

Application

Part *II*

Tables

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Table 1
Oil & Gas Operators (Affected Persons) within 1- Mile

API	OGRID	OGRID Name	Well Type	Status	Well Name	District	UL-STR	Total Depth	Pool ID
30-025-27097	214263	PRE-ONGARD WELL OPERATOR	O	C	PRE-ONGARD WELL #001	1	G-02-23S-34E	0	
30-025-27166	260297	BTA OIL PRODUCERS, LLC	G	A	ANTELOPE 8006 JVP #001	1	F-02-23S-34E	13600	[70360] ANTELOPE RIDGE, ATOKA (GAS)
30-025-27760	3002	BTA OIL PRODUCERS	O	C	ANTELOPE 8006 JVP #002	1	F-02-23S-34E	0	
30-025-27824	260297	BTA OIL PRODUCERS, LLC	G	P	MADDOX FEDERAL 8016 JV-P #001	1	N-35-22S-34E	13650	[70360] ANTELOPE RIDGE, ATOKA (GAS)
30-025-27941	260297	BTA OIL PRODUCERS, LLC	O	A	MADDOX FEDERAL B 8016 JV-P #001	1	F-35-22S-34E	13650	[70440] ANTELOPE RIDGE, MORROW (GAS); [96717] ANTELOPE RIDGE, BRUSHY CANYON
30-025-29807	260297	BTA OIL PRODUCERS, LLC	G	A	MAXUS B 8026 JV-P #001	1	P-34-22S-34E	13562	[70360] ANTELOPE RIDGE, ATOKA (GAS); [70440] ANTELOPE RIDGE, MORROW (GAS)
30-025-30092	214263	PRE-ONGARD WELL OPERATOR	O	P	PRE-ONGARD WELL #001	1	L-36-22S-34E	13700	
30-025-30128	260297	BTA OIL PRODUCERS, LLC	G	A	MADDOX FEDERAL B 8016 JV-P #002	1	E-35-22S-34E	12500	[70360] ANTELOPE RIDGE, ATOKA (GAS)
30-025-30699	260297	BTA OIL PRODUCERS, LLC	G	A	OJO CHISO FEDERAL #002	1	O-26-22S-34E	13650	[70360] ANTELOPE RIDGE, ATOKA (GAS)
30-025-30733	260297	BTA OIL PRODUCERS, LLC	G	A	OJO CHISO FED. #003	1	M-26-22S-34E	13572	[70360] ANTELOPE RIDGE, ATOKA (GAS); [81960] OJO CHISO, MORROW (GAS)
30-025-34982	372165	CENTENNIAL RESOURCE PRODUCTION, LLC	S	A	TIN CUP 25 STATE #001	1	M-25-22S-34E	12600	[96802] SWD, BELL CANYON-CHERRY CANYON; [96838] DRY AND ABANDONED; [98030] WC-025 G-03 S223425M, DELAWARE
30-025-40396	372165	CENTENNIAL RESOURCE PRODUCTION, LLC	O	A	PRYOR STATE COM #001H	1	M-36-22S-34E	8826	[97293] OJO CHISO, BONE SPRING, SOUTH
30-025-40715	260511	GMT EXPLORATION COMPANY LLC	O	C	PRYOR STATE COM #002C	1	N-36-22S-34E	0	[96553] OJO CHISO, BONE SPRING; [97293] OJO CHISO, BONE SPRING, SOUTH
30-025-40717	260511	GMT EXPLORATION COMPANY LLC	O	C	PRYOR STATE COM #004D	1	4-01-23S-34E	0	[97293] OJO CHISO, BONE SPRING, SOUTH
30-025-40844	260511	GMT EXPLORATION COMPANY LLC	O	C	PRYOR STATE COM #005C	1	M-36-22S-34E	0	[97293] OJO CHISO, BONE SPRING, SOUTH
30-025-40862	372165	CENTENNIAL RESOURCE PRODUCTION, LLC	O	A	PRYOR FEDERAL STATE COM #004H	1	4-01-23S-34E	8903	[97293] OJO CHISO, BONE SPRING, SOUTH
30-025-41352	372165	CENTENNIAL RESOURCE PRODUCTION, LLC	O	A	MERCHANT GAP 36 STATE COM #001H	1	D-36-22S-34E	11352	[97293] OJO CHISO, BONE SPRING, SOUTH
30-025-41353	372165	CENTENNIAL RESOURCE PRODUCTION, LLC	O	A	GODFATHER 36 STATE COM #002H	1	C-36-22S-34E	11396	[97293] OJO CHISO, BONE SPRING, SOUTH
30-025-41450	372165	CENTENNIAL RESOURCE PRODUCTION, LLC	O	A	MERCHANT GAP 25 STATE COM #001H	1	M-25-22S-34E	10384	[97293] OJO CHISO, BONE SPRING, SOUTH
30-025-41773	260297	BTA OIL PRODUCERS, LLC	O	C	HUDSON STATE 8016 JV-P #003C	1	H-02-23S-34E	0	[97293] OJO CHISO, BONE SPRING, SOUTH
30-025-42083	372165	CENTENNIAL RESOURCE PRODUCTION, LLC	O	A	GODFATHER 36 STATE COM #001H	1	C-36-22S-34E	10536	[97293] OJO CHISO, BONE SPRING, SOUTH
30-025-45063	372165	CENTENNIAL RESOURCE PRODUCTION, LLC	O	A	MORTAL KOMBAT 36 STATE COM #502H	1	M-36-22S-34E	10420	[97293] OJO CHISO, BONE SPRING, SOUTH

