108528549 SWD



9/01

S. P. YATES CHAIRMAN OF THE BOARD JOHN A. YATES PRESIDENT PEYTON YATES EXECUTIVE VICE PRESIDENT RANDY G PATTERSON SECRE ARY DENNIS G. KINSEY TREASURER

105 SOUTH FOURTH STREET ARTESIA, NEW MEXICO 88210-2118 TELEPHONE (505) 748-1471

March 20, 2001

MARTIN YATES, III

1912 - 1985

FRANK W. YATES

1936 - 1986

MAR 2 3 2001

State of New Mexico **OIL CONSERVATION DIVISION** 2040 S. Pacheco Street Santa Fe, NM 87505-5472

Dear Sir,

Enclosed please find a copy of form C-108 (Application for Authority to Inject) for the proposed Handicapper SWD #1 located in Unit B of Section 3-T10S-R26E, Chaves County. New Mexico. (30-005-63307)

Should you have any questions, please feel free to contact me at (505) 748-4182.

Sincerely,

Vames W. Pringle **Operations Engineer**

JWP/th

Enclosure

ULL CUINSERVATION DIVISION **2040 SOUTH PACHECO** SANTA FE, NEW MEXICO 87505

LOKINI C-100 Revised 4-1-98

HANDICAPPER SWD #1

APPLICATION FOR AUTHORIZATION TO INTECT

	ATTEICATION FOR AUTHORIZATION TO INJEC	<u>. </u>		
I.	PURPOSE: Secondary Recovery Pressure Maintenance Application qualifies for administrative approval? Yes N	X lo	Disposal	Storage
II.	OPERATOR: Yates Petroleum Corporation			
	ADDRESS: 105 South Fourth Street, Artesia, NM 88210			
	CONTACT PARTY: James W. Pringle		PHONE: (505)	748-4182
III.	WELL DATA: Complete the data required on the reverse side of this form for each well p Additional sheets may be attached if necessary.	roposed	for injection.	
IV.	Is this an expansion of an existing project? Yes X. No If yes, give the Division order number authorizing the project:	<u> </u>	MAR 2	·
V.	Attach a map that identifies all wells and leases within two miles of any proposed injection drawn around each proposed injection well. This circle identifies the well's area of review		ith a one-half mile	radius circle
VI.	Attach a tabulation of data on all wells of public record within the area of review which pe Such data shall include a description of each well's type, construction, date drilled, location schematic of any plugged well illustrating all plugging detail.	metrate t n, depth,	the proposed injecti , record of completi	on zone. on, and a
VII.	Attach data on the proposed operation, including:			
	 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 receiv produced water; and, If injection is for disposal purposes into a zone not productive of oil or gas at or within chemical analysis of the disposal zone formation water (may be measured or inferred f wells, etc.). 	n one mil	le of the proposed v	vell, attach a
*VIII.	I. Attach appropriate geologic data on the injection zone including appropriate lithologic de depth. Give the geologic name, and depth to bottom of all underground sources of drinkin total dissolved solids concentrations of 10,000 mg/l or less) overlying the proposed injects known to be immediately underlying the injection interval.	ig water	(aquifers containin	g waters with
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	: Divisio	n, they need not be	resubmitted).
*XI.	Attach a chemical analysis of fresh water from two or more fresh water wells (if available injection or disposal well showing location of wells and dates samples were taken.	and prod	lucing) within one	nile of any
XII.	Applicants for disposal wells must make an affirmative statement that they have examined data and find no evidence of open faults or any other hydrologic connection between the consources 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 as and belief.	nd correc	et to the best of my	knowledge
	NAME:James W. PringleTITLE:	Oper	ations Engine	er
	SIGNATURE: James Wilfingle	DATE: _	March 20, 200	1

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:

III. 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, 2040 South Pacheco, 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.

MARTIN YATES, III :912 - 1985 FRANK W. YATES :936 - 1986



S. P. YATES CHAIRMAN OF THE BOARD JOHN A. YATES PRESIDENT PEYTON YATES EXECUTIVE VICE PRESIDENT RANDY G. PATTERSON SECRETARY DENNIS G. KINSEY TREASURER

105 SOUTH FOURTH STREET ARTESIA, NEW MEXICO 88210-2118 TELEPHONE (505) 748-1471

March 20, 2001

Tim Gum State of New Mexico OIL CONSERVATION DIVISION 811 South First Street Artesia, NM 88210

Dear Mr. Gum.

