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REPORTS

DATE: 5/12/1978

H. MOORE WATER CONTAMINATION STUDY MOORE DEVONIAN POGL

STATE OF NEW MEXICO ENERGY AND MINERALS DEPARTMENT OIL CONSERVATION DIVISION HOBBS, NEW MEXICO

John W. Runyan - Geologist O.C.D. in cooperation with Water Resources Division Roswell, New Mexico

May 12, 1978

APPENDIX

Location Plat and U.S.G.S. Topo Map

Results of Survey

General Data

Water Analysis and Test Well Data

Well Numbering System

Daily Field Reports

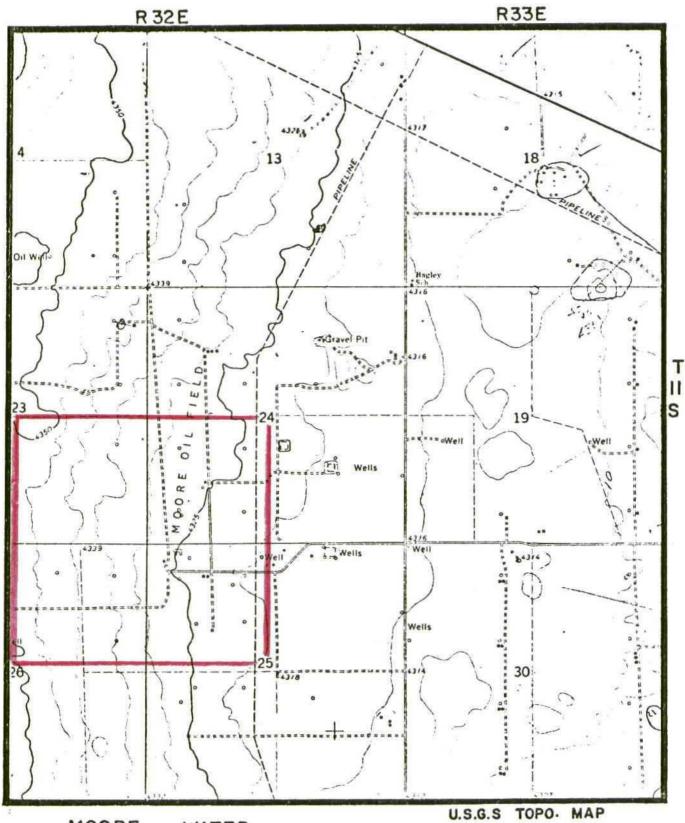
Water Analysis Sheets

Driller Logs

Maps ----- "Water Contamination and Water Rate Map"

Redbed "Triassic" Map

Crossection A--A'



MOORE WATER
CONTAMINATION STUDY

-Area of study.

RESULTS OF SURVEY

Mr. H. Moore first requested that four test wells be drilled around his house area on December 30, 1977. His house water well was 530 ppm Cl at this time. A total of seven test wells were drilled.

These seven wells established that the water movement is from west to east at a very low gradient across his house area. The house is actually located on an old buried playa lake bed.

Since the first water was tested December 30, 1977, at 530 ppm C1, the chloride content is slowly rising. In January 1978, the chloride content has increased to 610 ppm. Also, test well #2 has increased from 792 to 1532 ppm C1 in 2 months, indicating it is on the east edge of a chloride-high moving east.

The Chloride Rate Map definitely shows the area of contamination to be moving from west to east and the source of contamination appears to be coming from the west of Mr. Moore's house. Texaco was/is the only operator west of Moore's house.

The pit located in Unit A, Section 26, did have water placed in it for 3 years; and the rate of lateral water movement for the immediate area places the calculated rate-distance almost the same as the actual map distance (.2 $f/d \times 25.75$ years $\times 365$). Refer to chloride-rate movement map.

All of the information available to date indicates that the Texaco pit, located in Unit A, Section 22, TllS, R32E, could have been the origin of the contaminated water in the immediate area of Moore's house.

GENERAL DATA

The Moore Devonian Pool was discovered April 5, 1952, by Texaco, Inc. Moore Well #1 located in Unit D, Section 25, Township 11 South, Range 32 East.

Texaco, Inc. completed their State New Mexico "BP" NCT-1 Well #1 located in Unit B, Section 26, TllS, R32, August 29, 1952, and plugged same August 8, 1956. They completed their New Mexico "BJ" NCT-1 Well #1 located in Unit A, Section 26, TllS, R32E, September 3, 1952, and plugged same in October 24, 1955. The production from the above went into a central battery located in Unit A of Section 26.