Township	Range	Section	Unit Letter	Lease Number	Leasee (O & G Minerals)	Leassor (O & G Minerals)	Surface Owner	UPC
22S	34E	25	M	B010400014	LEACO NEW MEXICO EXPL. AND PROD., LLC	State	STATE OF NEW MEXICO	4203131267529
22S	34E	25	N	B010400014	LEACO NEW MEXICO EXPL. AND PROD., LLC	State	STATE OF NEW MEXICO	4203131267529
22S	34E	26	I	NMNM 043564	BTA OIL PRODUCERS	BLM (U.S.)	MERCHANT LIVESTOCK	4202131463264
22S	34E	26	J	NMNM 043564	BTA OIL PRODUCERS	BLM (U.S.)	BLM (U.S.)	4200127109179
22S	34E	26	K	NMNM 043564	BTA OIL PRODUCERS	BLM (U.S.)	BLM (U.S.)	4200127109179
22S	34E	26	M	NMNM 043564	BTA OIL PRODUCERS	BLM (U.S.)	BLM (U.S.)	4200127109179
22S	34E	26	N	NMNM 043564	BTA OIL PRODUCERS	BLM (U.S.)	BLM (U.S.)	4200127109179
22S	34E	26	O	NMNM 043564	BTA OIL PRODUCERS	BLM (U.S.)	BLM (U.S.)	4200127109179
22S	34E	26	P	NMNM 043564	BTA OIL PRODUCERS	BLM (U.S.)	MERCHANT LIVESTOCK	4202131463264
22S	34E	27	P	NMNM 043564	BTA OIL PRODUCERS	BLM (U.S.)	STATE OF NEW MEXICO	4202133328323
22S	34E	34	A	NMNM 019143	OCCIDENTAL PERMIAN LP	BLM (U.S.)	STATE OF NEW MEXICO	4202133328323
22S	34E	34	B	NMNM 019143	OCCIDENTAL PERMIAN LP	BLM (U.S.)	STATE OF NEW MEXICO	4202133328323
22S	34E	34	G	NMNM 019143	OCCIDENTAL PERMIAN LP	BLM (U.S.)	STATE OF NEW MEXICO	4202133328323
22S	34E	34	H	NMNM 019143	OCCIDENTAL PERMIAN LP	BLM (U.S.)	STATE OF NEW MEXICO	4202133328323
22S	34E	34	I	NMNM 019143	OCCIDENTAL PERMIAN LP	BLM (U.S.)	STATE OF NEW MEXICO	4202133328323
22S	34E	34	J	NMNM 019143	OCCIDENTAL PERMIAN LP	BLM (U.S.)	STATE OF NEW MEXICO	4202133328323
22S	34E	34	O	NMNM 019143	OCCIDENTAL PERMIAN LP	BLM (U.S.)	STATE OF NEW MEXICO	4202133328323
22S	34E	34	P	NMNM 019143	OCCIDENTAL PERMIAN LP	BLM (U.S.)	STATE OF NEW MEXICO	4202133328323
22S	34E	35	A	NMNM 026396	CENTENNIAL RESOURCE PRODUCTION, LLC (a)	BLM (U.S.)	LIMESTONE BASIN PROP RANCH LLC	4202132351350
22S	34E	35	B	NMNM 016830	CENTENNIAL RESOURCE PRODUCTION, LLC (a)	BLM (U.S.)	STATE OF NEW MEXICO	4202133328323
22S	34E	35	C	NMNM 023768	CENTENNIAL RESOURCE PRODUCTION, LLC (a)	BLM (U.S.)	STATE OF NEW MEXICO	4202133328323
22S	34E	35	D	NMNM 023768	CENTENNIAL RESOURCE PRODUCTION, LLC (a)	BLM (U.S.)	STATE OF NEW MEXICO	4202133328323
22S	34E	35	E	NMNM 023768	CENTENNIAL RESOURCE PRODUCTION, LLC (a)	BLM (U.S.)	STATE OF NEW MEXICO	4202133328323
22S	34E	35	F	NMNM 023768	CENTENNIAL RESOURCE PRODUCTION, LLC (a)	BLM (U.S.)	STATE OF NEW MEXICO	4202133328323
22S	34E	35	G	NMNM 016830	CENTENNIAL RESOURCE PRODUCTION, LLC (a)	BLM (U.S.)	STATE OF NEW MEXICO	4202133328323
22S	34E	35	H	NMNM 026396	CENTENNIAL RESOURCE PRODUCTION, LLC (a)	BLM (U.S.)	LIMESTONE BASIN PROP RANCH LLC	4202132351350
22S	34E	35	I	NMNM 026396	CENTENNIAL RESOURCE PRODUCTION, LLC (a)	BLM (U.S.)	LIMESTONE BASIN PROP RANCH LLC	4202132351350
22S	34E	35	J	NMNM 136220	XTO ENERGY INC	BLM (U.S.)	STATE OF NEW MEXICO	4202133328323
22S	34E	35	K	NMNM 136220	XTO ENERGY INC	BLM (U.S.)	STATE OF NEW MEXICO	4202133328323
22S	34E	35	L	NMNM 136220	XTO ENERGY INC	BLM (U.S.)	STATE OF NEW MEXICO	4202133328323
22S	34E	35	M	NMNM 026396	CENTENNIAL RESOURCE PRODUCTION, LLC (a)	BLM (U.S.)	LIMESTONE BASIN PROP RANCH LLC	4202132351350
22S	34E	35	N	NMNM 026396	CENTENNIAL RESOURCE PRODUCTION, LLC (a)	BLM (U.S.)	LIMESTONE BASIN PROP RANCH LLC	4202132351350
22S	34E	35	O	NMNM 026396	CENTENNIAL RESOURCE PRODUCTION, LLC (a)	BLM (U.S.)	LIMESTONE BASIN PROP RANCH LLC	4202132351350
22S	34E	35	P	NMNM 026396	CENTENNIAL RESOURCE PRODUCTION, LLC (a)	BLM (U.S.)	LIMESTONE BASIN PROP RANCH LLC	4202132351350
22S	34E	36	C	VB19800001	CENTENNIAL RESOURCE PRODUCTION, LLC	State	STATE OF NEW MEXICO	4203131267529
22S	34E	36	D	VB19800001	CENTENNIAL RESOURCE PRODUCTION, LLC	State	STATE OF NEW MEXICO	4203131267529
22S	34E	36	E	VB19800001	CENTENNIAL RESOURCE PRODUCTION, LLC	State	STATE OF NEW MEXICO	4203131267529
22S	34E	36	F	VB19800001	CENTENNIAL RESOURCE PRODUCTION, LLC	State	STATE OF NEW MEXICO	4203131267529
22S	34E	36	G	VB19800001	CENTENNIAL RESOURCE PRODUCTION, LLC	State	STATE OF NEW MEXICO	4203131267529
22S	34E	36	J	VB19700001	CENTENNIAL RESOURCE PRODUCTION, LLC	State	STATE OF NEW MEXICO	4203131267529
22S	34E	36	K	VB19700001	CENTENNIAL RESOURCE PRODUCTION, LLC	State	STATE OF NEW MEXICO	4203131267529
22S	34E	36	L	VB19700001	CENTENNIAL RESOURCE PRODUCTION, LLC	State	STATE OF NEW MEXICO	4203131267529
22S	34E	36	M	VB19700001	CENTENNIAL RESOURCE PRODUCTION, LLC	State	STATE OF NEW MEXICO	4203131267529
22S	34E	36	N	VB19700001	CENTENNIAL RESOURCE PRODUCTION, LLC	State	STATE OF NEW MEXICO	4203131267529
22S	34E	36	O	VB19700001	CENTENNIAL RESOURCE PRODUCTION, LLC	State	STATE OF NEW MEXICO	4203131267529
23S	34E	01	B	NMNM 127446	CENTENNIAL RESOURCE PRODUCTION, LLC (a)	BLM (U.S.)	STATE OF NEW MEXICO	4203133266265
23S	34E	01	C	NMNM 127446	CENTENNIAL RESOURCE PRODUCTION, LLC (a)	BLM (U.S.)	STATE OF NEW MEXICO	4203133266265
23S	34E	01	D	NMNM 127446	CENTENNIAL RESOURCE PRODUCTION, LLC (a)	BLM (U.S.)	STATE OF NEW MEXICO	4203133266265
23S	34E	01	E	NMNM 127446	CENTENNIAL RESOURCE PRODUCTION, LLC (a)	BLM (U.S.)	STATE OF NEW MEXICO	4203133266265
23S	34E	01	F	NMNM 127446	CENTENNIAL RESOURCE PRODUCTION, LLC (a)	BLM (U.S.)	STATE OF NEW MEXICO	4203133266265
23S	34E	01	L	VB13100002	CENTENNIAL RESOURCE PRODUCTION, LLC	State	STATE OF NEW MEXICO	4203133266265
23S	34E	02	A	L051130001	V-F PETROLEUM INC	State	STATE OF NEW MEXICO	4202133266265

Township	Range	Section	Unit Letter	Lease Number	Leasee (O & G Minerals)	Leassor (O & G Minerals)	Surface Owner	UPC
23S	34E	02	B	L051130001	V-F PETROLEUM INC	State	STATE OF NEW MEXICO	4202133266265
23S	34E	02	C	L051130001	V-F PETROLEUM INC	State	STATE OF NEW MEXICO	4202133266265
23S	34E	02	D	L051130001	V-F PETROLEUM INC	State	STATE OF NEW MEXICO	4202133266265
23S	34E	02	E	L051130001	V-F PETROLEUM INC	State	STATE OF NEW MEXICO	4202133266265
23S	34E	02	F	L051130001	V-F PETROLEUM INC	State	STATE OF NEW MEXICO	4202133266265
23S	34E	02	G	L051130001	V-F PETROLEUM INC	State	STATE OF NEW MEXICO	4202133266265
23S	34E	02	H	L051130001	V-F PETROLEUM INC	State	STATE OF NEW MEXICO	4202133266265
23S	34E	02	I	B010400011	APACHE CORPORATION	State	STATE OF NEW MEXICO	4202133266265
23S	34E	02	J	B010400011	APACHE CORPORATION	State	STATE OF NEW MEXICO	4202133266265
23S	34E	02	K	LG04850002	BTA OIL PRODUCERS	State	STATE OF NEW MEXICO	4202133266265
23S	34E	02	L	LG04850002	BTA OIL PRODUCERS	State	STATE OF NEW MEXICO	4202133266265
23S	34E	03	A	NMNM 019142	EOG RESOURCES INC	BLM (U.S.)	STATE OF NEW MEXICO	4201133312270
23S	34E	03	B	NMNM 019143	OCCIDENTAL PERMIAN LP	BLM (U.S.)	STATE OF NEW MEXICO	4201133312270
23S	34E	03	H	NMNM 019142	EOG RESOURCES INC	BLM (U.S.)	STATE OF NEW MEXICO	4201133312270
Notes	(a) Data source: https://reports.blm.gov/report/LR2000/33/Pub-CR-Serial-Register-Page							