Enclosed please find a copy of form C-108 (Application for Authority to Inject) for the proposed Handicapper SWD #1 located in Unit B of Section 3-T10S-R26E. Chaves County, New Mexico.

Should you have any questions, please feel free to contact me at (505) 748-4182.

Sincerely.

Vronge times W.

Games W. Pringle Operations Engineer

JWP/th

Enclosure

C-108 Application for Authorization to Inject Yates Petroleum Corporation Handicapper AWI State #1 B 3-10S-26E Chaves County, New Mexico

- I. The purpose of completing this well is for disposal of produced Ordovician, Penn, Wolfcamp, and Abo water into the Ordovician.
- II. Operator: Yates Petroleum Corporation 105 South Fourth Street Artesia, NM 88210 James W. Pringle (505) 748-4182
- III. Well Data: See Attachment A
- IV. This is not an expansion of an existing project.
- V. See attached map, Attachment B.
- VI. There are no wells within the area of review penetrating the proposed injection zone.
- VII. 1. Proposed average daily injection volume approximately 2,500 BWPD. Maximum daily injection volume approximately 5,000 BWPD.
 - 2. This will be a closed system.
 - 3. Proposed average injection pressure—1000 psi. Proposed maximum injection pressure--1300 psi.
 - 4. Sources of injected water would be produced water from the Ordovician, Penn, Wolfcamp, and Abo. (Attachment C)
 - 5. See Attachment C.
- VIII. The injection interval is Ordovician from 6,038'-6,268'.

Underground water sources of drinking water are in the Alluvial fill from surface to 400'.

- IX. The proposed disposal interval may be acidized with 15-20% HCL acid.
- X. Logs were filed at your office when the well was drilled. Any new logs run after completing will also be submitted to your office.

Application for Authorization to Inject Handicapper SWD #1 -2-

- XI. There are 2 windmills that exist within a one mile radius of the subject location. Chemical analysis is attached. (Attachment D)
- XII. Available engineering and geologic data have been examined and no evidence of open faults or hydrologic connection between the disposal zone and any underground sources of drinking water have been found.
- XIII. Proof of notice
 - A. There are no surface owners or offset operators to notify. Yates Petroleum Corporation owns all rights.
 - B. Copy of legal advertisement attached. (Attachment E)
- XIV. Certification is signed.

Yates Petroleum Corporation Handicapper SWD #1 B-3-10S-26E

Attachment A Page 1

- III. Well Data
- A. 1. Lease Name/Location: Handicapper SWD #1 B 3-10S-26E 660'FNL & 1980'FEL
 - 2. Casing Strings:
 - a. Proposed well condition.
 See Attachment A Proposed Status.
 8 5/8" 24#, J-55, ST&C at 1,108' (circ).
 5 1/2" 15.50#, J-55, ST&C at 6,478'.
 2 7/8" plastic-coated tubing w/nickel plated arrowset I packer at 6,000'±.
 - 3. Propose to use Guiberson or Baker plastic-coated or nickel-plated packer set at 6,000±.
- B. I. Injection Formation: Ordovician
 - 2. Injection interval into cased hole perforations 6.038'-6.268'.
 - 3. Well was originally drilled as an exploratory Ordovician well. Well will be a Ordovician water disposal well when work is completed.
 - 4. Next higher (shallower) oil or gas zone within 2 miles—Penn Clastics Next lower (deeper) oil or gas zone within 2 miles—None