A pit was in existence on this lease by October 10, 1952, and produced water was put in this pit, some reported 8,865 bbls. plus as follows:

	STATE "BJ" #1	STATE "BP" #1
1952	0 bbls.	219 bbls.
1953	155 bbls.	8491 bbls.
1954	O bbls.	not reported
1955	S.I.	not reported
1956	P&A	S.I. & P&A

Pit size was 30' x 30', located 650'/N & 960'/E of Section 26, T11S, R32E. Size and location taken from aerial photographs dated May 16, 1955. Pit was in existence and use for 3 years. It has been 25.75 years since the pit was first used.

The Texaco, Inc. New Mexico "BJ" Well #1 was reported to have holes in upper 0 -- 33 feet of 8 5/8" casing (13 3/8" surface casing) when well was plugged. It is most unlikely that this casing leak caused any of the contamination existing to date.

RATE CALCULATION

The following rate calculation is based on best information available to date. The State Engineers estimate the rate of water movement in the immediate area of Moore's house to be .2 feet/day, gradient of 1' dip to east for each 98' across Moore's area (from crossection).

The distance of water movement from Texaco's pit to front of contamination is 1925 feet. Calculations are: $365 \times .2 \times 25.75 = 1880$ feet, almost the exact same distance. Refer to chloride-rate map.

Due to the low volumes of water involved and long period of time since the contamination began, the chloride content of the water is low and has cleared up somewhat behind the tail of the contamination.

Respectfully submitted,

John W. Runyan, Geologist Oil Conservation Division

Hobbs, New Mexico

May 12, 1978

MOORE CONTAMINATION STUDY WATER ANALYSIS & TEST WELL DATA

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Test Well	Well Location	Ву	Agency	<u>Date</u>	Chlorides PPM	<u>T.D.</u>	Top Redbed	Surface Elevation
#1 #1	11.32.25.11230	Jetted Trip Sample	0.C.D. W.R.D.	1-4-78 1-9-78	113.6 72.0	90'	84'	4324'
#2 #2 #2 #2 #2	11.32.25.11131	Jetted Trip Sample Trip Sample Trip Sample Trip Sample	O.C.D. W.R.D. W.R.D. W.R.D. W.R.D.	1-5-78 1-9-78 1-20-78 1-30-78 2-13-78	792.0 1072.0 1521.0 1620.0 1532.0	86'	82'	4329'
#3 #3	11.32.25.11142	Jetted Trip Sample	O.C.D. W.R.D.	i-5-78 1-9-78	258.0 545.0	90'	86'	4325'
#4 #4	11.32.25.111214	Jetted Trip Sample	O.C.D. W.R.D.	1-6-78 1-9-78	156.0 191.0	90'	85'	4326'
#5 #5 #5 #5	11.32.26.222334	Jetted Trip Sample Trip Sample Trip Sample Trip Sample	O.C.D. W.R.D. W.R.D. W.R.D. W.R.D.	1-12-78 1-16-78 1-20-78 1-30-78 2-13-78	71.0 102.0 112.0 125.0 116.0	170'	167'	4333'
#6 #6 #6 #6	11.32.26.222343	Jetted Trip Sample Trip Sample Trip Sample Trip Sample	O.C.D. W.R.D. W.R.D. W.R.D.	1-17-78 1-20-78 1-30-78 2-13-78 3-20-78	99.8 78.0 74.0 70.0 102.0	90'	83'	4333'
#7 #7	11.32.23.442334	Jetted Trip Sample	O.C.D. W.R.D.	1-17-78 1-20-78	99.4 50.0	82'	78'	4332'
Moore Moore	Windmill Windmill House well House well			Nov.1977 Jan.1978 Nov.1977 Jan.1978	510.0 560.0 530.0 610.0			

.-- System of numbering wells in New Mexico.

Well 19.2.3.122

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# 1.J	11 T ԱԳԴ	ng			from injection into a injection and product	tion wells,	water flows	r	Storage - Production	
			leanu Spill		or pressure tests, so plugging, etc.)				■ Other ■ General Op	eration
	-					•		l ~	•	

NEW MEXICO OIL CONSURVATION COMMISSION FIELD TRIP REPORT 0 C υ Date 1-10-78 R R EDDIE SEAY Hiles 242 District I Name T Ε 8 am Time of Return 4 pm Time of Departure Car 16. 331 R ATIO Н In the space below indicate the purpose of the trip and the duties 0 performed, listing wells or leases visited and any action taken. U R Signature 0 S 8 11-25-33 to West Tatum to meet with Mr. Moore to discuss results of Moore contamination study. The contamination was determined to have come from a P&A well west of Moore house. After discussion it was determined that 2 moore wells were needed to pinpoint trouble. Meet with Mr. Paul Hamilton to discuss contamination study which was done in December 1977. Source of contamination was caused by Texaco SND well. .