Table 3
Produced Water

wellname	api	latitude	longitude	section	township	range	unit	ftgns	ftgww	county	state	sampledate	ph	tds_mgL	resistivity_ohm_cm	sodium_mgL	calcium_mgL	iron_mgL	magnesium_mgL	manganese_mgL	chloride_mgL	bicarbonate_mgL	sulfate_mgL	co2_mgL
GAUCHO UNIT #011H	3002541184	32.385006	-103.4891129	17	22S	34E	O	200S	1730E	Lea	NM	2/20/2015 0:00	6.8			43301	5338	0	769	0	78300	122	640	120
NEW MEXICO BS STATE #001	3002508468	32.4188576	-103.4170074	1	22S	34E	I	1980S	660E	LEA	NM			129792							70560	412	9365	
SLATTERY PERMIT #001	3002508473	32.4071236	-103.5080338	7	22S	34E	G	2310N	2310E	LEA	NM			4460							2502	158	243	
GAUCHO UNIT #001	3002533440	32.3654175	-103.488884	29	22S	34E	G	1650N	1650E	Lea	NM	5/19/2001 0:00	7.83	19593.3		6825.3	543	49	70		11533	450	39	90
GAUCHO 21 FEDERAL #001	3002534266	32.3753891	-103.4813843	21	22S	34E	L	1980S	660W	Lea	NM	5/19/2001 0:00	6.67	6188.8		2079.6	215	25	30		3593	183	39	90
GAUCHO UNIT #003	3002534557	32.3717728	-103.4952774	20	22S	34E	N	660S	1650W	Lea	NM	5/19/2001 0:00	5.02	628.8		118.9	18	83	2		200	109.8	92	125
GAUCHO UNIT #006	3002534789	32.3862648	-103.4856415	17	22S	34E	P	660S	660E	Lea	NM	5/19/2001 0:00	5.98	46757.5		16350.9	1379	150	162		28247	158.6	152	175
GAUCHO UNIT #011H	3002541184	32.385006	-103.4891129	17	22S	34E	O	200S	1730E	Lea	NM	9/30/2015 0:00	7.5	156141.2	0.041	48642.5	6969.8	30.2	943.9	1.46	97977.9	305	1005	470
GAUCHO UNIT #012H	3002541564	32.384037	-103.4853745	20	22S	34E	A	275N	575E	Lea	NM	9/30/2015 0:00	7	109808.2	0.058	35202.7	5341.4	30.8	755.2	0.62	66984.9	280.6	1030	320
GAUCHO UNIT #013H	3002541565	32.3841743	-103.4853745	20	22S	34E	A	225N	575E	Lea	NM	9/30/2015 0:00	7.5	139904.6	0.046	46238.1	6396.8	47.2	863.7	2.1	85080.8	292.8	740	550
GAUCHO UNIT #015H	3002541566	32.3841896	-103.4984589	20	22S	34E	D	100N	660W	Lea	NM	9/30/2015 0:00	7.5	184420.1	0.035	55686.4	10540.1	47.6	1426	1.31	115274	268.4	765	770
GAUCHO UNIT #007H	3002534440	32.3889961	-103.4941711	17	22S	34E	K	1650S	1980W	Lea	NM	9/5/2014 0:00	6.4	151777.7		50554.2	5768.6	86.9	717.9	1.29	91600	244	0	200
GAUCHO 21 FEDERAL #002H	3002540626	32.3709793	-103.4823151	21	22S	34E	M	375S	375W	Lea	NM	9/25/2014 0:00	5.9	266467.8		71664.2	20660.8	50.2	3492.5	3.8	167562	366	0	400
GAUCHO UNIT #006	3002534789	32.3862648	-103.4856415	17	22S	34E	P	660S	660E	Lea	NM	10/6/2014 0:00	6.5	107770.6		36197.3	4012.5	176.5	596.2	2.69	63874.9	244	0	400
GAUCHO UNIT #010H	3002541183	32.385006	-103.4892731	17	22S	34E	O	200S	1780E	Lea	NM	3/20/2015 0:00	6.4			46191	3712	0	560	0	79230	183	700	100
GAUCHO UNIT #007H	3002534440	32.3889961	-103.4941711	17	22S	34E	K	1650S	1980W	Lea	NM	5/6/2015 0:00	6.7			49601	21	0	1	0	76000	281	586	352
RIO BLANCO 33 FEDERAL #001	3002536359	32.3436928	-103.4783325	33	22S	34E	N	1000S	1620W	Lea	NM	9/8/2004 0:00	6.3	62533.4		20306.4	2713	6	404		37110	270	966	
RIO BLANCO 33 FEDERAL #002	3002536360	32.3499985	-103.4771576	33	22S	34E	F	1980N	1980W	Lea	NM	9/8/2004 0:00	5.7	488.5		0	19	207	4		133	104	15	
RIO BLANCO 33 FEDERAL #001	3002536359	32.3436928	-103.4783325	33	22S	34E	N	1000S	1620W	Lea	NM	12/16/2004 0:00	6.2	68159.8		23712.4	1846	5	299		40341	207.4	1112	85
RIO BLANCO 33 FEDERAL #002	3002536360	32.3499985	-103.4771576	33	22S	34E	F	1980N	1980W	Lea	NM	12/16/2004 0:00	6.1	67936.8		25431.7	761	23	99		40139	228.1	1062	100
RIO BLANCO 33 FEDERAL #001	3002536359	32.3436928	-103.4783325	33	22S	34E	N	1000S	1620W	Lea	NM	4/26/2005 0:00	5.8	79359.8		27048.4	2664	12	362		47015	290.4	1270	
RIO BLANCO 33 FEDERAL #001	3002536359	32.3436928	-103.4783325	33	22S	34E	N	1000S	1620W	Lea	NM	5/23/2005 0:00	6	72120.7		24577	2429	44	348		42714	290.4	1178	
RIO BLANCO 33 FEDERAL #002	3002536360	32.3499985	-103.4771576	33	22S	34E	F	1980N	1980W	Lea	NM	5/23/2005 0:00	6	72064.7		24088.8	2661	17	476		42799	290.4	1132	
RIO BLANCO 33 FEDERAL #001	3002536359	32.3436928	-103.4783325	33	22S	34E	N	1000S	1620W	Lea	NM	6/30/2005 0:00	6.1	66506.9		21582.6	2932	8	444		39405	414.8	1022	45
RIO BLANCO 33 FEDERAL #002	3002536360	32.3499985	-103.4771576	33	22S	34E	F	1980N	1980W	Lea	NM	6/30/2005 0:00	6	69796.6		24035.5	2180	3.5	317		41236	456.3	1074	100
RIO BLANCO 33 FEDERAL #003	3002537860	32.346386	-103.4776459	33	22S	34E	K	1980S	1830W	Lea	NM	5/3/2007 0:00	5.2	222115		59159.9	18937	59	3545	5	136732	219.6	817	200
RIO BLANCO 33 FEDERAL #001	3002536359	32.3436928	-103.4783325	33	22S	34E	N	1000S	1620W	Lea	NM	7/23/2007 0:00	6.1	77880.9		26903.7	2370	2	306	0.3	45432	366	1941	50
RIO BLANCO 33 FEDERAL #003	3002537860	32.346386	-103.4776459	33	22S	34E	K	1980S	1830W	Lea	NM	7/23/2007 0:00	5.6	280006.2		80104.2	21131	35	3442	4	172189	61	879	330
GAUCHO 21 FEDERAL #001	3002534266	32.3753891	-103.4813843	21	22S	34E	L	1980S	660W	Lea	NM	12/16/2014 0:00	6.5			48879	6182	11	802	0.12	88836	122	1240	70
GAUCHO 21 FEDERAL #002H	3002540626	32.3709793	-103.4823151	21	22S	34E	M	375S	375W	Lea	NM	12/16/2014 0:00	6.5			95433	33964	36	5149	6.9	224384	366	210	200
GAUCHO UNIT #011H	3002541184	32.385006	-103.4891129	17	22S	34E	O	200S	1730E	Lea	NM	12/16/2014 0:00	6.5			48879	6182	11	802	0.12	88836	122	1240	70
GAUCHO UNIT #006	3002534789	32.3862648	-103.4856415	17	22S	34E	P	660S	660E	Lea	NM	5/13/2015 0:00	6.8			32062	4909	163	1027	2.4	61000	305	16	220
RIO BLANCO 33 FEDERAL #001	3002536359	32.3436928	-103.4783325	33	22S	34E	N	1000S	1620W	Lea	NM	5/13/2015 0:00	6			73721	26380	10	2248	3.5	167000	49	167	990
GAUCHO 21 FEDERAL #002H	3002540626	32.3709793	-103.4823151	21	22S	34E	M	375S	375W	Lea	NM	5/13/2015 0:00	5.8			70837	26020	39	4726	7.7	169000	37	341	880
GAUCHO UNIT #010H	3002541183	32.385006	-103.4892731	17	22S	34E	O	200S	1780E	Lea	NM	5/13/2015 0:00	6.8			29047	8190	14	1367	0.41	63000	207	308	176
GAUCHO UNIT #011H	3002541184	32.385006	-103.4891129	17	22S	34E	O	200S	1730E	Lea	NM	5/13/2015 0:00	6.8			32064	8057	15	1472	0.58	67000	183	1309	220
GAUCHO UNIT #012H	3002541564	32.384037	-103.4853745	20	22S	34E	A	275N	575E	Lea	NM	5/13/2015 0:00	6.9			37508	4553	17	806	0.65	68000	427	97	286
GAUCHO UNIT #013H	3002541565	32.3841743	-103.4853745	20	22S	34E	A	225N	575E	Lea	NM	5/13/2015 0:00	7			47943	1788	4.2	408	0.11	77000	305	1600	330
GAUCHO UNIT #014H	3002541571	32.3840523	-103.4984589	20	22S	34E	D	150N	660W	Lea	NM	5/13/2015 0:00	6.7			46477	4803	13	800	1.3	82000	220	624	330
GAUCHO UNIT #007H	3002534440	32.3889961	-103.4941711	17	22S	34E	K	1650S	1980W	Lea	NM	9/9/2015 0:00	6.5	166697.6	0.038	53586.1	9072	47.4	981.2	1.27	101677.1	61	675	350
RIO BLANCO 33 FEDERAL #003	3002537860	32.346386	-103.4776459	33	22S	34E	K	1980S	1830W	Lea	NM	9/9/2015 0:00	5.6	138283.7	0.046	44690.7	7319	28	807.6	0.85	83981.1	366	675	561.2
GAUCHO UNIT #010H	3002541183	32.385006	-103.4892731	17	22S	34E	O	200S	1780E	Lea	NM	9/9/2015 0:00	5.58	165155.1	0.039	52757.1	9222	54.2	1040	1.44	100777.3	219.6	560	600
GAUCHO UNIT #015H	3002541566	32.3841896	-103.4984589	20	22S	34E	D	100N	660W	Lea	NM	9/9/2015 0:00	5.42	158146.5	0.04	50243.6	9024	42.8	1042	1.08	96378.3	231.8	710	860
RIO BLANCO 4 FEDERAL COM #003	3002536425	32.3309593	-103.4718094	4	23S	34E	J	1650S	1650E	Lea	NM	9/3/2014 0:00	6.1	179000.8		53519.9	12080.6	38.7	1748.7	2.4	109000	122	0	200
BELL LAKE UNIT #006	3002508483	32.3282585	-103.507103	6	23S	34E	O	660S	1980E	LEA	NM		7	71078							42200	500	1000	
BELL LAKE UNIT #002	3002508489	32.2701836	-103.5112457	30	23S	34E	N	660S	3300E	LEA	NM			52115							32200	451	529	
RIO BLANCO 4 FEDERAL COM #003	3002536425	32.3309593	-103.4718094	4	23S	34E	J	1650S	1650E	Lea	NM	10/15/2015 0:00	7	254017.1	0.025	62818	24835.8	47	4233.5	5.48	160463.8	244	425	1000
MAD DOG 15 FEDERAL COM #001	3002536778	32.299202	-103.4514999	15	23S	34E	P	660S	660E	Lea	NM	10/15/2015 0:00	6.07	185742	0.034	60151.2	9297	80.6	1501	1.68	113474.4	341.6	560	800
CABALLO 9 STATE #001	3002534577	32.321888	-103.4814224	9	23S	34E	E	1650N	660W	Lea	NM	9/10/2014 0:00	7.81	71862.4		24399.6	2685.9	462.1	367.8	2.86	42700	576	0	0
MAD DOG 15 FEDERAL COM #001	3002536778	32.299202	-103.4514999	15	23S	34E	P	660S	660E	Lea	NM	9/10/2014 0:00	6.9	71718.6		23830.8	2540	0	346.3	0	42400	610</		

