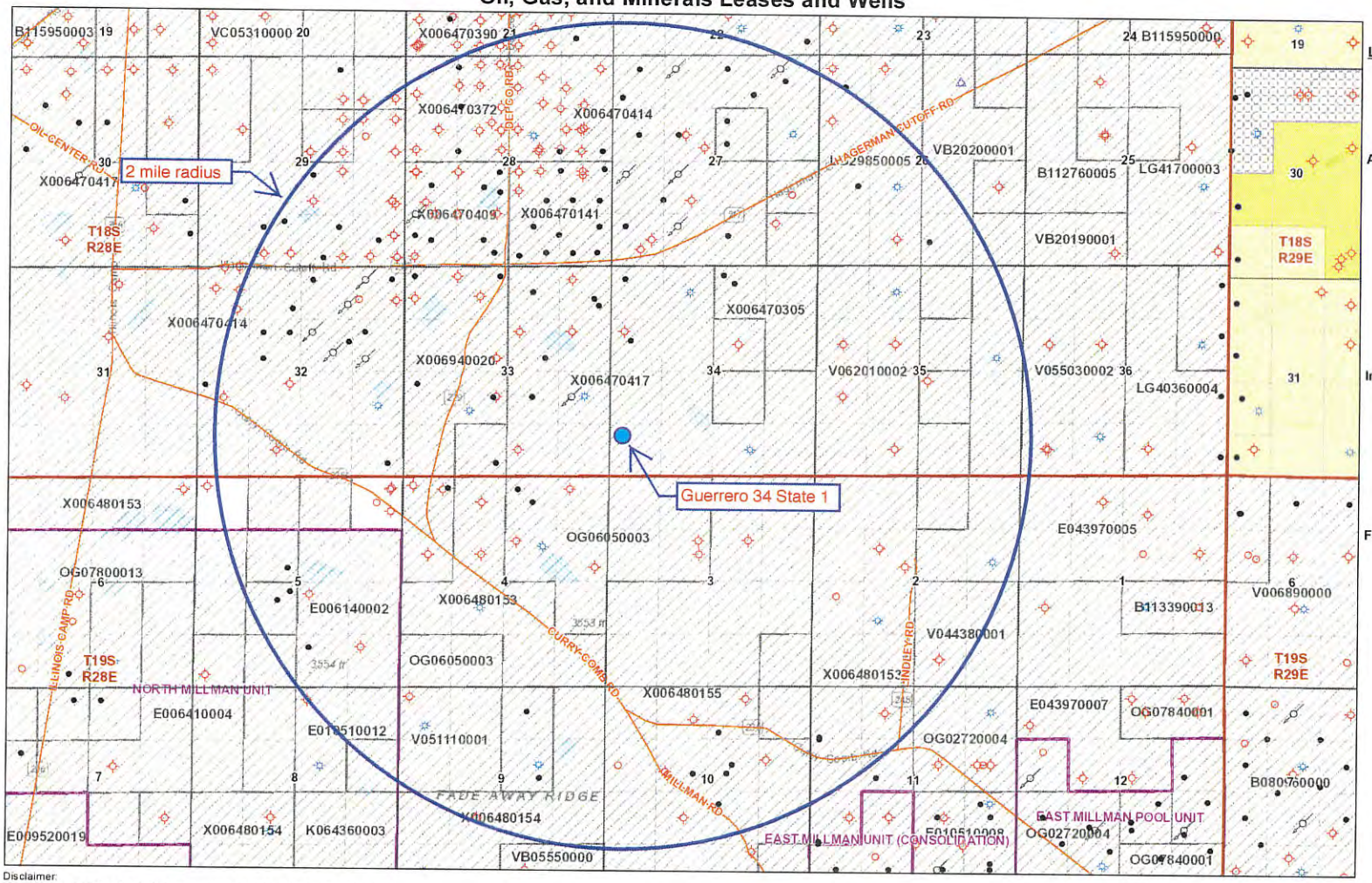
Application Part I*I*

New Mexico State Land Office

Oil, Gas, and Minerals Leases and Wells

EXHIBIT E



Legend

- Townships
- Sections
- Subdivisions

Active Wells

- Water Storage
- Miscellaneous
- Salt Water Disposal
- Injection
- Carbon Dioxide
- Gas
- Oil

Inactive Wells

- Plugged / Dry / Abandoned
- Cancelled / Not Drilled
- Detailed Roads
- Unit Agreement Boundaries
- Oil and Gas Leases

