct location for this well as Map ID No. 756 on Attachment V-1. A representative of Midland Map Company confirmed that Map ID No. 756 is the correct location for the well. The representative stated that the well will be correctly spotted on the company's new maps and that the well spot for Map ID No. 754 will be removed. Information to support the conclusion that Map ID No. 754 is mis-plotted is included in Attachment VI-2B.

Map ID No. 792 is an incorrect location on the Midland Map oil and gas base map for Map No. 814, the ARCO Permian Empire Abo Unit K No. 141. Midland Map Company's lease map shows Map ID No. 814 but not Map ID No. 792. A



representative of Midland Map Company confirmed that the correct location for the well is the location of Map ID No. 814. The representative said that the well spot for Map ID No. 792 will be removed from the oil and gas base map and that the location for Map ID No. 814 will be added to the oil and gas base map.

Map ID No. 795 is an incorrect location for Map ID No. 765. Midland Map shows the location of Map ID No. 795 on both their lease map and their oil and gas base map. Map ID No. 795 is labeled on Midland Map Company's lease map as Well No. 1. A representative of Midland Map Company concluded after examining their series of historical maps that Map ID No. 795 was permitted sometime between 1959 and 1960. Map ID No. 765 was permitted in 1959 as the William Hudson Hudson-State Abo No. 1. A discrepancy in the location of Map ID No. 765 is evident upon examination of the "Notice of Intention to Drill." The location for Map ID No. 765 was typed in on the "Notice of Intention to Drill" as 990 feet from the South line and 330 feet from the East line of the section, which is the location of Map ID No. 795. On this form, the word South was crossed out, and North was written in by hand. On the plat of the section in the upper left portion of the same form, the well is spotted at the location of Map ID No. 765. Map ID No. 795 was spotted by Midland Map Company on their maps at the typed-in location on the "Notice of Intention to Drill." The same well was also spotted at the correct location, that of Map ID No. 765. Information to support the conclusion that Map ID No. 795 is mis-plotted is included in Attachment VI-2C.

Map ID No. 942 is an incorrect location for Map ID No. 89. Map ID No. 942 is API No. 30-015-06250, included in the well data spreadsheet available on the OCD website on July 8, 2003, "artesia030521.xls." In the spreadsheet, this well is the Arco Oil and Gas Company Empire Abo UT I. No records are found in the OCD's files for this well in this location. The well records on file for Map ID No. 89 (API No. 30-015-02625) are included in Attachment VI-2D. The records include three sundry notices filed for API No. "30-015-0625." Map ID No. 89 was operated by ARCO Permian (and its predecessors and successors) as the Empire Abo Unit "I" No. 23 beginning in 1973. Because of the similarity in the API number, well name, and locations of the two wells, the API number and



location of Map ID No. 942 are considered to be incorrect. Map ID No. 942 is considered to be the same well as Map ID No. 89.

The mis-plotted well locations are:

Map ID Nos. 30, 108, 119, 132, 137, 754, 792, 795, and 942.

Expired Permits and Revised Locations (4 Wells)

Three wells, Map ID Nos. 934, 935, and 944, were permitted and never drilled. The permits were allowed to expire.

Map ID No. 120 is the original proposed location for Navajo's WDW-3. No well has been drilled at this location.

Proposed Locations (2 Wells)

Map ID Nos. 937 and 941 are permitted locations that have not yet been drilled.

Well with No Records (1 Well)

Map ID No. 778 was drilled to the Abo or shallower, and did not penetrate the injection zone. The well is shown as an oil well on the Midland Map. No records for the well are available from the OCD's files. Available information for the well is included in Attachment VI-2E. A representative of Midland Map Company stated that the well was drilled before 1957 by the Rutter & Wilbanks Bros. as the Hudson No. 2. However, the well does not appear on a 1959 location plat submitted for Map ID No. 785 (included in Attachment VI-2E). Rutter & Wilbanks Bros. drilled three wells in the vicinity of Map ID No. 778. Map ID No. 773, the Turner No. 1, was drilled in 1948 to 1742 feet in the Red Lake Queen-Grayburg-San Andres pool. Map ID No. 774, the Hudson No. 1, was drilled in 1948 to 1707 feet in the same pool. Map ID No. 779 was drilled in 1959 to 5884 feet in the Empire Abo pool. Because the well, if it exists, is shown as an oil well drilled by Rutter & Wilbanks Bros. (who drilled Abo and shallower wells nearby) that is surrounded by oil production from the Abo and shallower intervals, the well is not considered to have penetrated the Navajo injection zone.



Injection Zone Penetrations (15 Wells)

Fifteen (15) wells reached total depths of 7270 feet or greater and penetrated the proposed injection zone. Each of these wells is discussed in detail in Sections VI.C through VI.E. The wells that penetrated the injection zone are:

Attachment VI-1A includes construction details, total depth, status, and drill date for the injection zone penetrations in the AOR. Well records available from the OCD for these wells are provided in Attachment VI-2.

VI.C Well Schematics

Schematics of all wells within one mile of WDW-1, WDW-2, and proposed WDW-3 that penetrate the injection zone are included with the well records in Attachment VI-2.

VI.D Condition of Artificial Penetrations

Each of the wells that penetrates the injection zone was evaluated to determine if it will allow movement of fluids into or between USDWs. For the purpose of this demonstration, the artificial penetrations may be categorized as follows:

Class I Waste Disposal Well (3 wells):

Map ID Nos. 59 and 861 are Navajo's Class I injection wells, WDW-1 and WDW-2. Map ID No. 157 is Navajo's proposed WDW-3.

Class II Saltwater Disposal Wells (1 well):

Map ID No. 83, the I&W Inc., Walter Solt SWD-1, is a Class II saltwater disposal well that is currently active. The well injects into the Wolfcamp in four sets of perforations: 7518 to 7534 feet, 7742 to 7756 feet, 7778 to 7787 feet, and 7810 to



7812 feet. The injection zone coincides with the shallowest formation proposed for injection by the proposed Navajo injection wells. The well has surface and intermediate or production casing set to prevent contamination of the USDW. The casing/formation annulus is cemented across the injection zone, as presented in Attachment Attachment Attachment of the well's useful life, the operator will plug and abandon the well according to OCD regulations with cement plugs set to protect the USDW and with heavy mud left in the wellbore. The Class II well in the AOR is listed below:

014

Map ID No. 83.

No corrective action is required for this well.

Active Producing Wells (9 wells):

Active producing wells include producing and temporarily abandoned oil and gas wells. These wells have surface and intermediate or production casing set to prevent contamination of the USDW. In all wells, the casing/formation annulus is cemented across the injection zone. Reported top of cement, where available, or calculated top of cement for each casing string in each well is presented in Attachment VI-3. At the end of the wells' useful lives, the operators will plug and abandon the wells according to OCD regulations with cement plugs set to protect the USDW and with heavy mud left in the wellbore. The active producing wells within the AOR are listed below:

No corrective action is required for these wells.

Plugged and Abandoned Producing Wells (1 well):

Plugged and abandoned producing wells are former producing wells with surface and intermediate or production casing set that have been plugged with cement plugs and heavy mud. The cement plugs were placed between the injection zone and the



ATTACHMENT VI-1 TABULATION OF WELLS WITHIN 1 MILE OF THE INJECTION WELLS

	API	OPERATOR, WELL NAME, NUMBER	SEC, TWP, RGE, UL	DEPTH	STATUS TYPE	COMP. DATE PLUG DATE
-	30-015-00693	ASPEN OIL INC DELHI #001	36 17S 27E A 330N 330E	528	T/A O	8/30/41
2	30-015-00694	DELHI OIL CORP. STATE #013	36 17S 27E A 990N 990E	1993	P&A O	6/24/48
က	30-015-00646	ASPEN OIL INC DELHI #007	36 17S 27E A 990N 330E	. 540	T/A 0	4/21/50
4	30-015-00668	MCQUADRANGLE, LC SOUTH RED LAKE GRAYBURG UNIT #010	36 17S 27E G 1650N 2310E	1736	SHUT IN O	12/6/47
S	30-015-00690	ASPEN OIL INC CONKLIN #002	36 17S 27E G 1830N 2205E	532	ACTIVE O	3/6/49
9	30-015-00667	MCQUADRANGLE, LC SOUTH RED LAKE GRAYBURG UNIT #011	36 17S 27E G 2310N 2310E	1733	ACTIVE . I	3/23/49
7	30-015-00666	ASPEN OIL INC CONKLIN #001	36 17S 27E G 2310N 2310E	533	ACTIVE O	1/10/42
80	30-015-00689	C E LARUE & B M MUNCY JR GATES STATE #001	36 17S 27E H 1650N 330E	557	ACTIVE O	8/4/50
6	30-015-00647	C E LARUE & B M MUNCY JR GATES STATE #002	36 17S 27E H 1650N 990E	551	SHUT IN O	10/10/52
10	30-015-00669	ASPEN OIL INC HOMAN #001	36 17S 27E H 2310N 330E	1804	SHUT IN O	6/20/49
7	30-015-00688	KERSEY & CO RAMAPO #001	36 17S 27E 1 2310S 330E	590	P&A O	10/28/41
12	30-015-00670	KERSEY & CO RAMAPO #003	36 17S 27E 1 2970N 330E	1857	P&A O	1/3/50
13	30-015-00687	KERSEY & CO RAMAPO #002	36 17S 27E I 2310S 990E	1900	P&A G	5/7/48
Monday,	Monday, July 28, 2003		ATTACHMENT VI-1			Page 1 of 22

14 30-015-00685 ARCO OIL & GAS EMPIRE ABO UNIT G #020 15 30-015-00671 ROJO GRANDE COMPANY LLC RAMAPO #003 16 30-015-01221 MCQUADRANGLE, LC SOUTH RED LAKE GRAYBURG MARTIN YATES III DOOLEY STATE #3 18 30-015-05934 BP AMERICA PRODUCTION CC EMPIRE ABO UNIT #019A 19 30-015-01220 MCQUADRANGLE, LC SOUTH RED LAKE GRAYBURG 20 30-015-00674 ROJO GRANDE COMPANY LLC RAMAPO #002	ARCO OIL & GAS EMPIRE ABO UNIT G #020 ROJO GRANDE COMPANY LLC RAMAPO #003 MCQUADRANGLE, LC SOUTH RED LAKE GRAYBURG UNIT #023 MARTIN YATES III DOOLEY STATE #3 BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #019A MCQUADRANGLE, LC SOUTH RED LAKE GRAYBURG UNIT #022	36 17S 27E 1 1650S 330E 36 17S 27E J 2310S 2310E 36 17S 27E J 2300S 2300E 36 17S 27E J 36 17S 27E J	5980 591 1790 5865	P&A O ZONE ABAN O ZONE ABAN O	7/10/89 2/13/42
30-015-00671 30-015-01221 30-015-01220 30-015-00674	OMPANY LLC CRAYBURG BUCTION CO TH019A CRAYBURG GRAYBURG	\$ 27E 2310E \$ 27E 2300E \$ 27E	591 1790 5865	ZONE ABAN O ZONE ABAN O	2/13/42
30-015-01221 30-015-05934 30-015-01220 30-015-00674	, LC GRAYBURG 3 DUCTION CO - #019A , LC GRAYBURG	27E 2300E 27E	1790 5865	ZONE ABAN O	1/24/00
30-015-05934 30-015-01220 30-015-00674	3 DUCTION COI "#019A , LC : GRAYBURG	36 17S 27E J	5865		2/27/48 8/13/02
30-015-05934 30-015-01220 30-015-00674	ON CO				4/22/61
30-015-01220	AYBURG	36 17S 27E J 1650S 1650E	9269	ACTIVE O	2/26/61
30-015-00674		36 17S 27E K 2310S 2330W	1747	ZONE ABAN O	2/3/49
	OMPANY LLC	36 17S 27E K 2310S 2310W	514	ACTIVE O	5/15/47
21 30-015-01219 MCQUADRANGLE, LC SOUTH RED LAKE GRAYBURG	;, LC E GRAYBURG UNIT #021	36 17S 27E K 2310S 1650W	1710	ACTIVE I	1/20/48
22 30-015-23913 MCQUADRANGLE, LC SOUTH RED LAKE GRAYBURG	;.LC E GRAYBURG UNIT #043	36 17S 27E K 1650S 1650W	1785	ACTIVE O	12/11/81
23 MARTIN YATES III DOOLEY STATE ABO #3	I ABO #3	36 17S 27E K	5865	ACTIVE O	4/19/61
24 30-015-00673 ROJO GRANDE COMPANY LLC RAMAPO #001	OMPANY LLC	36 17S 27E K 1650S 2310W	510	ZONE ABAN O	10/16/41
25 30-015-00682 ROJO GRANDE COMPANY LLC RAMAPO #004	OMPANY LLC	36 17S 27E N 990S 1650W	541	ZÖNE ABAN O	9/29/42
26 30-015-00683 MCQUADRANGLE, LC SOUTH RED LAKE GRAYBURG	;, LC E GRAYBURG UNIT #028	36 17S 27E N 965S 1650W	1812	ACTIVE I	4/16/48
27 30-015-01218 BP AMERICA PRODUCT EMPIRE ABO UNIT #018	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #018	36 17S 27E N 330S 2310W	5925	T/A O	2/2/60

BIIDNILIAM OIL COMBANY	910, 1111, 1191, OL		STATUS	CUMP. DATE PLUG DATE
STATE B-6961 NO. 1-A	36 17S 27E O 990S 2310E	1500	P&A O	5/13/47
BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #019	36 17S 27E O 660S 1980E	6200	1/A 0	9/8/59
	36 17S 27E I		MISPLOT OF 14	
BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #020	36 17S 27E P 330S 990E	6013	T/A O	2/16/60
C F M OIL CO BLAKE STATE #001	30 17S 28E P 330S 990E	615	ACTIVE O	3/7/53
BEDINGFIELD, MALCO, RESLER STATE NO. 1	31 17S 28E A 330N 990E	2004	P&A O	7/15/52
RODNEY B WEBB DBA WEBB OIL CO POWCO STATE #001	31 17S 28E B 330N 1650E	652	ACTIVE O	11/15/75
BEDINGFIELD, J E DELHI-STATE NO. 1	31 17S 28E C 330N 2310E	637	P&A O	12/23/52
RODNEY B WEBB DBA WEBB OIL CO POWCO STATE #002	31 17S 28E B 980N 1620E	747	ACTIVE O	7/15/86
ASPEN OIL INC ASTON & FAIR A #001	31 17S 28E D 330N 330W	531	SHUT IN O	6/23/42
ASTON & FAIR STATE 31 NO. 1X	31 17S 28E D 350N 345W	525	NO COMPL O	1/5/46
MCLAUGHLIN, C T BEDINGFIELD STATE 1 NO. 1	31 17S 28E F 990N 990W	2307	P&A O	2/16/50
HANSON ENERGY HUDSON SAIKIN STATE #001	31 17S 28E E 2310N 330W	1816	ACTIVE O	5/29/48
HANSON ENERGY HUDSON SAIKIN STATE #002	31 17S 28E E 2310N 990W	1950	ACTIVE O	7/7/84

	API	OPERATOR, WELL NAME, NUMBER	SEC, TWP, RGE, UL	DEPTH	STATUS	COMP. DATE
70	20 045 04542	VINDUMO INCITO I IOCER A CIEDANA ELE	T 100 004 16	100	TYPE	PLUC DATE
		EMPIRE ABO UNIT #022	2260W	- 60	<u> </u>	
43 30	30-015-01635	ASPEN OIL INC ASTON & FAIR #001Y	31 17S 28E F 2310N 2310W	1926	SHUT IN O	5/8/48
44 30	30-015-01637	ASPEN OIL INC MALCO STATE #001	31 17S 28E G 2310N 2310E	1852	ACTIVE O	10/12/53
45 30	30-015-01652	KERSEY & CO BOLING #001	31 17S 28E G 2288N 1625E	6025	ACTIVE O	8/10/60
46 30	30-015-10537	SDX RESOURCES INC NORTHWEST ARTESIA UNIT #004	31 17S 28E H 2277N 330E	6180	ACTIVE O	9/23/65
47 30	30-015-10833	SDX RESOURCES INC NORTHWEST ARTESIA UNIT #010	31 17S 28E 1 1980S 660E	1945	ACTIVE O	6/17/66
48 30	30-015-01644	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #024A	31 17S 28E 1650S 330E	6106	T/A O	4/29/60
49 30	30-015-01642	HANSON ENERGY STATE FW #001	31 17S 28E J 1650S 2310E	1937	ACTIVE O	12/23/62
50 30	30-015-01650	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #023A	31 17S 28E J 1650S 1958E	6094	SHUT IN O	3/13/60
51 30	30-015-01651	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #022B	31 17S 28E K 1650S 2387W	6046	ACTIVE O	4/10/60
52 30	30-015-01640	HANSON ENERGY RAMPO #002	31 17S 28E L 2310S 330W	1996	ACTIVE O	7/16/55
53 3(30-015-01648	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #021A	31 17S 28E L 1651S 1089E	5971	ZONE ABAN O	4/29/60 8/24/02
54 30	30-015-01639	HANSON ENERGY RAMPO #001	31 17S 28E M 990S 330W	1975	ACTIVE O	5/1/48
55 3(30-015-01647	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #021	31 17S 28E M 660S 660W	9009	T/A O	1/31/60
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BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #022A HANSON ENERGY STATE FV #001 OTIS A ROBERTS PARKER-STATE NO. 1 NAVAJO REFINING CO. PIPELINE DIVISION WDW #001 BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #023 SDX RESOURCES INC NORTHWEST ARTESIA UNIT #011 BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #024	31 17S 28E N 660S 2082W 31 17S 28E N 766S 2188W 31 17S 28E O 990S 1650E 31 17S 28E 660S 2310E 31 17S 28E O 660S 1939E 31 17S 28E P 990S 660E	6050 1938 742 10200 6094 6122	ACTIVE O ACTIVE O ACTIVE O ACTIVE O ACTIVE	1/22/60 3/1/63 1/18/42 8/4/98 2/24/60 5/8/67
HANSON ENERGY STATE FV #001 OTIS A ROBERTS PARKER-STATE NO. 1 NAVAJO REFINING CO. PIPELINE DIVISION WDW #001 BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #023 SDX RESOURCES INC NORTHWEST ARTESIA UNIT #011 BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #024	S 28E 2188W S 28E 1650E S 28E 2310E S 28E 1939E S 28E 660E	1938 742 10200 6094 6122	ACTIVE O ACTIVE O ACTIVE O ACTIVE	3/1/63 1/18/42 8/4/98 2/24/60
PARKER-STATE NO. 1 NAVAJO REFINING CO. PIPELINE DIVISION WDW #001 BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #023 SDX RESOURCES INC NORTHWEST ARTESIA UNIT #011 BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #024	S 28E 1650E S 28E 2310E S 28E 1939E S 28E 660E	742 10200 6094 2012 6122	P&A O ACTIVE I ACTIVE O ACTIVE O	1/18/42 8/4/98 2/24/60 5/8/67
NAVAJO REFINING CO. PIPELINE DIVISION WDW #001 BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #023 SDX RESOURCES INC NORTHWEST ARTESIA UNIT #011 BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #024	\$ 28E 2310E \$ 28E 1939E \$ 28E 660E	10200 6094 2012 6122	ACTIVE O ACTIVE O ACTIVE	8/4/98 2/24/60 5/8/67
BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #023 SDX RESOURCES INC NORTHWEST ARTESIA UNIT #011 BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #024	\$ 28E 1939E \$ 28E 660E	6094 2012 6122	ACTIVE O ACTIVE O ACTIVE	2/24/60
SDX RESOURCES INC NORTHWEST ARTESIA UNIT #011 BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #024	S 28E 660E	2012	ACTIVE O ACTIVE	5/8/67
BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #024	38F	6122	ACTIVE	
	20F 660E		0	3/12/60
BEDINGFIELD, J E ASTON-STATE NO. 1	32 17S 28E D 330N 330W	651	P&A O	5/12/53
BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #025B	32 17S 28E E 2280N 978W	6013	A/T O	9/13/60
BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #026	32 17S 28E F 2280N 1980W	6171	A/A O	8/24/60
SDX RESOURCES INC NORTHWEST ARTESIA UNIT #008	32 17S 28E K 2310S 2105W	2003	ACTIVE O	99/8/9
BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #026B	32 17S 28E K 1650S 2310W	6083	ACTIVE O	3/27/60
SDX RESOURCES INC NORTHWEST ARTESIA UNIT #009	32 17S 28E L 2310S 660W	1930	A/T O	5/15/66
BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #025A	32 17S 28E L 1650S 990W	6075	ACTIVE O	4/13/60
		330N 330W 32 17S 28E 2280N 978W 32 17S 28E 2280N 1980W 32 17S 28E 2310S 2105W 32 17S 28E 1650S 2310W 32 17S 28E 1650S 2310W 32 17S 28E 1650S 990W	32 17S 28E E 2280N 978W 32 17S 28E F 2280N 1980W 32 17S 28E K 2310S 2105W 32 17S 28E K 1650S 2310W 32 17S 28E L 2310S 660W 32 17S 28E L 2310S 990W ATTACHMENT VI-1	32 17S 28E E 6013 2280N 978W 32 17S 28E F 6171 2280N 1980W 32 17S 28E K 2003 2310S 2105W 32 17S 28E K 6083 1650S 2310W 32 17S 28E L 1930 2310S 660W 32 17S 28E L 6075 1650S 990W ATTACHMENT VI-1

API	OPERATOR, WELL NAME, NUMBER	SEC, TWP, RGE, UL	DEPTH	STATUS TYPE	COMP. DATE Plug date
30-015-20043	SDX RESOURCES INC NORTHWEST ARTESIA UNIT #012	32 17S 28E M 990S 760W	1998	T/A 0	5/9/67
30-015-01660	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #025	32 17S 28E M 660S 660W	6132	SHUT IN	3/5/60
30-015-10834	SDX RESOURCES INC NORTHWEST ARTESIA UNIT #013	32 17S 28E N 990S 2030W	1954	ACTIVE O	6/17/66
30-015-01659	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #026A	32 17S 28E N 660S 1980W	6172	ACTIVE O	2/14/60
30-015-21539	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #261	32 17S 28E N 150S 1400W	6220	ACTIVE O	7/25/75
30-015-22009	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #272	32 17S 28E O 330S 2481E	6370	ACTIVE O	7/18/77
30-015-02606	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #026E	5 18S 28E C 330N 1941W	6254	T/A O	7/18/60
30-015-22697	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #261A	5 18S 28E C 1080N 1914W	6350	ACTIVE O	1/4/79
30-015-02607	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #025C	5 18S 28E D 660N 660W	6273	ACTIVE O	3/27/60
30-015-22750	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #251	5 18S 28E D 660N 150W	6250	SHUT IN O	1/12/79
30-015-02608	CONOCOPHILLIPS COMPANY STATE E AI #001	5 18S 28E E 1660N 330W	6265	ACTIVE O	5/10/60
30-015-24485	CONOCOPHILLIPS COMPANY ILLINOIS CAMP A COM #001	5 18S 28E E 1980N 990W	10450	ACTIVE G	8/10/83
30-015-02602	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #026D	5 18S 28E F 1650N 1650W	6265	ACTIVE O	12/30/59
30-015-25522	I & W INC WALTER SOLT STATE #001	5 18S 28E L 2240S 400W	8500	ACTIVE S	8/12/83
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	API	OPERATOR, WELL NAME, NUMBER	SEC, TWP, RGE, UI	DEPTH	STATUS TYPE	COMP. DATE Plug date
84	30-015-10244	MACK ENERGY CORP STATE AG #001	5 18S 28E L 2310S 330W	6365	ZONE ABAN O	8/25/63 3/27/01
87	30-015-20019	SDX RESOURCES INC NORTHWEST ARTESIA UNIT #016	6 18S 28E A 330N 330E	3280	ACTIVE O	3/14/67
88	30-015-02615	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #024B	6 18S 28E A 660N 660E	6241	ACTIVE O	2/29/60
68	30-015-02625	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #023C	6 18S 28E B 470N 2170E	6194	T/A O	12/21/59
90	30-015-21542	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #231	6 18S 28E B 1260N 1580E	6250	ACTIVE O	11/1/75
91	30-015-02621	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #022E	6 18S 28E C 660N 1980W	6033	ACTIVE O	12/29/59
92	30-015-21626	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #231A	6 18S 28E G 1361N 2531E	6380	SHUT IN O	10/22/75
68	30-015-02613	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #021B	6 18S 28E D 990N 660W	6119	ACTIVE O	12/30/59
8	30-015-23116	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #213	6 18S 28E E 2050N 100W	6225	ACTIVE O	6/2/80
95	30-015-02619	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #021C	6 18S 28E E 1990N 660W	6202	ACTIVE O	10/30/59
96	30-015-22637	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #212	6 18S 28E E 2450N 400W	6267	ACTIVE O	12/28/78
26	30-015-21395	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #211	6 18S 28E E 2630N 1300W	6200	ACTIVE O	2/11/75
86	30-015-22012	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #222	6 18S 28E F 1350N 1572W	6303	ACTIVE O	3/13/77
66	30-015-02626	SARKIN, DAVID C & OLIVER, HENRY F STATE NO. 1	6 18S 28E F 1650N 1650W	705	P&A O	2/21/42
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2/5/79	T/A O	6350	6 18S 28E J 2300S 1570E	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #232A	30-015-22528
12/12/02	0			EMPIRE ABO UNIT #024K	
8/24/60	O ZONE ABAN	6350		EMPIRE ABO UNIT #241 BP AMERICA PRODUCTION COMPANY	30-015-02617
4/12/81	ACTIVE	6386	6 18S 28E H	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #241	30-015-23547
3/24/60	ACTIVE O	6253	6 18S 28E H 1650N 990E	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #024C	30-015-02616
	0		ш	EMPIRE ABO UNIT #233	
01.20	ř	Ç Ç	00000	WINDOW INCIDENTIAL COMPANY	00 046 00400
	MISPLOT OF 107		6 18S 28E H		
4/13/76	SHUT IN O	6345	6 18S 28E G 2253N 1576E	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #232	30-015-21737
1/26/60	ACTIVE O	6242	6 18S 28E G 1980N 1980E	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #023B	30-015-02614
8/27/78	SHUT IN O	6260	6 18S 28E G 1900N 2441E	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #234	30-015-22593
7/8/79	ACTIVE O	6300	6 18S 28E G 1750N 1600E	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #235	30-015-22913
4/23/76	ACTIVE O	6305	6 18S 28E F 2610N 2713W	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #221	30-015-21746
5/19/78	ACTIVE O	6250	6 18S 28E F 2630N 1930W	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #223	30-015-22527
11/26/59	ACTIVE O	6206	6 18S 28E F 1990N 2082W	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #022D	30-015-02620
8/8/63	ACTIVE O	1985	6 18S 28E F 1874N 1874W	HANSON ENERGY STATE FX #001	30-015-10107
COMP. DATE PLUG DATE	STATUS TYPE	EPTE E	SEC, TWP, RGE, UL	OPERATOR, WELL NAME, NUMBER	AP.