WELLNAME: HANdicapper SUD =1 FIELD: FOOR RANCH LOCATION: 660'FNL & 1980'FEL, Sec 3, TIOS, R26E, CHAVES CO, NM LOCATION: 660 ____кв:<u>3,821</u> GL: <u>3834</u> ZERO: _____ AGL: _____ KB: <u>3, 8</u> SPUD DATE: <u>12/9/00</u> COMPLETION DATE: ____ CASING PROGRAM SIZE/WT/GR/CONN DEPTH SET COMMENTS:_ 85/8", 24.0#/AJ-55 STA 1, 100 5 1/2", 15.50 #/ Ft. J-55 STAC 6,478' 12/4"hole ATTACHMENT A Page 2 85/8"@1,108 ', CMTD W/ TOO SACKS CMT CIT CULATED to SULFACE 7%" ho/e TOC: 4,420 CBL 190 H- Joints of 2%" IPC tubing Wolfcamp 5,448'- 5,580' will squeeze w/ 2007-sAcks of cement Nickel plated Arrow-ser OrdoviciAN 6.039'-6.269' in several intervals I PACKER @ 6,000'+/-= PBTD: 6,436 51/2"@ 6,478', CMTD W/ 460 SACKS DATE: 1/2/01 - SKETCH NOT TO SCALE -TD: 6.478'

ATTACHMENT R

YATES PETROLEUM CORPORATION HANDICAPPER & WD #1 PROPOSED SALT WATER DISPOSAL WELL SEC. 3-T10S-R26E 660'FNL & 1980'FEL CHAVES COUNTY, NEW MEXICO

a		asesi 45 % U.S. Pw.Messenger, etal(S)		Spear Fed"	(DIA #22 78) Smith St. Con - State	Fastigna S. 18:5 Mix) "Eastland-State" State	41 12
	ne Blakemore,Tr. нөр 16069	Alpha 2 Alpha 2 (Barrow Fra We f Aba Obec Cl2 to 7 9 Alpha 2 (Barrow Fra We f Aba Obec Cl2 to 7 9 Alpha 2 (Barrow Fra (Barrow Fra (Barro	Y stes Pit. 81	(Nortex) Yates Yates L3-9968 24 Pet. L3-9968 25 L65078 Yates Pet - LAFG	Yates Per, etalogi xu S(era) L54920 (Pre Camb Disc)	Elk Dil S. (verde Vista) Elk Dil - CD2 XI W.R. St. CO2 XI WC DISC. I Mit Elk Dil WC DISC. I Mit Elk Dil W.R. St.	4104
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Schlumberger

Artesia Operating Center

ATTACHMENT C Page 1 → YATES

Company: YATES	Report No.:	ASY2K084		
Lease & Weil: HANDICAPPER AWI STATE 1	Service Point:	ANMLAB		
County, State: NM	Prepared by:	Ghania Ramdani		
Formation:	Prepared for:	MR. CURTIS PRIDDY		
BHT (F):	Date:	1/31/01		

Specific gravity: 1.152 @ 70 degrees F ph 6.00

	Anions					Ionic St			
	Factor	ml	Sample	mg/l	Factor	me/l	(mg/l)	(me/l)	(ppm)
Chlorides	3545	5,0	0.1	177250	0.0282	4998.45	2.4815	2.4992	153863
Sulfales	20	Less 200		0	0.0208	0.00	0.0000	0.0000	0
Carbonates	492	4.6	10	226	0.0333	7.54	0.0075	0.0075	196
Bicarbonates	1000	1.0	10	100	0.0164	1.64	0.0008	0.0008	87

	Cations						Ionic Strength			
	Factor	ml	Sample	mg/l	Factor	me/l	(mg/l)	(me/l)	(ppm)	
Calcium	401			0	0.0499	0.00	0.0000	0.0000	0	
Magnesium	243	0.0	0	0	0.0823	0.00	0.0000	0.0000	0	
Iron				100	0.0358	3.58	0.0008	0.0018	87	
Sodium	0	0	0	115036	0.0435	5004.05	2.5308	2.5020	99857	

Total Dissolved Solids: 292711.9

 10015.25

 Total lonic Strength:
 5.0214
 5.0114

Calcium Carbonate Deposition

Stiff-Davis Equation: Stability Index(SI) = pH - pCa - pAlk - K

pH= 6.00 pCa= #NUM! pAlk≏ 2.33 K≃ 1.31	Total Ion Equivalent NaCl Concentration= 253991.1 ppm
SI= #NUM!	The Stiff-Davis equation predicts this water #NUM! have a tendency toward calcium carbonate deposition.
Calcium Sulfate DepositionCaSO4 Solubility:S = 1000 (\$Total Ionic Strength=5.0214	SQRT (X**2 + 4*K) - X)
Solubility Constant, K= 0.00290 X= 0.0000	
S= 107.70 me/l	Laboratory analysis shows that this water contains 0.00 me/l, therfore the tendency towards calcium sulfate deposition does not exist.