wellname	api	latitude	longitude	section	township	range	unit	ftgns	ftgew	county	state	sampledate	ph	tds_mgL	resistivity_ohm_cm	sodium_mgL	calcium_mgL	iron_mgL	magnesium_mgL	manganese_mgL	chloride_mgL	bicarbonate_mgL	sulfate_mgL	co2_mgL
CABALLO 9 STATE #001	3002534577	32.321888	-103.4814224	9	23S	34E	E	1650N	660W	Lea	NM	10/14/2010 0:00	7	122402.2		38021	6823	11	1120	1	73600	622.2	1213	300

Table 4 - Chemistry of Produced Water from Formations

wellname	api	section	township	range	unit	county	state	field	formation	depth	samplesource	sampledate	ph	specificgravity	specificgravity_temp_F	tds_mgL	resistivity_ohm_cm	resistivity_ohm_cm_temp_F	conductivity	conductivity_temp_F	sodium_mgL	calcium_mgL	magnesium_mgL	chloride_mgL	bicarbonate_mgL	sulfate_mgL
MCKITTRICK FED #1	3001500135	25	22S	25E	G	EDDY	NM		DEVONIAN		DST					16200							8762	290	1175	
MCKITTRICK FED #1	3001500135	25	22S	25E	G	EDDY	NM		DEVONIAN		DST					17510							9389	664	982	
CARNERO PEAK UT #001	3001510053	31	22S	25E	A	EDDY	NM		DEVONIAN		DST					14601							7236	515	1487	
CARNERO PEAK UT #001	3001510053	31	22S	25E	A	EDDY	NM		DEVONIAN		DST					15780							8126	336	1467	
CARNERO PEAK UT #001	3001510053	31	22S	25E	A	EDDY	NM		DEVONIAN		DST					15580							7853	487	1488	
BANDANA POINT UT #001	3001500044	13	23S	23E	O	EDDY	NM	BANDANA POINT	DEVONIAN		DST					15500							8020	500	1190	
TORTOISE ASB COM #001	3001510490	29	23S	24E	G	EDDY	NM		DEVONIAN		DST					17861							7760	490	3100	
TORTOISE ASB COM #001	3001510490	29	23S	24E	G	EDDY	NM		DEVONIAN		DST					15601							7780	476	1600	
REMUDA BASIN UNIT #001	3001503691	24	23S	29E	J	EDDY	NM	REMUDA	DEVONIAN		SWAB					64582							37500	610	1700	
REMUDA BASIN UNIT #001	3001503691	24	23S	29E	J	EDDY	NM	REMUDA	DEVONIAN		SWAB					56922							29000	1740	4980	
BELL LAKE UNIT #006	3002508483	6	23S	34E	O	LEA	NM	BELL LAKE NORTH	DEVONIAN		HEATER TREATER		7			71078							42200	500	1000	
ANTELOPE RIDGE UNIT #003	3002521082	34	23S	34E	K	LEA	NM	ANTELOPE RIDGE	DEVONIAN		UNKNOWN	14/11/1967 0:00	6,9			80187							47900	476	900	
ANTELOPE RIDGE UNIT #003	3002521082	34	23S	34E	K	LEA	NM	ANTELOPE RIDGE	DEVONIAN		UNKNOWN	14/11/1967 0:00	6,9			80187							47900	476	900	
CLINE FEDERAL #001	3002510717	14	23S	37E	K	LEA	NM	CLINE	DEVONIAN		PRODUCTION TEST					118979							71280	462	2593	
E C HILL B FEDERAL #001	3002510945	34	23S	37E	A	LEA	NM	TEAGUE	DEVONIAN		UNKNOWN					112959							67390	288	2765	
E C HILL D FEDERAL #001	3002510947	34	23S	37E	H	LEA	NM	TEAGUE	DEVONIAN		UNKNOWN					35639										
E C HILL D FEDERAL #004	3002510950	34	23S	37E	A	LEA	NM	TEAGUE	DEVONIAN		UNKNOWN					236252							147000	129	781	
HUAPACHE #003	3001500020	22	24S	22E	F	EDDY	NM		DEVONIAN		DST					3110							48	246	2020	
JURNEGAN POINT #001	3001510280	5	24S	25E	M	EDDY	NM	WILDCAT	DEVONIAN		DST	14/12/1964 0:00	7			229706							136964	198	2511	
JURNEGAN POINT #001	3001510280	5	24S	25E	M	EDDY	NM	WILDCAT	DEVONIAN		DST	14/12/1964 0:00	7			203100							121100	175	2220	
WHITE CITY PENN GAS COM UNIT 1 #001	3001500408	29	24S	26E	A	EDDY	NM		DEVONIAN		DST	01/03/1960 0:00	7	1,012	60		0,36	75	25596	64	6072	1002	132	10120	653	1336
STATE B COM #001	3002509716	36	24S	36E	C	LEA	NM	CUSTER	DEVONIAN		UNKNOWN					176234							107400	128	1004	
ELLIOTT H FEDERAL #001	3002512272	31	24S	38E	H	LEA	NM	DOLLARHIDE	DEVONIAN		WELLHEAD					58687										
ELLIOTT H FEDERAL #001	3002512272	31	24S	38E	H	LEA	NM	DOLLARHIDE	DEVONIAN		WELLHEAD					57018										
WEST DOLLARHIDE DEVONIAN UNIT #104	3002512297	32	24S	38E	I	LEA	NM	DOLLARHIDE	DEVONIAN		WELLHEAD					50858							30200	183	980	
WESTATES FEDERAL #004	3002511389	1	25S	37E	E	LEA	NM	JUSTIS NORTH	FUSSELMAN		DST	17/06/1961 0:00	6			80880							46200	340	3050	
WESTATES FEDERAL #004	3002511389	1	25S	37E	E	LEA	NM	JUSTIS NORTH	FUSSELMAN		DST					84900							48600	840	2650	
WESTATES FEDERAL #004	3002511389	1	25S	37E	E	LEA	NM	JUSTIS NORTH	FUSSELMAN		DST					72200							41000	370	2960	
WESTATES FEDERAL #004	3002511389	1	25S	37E	E	LEA	NM	JUSTIS NORTH	FUSSELMAN		DST					80900							46200	340	3050	
WESTATES FEDERAL #004	3002511389	1	25S	37E	E	LEA	NM	JUSTIS NORTH	FUSSELMAN		DST					77600							44000	550	3240	
WESTATES FEDERAL #004	3002511389	1	25S	37E	E	LEA	NM	JUSTIS NORTH	FUSSELMAN		DST					135000							77000	650	5810	
WESTATES FEDERAL #004	3002511389	1	25S	37E	E	LEA	NM	JUSTIS NORTH	FUSSELMAN		DST					114000							65000	280	5110	
WESTATES FEDERAL #004	3002511389	1	25S	37E	E	LEA	NM	JUSTIS NORTH	FUSSELMAN		DST					135000							77000	500	5320	
WESTATES FEDERAL #008	3002511393	1	25S	37E	E	LEA	NM	JUSTIS NORTH	FUSSELMAN		UNKNOWN					91058							51020	376	4783	
WESTATES FEDERAL #008	3002511393	1	25S	37E	E	LEA	NM	JUSTIS NORTH	FUSSELMAN		UNKNOWN					86847							50450	363	2544	
STATE NJ A #001	3002511398	2	25S	37E	A	LEA	NM	JUSTIS NORTH	DEVONIAN		DST					105350							59300	660	4950	
NEW MEXICO BM STATE #002	3002511407	2	25S	37E	I	LEA	NM	JUSTIS NORTH	MONTOYA		UNKNOWN					77770							45500	1800	2400	
HALE STATE #003	3002512581	2	25S	37E	H	LEA	NM	JUSTIS NORTH	MONTOYA		WELLHEAD					64916							37000	813	2500	
SOUTH JUSTIS UNIT #016F	3002511556	13	25S	37E	F	LEA	NM	JUSTIS	FUSSELMAN		UNKNOWN					57675							34030	595	1211	
LEARCY MCBUFFINGTON #008	3002511569	13	25S	37E	N	LEA	NM	203MNTY, 259FSLM	FUSSELMAN	7052		02/01/1900 0:00	7,6	1,037	78	67909			81429	67		2603	684	38887	742	2489
LEARCY MCBUFFINGTON #008	3002511569	13	25S	37E	N	LEA	NM	JUSTIS	MONTOYA		UNKNOWN					67898							38880	742	2489	
A B COATES C FEDERAL #014	3002511736	24	25S	37E	G	LEA	NM	JUSTIS	MONTOYA		UNKNOWN					39261							22840	871	1030	
SOUTH JUSTIS UNIT #023C	3002511760	25	25S	37E	C	LEA	NM	JUSTIS	FUSSELMAN		SEPARATOR					63817							35870	360	3442	
CARLSON A #002	3002511764	25	25S	37E	I	LEA	NM	JUSTIS	FUSSELMAN		DST					208280							124000	510	3400	
STATE Y #009	3002511777	25	25S	37E	A	LEA	NM	JUSTIS	FUSSELMAN		DST	17/03/1961 0:00	7,3			219570							129000	960	4630	
STATE Y #009	3002511777	25	25S	37E	A	LEA	NM	JUSTIS	FUSSELMAN		DST	18/03/1961 0:00	6,8			163430							96000	290	3780	
CARLSON B 25 #004	3002511784	25	25S	37E	P	LEA	NM	JUSTIS	FUSSELMAN		SEPARATOR					184030							112900	68	1806	
COPPER #001	3002511818	28	25S	37E	J	LEA	NM	CROSBY	DEVONIAN		UNKNOWN					27506							15270	1089	1079	
ARNOTT RAMSAY NCT-B #003	3002511863	32	25S	37E	A	LEA	NM	CROSBY	DEVONIAN	8797		02/01/1900 0:00		1,142	70							17244	5345	100382	476	
ARNOTT RAMSAY NCT-B #003	3002511863	32	25S	37E	A	LEA	NM	CROSBY	DEVONIAN		UNKNOWN					158761										
WEST DOLLARHIDE DEVONIAN UNIT #110	3002512386	5	25S	38E	B	LEA	NM	DOLLARHIDE	DEVONIAN		UNKNOWN					56776										
FARNSWORTH FEDERAL #006	3002511950	4	26S	37E	A	LEA	NM	CROSBY	DEVONIAN		UNKNOWN					31931							20450	302	591	