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ID NO API	OPERATOR, WELL NAME, NUMBER	SEC, TWP, RGE, UL	DEPTH	STATUS TYPE	COMP. BATE Plug date
114 30-015-02611	BARNEY COCKBURN STATE NO. 1	6 18S 28E J 2310S 2310E	2095	P&A 0	8/15/49
115 30-015-02628	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #023D	6 18S 28E J 2260S 2270E	6310	ACTIVE O	5/23/79
116 30-015-22491	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #231B	6 18S 28E J 1700S 2350E	6350	T/A 0	8/13/78
117 30-015-02618	MILLER BROS OIL CO CAPITOL STATE NO. 1	6 18S 28E J 1647S 2076E	2396	P&A G	3/21/55
118 30-015-02623	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #022F	6 18S 28E K 2248S 2075W	6210	ACTIVE O	2/22/60
119		6 18S 28E K		MISPLOT	
120	NAVAJO REFINING COMPANY WDW-2 (ORIGINAL LOCATION)	6 18S 28E L			
121 30-015-02622	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #021D	6 18S 28E L 2219S 660W	6194	ACTIVE O	1/23/60
122 30-015-23548	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #211A	6 18S 28E L 1950S 1000W	6312	ACTIVE O	7/17/80
123 30-015-02627	PENROC OIL CORP STATE M-AI #002	6 18S 28E M 949S 990W	6225	ACTIVE O	10/21/60
124 30-015-26943	MEWBOURNE OIL CO CHALK BLUFF 6 STATE #001	6 18S 28E M 990S 730W	10200	ACTIVE	4/16/92
125 30-015-02610	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #022C	6 18S 28E N 955S 1750W	6243	ACTIVE O	8/5/60
126 30-015-02624	PAN AMERICAN PETROLEUM CO STATE CD NO. 1	6 18S 28E O 968S 2270E	6412	P&A O	5/1/61
127 30-015-25503	DICKSON PETROLEUM CO KIMBERLY STATE NO. 1	6 18S 28E P 660S 330E	1750	P&A O	12/30/85
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ID NO API	OPERATOR, WELL NAME, NUMBER	SEC, TWP, RGE, UL	DEPTH	STATUS TYPE	COMP. DATE PLUG DATE
128 30-015-02612		(0	2246	P&A	
	STATE NO. 1	330S 330E		0	5/13/52
129 30-015-01215	5 BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #020D	1 18S 27E A	6118	ACTIVE	11/5/59
130 30-015-00708		m	9209	ACTIVE	2/1/2
		141		0	
131	MALCO REFINERIES HILL #4	1 18S 27E C	1840	Р&А	5/10/48
132		1 18S 27E C		MISPLOT	
133 30-015-00710	0 BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #018C	1 18S 27E C 660N 1980W	6173	ACTIVE O	9/16/59
134 30-015-26741	1 MEWBOURNE OIL CO CHALK BLUFF FEDERAL COM #002	1 18S 27E F 1650N 1350W	10140	ACTIVE G	8/24/91
135 30-015-00706	6 BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #018A	1 18S 27E F 2310N 1980W	6087	ACTIVE O	5/31/59
136 30-015-00709	9 BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #019C	1 18S 27E G 1980N 1980E	6205	ACTIVE O	8/2/59
137		1 18S 27E G		MISPLOT	
138 30-015-21552	2 BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #191	1 18S 27E G 2500N 2500E	6259	ACTIVE	9/7/75
139 30-015-00711	1 BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #020C	1 18S 27E H 1980N 660E	6218	ACTIVE O	10/13/59
140 30-015-21783	3 BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #202	1 18S 27E H 2490N 1299E	6296	ACTIVE O	5/13/76
141 30-015-22656	6 BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #203	1 18S 27E H 2400N 700E	6225	ACTIVE O	10/10/78
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2	API	OPERATOR, WELL NAME, NUMBER	SEC, TWP, RGE, UL	DEPTH	STATUS TYPE	COMP. DATE Plug date
142		MANHATTAN OIL CRONIN #1	1 18S 27E H	2900	P&A	4/1/25
143	30-015-21553	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #201	1 18S 27E H 2501N 20E	6225	ACTIVE O	7/19/75
144	30-015-27163	MEWBOURNE OIL CO CHALK BLUFF FEDERAL COM #003	1 18S 27E 1 1980S 990E	10150	ACTIVE G	1/16/93
145	30-015-00697	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #020K	1 18S 27E 1 1980S 660E	6185	ZONE ABAN O	9/29/59
146	30-015-22657	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #193	1 18S 27E J 2490S 2200E	6225	ACTIVE	10/26/78
147	30-015-00696	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #019Q	1 18S 27E J 1980S 1980E	6180	ACTIVE O	8/20/59
148	30-015-22560	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #192	1 18S 27E J 220S 1390E	6250	ACTIVE O	6/25/78
149	30-015-21873	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #191A	1 18S 27E J 1526S 1470E	6350	ACTIVE O	9/23/76
150	30-015-22658	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #194	1 18S 27E J 1500S 2130E	6325	ACTIVE O	11/14/78
151	30-015-22559	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #184	1 18S 27E K 2290S 2445W	6200	SHUT IN O	7/25/78
152	30-015-22096	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #183	1 18S 27E K 2370S 1510W	6210	ACTIVE O	7124/77
153	30-015-21554	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #181	1 18S 27E K 1367S 1440W	6203	ZONE ABAN O	10/30/75 4/17/03
154	30-015-00707	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #018B	1 18S 27E K 1980S 1980W	6163	ACTIVE O	5/22/59
155	30-015-21792	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #182	1 18S 27E K 1533S 2370W	6369	ACTIVE O	6/1/76
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	API	OPERATOR, WELL NAME, NUMBER	SEC, TWP, RGE, UL	DEPTH	STATUS TYPE	COMP. DATE PLUG DATE	
156	30-015-00713	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #018D	1 18S 27E N 995S 1644W	6174	D 0	12/5/59	
157	30-015-26575	NAVAJO REFINING COMPANY WDW-3 (PROPOSED)	1 18S 27E N 790S 2250W	10120	T/A G	3/7/91	
158	30-015-20394	HUMBLE OIL & REFINING CO EMPIRE ABO FEDERAL NO. 5	1 18S 27E O 953S 2197E	6300	P&A 0	4/9/71	
159	30-015-00698	ARCO PERMIAN EMPIRE ABO UNIT #191	1 18S: 27E O 660S 1980E	6365	P&A S	11/8/59	
160	30-015-00699	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #020B	1 18S 27E P 940S 330E	6250	ACTIVE O	12/2/61	
161	30-015-26404	MEWBOURNE OIL CO FEDERAL T #001	12 18S 27E A 660N 990E	10141	T/A G	9/13/90	
162	30-015-25099	EASTLAND OIL CO COMSTOCK FEDERAL #006	12 18S 27E H 1809N 990E	1652	ACTIVE O	9/11/85	
165	30-015-25997	EASTLAND OIL CO LAUREL STATE #001	7 18S 28E C 940N 1757W	1690	ACTIVE O	2/23/87	
166	30-015-25675	EASTLAND OIL CO LAUREL STATE #002	7 18S 28E E 940N 1757W	1690	ACTIVE O	11/10/88	
167	30-015-25236	MOREXCO INC STATE BY #001	7 18S 28E F 1980N 1980W	10400	ACTIVE O	6/10/85	
353	30-015-27286	MEWBOURNE OIL CO CHALK BLUFF 36 STATE #001	36 17S 27E M 660S 990W	10060	ACTIVE O	3/30/93	
354	30-015-24612	PRONGHORN MANAGEMENT CORP STATE M #001	36 17S 27E M 790S 990W	1451	ACTIVE O	10/11/83	
355	30-015-00676	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #017	36 17S 27E M 330N 990W	5797	ACTIVE O		
356	30-015-10184	ASPEN OIL INC STATE #006	36 17S 27E M 330S 920W	1343	ACTIVE O		
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	AP	UPCRATUR, WELL NAME, NUMBER	SEG, IMP, KGE, UL	UCFIN	TYPE	PLUG DATE
358	30-015-21623	ASPEN OIL INC STATE #007	36 17S 27E M 360S 455W	1366	ACTIVE O	
359	30-015-00662	ACREY, B L & F D STATE NO. 2	36 17S 27E M 330S 330W	592	P&A 0	10/15/42
595	30-015-02605	BP AMERICA PRODUCTION UNIT EMPIRE ABO UNIT NO. 27 E	5 18S 28E B 930N 2271E	6261	ACTIVE O	3/30/60
748	30-015-00715	MCQUADRANGLE, LC SOUTH RED LAKE GRAYBURG UNIT #037	1 18S 27E D 330N 330W	1835	ACTIVE	
748	30-015-00701	MCQUADRANGLE, LC SOUTH RED LAKE GRAYBURG UNIT 37 WIW	1 18S 27E D 330N 330W	1835	ACTIVE O	
749	30-015-00712	ARCO OIL & GAS EMPIRE ABO UNIT I NO. 17	1 18S 27E D 647N 667W	5900	P&A O	1/24/87
750		JONES BRAINARD	1 18S 27E E 1650N 330W	481	P&A O	5/10/39
751	30-0:15-00704	ARCO OIL & GAS EMPIRE ABO UNIT J NO. 17	1 18S 27E E 1980N 660W	2960	P&A O	3/26/59
752	30-015-00703	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #017A	1 18S 27E L 1980S 660W	6091	ACTIVE O	5/22/95
753	30-015-22815	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #171	1 18S 27E M 670S 330W	6300	ACTIVE O	5/22/79
754			1 18S 27E M		MISPLOT OF 756	
755	30-015-00714	VALLEY REFINING CO HILL #1	1 18S 27E N	2404	P&A	12/20/43
756	30-015-00705	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #017B	1 18S 27E M 990S 660W	6150	ACTIVE O	6/22/28
757		BRAINARD & GUY STATE 2	2 18S 27E A 330N 610E	530	NO COMPL	1/31/42
onday,	Monday, July 28, 2003		ATTACHMENT VI-1			Page 13 of 22

2	API	OPERATOR, WELL NAME, NUMBER	SEC, TWP, RGE, UL		STATUS TYPE	COMP. DATE Plug date
758	30-015-00721	MCQUADRANGLE, LC SOUTH RED LAKE GRAYBURG UNIT #036	2 18S 27E A 330N 990E	1705	SHUT IN O	11/6/47
765	30-015-00724	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #016B	2 18S 27E A 990N 330E	5920	ACTIVE	
992	30-015-00737	MCQUADRANGLE, LC SOUTH RED LAKE GRAYBURG UNIT #038	2 18S 27E B 905N 1601E	1722	ACTIVE O	5/23/48
772	30-015-00745	H & S OIL LLC STATE H #001	2 18S 27E H 1980N 660E	6140	ACTIVE O	3/9/59
773	30-015-00742	S&J OPERATING COMPANY SOUTH RED LAKE GRAYBURG UNIT 39 WIW	2 18S 27E H 1650N 990E	1742	P&A O	4/1/48 2/8/91
774	30-015-00740	MCQUADRANGLE, LC SOUTH RED LAKE GRAYBURG UNIT #040	2 18S 27E G 1650N 2197E	1707	д А	5/13/48 7/10/02
778		RUTTER & WILBANKS HUDSON #2	2 18S 27E G 2310N 1650E		0	1/1/57
622	30-015-00741	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #015B	2 18S 27E G 2310N 1980E	5880	ACTIVE O	6/6/28
781		MALCO REFINING CO STATE B-2	2 18S 27E J 2310S 2310E	4164	P&A O	1/1/47
785	30-015-00717	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #016	2 18S 27E 1 1980S 660E	6114	ACTIVE O	2/6/95
786	30-015-00716	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #015	2 18S 27E J 1980S 1830E	6100	ACTIVE O	3/23/59
789	30-015-22896	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #143A	2 18S 27E K 1820S 2550W	6108	ACTIVE O	5/13/79
791	30-015-22914	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #161	2 18S 27E 1 1310S 590E	6225	ACTIVE O	9/13/79
792			2 18S 27E 0		MISPLOT OF 814	

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	API	OPERATOR, WELL NAME, NUMBER	SEC, TWP, RGE, UL	DEPTH	STATUS	COMP. DATE Plug date
793	30-015-22609	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #143	2 18S 27E N 1200S 1900W	6093	ACTIVE O	12/20/78
795			2 18S 27E P		MISPLOT OF 765	·
796	30-015-21544	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #151	2 18S 27E O 1110S 1322E	6285	T/A O	11/4/75
797	30-015-22885	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #155	2 18S 27E O 1040S 2025E	6202	T/A 0	5/1/79
799	30-015-00722	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #016A	2 18S 27E P 660S 660E	6115	1/A 0	1/20/59
800	30-015-22808	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #156	2 18S 27E O 600S 1330E	6225	ACTIVE O	4/12/79
801	30-015-00731	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #015A	2 18S 27E O 660S 1980E	6220	ACTIVE O	11/19/58
802	30-015-22669	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #154	2 18S 27E O 800S 2500E	6200	T/A 0	12/4/78
805	30-015-22013	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #153	2 18S 27E O 90S 1456E	6303	T/A 0	4/20/77
808	30-015-21825	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #152	2 18S 27E O 320S 2602E	6335	T/A 0	6/17/76
807	30-015-22608	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #142	2 18S 27E N 100S 1950W	6200	ACTIVE O	1/12/79
808	30-015-21807	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #132	2 18S 27E M 275S 1243W	6200	ACTIVE O	7/1/76
812	30-015-00730	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #014	2 18S 27E N 660S 1980W	6112	ACTIVE O	10/21/58
813	30-015-00720	BP AMERICA PRODUCTION COMPANY RIVERWOLF UNIT #004	2 18S 27E A 990N 1650E	5881	ACTIVE O	10/21/59
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9	API	OPERATOR, WELL NAME, NUMBER	SEC, TWP, RGE, UL	DEPTH	STATUS TYPE	COMP. DATE Plug date
814	30-015-22051	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #141A	2 18S 27E K 1370S 2445W	6203	ACTIVE O	5/17/77
836	30-015-00869	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #016C	11 18S 27E A 330N 653E	6211	ACTIVE O	7/1/59
837	30-015-22568	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #151B	11 18S 27E B 400N 1450E	6310	T/A 0	8/1/78
838	30-015-22838	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #153B	11 18S 27E B 200N 1925E	6252	T/A O	6/9/9
839	30-015-00868	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #015C	11 18S 27E B 660N 1980E	6260	T/A 0	4/6/58
840	30-015-22569	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #152B	11 18S 27E B 560N 2588E	9300	T/A 0	8/23/78
841	30-015-22834	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #141B	11 18S 27E C 225N 2280W	6225	SHUT IN O	5/21/79
842	30-015-00864	ARCO OIL & GAS EMPIRE ABO UNIT M NO. 14	11 18S 27E C 660N 1980W	6315	P&A O	9/5/57
843	30-015-22833	BP AMERICA PRODUCTION COMPANY EMPIRE ABO UNIT #133B	11 18S 27E D 450N 1175W	6225	T/A 0	5/23/79
844	30-015-00867	ARCO OIL & GAS EMPIRE ABO UNIT M NO. 13	11 18S 27E D 660N 660W	6114	P&A 0	4/26/58
846	30-015-22556	ARCO OIL & GAS EMPIRE ABO UNIT M NO. 131	11 18S 27E D 1100N 1200W	6325	P&A O	7/10/78
848	30-015-20510	AMOCO PRODUCTION CO MALCO S NO. 1	11 18S 27E F 1650N 1653W	10168	P&A O	10/16/71
849	30-015-00865	ARCO OIL & GAS EMPIRE ABO UNIT N NO. 14	11 18S 27E F 1650N 1980W	6208	P&A O	2/3/61
850	30-015-00866	ARCO OIL & GAS EMPIRE ABO UNIT N NO. 131	11 18S 27E E 1980N 660W	6120	P&A O	3/27/58
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851 30-015-00870 /			:	TYPE	PLUG DATE
	AMOCO PRODUCTION CO SMITH-MCPHERSON NO. 1	11 18S 27E J 1980S 1980E	7270	P&A O	9/1/56
852 30-015-01201 (OSCAR HOWARD AN ETZ #3	11 18S 27E N	1828	P&A	4/15/27
853 30-015-01202 (OSCAR HOWARD AN ETZ #2	11 18S 27E O	1827	P&A	2/4/27
854 30.015-00863 E	B.R. POLK, JR. VICKERS #1	11 18S 27E N	1794	P&A	10/14/49
855 30-015-24857 F	RICKS EXPLORATION, INC. FEDERAL DH GAS COM #001	11 18S 27E M 700S 990W	11915	ACTIVE G	5/18/84
856 30-015-20535 F	ROBERT G COX FEDERAL EA 2	12 18S 27E D 330N 455W	6248	P&A O	11/27/71 8/7/73
857 30-015-00871 F	RHONDA OPERATING CO FEDERAL EA #001	12 18S 27E D 330N 330W	6253	P&A O	7/8/75 4/12/94
858 30-015-23115 F	RHONDA OPERATING CO FEDERAL EA NO. 3	12 18S 27E D 330N 380W	6295	D&A O	3/16/80
859 30-015-25738 E	EASTLAND OIL CO COMSTOCK FEDERAL #009	12 18S 27E G. 2310N 2310E	1586	ACTIVE O	4/25/87
860 30-015-25270 E	EASTLAND OIL CO CHUKKA FEDERAL #001	12 18S 27E F 2310N 2310W	1600	ACTIVE O	4/23/85
861 30-015-20894	NAVAJO REFINING COMPANY WDW #002	12 18S 27E E 1980N 660W	10372	ACTIVE I	7/18/73
862 30-015-00874 E	EASTLAND OIL CO COMSTOCK FEDERAL #007	12 18S 27E J 2310S 2355E	3664	ACTIVE O	6/29/48
863 30-015-00872 I	MCKEE-JONES MAGRUDER NO. 1	12 18S 27E L 310S 990W	594	D&A O	2/18/43
864 30-015-25201	EASTLAND OIL CO COMSTOCK FEDERAL #002	12 18S 27E K 1650S 1770W	1600	ACTIVE O	3/16/85

868 30-015-25649 FRED POOL DRILLING CO 12 18S 27E L 2000 868 30-015-25545 EASTLAND OIL CO 12 18S 27E M 1530 867 30-015-25545 EASTLAND OIL CO 990S 990W 1530 868 30-015-26017 EASTLAND OIL CO 990S 12 18S 27E M 2510 869 30-015-26100 EASTLAND OIL CO 990S 1650W 2040 869 30-015-26100 EASTLAND OIL CO 12 18S 27E M 2400 870 COMSTOCK FEDERAL #010 330S 1650W 1625 1650W 1625 871 30-015-2510 EASTLAND OIL CO 12 18S 27E M 2400 872 30-015-25202 EASTLAND OIL CO 12 18S 27E M 2000 873 30-015-26107 PILCHER OIL & GAS 12 18S 27E M 2000 874 30-015-06177 PILCHER OIL & GAS 330S 330S 330E	API OPE	OPERATOR, WELL NAME, NUMBER	SEC, TWP, RGE, UL	DEPTH	STATUS TYPE	COMP. DATE Plug date
EASTLAND OIL CO COMSTOCK FEDERAL #003 990S R.E. McKEE ET AL MAGRUDER #2 EASTLAND OIL CO COMSTOCK FEDERAL #001 EASTLAND OIL CO COMSTOCK FEDERAL #001 EASTLAND OIL CO COMSTOCK FEDERAL #001 EASTLAND OIL CO COMSTOCK FEDERAL #0001 EASTLAND OIL CO COMSTOCK FEDERAL #0001 EASTLAND OIL CO COMSTOCK FEDERAL #0005 PILCHER OIL & GAS MICHAEL CRONIN #1 CITIES SERVICE OIL CO MAGRUDER NO. 8 4 ROBERT E MCKEE MAGRUDER NO. 5 PILCHER OIL & GAS MICHAEL CRONIN #1 CITIES SERVICE OIL CO MAGRUDER NO. 5 PILCHER OIL & GAS MICHAEL CRONIN WO. 2 PILCHER OIL & GAS MICHAEL CRONIN WO. 2 ROBERT E MCKEE MAGRUDER NO. 5 PILCHER OIL & GAS MICHAEL CRONIN NO. 2 PILCHER OIL & GAS MICHAEL CRONIN NO. 2 TO STATE NO. 1 EASTLAND OIL CO TIS 18S 27E P TO STATE NO. 1 TO STATE NO. 1 EASTLAND OIL CO TIS 18S 27E A STATE NO. 1 EASTLAND OIL CO TIS 18S 27E A STATE NO. 1 EASTLAND OIL CO TIS 18S 27E A STATE NO. 1 EASTLAND OIL CO TIS 18S 27E A STATE NO. 2 EASTLAND OIL CO TIS 18S 27E A STATE NO. 1 EASTLAND OIL CO TIS 18S 27E A STATE NO. 2 EASTLAND OIL CO TIS 18S 27E A STATE NO. 2 EASTLAND OIL CO TIS 18S 27E A STATE NO. 2 EASTLAND OIL CO TIS 18S 27E A STATE NO. 2 EASTLAND OIL CO TIS 18S 27E A STATE NO. 2 EASTLAND OIL CO TIS 18S 27E A STATE NO. 2 EASTLAND OIL CO TIS 18S 27E A STATE NO. 2 EASTLAND OIL CO TIS 18S 27E A STATE NO. 5 EASTLAND OIL CO TIS 18S 27E A STATE NO. 5 EASTLAND OIL CO TIS 18S 27E A STATE NO. 5 EASTLAND OIL CO TIS 18S 27E A STATE NO. 5 EASTLAND OIL CO TIS 18S 27E A STATE NO. 5 EASTLAND OIL CO TIS 18S 27E A STATE NO. 5 EASTLAND OIL CO TIS 18S 27E A STATE NO. 5 EASTLAND OIL CO TIS 18S 27E A STATE NO. 5 EASTLAND OIL CO TIS 18S 27E A STATE NO. 5 EASTLAND OIL CO TIS 18S 27E A STATE NO. 5 EASTLAND OIL CO TIS 18S 27E A STATE NO. 5 EASTLAND OIL CO TIS 18S 27E A STATE NO. 5 EASTLAND OIL CO TIS 18S 27E A STATE NO. 5 EASTLAND OIL CO TIS 18S 27E A TIS 18S 27E A TIS 18S 27E A TIS 18S 27E A TIS 18S 27E A TIS 18S 27E A TIS 18S 27E A TIS 18S 27E A TIS 18S 27E A TIS 18S 27E A TIS 18S 27E A		OL DRILLING CO XK FEDERAL NO. 8	S 27E 990W	2000	D&A O	10/10/86
30-015-00873 R.E. McKEE ET AL. AMAGRUDER #2 MAGRUDER #2 MAGRUDER #2 MAGRUDER #2 MAGRUDER #2 MAGRUDER #2 MAGRUDER #2 MAGRUDER #2 MAGRUDER #2 MAGRUDER #2 MAGRUDER #2 MAGRUDER #2 MAGRUDER #2 MAGRUDER #2 MAGRUDER #2 MAGRUDER #2 MAGRUDER M.O. #2 <		D OIL CO XK FEDERAL #003	27E 990W	1530	ACTIVE O	5/19/86
30-015-26017 EASTLAND OIL CO 12 185 27E N 30-015-25100 EASTLAND OIL CO 12 18S 27E N 30-015-25100 EASTLAND OIL CO 12 18S 27E N 30-015-2502 EASTLAND OIL CO 12 18S 27E O 30-015-06171 PILCHER OIL & GAS 12 18S 27E I MICHAEL CRONIN NO. 3 12 18S 27E I 30-015-00875 CITIES SERVICE OIL CO 12 18S 27E P 30-015-00876 ROBERT E MCKEE 12 18S 27E P 30-015-00876 ROBERT E MCKEE 100S 500E P 30-015-00876 PILCHER OIL & GAS 12 18S 27E P 30-015-00876 ROBERT E MCKEE 100S 500E P 30-015-00876 PILCHER OIL & GAS 20DS 20DS 20DS 30-015-00870 HASSENFUSH-DONNELLY 0 0 0 30-015-01200 HASSENFUSH-DONNELLY 0 0 0 30-015-02377 STATE NO. 1 250N 39DE 0 3		:E ET AL :R #2	27E	2510	P&A	2/27/45
30-015-25100 EASTLAND OIL CO 12 18S 27E N 30-015-25202 EASTLAND OIL CO 12 18S 27E O 30-015-06171 PILCHER OIL & GAS 12 18S 27E I MICHAEL CRONIN NO. 3 1069S 251E I MICHAEL CRONIN #1 12 18S 27E P MICHAEL CRONIN #1 330-015-00875 CITIES SERVICE OIL CO 12 18S 27E P 30-015-00876 ROBERT E MCKEE 12 18S 27E P 30-015-00870 ROBERT E MCKEE 12 18S 27E P 30-015-00870 PILCHER OIL & GAS 200S 200E P 30-015-00870 PILCHER OIL & GAS 200S 200E P 30-015-00870 PILCHER OIL & GAS 200S 200E P 30-015-00870 HASSENFUSH-DONNELLY 0 0 0 30-015-06137 EASTLAND OIL CO 13 18S 27E A STATE NO. 1 250N 990E C C 30-015-0834 EASTLAND OIL CO 13 18S 27E C		D OIL CO XK FEDERAL #010	27E 1650W	2040	ZONË ABAN O	12/16/89 1/23/03
30-015-25202 EASTLAND OIL CO 12 18S 27E O 30-015-06171 PILCHER OIL & GAS 12 18S 27E I 30-015-06171 PILCHER OIL & GAS 12 18S 27E I MICHAEL CRONIN M1 12 18S 27E P 30-015-00875 CITIES SERVICE OIL CO 12 18S 27E P 30-015-00876 ROBERT E MCKEE 12 18S 27E P 30-015-06170 PILCHER OIL & GAS 12 18S 27E P 30-015-06170 PILCHER OIL & GAS 200S 200E P 30-015-06170 HASSENFLUSH-DONNELLY 13 18S 27E A 30-015-06137 EASTLAND OIL CO 13 18S 27E A 30-015-05394 EASTLAND OIL CO 13 18S 27E A		D OIL CO XK FEDERAL #001	3 27E 1650W	2400	ACTIVE O	12/10/84
30-015-06171 PILCHER OIL & GAS 12 18S 27E I MICHAEL CRONIN M.O. 3 12 18S 27E P PILCHER OIL & GAS 12 18S 27E P MICHAEL CRONIN #1 330-015-00875 CITIES SERVICE OIL CO 12 18S 27E P 30-015-00876 ROBERT E MCKEE 12 18S 27E P 30-015-00876 ROBERT E MCKEE 12 18S 27E P 30-015-00876 ROBERT E MCKEE 12 18S 27E P 30-015-06170 PILCHER OIL & GAS 200S 200E P 30-015-06170 HASSENFUSH-DONNELLY 13 18S 27E A 30-015-06137 EASTLAND OIL CO 13 18S 27E A STATE NO. 1 250N 90E A 30-015-25394 EASTLAND OIL CO 13 18S 27E C		D OIL CO JK FEDERAL #005	3 27E 2310E	1625	ACTIVE O	4/19/85
30-015-00875 CITIES SERVICE OIL CO 12 18S 27E P 30-015-00875 CITIES SERVICE OIL CO 12 18S 27E P 30-015-00876 ROBERT E MCKEE 12 18S 27E P 30-015-06170 PILCHER OIL & GAS 2005 2005 P 30-015-06170 PILCHER OIL & GAS 2005 2006 P 30-015-06170 HASSENFUSH-DONNELLY 13 18S 27E A 30-015-06137 EASTLAND OIL CO 13 18S 27E A 30-015-25394 EASTLAND OIL CO 13 18S 27E C		OIL & GAS CRONIN NO. 3	(0	2200	P&A O	5/20/26
30-015-00875 CITIES SERVICE OIL CO 12 18S 27E P 30-015-00876 ROBERT E MCKEE 12 18S 27E P 30-015-00876 ROBERT E MCKEE 12 18S 27E P 30-015-06170 PILCHER OIL & GAS 12 18S 27E P 30-015-06170 HASSENFUSH-DONNELLY 200S 200E A 30-015-06137 EASTLAND OIL CO 13 18S 27E A 30-015-25394 EASTLAND OIL CO 13 18S 27E C	PILCHER (OIL & GAS CRONIN #1	27E	2002	P&A	2/15/32
30-015-00876 ROBERT E MCKEE 12 18S 27E P MAGRUDER NO. 5 100S 500E P 30-015-06170 PILCHER OIL & GAS 12 18S 27E P MICHAEL CRONIN NO. 2 200S 200E P 30-015-01200 HASSENFUSH-DONNELLY 13 18S 27E A 30-015-06137 EASTLAND OIL CO 13 18S 27E A STATE NO. 2 250N 990E C 30-015-25394 EASTLAND OIL CO 13 18S 27E C		FVICE OIL CO ER NO. B-4	330E	2000	P&A 0	7/30/52
30-015-06170 PILCHER OIL & GAS 12 18S 27E P 30-015-06170 HASSENFUSH-DONNELLY 13 18S 27E A 30-015-06137 EASTLAND OIL CO 13 18S 27E A 30-015-25394 EASTLAND OIL CO 13 18S 27E A 30-015-25394 EASTLAND OIL CO 13 18S 27E C		E MCKEE ER NO. 5	S 27E 500E	1994	P&A O	2/8/54
30-015-01200 HASSENFUSH-DONNELLY 13 18S 27E A STATE NO. 1 0 0 0 30-015-06137 EASTLAND OIL CO 13 18S 27E A STATE NO. 2 250N 990E 30-015-25394 EASTLAND OIL CO 13 18S 27E C		OIL & GAS CRONIN NO. 2	3 27E 200E	2004	P&A O	2/22/26
30-015-06137 EASTLAND OIL CO 13 18S 27E A STATE NO. 2 250N 990E 30-015-25394 EASTLAND OIL CO 13 18S 27E C		USH-DONNELLY). 1	27E 0	2030	P&A O	1/1/26
30-015-25394 EASTLAND OIL CO 13 18S 27E C		D OIL CO), 2	3 27E 990E	2696	D&A O	1/1/26
ARTESIA STATE #002 330N 2310W	_ ,	D OIL CO STATE #002	S 27E 2310W	1613	ACTIVE	9/28/85