SAMPLE

....

Oil Co :: Yates Petroleum Lease : Witz ''UN'' Well No.: # 1 Lab No. :: Fr\ANALYSES\Mer1001.001 ANALYSIS	Sample Loc, : Date Analyzed: 10-March-2001 Date Sampled :
 pH Specific Gravity 60/60 F. CaCO₃ Saturation Index @ E0 F. Dissolved Gasses 	080 076 -3.568 -2.648 MG/L EQ. WT. *MEQ/L
4. Hydrogen Sulfide 5. Çarbon Dioxide Not	Not Present Determined Determined
Cations7. Calcium(Ca++)3. Magnesium(Mg++)9. Sodium(Na+)10. Barium(Ba++)Not	3,931 / 20.1 = 195.57 894 / 12.2 = 73.28 32,995 / 23.0 = 1,434.61 Determined
Anichs 11. Hydroxyl (OH ⁻) 12. Carbonate (CC ₃ ⁼) 13. Bicarbonate (HCO ₃ ⁻) 14. Sulfate (SO ₄ ⁼) 15. Chloride (Cl ⁻)	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
15. Total Dissolved Solids 17. Total Iron (Fe) 18. Total Hardness As CaCO3 19. Resistivity @ 75 F. (Calculated	98,436 518 / 16.2 = 28.43 13,498) 0.093 /cm.
LOGARITHMIC WATER PATTERN *moq/L.	PROBABLE MINERAL COMPOSITION COMPOUND EQ. WT. X *meq/L = mg/L.
	$Ca(HCO_3)_2 = 81.04 = 0.47 = 35$
	CaSO4 69.07 12.30 837
	CaCl ₂ 55.50 182.80 10,146
Fe Hit Still With Hit Hit Hit Hit CO3	Mg(HCO ₃) ₂ 73.17 0.00 0
Calcium Sulfate Solubility Profile	MgSO4 60.19 0.00 0
	MgCL ₂ 47.62 73.28 3,490
	NaHCO3 84.00 0.00 0
	NaSO4 71.03 0.00 C
	NaCl 58.46 1,433.67 83,812

Tenp *f. 58 78 ... 110 190 150 170 *Milli Equivalents per Liter This water is moderately corrosive due to the pH observed on analysis. The corrosivity is increased by the content of mineral salts in solution.

SAMPLE

Oil Co. : Yates Petroleum Lease : Allied ''AUS'' Well No.: # 2 Lab No. : F:\ANALYSES\Mar1001.001

Sample Loc. ; Date Analyzed: 10-March-2001 Date Sampled :

ANALYSIS

1. pH 2. Specific Gravity 60/60 F. 3. CaCO3 Saturation Index @	4.980 1.158 80 F1.006 140 F. +0.354			
Dissolved Gasses	HG/L	EQ. WT.	+MEQ/L	
4. Hydrogen Sulfide 5. Carbon Dioxide 6. Dissolved Oxygen	Not Present Not Determined Not Determined			
Cations				
7. Calcium (Ca++) 8. Magnesium (Mg++) 9. Sodium (Na+) (Calcu 10. Barium (Ba++)	17,198 3,279 11ated) 55,227 Below 10	/ 20.1 = / 12.2 = / 23.0 =	855.62 268.77 2,401.17	
Anions				
11. Hydroxyl (OH ⁻) 12. Carbonate (CO ₃ ⁻) 13. Bicarbonate (HCO ₃ ⁻) 14. Sulfate (SO ₄ ⁻) 15. Chloride (Cl ⁻)	0 49 210 124,972	/ 17.0 = / 30.0 = / 61.1 = / 48.8 = / 35.5 =	0.00 0.00 0.80 4.30 3,520.34	
16. Total Dissolved Solids 17. Total Iron (Fe)	200,935			
18. Total Hardness As CaCO3 19. Resistivity @ 75 F. (Calco	56.446	/ 18.2 =	5.77	
LOGARITHMIC WATER PATTERN *meq/L.	Probat CCMPOUND	BLE MINER EQ. WT.	AL COMPOSI X *maq/L	TION = mg/L.
	- C1 Ca (HCO3)	2 81.04	0.80	65
	HCO3 CaSO4	68.07	4.30	293
#####################################	SO4 CaCl2	5 5.50	850.52	47,204
Fe HHILL MILL HELL FILL FILL FILL FILL FILL FILL FILL F	н соз мg (нсо _з);	2 73.17	0.00	C
Calcium Sulfate Solubility Pro	Mason	60.19	0.0 0	Ģ
P44 935 930	MgCL ₂	47.62	260.77	12 793
	NaHCO3	\$4.00	С,00	Ĵ
	NaSO4	71.03	0.00	0
		_		