Federal Minerals Ownership

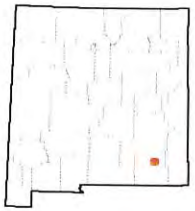
- All Minerals
- Coal Only
- Oil and Gas Only
- Oil, Gas and Coal Only
- Other Minerals

0 0.4 0.8 1.6 mi

0 0.5 1 2 km

EXHIBIT E

Map Created: 8/6/2019



All Constituents in mg/l

API	Section	Township	Range	Formation	TDS	Na	Ca	Fe	Mg	CL	HCO3	SO4
3001502587	4	18S	28E	Abo	30713					15340	1882	2148
3001502587	4	18S	28E	Abo	31644					15780	1988	2214
3001502587	4	18S	28E	Abo	30668					15370	1873	2138
3001502588	4	18S	28E	Abo	31951					16990	2007	2140
3001502627	6	18S	28E	Abo	57541					30850	2192	2899
3001501767	1	18S	28E	Artesia	263556					163000	195	750
3001502638	8	18S	28E	Artesia	202816					125400	71	798
3001528247	10	18S	28E	Artesia	127116	45317	4842	5	1826	82349	339	2810
3001501815	10	18S	28E	Artesia	118021	40427	5272	5	1930	76031	381	2580
3001523225	10	18S	28E	Artesia	117316	45547	2198	5	509	71949	896	4933
3001528244	10	18S	28E	Artesia	25243	7612	1394	5	419	14356	317	1435
3001528010	11	18S	28E	Artesia	142761	54662	3684	14	1229	91856	273	4149
3001528010	11	18S	28E	Artesia	136939	50918	4398	5	1464	88451	206	3698
3001501946	19	18S	28E	Artesia	54350	25400	820	0	1230	49600	355	4210
3001501947	19	18S	28E	Artesia	30610	6049	380		576	29600	520	490
3001501940	19	18S	28E	Artesia	127650	2850	4000	0	7500	115000		
3001501940	19	18S	28E	Artesia	117200	2800	4000	0	9200	103800	48	160
3001501946	19	18S	28E	Artesia	180950	108123	770	1	4080	175000	56	600
3001501941	19	18S	28E	Artesia	12900	7222	240	0	440	12000	200	150
3001501965	19	18S	28E	Artesia	19950	11684	336	0	464	19500	344	175
3001501965	19	18S	28E	Artesia	15275	8464	288	1	552	15000	252	18
3001501942	19	18S	28E	Artesia	249200					146800	0	5974
3001501965	19	18S	28E	Artesia	17650	10695	208	1	192	17000	160	140
3001501943	19	18S	28E	Artesia	113668	69644	2080	0	0	108000	836	3600
3001501946	19	18S	28E	Artesia	89448	26772	2040	0	0	42500	344	2880
3001501951	19	18S	28E	Artesia	52225	30159	2100	0	0	48000	310	2750
3001501954	19	18S	28E	Artesia	132104	81714	2440	0	0	128000	240	2400
3001501964	19	18S	28E	Artesia	97692	59340	2160	0	0	92000	952	3840
3001509142	19	18S	28E	Artesia	59540	34983	1920	0	0	54500	460	3360
3001502022	23	18S	28E	Artesia	100680	29466	2765	525	4671	66957	255	193

EXHIBIT F

All Constituents in mg/l

API	Section	Township	Range	Formation	TDS	Na	Ca	Fe	Mg	CL	HCO3	SO4
3001502113	29	18S	28E	Artesia	38950		13620	####	8750	12400	400	3750
3001502142	30	18S	28E	Artesia						44000		
3001502138	30	18S	28E	Artesia	28300	2100	2960	0	7640	17400	650	1750
3001502139	30	18S	28E	Artesia	14975		2400	0	5400	7000	48	150
3001502138	30	18S	28E	Artesia	16500		440	0	760	15000	300	175
3001502138	30	18S	28E	Artesia	12175	6049	336	0	524	11000	520	192
3001502142	30	18S	28E	Artesia	43700	25530	450	2	1110	43000	160	450
3001502142	30	18S	28E	Artesia	43700	25530	448	2	1112	43000	140	450
3001502142	30	18S	28E	Artesia	17750	7890	376		664	17500	112	450
3001502142	30	18S	28E	Artesia	10650	5819	340	0	460	10000	160	450
3001502142	30	18S	28E	Artesia	9750	5037	360	2	520	9500	160	375
3001502132	30	18S	28E	Artesia	12850	7084	480	0	420	12600	420	200
3001502142	30	18S	28E	Artesia	12750	6417	440	0	500	11750	420	250
3001521866	30	18S	28E	Artesia	38950	21321	480	0	1260	37000	316	325
3001502135	30	18S	28E	Artesia	126534		10880	0	34320	79000	284	2250
3001502132	30	18S	28E	Artesia	22220	11477	1720	0	0	18500	488	2520
3001502139	30	18S	28E	Artesia	30128	16698	1520	0	0	26000	452	2880
3001502166	33	18S	28E	Artesia	80632					45800	610	3750
3001502178	4	19S	28E	Artesia	140946					85640	450	2229
3001502226	12	19S	28E	Artesia	100179					59426	1088	1050
3001502239	13	19S	28E	Artesia	122436					71810	1000	2404
3001510105	13	19S	28E	Artesia	113098					64800	1728	4104
3001502302	25	19S	28E	Artesia	66858					39750	1154	262
3001503554	3	19S	29E	Artesia	6605					1933	246	2296
3001503555	3	19S	29E	Artesia	5776					1926	184	1846
3001503563	5	19S	29E	Artesia	200307					118800	1641	2853
3001503597	18	19S	29E	Artesia	76473					43850	1260	2424
3001503615	34	19S	29E	Artesia	51629					25250	1964	6000
3001503615	34	19S	29E	Artesia	152978					82800	183	11900
3001503615	34	19S	29E	Artesia	66591					35200	1365	5200