20 AG	API	OPERATOR, WELL NAME, NUMBER	SEC, TWP, RGE, UL	DEPTH	STATUS	COMP. DATE Plug date
879	30-015-25241	EASTLAND OIL CO ARTESIA STATE #001	13 18S 27E C 330N 1650W	1575	ACTIVE O	4/13/85
880	30-015-00884	DALE RESLER STATE NO. 3	13 18S 27E C 990N 1650W	2047	P&A O	1/29/45
881	30-015-25370	CBS OPERATING CORP ARTESIA STATE UNIT #002A	13 18S 27E D 480N 940W	1608	ACTIVE O	8/27/85
882	30-015-00883	CBS OPERATING CORP ARTESIA STATE UNIT #001	13 18S 27E D 990N 990W	1950	ACTIVE O	12/11/44
883	30-015-00880	DALE RESLER - JONES STATE NO. 1	13 18S 27E E 1650N 990W	2353	P&A O	1/26/45
884	30-015-24881	DAVID G HAMMOND ANADARKO 13 FEDERAL #001	13 18S 27E F 1880N 1830W	3020	ACTIVE O	6/18/84
885	30-015-00888	RALPH NIX & JERRY CURTIS PAGE NO. 1	13 18S 27E F 1980N 1650W	2000	P&A O	11/28/54
886	30-015-00879	DALE RESLER JONES-GOVT NO. 1	13 18S 27E F 2310N 1650W	2000	D&A O	3/14/45
888	30-015-25078	DICKSON PETROLEUM, INC ANADARKO 13 FEDERAL NO. 1	13 18S 27E G 1724N 2279E	2150	D&A 0	12/30/84
895	30-015-00891	ANADARKO PETROLEUM CORP ARTESIA STATE UNIT TRACT 4 NO. 1	14 18S 27E A 990N 330E	2060	P&A O	6/30/44
896	30-015-00893	RESLER STATE NO. 1	14 18S 27E G 1650N 1650E	2375	D&A 0	1/1/00
897	30-015-00895	CBS OPERATING CORP ARTESIA STATE UNIT #001B	14 18S 27E H 1650N 330E	1888	ACTIVE O	2/8/45
901	30-015-00695	WILLIAM & EDWARD HUDSON HILL NO. 1	1 18S 27E L 1650S 330W	1763	D&A O	6/18/48
910	30-015-00744	COMPTON-SMITH STATE 1	2 18S 27E J 2310S 1640E	1080	P&A O	
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2	API	OPERATOR, WELL NAME, NUMBER	SEC, TWP, RGE, UL	DEPTH	STATUS TYPE	COMP. DATE Plug date
911	30-015-31123	SOUTHWESTERN ENERGY PRODUCTION C NO BLUFF 36 STATE COM #002	36 17S 27E H 1980N 760E	10050	ACTIVE	
912	30-015-31036	C E LARUE & B M MUNCY JR GATES STATE #003	36 17S 27E H 2310N 990E	614	ACTIVE O	
916	30-015-31592	ROJO GRANDE COMPANY LLC RAMAPO #007	36 17S 27E N 330S 2310E	612	P&A O	7/6/01 12/21/01
917	30-015-30784	SDX RESOURCES INC NW STATE #012	31 17S 28E A 330N 480E	3300	ACTIVE O	
918	30-015-30893	SDX RESOURCES INC NW STATE #028	31 17S 28E A 973N 959E	2808	ACTIVE O	
919	30-015-32162	SDX RESOURCES INC ENRON STATE #004	31 17S 28E D 460N 990W	3460	NO COMPL O	4/3/03
920	30-015-30783	SDX RESOURCES INC NW STATE #011	31 17S 28E H 1650N 330E	3205	ACTIVE O	
921	30-015-30849	SDX RESOURCES INC NW STATE #009	31 17S 28E 1 2310S 270E	3195	ACTIVE O	
922	30-015-30760	SDX RESOURCES INC NW STATE #010	31 17S 28E P 735S 330E	3210	ACTIVE O	
923	30-015-31920	SDX RESOURCES INC ENRON STATE #002	32 17S 28E D 990N 990W	4030	ACTIVE O	
924	30-015-30781	SDX RESOURCES INC NW STATE #005	32 17S 28E K 1900S 2146W	3190	ACTIVE O	
925	30-015-30777	SDX RESOURCES INC NW STATE #006	32 17S 28E L 2310S 990W	3204	ACTIVE O	
926	30-015-30685	SDX RESOURCES INC NW STATE #007	32 17S 28E M 990S 990W	3220	ACTIVE O	
927	30-015-30815	SDX RESOURCES INC NW STATE #008	32 17S 28E N 1090S 2126W	3310	ACTIVE O	
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2	API	OPERATOR, WELL NAME, NUMBER	SEC, TWP, RGE, UI.		STATUS	COMP. DATE
					TYPE	PLUG DATE
928	30-015-32310	MARBOB ENERGY CORP AAO FEDERAL #004	1 18S 27E A 990N 990E	4000	PROPOSED 0 ·	
929	30-015-32309	MARBOB ENERGY CORP AAO FEDERAL #003	1 18S 27E B 330N 1690E	4125	NO COMPL O	4/10/03
930	30-015-32308	MARBOB ENERGY CORP AAO FEDERAL #002	1 18S 27E C 430N 2310W	4150	ACTIVE O	9/19/02
931	30-015-32307	MARBOB ENERGY CORP AAO FEDERAL #001	1 18S 27E D 330N 990W	3851	ACTIVE O	12/10/02
932	30-015-22816	ARCO OIL & GAS EMPIRE ABO UNIT L #192	1 18S 27E O 1120S 1440E	6350	ABAN LOCATION O	6/28/80 6/23/80
933	30-015-20388	ARCO OIL & GAS EMPIRE ABO #5	1 18S 27E N 990S 2297E	6300	SAME AS 158 O	12/31/99
934	30-015-27719	MEWBOURNE OIL CO CHALK BLUFF 12 FED #001	12 18S 27E 1650S 990E		ABAN LOCATION G	
935	30-015-27437	YATES PETROLEUM CORPORATION BEAUREGARD ANP STATE COM #001	14 18S 27E B 660N 1980E	0	ABAN LOCATION G	
936	30-015-31086	MARBOB ENERGY CORP LP STATE #001	5 18S 28E E 1650N 990W	4503	ACTIVE O	
937	30-015-31109	MARBOB ENERGY CORP LP STATE #002	5 18S 28E E 2301N 230W	0	PROPOSED 0	
938	30-015-30785	SDX RESOURCES INC NW STATE #015	6 18S 28E A 430N 330E	3225	ACTIVE O	
939	30-015-00264	BARNEY COCKBURN CAPITAL STATE NO. 1	6 18S 28E J 2310S 2310E	2095	SAME AS 114 O	5/23/79
940	30-015-31087	MARBOB ENERGY CORP LP STATE #003	6 18S 28E M 990S 330W	4466	ACTIVE O	7/15/00
941	30-015-31088	MARBOB ENERGY CORP LP STATE #004	6 18S 28E M 330S 990W	0	PROPOSED O	
Monday,	Monday, July 28, 2003		ATTACHMENT VI-1			Page 21 of 22

2	API	OPERATOR, WELL NAME, NUMBER	SEC, TWP, RGE, UL	DEPTH	STATUS TYPE	COMP. DATE Plug date
942	942 30-015-06250	SAME AS 89	6 18S 28E O	0	SAME AS 89	
943	30-015-31319	EASTLAND OIL CO LAUREL STATE #003	7 18S 28E E 2310N 330W	1630	ACTIVE O	1/31/01
944		NAVAJO REFINING COMPANY WDW-3 (ORIGINAL LOC.)	6 18S 28E D 778N 995W		ABAN LOCATION I	

Revised July 2003

ATTACHMENT VI-1A

CONSTRUCTION DATA FOR WELLS THAT PENETRATE THE INJECTION ZONE WITHIN 1 MILE OF THE INJECTION WELLS

 						_				_	_											·						
	REMARKS				Perfs:	10172 - 10184 feet	10070 - 10075 feet	Perfs:	7518 - 7534 feet	7632 - 7642 feet (cemented)	7742 - 7756 feet	7778 - 7787 feet	Perfs: 10084 - 10092 feet						Perfs: 9999 - 10024 feet				Perfs:	9950 - 9954 feet	9957 - 9972 feet			
ATA	MUD WEIGHT (lb/gal)	NA			ΑN			Ϋ́N					ĄX	:		•			NA				NA					
MUD DATA	FILLED (Y/N)	NA AN			NA			NA					NA						Ϋ́			·	NA					
ING	SX OF CEMENT	45			ΝΑ			Ϋ́Α					ΑΝ						Y Y				NA					
PLUGGING	DEPTH (ft)	9734		·	NA			NA					AN.						NA A		•		NA					
	DATE COMPLETED OR PLUGGED	9/9/93	Recompleted	8/4/98	8/10/83	-		8/12/83					4/16/92						8/24/91				1/16/93					
	SX OF CEMENT	525	1000	1370	929	1400	2007	350	. 059	520			200	1100	1895	175			450	1025	1020		001	250	1200	200		
CASING	DEPTH (ft)	390	2555	9094	663	4000	10450 9922	354	1745	8466	7500		400	2600	9445	- 7206	10198	0666	416	2610	10148	9939	400	2600	8968	- 0098	10150	9972
	DÍAMETER (in)	13-3/8	8/5-6	7	13-3/8	8-5/8	5-1/2 2-7/8	13-3/8	8-5/8	5-1/2	2-7/8		13-3/8	9-5/8	7	4-1/2		2-3/8	13-3/8	9-2/8	5-1/2	2-7/8	13-3/8	8/5-6	7	4-1/2		2-3/8
	TOTAL DEPTH (ft)	10200	PB 9004		10450			8500					10200						10140				10150					
	TYPE	Active	Class I		Active	Gas		Active	SWD				Active	Gas				1	Active	Gas			Active	Gas				
	OPERATOR/LEASE	Navajo Refining Company WDW-1	31-17S-28E Unit O		Phillips Oil Company	Illinois Camp A Com No. 1	Empire Penn Gas Field 5-18S-28E Unit E	Metek Pipe & Supply (original)	I&W, Inc.	Walter Solt State No. 1	5-18S-28E Unit L		Mewbourne Oil Company	Chalk Bluff 6 State No. 1	North Illinois Camp Morrow	6-18S-28E Unit M			Mewbourne Oil Company	Chalk Bluff Federal Com No. 2	North Illinois Camp Morrow	1-18S-27E Unit F	Mewbourne Oil Company	Chalk Bluff Federal Com No. 3	North Illinois Cansp Morrow	1-18S-27E Unit I		
	£ 8	59			81			83					124						134				144			_		

ATTACHMENT VI-1A (Continued)

CONSTRUCTION DATA FOR WELLS THAT PENETRATE THE INJECTION ZONE WITHIN 1 MILE OF THE INJECTION WELLS

The state of the s	REMARKS			Perfs: 10116 - 10124 feet (cemented) 1627 - 46 feet	Perfs: 7164-7277 feet 8528-8572 feet 946-9484 feet 9842-9856 feet	Cement plug is present at the top of the liner, which is set above the top of the injection zone.	Injection zone is not cased and is mud-filled.
MUD DATA	MUD WEIGHT (lb/gal)	NA		Unknown	N.		
MUD	FILLED (Y/N)	NA		¥	Ϋ́ V	>-	>
BING	SX OF CEMENT	NA		35', CIBP 100' 100'	NA	NA 25 15 40 350	30 30 50 60 10
PLUGGING	DЕРТН (ft)	NA		10050 7050 5950 2600	8300	9495 7863-7613 6995 5350-5250 1050-950 Surface	4119-3735 3040-2900 2040-1922 1010-910 602-502 Surface
	DATE COMPLETED OR PLUGGED	3/1/91	6/13/90	6/10/85 12/20/95 Recompleted to Grayburg	3/30/93	12/03/85	09/01/56
	SX OF CEMENT	425 1025 1350 175	450 900 430 80	500 1150 1000	530 1150 1620 225	970 300 855	700 250 NA
ÇASING	DЕРТН (ft)	400 2604 9450 9051 -	472 2589 9473 10140 (liner)	418 2600 10400 1706	399 2603 9253 8439- 10057	1000 6348 6277-10138	572 960-1790 2990-4500
	DIAMETER (in)	13-3/8 9-5/8 7 4-1/2	13-3/8 8-5/8 5-1/2 4	13-3/8 8-5/8 5-1/2 2-7/8	13-3/8 9-5/8 7 4-1/2	11-3/4 8-5/8 5-1/2	13-3/8 9-5/8 4-1/2
	TOTAL DEPTH (ft)	10120	10141	10400	10060	10168	7270
	TYPE	Proposed Class I	Active Shut In	Active Oil	Active Gas	P&A	P&A
	OPERATOR/LEASE	Navajo Refining Company WDW-3 Mewbourne Oil Company (original) Chalk Bluff Fed. Com No. 1 North Illinois Camp Morrow 1-185.27E Unit N	Mewbourne Oil Company Federal T.No. 1 North Illinois Camp Моггоw 12-185-27E Unit A	ARCO Oil & Gas Company Morexco, Inc. State BY No. 1 Artesia Q-GB-SA 7-18S-28E Unit F	Mewbourne Oil Company Chalk Bluff 36 State No. 1 36-175-27E Unit N	Amoco Production Company Malco S No. 1 11-18S-27E Unit F	Amoco Production Company Smith-McPherson No. 1 (was Stanolind Oil and Gas Co. Ruth C. McPherson No. 1) 11-18S-27E Unit J
	<u>a</u> 8	€	191	167	786	848	821

Revised July 2003

ATTACHMENT VI-1A (Continued)

CONSTRUCTION DATA FOR WELLS THAT PENETRATE THE INJECTION ZONE WITHIN 1 MILE OF THE INJECTION WELLS

	REMARKS	Long-string casing is cemented	from total depth to above the	top of the confining zone.	Perfs (Strawn, Morrow):	9295-9308 feet	9789-9846 feet				Perfs:	9927-9964 feet	
MUD DATA	MUD WEIGHT (lb/gal)							NA			AN		
QÚM.	FILLED (Y/N)							ΥN			Ϋ́Α		
PLUGGING	SX OF CEMENT	55	55					NA			Ϋ́Α		
PLUG	рертн (ft)	11610	10700					NA			NA		
	DATE COMPLETED OR PLUGGED	05/18/84						07/18/73	Recompleted	66/8/9	4/28/01		
	SX OF CEMENT	700	1400	2720				Surface	800	1570	465	650	553
CASING	ОЕРТН (ft)	205	2200	11915				9	1995	6988	425	2002	10050
	DIAMETER (in)	13-3/8	8/5-6	5-1/2				13-3/8	8-5/8	5-1/2	13-3/8	8-5/8	5-1/2
	TOTAL DEPTH (ft)	11915						10372	PB 8770		10050		
	TYPE	Ϊ́Ο						Active	Class I		Active Gas		
	OPERATOR/LEASE	Anioco Production Company	Federal DH Gas Com. No. 1	11-18S-27E Unit M				Navajo Refining Company, WDW-2	12-18S-27E Unit E		911 Southwest Energy Production Co.	No. Bluff 36 State Comm. No. 2	36-175-27E Unit H
	5 E	855						861			2116		

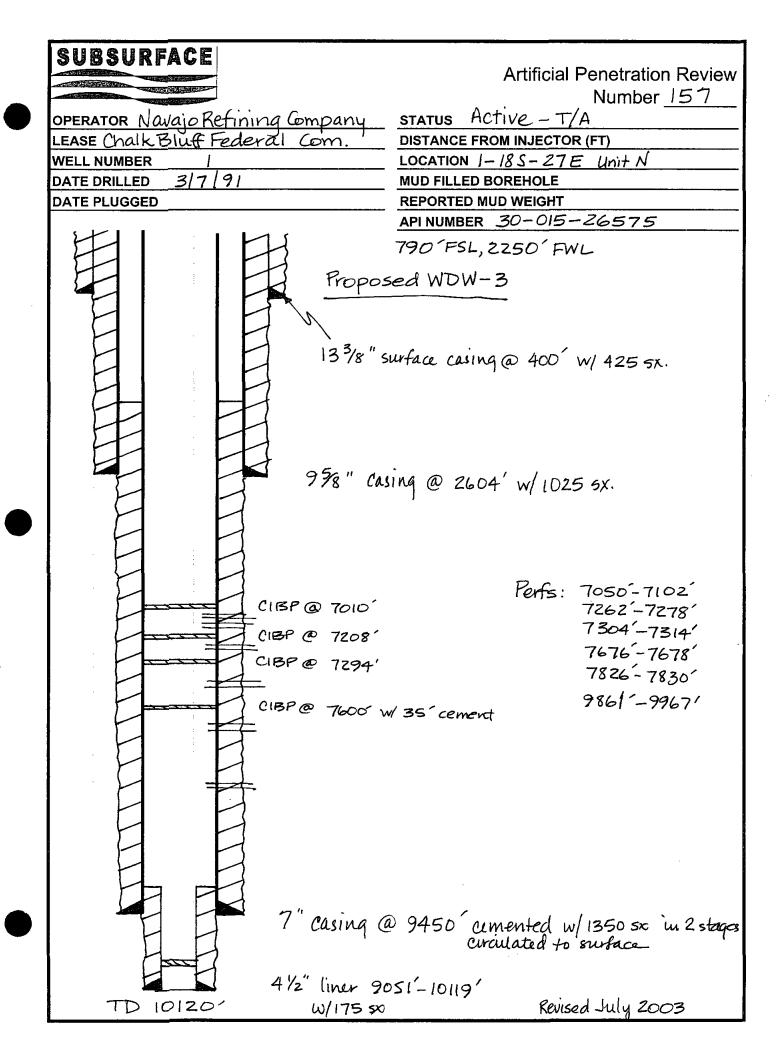
NA - Not applicable

MAP ID NO. 157

NAVAJO REFINING COMPANY NO. 1 CHALK BLUFF FEDERAL COM.

PROPOSED WDW-3





3160-5 lember 1994) OCD-Artesia

UNITED STATES DE BI

FORM APPROVED OMB No. 1004-0135 Expires July 31, 1996

PARTMENT OF THE INTERIOR	44.33.33
UREAU OF LAND MANAGEMENT	59 1011 12 73 74 75
MOTICES AND DEDORTS ON W	(E1) A

SUNDRY NOTICES AND REPORTS ON WELLS

6. If Indian, Allottee or Tribe Name

Do not use this form for proposals to drill or to repenter an abandoned well. Use Form 3160-3 (APD) for such proposals 2003

	SUBMIT IN TRIPLICATE - Other Instru	ctions on reverse side	7.	If Unit or CA/Agreement, Name and/or No.
1.	Type of Well Oil Well Gas Well Other	Cosp. Abil	8.	Well Name and No.
2.	Name of Operator Navajo Refining Co.	\$2159230	9,	Chalk Bluff Fed. Com. #1 API Well No.
За.	Address	3b. Phone No. (include area code)		30-015-26575
	P.O. Drawer 159, Artesia, NM 88211	505-748-3311	10.	. Field and Pool, or Exploratory Area
4.	Location of Well (Footage, Sec., T., R., M., or Survey Description)			
	N-1-18s-27e	000/- /	11.	. County or Parish, State
	N-1-185-276 790 FSL42	158 FUL		Eddy

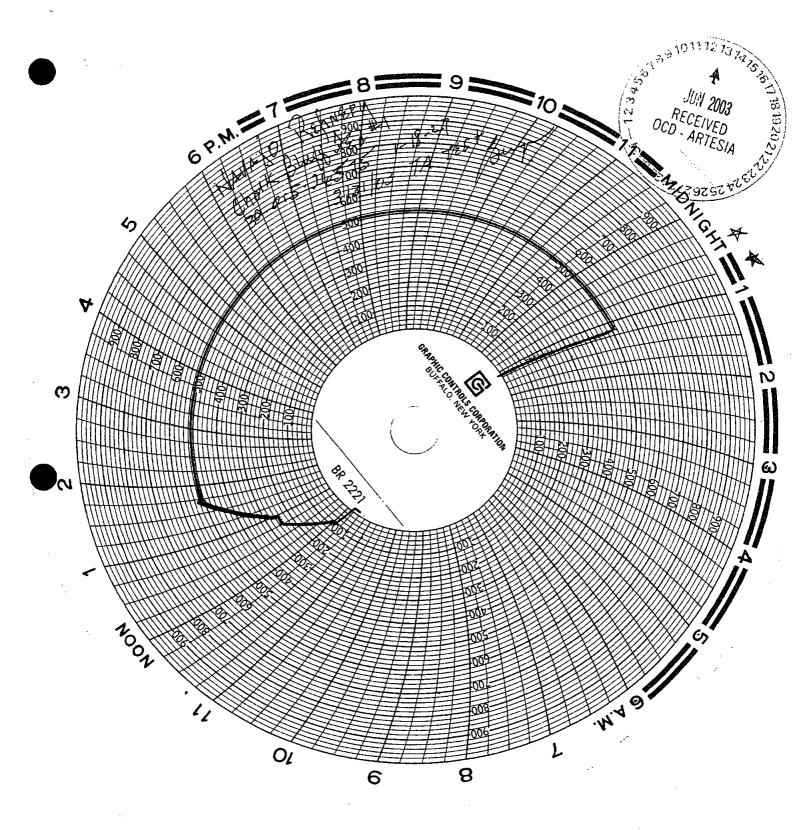
Type of submission		TY	PE OF ACTION	
Notice of Intent Subsequent Report Final Abandonment Notice	Acidize Alter Casing Casing Repair Change Plans Convert to Injection	Deepen Practure Treat New Construction Plug and Abandon Plug Back	Production (Start/Resume) Reclamation Recomplete Temporarily Abandon Water Disposal	Water Shut-Off Well Integrity Other

escribe Proposed or Completed Operation (clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomplete horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones, Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports shall be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 shall be filed once testing has been completed. Final Abandonment Notices shall be filed only after all requirements, including reclamation, have been completed, and the operator has determined that the site is ready for final inspection.)

This well is temporarily abandoned. We are holding it for future use as a waste water injection well. We ran an MIT on it on March 31, 2003 (chart enclosed) and it passed. This test was witnessed by the New Mexico OCD.

	·
14. I hereby certify that the foregoing is true and correct	
Name (Printed/Typed)	Title
Darrell Mosre	Env. Mgr. for Water & Waste
Signature aud Mosel	Date 5/13/03
A CONTROL OF THE WINDSPACE FOR FED	DERAL OR STATE OFFICE USE
od by AME SED) INE S. LAS	Title Date 6/1/03
Conditions of approval, if any, we attached. Approval of this notice does not certify that the applicant holds legal or equitable title to those rights in the much would entitle the applicant to conduct operations thereon.	t warrant or Office

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.



District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 South First, Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
0 South Pacheso, Santa Fe, NM 87505

State of New Mexico Energy Minerals and Natural Resources

Form C-104A August 11, 2000

Oil Conservation Division 2040 South Pacheco Santa Fe, NM 87505 Submit 1 copy of the final affected wells list along with 2 copies of this form per number of wells on that list to appropriate District Office

Change of Operator

Prev	ious Operator Information:	Ne	ew Operator Informa	ation:
OGRID: Name: Address: Address:	14744 Mewbourne Oil Company P. O. Box 7698 Tyler, TX 75711	Effective Date: New Ogrid: New Name: Address: Address:	5 October, 15694 Navajo Refin 100 Grescent 7.0. Box 159	2000 ing Company Court, Ste 1 75201
form and the atta New Operator Signature: Printed name: Title:	Darrell Moore	and Waste		ormation on this
Previous operator	complete below:		NMOCD Approva	<u> </u>
Previous Operator: M.	ewbourne Oil Company	Signature:	in W. Sees	ر
Previous	swhodine off combana	Printed		
OGRID: 1	471A	Name: 0	* · · ·	
	11717	* Ku	tuit Sylwis	ov
Signature:	Morty Wheteone	District:	Nas	
Printed Name:			NUV 2 7 2000	
	antes Tilbatatana	Date:	* * * *	

27021- property code - Chalk Bluff Jederal Com #1 30-015-26575-API Humber 1-185-27E

SUBSURFACE	
	Artificial Penetration Review
	Number 353
OPERATOR Mewbourne Oil Company	STATUS ACTIVE
LEASE Chalk Bluff 36 State	DISTANCE FROM INJECTOR (FT)
WELL NUMBER	LOCATION 36-175-27E. N
DATE DRILLED 3/30/93	MUD FILLED BOREHOLE
DATE PLUGGED	REPORTED MUD WEIGHT
DATE PLUGGED	
LARI ME	API NUMBER 30-015-27286
	660'FSL, 990'FWL
	(<u>o</u>) v
13 3/2"	casing at 399' nement to curtace
	casing at 399', cement to surface,
	350 %
	l
	·
95/8" cas	ing at 2603, cement to surface,
	out 2003, concert to surface,
	1150 sx
Perfs:	
7164-7:	277′
8528'-8	2572
9842'-9	3856
9864'-9	0886
Bridge Plans	2 Cana"
Bridge Plug (ω 830O
7" raving at	9253, cement to surface, 1620 &
4/2" liner 84	139'-10057'
TD 10060'	1002
1 1 100 60	

District I PO Box 1980, Hobbs, NM 88241-1980

District II 811 South First, Artesia, NM 88210

District i 1000 Ri

State of New Mexico
Energy, Minerals & Natural Resources Department

OIL CONSERVATION DIVISION

SV 353 Form C-104 Revised October 18, 1994 Instructions on back

priate District Office
5 Copies
AMENDED REPORT

10	OIL GOIGER WATER
io Brazos Rd., Aztec, NM 87410	2040 South Pacheco
IV	Santa Fe, NM 87505
and Dealers Contacts and office	

District IV						S	anta Fe	NM 87	50 5				AME	NDED REPORT
2040 South Pa				OR AL	ΤΟ/	N ABL	E AND) AUTI	HORIZ	'ATIO	N TO TRA	NSPO	RT	
<u> </u>				perator nam						T		² OGRID		r
Mewboume PO Box 52		oany /								L		14744	<u> </u>	
Hobbs, Ne		88241									3 5	leason for I	Filing C	ode
											Plug E	ack/Rec	omple	tion
1	Pl Number	,	100		· laia#		5	Pool Name)			(ool Code
30 - 0 15-7 7Pa	operty Code		LOG	gan Draw	VVOIR	camp.	• Pro	operty Nam				+		160 elt Number
, ,	7871		Cha	alk Bluff:	36 Sta	rte	• • • •						-	1
II. 10 S	Surface	Location	<u> </u>											
Ul or lot no.	Section	Township		Range	Lot k	ln	Feet from	the	North/Sc	uth Line	Feet from the	East/We	st line	County
	36	178		27E	<u> </u>		- 6	60	Sou	<i>i</i> th	990	We	st	Eddy
Ul or lot no.	Bottom Section	Hole Loc			Lot ld	<u>-</u>	Feet from		North/Sc	ممثا الخدم	Feet from the	East/We	nt Rose	Count
Ur or social.	Secuon	Township	-	Range	LOX NO	ın	reet iron	i triee	Northad	uu Line	reet liota die	CRRYAAG	SI B) NO	County
12 Lse Code	13 Produci	ng Method C	ode	14 Gas	Connec	ction Date	15 C	-129 Permi	t Number	1	C-129 Effective (Date	17 C-	129 Expiration Date
ŀ	P	umping		0	7/17/	01				1				
III. Oil a	nd Gas	Transpo												
18 Transpor OGRID	ter	-		nsporter Na nd Address				20 PO	D	21 O/G	,	POD ULS	TR Loc scription	ation
	Ал	noco Pipeli	ne C	ompany										
138646		lsa, Ok.						192381	U	0]			
	<u></u>	hom Oper	atino	Compa	Z	1000						12.	456	3
990	Art	esia, NM			<i>الا</i> ت	700	22	8297	76	G	1 2		4	93
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								7555(A)	3400	1954.	, Ç			100 1112 B 14 88 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Æ												ેટાટલ	7618	, Lb
	uced Wa	ater												
1	85D							24 POD UL	SIR Loca	on and L	lescription			
		tion Dat	<u> </u>											
25 Spu				dy Date			²⁷ TD		2ª P81	D	29 Perfora	ntions	7	ODHC, DC, MC
02/0	3/93		07/1	7/01			10060		830	0	7164-7	277		
	31 Hole Size		_[≅C	asing &	Tubing S	ŠiZB		35	Depth Se	et .	*		s Cement
	17 1/2"				13	3/8"				399,				530
	12 1/4"		_			5/8"				2603'	-			150
	8 3/4"	····	\downarrow			7"				9253'				620
Ļ	6 1/8"	-	\perp		4	1/2"				10057				225
	I Test D		D. 7	- F :-						<u> </u>				#A : F
35 Date N 07/17			Delive '/17/I	ery Date N1		³⁷ Test I		, a	Test Leng 24	ju	≫Tbg.Pre N/A			44 Csg. Pressure 35
41 Choke		"	4201		+	4 War			4 Ges		45 AOF		┿	46 Test Method
N/		1	88		1	7			88		1			Pumping
47 I hereby ce								Γ' Τ		NI 01	NOE2: **=	ON 5"	.,,,,,,	N.1
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Printed name:	N.M. Y	oyng						Titie:	-		Sin l	t Su	kw	isov
Title: Distri	ict Manage	×						Approval	Date:			QED	107 D	2601
Date: 08	/24/01	•	\exists	Phone:	505	-393-59	905	<u> </u>				UCF		(W)
44 If this is a c	hange of ope	erator fill in th	e OG	RID numb				soperator						
	Previous	Operator Sig	natur	e				Printed	Name			1	itie	Date
I														

Submit to Appropriate District Office, State Lease - 6 copies Fee Lease - 5 copies DISTRICT I P.O. Box 1980, Hobbs, NM 88240

State of New Mexico Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION

2040 Pacheco St.

Form C-105 Revised 1-1-89

WELL API NO.