" Housekeeping

- Water Contamination

INSPECTION

REORGED

m Drilling Operation

- Well Test

· Plugging

* Plugging Cleanup

* Mishap or Spill

INSPECTION CLASSIFICATION

U = Underground Injection Control = Any
inspection of or related to injection
project, facility, or well or resulting
from injection into any well. (SWD, 2ndry
injection and production wells, water flows
or pressure tests, surface injection equipment,
plugging, etc.)

I = Injection

C = CI'D

S = SUD

U = Underground Storage

NATURE OF SPECIFIC WES

OR FACILITY INSURCIN

P . Production

O = Other

G * General Operation

I H S P E C T	CLASSIFICATION	F A C I L I T	H O U R S	Q U A R T E R H O U R S		Miles 140 District 1 7:45 pm Car No. 0F-497
W	0		12	1	A-26-11-32 To Moore Devonian Pool to witness the dimore water contamination study. TW #5 located 200' ENE from Texaco's P&A well in A-Texaco P&A well and Moore's house. Top redbed stringer at 82½ feet, base 84 feet. 84 167' Cretaceous washin. This well hit dead of gulley. Top redbed 167' TD 170' 1st sample chlorides = 71.0 ppm 2nd sample chlorides = 56.8 ppm (10 min later)	-26-11-32, in line from
					Those present: Mr. Jim Wright, state Engineer Mr. Moore, John W. Runyan, OCC and	Mr. Sumruld, Driller.
				I I ON	INSPECTION CLASSIFICATION	NATURE OF SPECIFIC WELL OR FACILITY INCRECIES
Housekeeping U = W = Water Contamination D = Drilling Operation T = Well Test P = Plugging C = Plugging Cleanup M = Michap or Spill O = Other Cleanup Cleanu					tion inspection of or related to injection project, facility, or well or resulting from injection and production wells, water flows	I = Injection S = SUD U = Underground Storage P = Production

O = Other - Inspections not related to injection

L L	FA	HO	0	. NEW MEXICO OIL CONSURVATION OF FIELD TRIP REPORT	COMMISSI	011	•	
A S S I	CILITY	U R S	A R T E R	Name EDDIE SEAY Date 1-16-7 Time of Departure 7:30 a.m. Time of Retur				-
A T I O N	1		H O U R S	In the space below indicate the purpose of the treperformed, listing wells or leases visited and ar Signature	rip and ny actio	the dut n taker	ics	
U	s ·	4		11-25-33 to West Tatum to catch and run water Moore contamination study. Sample 50 feet 128 ppm 56 feet 130 ppm 84 feet 113 ppm 156 feet 110 ppm	sample	from	Test Well #5	
0	Р	4	-			•		
	•							
•								
			1	•		•		
	: 133 YERFO			INSPECTION CLASSIFICATION			E OF SPECIFIC ACLUTY INSPEC	
ı = Hc				U = Underground Injection Control - Any			Injection	<u>.</u> .

W = Water Contamination

S = SUD

p " Drilling Operation r - Well Test

Storage P - Production

- Underground

r - Plusping C w Plugging Cleanup M * Mishap or Spill

inspection of or related to injection project, facility, or well or resulting from injection into any well. (SWD, 2ndry injection and production wells, water flows or pressure tests, surface injection equipment, plugging, etc.)

. O = Other

G * General Operation

*NEW MEXICO OIL CONSTRUCTION COMMISSION

C	FA	11 0	Q	FIELD	THIP REPORT	•
L S S I	C	U R	A R	Name EDDIE SEAY	liles 226 District I	
I		S	E			Car No. 331
i d	Y		R H	· · · · · · · · · · · · · · · · · · ·		
ATION			O U R	In the space below indicate the purp performed, listing wells or leases we signature	ose of the trip and usited and any action	the duties on taken.
	-	-	S			
U	S	6	-	11-25-33 to West Tatum to begin d Study. Set location 100 feet eas drilling started snowing and r	t of well #5 rig	up and started
	.			• •	•	
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TYP	133 E 133	SPECT NUMBER		Inspection Classification		NATURE OF SEPCIFIC WILL OR FACILITY INSPECTION
	ousek	cepi	ing	U = Underground Injection Contr		I = Injection
m D		ing C	amina Perat		or resulting	S = SUD U = Underground Storage
" " l'	Luqgi Luqqi	ng ng C	leanu	injection and production we pressure tests, surface	lls, water flows	P = Production O = Other
14 14	retrat.	or.	Spill	plugging, etc.)		G = General Operation