EXHIBIT F

All Constituents in mg/l

API	Section	Township	Range	Formation	TDS	Na	Ca	Fe	Mg	CL	HCO3	SO4
3001510329	36	19S	29E	Artesia	43392					20700	1428	5589
3001503612	32	19S	29E	Bone Spring	33760					15600	290	5500
3001540781	12	19S	29E	Bone Spring 1 Ss	213636	79761	3295	22	662	127089		481
3001540779	12	19S	29E	Bone Spring 1 Ss	210479	78858	3619	17	723	124000	488	639
3001540780	12	19S	29E	Bone Spring 1 Ss		93423	5621	0	1224	157841	415	470
3001540779	12	19S	29E	Bone Spring 1 Ss		94968	3407	3	730	155973	659	480
3001540780	12	19S	29E	Bone Spring 1 Ss		90194	3568	0	718	149598	244	420
3001540781	12	19S	29E	Bone Spring 1 Ss	208284	75251	3375	18	677	126406		488
3001540587	20	19S	29E	Bone Spring 1 Ss	220041	82296	3071	19	678	131023		709
3001540511	20	19S	29E	Bone Spring 1 Ss		79272	3440	21	664	131794	366	500
3001540591	20	19S	29E	Bone Spring 1 Ss		68603	10342	23	1757	130837	73	800
3001540591	20	19S	29E	Bone Spring 1 Ss		104490	5604	21	1237	175022	964	490
3001540511	20	19S	29E	Bone Spring 1 Ss		91931	5555	20	1182	155717	439	470
3001540512	21	19S	29E	Bone Spring 1 Ss		101408	3045	12	671	162925	549	290
3001540512	21	19S	29E	Bone Spring 1 Ss	167727	59396	2871	16	546	102000	317	748
3001540513	21	19S	29E	Bone Spring 1 Ss	214315	74061	3014	60	687	133469	366	0
3001541014	21	19S	29E	Bone Spring 1 Ss		86063	5256	27	1154	145983	488	490
3001540512	21	19S	29E	Bone Spring 1 Ss		85156	5652	21	1173	145584	476	510
3001541007	21	19S	29E	Bone Spring 1 Ss	202394	71386	3167	66	688	124677		552
3001541014	21	19S	29E	Bone Spring 1 Ss	204994	71291	3070	33	665	127550		545
3001540822	22	19S	29E	Bone Spring 1 Ss	208209	71859	3449	40	701	129492		622
3001540822	22	19S	29E	Bone Spring 1 Ss	209470	75384	3145	35	658	127594		557
3001541008	22	19S	29E	Bone Spring 1 Ss		86589	5601	51	1217	147547	537	510
3001540822	22	19S	29E	Bone Spring 1 Ss		95292	3405	14	671	156438	342	440
3001541008	22	19S	29E	Bone Spring 1 Ss		96553	3472	11	698	158477	550	440
3001540289	27	19S	29E	Bone Spring 1 Ss	205841	75826	2827	98	580	123798		504
3001540508	27	19S	29E	Bone Spring 1 Ss	209710	72736	3012	71	575	130499	305	0
3001540289	27	19S	29E	Bone Spring 1 Ss		103455	3590	21	706	170216	378	400
3001540508	27	19S	29E	Bone Spring 1 Ss		85353	3256	28	620	141209	366	360
3001540583	27	19S	29E	Bone Spring 1 Ss		94174	3444	25	695	155343	305	420