30-015-27286

DISTRICT II P.O. Drawer DD, Artesia	a, NM 88210			anta Fe,	CO St.	8750	5		L			TATE 🔀	S FI	E
1000 Rio Brazos Rd, A	ztec, NM 874	10							1 -	State Oil & -379-4	Gas Lease	No.		
WELL CO	OMPLETI	ON OR RE	COMPLE	TION REP	ORT A	ND L	.OG						1272)	
1a. Type of Well: OIL WELL] G/	AS WELL 🗌	DRY	OTHER			····		7.1	Lease Name	e or Unit Agre	ement Na	me	67
b. Type of Completion: NEW WORK WELL OVER	DEEPI	EN PLI	JG CK 🔀	DIFF RESVROT	HER				С	halk Bluff	12	RE	SEP 2001	A 69 10 11 12 13 74 Ch
2. Name of Operator		$\overline{\mathcal{I}}$,			Well No.	25.5	OCD C	ADTED	
Mewbourne Oil Co	mpany								1	21	or Wildcat &		"ITESIA	~~~~
3. Address of Operator PO Box 5270, Hot	obs, New I	Mexico 882	41						Lo	ogan Drav	w Wolfcar	Ŷ}>,_		Note:
4. Well Location	М .	660		Sai	uth	•			90	_		_	est	7
ــ Unit Letter	<u>M</u> :	<u>660</u> F	eet From The	Sou	uun		ine and _ スヿ	98	3 U	Feet	From The _	V	est	Line
Section	36		wnship	17S	Range		28€		MPN			Edd	,	County
10. Date Spudded 02/03/93	11. Date T.D 03/19/		i	Compl. <i>(Ready)</i> 17/01	to Prod.)		13. Eleva 3635' (OF & 1	RKB, RT, G	R, etc.)	14. Ele	v. Casingt 3635'	nead
15. Total Depth 10060	16. F	Plug Back T.D. 8300		17. If Multiple Many Zo		How		Interval Drilled E		Rotary Too	. 4	Cable 7	ools	
19. Producing Interval(s)	, of this comp	letion - Top, B	ottom, Name		••		•				20. Was Di	irectional No		ade
21. Type Electric and Oth	ner Logs Run	······································						· · · · · · · · · · · · · · · · · · ·		22. Was W	ell Cored	No	<u> </u>	
23.	 	CA	SING R	ECORD	(Repo	ort all	strings	set i	n w	ell)				
SING SIZE	WEIG	SHT LB/FT.	DEP	TH SET	Н	OLE SI	ZE		CEM	ENTING F	RECORD	Al	MOUNT P	ULLED
13 3/8"		48#	3	399'		17 1/2	<u>)</u>			530 sk	S		N/A	
9 5/8"		36#		603'		12 1/4				1150 sk			N/A	
7"		26#	+ 9	253		8 3/4	•			1620 sk	(S		N/A	
			_											
24.		LIN	ER RECO	RD	<u>. </u>			2	5.	TL	JBING RI	CORE)	
SIZE	TOP	В	оттом	SACKS CE	MENT	SC	REEN			IZE	DEPTH		PACKE	RSET
4 1/2"	8439'		10057'	225					2	7/8"	73	52	TAC @	7190'
				<u> </u>										
26. Perforation record			er)					_	FR/		, CEMEN			
7164-7277'. 58 .3	8" diamete	er holes				DEF	TH INTE		\dashv		FAND KINE			
							7164-72	211	\dashv	5000	gals 20%	Ne-re a	k Dali sea	iers
									-		<u></u>	····-		
28,				PRODUC	CTIO	N								
Date First Production 07/17/01				lowing, gas lift			and type p	ump)			Well S		od. or Shu	t-in)
Date of Test 07/22/01	Hours Tes		Choke Size N/A	Prod'n Fo		Oil - Bb	L. 38	Gas	MCF 88	.	Water - BbL. 78		Gas - Oil Ra	tio
Flow Tubing Press.	Casing Pr		Calculated 24 Hour Rate	- Oil - BbL			as - MCF 88					vity - API	(Corr.)	
29. Disposition of Gas (S			c.)	00	•		00				fitnessed By		38	
Sold			•							J. Ca	-			
30. List Attachments C-103 & C104.			······································							<u>t</u>				
31. Horeby certify that th	ne information	shown on bot	h sides of this	form is true and	d complet	e to the	best of my	knowle	dge a	nd belief				
Signature 1	A. Marx			Printed N.I	M. You	ng			Title	District N	/lanager	Ď~	te_08/24	1/01
	7 }		·											

INSTRUCTIONS

This form is to be filed with the appropriate District Office of the Division not later than 20 days after the completion of any newly-drilled or deepened well. It shall be accompanied by one copy of all electrical and radio-activity logs run on the well and a summary of all specific tests conducted, including drill stem tests. All depths reported shall be measured depths. In the case of directionally drilled wells, true vertical depths shall also be reported. For multiple completions, Items 25 through 29 shall be reported for each zone. The form is to be filed in quintuplicate except on state land, where six copies are required. See Rule 1105.

INDICATE FORMATION TOPS IN CONFORMANCE WITH GEOGRAPHICAL SECTION OF STATE

	5	outneastern	New Mexico				ortnwestern		
T. Anh	٧	Τ.	Canyon	8327.0	T. Ojo	Alamo	T.	Penr	า. "B" า. "C" า. "D" iville
T. Salt	<i></i>		Strawn	8820.0	T. Kirtl	and-Fru	itland T.	Peni	า. "C"
B. Salt		Т.	Atoka	9380.0	Γ. Pict	ured Cli	ffs T.	Penr	า. "D"
T. Yate	:S	328.0 T	Miss	10040.0	T. Cliff	House	T.	Lead	lville
T. 7 Riv	vers	464.0 T	Devonian		Γ. Men	efee	Т.	Mad	ison
T. Que	en	1008.0 T	Silurian		Γ. Poir	nt Looko	ut T.	Elbe	rt
T Grav	/bura	1360.0 T	Montova		r Man	cos	T	McC	racken
T Con	Androc	17950 T	Cimpoon	-		i in	T	Jana	cia Otzta
T Glori	ieta	3155.0 T	McKee		Base (Greenho	rn T	Gran	lite
T Pade	dock	T	Fllenburger	`	Γ Dak	nta	··· — Ť		
T Bline	abok	Ť	Gr Wash		E Mor	rison			
T Tubb)~! <u> </u>	4025 n T	Delaware Sand	· ·		ilto			
T Drinl	kard	4855.0 T	Rone Springs	1 ——— -	Γ. Foto	ada			
T Aho	naru	5120.0 T	Morrow	9494 0	r. Σπα	aua	†		-
T Wolf	camp	6702 0 T	WOTON		r. VVIII	yale	†.		·
T Denr	camp _	82100 T		 	Dorr	ne	——— [†] .		
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r. Cisc	o (bougi	10) 1.							
	_		OIL OR G						
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No. 2, f	rom	to		*****	No.	4, from		to	
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Include	data ni	n rate of water	inflow and elev						
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			to				eet		
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District I PO Box 1980, Hobbs, NM 88241-1980

State of New Mexico Energy, Minerals & Natural Resources Department Form C-101

District II 811 South Flist, Artesia, NM 88210

Revised October 18, 1994 Instructions on back

District III 1000 Rio Brazos Rd., Aztec, NM 87410

Submit to Appropriate District Office State Lease - 6 Copies Fee Lease - 5 Copies

District IV 2040 South Pacheco, Santa Fe, NM 87505

OIL CONSERVATION DIVISION 2040 South Pacheco Santa Fe, NM 87505

AMENDED REPORT

APPLICA	NOITA	FOF	R PE	RMIT	TO DR	ILL, RE-I	EΝ	TER, DE	ERI	EN PLUGE	BACK	, OR AD	D A ZONE
Mewbourne PO Box 527	Oil Comp		/		tor Name an			PER, DE	30-	A list on	ACK 256171	200	RID Number 14744
Hobbs, N.M. 505-393-590	88241							31-1	0C.D	JUN 2001 RECEIVED	∞ <i>i</i>	30 - 015	Pl Number -27286
₄Property 787			Cł	alk Bluff	36 State 1		perty	y Name R	<u> </u>	ARTESIA	00/		₅Well No. 1
						,Surfac	се	Location	જિંુ	35 47 51 16			
UL or lot no.	Section 36	Town 17	nship 'S	Range 26É	Lot Idn	Feet from th	е	North/South S		Feet from the 990	East	/West Line W	County Eddy
		"P	rope	Sed B	ottom l	Hole Loca	atic	on If Diffe	reni	t From Surf	ace		
UL or lot no.	Section	Town	nship	Range	Lot idn	Feet from the	е	North/South	line	Feet from the	East	/West Line	County
	<u></u>	9Pro	posed	Pool 1		·				10Propos	ed Pool	2	
							J.						
11Work Ty	•		1	₂Well Type G	Code	13Ca	ible/F R	Rotary		14Lease Type Cod	le	15Ground	Level Elevation 3625
uMar	itipie			17Proposed 940		Canyon/		ation fcamp	TB.	18Contractor		205	Spud Date
		•		21	ropose	d Casing	j ai	nd Ceme	nt F	Program			····
Hole Siz	re	Ca	asing S	Size	Casing	weight/foot	F	Setting Dept	ħ	Sacks of Cer	nent	Esti	mated TOC
					·							ļ. ———	
													
"Describe the properties of the bloom of the	roposed prog wout preven	gram. tion pro	If this a ogram,	application if any. Us	is to DEEPE e additional :	N or PLUG BA sheets if neces	CK g sary.	ive the data on	the pr	resent productive z	one and	proposed new	productive zone.
above top	perforatio	ns. Ca	ap Cl	BP w/ 35	cement.	Attempt a co	omp		Cany	il Company wou yon @ +/- 8550 '200'.		to set a CIE	BP 100'
During ope	erations of	f plugi	back	& testing	, a 7 1/16	x 3000 psi E	3OP	w/ 2 3/8"rai	ns &	blinds will be u	sed.		
231 hereby certify to best of my knowle	that the infor	mation lief.	given	above is tr	ue and comp	lete to the	7	0	L C	ONSERVA	TION	DIVISI	ON
Signature:	AMI	U					App	proved By:		Juni 1	W.	Gum	5
Printed name:	N.M. Youn	g)					Titte	e:		Western	Sy	esursi	W
Title: District I	Manager			-			App	proval Date:	AIIG	2 9 2001	Expirat	ion Date:	VIC 2 0 200

DISTRICT I P.O. Box 1980, Hobbs, NM 88240

OIL CONSERVATION DIVISION P.O. Box 2088

Santa Fe, New Mexico 87504-2088

DISTRICT II
P.O. Drawer DD, Artesia, NM 88210

D. JCT III 1000 Rio Brazos Rd., Aziec, NM 87410

WELL LOCATION AND ACREAGE DEDICATION PLAT
All Distances must be from the outer boundaries of the section

Operator			LEASE		Len terr
METATRATIDATE	OIL COMPANY	·	CHALK BLUFF	36 STATE	1 ·
Unit Letter	Section COMPANY	Township	Range	County	<u> </u>
	ł	· -			D11
<u>M</u>	36	17 SOUTH	27 EAST	NMPM ED	DY
Actual Footage Loc	ation of Well:				
990.	feet from the	EST line and	660	feet from the SOU	TH line
Ground level Elev.		ig Formation	Pool		Dedicated Acreage:
2625		•	****	11 45	220
3635		<u> </u>		p Morrow North	320 Acres
1. Outline	e the screage dedicate	d to the subject well by colored po	encil or hachure marks on the	e plat below.	
2 76			# 1 # # 1 #		
2 II IBON	e man one isses is dec	licated to the well, outline each an	d recurring ma ownersurb men	tent (port as to mostring interest a	ind royany).
3 If mon	e than one lesse of dif	Terent ownership is dedicated to the	se well have the interest of a	all owners been consolidated by o	ommunitization.
	tion, force-pooling, et				
KX	Yes		pe of consolidation <u>C</u>	<u>ommunitization</u>	
		s and tract descriptions which hav	e actually been consolidated	(Use reverse side of	
	if neccessary.		, ,		•
		to the well until all interests have	been consolidated (by comm	unitization, unitization, forced-po	oling or otherwise)
		minating such interest, has been a			•
			-	<u> </u>	
	<u> </u>	I -	1	OPER	ATOR CERTIFICATION
	:	i		I here	tby certify that the information
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	l		i	best of my b	rowledge and belief.
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1		1		Signature	.1//
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 			_	Bill Pi	erce
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		<u> </u>	!		ne Oil Company
1	<u>l</u>	.	1	Date	
				October	27, 1992
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<u> </u>				SURV	EYOR CERTIFICATION
				50 C C C C C C C C C C C C C C C C C C C	
					rtify that the well location shown
	1		•		t was plotted from field notes of
	i		i .		eys made by me or under my
		· 1	1		and that the same is true and
	1		1	PERCENT 1	the best of my knowledge and
	1		I	belief.	
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	e Par Cara				3640
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	1030	1700 2010 2040 2	· · · · · · · · · · · · · · · · · · ·		

State of New Mexico Energy, Minerals and Natural Resources Department

Form C-103 Revised 1-1-89

District Office DISTRICT I OIL CONSERVATION DIVISION WELL API NO. P.O. Box 1980, Hobbs, NM 88240 2040 Pacheco St. 30-015-27286 Santa Fe. NM 87505 DISTRICT II

Drawer DD, Artesia, NM 88210 sindicate Type of Lease STATE FEE State Oil & Gas Lease No. 1000 Rio Brazos Rd., Aztec, NM 87410 E-379-4 SUNDRY NOTICES AND REPORTS ON WELLS (DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A Lease Name or Unit Agreement Name DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.) Chalk Bluff 36 State Type of Well: WELL [\boxtimes «Well No. Name of Operator Mewbourne Oil Company 1 Pool name or Wildcat Address of Operator PO Box 5270, Hobbs, New Mexico 88241 Logan Draw Atoka 4Well Location 990 660 South West Feet From The Feet From The Line **Unit Letter** Line and R28E 36 Section 17S **NMPM** Eddy County Range 10Elevation (Show whether DF, RKB, RT, GR, etc.) 3635' GL Check Appropriate Box to Indicate Nature of Notice, Report, or Other Data NOTICE OF INTENTION TO: SUBSEQUENT REPORT OF: PLUG AND ABANDON PERFORM REMEDIAL WORK REMEDIAL WORK ALTERING CASING TEMPORARILY ABANDON CHANGE PLANS COMMENCE DRILLING OPNS. PLUG AND ANBANDONMENT **PULL OR ALTER CASING** CASING TEST AND CEMENT JOB OTHER: PB Atoka. Test & plug off Canyon. Test & Produce Wolfcamp 12Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work) SEE RULE 1103. 6/28/01... POOH w/ tbg. RIH w/ 4 1/2" CIBP & set @ 9400'. Dump 35' cement on plug. New PBTD @ 9365'. Test to 1000 psi. OK. Perforate Canyon @ 8528-72' (12'. 2 spf. 24 holes). Acidize w/ 2100 gals 20% Ne-Fe & ball sealers. Swab test. 7/05/01...POOH. RIH & set 7" RBP @ 8300'. Load & test to 1000 psi. OK. New PBTD @ 8300'. Perforate Wolfcamp @ 7164-7277' (29'. 2 spf. 58 holes). GIH w/ tbg. Acidize perfs w/ 5000 gals 20% Ne-Fe & ball sealers. Swab test. 7/16/01...POOH w/ test equipment. Run tbg & rods & put well on production. I hereby certify that the information above is true and complete to the best of my knowledge and belief. SIGNATURE

TYPE OR PRINT NAME N.M. YOUNG

DATE 08-24-01

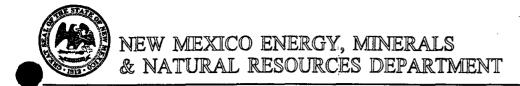
TELEPHONE NO. 505-393-5905

(This space for State Use

ED BY

Sim W. Sum Wisteret Supervisor

NOTIONS OF APPROVAL, IF ANY:



OIL CONSERVATION DIVISION DISTRICT II ARTESIA 811 S. FIRST ST. ARTESIA, NM 88210 (505) 748-1283 FAX (505) 748-9720

Jennifer A. Salisbury

January 28, 2000

Mewbourne Oil Company P.O. Box 5270 Hobbs, NM 88241

Re: Well Placed In Pool

Gentlemen/Madams:

As the result of Division Order 11300, the following described gas well has been placed in the pool shown below. This change in nomenclature has been made in our files. Please change your records to reflect the proper pool name. All subsequent reports must show this nomenclature until further notice.

Logan Draw; Atoka, Southeast Gas Pool Chalk Bluff '36' State #1 Unit M, Section 36, Township 17 South, Range 27 East, NMPM Poolcode: 96979

Transporters are advised by copy of this letter, to change their records to reflect the pool name as established by this order, effective October 1, 1999.

Sincerely,

Bryan Arrant

District Geologist

Cc: Amoco Pipeline Company

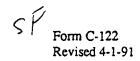
Transwestern Pipeline Company

Trepo Arrend

Santa Fe Mae

Well File

State of New Mexico Energy, Minerals and Natural Resources Department

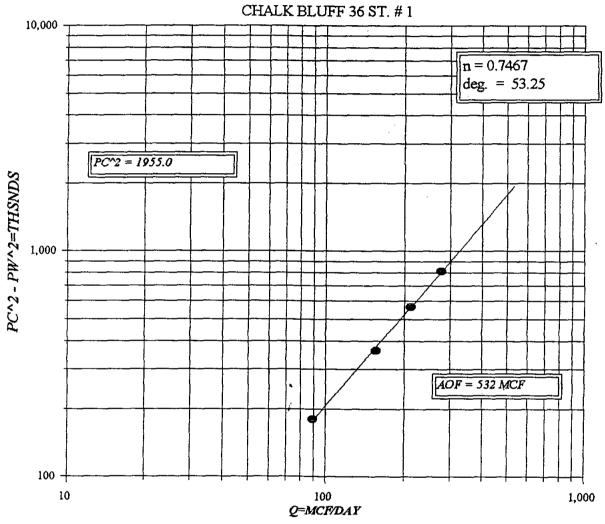


OIL CONSERVATION DIVISION

P.O. Box 2088 Santa Fe, New Mexico 87504-2088

	/	M	JLTII	POINT	AND	ONE	POIN	T BACK	PRES	SURI	e test fo	OR GA	s w	ELL		
Ope	rator V Mev	bourn	o Oil	Compa	ากง	,				Lease	or Unit Name Chalk Blu	eff 36	Sta	to.		
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L 938	5 H	385	Gg	696	% CO ₂	4.586	5 %	N ₂ 0.788	% H	₂ S	Prover	ļ	Meter	Run 068	Tap FI	
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2.	3.068 3.068			27 27		32.0 60.0		70 77	124				11		$\frac{1}{1}$	<u>hr</u> hr
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4. !	_	106	9.3	1143.	4 8	11.6	_		P_c^2	- P _w ²]					
5.							<u>!</u>		-							
Absolu	ne Open Flo		32				Mcfd	@ 15.025	Angle	of Slope	θ53.2	25		Slope, n_	.740	<u>57</u>
Reman		ll pro					t -			 .	 					
	* Cori	rected	to 4	.586%	<u></u>											
Appro	ved By Divi	sion		Condu	acted By:	••	, E	(Calculated	By:			Check	ed By:		
				Ja	arrel	Serv	ices	, Inc.	Bob i	Murra	ay		Bok	o Murra	У	

MEWBOURNE OIL COMPANY



v	" com un		עוט מתחטי		: L. B.		. METT NO.			Pc = 1398.2	Pc2 =	
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				:0.018231				RANGE				1178.8 *[]
==			=======					========	:::::::::::::::::::::::::::::::::::::::	1141.1		1069.3 *
	VOL 1	: 89	DCTA 1	: 1332.2			RESV.TEMP	167.9	Į I	 Pc2-Pw2= 180.0	Pw2 =	* 1775.0 *
	VOL 2			: 1262.2			THAT. PURE	107.5	 	361.1	INZ -	1593.9 *
	VOL 3			: 1178.2			SHUT-IN PR	= 1398 2]	565.5		1389.5 *
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State of New Mexico Energy, Minerals and Natural Resources Department

54

Form C-103 Revised 1-1-89

DISTRICT OIL CONSERVATION DIVISION P.O. Box 1980, Hobbs, NM 88240 WELL API NO. 2040 Pacheco St. 30-015-27286 Santa Fe. NM 87505 DISTRICT II P.O. Drawer DD. Artesia, NM 88210 sindicate Type of Lease STATE FEE DISTRICT III State Oil & Gas Lease No. 1000 Rio Brazos Rd., Aztec, NM 87410 E-379-4 SUNDRY NOTICES AND REPORTS ON WELLS (DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A ¿Lease Name or Unit Agreement Name DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" Chalk Bluff 36 State (FORM C-101) FOR SUCH PROPOSALS.) Type of Well: OIL WELL WELL X OTHER 2Name of Operator Mewbourne Oil Company Address of Operator Pool name or Wildcat PO Box 5270, Hobbs, New Mexico Wildcat Atoka Well Location 660 South 990 West Unit Letter Feet From The Feet From The Line and Line 36 17s 27e Eddy Section Township County Range 10Elevation (Show whether DF, RKB, RT, GR, etc.) 3625 GL 11 Check Appropriate Box to Indicate Nature of Notice, Report, or Other Data NOTICE OF INTENTION TO: SUBSEQUENT REPORT OF: PLUG AND ABANDON PERFORM REMEDIAL WORK REMEDIAL WORK ALTERING CASING CHANGE PLANS PLUG AND ANBANDONMENT MPORARII Y ARANDON COMMENCE DRILLING OPNS. ULL OR ALTER CASING CASING TEST AND CEMENT JOB OTHER: OTHER: Test Atoka 12Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work) SEE RULE 1103. 9-21-99...POOH w/ Tbg. 9-22-99...Set RBP over Morrow perfs. Perforate Atoka perfs @ 9466-84. GIH w/ Pkr & tbg. 9-24-99...Acidize new Atoka perfs w/ 3000 gals 7 1/2% HCL adding N2 w/ Ball Sealers. Swab & Flow test. 10-16-99...Frac Atoka perfs w/ 30,000 gais 70 Quality Foam using 10,000 lbs 20/40 Interprop. Flow back & clean-up 10-19-99... Turn to sales.

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE WINDOWS DATE 11-01-99

505

TYPE OR PRINT NAME NIM YOUNG

his space for State Use)

APPROVED BY

Sim W. Sum

TITLE District Supervisor

DATE // 5 -99

District I PO Box 1980, Hobbs, NM 88241-1980

District II 811 South First, Artesia, NM 88210 District III 1000 Rio Brazos Rd., Aztec, NM 87410 State of New Mexico
Energy, Minerals & Natural Resources Department

SP

Form C-10
Revised October 18, 199
Instructions on bac
Submit to Appropriate District Offic

OIL CONSERVATION DIVISION 2040 South Pacheco Santa Fe, NM 87505

5 Copie MENDED REPOR

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Mewbourne	e Oil Con	npany V	1 Operator nai	ne and Address	•					² OGRID No 14744	ımber	
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V. Well	Compl		²⁶ Ready Date 09/24/99	asing & Tubing	10060		9780	pth Se	9466-94	184'		DHC, DC, MC
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V. Well	Compl d Date 03/93 31 Hole St	Zé	²⁶ Ready Date 09/24/99		10060		9780 33 De	•	9466-94	184'	Sack:	Cement
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Submit to Appropriate District Office

State of New Mexico

Form C-105 Revised 1-1-20

State Lease - 6 copies												Revis	sed 1-1-89
Fee Lease - 5 copies <u>DISTRICT I</u> P.O. Box 1980, Hobbs	s, NM 88240	OIL	CONS	ERVAT	ΓΙΟΝ St. St.	I DI\	/ISIOI	1	WELL A 30-015		5		
DISTRICT II O. Drawer DD, Artes	sia, NM 88210		S	040 Pached	9 NN 20	87 50	5		5. Indica	ite Type	of Lease STA	TE 🔀	FEE .
DISTRICT III				6,6		4	132	İ	6. State	Oil & G	as Lease N	io.	
1000 Rio Brazos Rd,	<u> </u>			17	. Do-	<u> </u>	127		E-379-	4			
· · · · · · · · · · · · · · · · · · ·	OMPLETIO	N OR REC	OMPLET	TON REPO	ORTA	MDal	OG [3]						
1a. Type of Well: OIL WELL	GAS	WELL 🔀	DRY	OFHER OCE	PECEI	VED	277		7. Lease	Name or	Unit Agreer	nent Nan	ne
b. Type of Completion: NEW WORI WELL OVER	κ	PLUG BACK		DIFF COLOTH		ESIA	~ 65°/		Chalk	Bluff "3	6" State		
2. Name of Operator	•				रेश्वर	سر دا د			8. Well N	0.	-		
Mewbourne Oil C							-		1		ما س ر ، و اما	1 -	
3. Address of Operator P. O. Box 5270, I		8241									Vildcat SE		Ptoka
4. Well Location	<u> </u>												
Unit Letter	<u> </u>	660 Fee	t From The _	Sou	th	t	ine and	990	<u> </u>	Feet Fro	om The	W	est Line
Section	36	Town	ship '	178	Range		27E	N	МРМ			Edd	y County
10. Date Spudded	11. Date T.D.			ompl. (Ready to	o Prod.)		13. Elevati	•	* & RKB, I	RT, GR,	etc.)	14. Elev	. Casinghead
02/03/93	03/19/9		09/2				3635' G						3635'
15. Total Depth 10060'	16. Pk	ig Back T.D. 9780'		17. If Multiple Many Zon		How NA		ntervals rilled By		ry Tools	:	Cable To	ools
19. Producing Interval(s 9466-9470' & 94		_	om, Name						•	20). Was Dire	ctional No	Survey Made
21. Type Electric and O	ther Logs Run								22. W	as Well		No	
23		CAS	SING RI	ECORD (Repo	ort all	strings	set in	well)	•			
CASING SIZE	WEIGH	IT LB/FT.	DEPT	H SET	Н	OLE SI	ZE	C	EMENT	NG RE	CORD	AN	OUNT PULLED
13-3/8"		48#	3	99'		17-1/2	2**		530 sk	s Class	s C		None
9-5/8"		36#	26	303'		12-1/4	l ^e		1150 sl	s Clas	s C		None
7"		26#	92	253'		8-3/4	19		1620 sks Class H				None
			-		-						·		
24.		LINE	R RECO	RD	<u> </u>		L	25		TUE	ING RE	CORD	
SIZE	TOP		TTOM	SACKS CE		S	CREEN	25	SIZE	<u></u>	DEPTH		PACKER SET
4-1/2"	8439'		0057'	225					2-3/8	•	940		9407'
			-			1							
26. Perforation recor	•												JEEZE, ETC.
9466-9484', 0.44	" entry hole o	liameter, 56	noies total			DE	PTH INTER				ND KIND		
						<u> </u>	9466-94	64	Fra	ctures	umulated	with It	0000# IP 20/40
*···													
28.	—	Producti		PRODUC lowing, gas lift,			and top or	room l			l Mail Ch	tus (D=	and an Office in)
Date First Production 09/24/99		Flowing	on Medico (1	nowing, gas inc	, pumpin	y - 312 0	ана туре ра	тф)			Well Sta		od. or Shut-in) ducing
Date of Test 10/18/99	Hours Test	-	hoke Size 24/64"	Prod'n Fo Test Peri		Oil - Bl	2	Gas - 3	MCF 17	Wa 	ater - BbL. 2	0	as - Oil Ratio 158500
Flow Tubing Press. 45	Casing Pres	1	alculated 24- lour Rate	- Oil - BbL		1	as - MCF 317	W	ater - BbL		Oil Gravi	•	
45 29. Disposition of Gas			}				31/		2	Fact VARIA-	essed By		33.8
Sold										Mr. Mil	•		
30. List Attachments													

31. I hereby certify that the information shown on both sides of this form is true and complete to the best of my knowledge and belief

Printed Name Jerry Elgin

10/19/99 Date _

District I PO Box 1980, Hobbs, NM 88241-1980

State of New Mexico

Energy, Minerals & Natural Resources Department

Form C-101 Revised October 18, 1994

Instructions on back

Submit to Appropriate District Office

State Lease - 6 Copies Fee Lease - 5 Copies

811 South First, Artesia, NM 88210 District III 1000 Rio Brazos Rd., Aztec, NM 87410

District II

District IV

2040 South Pacheco, Santa Fe, NM 87505

OIL CONSERVATION DIVISION 314157677 2040 South Pacheco Santa Fe, NM 87505

AMENDED REPORT APPLICATION FOR PERMIT TO DRILL, RE-ENTER DEEPEN PLAGBACK OR ADD A ZONE

Mewbourne Oil Company P. O. Box 5270	Operator Name and Address	OCD ARTESIA	20GRID Number 14744
Hobbs, NM 88241		1000000112915h	30 - 0 15-27286
Property Code	sProperty Chalk Bluff "36" State	Name .	»Well No.

Surface Location

UL or lot no.	Section	Township	Range	Lot idn	Feet from the	North/South line	Feet from the	East/West Line	County
М	36	178	27E		660	South	990	West	Eddy

.Proposed Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West Line	County
رير د	At	•Proposeo oka Gas P					₁₀Ргороз	ed Pool 2	

11Work Type Code	₁₂Weil Type Code G	13Cable/Rotary R	14Lease Type Code S	15Ground Level Elevation 3635
16 Multiple	17Proposed Depth	18Formation	19Contractor	₂₀ Spud Date
No .	10060	Atoka	Key Energy Services	09-15-99

²¹Proposed Casing and Cement Program

Hole Size	Casing Size	Casing weight/foot	Setting Depth	Sacks of Cement	Estimated TOC
17-1 <i>[</i> 2"	13-3/8"	48#	399	530·	Surface
12-1/4"	9-5/8"	36#	2603	1150	Surface
8-3/4"	7"	26#	9253	1620	Surface
6"	4-1/2" Liner	11.6#	10057	225	TOL @ 8439'

²²Describe the proposed program. If this application is to DEEPEN or PLUG BACK give the data on the present productive zone and proposed new productive zone. Describe the blowout prevention program, if any. Use additional sheets if necessary.