	·				. HEM MEXICO OIF CONSTRANTION CONTRACT	· • • • • • • • • • • • • • • • • • • •	•
	(F	н	Q	FIELD TRIP REPORT	•	
	ι. Γ	, C	0	υ λ	•		· ·
	S	i	R	R	Name EDDIE SEAY Date 1-18-78	11100 222	District I
	S	L	S	Ŧ		•	
	j	T		E R	Time of Departure 8 am Time of Return	3 p.m.	_Car No. 331
		Ŷ		••	K.		•••
	Ţ	1		H	In the space below indicate the purpose of the trip and	the duties	
ĺ	O			Ŭ	performed, listing wells or leases visited and any action	n taken.	
!	N			R	Signature 221		
,	1						· - حبان اب برسند برا سن بسار سر برس
					· · ·	•	
	U	S	7	-	11-25-33 to West Tatum to finish drilling test well	#6 in Moor	e
]			Contamination Study. Top redbed 83 feet		
!		,			TD 90 feet		
					Water sample 99.4 ppm	•	
					•		
					•		
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	7.5.11	1111		101	LUCDUCATON	NATURE OF	SPECIFIC WILL
		TERFC			INSPECTION CLASSIFICATION		TY THEFTE !
11		usek	ceni	na	U = Underground Injection Control - Any	1 = Inj	ection
W	# K3	iter	Cont	amina	tion inspection of or related to injection .	S = \$1:0	
() T		:111; :11 7		berai	ion project, facility, or well or resulting from injection into any well. (SWD, 2ndry		erground torage
i,	- P)	uggi	ng		injection and production wells, water flows	P - Pro	duction
				leani Spill		. 0 = 0th	er eral Operation
	m ()(, ar	vilia 4 7		1 0 2 000	come of comments
		1 1 1 1 1	10	-	to the termination not related to injection	I	•

marking out valued to injection

Well C	wnersh	ip:	MOORE (CONTAMINATION	STUDY		iell No	TW #1
				☐ Feder				
165' di	ue sout	h of Te	exaco TA	Well #3		- R 32 E	11:32:	25:11230
Type W	le11:		Water T	est Well		Dep	th: 90	feet.
			1.12+24 /	lnalysis				
8ample	Number	C:	#1		Date	e Taken: _	1-4-78	Eddy Seay
		Specif	ic Condu	ctance:		m/_		
		Total	dissolve	d Solids:		PPM.		
			Cl	hlorides:	113.6	PPM.		
			8	Sulfates:		PPM.		
		Ortho-	phosphate	es: V. lo	Lo	<u>Med</u>	· High	1
			Sulfide	es: None	Lo	₩ Med	. High	រួ
Date A	nalized	l:	-4-78		By: Ed	die Seay		
Remark	9:							
								,
(*************************************	na, Aprilantanya,	**************************************						
()								
Contract Contract					والبادرات البادي بالبادل في عبل			
Qualir managapes	**************************************	**************************************						
Chapter-sequence of		-						

Well Ownership: MOORE CONT.	AMINATION STUDY	Well No. TW #2
Land Status: State	☐ Federal ☐ Fee	
Well Location: Unit_D, Sect	ton 25, T 11 S - R 32	E 11.32.25.11131
located 300' due west of Moore'	s house	
Type Well: Water Test	Well	Depth:86 feet.
Well Use: Water anal	ysis	
Sample Number: #1		1-5-78
Specific Conductar	nce:m/	
Total dissolved Sc	olids:PPM.	
Chlor	rides: 792 PPM.	
Sulf	ates:PPM.	
Ortho-phosphates:	V. low Low	Med. High
Sulfides:	None Low	Med. High
*		
Date Analized:	By: John W.	Runyan
Remarks:		

Well Owners	MOORE MOORE		Well No	TW #2
Land Status	State F	ederal 🔽 Fe	e	
Well Location	on: Unit_D, Section_2	5, T 11 s - R.	32 E	
m (1.22	Test Well		Don't le	
Well Use:	Water Contamina		1	eet.
Sample Number	#2	_ Date Tak	en: 1-19-78	(Chaves - St. Eng
	Specific Conductance:	m/		
	Total dissolved Solids	PPM.		
	Chlorides	1427 PPM.		
	Sulfates	: PPM.		
	Ortho-phosphates: V	low Low	Med. High	
	Sulfides: 🔲	None Low	Med. High	,
	*			•
Date Analize	d: 1-19-78	By: John W	. Runyan	
Remarks:	Sample taken from 62' w			
50 ml sample	= 71.0 factor x 20.1 ti	tration = 1427.1 p	pm	
		·		