EXHIBIT F

All Constituents in mg/l

API	Section	Township	Range	Formation	TDS	Na	Ca	Fe	Mg	CL	HCO3	SO4
3001540507	27	19S	29E	Bone Spring 1 Ss	194044	69009	2891	47	594	119143		546
3001540583	27	19S	29E	Bone Spring 1 Ss	207101	72181	3108	45	663	128420		785
3001540509	28	19S	29E	Bone Spring 1 Ss	208768	75798	3376	73	684	126019		536
3001540135	28	19S	29E	Bone Spring 1 Ss	216803	79610	2917	15	650	130755		662
3001540135	28	19S	29E	Bone Spring 1 Ss	79317	27817	1901	23	288	46791	573	1057
3001540135	28	19S	29E	Bone Spring 1 Ss	204699	70858	2959	31	647	127420	268	0
3001540135	28	19S	29E	Bone Spring 1 Ss		92567	3277	21	696	152161	366	460
3001540509	28	19S	29E	Bone Spring 1 Ss		93253	3591	16	683	153680	366	480
3001540509	28	19S	29E	Bone Spring 1 Ss		78139	5701	122	1195	134723	476	490
3001540592	28	19S	29E	Bone Spring 1 Ss		94735	3617	15	717	156241	231	480
3001540515	29	19S	29E	Bone Spring 1 Ss		97526	2676	0	586	155601	927	310
3001540514	29	19S	29E	Bone Spring 1 Ss	203297	76713	3056	29	651	119809	390	0
3001540516	29	19S	29E	Bone Spring 1 Ss	210488	74730	3363	39	728	129027		548
3001541380	30	19S	29E	Bone Spring 1 Ss		109466	2731	0	609	174338	549	440
3001540584	32	19S	29E	Bone Spring 1 Ss	213293	72011	3096	26	608	134925		603
3001540606	32	19S	29E	Bone Spring 1 Ss	243754	81606	2589	36	973	152761		3578
3001540584	32	19S	29E	Bone Spring 1 Ss	214766	78221	3072	15	673	129950		680
3001540606	32	19S	29E	Bone Spring 1 Ss		78663	3352	0	651	130698	366	540
3001540584	32	19S	29E	Bone Spring 1 Ss	195749	70891	3422	17	683	117441		964
3001540777	12	19S	29E	Bone Spring 2 Ss	211237	62106	11194	88	1452	133575		789
3001540778	12	19S	29E	Bone Spring 2 Ss	220688	66570	12206	66	1590	137383		732
3001540778	12	19S	29E	Bone Spring 2 Ss	210922	63737	10725	60	1439	132273		617
3001540782	12	19S	29E	Bone Spring 2 Ss	196138	62689	10129	36	1390	118800	98	929
3001540782	12	19S	29E	Bone Spring 2 Ss		72789	11481	40	1699	139551	61	620
3001540782	12	19S	29E	Bone Spring 2 Ss		87943	20188	99	2702	179698	183	600
3001540777	12	19S	29E	Bone Spring 2 Ss		77378	11310	33	1609	145992	171	660
3001540782	12	19S	29E	Bone Spring 2 Ss		77810	13519	232	1752	151421	183	540
3001538338	20	19S	29E	Bone Spring 2 Ss	214079	68545	11436	36	1947	129500	110	0
3001538421	20	19S	29E	Bone Spring 2 Ss	212073	68607	11378	31	2164	127200	122	0
3001539365	20	19S	29E	Bone Spring 2 Ss	204892	66120	11033	41	1821	123300	134	0