- 1) Temporarily abandon Morrow perforations 9842-9856' and 9864-9886' by setting a cast iron bridge plug at 9800' and dumping 20' cement plug on top.
- 2) Test the Atoka Formation through perforations 9442-9446' and 9452-9464'.
- 3) File for commingling permit if well conditions warrant.

6" 5000 psi WP dual hydraulic BOP's will be utilized on this project. Any produced fluids will be diverted through a 5000 psi WP adjustable choke to a steel tank via 2" steel lines

I hereby certify that the information given above is true and complete to the best of my knowledge and belief.	OIL CONSERVATION DIVISION						
Signature: Asalan Elin	Approved By:	W. Sum B6X					
Printed name: Jerry Elgin	Title: Wis	trut Sugarvisor					
Title: District Manager	Approval Date: 8-/7-99	Expiration Date: 8 - /7 - cc					

District (PO Box 1980, Hobbs, NM 88241-1980

State of New Mexico

Form C-102 Revised October 18, 1994 Energy, Minerals & Natural Resources Department

Instructions on back

Submit to Appropriate District Office State Lease - 4 Copies

District II 811 South First, Artesia, NM 88210

District III 1000 Rio Brazos Rd., Aztec, NM 87410

District IV 2040 South Pacheco, Santa Fe, NM 87505 OIL CONSERVATION DIVISION

2040 South Pacheco Santa Fe, NM 87505

MAMENDED REPORT

Fee Lease - 3 Copies

API Numb 30-015-27		North Illinois Camp Atoka Gas Pool	1212
Property Code	Chalk Bluff "36" State	sProperty Name	sWell Number
70GRID No. 14744	Mewbourne Oil Company	sOperator Name	₃Elevation 3635

	UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West Line	County
ı	M	36	178	27E		660	South	990	West	Eddy
•								<u>'</u>		

"Bottom Hole Location If Different From Surface

	UL or lot no.	Section	Townshi	p Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West Line	County
ŀ	12Dedicated Acres 13Joint or Infill 14Con		14Consolidat	ion Code	15Order No.	<u> </u>				
	320.00		1	С	ļ					

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

6					"OPERATOR CERTIFICATION
1					I hereby certify that the information contained herein is
					true and complete to the best of my knowledge and belief
					Some Eli
			·		Signature Jetzy Elgin
l					Printed Name
					District Manager
					Title
	·				08-13-99 Date
					Date
	////////	///////////////////////////////////////	1111111111	1//////////////////////////////////////	CLIDVEVOD CEDTICICATION
	1	/// / / / / / / / / / / / / / / / / / /	, . , . , . , . , .	,,,,,,	"SURVEYOR CERTIFICATION
1		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	, . , , , , , , , , , ,	1	I hereby certify that the well location shown on this plat
		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and
		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me
11/1/1		,,,,,,,			I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and
111111		,,,,,,,,			I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.
1211111					I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief. 10-19-92
111111111					I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief. 10-19-92 Date of Survey
11111111111	990'				I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief. 10-19-92 Date of Survey
11111111111	990'				I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief. 10-19-92 Date of Survey
	990'				I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief. 10-19-92 Date of Survey Signature and Seal of Professional Surveyer:
	990'				I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief. 10-19-92 Date of Survey Signature and Seal of Professional Surveyer: Original signed by Herschel Jones
	660				I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief. 10-19-92 Date of Survey Signature and Seal of Professional Surveyer:

	. ~ 1	1					SÉ
	HOIVISION	State of N	lew Mexico		5.5		<u> </u>
Submit 3 Copies Appropriate District Office CONSER	' Rnemy 1	Minerals and Nat	tural Resources Departmen	ıt		Form C Revised	
P.O. Box 1980, Hobbs, NM 88240	30.00				はこといとい		tructions om of Page
DISTRICT II P.O. Drawer DD, Antonia, Ning 35010	HUOTER		ATION DIVISION ox 2088	1	Ribb		an or rage
DISTRICT III	Sa	inta Fe, New M	exico 87504-2088		665		
1000 Rio Brazos Rd., Aztec, NM 87410	DEOLIEST E		BLE AND AUTHORIZ	ATION	C. C. D.	÷	
I.			L AND NATURAL GAS				
Operator	10 110	THOI OIT OIL	- AND ITAL CITAL CAN		API No.		·
Mewbourne Oil Company	,			30-	015-27286	5 :	
Address	No. Moudes	00241					
P.O. Box 5270 Hobbs, Reason(s) for Filing (Check proper box)	New Mexico	88241	Other (Please explain	-1			
New Well	Change is	Transporter of:	Com to seek them	•,			
Recompletion	· -	Dry Gas					
Change in Operator	Cazinghead Gas	Condensate					
If change of operator give name and address of previous operator							
II. DESCRIPTION OF WELL	AND LEASE						
Lease Name		Pool Name, Includ	ing Formation		of Lease	L	case No.
Chalk Bluff "36" State	1	N. Illino	is Camp Morrow	State,	THEN XXX X	E-37	9-4
Location	000		West 660			South	
Unit Letter M	990	_ Feet From The	West Line and 660	Fe	et From The	Juucii	Line
Section 36 Township	. 17S	Range 27E	, NMPM, E	ddy			County
III. DESIGNATION OF TRAN	SPORTER OF O	IL AND NATU	RAL GAS				
Name of Authorized Transporter of Oil	or Conde		Address (Give address to which				
Amoco Pipeline ICT			Oil Tender Dept.				
Name of Authorized Transporter of Casing	_	or Dry Gas 🏋	Address (Give address to which P.O. Box 1188 Ho			m is 10 be se 77251	w)
Transwestern Pipeline If well produces oil or liquids.	Unit Sec.	Twp. Rge.		When	7		
give location of tanks.	м 36	17S 27E	Yes	_i	03	3/30/93	
If this production is commingled with that i	from any other lease or	pool, give comming	ling order number:				
IV. COMPLETION DATA	Oil Wel	l Gas Well	New Weil Workover	Deepen	Plug Back S	iame Res'v	Diff Res'v
Designate Type of Completion		i X	X				
Date Spudded	Date Compl. Ready to	o Prod.	Total Depth		P.B.T.D.		
02/02/93	03/30/93		10,060' Top Oil/Gas Fay			10,012	
Elevations (DF, RKB, RT, GR, etc.)	Name of Producing F	OMMINON	9,842		Tubing Depth	9,803	1
3650' KB 3635' GR	Morrow		7,042		Depth Casing		
9842'-9856', 9864'-988	36'						
			CEMENTING RECORD	•			
HOLE SIZE	13-3/8"		DEPTH SET		530 sx.	ACKS CEMI Class	ENT CII
17-1/2"	9-5/8"		2603		1150 sx		
12-1/4" 8-3/4"	7"		92531		1620 sx		
6"	4-1/2"		10057		225 sx.	Class	"H"
V. TEST DATA AND REQUES	T FOR ALLOW	ABLE					
OIL WELL (Test must be after n Date First New Oil Run To Tank	ecovery of total volume Date of Test	of load oil and must	be equal to or exceed top allow Producing Method (Flow, pum			r juli 24 kola	rs.)
Length of Test	Tubing Pressure .		Casing Pressure		Choke Size		
Actual Prod. During Test	Oil - Bbls.		Water - Bbis.		Gas- MCF		
GAS WELL		·					
Actual Prod. Test - MCF/D	Length of Test		Bbis. Condensate/MMCF		Gravity of Co		
1500		Hours	6.6 Casing Prossure (Shut-in)		Choke Size	55	
Testing Method (pitot, back pr.) Back Pressure	Tubing Pressure (Shu 2700#	//	Packer			1/4"	
· · · · · · · · · · · · · · · · · · ·			-, 				

INSTRUCTIONS: This form is to be filed in compliance with Rule 1104

(505)

VI. OPERATOR CERTIFICATE OF COMPLIANCE

I hereby certify that the rules and regulations of the Oil Conservation Division have been complied with and that the information given above

1993

04/02/93 Date Appli

April 5,

 Request for allowable for newly drilled or deepened well must be accompanied by tabulation of deviation tests taken in accordance with Rule 111.

Date Approved .

By_

Title.

OIL CONSERVATION DIVISION

ORIGINAL: SIGNED BY

MIKE WILLIAMS SUPERVISOR, DISTRICT II

APR 2 6 1993

2) All sections of this form must be filled out for allowable on new and recompleted wells.

Engineer Title 393-5905

- 3) Fill out only Sections I, II, III, and VI for changes of operator, well name or number, transporter, or other such changes.
- 4) Separate Form C-104 must be filed for each pool in multiply completed wells.

District Office ANSER ON DIVISION Energy, I Fee Lease 16 copies State of New Mexico Form C-105 Energy, Minerals and Natural Resources Department RECE TED Revised 1-1-89 Fee Lease - 5 copies OU CONSERVATION DIVISION WELL API NO. P.O. Box 1980, Hobbs, NM, 88240 AM ISTRICT II GH JAM P.O. Drawer DD, Artesia, NM 88210 30-015-27286 P.O. Box 2088 RECLEVED 5. Indicate Type of Lease Santa Fe, New Mexico 87504-2088 STATE | X FEE 100 1 5 100 5 6. State Oil & Gas Lease No. E-379-4 1000 Rio Brazos Rd., Aztec, NM 87410 WELL COMPLETION OR RECOMPLETION REPORT AND LOG **** * la. Type of Well: 7. Lease Name or Unit Agreement Name OIL WELL GAS WELL X DRY . OTHER b. Type of Completion: Chalk Bluff "36" State NEW WORK OVER DEEPEN 2. Name of Operator 8. Well No. 1 Mewbourne Oil Company 9. Pool name or Wildcat Address of Operator N. Illinois Camp Morrow P.O. Box 5270 Hobbs, New Mexico 88241 990__ Feet From The West 660 South Unit Letter ___M___: Line and Feet From The Line 178 27E Eddv Section Township **NMPM** County 10. Date Spudded 11. Date T.D. Reached 12. Date Compl. (Ready to Prod.) 13. Elevations (DF& RKB, RT, GR, etc.) 14. Elev. Casinghead 3635' 03/30/93 3650' KB 3635' GR GR 02/02/93 03/17/93 17. If Multiple Compl. How Many Zones? 15. Total Depth 16. Plug Back T.D. 18. Intervals Drilled By Rotary Tools Cable Tools 10,012' 10,060' 19. Producing Interval(s), of this completion - Top, Bottom, Name 20. Was Directional Survey Made Yes 9842'-9886': Lower Morrow 21. Type Electric and Other Logs Run 22. Was Well Cored SDL-DSN, DLL-MSFL-GR, Sonic, CBL CASING RECORD (Report all strings set in well) **CASING SIZE** DEPTH SET CEMENTING RECORD WEIGHT LB/FT. HOLE SIZE AMOUNT PULLEI 530 sx. Class "C" 3991 17-1/2" 13-3/8" 48#/ft. Circulated 12-1/4" 9-5/8" 36#/ft. 2603' 1150 sx. Class Circulated 7" 92531 8-3/4" Circulated 26#/ft. 1620 sx. Class 24. LINER RECORD TUBING RECORD SIZE TOP BOTTOM SACKS CEMENT **SCREEN DEPTH SET** SIZE 84391 10,057225 sx. -7/8-2-3/8" 98031 4-1/2" 27. ACID, SHOT, FRACTURE, CEMENT, SQUEEZE, ETC. Perforation record (interval, size, and number) DEPTH INTERVAL AMOUNT AND KIND MATERIAL USED 14' 49 holes 9842'-9856' 4 spf 80 holes 221 4 spf 9864'-9886' PRODUCTION Date First Production Production Method (Flowing, gas lift, pumping - Size and type pump) Well Status (Prod. or Shut-in) U3/3U/Q3 Producina Gas - Oil Ratio Date of Test Hours Tested Choke Size Prod'n For Oil - Bbi. Gas - MCF Water - Bbl. 1/4" Test Period 150 MCF/BBL 24 Hours 1500 10 0 03/31/93 Casing Pressure Water - BbL Flow Tubing Press. Calculated 24-Oil - BbL Gas - MCF Oil Gravity - API - (Corr.) Hour Rate 10 1500 Packer 55.0 Test Witnessed By 29. Disposition of Gas (Sold, used for fuel, vented, etc.) Erick W. Nelson Sold List Attachments 31. I hereby certify that the information shown on both sides of this form is true and complete to the best of my knowledge and belief Printed Date 04/05/93 Erick W. Nelson Engineer Title Name

State of New Mexico Submit to Appropriate Form C-101 District Office
State Lease - 6 copies
Fee Lease - 5 copies
Fee Lease - 5 copies Energy, Minerals and Natural Resources Department Revised 1-1-89 QIL CONSERVATION DIVISION P.O. Box 1980, Hobbs, NM 88240 API NO. (assigned by OCD on New Wells) P.O. Box 2088 Santa Fe, New Mexico 87504-2088 39-06-27234 5. Indicate Type of Lease P.O. Drawer DD, Artesia, NM 88210 STATE X 6. State Oil & Gas Lease No. 1000 Rio Brazos Rd., Aztec, NM 87410 O. C. D. E-379-4 APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK la. Type of Work: 7. Lease Name or Unit Agreement Name DEEPEN | DRILL X RE-ENTER | PLUG BACK b. Type of Well: Chalk Bluff "36" State WELL | WELL X OTHER 2. Name of Operator 8. Well No. Mewbourne Oil Company 9. Pool name or Wildcat 3. Address of Operator P.O. Box 5270 Hobbs, New Mexico 88241 Illinois Camp Morrow North : 990 Feet From The West Line and 660 Feet From The South 17S 27E Township Range Eddy **NMPM** County 10. Proposed Depth 11. Formstion 12. Rotary or C.T. 10.300' Morrow Rotary 16. Approx. Date Work will start 14. Kind & Status Plug, Bond 13. Elevations (Show whether DF, RT, GR, etc.) 15. Drilling Contractor 3635' G.R. Blanket on file WEK Drilling Jan. 31, 1993 17. PROPOSED CASING AND CEMENT PROGRAM SETTING DEPTH SACKS OF CEMENT SIZE OF CASING WEIGHT PER FOOT SIZE OF HOLE **EST. TOP** Circ 3-3/8" 12# 17-1/2" 9-5/8" 2,600'±1 12-1/4" 36# 700 sks. Tie <u>back into s</u> 8-3/4" 5-1/2" 17# 10.300'[±] | 600 sks Bring above top of Abo 0^{1} -400' Spud mud w/fresh water gel, LCM as needed. 2,600' Fresh water gel & lime. LCM as needed.

Mud Program:

- 2,600' 9,200' Cut brine with lime for pH control. WL-NC. 9,200' 10,300' Cut brine w/Drispac, salt gel, lime, soda ash and starch. Wt. 9.2-9.6 ppg, WL 10 cc or less, Vis. 32-36. Raise wt. accordingly if abnormal pressures are encountered.

BOP Program:

1500 Series Double Ram Hydraulic BOP w/900 Series Hydril from Intermediate csq. to T.D. 900 Series Hydril on Surface csq. to Intermediate csq. point. PVT system, mud-gas seperator, rotating head from Wolfcamp to T.D.

Gas is not dedicated.

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: IF PROPOSAL IS TO DEEPEN OR FLUG BACK, GIVE DATA ON PRESENT PRODUCTIVE ZONE AND PROPOSED NEW PRODUCT

ZONE. GIVE BLOWOUT PREVENTER PROGRAM, IF ANY.		
I hereby certify that the information above us true and complete to the cest of my anowienge and	belief.	
SIONATURE Sill French TT	Drilling Superintendent	DATE 01/18/93
SOUNIOR		(505)

(This space for State Use)

TYPE OR PRINT NAME

me Geologist

CONDITIONS OF APPROVAL, IF ANY:

Bill Pierce

NOTIFY N.M.O.C.D. DA CUFFICIENT TIME TO MITTIES'S OSLIGHTING THE

TELEPHONE NO. 393-5905

State of New Mexico Energy, Minerals and Natural Resources Department

DISTRICT | P.O. Box 1980, Hobbe, NM 88240

TRICT II 6. Drawer DD, Arlesia, NM 88210

OIL CONSERVATION DIVISION

P.O. Box 2088 Santa Fe, New Mexico 87504-2088

DISTRICT III 1000 Rio Brazos Rd., Aziec, NM 87410

WELL LOCATION AND ACREAGE DEDICATION PLAT

OIL COMPANY			Lease				Well No)	
DIL COMPANY	UT .				·		- 1		
		. <u>.</u>		BLUFF 3	6 STATE		1 1	· · ·	
Section	Township		Range			County			٠
	17 SOU	CH	27 E	AST	NMP	M	EDDY		
					*	-			
		line and			feet fro	m the S	OUTH II		,
1									
						orth	1 320	1	Acres
han one lease is de han one lease of di on, force-pooling, e Yes	edicated to the well, of the inferent ownership is to.7	outline each and dedicated to the	i identify the own a well, have the pe of consolidati	nership thereogniterest of all com	(both as to wor owners been con munitiza	solidated b		oa,	
Deccessity.	_						-pooling, or other	rwise)	
[contained	tereby certify I herein in tru	that the and comp	інfогта
).	
				. 		1			
					·	Company Mewbo	,		
			. •	! ! !		Octob			ATIO!
			·.			on this	plat was plott nerveys made	ed from fu	eld not under
1						correct belief.	to the best of		
 				 - 		10/	19/92		.
	·					Certific		for)
	Product Morrow he acreage dedicate han one lease of di n, force-pooling, e Yes "no" list the owne neccessry. le will be assigned no-standard unit, el	reet from the WEST Producing Formation Morrow he acreage dedicated to the subject well, than one lease of different ownership is in, force-pooling, etc.? Yes No If any "no" list the owners and tract description necessary. Its will be assigned to the well until all on-standard unit, eliminating such interests the owners and tract description necessary.	on of Well: Seet from the WEST line and Producing Formation Morrow	cet of Well: Producing Formation	the from the WEST line and 660 Producing Formation Pool	the from the WEST line and 660 feet from the WEST producing Formation Pool Illinois Camp Morrow Notes acresge dedicated to the subject well by colored pencil or hackure marks on the plat below. The name one lease is dedicated to the well, outline each and identify the ownership thereof (both as to won has none lease of different ownership is dedicated to the well, have the interest of all owners been confused in force-pooling, etc.? Yes No If answer is "yes" type of consolidation Communitization necessary. Is will be assigned to the well until all interests have been consolidated (Use reverse side necessary. Is will be assigned to the well until all interests have been consolidated (by communitization, unitization-standard unit, eliminating such interest, has been approved by the Division.	the from the WEST line and 660 feet from the St Producing Formation Pool Illinois Camp Morrow North Morrow Illinois Camp Morrow North Morrow Illinois Camp Morrow North Morrow Illinois Camp Morrow North Morrow Illinois Camp Morrow North Morrow Illinois Camp Morrow North Man one lease is dedicated to the well, outline each and identify the ownership thereof (both as to working interest and none lease of different ownership is dedicated to the well, have the interest of all owners been consolidated by an force-pooling, etc. No	the front be WEST line and 660 feet from the SOUTH line and Producing Formation Prod Dedicate Producing Formation Prod Illinois Camp Morrow North 320 has not lease is dedicated to the subject well by colored peecil or hashure marks on the plat below. That note lease is dedicated to the well, outline each and identify the ownership thereof (both as to working interest and royalty). The note lease of different ownership is dedicated to the well, have the interest of all owners been consolidated by communitization, force-pooling, etc.? Yes No If answer is "yes" type of consolidation. Communitization of necessary. Is well be assigned to the well until all interests have been consolidated (Use reverse ride of necessary. Is well be assigned to the well until all interests have been consolidated by communitization, untilization, forced-pooling, or othe actual and the standard until all interests, has been approved by the Division. OPERATOR CE I hereby certify that if on this plat was plant plant was plant and plant of the standard until plant was plant and plant of the best of my knowledge and supervisors, and that correct to the best of heliof. Date October 27, 15 SURVEYOR CE I hereby certify that if on this plant was plant plant was plant and plant plant was plant and plant plant was plant and plant plant was plant and plant plant was plant and plant plant was plant and plant plant was plant and plant plant was plant and plant plant was plant and plant plant was plant and plant plant was plant and plant plant was plant and plant plant was plant and plant p	the from the WEST line and 660 feet from the SOUTH line Prochicing Formation Pool Illinois Camp Morrow North 320 And note lease of different ownership is dedicated to the well, have the interest of all owners been consolidated by communitization, a, force-pooling, etc.? Yes No. If answer is "yes" type of consolidation Communitization, more than descriptions which have actually been consolidated (Use reverse side of the well until all interests have been consolidated (Use reverse side of the well until all interests have been consolidated (Use reverse side of the well until all interests have been consolidated (Use reverse side of the well until all interests have been consolidated (Use reverse side of the well until all interests have been approved by the Division. OPERATOR CERTIFICA I haveby carrify that the contained havein in true and complets of my knowledge and belief. Signaling Printed Name October 27, 1992 SURVEYOR CERTIFICA Freely carrify that the well look on this plat was plotted from functional surveys made by my surveyed 10/19/92 Signaling Surveyor Confidents Na

MAP ID NO. 861

NAVAJO REFINING COMPANY, WDW-2

SEE DIVIDER LABELED
"WDW-2: OCD AND BLM FORMS"



OIED OIED EL PE	
SUBSURFACE	Artificial Penetration Review
	· · · · · · · · · · · · · · · · · · ·
6 10 (Super Part) Co	Number 911
OPERATOR Southwest Energy Production Co.	OTATOO /
LEASE No. Bluff 36 State Com	DISTANCE FROM INJECTOR (FT)
WELL NUMBER 2	LOCATION 36-175-27E, H
DATE DRILLED 4/28/01	MUD FILLED BOREHOLE
DATE PLUGGED	REPORTED MUD WEIGHT
<u> </u>	API NUMBER 30-015-31123
	1980 FNL, 760 FEL
	1760 FNL, 160 FEL
Cement to	P; calc. Surface
	p, carc. surface
1278,	61 16/94 Casing at 425' W/465 sx.
1 Par Comput to	Ps calc. 616'
	P) Calc. 616
05/2//	
\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	2.16/ft casing at 2002' w/ 650 8x
	, 550
6500	
← Cement top,	MIR 7241'
Perfs: 9927	1'-9964'
	1- Anima At INDED WEED
5/2,:17 16	17 casing at 10050° w/553 50
The language	
TD 10050	

District I 1625 N. French Dr., Hobbs, NM 88240 811 South First, Artesia, NM 88210 District III

1000 Rio Brazos Road, Aztec, NM 87410 CENTED OCD ARTESIA

Title: Sr. Engineering Technician

March 1, 2001

Date:

Phone: 281-618-4733

State of New Mexico Energy Minerals and Natural Resources

Oil Conservation Division 2040 South Pacheco Santa Fe NM 87505

Form C-101 Revised March 17, 1999 Submit appropriate District Office State Lease - 6 Copies Fee Lease - 5 Copies

Expiration DMAR - 8 2002

2040 South Pa				17		Salita PC, IV.			,	J		NDED REPOR
APPL		Southwe	PERMIT ' Operator Name a stern Energy Pr Sam Houston Pr Houston, TX	and Addres oduction arkway E	s' Compa	any	R, DE	EPEN,	PLUGBAC 148111	² OGRII	D Number	A ZONE
						<u> </u>			20 015 21		Number	
³ Proper	ty Code		<u> </u>			Property Name			30 - 015 - 31	123	⁶ Well 1	No.
	25858			N		"36" State C					2	···
,	,			7	Su	rface Location	on T					
UL or lot no.	Section	Township	Range	Lot	Idn	Feet from the	North/S	South line	Feet from the	East/West line		County
	36	17\$	27E	<u> </u>		1980	3	orth	760	East		Eddy
	Γ	· · · · · · · · · · · · · · · · · · ·	Proposed E	Bottom	Hole	Location If I	Differe	ent Fron	n Surface			
UL or lot no.	Section	Township	Range	Lot	Idn	Feet from the	North/S	South line	Feet from the	East/	West line	County
	.t	l	Proposed Pool 1						¹⁰ Propo	sed Pool	12	<u></u>
		Wile	dcat (Mississippian	1)			<u> </u>					
	Type Code		12 Well Type Co	de		13 Cable/Rotary		14	Lease Type Code SGround Level Elevation			
	N G R 16 Multiple 17 Proposed Depth 18 Formation				18 Formation	1						
	N .		10,050'			Mississippia	a t				1/01 (est.)	
			²¹ F	ropose	d Cas	ing and Cen	nent P	rogram				
Hole Si	ze	Ca	sing Size	Casin	g weight	:/foot	Setting Depth Sacks of		Sacks of Ce	ment	E	Estimated TOC
26"	•		20"				40'		Ready Mix			Surface
17 – !	/ ₂ "	13	− 3/8"		61#		425	·	1500			Surface
12 – !	/4"	8	3 5/8"	·····	32#		2,000)'	1,495			Surface
7 7/8			5 ½"		17#		10,10	0'	860			8,000'
zone. De SEE ATTACH	scribe the b	lowout pre	vention program, i	fany. Use	addition	PLUG BACK, ginal sheets if necess	sary.		resent productive	zone and	1 proposed	new productive
²³ I hereby certibest of my kno. Signature:			given above is tn	ie ar.d com	iplete to	the		OIL CO	ONSERVAT:	ION I	OIVISIO	ON
)	1.					Аррго	ved by:		nal S ignet			GUM
Printed name:	Printed name: Cathy Rowan							DIST	rict h supe	RVIE	洲	

Approval Data:
Conditions of Approval:

Attached

GENERAL DRILLING PROGRAM- Attachment to Form C-101

Southwestern Energy Production Company- No Bluff "36" State Com. #2 1980' FNL 760' FEL Section 36-T17S-R27E Eddy County, New Mexico

Elevation: 3630' GR

Proposed Total Depth: 10,100'

Estimated Formation Tops

Yates	320'
7 Rivers	460'
Queen	1000'
Grayburg	1300'
San Andres 'D'	1784'
Glorieta	3160'
Wolfcamp	6470'
Strawn	8870'
Atoka	9430'
Morrow Lime	9544'
Morrow Clastics	9724'
Missippian	10,040'

Casing/Cement Program

Hole Size	Casing Size/Weight/Grade	Setting Depth	Cement	Est. TOC	
	20" Conductor pipe	40'	ready mix	surface	
17-1/2"	13-3/8" 61# J-55 ST&C	425'	550 sx 15:85 Poz: Class C + 0.25 pps D29+2% S1+2% D20	surface	
12-1/4"	8-5/8" 32# J-55 ST&:C	1900'	Lead:700 sx 35:65 Poz: Class C + 6% D20+ 0.25 pps D29 Tail: 235 sx Class C+ 2% S1 +0.25 pps D29	surface	
7-7/8"	5-1/2" 17# N-80 LT&C	10,050'	860 sx 50:50 Poz: Class H + 6% D44 +2% D20+0.4% D59	8000'	

Drilling Fluids Program

Depth	Mud Weight	Viscosity	Fluid Loss	Comments
0-425'	8.4-8.6	32-34	NC	spud mud
425'-1900'	9.0-9.2	28-29	NC	cut brine water,paper,caustic
1900'-9300'	8.4-9.3	28-29	NC	cut brine,caustic,paper
9300'-10,050'	9.3-9.6	34-38	<15 cc	xantham gum, starch

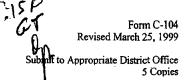
<u>District I</u> 1625 N. French Dr., Hobbs, NM 88240 District II

811 South First, Artesia, NM 88210

District III

State of New Mexico Energy, Minerals & Natural Resources

OIL CONSERVATION DIVISION 2040 South Pacheco



1000 Kio Brazi District IV	os Ra., Aziec	, NM 8/41U		:	Santa Fe. N	MW 8	/505			· r	AME	NDED REPOR
2040 South Pa										_		
<u>(, </u>	RE	EQUEST				AU.	THORIZA	ATIO	N TO TRAI			
		al . .	Operator nan								ID Numbe	r
					ction Compa	-	, TT 55000				4811	
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Date: 05/21/0				81) 618								<u> </u>
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·····												
	Previous O	perator Signat	ure			Pri	inted Name			Ti	tle.	Date

Arrant, Bryan

From:

Arrant, Bryan

Sent:

Monday, July 15, 2002 1:37 PM

To:

Jones, William V

Cc:

Gum, Tim

Subject:

RE; No Bluff "36" State Com Well No. 2 API: 30-015-31123

Will,

I briefly looked into the area surrounding the Bluff 36 State Com. #2 well and I see that there is Abo production immediately to the south of this well.

The operator should had brought cement to cover the Abo. As you indicated with operators permitting Glorieta-Yeso wells in this area, possibly cement up though these formations also. Once you issue an order, we will take steps and have SW Energy perf and squeeze their production casing to meet OCD requirements. If you have other plans or concerns, please advice.