OSE Well Logs – NO WATER SUPPLY WELLS

XIII. Applicants must complete the "Proof of Notice" section on the reverse side of this form.

R. T. HICKS CONSULTANTS, LTD.

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August 6, 2019

Hobbs News Sun
201 N. Thorp
P.O. Box 850
Hobbs, N.M. 88240

LEGAL NOTICE

AWR Disposal LLC, 3300 N. A Street, Ste. 220, Midland, TX 79705 filed Form C-108 (Application for Authorization to Inject) with the New Mexico Oil Conservation Division seeking administrative approval for a salt water disposal well. The proposed well, the Elbow Room SWD #1 will be located 1,690 feet from the South line and 2,090 feet from the East line, Section 35, Township 22 South, Range 34 East, Lea County, New Mexico. Produced water from area production will be commercially disposed into the Devonian, Fusselman and Montoya Formations at a depth of 14,898 feet to 17,079 feet at a maximum surface pressure of 3,000 psi and an average injection rate of 30,000 barrels per day. The proposed SWD well is located approximately 24.3 miles southwest of Eunice, New Mexico.

Interested parties wishing to object to the proposed application must file with the New Mexico Oil Conservation Division, 1220 S. St. Francis Dr., Santa Fe, NM 87505 (505) 476-3460 within 15 days of the date of this notice.

Additional information can be obtained by contacting Mr. Randall Hicks, agent for Accelerated Water Resources, LP, at 505-238-9515.

Sincerely,
R.T. Hicks Consultants



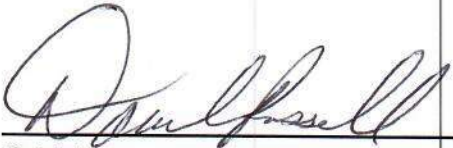
Randall Hicks
Principal

Affidavit of Publication

STATE OF NEW MEXICO
COUNTY OF LEA

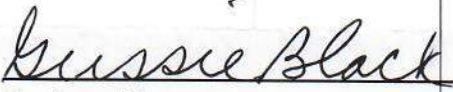
I, Daniel Russell, Publisher of the Hobbs News-Sun, a newspaper published at Hobbs, New Mexico, solemnly swear that the clipping attached hereto was published in the regular and entire issue of said newspaper, and not a supplement thereof for a period of 1 issue(s).

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6th day of August 2019.



Business Manager

My commission expires
January 29, 2023
(Seal)



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LEGAL NOTICE AUGUST 6, 2019

AWR Disposal LLC, 3300 N. A Street, Ste. 220, Midland, TX 79705 filed Form C-108 (Application for Authorization to Inject) with the New Mexico Oil Conservation Division seeking administrative approval for a salt water disposal well. The proposed well, the Elbow Room SWD #1 will be located 1,690 feet from the South line and 2,090 feet from the East line, Section 35, Township 22 South, Range 34 East, Lea County, New Mexico. Produced water from area production will be commercially disposed into the Devonian, Fusselman and Montoya Formations at a depth of 14,898 feet to 17,079 feet at a maximum surface pressure of 3,000 psi and an average injection rate of 30,000 barrels per day. The proposed SWD well is located approximately 24.3 miles southwest of Eunice, New Mexico.

Interested parties wishing to object to the proposed application must file with the New Mexico Oil Conservation Division, 1220 S. St. Francis Dr., Santa Fe, NM 87505 (505) 476-3460 within 15 days of the date of this notice.

Additional information can be obtained by contacting Mr. Randall Hicks, agent for Accelerated Water Resources, LP, at 505-238-9515.

Sincerely,
R.T. Hicks Consultants
Randall Hicks
Principal
#34531

67115764

00231755

RANDALL HICKS
R.T. HICKS CONSULTANTS, LTD
901 RIO GRANDE BLVD NM
SUITE F-142
ALBUQUERQUE, NM 87104

R. T. HICKS CONSULTANTS, LTD.

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August 09, 2019

NOTIFICATION TO INTERESTED PARTIES

Via U.S. Certified Mail – Return Receipt Requested

To Whom It May Concern:

AWR Disposal, LLC, Midland, Texas, has made application to the New Mexico Oil Conservation Division to drill and complete, for salt water disposal, the Elbow Room SWD #1. The proposed commercial operation will be for produced water disposal from area operators. As indicated in the notice below, the well is in Section 35, Township 22 South, Range 34 East in Lea County, New Mexico.

The published notice states that the interval will be from 14,898 feet to 17,079 feet into the Devonian, Fusselman and Montoya Formations.

LEGAL NOTICE

AWR Disposal LLC, 3300 N. A Street, Ste. 220, Midland, TX 79705 filed Form C-108 (Application for Authorization to Inject) with the New Mexico Oil Conservation Division seeking administrative approval for a salt water disposal well. The proposed well, the Elbow Room SWD #1 will be located 1,690 feet from the South line and 2,090 feet from the East line, Section 35, Township 22 South, Range 34 East, Lea County, New Mexico. Produced water from area production will be commercially disposed into the Devonian, Fusselman and Montoya Formations at a depth of 14,898 feet to 17,079 feet at a maximum surface pressure of 3,000 psi and an average injection rate of 30,000 barrels per day. The proposed SWD well is located approximately 24.3 miles southwest of Eunice, New Mexico.

Interested parties wishing to object to the proposed application must file with the New Mexico Oil Conservation Division, 1220 S. St. Francis Dr., Santa Fe, NM 87505 (505) 476-3460 within 15 days of the date of this notice.

You have been identified as a party who may be interested as an offset lessee or operator. **IF YOU WOULD LIKE AN ELECTRONIC COPY OF THE ENTIRE PERMIT PACKAGE, PLEASE SEND YOUR REQUEST TO** david@rthicksconsult.com (request a read receipt to avoid your email becoming stuck in spam).

Thank you for your attention in this matter.