Well Ownersh	ip: MOORE CONT	TAMINATION STU	DY	Well No	TW #3
	☐ State				
Well Location	n: Unit D, See	ction 25 , T	<u>11</u> s - R <u>32</u>	E 11.32	.25.11142
180 feet nort	theast of windmil	1 at house			
	Water te			Depth: 90	feet.
Well Use:	Water an	alysis			-
Sample Number	r:#1		Date Taken	:1-5-78	3, Eddie Seay
	Specific Conduct	tance:	m/		
	Total dissolved	Solids:	PPM.		
	C h.]	lorides: 25	8		
	Sı	ılfates:	PPM.		
	Ortho-phosphates	S: V. low	Low 1	Med. Hig	<u>'h</u>
	Sulfides	None	Low 1	Med. Hig	μ
		•			-
Date Analized	1-5-78	E	y: Eddie Seay		
			N.M.(o.c.c.	
Remarks:				· · · · · · · · · · · · · · · · · · ·	

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	APPLE TO THE CONTRACT OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE PROPERTY OF THE P		ر در در در در در در در در در دار در در در در در در در در در در در در در		

Well Ownershi	ip: MOORE WATER STUDY	Well No. TW #4
Well Location	State Federal X Feneral II S - R. heast of Moore house	
	Water test well Water analysis	Depth: 90 feet.
Sample Number	Date Take	en: 1-6-78 Eddie Seay
	Specific Conductance:m/_ Total dissolved Solids:PPM. Chlorides:156PPM. Sulfates:PPM. Ortho-phosphates:V. lowLow	Med. High
	и.	ay 1.0.C.C.
Kemarks:		
•		

Well Ownersh	moore contamin	NATION STUDY	Well No	TW #5
Well Locatio	State Son: Unit A, Section from Texaco's P&A well	26 , T 11 S -	R 32 E 11.32.2	26.222334
= -	Water test wel		Depth: 167	feet.
Sample Numbe	Sulfate Ortho-phosphates:		PM. PM. PM. Med. Hig	<u>h</u>
	d: 1-12-78	By: John		

Well Ownership: MOORE CONTAMINATION STUDY	Well No. TW #5
Land Status: State Federal	K Fee
Well Location: Unit A, Section 26, T 11 S	- R 32 E 11.32.26.222334
Type Well: Water test well	Depth: 167feet.
Well Use: Water analysis	
Sample Number: #2 Date	e Taken: 1-12-78
Specific Conductance:	_m/
Total dissolved Solids:	PPM.
Chlorides: 56.8	PPM.
Sulfates:	PPM.
Ortho-phosphates: V. low Lov	W Med. High
Sulfides: None Low	w ☐ Med. ☐ High
•	
Date Analized: 1-12-78 By: Jo	hn W. Runyan
Remarks: Sample #2 taken 10 minutes after s	N.M.O.C.C.
Remarks:	

Well Ownersh	hip: MOORE WATER CONTAMINATION STUDY Well No. TW #5	
Well Location	: State Federal XX Fee on: Unit A, Section 26, T 11 S - R 32 E ENE of Texaco's P&A well #1 in A-26-11-32	
Type Well: Well Use:	Test well Depth: 170 feet. Water contamination test	
Sample Numbe	Date Taken: 1-19-78 Chaves, State Specific Conductance:m/_ Total dissolved Solids:PPM. Chlorides:113.6PPM. Sulfates:PPM. Ortho-phosphates:V. lowLowMedHigh Sulfides:NoneLowMedHigh	Engr
Remarks:	By: John W. Runyan N.M.O.C.C. Sample taken from 56' with trip sampler = 71.0 factor x 1.6 titration = 113.6 ppm	
	71.0 Tueston X 1.0 Cretation - 113.0 ppm	

Well Own	ership:	MOORE WAT	ER CONTAMINAT	ION STUDY	Wel:	l No	TW #5	·····
Land Sta	tus:	State	☐ Federal	₩ Fee				
Well Loc	ation:	Unit A , Sec	ction <u>26</u> , T	<u>ll</u> s - R <u>3</u> 2	2_E			
located :	200 feet	ENE of Texac	o well #1 in	A-26-11-32				
Type Wel	1:	Test wel]		Depth	: <u>110</u> fe	eet.	
Well Use	:	Water co	ntamination t	est			•	
Sample N	umber:	#3A		Date Taken	ı:	1-19-78	Chaves	<u>St. E</u> ngr
	Spe	cific Conduct	ance:	m/				
	Tot	al dissolved	Solids:	PPM.				
	•	Chl	orides:	27.8 PPM.				
		Sı	lfates:	PPM.				
	Ort	ho-phosphates	: <u>V. low</u>	Low	Med.	☐ <u>High</u>		
		Sulfides	: None	Low	Med.	☐ <u>High</u>		
			:			-		
Date Ana	lized:	1-19-78	B	y: John W. R	Runyan	·		
Remarks:								
			trip sampler					
50 ml sam	ple = 71	1.0 factor x	1.8 titration	= 127.8				
B*************************************		<u></u>						
								