This water is moderately corrosive due to the pH observed on analysis. The corrosivity is increased by the content of mineral salts in solution. SAMPLE

Permian Treating Chemicals WATER ANALYSIS REPORT

Oil Co. : Yates Petroleum Lease : Sandleewood ''AEW'' Well No. : # 1 Lab No. : F:\AMALYSES\Mar1001.001 ANALYSIS	Sample Loc. : Date Analyzed: Date Sampled :	10-March-200	91	
2. Specific Gravity 60/60 F. 1.(3. CaCO ₃ Saturation Index @ 80 F. @ 140 F.	-2.403 -1.483			
Dissolved Gasses 4. Hydrogen Sulfide 5. Carbon Dioxide 6. Dissolved Oxygen Not	MG/L fot Present Determined Determined	EQ. WT.	*NEQ/L	
Cations7. Calcium(Ca++)8. Magnesium(Mg++)9. Sodium(Na+)10. Barium(Ba++)	3,931 1,192 21,187 25	/ 20.1 = / 12.2 = / 23.0 = / 60.7 =	195.57 97.70 921.17 0.36	
Anions 11. Hydroxyl (OH ⁻) 12. Carbonate (CO ₃ ⁼) 13. Bicarbonate (HCO ₃ ⁻) 14. Sulfate (SO ₄ ⁻) 15. Chloride (Cl ⁺)	0 195 0 42,990	/ 17.0 = / 30.0 = / 61.1 = / 48.8 = / 35.5 =	0.00 0.00 3.19 0.00 1,210.99	
 Total Dissolved Solids Total Iron (Fe) Total Hardness As CaCO- Resistivity @ 75 F. (Calculated) 	69,520 380 14 725	/ 18.2 =	20.88	
LOGARITEMIC WATER PATTERN *meq/L.	Prob Compound	ABLE MINER EQ. WT.	AL COMPOSI X *meq/L	TION * mg/L.
) ₂ 81.04		259
	CaSO4	68.07	0.00	Ç
Mg HHH HAT HAT HAT AND HAND HAND SO4	CaCl ₂	55.50	192.38	10,677
Fe 1991 1991 1991 1991 1991 1991 1991 19	Mg (HCO3) ₂ 73.17	0.00	ē
<u>Calcium Sulfate Solubility Profile</u>	MgSO4	60.19	0.00	C
2481	MgCL ₂	47.62	97. 70	4,653
2472 2453 2424	NaHCO3	84.00	5.00	Ĵ.
2113 2376 2777	NaSO4	72.03	0.00	Û
2230 2232 2228 Temp Fr. 30 79 90 118 130 108 179	NaCl =mi l	58.46 li Equival		

The version is present. Do not mix this water with a Sulfate-Bearing water without proper inhibition. This water is moderately corresive due to the pH observed on analysis. The corrosivity is increased by the content of mineral salts in solution.