Sincerely,
R.T. Hicks Consultants



Randall Hicks
Principal

OPERATORS, LEASEHOLDERS AND SURFACE OWNERS WITHIN 1 MILE -RADIUS

APACHE CORPORATION Elbow Room SWD #1 303 VETERANS AIRPARK LN #1000 MIDLAND, TX 79705		BTA OIL PRODUCERS, LLC Elbow Room SWD #1 104 S Pecos Midland, TX 79701		Bureau of Land Management Elbow Room SWD #1 620 E. Greene Street Carlsbad, NM 88220-6292
CENTENNIAL RESOURCE PRODUCTION Elbow Room SWD #1 1001 17th Street Suite 1800 Denver, CO 80202		EOG RESOURCES INC Elbow Room SWD #1 P.O. Box 2267 Midland, TX 79702		GMT EXPLORATION COMPANY LLC Elbow Room SWD #1 1560 BROADWAY SUITE 2000 DENVER, CO 80202
LEACO NEW MEXICO EXPL. AND PROD Elbow Room SWD #1 2000 POST OAK BLVD SUITE 100 HOUSTON, TX 77056		LIMESTONE BASIN PROP RANCH LLC Elbow Room SWD #1 18 DESTA DRIVE MIDLAND, TX 79705		MERCHANT LIVESTOCK Elbow Room SWD #1 PO BOX 1105 EUNICE, NM 88231
New Mexico State Land Office Elbow Room SWD #1 310 Old Santa Fe Trail Santa Fe, NM 87501		OCCIDENTAL PERMIAN LP Elbow Room SWD #1 5 GREENWAY PLAZA Suite 110 HOUSTON, TX 77046-0521		V-F PETROLEUM INC Elbow Room SWD #1 P.O. BOX 1889 MIDLAND, TX 79702
XTO ENERGY INC Elbow Room SWD #1 810 HOUSTON STREET SUITE 2000 FT. WORTH, TX 76102-6298				

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	#1000	
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PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

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	1001 17th Street	
	Suite 1800	
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PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

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☐ Adult Signature Restricted Delivery	\$	
Postage	\$	
Total Postage and Fees	\$	
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Street and Apt. No., or PO Box No.	Elbow Room SWD #1	
	2000 POST OAK BLVD	
	SUITE 100	
City, State, ZIP+4®	HOUSTON, TX 77056	

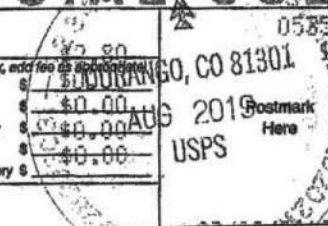
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Street and Apt. No., or PO Box No.	Elbow Room SWD #1	
	310 Old Santa Fe Trail	
	Santa Fe, NM 87501	
City, State, ZIP+4®		

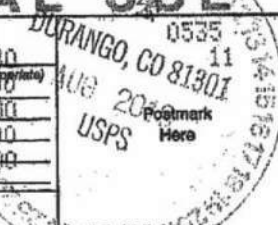
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☐ Adult Signature Restricted Delivery	\$	
Postage	\$0.55	
Total Postage and Fees	\$6.85	
Sent To	XTO ENERGY INC	
Street and Apt. No., or PO Box No.	Elbow Room SWD #1	
	810 HOUSTON STREET	
	SUITE 2000	
City, State, ZIP+4®	FT. WORTH, TX 76102-6298	

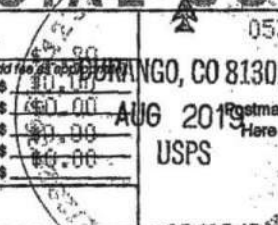
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☐ Return Receipt (electronic)	\$	
☐ Certified Mail Restricted Delivery	\$	
☐ Adult Signature Required	\$	
☐ Adult Signature Restricted Delivery	\$	
Postage	\$0.55	
Total Postage and Fees	\$6.85	
Sent To	BTA OIL PRODUCERS	
Street and Apt. No., or PO Box No.	Elbow Room SWD #1	
	104 S PECOS	
	MIDLAND, TX 79701	
City, State, ZIP+4®		

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☐ Adult Signature Restricted Delivery \$

Postage

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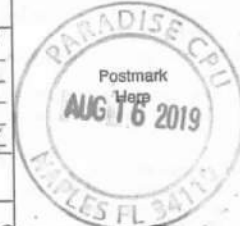
Total Postage and Fees

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206 Resources Inc
 Elbow Room SWD #1
 PO Box 2267
 Midland, TX 79702

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☐ Certified Mail Restricted Delivery \$

☐ Adult Signature Required \$

☐ Adult Signature Restricted Delivery \$

Postage

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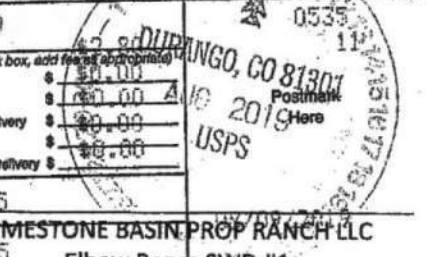
Total Postage and Fees

\$4.05

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LIMESTONE BASIN PROP RANCH LLC
 Elbow Room SWD #1
 18 DESTA DRIVE
 MIDLAND, TX 79705

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Postage

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Total Postage and Fees

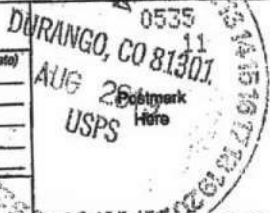
\$4.05

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OCCIDENTAL PERMIAN, LP
 Elbow Room SWD #1
 5 GREENWAY PLAZA
 SUITE 110
 HOUSTON, TX 77046



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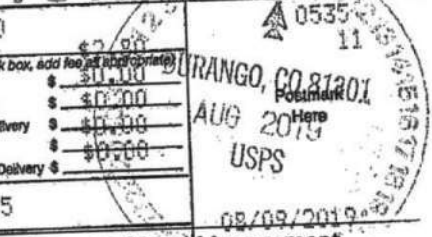
Total Postage and Fees

\$4.05

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Bureau of Land Management
 Elbow Room SWD #1
 620 E. Greene Street
 Carlsbad, NM 88220-6292

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☐ Adult Signature Required \$

☐ Adult Signature Restricted Delivery \$

Postage

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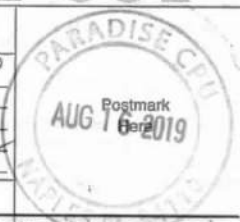
Total Postage and Fees

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GMT EXPLORATION COMPANY LLC
 Elbow Room SWD #1
 1560 BROADWAY
 SUITE 2000
 DENVER, CO 80202

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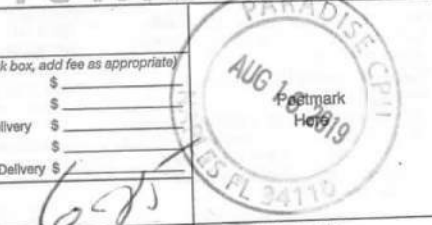
Total Postage and Fees

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MERCHANT LIVESTOCK
 Elbow Room SWD #1
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 EUNICE, NM 88231

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☐ Adult Signature Required \$0.00
☐ Adult Signature Restricted Delivery \$0.00

Postage \$0.55

Total Postage and Fees \$6.85

V-F PETROLEUM INC

Elbow Room SWD #1

Sent To

P.O. BOX 1889

Street and Apt. No., or PO Box No.

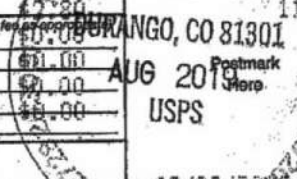
MIDLAND, TX 79702

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Artesia ▲ Carlsbad ▲ Durango ▲ Midland

August 20, 2019

Mr. Phillip Goetze, P.G.
New Mexico Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, NM 87505

RE: AWR Disposal LLC, Elbow Room SWD #1
UL J, Section 35 T22S R34E, Lea County

Dear Mr. Goetze:

On behalf of AWR Disposal LLC, R.T. Hicks Consultants is providing data and an opinion regarding the probability that injection of wastewater in the above referenced well at the proposed rates will cause seismic events of sufficient magnitude to create damage. It is our understanding that OCD is interested in such an opinion as part of the SWD approval process. We elected to provide this opinion as a separate submission as the C-108 does not specifically require such an opinion.