Bryan

----Original Message----

From:

Jones, William V

Sent:

Thursday, July 11, 2002 8:50 AM

To:

Gum, Tim

Cc:

Arrant, Bryan; Catanach, David

Subject:

No Bluff "36" State Com Well No. 2 API: 30-015-31123

Hello Tim:

I thought I would send an email with all the facts as I have found them:

This well was drilled and 5.5 inch set to 10050' (to the Mississippian) on 4/16/01. They only used 553 sx of cement and calc cement top at 7,350'. Many operators in this area to this depth have used 2 stage tools and cemented 2000 sacks total in 3 stages. I see OCD instructions in the file 5/3/2000 for the operator (Southwestern Energy Production Company) to "cover all oil, gas, and water bearing zones".

I think there are other productive zones. For instance, the Jeffers 36 St #003 (api: 30-015-31541) and other wells have been permitted to 4000' in this area with the Glorieta or SA as the objective. There is also some 500' shallow Yates production that is played out already.

The reason I found this:

I am looking at an SWD application from Mack Energy. They have drilled a new well and want to complete the Beech Federal #003 for SWD in the Abo at 5000'. The No Bluff 36 State Com #2 is in the Area of Review with cement top below the Abo.

Please let me know what action you will take on this - so I can determine how to proceed with Mack's application.

Regards,

Will Jones

Pismet ! 1625 N. French Dr., Hobbs, NM 88240 District II 811 South First, Artesia, NM 88210 District III 1000 Rio Brazos Road, Aztec, NM 87410 District IV

State of New Mexico (53)
Energy Minerals and Natural Resources

RECEIVED OCD - ARTESIA Revised March 17, 1999

WAY 2000 Submit to appropriate District Office State Lease - 6 Copies Fee Lease - 5 Copies

Oil Conservation Division 2040 South Pacheco

2040 South Pa	APPLICATION FOR PERMIT TO DRILL, RE Operator Name and Address Southwestern Energy Production Company						M 875	05\لئز ئزنية		 گد	*** **********************************	NDED REPOR
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<u> </u>			Houston, T.	X 77032	<u></u>					3 API	Number	
									30- 013	<u> </u>	3112	<u> </u>
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		d progran	n. If this applicatio	n is to DEE	PEN or PLUGE	BACK, gi	ve the da	ta on the	present productive	zone an	d proposed	new productive
zone. Des	scribe the bi	lowout pr	evention program,	if any. Use	additional sheet	s if neces	sary.		Notify OCD	at Si	PUD &	TIME
								to witness co	men	iting the		
SEE ATTACHI	MENT				•				153/		_casing	} _
²³ I hereby certi	fy that the i	nformatic	on given above is tr	ue and com	plete to the		 	OIL C	ONSERVAT	ON:	DIVISIO	ON
best of my know	jedge/agg	belief.										
Signature:	ethy	1/16	up								÷	
		/				Appro	ved by:	•	Sim W.	, E	kemi	36X

Drilling Technician Phone: 281-618-4733 Date: May 2, 2000

Cathy Rowan

Printed name:

Conditions of Approval:

Attached

Expiration Date:

GENERAL DRILLING PROGRAM- Attachment to Form C-101

Southwestern Energy Production Company- No Bluff "36" State Com. #2 1980' FNL 1980' FEL Section 36-T17S-R27E Eddy County, New Mexico

Elevation: 3639'GR

Proposed Total Depth: 10,100'

Estimated Formation Tops

San Andres	1851'
Glorietta	3355'
Wolfcamp	6670'
Strawn	9030'
Morrow Clastics	9770'
Missippian	10,000°

Casing/Cement Program

Hole Size	Casing Size/Weight/Grade	Setting Depth	Cement	Est. TOC
	20" Conductor pipe	40°	ready mix	surface
17-1/2"	13-3/8" 61# J-55 ST&C	425'	1500 sx 15:85 Poz: Class C + 0.25 pps D29+2% S1+2% D20	surface
12-1/4"	8-5/8" 32# J-55 ST&C	2000'	Lead: 1260 sx 35:65 Poz: Class C + 6% D20+ 0.25 pps D29 Tail: 235 sx Class C+ 2% S1 +0.25 pps D29	surface
7-7/8"	5-1/2" 17# N-80 LT&C	10,100°	860 sx 50:50 Poz: Class H + 6% D44 +2% D20+0.4% D59	8000'

Drilling Fluids Program

<u>Depth</u>	Mud Weight	Viscosity	Fluid Loss	Comments
0-425'	8.4-8.6	32-34	NC .	spud mud
425'-2000'	9.0-9.2	28-29	NC	cut brine water,paper,caustic
2000'-9300'	8.4-9.3	28-29	NC	cut brine,caustic,paper
9300'-10,100'	9.3-9.6	34-38	<15 cc	xantham gum, starch

Blowout Prevention Program- Attachment to Form C-101

0'-425'

None

425'-2000'

20" 2000# annular preventer system.

2000'-10,100'

13-5/8" 5000# double ram type preventers, 5000# annular preventer and rotating head body. Test all rams choke manifold, kill line upper and lower kelly valves to 3000 psi. A choke manifold and 120 gallon accumulator with floor and remote operating stations and auxiliary power system.

Any equipment failing to test satisfactorily, will be repaired or replaced. Results of the BOP test will be recorded in the Driller's Log.

The BOP's will be maintained ready for use until drilling operations are completed. BOP drills will be conducted as necessary to assure that equipment is operational and each crew is properly trained to carry out emergency duties.

Accumulator shall maintain a pressure capacity reserve at all times to provide for the close-open-close sequence of the blind and pipe rams of the hydraulic preventers.

DISTRICT I P.O. Bex 1980, Hobbs, NM 88241-1980

DISTRICT II P.O. Drawer DD, Artesia, NM 86211-0719

STRICT III O Rio Brazos Rd., Astec, NM 87410

DISTRICT IV P.O. BOX 2085, SANTA FE, N.M. 87504-2088

State of New Mexico

Energy, Minerals and Natural Resources Department

DIVISION ARTESIA

18192027

Form C-102 February 10, 1994 State Appropriate District Office

Fee Dease - 3 Copies

AMENDED REPORT

OIL CONSERVATION

P.O. Box 2088

Santa Fe, New Mexico 87504-2088

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number	Pool Code Pool	Name
Property Code	Property Name NO BLUFF "36" STATE COM.	Well Number 2
OGRID No.	SOUTHWESTERN ENERGY PRODUCTION CO.	Elevation 3639

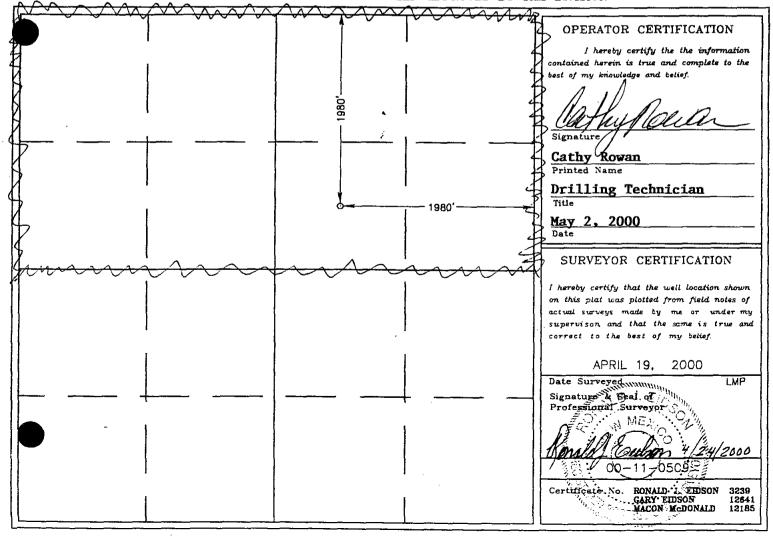
Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
G	36	17 S	27 E		1980	NORTH	1980	EAST	EDDY

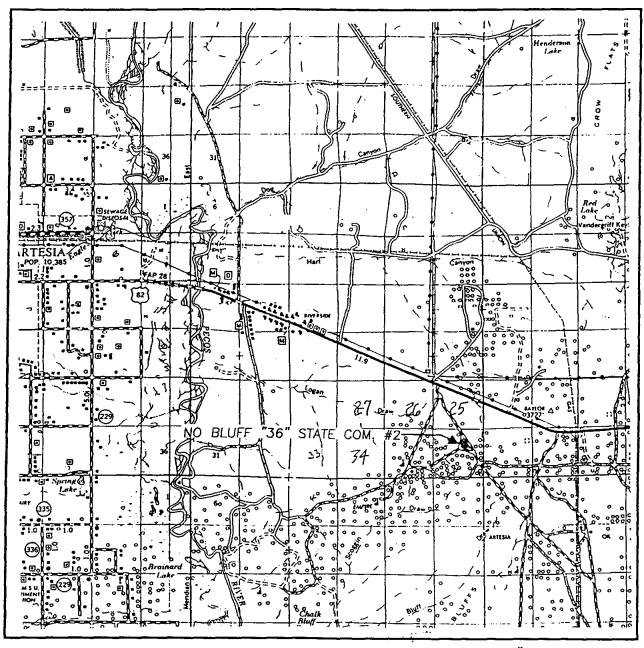
Bottom Hole Location If Different From Surface

UL or lat No.	Section 1	Township	Range	Lot. Idn	Feet from the	North/South line	Feet from the	East/West line	County
Dedicated Acres	Joint or	Infill Con	solidation C	ode Ore	ier No.		<u> </u>	l	
320	_				_				

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



VICINITY MAP

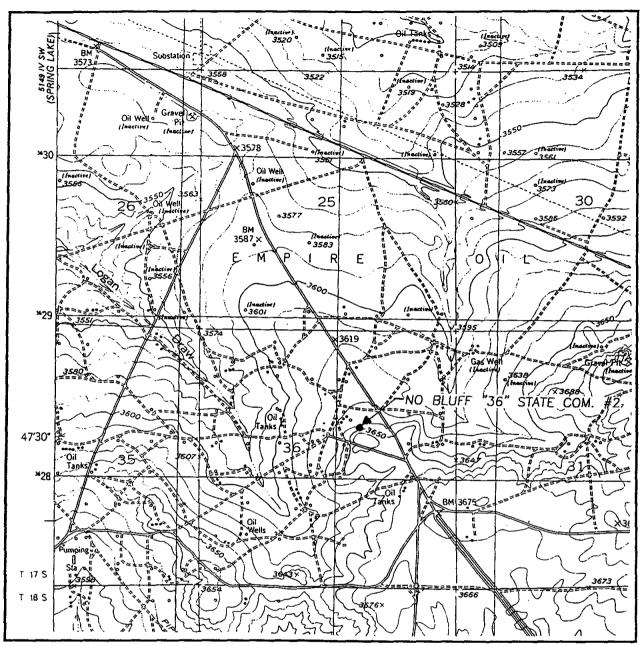


SCALE: 1" = 2 MILES

SEC. 36	TWP. <u>17-S</u> RGE. <u>27-E</u>
SURVEY	N.M.P.M.
COUNTY	EDDY
DESCRIPTIO	N 1980' FNL & 1980' FEL
ELEVATION_	3639
OPERATOR_	SOUTHWESTERN ENERGY PRODUCTION CO.
_	DILLEE "75" STATE COLL

JOHN WEST SURVEYING HOBBS, NEW MEXICO (505) 393-3117

LOCATION VERFICATION MAP



SCALE: 1" = 2000'

CONTOUR INTERVAL: RED LAKE, N.M. — 10'

SEC. 36 TWP. 17-S RGE. 27-E

SURVEY N.M.P.M.

COUNTY EDDY

DESCRIPTION 1980' FNL & 1980' FEL

ELEVATION 3639

SOUTHWESTERN ENERGY

OPERATOR PRODUCTION CO.

LEASE NO BLUFF "36" STATE COM.

U.S.G.S. TOPOGRAPHIC MAP

RED LAKE, N.M.

JOHN WEST SURVEYING HOBBS, NEW MEXICO (505) 393-3117

ATTACHMENT VI-2D

MAP ID NO. 942 (Same as Map ID No. 89)

RECORDS FOR MAP ID NO. 89



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Printed name: Kellie D. Murrish													
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DISTRICT 1 P.O. Box 1980, Hobbs, NM 88240

OIL CONSERVATION DIVISION
P.O. Box 2088

WELL AM NO.

DISTRICT II	*	- -	30-015-0625	
P.O. Drawer DD, Artesia, NM \$8210	RECEIVED	7' 9'FJVY 2000	5. Indicate Type of Lease	FEE
ISTRICT III 1000 Rio Brazos Rd., Azioc, NM 87410		5N	6. State Oil & Ges Lease No.	<u> </u>
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2. Name of Operator ARCO OIL AND GAS CO	OMPANY /			
	1. 88240			
4. Well Location Unit Letter _B : _47	O Feet From The North	Line and 217	0 Feet From The East	Line
	100	205	F 2 4	
Section 0	10. Elevation (Show whether	er DF, RKB, RT, GR, etc.)	MILMI VIIIII	County ///////
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work) SEE RULE 1103.		and give partinent dates, inclu	ding estimated date of starting any proposed	•
03/10/94: Add perfs 59 NEFE acid.	985-6080, set pkr @ 59	43.85'. Acidize	5985-6130' w/3000 gals	15%
	w/l bbl 8.6# brine w/ . Test chart attached	TH-377 chemical.	Pressure test to 640#,	, held
			•	
I hereby certify that the information above is tr	we and complete to the best of my knowledge a		rk II. DATE 03/29	9/94
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(This spaces for State Use)				
(time share-time name name) \]				

SUPERVISOR, DISTRICT IL

APR

8 1994

THA IL JAVORTIA TO ENGINGHOO

Submit 3 Copies to Appropriate District Office

State of New Mexico ergy, Minerals and Natural Resources Depart.

DISTRICT! P.O. Box 1980, Hobbs, NM 88240

DISTRICT II P.O. Drawer DD, Arcesia, NM \$8210

OIL CONSERVATION DIVISION P.O. Box 2088

Santa Fe, New Mexico 875

04/2088	,	
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WELL API NO. 30-015-0625

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D	ISTRICT III		÷г	P 9 0 1993	J. 132-17/2	STATE	FEE 🗌
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Ì	· · · · · · · · · · · · · · · · · · ·	S TO DRILL OR TO D	EEPEN OR PE	OR PLUG BACK TO A		ar Unit Agreement Name	
	ABT AST OF OR OR	отнеа GA	S INJ	JECTION	EMPIRE A	BO UNIT "I"	
1	Name of Operator ARCO OIL AND GAS COMPANY				E. Well No.		
1	Address of Operator P.O. 1710 HOBBS N.M. 882	:40			9. Pool same or EMPIRE A		
1	Well Location Unit Letter B :470 Fee	From The NORTH		Line and	Fost From	EAST	Line
	Section 6 To	nathip 18S	Ra	28E	NMPM	EDDY	County
		10. Elevation (Show)	69.6	OF, RKB, RT, GR, 44c.) GL			
11.			cate l	Nature of Notice, Re	-		
	NOTICE OF INTENT	ON TO:		SUB	SEQUENT I	REPORT OF:	
PEI	rform remedial work 🔲 💎 Pi	LUG AND ABANDON		REMEDIAL WORK		ALTERING CASING	
TE	MPORARILY ABANDON 🔲 CI	HANGE PLANS		COMMENCE DRILLING	OPNS.	PLUG AND ABANDO	NMENT [
PU	LL OR ALTER CASING			CASING TEST AND CE	MENT JOB		
οп	HER: CONVERT TO GAS INJECTIO	N	\overline{XX}	OTHER:			[
12	Describe Proposed or Completed Operations (Clawork) SEE RULE 1103.	arty state all pertinent de	soils, ex	d give pertinent dates, includ	ling estimated date of	of starting any proposed	
	TD 6194, PBD 6182, PERFS	6120-30, PKR	6025				
	NOTIFY NMOCD PRIOR TO STA	RTING WORK.					
	LOAD CSG W/TREATED FLUID,	TEST CSG TO	500#	FOR 20 MIN, AND	START GAS	S INJECTION.	
	IF GAS INJECTION LESS THA	N 2 MMCFPD AD	D PEI	RFS WITHIN ABO I	INTERVAL 60	70-6120	

-	_		
DONATURE A	mation above is true and complete to the best of my know	redge and belief. TITLE OPERATION COORDINATOR	DATE 9-16-93 TELEPHONE NO. 391-1621
(This spect for State Use) APPROVED BY	ORIGINAL/SIGNED BY MIKE WILLIAMS SUPERVISOR, DISTRICT IT		UCT 1 9 1993

Submit 3 Copies to Appropriate District Office

State of New Mexico Energy, Minerals and Natural Resources Department

Form C-103 Revised 1-1-89

DISTRICT I P.O. Box 1980, Hobbs, NM 88240

DISTRICT II P.O. Drawer DD, Artesia, NM 88210

CONDITIONS OF AFTROVAL, IF ANT:

OIL CONSERVATION DIVISION

P.O. Box 2088 RECEIVED Santa Fe, New Mexico 87504-2088

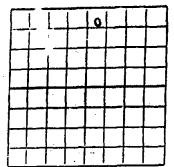
WELL API NO. 30-015-0625 5. Indicate Type of Lease

DICTRICT III			MAI] 4 R	192	STATE	FEE 🔛
DISTRICT III 1000 Rio Brazos Rd.,	Azzec, NM 87410		O. C. D.	6. State Oil & G	es Lease No.	
(DO NOT USE TH	IS FORM FOR PROPO DIFFERENT RESERVO	S AND REPORTS ON SALS TO DRILL OR TO DE IR. USE "APPLICATION R) FOR SUCH PROPOSALS	I WELLS EEPEN OR PLUG BACI OR PERMIT		r Unit Agreement Nar	//////////////////////////////////////
1. Type of Well: Oil. Will.	MET [ОТНЕВК		EMPIRE	ABO UNIT "I	n .
2. Name of Operator		, VIV		8. Well No.		
3. Address of Operato	AND GAS COMPAI T , HOBBS, NEW M			9. Pool same or EMPIRE		
4. Well Location	, HODDS, MEW II	MIGO 602.6			:	••••••••••••••••••••••••••••••••••••••
Unit Letter .	<u>B</u> : 470	Feet From The NORT	H Line and	2170 Feet From	The EA	ST Line
Section	6	Township 18S	Range 28	E NMPM E	DDY	County
			heiher DF, RKB, RT, GR	, etc.)		
	Chark Apr	3669.6' G		tice, Report, or Othe	- V////////////////////////////////////	
11. NO	TICE OF INTEN	-		SUBSEQUENT F		
PERFORM REMEDIA	<u> </u>	PLUG AND ABANDON	REMEDIAL W	ORK	ALTERING CASIN	G [
TEMPORARILY ABAI	NDON	CHANGE PLANS	COMMENCE	ORILLING OPNS.	PLUG AND ABANI	DONMENT [
PULL OR ALTER CAS	SING		CASING TEST	AND CEMENT JOB		-
OTHER:			OTHER:	TEMPORARILY ABAN	DON -	X
12. Describe Promed	or Completed Operations	IClearly state all pertinent del	ails, and give pertinent do	ites, including estimated date of	f startists and propose	<u> </u>
work) SEE RULE	1103.			•	,	_
	WELL BORE FOR					
TD 6194';	-	CRFS: 6120-6130'				
4/29/92		IICAL. HELD FOR		SURE CSG TO 500# PKR SET @ 6025.8		
			his Approval d Sandonment Exp	of Temporary pires	197	NO.
		T/ Ab	andonment Expi	res		
_						
I hereby certify that the is	nformation above is true and o	omplete to the best of my knowles	ige and belief.			
	me Cafe			ns Coordinator	DATE5/13/	/92
TYPE OF PRINT NAME	James D. Cog	burn	,		TELEPHONE NO.	391-1600
(This space for State Use)	100 =		7:10 D		5~/a	loa

•		<u> </u>	
ANTA FE			REQUEST FOR ALLOWABLE AND
AND OFFICE			 AUTHORIZATION TO TRANSPORT OIL AND NATURAL
(RANSPORTER	OIL		
	GAS	111	
OPERATOR			
FRORAT ON OF	ICE		
Coerator			 ,

	-			•		
	ANTA FE		CONSERVATION CUI. FOR ALLOWABLE AND		Form C-104 Supersedes Of Effective 1-1-0	d C-104 a 65
	.s.g.s.	AUTHORIZATION TO TR	ANSPORT OIL AND	NATURAL G	SAS	
	AND OFFICE OIL				RECEIV	ED
	OPERATOR I				SEP 2 6 19	73
١.	Creator Atlantic Richfield Com	npany /			O. C. C.	
	Address				ARTESIA, OFF	1CE
	P. O. Box 1710, Hobbs,	N.M. 88240				
	Reason(s) for filing (Check proper bo	Change in Transporter of:	. Other /Pleas		e Abo Unit eff	10/01
	Hecompletion	OII Dry G	C internal		ame from State	
	Change in Ownership	Casingherid Gas Cando				
	If change of ownership give name and address of previous owner	Resler and Sheldon, Box	к 2053,S. Padre	Island, T	X	
II.	DESCRIPTION OF WELL AND					
	Logge Name	Well No. Poor Name, Incitaing F	"ormalion	Kind of Lease State, Federal		Lease
	Empire Abo Unit I	23 Empire Abo		State, Federal	crree DCace	
	Unit Letter B : 4'	70 Feet From The North	ne and 2170	Feet From T	he East	·
	Line of Section 6 To	waship 18S Hange 2	28E , NMPI	d,	Eddy	Co
ш.	Name of Authorized Transporter of Of	VER OF OIL AND NATURAL G	Azionas (Give address		ed copy of this form is t	o be sent
	AMOCO Pipe Line Compa	ay	2300 Continent Fort Worth, T	<u> 76102</u>		
	Name of Authorized Transporter of Co	ising and Ges (X) or Dry Gas [[]	Admess (Give address	to which approve	ed copy of this form is t	
	Phillips Petroleum Com		Phillips Bldg		shington, Odess	a,1x /
	li well produces oil or liquids, give location of ignes.	Unit Ser. Twp. Pgc. B 6 18S 28E	Yes	ied (inter	August l	.960
w	•	ith that from any other lease or pool,	give commingling orde	r number:		
• • •	Designate Type of Completi	$\operatorname{Ort} \operatorname{Well} = \operatorname{GasWell}$	Hew Well Worksver	Deepen	Plug Back Same Res	'v. Diff.
	Date Spudded	Date Compl. Ready to Prod.	Total Derth		P.B.T.D.	
	Elevations (DF, RKB, RT, GR. etc.)	Name of Producing Formation	Top Osi/Gas Pay		Tubing Depth	
	Perforations	<u> </u>			Depth Casing Shoe	
	rendiations				Lechii Casing Silve	
		TUBING, CASING, AN	,			
	HOLESIZE	CASING & TUBING SIZE	DEPTHS	ET	SACKS CEM	ENT
			i		<u> </u>	
V.	TEST DATA AND REQUEST F		ifter recovery of total volu pth or be for full 24 hours		nd must be equal to or e	xceed top
	Date First New Oil Run To Tanks	Date of Test	Producting Method (Flor	u, pump, gas lift,	, etc.)	
i	Length of Test	Tubing Pressure	Cosing Pleasure		Choke Size	
	Actual Prod. During Test	Cti-Bbia,	Water - Bibis.		Ggs-MCF	
		<u> </u>	<u> </u>			
	GAS WELL					
i	Actual Prod. Test-MCF/D	Length of Teut	Bols. Condensate/MMC	F	Gravity of Condensate	
ſ	Testing Method (pitot, back pr.)	Tubing Pressuro (Shut-in)	Casing Pressure (Shut	-in)	Choke Size	
VI.	CERTIFICATE OF COMPLIAN	CE	OIL	CONSERVAT	TION COMMISSION	٧
			SE SE	P 2 8 1973	}	19
	Commission have been complied to	regulations of the Oil Conservation with and that the information given	APPROVED	Ph.	124181	
		e best of my knowledge and belief.	BY	(1 × 12	TOB	

Length of Test	Tubing Pressure	Coaing Pressure	Choke Size
Actual Prod. During Test	Cii-Bbia.	Water-Bois.	Gas-MCF
GAS WELL			
Actual Prod. Test-MCF/D	Length of Test	Bots. Condensate/MMCF	Gravity of Condensate
Teeting Method (pitot, back pr.)	Tubing Pressuro (Gimt-is)	Cosing Pressure (Shut-in)	Choke Size
Commission have been complied	NCE d regulations of the Oil Conservation with and that the information given he best of my knowledge and belief.	APPROVED SEP 2 8 1	Trissext
September 26,	ng Clerk	If this is a request for all well, this form must be account to the second to the second to the second and it is considered and the second to	must be filled out completely for



NEW MEXICO OIL CONSERVATION COMMESSION

Santa Fe, New Mexico

RECEIVED

MAIN OFFICE OCC.

3.0.; MAIN OFFICE OCC. WELL RECORD

DEC 2 8 1959

D. C. C. ARTESIA, OFFICE

1979 DEC 30 // // 8:20

Mail to District Office, Oil Conservation Commission, to which Form C-101 was sent-later than twenty days after completion of well. Follow instructions in Rules and Regulation the Commission. Submit in QUINTUPLICATE.

If State Land subsit 6 Copies

	AREA 640 CATE WELL	ACRES CORRECTLY							
		Resler	and Sh				Ano State	L. Balling	
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. WEB NO.	Empire		-		L Pool	Eddy	•	age to the	eville.
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If drill-stem or other special tests or deviation surveys were made, submit report on expansis sheet and attach berryn
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NEW EXICO OIL CONSERVATION COMPANDED Senta Fe, New Mexico

Poem 6-100 Ported 02/1/29) -

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ATTACHMENT VI-2E

MAP ID NO. 778

NOTE FROM MIDLAND MAP COMPANY 1959 MAP OF WELLS IN 2-18S-27E



Midland Map Co.

To:	NANCY NIEMANN	From:	DOREEN DEVORE	
Fax:	(713) 880-3248	Date:	March 12, 1999	
Phone:		Pages:	1	·
Re:	EDDY COUNTY WELLS	α :		
☐ Urgen	at x For Review	☐ Please Comment	☐ Please Reply	☐ Please Recycle

Comments: AFTER INVESTIGATING YOUR FAX, I AM ONLY ABLE TO GIVE YOU PART OF THE INFORMATION YOU REQUESTED. AS I TOLD YOU BEFORE, WE DON'T HAVE PERMIT AND COMPLETION INFORMATION FOR NEW MEXICO, SO I CAN ONLY GIVE YOU BASIC INFORMATION ABOUT THE WELLS YOU REQUESTED. I SUGGEST THAT YOU CONTACT EITHER THE SUBSURFACE LIBRARY HERE IN MIDLAND AT (915) 683-5588 (THIS IS WHERE I FOUND YOUR INFORMATION YESTERDAY) OR CALL HERROLDS AT (915) 682-7773 AND ASK FOR "DOC". I AM NOT CERTAIN WHETHER THEY WILL OR WILL NOT CHARGE YOU FOR THE INFORMATION.

MAP ID NO. 778

1.) 2-18S-27E 2310FN, 1650FE

> WELL#: 2, ORIG. OPERATOR: RUTTER & WILBANKS FEE: Hudson THIS WELL WAS COMPLETED BEFORE 1957

795

2.) 2-18S-27E 990FS, 330FE

> WELL#; 1 ORIG. OPERATOR: ATLANTIC RICHFIELD (ARCO) FEE: State "AS"

THIS WELL WAS PERMITTED SOMEWHERE BETWEEN 1959-1960

754 3,) 1-18S-27E 660FS, 660FW

> WELL#: 17 ORIG. OPERATOR: HONDO OR PAM AM FEE: Malco

THIS WELL WAS COMPLETED SOMEWHERE AROUND 1975

I WISH YOU LUCK IN YOUR INVESTIGATION.