EXHIBIT F

All Constituents in mg/l

API	Section	Township	Range	Formation	TDS	Na	Ca	Fe	Mg	CL	HCO3	SO4
3001540037	20	19S	29E	Bone Spring 2 Ss	206939	68708	11434	41	1886	122200	146	0
3001538421	20	19S	29E	Bone Spring 2 Ss	218593	71348	11431	44	2171	130625		593
3001540037	20	19S	29E	Bone Spring 2 Ss	188897	58687	10476	29	1659	114294	49	1768
3001538338	20	19S	29E	Bone Spring 2 Ss		57466	11211	23	2455	117396	110	540
3001538421	20	19S	29E	Bone Spring 2 Ss		59008	11203	17	2524	119999	146	480
3001540037	20	19S	29E	Bone Spring 2 Ss		88453	11171	27	2368	164953	122	440
3001540037	20	19S	29E	Bone Spring 2 Ss	212555	61902	10789	34	1765	135296		786
3001538338	20	19S	29E	Bone Spring 2 Ss	215251	67241	11580	33	1943	130663	49	1549
3001538421	20	19S	29E	Bone Spring 2 Ss	222698	70153	11230	23	2195	135411	49	1399
3001539365	20	19S	29E	Bone Spring 2 Ss	192416	60668	10063	40	1543	116201	98	1863
3001538605	21	19S	29E	Bone Spring 2 Ss	187069	59558	9295	39	1457	112389	73	2422
3001539372	21	19S	29E	Bone Spring 2 Ss	179727	56773	9354	42	1408	108290	73	2022
3001538605	21	19S	29E	Bone Spring 2 Ss	212439	70396	10624	35	1653	126800	49	777
3001540134	21	19S	29E	Bone Spring 2 Ss	221551	66995	10754	24	2054	138800	37	652
3001538335	21	19S	29E	Bone Spring 2 Ss	207620	63676	10340	38	1579	129265	24	0
3001538605	21	19S	29E	Bone Spring 2 Ss		68390	10388	61	1720	130427	110	820
3001539374	21	19S	29E	Bone Spring 2 Ss		69882	10737	28	1836	133839	49	760
3001540134	21	19S	29E	Bone Spring 2 Ss		71254	10986	12	2354	138115	122	540
3001539372	21	19S	29E	Bone Spring 2 Ss		58456	10738	40	1975	116569	110	640
3001540036	21	19S	29E	Bone Spring 2 Ss		83934	10820	39	1849	155753	122	600
3001538335	21	19S	29E	Bone Spring 2 Ss	18243	5584	971	15	165	10069	220	1055
3001538335	21	19S	29E	Bone Spring 2 Ss	172529	55589	8279	37	1270	104676	24	1100
3001540036	21	19S	29E	Bone Spring 2 Ss	179518	56819	9252	57	1394	108013	98	2157
3001540134	21	19S	29E	Bone Spring 2 Ss	158405	49315	8392	23	1577	95620	122	1731
3001538334	22	19S	29E	Bone Spring 2 Ss	209176	74633	3152	32	653	127957		559
3001538334	22	19S	29E	Bone Spring 2 Ss	142243	45640	6959	44	989	85871	37	1319
3001540216	27	19S	29E	Bone Spring 2 Ss	205198	76060	2957	69	598	122742		502
3001538333	27	19S	29E	Bone Spring 2 Ss		56874	10448	40	1708	112925	146	540
3001538333	27	19S	29E	Bone Spring 2 Ss		78323	9979	32	1800	145351	98	640
3001540501	27	19S	29E	Bone Spring 2 Ss		86090	13546	25	1952	164708	171	580

EXHIBIT F