We relied upon the following data to develop our opinion

- State of stress in the Permian Basin, Texas and New Mexico: Implications for induced seismicity, Jens-Erik Lund Snee and Mark D. Zoback, The Leading Edge, February 2018¹
- Plate 5, which is reproduced from the Snee and Zoback publication, which uses the following references
 - Crone, A. J., and R. L. Wheeler, 2000, Data for Quaternary faults, liquefaction features, and possible tectonic features in the Central and Eastern United States, east of the Rocky Mountain front; U.S. Geological Survey Open-File Report.
 - Ewing, T. E., R. T. Budnik, J. T. Ames, and D. M. Ridner, 1990, Tectonic map of Texas: Bureau of Economic Geology, University of Texas at Austin.
 - Green, G. N., and G. E. Jones, 1997, a digital geologic map of New Mexico in ARC/INFO format: U.S. Geological Survey Open-File Report.
 - Ruppel, S. C., R. H. Jones, C. L. Breton, and J. A. Kane, 2005, Preparation of maps depicting geothermal gradient and Precambrian structure in the Permian Basin: USGS Order no. 04CRSA0834 and Requisition no. 04CRPR01474.
 - NMOCD database of oil and gas wells
- Plate 5, which shows the distribution of active and new SWD wells in the area of the proposed AWR Disposal SWD well
- Stratigraphic and lithologic information from two deep wells in the Delaware Basin
- Data on the thickness and lithology of the Simpson Group from the Texas Bureau of Economic Geology²

¹ https://scits.stanford.edu/sites/default/files/3702_tss_lundsnee_v2.pdf

² http://www.beg.utexas.edu/resprog/permianbasin/PBGSP_members/writ_synth/Simpson.pdf

Plate 5 reproduces Figure 3 of the 2018 publication of Snee and Zoback and shows

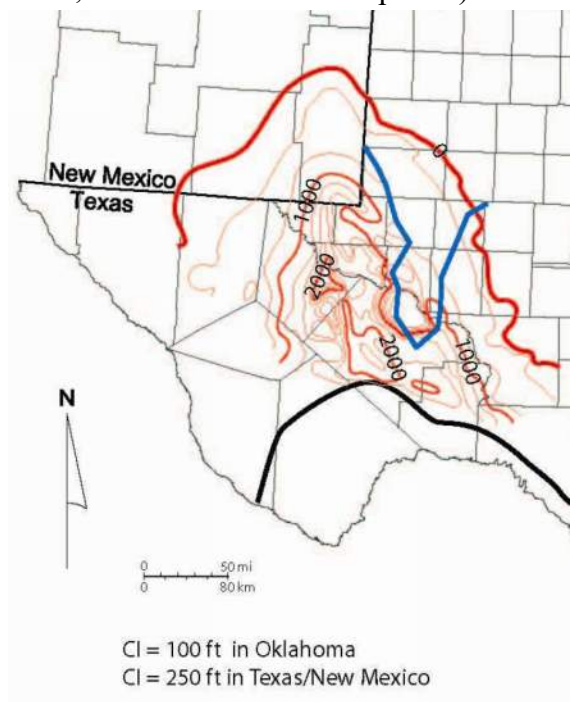
1. Fault traces based upon the references provided above for which Dr. Snee and Dr. Zoback provide a value of the fault slip potential (FSP)
2. Areas of documented seismic activity, and a magnitude 2.0-2.9 earthquake that occurred between 1970-2004 about 14 miles southwest of the proposed Elbow Room SWD #1. A slightly larger magnitude and more recent seismic event is reported about 25 miles west of the Elbow Room SWD #1 well location.
3. Although Plate 5 does not show faults that may be identified in confidential seismic data owned by oil and gas operators, the closest mapped basement fault that was re-activated during Woodford time is about 14 miles to the west exhibits a low FSP (less than 5%) based upon the modeling and analysis of Snee and Zoback referenced above
4. Other mapped faults in southern Lea County shown on Plate 5 also show a low FSP, except for part of southwest-northeast trending fault about 10 miles north-northwest of the Elbow Room SWD #1 well that has a FSP of about 25 – 33% in the central portion of this fault trace.

Plate 6 reproduces the major elements of Plate 5 in the inset map and also shows that within an 6-mile radius around the proposed Elbow Room SWD #1, the OCD database shows about 3 active and 2 new Devonian SWDs, which translates into an average density of about one SWD for every 23 square miles.

Figure 4 from the referenced Bureau of Economic Geology (The Middle-Upper Ordovician Simpson Group of the Permian Basin: Deposition, Diagenesis, And Reservoir Development) is attached to this letter and the portion of that figure for the Delaware Basin is shown to the right. In southern Lea County the mapped thickness appears to be 500-1500 feet thick (note one contour line appears to be missing on the map). This unit, which is clay-rich carbonate interbedded with shale and sandstone, provides an excellent permeability/pressure barrier between the injection zone and the basement faults that were re-activated during Woodford time.

Data from the Amoco Federal CW Com 1 (3002528119) show that the thickness of the Simpson in the Antelope Ridge area of Lea County (Section 3 24S 34E) is about 450 feet thick with. This is consistent with Figure 4 of the BEG paper (probably because this well was used to produce the isopach map).

We contend that the data permit conclusion that unmapped faults (which may be located by confidential seismic data that AWR Disposal does not possess) near the Elbow Room SWD #1 would be dominantly north-south normal faults, as is common in Lea County. The data on Plate



August 20, 2019

Page 3

6 permit a conclusion that faults near the Elbow Room SWD #1 are also most likely to exhibit a low FSP, like the mapped faults shown on Plate 5.

Given the density of Devonian SWDs (planned/new and active) near the proposed Elbow Room SWD #1 well and the high likelihood that any unmapped faults in the area would exhibit a low FSP, the probability that injection into the Elbow Room SWD #1 would cause an increase in pore pressure to trigger a seismic event of sufficient magnitude to cause damage is very low.

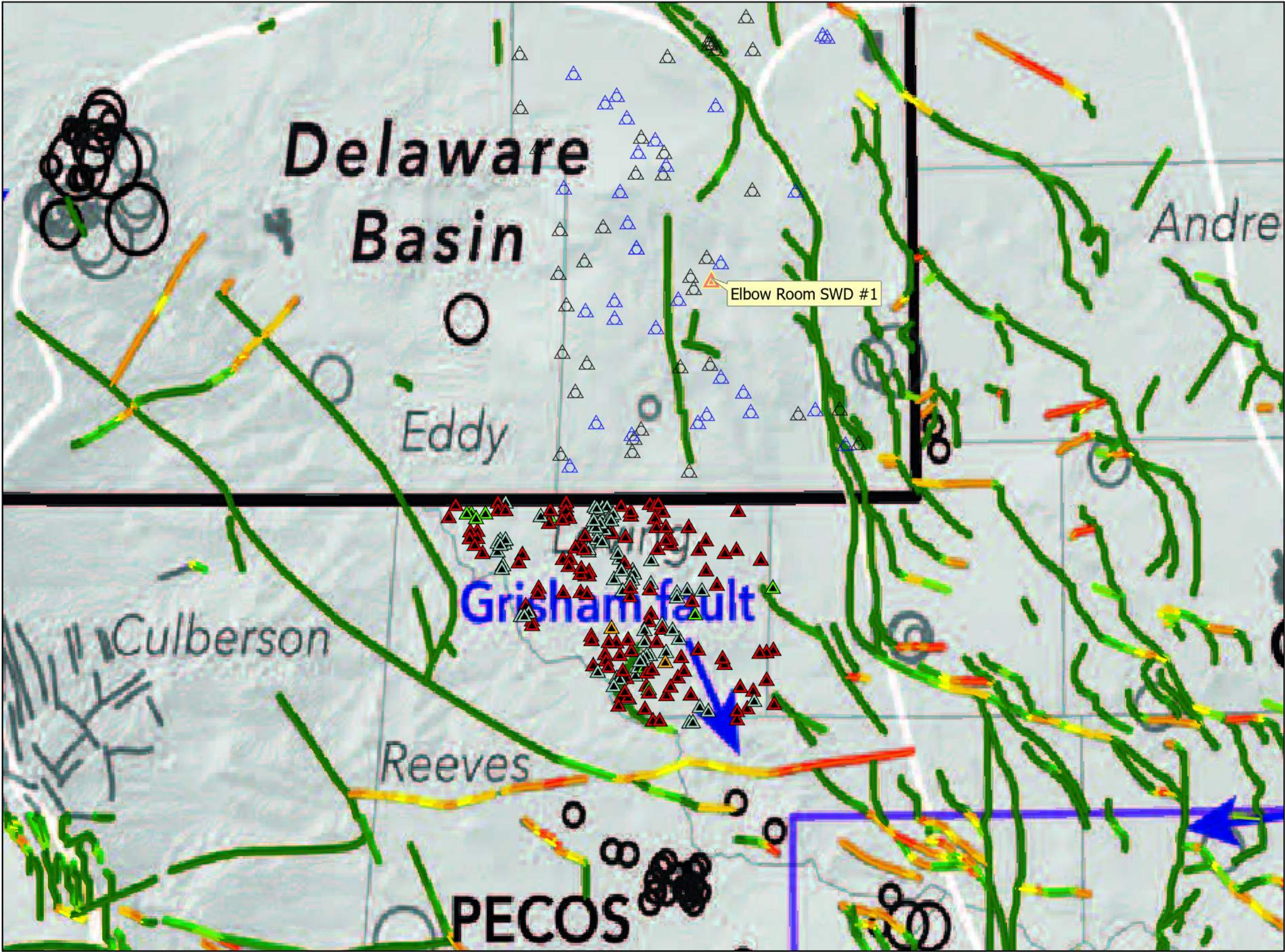
The users of this letter should recognize the uncertainties of using seismic maps of the Permian Basin to determine probability that injection of wastewater into a single SWD well could cause seismic events of sufficient magnitude to cause damage. However, on a regional basis injection by numerous wells into the Devonian/Fusselman/Montoya interval will raise the hydrostatic pressure. If pressure increases sufficiently, fluid could migrate from the injection zone along fault planes, up and down. Downward fluid migration will be intercepted first by the sandstone units of the Simpson Group. After fluid pressure increases in these sandstones, fluid would migrate downward into the Ellenberger Formation, which lies beneath the Simpson Group. This downward migration will next enter the permeable units of the Ellenberger and, over time, increase the fluid pressure. After fluid pressure in the Ellenberger is sufficiently large to cause downward migration along fault planes or other conduits, the migrating fluid will, in some areas, enter a thinner horizon of granite wash. Downward migrating fluids from the injection zone could then enter basement fault planes if the pressure in the granite wash horizon is sufficient, and reduce the frictional resistance (lubricate the faults). Reduction in the frictional force in faults due to fluid invasion can and has caused seismic events. In my opinion, the probability that injection into the Elbow Room SWD will measurably contribute to the events described above and will cause a seismic event resulting in damage is so low as to be nil.