SAMPLE

Lease : M Well No,: 🛊	TINALYSES MET1001.001	Sample Loc. : Date Analyzed: Date Sampled :	10-March-2001		
	0H Specific Gravity 60/60 F. CaCO3 Saturation Index @ 90 @ 140 @ 140	5.630 1.143 F0.285 F. +0.815 MG/L	EQ. WT.	*MEQ/L	
4. H	Ivdrogen Sulfide	Not Present Not Determined Not Determined			
7. C 8. M 9. S	z ions Calcium (Ca++) Magnesium (Mg++) Sodium (Na+) (Calcula Barium (Ba++)	7,174 1,610 (ted) 63,744 Not Determined	/ 20.1 = / 12.2 = / 23.0 =	356,92 131,97 2,771.48	
11 H 12 C 13 B 14 S 15 C	long lydroxyl (OH ⁻) Larbonate (CO ₃ ⁼) Sicarbonate (HCO ₃ ⁻) Sulfate (SO ₄ ⁼) Chloride (Cl ⁻)	0 0 244 775 114,974	/ 17.0 = / 30.0 = / 61.1 = / 48.8 = / 35.5 =	0.00 0.00 3,99 15.68 3,236.70	
17. 1 8 1	Total Dissolved Solids Total Iron (Fe) Total Hardness As CaCO3 Resistivity © 75 F. (Calcula	188,521 343 24,542 aced) 0.007 /cm.	/ 18.2 =	18.82	
Ĩ	LOGARITHMIC WATER PATTERN *meq/L.	PROB Compound	ABLE MINERA EQ. WT.	L COMPOSI X *meq/L	TION = mg/l.
Na hill		Cl Ca (HCO3) ₂ 81.04	3.99	324
Ca 🚻		1003 Ca SO 4	68.07	15.88	1,081
Mg illi		SO4 CaCl2	55.50	337.04	18,706
Fe 👭		003 Mg (HCO3) ₂ 73.17	0.00	Ċ
	ium Sulfate Solubility Prof:	MgSO4	60.19	0.00	Û
21:		MgCL ₂	47,62	131.97	6,284
\$14 212 213		NaHCO3	84.00	0.00	Ĵ
211 L 21		NaSO4	71,03	0 30	2
21 21		NaCl	58.46	2.769.70	
The core	•F. 10 78 88 118 138 154 179		111 Equivale		ITCET.

This water is somewhat corresive due to the pH observed on analysis. The corrosivity is increased by the content of mineral salts in solution.

SAMPLE

Lease Well No. Lab No.	Yates Petroleum Witz ''UN'' # 4 F:\ANALYSES\Mar1001.001	Sample Loc. : Date Analyzed: : Date Sampled :	10-Narch-2001		
	11919				
1. 2. 3.	pH 5. Specific Gravity 60/60 F. 1. CaCO ₃ Saturation Index G 80 F. G 140 F.	150 159 -0.501			
2	Dissolved Gasses	40.039 MG/L	EQ. WT.	*MEQ/L	
4. 5. 6.	Hydrogen Sulfide Carbon Dioxide Not Dissolved Oxygen Not	Not Present Determined Determined			
7.	Magnesium (Mg++) Sodium (Na+) (Calculated	16,181 2,981 54,646 Below 10	/ 20.1 = / 12.2 = / 23.0 =	904.53 244.34 2,375.91	
2	nions				
11. 12. 13. 14. 15. .6. 17. 18.	Hydroxyl (OH ⁻) Carbonate (CO ₃ =) Bicarbonate (HCO ₃ ⁻) Sulfate (SO ₄ ²) Chloride (Cl ²) Total Dissolved Solids Total Dissolved Solids	124,972 201,008	/ 17.0 = / 30.0 = / 61.1 = / 49.8 = / 35.5 = / 18.2 =	0.00 0.00 1.19 3.18 3,520.34 4.53	
19.	Total Hardness As CaCO3 Resistivity @ 75 F. (Calculated) 0.001 /cm.			
	LOGARITHMIC WATER PATTERN *meq/L.	PROBJ COMPOUND	BLE MINERAL EO. WT.	L COMPOSI X *meq/L	TION = mg/L.
Na	- -		2 81.04	_	- ., , 97
Ca		CaSO4	68,07	3.18	216
Mg		CaCl ₂	55,50	900.16	49,959
		Mg (HCO3)	2 73.17	0.00	C
		MgS04	60.19	0.00	6
<u>Ca.</u>	Icium Sulfate Solubility Profile	MgCL ₂	47.62	244,34	
	960				
•		NaHCO3	84.00	0.00	U
Ĺ		NaSO4	71,03	с.00	0
		NaCl		2,375.84	
n Thir wa	er-F. 39 70 00 114 129 150 170 atomic comethat corrective due to		li Equiva le		liter

This water is somewhat corrosive due to the pH observed on analysis. The corrosivity is increased by the content of mineral salts in solution.