All Constituents in mg/l

API	Section	Township	Range	Formation	TDS	Na	Ca	Fe	Mg	CL	HCO3	SO4
3001540506	27	19S	29E	Bone Spring 2 Ss		84563	13920	39	2008	163345	98	740
3001539328	28	19S	29E	Bone Spring 2 Ss	209249	63419	10816	27	1939	130309	61	0
3001540206	28	19S	29E	Bone Spring 2 Ss	210487	63900	10990	45	1916	130880	61	0
3001540217	28	19S	29E	Bone Spring 2 Ss	200099	62122	10663	30	1899	122620	85	0
3001540207	28	19S	29E	Bone Spring 2 Ss		76325	13728	0	2631	152008	122	640
3001540217	28	19S	29E	Bone Spring 2 Ss		84893	11130	15	2281	159026	110	740
3001540217	28	19S	29E	Bone Spring 2 Ss	211734	70916	11464	16	2278	123941	98	0
3001539373	29	19S	29E	Bone Spring 2 Ss	204175	66112	11002	43	1752	122800	98	0
3001540423	29	19S	29E	Bone Spring 2 Ss	202518	66051	11044	45	1871	121000	134	0
3001540424	29	19S	29E	Bone Spring 2 Ss	199175	65110	10607	27	1713	119200	134	0
3001539373	29	19S	29E	Bone Spring 2 Ss	207229	72432	7735	62	1304	122859		588
3001539386	29	19S	29E	Bone Spring 2 Ss	210082	79107	2905	16	645	124634		624
3001539373	29	19S	29E	Bone Spring 2 Ss	207257	64962	11127	37	1762	125792	61	1442
3001539386	29	19S	29E	Bone Spring 2 Ss	207902	67569	9690	27	1472	126295	49	1128
3001540423	29	19S	29E	Bone Spring 2 Ss	191835	60132	10463	55	1576	116618	73	1132
3001539386	29	19S	29E	Bone Spring 2 Ss	210714	64075	11182	47	1749	130950	37	0
3001539373	29	19S	29E	Bone Spring 2 Ss		76748	10831	41	2005	145145	244	460
3001539386	29	19S	29E	Bone Spring 2 Ss		82889	11278	58	2174	156139	134	520
3001540423	29	19S	29E	Bone Spring 2 Ss	213597	61082	10818	31	1979	137006		753
3001540424	29	19S	29E	Bone Spring 2 Ss	206242	59619	10150	26	1615	132172		701
3001539386	29	19S	29E	Bone Spring 2 Ss	192324	60013	10466	27	1697	116431	61	1722
3001540035	32	19S	29E	Bone Spring 2 Ss	204442	69490	2892	17	616	128687		738
3001538476	32	19S	29E	Bone Spring 2 Ss	203063	60960	10276	46	1680	127495		669
3001538476	32	19S	29E	Bone Spring 2 Ss	197878	63015	9639	55	1655	119391	110	1990
3001539790	33	19S	29E	Bone Spring 2 Ss	194362	62735	10730	33	1733	116600	134	0
3001539806	33	19S	29E	Bone Spring 2 Ss	212965	67869	11454	40	2204	128700	146	0
3001539806	33	19S	29E	Bone Spring 2 Ss	211695	65999	10786	37	2077	129142		629
3001539806	33	19S	29E	Bone Spring 2 Ss	216504	62855	10959	36	2056	137871		647
3001539790	33	19S	29E	Bone Spring 2 Ss	168771	52934	9017	37	1376	102210	98	1308
3001540025	20	19S	29E	Bone Spring 3 Ss	103835	32098	6912	84	1008	62300	281	0