... wha

NEW MEXICO OIL CONSERVATION COMMISSION

Well Location and Acreage Dedication Flat

ention a.			· ·		D	ate <u>March 25, 1959</u>
Operator	Th. 14	lantic Refining C	'amnany i	i eace	State "AO"	•
Well No.	Ine At	Unit Letter	Section .	7		18 South Range 27 East NA
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A Waterhouse, Asst Chief Survey ne Aliganic Refining Company

PA10-698 Ю (See instructions for completing this form on the reverse side)

State

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TOP OF CEMENT IN INJECTION ZONE WELLS IN THE AREA OF REVIEW

Top of Cement	(feet below	ground)	Surface	Surface	256	Surface	Surface	62501	Surface	Surface	Surface	Top of Liner	Surface	Surface	6594	273	1898	1943	Top of Liner	Surface	Surface	1547	Top of Liner	Surface	029	60003	Top of Liner	Surface	Surface	5321
Cement	Height	(feet)	823	4846	10194	443	2250	7	633	3091	23491	1635	570	2880	3554	127	702	7025	1869	538	2880	7903	1635	570	1919	ŀ	1291	633	3981	5079
	Hole	Rugosity	8.0	9.0	0.8	8.0	8.0		8.0	8.0	8.0	0.8	8.0	8.0	0.8	8.0	8.0	8.0	8.0	8.0	8.0	8.0	0.8	8.0	8.0	1	0.8	8.0	8.0	8.0
Cement	Factor	(cu ft/sacks)	1.1	1.1	1.1	1.1	1.1		1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	ŀ	1.1	1.1	1.1	1.1
Hole	Diameter	(inches)	17.5	11	7.875	17.5	.11	7.875	17.5	12.25	7.875	6.125	17.5	12.25	8.75	17.5	12.25	8.75	6.125	17.5	12.25	8.75	6.125	17.5	12.25	7.875	5.5	17.5	11	7.875
Cement	Volume	(sacks)	059	1400	2007	350	959	520	500	1100	1895	175	450	1025	1020	100	250	1200	200	425	1025	1350	175	450	006	430	80	200	1150	1000
Setting	Depth	(feet)	663	4000	10450	354	1745	8466	400	2600	9445	10198	416	2610	10148	400	2600	8968	10150	400	2604	9450	10119	472	2589	9473	10140	418	2600	10400
Casing	Diameter	(inches)	13.375	8.625	5.5	13.375	8.625	5.5	13.375	9.625	7	4.5	13.375	9.625	5.5	13.375	9.625	7	4.5	13.375	9.625	7	4.5	13.375	8.625	5.5	4.5	13.375	8.625	5.5
	Map ID	No.	81			831			124²				134			144				157				191				167		

Navajo/60D5497_Permit/Attachment VI-3

TOP OF CEMENT IN INJECTION ZONE WELLS IN THE AREA OF REVIEW

Top of Cement	(feet below	ground)	Surface	Surface	Surface	Top of Liner	69	5400⁴	6850⁴	Surface	1088	Unknown	Surface	Surface	Surface	Surface ⁵	Surface ⁵	Surface	616	7241
Cement	Height	(feet)	671	3231	9483	2103	931	ŀ	1	887	702	1	887	3934	13816	!	1	589	1386	2809
	Hole	Rugosity	8.0	8.0	0.8	0.8	8.0	ŀ	!	0.8	0.8	1	0.8	8.0	8.0	;	1	0.8	8.0	0.8
Cement	Factor	(cu ft/sacks)	1.1	1.1	1.1	1.1	1.1	;	1	1.1	1.1	;	1.1	1.1	1.1	:	1	1.1	1.1	1.1
Hole	Diameter	(inches)	17.5	12.25	8.75	6.125	17.5	12.25	7.875	17.5	12.25	6.125	17.5	12.25	7.875	11.000	7.875	17.5	12.25	7.875
Cement	Volume	(sacks)	530	1150	1620	225	926	300	855	700	250	Unknown	002	1400	2720	800	1570	465	650	553
Setting	Depth	(feet)	399	2603	9253	10057	1000	6348	10138	572	1790	4500	502	2200	11,915	1995	6988	425	2002	10050
Casing	Diameter	(inches)	13.375	9.625	7	4.5	11.75	8.625	5.5	13.375	9.625	5.5	13.375	9.625	5.5	8.625	5.5	13.375	8.625	5.5
	Map ID	No.	353				848		·	851			855			8615		911		

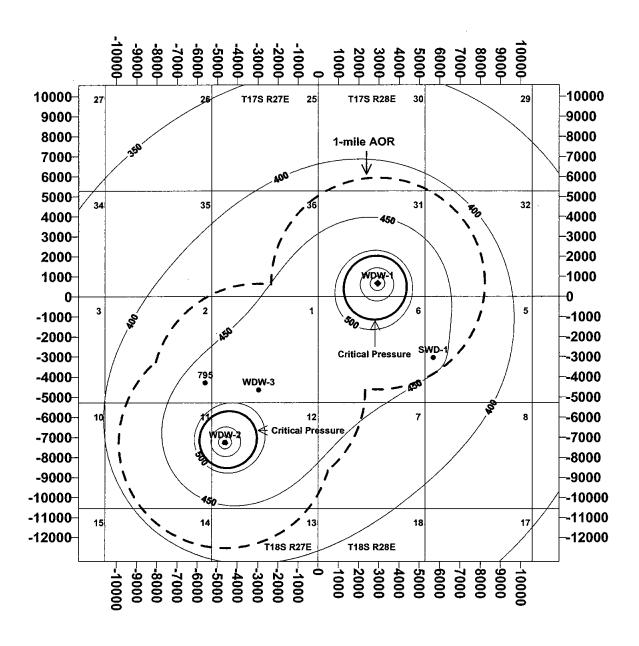
Cement Height = Cement Volume * Cement Factor * Hole Rugosity * 1/(PI*(Hole Radius^2 - Casing Radius^2))

¹ For Map ID No. 83, cement volume for 5-1/2 inch casing includes squeezes. Top of cement per temperature survey conducted on May 9, 1991. ² For Map ID No. 124, hole diameter for 4-1/2 inch liner was not reported; 6.125 inches is estimated. ³ For Map ID No. 161, per cement bond log on July 20, 1993. Log is included in Attachment VI-2.

⁴ For Map ID No. 848, top of cement for 8-5/8 inch casing is 5100 feet per operator's well schematic. Top of cement for 5-1/2 inch liner is 6850 feet per operator's well schematic. ⁵ Map ID No. 861 is Navajo's WDW-2. Cement was circulated to the surface per operator.

NAVAJO REFINING COMPANY

PRESSURE INCREASE MODELING RESULTS



Critical Pressure Increase = 512 psi

k = 250 md h = 85 feet

WDW-1 at Historical Rates 09/23/1999 to 06/30/2003 WDW-1 at 500 gpm 07/01/2003 to 09/22/2019

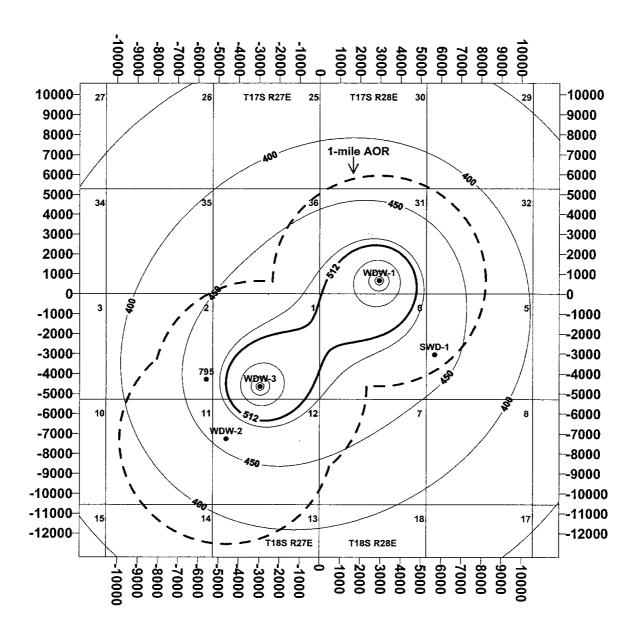
WDW-2 at Historical Rates 09/23/1999 to 06/30/2003 WDW-2 at 500 gpm 07/01/2003 to 09/22/2019

WDW-3 at 0 gpm 07/01/2003 to 09/22/2019

SWD-1 at 17.6 gpm 06/01/1998 to 09/22/1999 SWD-1 at 58.3 gpm 09/23/1999 to 09/22/2019

NAVAJO REFINING COMPANY

PRESSURE INCREASE MODELING RESULTS



Critical Pressure Increase = 512 psi

k = 250 md h = 85 feet

WDW-1 at Historical Rates 09/23/1999 to 06/30/2003

WDW-1 at 500 gpm 07/01/2003 to 09/22/2019

WDW-2 at Historical Rates 09/23/1999 to 06/30/2003

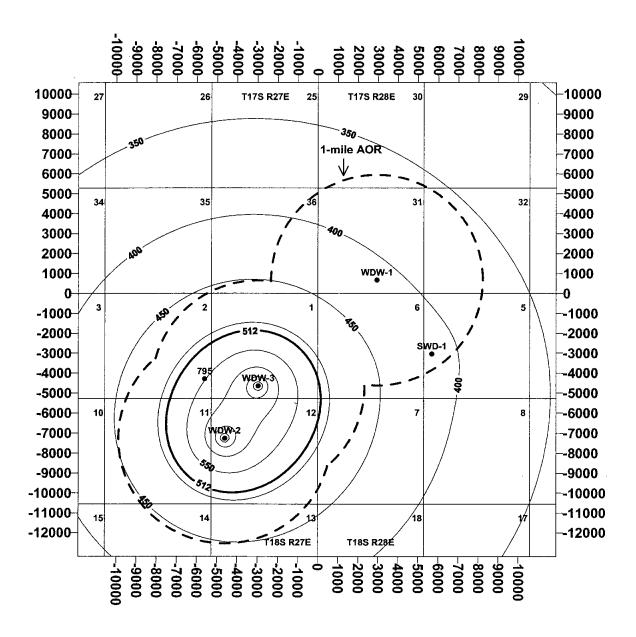
WDW-2 at 0 gpm 07/01/2003 to 09/22/2019

WDW-3 at 500 gpm 07/01/2003 to 09/22/2019

SWD-1 at 17.6 gpm 06/01/1998 to 09/22/1999 SWD-1 at 58.3 gpm 09/23/1999 to 09/22/2019

NAVAJO REFINING COMPANY

PRESSURE INCREASE MODELING RESULTS



Critical Pressure Increase = 512 psi

k = 250 md h = 85 feet

WDW-1 at Historical Rates 09/23/1999 to 06/30/2003

WDW-1 at 0 gpm 07/01/2003 to 09/22/2019

WDW-2 at Historical Rates 09/23/1999 to 06/30/2003

WDW-2 at 500 gpm 07/01/2003 to 09/22/2019

WDW-3 at 500 gpm 07/01/2003 to 09/22/2019

SWD-1 at 17.6 gpm 06/01/1998 to 09/22/1999 SWD-1 at 58.3 gpm 09/23/1999 to 09/22/2019

VII. PROPOSED OPERATIONS

1. Proposed Injection Rate and Volume

The proposed maximum injection rate for WDW-1, WDW-2, and proposed WDW-3 combined is 1000 gpm or 34,286 bpd. The proposed maximum injection volume in any given month is that volume calculated by multiplying 1000 gpm by 60 minutes per hour by 24 hours per day by the number of days in the month.

The proposed maximum rate of injection into any one well is 500 gpm.

2. Whether the System Is Open or Closed

The operations for the proposed Class I wells will be restricted to injection from a closed system. Fluids to be injected will be generated on site at Navajo's refineries in Artesia and Lovington and will be transported to the injection wells by pipeline.

3. Proposed Injection Pressure

The maximum injection pressure at the wellhead will not exceed 0.2 psi per foot of depth to the top of the injection zone, as required by OCD Proposed Rule 21.B(7), dated October 6, 1997. The maximum injection pressure at the wellhead may vary, depending on the depth of the injection formation. For example, if WDW-1 is completed at the top of the injection zone at 7450 feet, then the requested maximum injection pressure is 1490 psi, as calculated below:

Maximum Injection Pressure at the Top of the Injection Zone

- = Top of the Injection Zone x 0.2 psi/ft
- = 7450 feet x 0.2 psi/ft
- = 1490 psi

If the top of the injection formation coincides with the top of the Cisco or Canyon Formations, both of which are deeper than the Wolfcamp Formation, then the proposed injection pressure will be higher. The proposed injection pressure for each injection formation is summarized in the following table:



	PROPOSED INJ	ECTION PRESSURE	
Injection Formation	Top of Injection Formation	Maximum Injection Pressure Gradient	Proposed Injection Pressure
WDW-1			
Wolfcamp Cisco Canyon	7450 feet 7816 feet 8475 feet	0.2 psi/ft 0.2 psi/ft 0.2 psi/ft	1490 psi 1563 psi 1695 psi
WDW-2			
Wolfcamp Cisco Canyon	7270 feet 7645 feet 8390 feet	0.2 psi/ft 0.2 psi/ft 0.2 psi/ft	1454 psi 1529 psi 1678 psi
WDW-3			
Wolfcamp Cisco Canyon	7303 feet 7650 feet 8390 feet	0.2 psi/ft 0.2 psi/ft 0.2 psi/ft	1461 psi 1530 psi 1678 psi

4. Wastestream Information and Compatibility with the Injection Zone

Navajo proposes to inject exempt and nonexempt nonhazardous oilfield waste that is generated at its refineries in Artesia and Lovington. Waste waters from process units, cooling towers and boilers, streams from water purification units and desalting units, recovered and treated ground water, and general wash waters will be blended to make up the proposed waste stream.

Recent chemical analyses of the waste water are included as Attachment VII-1. Average concentration levels for major constituents are listed in Attachment VII-2, along with the expected pH range and specific gravity.

5. Injection Zone Fluid Analysis

The composition of the native formation fluid in the proposed Wolfcamp, Cisco, and Canyon injection zone is expected to be similar to that in these formations in other parts of southeastern New Mexico. The salinity of Wolfcamp, Cisco, and



Canyon formation brines from hydrocarbon producing areas in northern Lea County, to the east of Eddy County, was reported by Meyer (1966, Table 4). Attachment VII-3 summarizes the salinity data reported by Meyer (1966, Table 4) for Wolfcamp, Cisco, and Canyon formation brines from limestones that were deposited in a shelf environment similar to that of the proposed injection site. The salinity of the formation brines range from 67,098 to 119,909 parts per million (ppm). The formation brines were produced from intervals that occur between 9001 feet and 10742 feet below ground. Also listed in Attachment VII-7 are data from Strawn limestones that were deposited in a platform environment and that occur at 7700 feet below ground; the salinity of the Strawn formation brine is 39,374 ppm. DST data from WDW-1 indicate that the salinity of fluid recovered from the Cisco Formation in DST No. 5 is 25,000 ppm (Attachment VIII-9).

Formation fluid samples were obtained from the Cisco injection interval upon completion of Navajo's WDW-1 in July 1998. The sample from the lower Cisco perforations (8220 feet to 8476 feet) had a TDS concentration of 33,000 mg/l. The sample from the upper Cisco perforations (7924 feet to 8188 feet) had a TDS concentration of 18,000 mg/l. The report of the chemical analysis is included as Attachment VII-4.

Formation fluid samples were obtained from the Cisco injection interval upon completion of Navajo's WDW-2 in June 1999. The sample from the lower Cisco perforations (7820 feet to 8392 feet) had a specific gravity of 1.0249 and a TDS concentration of 20,000 mg/l. The sample from the Lower Wolfcamp and upper Cisco perforations (7570 feet to 7736 feet) had a specific gravity of 1.0082 and a TDS concentration of 13,000 mg/l.

Navajo will attempt to retrieve a sample of formation brine during the well testing operations of proposed WDW-3. Formation brine samples will be retrieved prior to any stimulation treatments or injection into the wells.



ATTACHMENT VII-1 CHEMICAL ANALYSES OF INJECTED WASTE WATER



RECENT CHEMICAL ANALYSES OF WASTE WATER FROM NAVAJO'S REFINERY IN LOVINGTON, NM



Sample ID 71197 Analysis: Eric Vidacovic Asing the Point Waste Water Sample Date 28-May-03 Log Out 2-Jun-03 261 11 33 240 40.01 6.08 40.01 6.09 6.00 6.00 6.00 6.00 6.00 6.00 6.00	ker Petrolite		Navajo Lea Pvington, NM	m, na	5	WATER ANALYSIS	
Sample Date 71187 Sample Date 3-Nov.43 Sample Date 28-Mir-03 Sample Date 28-Mir-03 Sample Date 28-Mir-03 Log for 2-Nov.43 RUN 1-2 din Log for 2-Nov.43 Sample Date 28-Mir-03 250 2-40 Color 2-Nov.41 Color 2-Nov.42 Color 2-Nov.42 Color 2-Nov.42 Color 2-Nov.42 Color 2-Nov.42 Color 2-Nov.42 Color 2-Nov.42 Color 2-Nov.42 Color 2-Nov.42 Color 2-Nov.42 Color 2-Nov.42 Act. mg/L 4-S Act. mg/L 4-S Act. mg/L 4-S Act. mg/L 4-S Act. mg/L 4-S Act. mg/L 4-S Act. mg/L 4-S Act. mg/L <th< th=""><th>Submitter: Addington, Jeff</th><th></th><th>Analysts: Eric Vidacovich</th><th>Н</th><th>2003</th><th></th><th></th></th<>	Submitter: Addington, Jeff		Analysts: Eric Vidacovich	Н	2003		
Sample Polnt Wasle Water	Sample ID	74197		_			
Sample Polm Waske Water	ASR#	0305AD17					
Sample Date 26-May-03 3-Jun-03 2-Jun	Sample Point						
RUN Log in 19-Jun/33 3-Jun/33 151 151 151 151 151 151 151 151 151 151 152 153 154	Sample Date	28-May-03					
RUN	Login	3-Jun-03					
261 270 270 270 270 270 270 270 270 270 270		12-Jun-03					
11 11 11 11 11 11 11 11 11 11 11 11 11	Na, Total, mg/L	261					
3.3 2.40 2.40 4.01 4.0.01 4.0.02 4.0.01 4.0.01 4.0.01 4.0.01 4.0.01 4.0.01 4.0.01 4.0.02 4.0.02 4.0.02 4.0.02 4.0.02 4.0.02 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0	K, Total, mg/L	11					
240 -201 -201 -203 -203 -203 -204 -204 -205 -205 -201 -205 -201 -203 -201 -203 -203 -203 -203 -203 -203 -203 -203	Mg, Total, mg/L	33					
Cold Cold	Ca, Total, mg/L	240					
0.38 -0.09 -0.09 -0.09 -0.09 -0.09 -0.09 -0.00 -0.	Mo, Total, mg/L	<0.01					
COD COD COD COD COD COD COD COD COD COD COD COD COD COD COD COD COD COD COD COD COD COD COD COD COD COD COD COD COD COD COD COD COD COD COD COD COD COD COD COD COD COD COD COD COD COD COD COD COD COD COD COD COD COD COD COD COD COD COD COD COD COD COD COD COD COD COD COD COD COD COD COD COD COD COD COD COD COD COD COD COD COD COD COD COD	Fe, Total, mg/L	0.36					
Cop Cop	Cu, Total, mg/L	<0.01					
40.01 600 600 135.1 135.1 1	Zn, Total, mg/L	60'0					
500 500 135.1 135.1 135.1 135.1 133.1	Al, Total, mg/L	<0.01			·		
ingld. 735.1 L. 133 L. 0 0 6.86 6.86 C. c1 c4.4 4.4 4.4 4.4 4.5 G.02 G.02 G.02 G.02 G.03 G.04 A.A G.04 A.A G.04 A.A G.04 A.A G.04 A.A G.04 A.A G.04 A.A G.04 A.A A.A A.A A.A A.A A.A A.A	Ca as CaCO3, Total, mg/L	800					
ingid. 735.1 L. 133 L. 0 0 0 886 886 1. 44 4.5 4.4 4.5 4.5 4.5 4.5 4.5	Mg as CaCO3, Total, mg/L	135.1					
133 0 0 0 686 41 44 44 45 45 689 689 689 689 689 700 109 109 109 00 0 0 0 0 126.3	Hardness as CaCO3,Total ,mg/l.	735.1					
686 686 610 210 210 210 4.4 4.4 4.5 4.5 6.002 6.89 6.89 6.89 6.89 6.89 6.89 6.89 6.89	Bicarbonate as HCO3, mg/L	133					
696 696 696 696 696 696 696 696 696 696	Carbonale as CO3, mg/L	0					
686 41 210 444 45 45 40.02 45 8.B 8.B 255 6.89 0 0 0 109 0 109 0 109 0 109 0 109 0 126.3	Hydroxide as OH, mg/L	0					
210 4.4 4.4 4.5	Cf, by FIA, mg/L	686				,	
210 4.4 4.5 4.5 4.6 4.5 4.6 4.6 4.6 4.6 4.6 4.6 4.6 4.6 4.6 4.7 4.6 4.6 4.6 4.6 4.6 4.6 4.6 4.6 4.6 4.6	NOx as NO3, by FIA, mg/L	₽					
os/cm mitos/cm	SO4, by FIA, mg/L	210					
ns/cm milos/cm	Ortho-PO4, by FIA, mg/L	4.4					
os/cm untos/cm	B as B(OH)4, by ICP, mg/L	4.5					
os/cm untios/cm	Mo as MoO4, by ICP, mg/L	<0.02					
hos/cm cmftos/cm	Si as SiO2, Total by ICP, mg/L	45					
omflos/cm	P as PO4, Total by ICP, mg/L	8.9					
	S as SO4, Total by ICP, mg/L.	255					
	pH (as received, lab)	6.89					
	P Alkalinity as CaCO3, mg/L	0					
	T Alkalinity as CaCO3, mg/L	109					
	Specific Conductivity, micromhos/cm	3140					
	Neutralized Conductivity, micromhos/cm	NA					
	TDS, mg/L, Calculated	1506					
	TDS/Conductivity	0.48					
	TDS/Neutralized Conductivity	0					
-	Total Cations, meq, Calculated	26.33					
	Total Anions, meq, Calculated	26.1					

OLAVAN

Work Order: 3061622

Page Number: 1 of 4 Lovington,NM

Summary Report

Darrell Moore

Report Date: June 27, 2003

Navajo Refining

501 E. Main Artesia, NM 88210 Work Order: 3061622

Project Location: Lovington,NM

			Date	Time	Date
Sample	Description	Matrix	Taken '	Taken	Received
10309	Lovington City WW	water	2003-06-13	13:00	2003-06-16

Sample: 10309 - Lovington City WW

Param	Flag	Result	Units	RL
Total Silver		< 0.0125	mg/L	0.0125
Total Aluminum		< 0.100	$_{ m mg/L}$	0.100
Hydroxide Alkalinity		<1.00	mg/L as CaCo3	1.00
Carbonate Alkalinity		<1.00	mg/L as CaCo3	1.00
Bicarbonate Alkalinity		108	mg/L as CaCo3	4.00
Total Alkalinity		108	mg/L as CaCo3	4.00
Total Arsenic		0.0500	${ m mg/L}$	0.0100
Total Boron		0.455	m mg/L	0.00500
Total Barium		0.204	m mg/L	0.0100
Total Beryllium		< 0.00250	mg/L	0.00250
Total Cadmium	*	< 0.00500	m mg/L	0.00500
Total Cobalt		< 0.0200	mg/L	0.0200
Specific Conductance	•	2830	μ MHOS/cm	0.00
Total Chromium		< 0.0100	mg/L	0.0100
Total Copper		< 0.0250	mg/L	0.0250
Total Iron		0.512	m mg/L	0.0500
Total Mercury		< 0.000200	mg/L	0.000200
Chloride		660	m mg/L	0.500
Sulfate		206	mg/L	0.500
Total Manganese		0.0580	mg/L	0.0250
Total Molybdenum		< 0.0500	$_{ m mg/L}$	0.0500
Total Nickel		< 0.0250	$_{ m mg/L}$	0.0250
Total Lead		< 0.0100	m mg/L	0.0100
рĦ		7.00	s.u.	0.00
Reactivity		non-reactive		0.00
Hydrogen Sulfide		<10.0	mg/L	10.0
Hydrogen Cyanide		< 2.50	$\mathtt{mg/L}$	2.50
Corrosivity	ľ	on-corrosive	mm/yr	0.00
pH		7.20	s.u.	0.00
Ignitability	I	non-ignitable		0.00
Dissolved Calcium		213	mg/L	0.500
Dissolved Magnesium		26.9	$_{ m mg/L}$	0.500
Dissolved Potassium		9.32	mg/L	0.500

continued ...

Work Order: 3061622

Page Number: 2 of 4 Lovington,NM

sample 10309 continued ...

Param	Flag Result	Units	RL
Dissolved Sodium	269	mg/L	0.500
Total Selenium	0.0700	mg/L	0.0100
Pyridine	< 0.00500	mg/L	5.00
n-Nitrosodimethylamine	< 0.00500	mg/L	5.00
2-Picoline	< 0.00500	m mg/L	5.00
Methyl methanesulfonate	< 0.00500	mg/L	5.00
Ethyl methanesulfonate	< 0.00500	mg/L	5.00
Phenol	< 0.00500	mg/L	5.00
Aniline	< 0.00500	mg/L	5.00
bis(2-chloroethyl)ether	< 0.00500	$_{ m mg/L}$	5.00
2-Chlorophenol	< 0.00500	mg/L	5.00
1,3-Dichlorobenzene (meta)	< 0.00500	mg/L	5.00
1,4-Dichlorobenzene (para)	< 0.00500	mg/L	5.00
Benzyl alcohol	< 0.00500	mg/L	5.00
1,2-Dichlorobenzene (ortho)	< 0.00500	mg/L	5.00
2-Methylphenol	< 0.00500	mg/L	5.00
bis(2-chloroisopropyl)ether	<0.00500	mg/L	5.00
4-Methylphenol / 3-Methylphenol	<0.00500	mg/L	5.00
n-Nitrosodi-n-propylamine	<0.00500	mg/L	5.00
Hexachloroethane	<0.00500	mg/L	5.00
Acetophenone	<0.00500	mg/L	5.00
Nitrobenzene	< 0.00500	$_{ m mg/L}^{-s/-}$	5.00
n-Nitrosopiperidine	<0.00500	$\frac{-s}{mg/L}$	5.00
Isophorone	<0.00500	mg/L	5.00
2-Nitrophenol	<0.00500	mg/L	5.00
2,4-Dimethylphenol	<0.00500	mg/L	5.00
bis(2-chloroethoxy)methane	<0.00500	mg/L	5.00
2,4-Dichlorophenol	< 0.00500	mg/L	5.00
1,2,4-Trichlorobenzene	< 0.00500	$_{ m mg/L}^{ m L}$	5.00
Benzoic acid	<0.00500	$\frac{m_0}{m_0}$ L	5.00
Naphthalene	<0.00500	mg/L	5.00
a,a-Dimethylphenethylamine	<0.00500	mg/L	5.00
4-Chloroaniline	<0.00500	mg/L	5.00
2,6-Dichlorophenol	<0.00500	mg/L	5.00
Hexachlorobutadiene	<0.00500	mg/L	5.00
n-Nitroso-di-n-butylamine	<0.00500	$\frac{m_0}{m_0}$ L	5.00
4-Chloro-3-methylphenol	<0.00500	$\frac{-2}{mg/L}$	5.00
2-Methylnaphthalene	<0.00500	$\frac{-2}{mg/L}$	5.00
1-Methylnaphthalene	<0.00500	mg/L	5.00
1,2,4,5-Tetrachlorobenzene	< 0.00500	mg/L	5.00
Hexachlorocyclopentadiene	<0.00560	mg/L	5.00
2,4,6-Trichlorophenol	<0.00500	mg/L	5.00
2,4,5-Trichlorophenol	< 0.00500	$_{ m mg/L}^{-3/-}$	5.00
2-Chloronaphthalene	<0.00500	mg/L	5.00
1-Chloronaphthalene	<0.00500	mg/L	5.00
2-Nitroaniline	<0.00500	mg/L	5.00
Dimethylphthalate	<0.00500	mg/L	5.00
Acenaphthylene	< 0.00500	mg/L	5.00
2,6-Dinitrotoluene	< 0.00500	$\frac{-s}{mg/L}$	5.00
3-Nitroaniline	< 0.00500	mg/L	5.00
Acenaphthene	< 0.00500	mg/L	5.00
2,4-Dinitrophenol	<0.00500	mg/L	5.00
Dibenzofuran	< 0.00500	m mg/L	5.00
Pentachlorobenzene	< 0.00500	mg/L	5.00
4-Nitrophenol	<0.00500	mg/L	5.00
2,4-Dinitrotoluene	< 0.00500	.mg/L	5.00
		3,-	continued

continued ...

Work Order: 3061622

Page Number: 3 of 4 Lovington,NM

sample 10309 continued ...