Sincerely,
R.T. Hicks Consultants

A handwritten signature in black ink, appearing to read "Randall T. Hicks".

Randall T. Hicks
Principal

Copy: AWR Disposal LLC

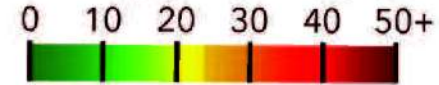


- ▲ SWD
- Oil and Gas (NMOCD)
- △ Salt Water Injection, Active
- △ Salt Water Injection, New
- Loving, Tx Oil and Gas Wells
- ▲ Injection/Disposal From Gas
- ▲ Injection/Disposal From Oil
- ▲ Injection/Disposal From Oil/Gas
- ▲ Injection/Disposal Well

Seismicity:

- M_w 2.0-2.9 ○ Since 2005
- M_w 3.0-3.9 ○ 1970-2004
- M_w 4.0+

Fault slip potential (%):



Seismic and Fault Slip Potential-
Ewing et al. (1990), Green and Jones (1997), Ruppel
et al. (2005), and the USGS Quaternary Faults and
Folds Database (Crone and Wheeler, 2000).



0 5 10
Miles

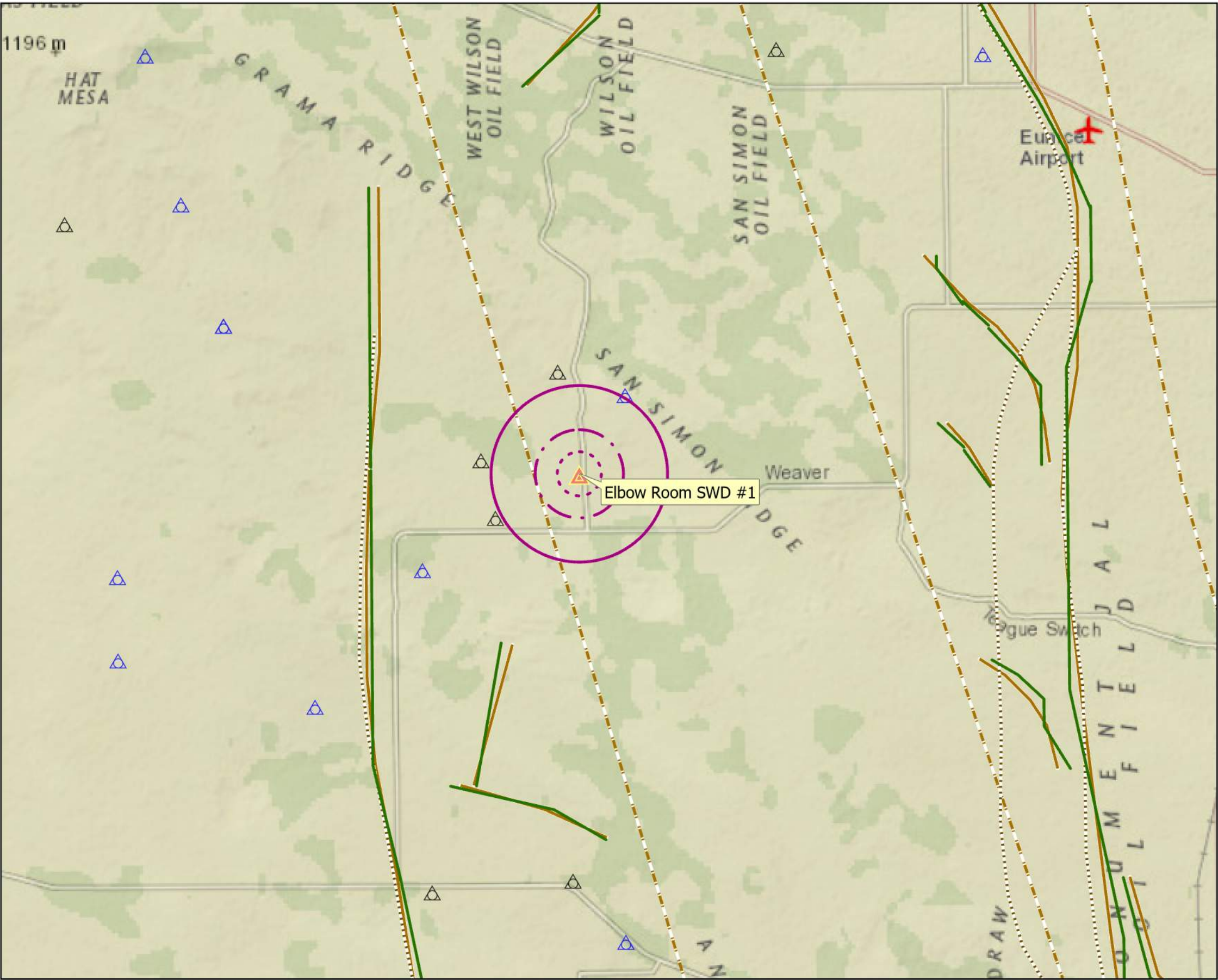
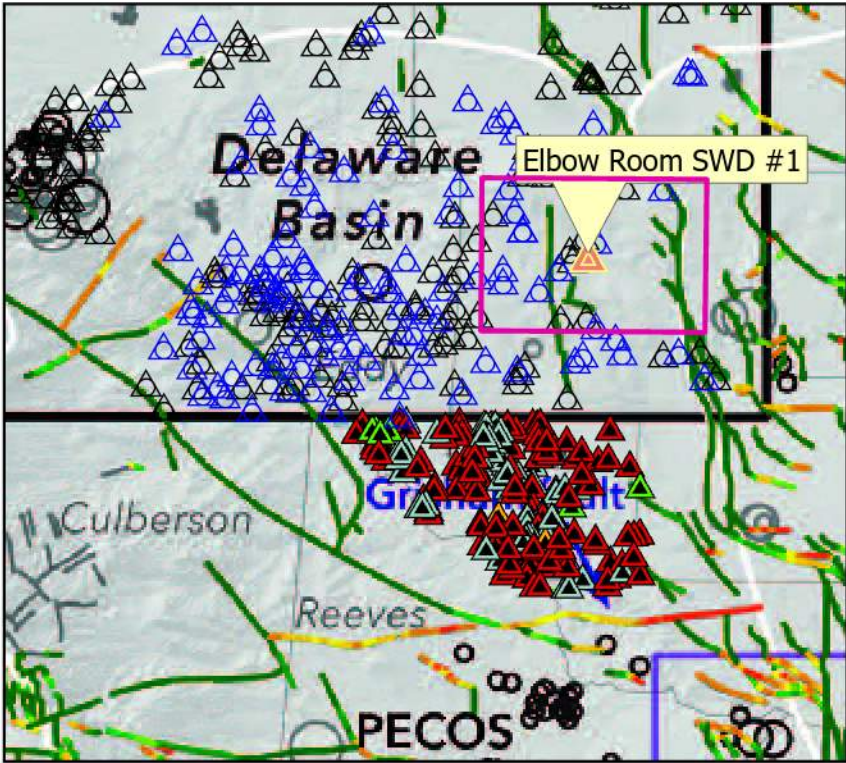
R.T. Hicks Consultants, Ltd
901 Rio Grande Blvd NW Suite F-142
Albuquerque, NM 87104
Ph: 505.266.5004

Seismicity and Fault Slip Potential

AWR Disposal, LLC
Elbow Room SWD #1

Plate 5

August 2019



- feat_type
- SWD
- Distance (miles)
- 0.5
 - 1
 - 2
- Oil and Gas (NMOCD)
- Salt Water Injection, Active
 - Salt Water Injection, New
- Faults
- Fault - Woodford
 - Fault - Precambrian
 - Fault - Basement
- Fault Slip Potential (%)
- <5
 - 10 -15

Seismic and Fault Slip Potential-
Ewing et al. (1990), Green and Jones (1997), Ruppel
et al. (2005), and the USGS Quaternary Faults and
Folds Database (Crone and Wheeler, 2000).



R.T. Hicks Consultants, Ltd
901 Rio Grande Blvd NW Suite F-142
Albuquerque, NM 87104
Ph: 505.266.5004

Fault Slip Potential

AWR Disposal, LLC
Elbow Room SWD #1

Plate 6

August 2019