EXHIBIT F

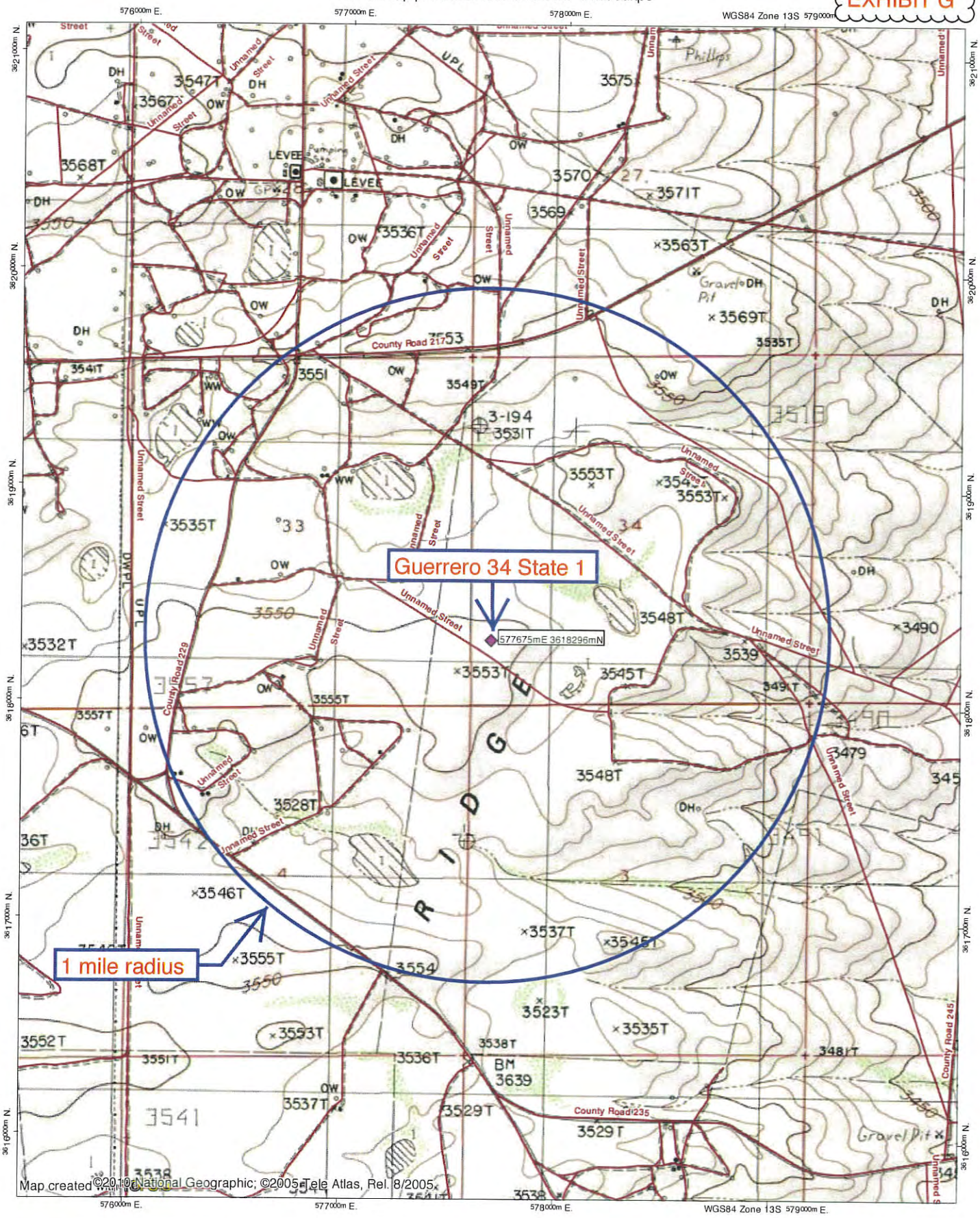
All Constituents in mg/l

API	Section	Township	Range	Formation	TDS	Na	Ca	Fe	Mg	CL	HCO3	SO4
3001540025	20	19S	29E	Bone Spring 3 Ss	76582	25463	2775	38	498	45756		930
3001542946	20	19S	29E	Bone Spring 3 Ss	106366	34602	4236	19	736	64935		703
3001542809	21	19S	29E	Bone Spring 3 Ss	117585	38613	4526	39	774	71782		550
3001542809	21	19S	29E	Bone Spring 3 Ss	115850	36308	4673	12	801	72335		564
3001543321	28	19S	29E	Bone Spring 3 Ss	105001	35624	3951	18	690	62695		685
3001502301	25	19S	28E	Delaware	55498					32420	601	984
3001503537	1	19S	29E	Devonian	29011					16000	520	1500
3001529331	21	18S	28E	Morrow	33151	11660	441	876	73	20051	516	5
3001523998	16	19S	28E	Morrow	56555		1680	60	730	34080	866	13
3001503612	32	19S	29E	Pennsylvanian	6420							
3001502638	8	18S	28E	Premier		65664	7000		3887	125400	71	798
3001502302	25	19S	28E	Queen	66874	23288	1804		608	39757	1154	262
3001502301	25	19S	28E	Queen								
3001502301	25	19S	28E	Queen								
3001501965	19	18S	28E	Queen/Grayburg	15275	8786	160	2	484	15000	280	98
3001501965	19	18S	28E	Queen/Grayburg	15275	8832	390	2	410	15000	140	600
3001501944	19	18S	28E	Queen/Grayburg	105912	19711	1360	0	0	101500	444	2640
3001501942	19	18S	28E	San Andres		90699	3277	0	1878	146802	14	5974
3001502303	26	19S	28E	Seven Rivers								
3001502280	21	19S	28E	Wolfcamp	118720					70200	2700	1080

EXHIBIT F

TOPO! map printed on 08/09/19 from "Untitled.tpo"

EXHIBIT G



NATIONAL GEOGRAPHIC

0.0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 miles
0.0 0.5 1.0 km

TN MN
7°
08/09/19

EXHIBIT G

New Mexico Office of the State Engineer

Water Column/Average Depth to Water

(A CLW##### in the POD suffix indicates the POD has been replaced & no longer serves a water right file.)

(R=POD has been replaced, O=orphaned, C=the file is closed)

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters) (In feet)

POD Number	Code	POD Sub-basin	County	Q 64	Q 16	Q 4	Sec	Tws	Rng	X	Y	Distance	Depth Well	Depth Water	Water Column
RA 09588		RA	ED		1	2	33	18S	28E	576976	3619384*	1293	300		
1 mile = 1610 m															
CP 00478 POD1		CP	ED	1	1	4	05	19S	28E	575300	3617036*	2688	312	145	167