							 	
G Tillia i i sa de Tanadon			***					

Well Ownersh	ip: MOORE WA	TER CONTAMINAT	ION STUDY	Well No	TW #6
Land Status:	☐ State	☐ Federal			
Well Location	n: Unit A , Sec	tion <u>26</u> , T	<u>11</u> s - R <u>32</u>	E 11.32.2	26.2
•	eet east of TW #				
Type Well:	Water te	st well	I	Depth: 90 fe	eet.
Well Use:	Water an	alysis			
	#1		Date Taken:	1-17-78	, Eddie Seay
	Specific Conduct	ance:	m/		
	Total dissolved				
	Chl	orides:	8PPM.		
	Su	lfates:	PPM.		
	Ortho-phosphates	: V. low	Low D	Med. High	
	Sulfides	: None	Low D	ed. ☐ High	
		•			
Date Analized	1-17-78	B	v: Eddie Seay	/	
		9	N.M.C).C.C.	
Remarks:					
	The Parameter is a second control of the sec				
					
					-
***************************************			·		
**************************************		Name and the second state of the second state			

Well Ownersh	MOORE WATER C	ONTAMINATION	STUDY	Well No	TW #6
	State				
Well Locatio	on: Unit A , Sect:	ion <u>26</u> , T	<u>11 s - R 32</u>	E	
	feet ENE of Texaco'				
	Water test				
	contaminat				
Sample Numbe	r:#2		Date Taken:	1-19-78	Chaves St. Engr
	Specific Conductar	ice:	m/_		
	Total dissolved So	olids:	PPM.		
	Chlor	ides: 92	.3 PPM.		
		fates:			
	Ortho-phosphates:			ed. MHigh	
			DLow DM		
Date Analize	d: 1-19-78	B)	John W. R	unyan	· · · · · · · · · · · · · · · · · · ·
			N.M.O	.C.C.	
	with trip sampler				
0 ml sample	= 71.0 factor x 1.:	3 titration :	= 92.3 ppm		
		<u> </u>			
				-	
thatron arterna are described and are are are are are are a second and a second are are a second					And the second s
		Ophilis a Armina paradici Saya (PANA)		,	

Well Owner	ship:	MOORE W	ATER CONTAMINATI	ON STUDY	Well No	TW #7
Land Status	s:	☐ State	☐ Federal	∑ Fee		
Well Locat	ion: Uı	nit, Se	ection_23, T_	11 s - R <u>32</u>	E 11.32.2	3.442334
•	ستند الكدرانب وراا					
			est well			
Well Use:_		Water ar	nalysis			
Sample Numb	oer:	#2	edious de frances de la Possible (Touriste Constitution)	Date Taken:	3-17-78,	State Engr.
	Speci	i fic Conduc	tance:	m/		
	Total	L dissolved	Solids:	PPM.		
		Ch	lorides: 99.4	PPM.		
		S	ulfates:	PPM.		
	Ortho	-phosphate	s: V. low	Low M	ed. High	
		Sulfide	s: None	Low M	ed. High	
						•
Date Analiz	zed: 3-7	22-78	Ву	John W. Ru	nyan	
					.C.C.	
			nated with dril			
			Traced Williams	Tring Water .	······································	
25 ml sample	e = 142	0 factor x	.7 titration =	99 4 npm		
				33.1 ppm		
••••••••••••••••••••••••••••••••••••••					 	

(************************************	بجيرت منبود سنفود الأثار	Circles or deligraphic graphs state as a second				