- - - ----



MILLER CHEMICALS, INC.

Post Office Box 298 Artesia, N.M. 88211-0298 (505) 746-1919 Artesia Office (505) 393-2893 Hobbs Office (505) 746-1918 Fax

WATER AMALYSIS REFORT

Addres. Lease Weil	/ : YATES PETROLE ARTESIA, NM : WINDMILL-3/4 : OF HANDKAPER" Pt. : UNKNOWN	MILE NORTH		: UNKNOWN	ND. : 00223
	ANALYSIS		ng, L		° meq/1
2. 3. 5. 6. 7. 3. 9.	H2S Specific Gravity Total Dissolved Solid Suspended Solids Dissolved Oxygen Dissolved CO2 Oll In Water Phenolphthalein Alkal Methyl Orange Alkalin Bicarbonate	s inity (CaCO3) ity (CaCO3) HCO3	159.Ū		
13.	Chloride Sulfate		1278.0 1500.0		
15.	Calcium Magnesium Sodium (calculated)	Mig	680.0 194.8 458.4	Mg	16.0
17. 18. 19.	iron Barlum Strontium Total Hardness (CaCO3	Fe Ba Sr	0.3 NR		

PROBABLE MINEPAL COMPOSITION

F.EMARKS:

ATTACHMENT D Page 2

SCALE TENEENCY REPORT

Company	: YATES PETROLEUM	Date	: 2/20/01
Address	: ARTESIA, NM	Date Sampled	: UNKNOWN
lease	: WINDMILL-3/4 MILE NORTH		Analysis No. : 00223
Weil	: CF HANDKAPER"AWI" #1	Analyst	: A. MILLEF
Sample Pt.	: UNKNOWN		

		CaCO	3 Sa	cali	ng Te:	nde	ency			
S.I.		0.2	at	70	deg.	174	or	21	deg.	С
S.I.	-	0.2	at	96	deg.	(₂₄	or	32	deg.	С
.1.E	=	0.2	at	11(deg.	\overline{z}	or	43	deg.	С
S.I.	=	0.3	át	130	deg.	1.	or	54	deg.	С
S.I.	=	0.3	άt	150	deg.	\widehat{r}	or	66	deg.	С

CALCIUM SULFATE SCALING TENDENCY CALCULATIONS (Skiliman-MoDonald-Stiff Method) Calcium Sulfate

S	=	2068	at	76	deg.	F or	21	deg	С
S	=	2106	at	90	deg.	F or	32	deg	С
S		2117	at	110	deg.	F or	43	deg	С
S		2102	at	130	deg.	F or	54	deg	С
S	=	2076	аt	150	deg.	For	56	deg	С

Respectfully submitted, A. MILLER



MILLER CHEMICALS, INC.

Post Office Box 298 Artesia, N.M. 88211-0298 (505) 746-1919 Artesia Office (505) 393-2893 Hobbs Office (505) 746-1918 Fax

WATER ANALYSIS REFORM

Adires: Lease Well	: YATES PETROLEUM : ARTESIA, NM : WINDMILL-1.5 MILLS S : OF HANDKAPER"AWI" +1 Pt. : UNKNOWN	Date : Date Simpled : Analysis No. :	UNKNOWN
	AMALYSIS	mg L	t meg/l
î. •	рН 7.9		
	H2S O		
	Specific Gravity 1.000		
	Total Lissolved Schids	5201.4	
	Sispended Solids	32	
	Dissolved Oxygen	XB.	
	Dissolved CO2	1×12	
	Oil In Water	NR	
	Phenolphthalein Alkalinity .0400	3)	
	Methyl Orange Alkalinity (CaCOS)		
	Bicarbonate HC	03 195 . 0 :	
			CL 30.0
			SO4 52.1
			Ca 41.9
			Mg 36.0
			Na 7.4
	Iron Fe	0.3	
	Barium Ba		
	Strontium Sr	• • • • •	
	Total Hardness (CaCO3)	3900.C	