Param	Flag	Result	Units	RL
1-Naphthylamine	· · · · · · · · · · · · · · · · · · ·	< 0.00500	m mg/L	5.00
2,3,4,6-Tetrachlorophenol		< 0.00500	m mg/L	5.00
2-Naphthylamine		< 0.00500	$_{ m mg/L}$	5.00
Fluorene		< 0.00500	mg/L	5.00
4-Chlorophenyl-phenylether		< 0.00500	m mg/L	5.00
Diethylphthalate		< 0.00500	$_{ m mg/L}$	5.00
4-Nitroaniline	,	<0.00500	$_{ m mg/L}^{- m g,-}$	5.00
Diphenylhydrazine		< 0.00500	mg/L	5.00
4,6-Dinitro-2-methylphenol	;	< 0.00500	$_{ m mg/L}^{-3,-}$	5.00
Diphenylamine		< 0.00500	$_{ m mg/L}$	5.00
4-Bromophenyl-phenylether		< 0.00500	$_{ m mg/L}$	5.00
Phenacetin		< 0.00500	$_{ m mg/L}^{- m g/L}$	5.00
Hexachlorobenzene		< 0.00500	mg/L	5.00
4-Aminobiphenyl		< 0.00500	mg/L	5.00
Pentachlorophenol		< 0.00500	mg/L	5.00
Anthracene		<0.00500	$_{ m mg/L}$	5.00
Pentachloronitrobenzene		<0.00500	$\frac{mg/L}{mg}$	5.00
Pronamide	•	<0.00500	mg/L	5.00
Phenanthrene		<0.00500	mg/L mg/L	5.00
		<0.00500		5.00
Di-n-butylphthalate		<0.00500	mg/L	5.00
Fluoranthene			mg/L	5.00
Benzidine		<0.00500 <0.00500	mg/L	5.00
Pyrene			mg/L	
p-Dimethylaminoazobenzene		<0.00500	$_{ m mg/L}$	5.00
Butylbenzylphthalate		<0.00500	mg/L	5.00
Benzo(a)anthracene		<0.00500	mg/L	5.00
3,3-Dichlorobenzidine		<0.00500	mg/L	5.00
Chrysene		<0.00500	m mg/L	5.00
bis(2-ethylhexyl)phthalate		< 0.00500	mg/L	5.00
Di-n-octylphthalate		<0.00500	m mg/L	5.00
Benzo(b)fluoranthene		< 0.00500	mg/L	5.00
Benzo(k)fluoranthene		<0.00500	mg/L	5.00
7,12-Dimethylbenz(a)anthracene		< 0.00500	mg/L	5.00
Benzo(a)pyrene		< 0.00500	mg/L	5.00
3-Methylcholanthrene		< 0.00500	$rac{ ext{mg/L}}{ ext{L}}$, 5.00
Dibenzo(a,j)acridine		< 0.00500	m mg/L	5.00
Indeno(1,2,3-cd)pyrene		< 0.00500	mg/L	5.00
Dibenzo(a,h)anthracene		< 0.00500	${ m mg/L}$	5.00
Benzo(g,h,i)perylene		< 0.00500	${f mg/L}$	5.00
Total Dissolved Solids		1702	\mathtt{mg}/\mathtt{L}	10.00
Total Uranium		< 0.0200	${ m mg/L}$	0.0200
Total Vanadium		< 0.0250	${ m mg/L}$	0.0250
Bromochloromethane		<1.00	$\mu { m g}/{ m L}$	1.00
Dichlorodifluoromethane		<1.00	$\mu { m g}/{ m L}$	1.00
Chloromethane (methyl chloride)		<1.00	$\mu { m g}/{ m L}$	1.00
Vinyl Chloride		<1.00	$\mu { m g}/{ m L}$	1.00
Bromomethane (methyl bromide)		< 5.00	$\mu_{f g}/{f L}$	5.00
Chloroethane		<1.00	$\mu { m g/L}$	1.00
Trichlorofluoromethane		<1.00	$\mu { m g}/{ m L}$	1.00
Acetone		<10.0	$\mu_{ m g/L}$	10.0
Iodomethane (methyl iodide)		< 5.00	$\mu { m g/L}$	5.00
Carbon Disulfide		1.08	μ g/L	1.00
Acrylonitrile		<1.00	$\mu {\sf g}/{ m L}$	1.00
2-Butanone (MEK)		<5.00	$\mu_{ m g/L}$	5.00
4-Methyl-2-pentanone (MIBK)		<5.00	$\mu { m g}/{ m L}$	5.00
2-Hexanone		< 5.00	$\mu_{ m g/L}$	5.00
				ontinued

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sample 10309 continued ...

Param	Flag	Result	Units	RL
trans 1,4-Dichloro-2-butene		<10.0	$\mu { m g}/{ m L}$	10.0
1,1-Dichloroethene		<1.00	$\mu \mathrm{g}/\mathrm{L}$	1.00
Methylene chloride		<5.00	$\mu_{ t g}/{ t L}$	5.00
MTBE		<1.00	$\mu { m g}/{ m L}$	1.00
trans-1,2-Dichloroethene		<1.00	$\mu { m g}/{ m L}$	1.00
1,1-Dichloroethane		<1.00	$\mu_{ m g}/{ m L}$	1.00
cis-1,2-Dichloroethene		<1.00	$\mu { m g}/{ m L}$	1.00
2,2-Dichloropropane		<1.00	$\mu_{ m g}/{ m L}$	1.00
1,2-Dichloroethane (EDC)		<1.00	$\mu g/L$	1.00
Chloroform		<1.00	$\mu { m g}/{ m L}$	1.00
1,1,1-Trichloroethane		<1.00	$\mu_{ m g}/ m L$	1.00
1,1-Dichloropropene		<1.00	$\mu {\sf g}/{ m L}$	1.00
Benzene		<1.00_	$\mu { m g}/{ m L}$	1.00
Carbon Tetrachloride		<1.00	$\mu { m g}/{ m L}$	1.00
1,2-Dichloropropane		<1.00	$\mu g/\mathrm{L}$	1.00
Trichloroethene (TCE)		. <1.00	$\mu { m g}/{ m L}$	1.00
Dibromomethane (methylene bromide)		<1.00	$\mu { m g}/{ m L}$	1.00
Bromodichloromethane		<1.00	$\mu_{ m g}/{ m L}$	1.00
2-Chloroethyl vinyl ether		<5.00	$\mu { m g}/{ m L}$	5.00
cis-1,3-Dichloropropene		<1.00	$\mu {\sf g}/{\sf L}$	1.00
trans-1,3-Dichloropropene		<1.00	$\mu { m g}/{ m L}$	1.00
Toluene		<1.00	$\mu { m g}/{ m L}$	1.00
1,1,2-Trichloroethane		<1.00	$\mu { m g}/{ m L}$	1.00
1,3-Dichloropropane		<1.00	$\mu \mathrm{g}/\mathrm{L}$	1.00
Dibromochloromethane		<1.00	$\mu { m g}/{ m L}$	1.00
1,2-Dibromoethane (EDB)		<1.00	$\mu { m g}/{ m L}$	1.00
Tetrachloroethene (PCE)		<1.00	$\mu_{ t g}/{ t L}$	1.00
Chlorobenzene		<1.00	$\mu_{ m g}/{ m L}$	1.00
1,1,1,2-Tetrachloroethane		<1.00	$\mu \mathrm{g}/\mathrm{L}$	1.00
Ethylbenzene		1.36	$\mu { m g}/{ m L}$	1.00
m,p-Xylene		<1.00	$\mu_{ m g}/{ m L}$	1.00
Bromoform		<1.00	$\mu g/\mathrm{L}$	1.00
Styrene		<1.00	$\mu { m g}/{ m L}$	1.00
o-Xylene		~1.17	$\mu { m g}/{ m L}$	1.00
1,1,2,2-Tetrachloroethane		<1.00	$\mu {\sf g}/{ m L}$	1.00
2-Chlorotoluene		<1.00	$\mu { m g}/{ m L}$	1.00
1,2,3-Trichloropropane		<1.00	$\mu_{ m g}/{ m L}$	1.00
Isopropylbenzene		<1.00	$\mu {f g}/{f L}$	1.00
Bromobenzene		<1.00	$\mu { m g}/{ m L}$	1.00
n-Propylbenzene		<1.00	$\mu { m g}/{ m L}$	1.00
1,3,5-Trimethylbenzene		<1.00	$\mu_{ m g}/{ m L}$	1.00
tert-Butylbenzene		<1.00	$\mu { m g}/{ m L}$	1.00
1,2,4-Trimethylbenzene		<1.00	$\mu { m g}/{ m L}$	1.00
1,4-Dichlorobenzene (para)		<1.00	$\mu { m g}/{ m L}$	1.00
sec-Butylbenzene		<1.00	$\mu_{ m g}/{ m L}$	1.00
1,3-Dichlorobenzene (meta)		<1.00	$\mu { m g}/{ m L}$	1.00
p-Isopropyltoluene		<1.00	$\mu { m g}/{ m L}$	1.00
4-Chlorotoluene		<1.00	$\mu {\sf g}/{\sf L}$	1.00
1,2-Dichlorobenzene (ortho)		<1.00	$\mu_{ m g}/{ m L}$	1.00
n-Butylbenzene		<1.00	$\mu_{ m g}/{ m L}$	1.00
1,2-Dibromo-3-chloropropane		< 5.00	$\mu_{ m g}/{ m L}$	5.00
1,2,3-Trichlorobenzene		< 5.00	$\mu_{ t g}/{ t L}$	5.00
1,2,4-Trichlorobenzene		< 5.00	$\mu { m g}/{ m L}$	5.00
Naphthalene		< 5.00	$\mu_{ m g}/{ m L}$	5.00
Hexachlorobutadiene		< 5.00	$\mu { m g}/{ m L}$	5.00
Total Zinc		0.173	$_{ m mg/L}$	0.0250

Page	INF H CHAIN-OF-CUSTODY AND ANALYSIS REQUEST	306/622	ANALYSIS REQUEST	(Circle or Specify Method No.)	7.005/8			Cq Ct E	200 200 2 68 aA 2 68 aA g 2 68 aB g 2 69 aB aB aB aB aB aB aB aB aB aB aB aB aB	TIME MTBE 80218/6 BTEX 80218/6/6 TPH 418.1/TX1 TOLP Metals Ag TCLP Metals Ag TCLP Semi Vol. 826 GC/MS Semi. Vol. 826 GC/MS Semi. Vol. 826 GC/MS Semi. Vol. 826 GC/MS Semi. Vol. 826 GC/MS Semi. Vol. 826 GC/MS Semi. Vol. 826	RED AMILE Same		5.1.2						LAB USE REMARKS:	I Pansol Losned !!	1.585 12.5.4) 1.4
	91 9	IIIC.	Phone #:	Fax #:			Project Name:	Sampler Signature;	MATRIX PRESERVATIVE METHOD	WATER SOIL SOIL HIR SLUDGE HIRO 1CE 1CE NAOH 1CE 1CE NONE	1/2								ved by: Date: Time	red by: Date: Time:	Receivedant Laboratory by Date: // Three
10307	. 8	(800) 79-1296 ITACEAIIAIYSIS, (800) 378-1296 (800) 378-1200 (800) 378-1200 (800)	Company Name	Address: (Street, City, Zip)	Contact Person:	Invoice to: (If different from above)	Project #:	Project Location:	·	LAB USE	10309 Levington City WW S	2	rva.	o care di care	7.47	6II	7 / 1 / 1 / 1 / 1 / 1 / 1 / 1 / 1 / 1 /	909	Relinquished by: Date: Time: Received by:	Relinquished by: Date:	ด Relinquished by: Date: Time: Receive



DISCHARGE PLAN APPLICATION AND APPLICATION FOR AUTHORIZATION TO INJECT, PER OIL CONSERVATION DIVISION FORM C-108, INTO CLASS I WELLS WDW-1, WDW-2 AND PROPOSED WDW-3

VOLUME II SECTIONS VIII THROUGH REFERENCES

NAVAJO REFINING COMPANY Artesia, New Mexico

Subsurface Project No. 60D5497

September 2003

Prepared By:

SUBSURFACE TECHNOLOGY, INC. Houston, Texas

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VIII. GEOLOGY

VIII.A Injection Zone Lithology, Depth, Thickness, Porosity, and Permeability

The proposed injection zones are porous carbonates of the lower portion of the Wolfcamp Formation and the Cisco and Canyon Formations. These formations occur in WDW-1, WDW-2, and proposed WDW-3 at the depths shown in the table below. The injection zone is shown on the logs of WDW-1, WDW-2, and proposed WDW-3 in Attachments VIII-1, VIII-1A, VIII-2, and VIII-2A, VIII-2B, and VIII-2C, and in cross sections in Attachments VIII-3 and VIII-4.

	WD' (KB height =)W-2 = 3623 feet)	PROPOSED WDW-3 (KB height = 3625 feet)		
Injection Zone Formation	Measured Depth below KB (feet)	Subsea Depth (feet)	Measured Depth below KB (feet)	Subsea Depth (feet)	Measured Depth below KB (feet)	Subsea Depth (feet)	
Lower Wolfcamp	7450	-3757	7270	-3647	7303	-3678	
Cisco	7816	-4123	7645	-4022	7650	-4025	
Canyon	8475	-4782	8390	-4767	8390	-4765	
Base of Injection Zone (base of Canyon)	9016	-5323	8894	-5271	8894	-5269	

The lower portion of the Wolfcamp Formation (the Lower Wolfcamp) is the shallowest porous unit in the proposed injection interval. The Wolfcamp Formation (Permian - Wolfcampian age) consists of light brown to tan, fine- to medium-grained, fossiliferous limestones with variegated shale interbeds (Meyer, 1966, page 69). The top of the Wolfcamp Formation was correlated for this study to be below the base of the massive, dense dolomites of the overlying Abo Formation. The base of the Wolfcamp coincides with the top of the Cisco Formation. Attachment VIII-5 shows that the thickness of log porosity greater than 5% in the entire Wolfcamp Formation ranges from 0 feet to 295 feet in a band 3 miles wide that trends northeast-southwest across the study area. Attachment VIII-5 indicates that the



Wolfcamp will have porosity at proposed WDW-3 that is similar to that at Navajo's WDW-1 and WDW-2.

The upper portion of the Wolfcamp Formation from 6890 feet to 7450 feet in WDW-1, has low permeability, as indicated by DSTs run in WDW-1 in 1993 (see Section VIII.B). Logs of the upper portion of the Wolfcamp in proposed WDW-2 show that it includes bands of low porosity, such as the interval from 7120 feet to 7180 feet. The upper portion of the Wolfcamp Formation is not included in the proposed injection zone.

The Lower Wolfcamp is the same interval used for injection in the I&W, Inc., Walter Solt SWD-1 (Map ID No. 83), which is completed between 7518 feet and 7812 feet in that well. The caliper log run in WDW-1 in 1993 in the Lower Wolfcamp (Attachment VIII-1A) shows several intervals of hole enlargement in carbonates, for example from 7640 feet to 7670 feet. These intervals may have sufficient permeability and lateral extent to accept injected fluids. In WDW-2, the lower 80 feet of the Lower Wolfcamp, from 7565 feet to 7645 feet, is porous carbonate that is similar in log character to the underlying Cisco Formation. Navajo has demonstrated that the Cisco Formation has injection capacity in WDW-1.

The Cisco Formation (Pennsylvanian - Virgilian age) of the Northwest Shelf is described by Meyer (1966, page 59) as consisting of uniform, light-colored, chalky, fossiliferous limestones interbedded with variegated shales. Meyer (1966, page 59) also describes the Cisco at the edge of the Permian Basin as consisting of biohermal (mound) reefs composed of thick, porous, coarse-grained dolomites. Locally, the Cisco consists of porous dolomite that is 745 feet thick in WDW-2, 659 feet thick in WDW-1, and 720 feet in proposed WDW-3. The total thickness of intervals with log porosity greater than 5% is approximately 310 feet in WDW-1, 580 feet in WDW-2, and 572 feet in proposed WDW-3. The total thickness with log porosity greater than 10% is approximately 100 feet in WDW-1, 32 feet in WDW-2, and 65 feet in proposed WDW-3. Attachment VIII-6 shows that the thickness of the porous intervals in the Cisco ranges from 0 feet in the northwestern part of the study area to nearly 700 feet in a band 3 miles wide that trends northeast-southwest.



The Canyon Formation (Pennsylvanian - Missourian age) consists of white to tan to light brown fine-grained, chalky, fossiliferous limestone with gray and red shale interbeds (Meyer, 1966, page 53). Locally, the Canyon occurs between the base of the Cisco dolomites and the top of the Strawn Formation of Pennsylvanian (Desmoinesian) age. The total thickness of intervals with log porosity greater than 5% is 34 feet in WDW-1, 30 feet in WDW-2, and 10 feet in proposed WDW-3. No intervals appear to have log porosity greater than 10% in any of the three injection wells.

Permeability measurements that range from less than 100 md to 2733 md are available for the Lower Wolfcamp-Cisco-Canyon injection zone. Permeability measurements from hydrocarbon-producing intervals in the Wolfcamp, Cisco, and Canyon from Meyer (1966, Table 4) are summarized in Attachment VIII-7. Meyer reported permeabilities in the Cisco of up to 114 millidarcies (md), up to 38 md in the Canyon, and up to 200 md in the Wolfcamp.

Permeability was estimated to be 597 md from DST No. 5 conducted in WDW-1 on August 26, 1993. DST No. 5 was conducted near the top of the Cisco Formation from 7817 feet to 7851 feet. Test data for DST No. 5 and calculation of permeability are included in Attachments VIII-9 and VIII-9A, respectively.

A pressure buildup/pressure falloff test was conducted in WDW-1 on July 30 and 31, 1998, after WDW-1 was recompleted to the Cisco injection zone. The transmissibility (kh, or product of permeability and thickness) determined from the pressure falloff test data was 284,839 md-ft. The average permeability of the Cisco injection zone is determined by dividing kh by the thickness of the interval that was perforated, as shown below:

$$k = \frac{kh}{h}$$

$$= \frac{284,839 \text{ md-ft}}{253 \text{ feet}}$$

$$= 1126 \text{ md}$$



where,

k = permeability

kh = transmissibility from pressure falloff test

h = thickness of perforated interval

The WDW-1 pressure buildup/pressure falloff test data and analysis are included as Attachment VIII-9B.

A pressure buildup/pressure falloff test was conducted in WDW-2 on June 4 and 5, 1999, after WDW-2 was recompleted to the Lower Wolfcamp and Cisco injection zone. The transmissibility (kh, or product of permeability and thickness) determined from the pressure falloff test data was 817,018 md-ft. The average permeability of the injection zone was determined by dividing kh by the thickness of the interval that was perforated, 299 feet, to be 2733 md.

In summary, permeability values in the proposed injection zone from producing fields in the region range up to 200 md, as discussed above. Based on test data for WDW-1 and WDW-2, however, permeability values as high as 2733 md or higher occur in intervals in the injection zone. Permeabilities of 250 md and greater are also expected in the injection zone in proposed WDW-3.

VIII.B Confining Zone

The confining zone extends from 4000 feet to 7450 feet in WDW-1, from 4120 feet to 7270 feet in WDW-2, and from 4030 feet KB to 7303 feet KB in proposed WDW-3. The confining zone includes massive low-porosity carbonate beds and layers of shale in the Upper Wolfcamp, Abo, and Yeso Formations that will confine the injected fluids to the proposed injection zone (Lower Wolfcamp, Cisco, and Canyon Formations). The formations that comprise the confining zone are described below. The confining zone extends throughout the AOR, as shown in the cross sections in Attachments VIII-3 and VIII-4.



The proposed injection zone is directly overlain by the confining layers of the upper portion of the Wolfcamp Formation. Three (3) DSTs were conducted in the upper portion of the Wolfcamp in WDW-1, in the interval from 7016 feet to 7413 feet, that indicate that the interval has low permeability and can confine injected fluids to the injection zone. The DSTs, DST Nos. 2, 3, and 4, are summarized in the daily drilling reports in Attachment VIII-8. Reports of the data from DST Nos. 3 and 4 are presented in Attachment VIII-9. Although the data from DST No. 4 are not analyzable, an average permeability of 0.36 md was calculated from the data from DST No. 3, as shown below:

$$k = 162.6 \frac{\text{q B } \mu}{\text{mh}}$$

$$= 162.6 \frac{(20 \text{ bbl/89 min x 1440 min/day})(1)(0.53 \text{ cp})}{(570.883 \text{ psi/cycle})(7382 \text{ feet - 7230 feet})}$$

$$= 162.6 \frac{(323.6 \text{ bpd})(1)(0.53 \text{ cp})}{(570.883 \text{ psi/cycle})(152 \text{ feet})}$$

$$= 0.36 \text{ md}$$

A permeability on the order of 0.1 md is at the low end of the permeability range for carbonates, and is at the high end of the permeability range for shales, according to Freeze and Cherry (1979, p. 29). Therefore, the low-permeability carbonates of the upper Wolfcamp will provide the first level of confinement for the injection zone.

The Abo Formation overlies the Wolfcamp and extends from 5400 feet to 6890 feet in WDW-1, from 5506 feet to 6728 feet in WDW-2, and from 5380 feet KB to 6745 feet KB in proposed WDW-3. Although the Abo is well known as a major oil producer in the AOR, the producing intervals lie in the upper Abo, whose equivalents are above 6100 feet in WDW-1 and above 6200 feet in proposed WDW-2. The deepest Abo test well in the AOR, Map ID No. 126, located 6000 feet east (downdip) of proposed WDW-3, was drilled to 6412 feet. No Abo production in the AOR has been established below 6298 feet, the producing interval in Map ID No. 112, located 3800 feet southeast (downdip) of WDW-1. The base of



the producing interval within the Abo Formation in the AOR, therefore, is over 900 feet above the top of the proposed injection zone. The lower 600 feet of the Abo Formation (below the deepest producing interval in the AOR), consisting primarily of dolomite with average porosity less than 5% and interbedded shale, will serve as the secondary confining layer above the proposed injection zone.

The Yeso Formation, which will provide additional confining capabilities, directly overlies the Abo Formation. The top of the Yeso is not consistently identified in the AOR, according to well records submitted to the OCD and available scout tickets. However, the top of the confining zone can be considered to extend to the top of the low-porosity limestone interval below the higher-porosity dolomites below the Glorieta Member of the San Andres Formation (at 4000 feet in WDW-1, 4120 feet in WDW-2, and 4030 feet KB in proposed WDW-3). The Yeso consists of low-porosity carbonates and clastic beds. The Tubb shale, a shale interval that is up to 150 feet thick in some wells in the study area, also occurs in this interval. Although no faults are known to exist in the confining zone within the AOR, the Tubb shale will serve to prevent movement of fluids through a hypothetical unknown fault.

VIII.C Structure

The proposed injection well is located on the southern flank of the Artesia-Vacuum anticline (also called the Vacuum Arch), which trends east-west across the study area. The Vacuum Arch is shown clearly on Attachment VIII-10, a structure map drawn on the Rio Bonito member of the San Andres Formation. The top of the Rio Bonito member occurs at approximately 2260 feet in WDW-1 and at 2320 feet in WDW-2, or 300 feet to 320 feet below the top of the San Andres Formation, and over 4600 feet above the top of the proposed injection interval (Lower Wolfcamp, Cisco, and Canyon Formations). The general structure of the injection zone is shown on Attachment VIII-11, a regional structure map of the Strawn Formation, drawn on a horizon that is approximately 375 feet below the top of the Strawn (base of the proposed injection zone), as it is recognized in records and scout tickets for wells in the local study area. The top of the proposed injection zone is conformable with the structure of the Strawn Formation. Attachment VIII-11 shows the trend of the Vacuum arch, as well as the southeasterly dip of the beds at approximately 100 feet per mile in the vicinity of the proposed injection wells. No faults exist in the



study area, and faulting occurs no closer than 16 miles to the proposed injection wells. The nearest fault is the K-M fault, which is located 6 miles northwest of Artesia and trends northeast-southwest, as shown on Attachment VIII-10. Attachments VIII-12, VIII-13, VIII-14, and VIII-15 are local structure maps drawn on the Wolfcamp, Cisco, Canyon, and Strawn Formations.

VIIIAD Underground Sources of Drinking Water (USDWs)

The base of the USDWs, in which the total dissolved solids (TDS) concentration of the formation water is less than 10,000 milligrams/liter (mg/l) or the equivalent, 10 g/l, occurs at approximately 3200 feet above sea level at WDW-1 and 3150 feet above sea level at WDW-2 and proposed WDW-3, as shown on Attachment VIII-16. In WDW-1, the base of the USDWs occurs at a measured depth of 493 feet below kelly bushing (KB; 493 feet KB = 3693 feet - 3200 feet, where 3693 feet is the elevation of the kelly bushing of WDW-1), or the base of the Tansill Formation (Permian - Guadalupean age). In WDW-2, the base of the USDWs occurs at a measured depth of 473 feet below KB (473 feet KB = 3623 feet - 3150 feet). In proposed WDW-3, the base of the Tansill Formation occurs at 420 feet KB. In the eastern part of the study area, at depth, the Tansill Formation is overlain by the The Salado consists of halite, Salado Formation (Permian - Ochoan age). polyhalite, anhydrite, and potassium salts, which are soluble. The Salado is overlain by the Rustler Formation (Permian - Ochoan age). In the AOR, which straddles the outcrop area of the Salado, and to the east, the Salado has been removed by solution by ground water flowing through the Rustler.

To the east, where the Rustler is present, the Rustler is the USDW. To the west, where the Rustler has been removed by erosion and the Salado has been removed by solution, the Tansill is the USDW. The Tansill Formation and the underlying Yates Formation comprise the Three Twins Member of the Chalk Bluff Formation known in outcrops in the region (Hendrickson and Jones, 1952, page 20), and listed as a freshwater-producing interval in Attachment XI-1. The proposed injection zone (Lower Wolfcamp, Cisco, and Canyon Formations) is separated from the USDWs by 6957 feet (6957 feet = 7450 feet - 493 feet, where 7450 feet is the depth of the top of the injection zone) of carbonates, siltstones, and shales in WDW-1. In WDW-2, the USDWs are separated from the injection zone by 6797 feet (= 7270)



feet - 473 feet). In proposed WDW-3, the USDWs are separated from the injection zone by 6883 feet (= 7303 feet - 420 feet).

VIII.E Compatibility Issues

The integrity of the carbonates of the injection zone and the confining zone is not threatened by the injected waste. The monitoring system and physical limitations on injection established by state and federal regulations are adequate checks to identify and address any problems that may arise. Operating limits on maximum injection pressure and monitoring requirements for well annular pressure versus injection pressure and annular fluid volume force the operator to be as protective of his wellbore and the injection zone as is possible. Furthermore, events such as tubing failures and packer failures that are caused by the injection of corrosive materials would require that the well be shut down and that a workover be performed. The proposed monitoring methods are capable of detecting wellbore integrity and injection problems before they could threaten human health and the environment.

The proposed waste stream will have a pH range of 6.0 to 9.0, that is, near neutral to slightly alkaline. The reactions of alkaline solutions with carbonates are slow or non-existent, so no significant loss of formation is expected from injection of this waste stream. Therefore, no chemical incompatibility between the proposed waste stream and the formation is expected to occur that could allow wastes to migrate out of the injection zone.



ATTACHMENT VIII-2B RESISTIVITY LOG OF PROPOSED WDW-3



ATTACHMENT VIII-2C POROSITY LOG OF PROPOSED WDW-3



X. LOGGING AND TESTING

<u>WDW-1</u>: Two (2) formation fluid samples were retrieved from the Cisco injection interval when WDW-1 was completed in July 1998. The sampling procedure was detailed in the "Reentry and Completion Report, Waste Disposal Well No. 1" (the completion report was submitted to the OCD in September 1998). The results of the analysis of the fluid samples are also discussed in Section VI.E and included as Attachment VII-4 of this application.

No cores were taken from WDW-1.

The WDW-1 logging program is described fully in the completion report, and the logs are included in the completion report. The logs run in WDW-1 are listed below:

TYPE OF LOG	TYPE OF HOLE LOGGED	INTERVAL (ft)
	Intermediate Casing	
Cement Bond Log Variable Density Log Gamma Ray	Cased Hole	0 to 2548
	Long-String Casing	
Dual Laterolog Gamma Ray Micro-Spherically Focused Electric Log	Open Hole	2546 to 10,182
Spectral Density Dual Spaced Neutron Log Gamma Ray	Open Hole	350 to 10,139
Compensated Sonic Log Gamma Ray	Open Hole	350 to 10,181
Formation Microscanner Imaging Results	Open Hole	4000 to 9143
Caliper Log Gamma Ray	Open Hole	2553 to 9143
Cement Bond Log Variable Density Log Gamma Ray	Cased Hole	0 to 8990
Casing Evaluation Log w/Multi-Finger Caliper Tool w/Electromagnetic Casing Caliper Thickness Tool	Cased Hole	0 to 8997
Temperature Log	Cased Hole	0 to 8997
Temperature Log	Cased Hole	0 to 8997



The mechanical integrity of WDW-1 was demonstrated by the use of: a casing inspection log, a casing pressure test, and a cement bond log of the 7-inch casing; a cement bond log of the 9-5/8 inch casing; and a radioactive tracer survey, an annulus pressure test, and a differential temperature survey. These tests are detailed in the completion report for WDW-1.

<u>WDW-2</u>: Details of the logging and testing conducted during the reentry and recompletion of WDW-2 in May and June 1999 were provided in the document "Reentry and Completion Report, Waste Disposal Well No. 2," prepared by Subsurface and submitted to the OCD by Navajo in July 1999.

<u>Proposed WDW-3</u>: A formation fluid sample will be retrieved from the injection zone in proposed WDW-3. Navajo will conduct injectivity testing in permeable intervals of proposed WDW-3.

The proposed logging program is described below:



HOLE/CASING	OPEN-HOLE LOGS	CASED-HOLE LOGS
	Proposed WDW-3	
17-1/2-inch Surface Borehole (13-3/8 inch Casing) 400 feet		Log run on 1/29/91: Gamma Ray
12-1/4-inch Intermediate Borehole (9-5/8-inch Casing) 2604 feet		Log run on 1/29/91: Gamma Ray
8-3/4-inch Long-String Borehole (7-inch Casing) 9450 feet	Logs Run on 1/29/91: Gamma Ray Caliper Dual Laterolog Micro SFL Spectral Density Dual Spaced Neutron	Logs Proposed on Reentry: Cement Bond/Variable Density Casing Inspection Log Differential Temperature Log Radioactive Tracer Survey
6-inch Liner Borehole (4-1/2-inch Liner) 9051 feet to 1019 feet	Logs Run on 1/29/91: Gamma Ray Caliper Dual Laterolog Micro SFL Spectral Density Dual Spaced Neutron	