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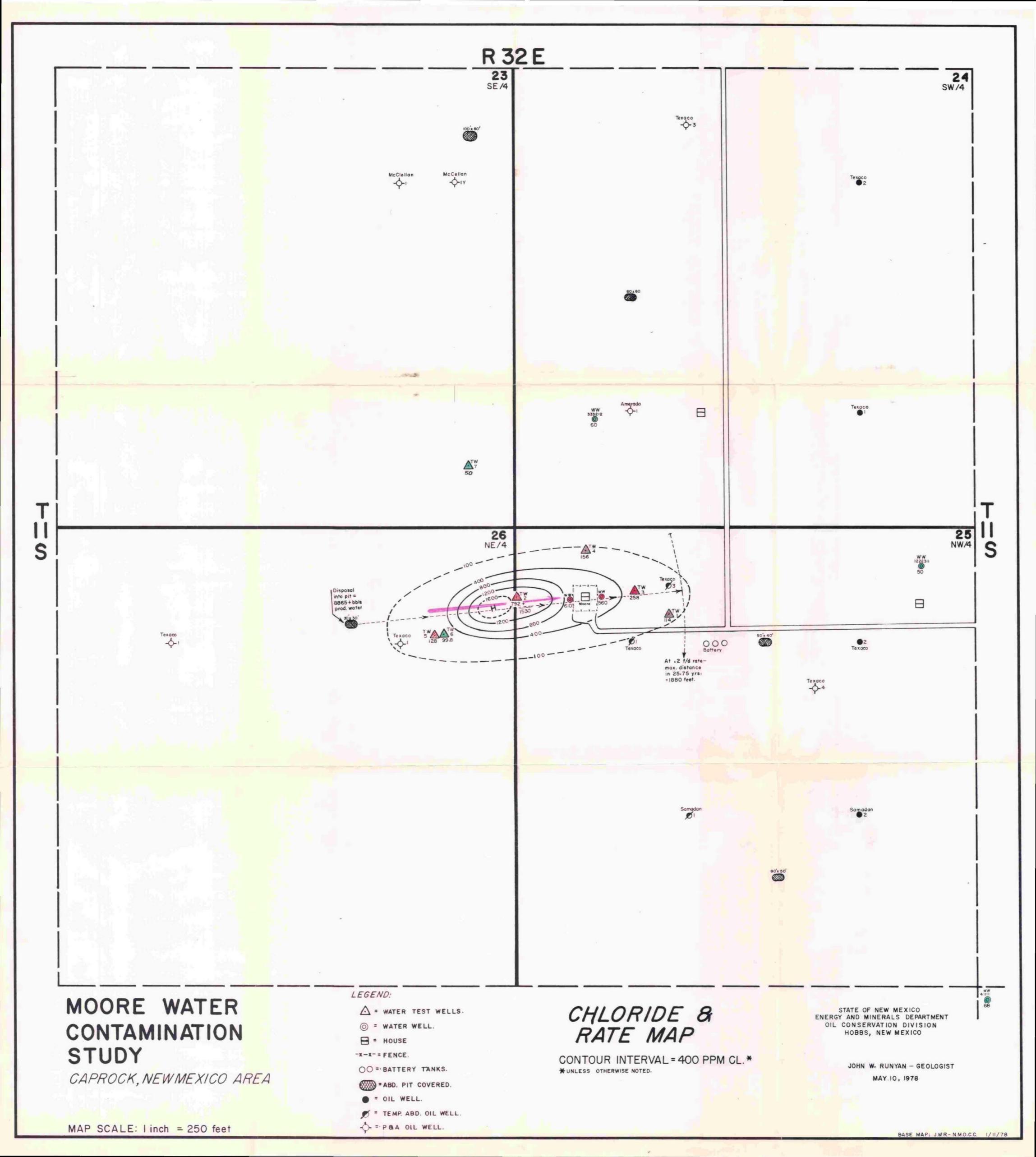
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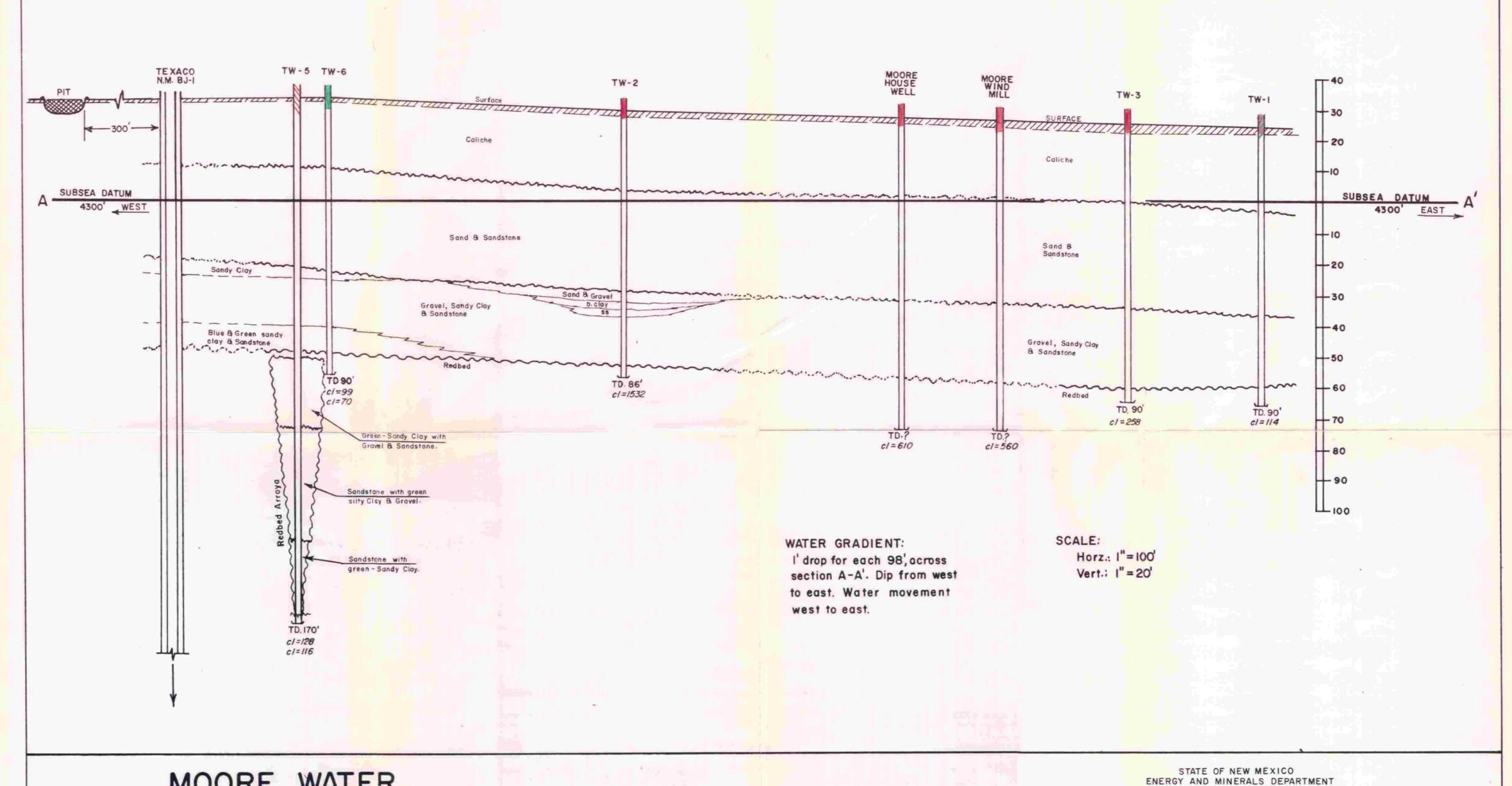
_		MELING SPRVICE Veore Water Study	MED DE	SUMR	Higher COD 306 2776
Hole	# 1	NEW MEXICO 88260		וט	
0	2	surface soil			
2	27	caliche			·
27	61	sand & sandstone layers			
61	84	layers of gravel, sandy clay			
		& sandstone		•	0.5
84	90	red clay	Mole	# 6	CI
Hole	# 2		··· · · · · · · · · · · · · · · · · ·	· . 1	surface soil
0	1	surface	1	23	caliche
ì	26	caliche	23	5 7	sand & sandstone layers
26	58	sand & sandstone layers	57	74	sandstone(cemented gravel)
58	62	sand & gravel	01	, -2	& loose gravel
62	64	brown clay	74	83	grey & blue anndy clay
64	67	sandstone	7.4	(3 ,)	with stringers of sandstone
67	\$2	sandy clay, gravel, sandstone.	83	90	red clay
8 2	86	red clay	9.7	30	ten eray
Hole	# 3				· · · · · · · · · · · · · · · · · · ·
0	3	surfa ce			
3	25	caliche			•
25	60	sand & Sandstone layers			•
60	67	aand			
67 86	86 90	gravel & sandy clay layers red clay			
80	50	red elay			
Hol	e # 4				
0	26	caliche			
26	62	send & sandstone layers			
62 65	65 85	cemented gravel(conglomerate layers of sandy clay, gravel)		
03	6 3				
85	90	* sendstone red clay			
Hol	e # 5				
0	1	surface soil			
i	23	caliche			
23	55	send & sendstone			
55	57	sandy clay			
57	74	sardstone & gravel layers			
74	84	sandy clay & sandstone layer			
84	116	sandy clay(various colors)wi			

stringers of gravel& sandstone sandstone (and-or cemented grava)

with stringers of sandy clay.

sandy clay with stringers of





MOORE WATER CONTAMINATION STUDY

CROSSECTION A-A'

STATE OF NEW MEXICO
NERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
HOBBS, NEW MEXICO

JOHN W. RUNYAN - GEOLOGIST MAY 10, 1978

MOORE DEVONIAN POOL