PROBABLE MINERAL COMPOSITION

milli equivalents per Lit	er	Compound	Equiv wt	X meq	L	= n.g/1.
· +	7				·	
42; *Ca < *HCO3	3	Ca(ECO3)2	31.0	3	2	259
>	ļ — — — — — — — — — — — — — — — — — — —	CaSC4	68.1	38	7	2635
36i *Mg> *SO4	- E.C.	CaCl2	55.5			
/		Mg (HCOB - 2	73.2			
7: *Na> *Cl	50	MgSO4	ā0.2	13	3	803
+	+	MgCl2	47.6	22	7	1079
Saturation Values Dist. Wa	ter 20 C	NAHCO3	64.0			
CaCO3 13	mg/ll	Na2SC4	71.0			
CaSC4 * 2H2O 2090 BaSC4 2.4	mg/L mg/L	NaCl	5 ⁸ .4		4	131

ATTACHMENT D Page 4

SCALE TENDENCY REPORT

Company	: YATES PETROLEUM	Date : 2/20/01
Adaress	: ARTESIA, NM	Date Sampled : UNKNOWN
Lease	: WINDMILL-1.5 MILES 3	Analysis No. : 00224
Well	: OF HANDKAPER "AWI" #	Analyst : A. MILLER
Sample Pt.	: UNKNOWN	

STABILITY LEDEX CALCULATIONS (Stiff-Davis Method) CaCO3 Scaling Tendency							
S.I. S.I S.I	= 0.3 = 0.3 = 0.4	at 70 deg. at 90 deg. at 110 deg. at 130 deg. at 150 deg.	. For 32 . For 43 . For 54	deg. C deg. C deg. C			
CALCIUM SULFATE SCALING TENDENCY CALCULATIONS (Skillman-McDonald-Stiff Method) Calcium Sulfate							
S = S = S =	2200 2218 2205	at 70 deg. at 90 deg. at 110 deg. at 130 deg. at 150 deg.	. F or 32 . F or 43 . F or 54	deg C deg C deg C			

Respectfully submitted, A. MILLER

MARTIN MATES, III 1912 - 1985 FRANK W. MATES 1935 - 1986



S. P. YATES CHAIRMAN OF THE BOARD JOHN A. YATES PRESIDENT PEYTON YATES EXECUTIVE VICE PRESIDENT RANDY G. PATTERSON SECRETARY DENNIS G. KINSEY TREASURER

105 SOUTH FOURTH STREET ARTESIA, NEW MEXICO 88210-2118 TELEPHONE (505) 748-1471

March 20. 2001

Roswell Daily Record P. O. Box 1897 Roswell, NM 88202

Gentlemen:

Yates Petroleum Corporation desires to place a public notice in your newspaper for one day. The notice is enclosed.

Please place this notice in your paper on Sunday, March 25, 2001, and forward a copy of it along with your billing as soon as possible to:

Yates Petroleum Corporation 105 South Fourth Street Artesia, NM 88210 Attn: James W. Pringle

If you have any questions, please contact me at 748-4182. Thank you for your cooperation in this matter.

Sincerely,

ringle

James W. Pringle Operations Engineer

JWP/th

Enclosure

ATTACHMENT E

Legal Notice

Yates Petroleum Corporation, 105 South Fourth Street, Artesia, NM 88210, has filed form C-108 (Application for Authorization to Inject) with the New Mexico Oil Conservation Division seeking administrative approval for an injection well. The proposed well, the "Handicapper SWD #1" located 660'FNL & 1980'FEL of Section 3, Township 10 South, Range 26 East of Chaves County, New Mexico, will be used for salt water disposal. Disposal waters from the Ordovician, Penn, Wolfcamp, and Abo will be re-injected into the Ordovician at a depth of 6,038'-6,268' with a maximum pressure of 1300 psi and a maximum rate of 5,000 BWPD.

All interested parties opposing the aforementioned must file objections or requests for a hearing with the Oil Conservation Division, 2040 S. Pacheco Street, Santa Fe, NM 87505-5472, within 15 days. Additional information can be obtained by contacting James W. Pringle at (505) 748-4182.