Average Depth to Water: **145 feet**

Minimum Depth: **145 feet**

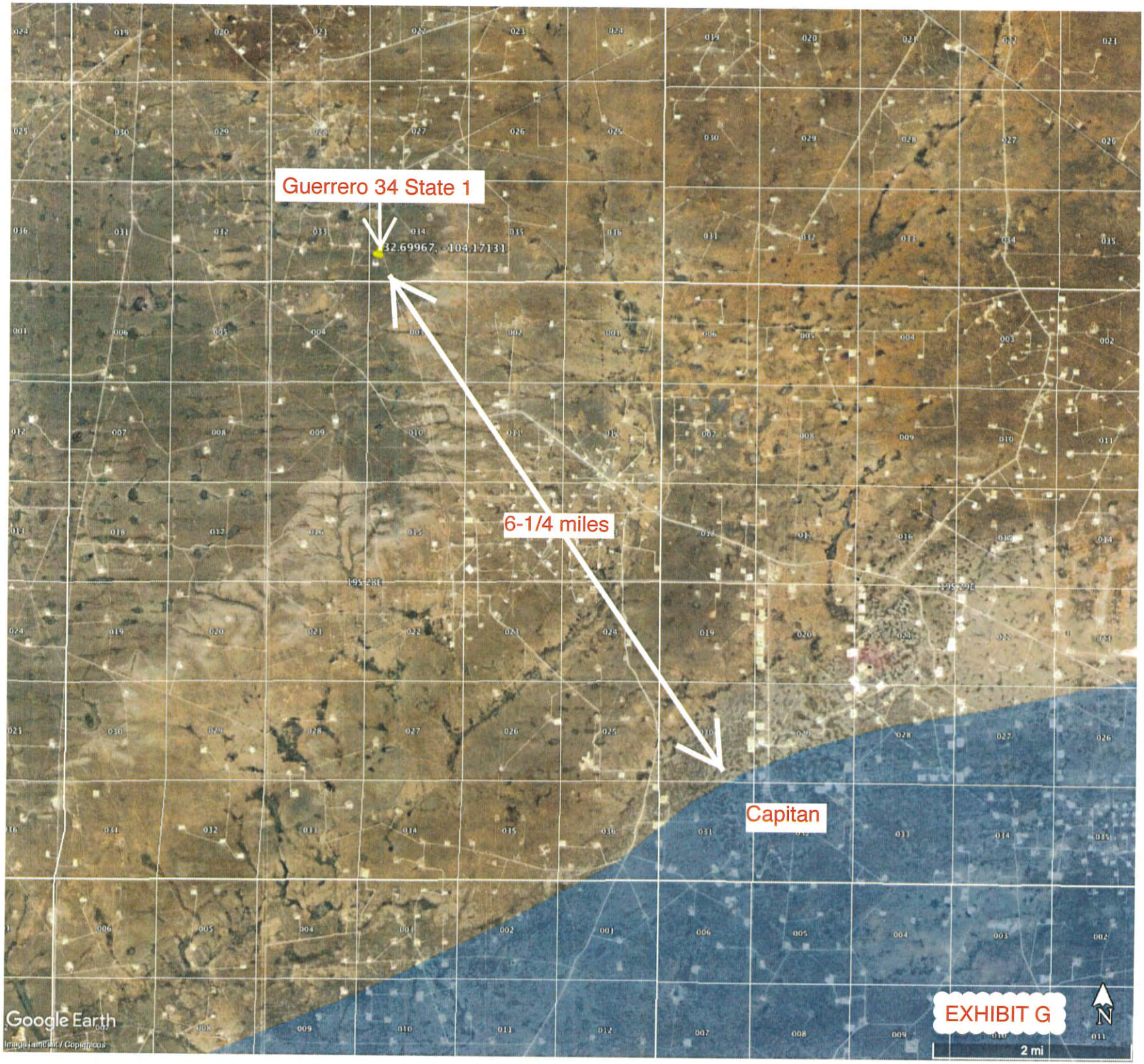
Maximum Depth: **145 feet**

Record Count: 2

UTMNAD83 Radius Search (in meters):

Easting (X): 577675 **Northing (Y):** 3618296 **Radius:** 3220

***UTM location was derived from PLSS - see Help**


Guerrero 34 State 1
32.69967, -104.17131
6-1/4 miles
Capitan
EXHIBIT G
N
2 mi
Google Earth

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37 Verano Loop, Santa Fe, New Mexico 87508 (505) 466-8120

EXHIBIT H

Seismic Risk Assessment

V-F Petroleum Inc.

Guerrero 34 State No. 1

Section 34, Township 18 South, Range 28 East

Eddy County, New Mexico

Cory Walk

Cory Walk

B.S., M.S.

Geologist

Permits West Inc.

August 12, 2019

EXHIBIT H

GENERAL INFORMATION

Guerrero 34 State #1 is located in the SW 1/4, section 34, T18S, R28E, about 16 miles southeast of Artesia, NM in the Permian Basin. V-F Petroleum Inc. proposes the injection zone to be within the Devonian formation through an open hole from 12,100'-14,000' below ground surface. This report assesses any potential concerns relating to induced seismicity along deep penetrating Precambrian faults or the connection between the injection zone and known underground potable water sources.

SEISMIC RISK ASSESSMENT

Historical Seismicity

Searching the USGS earthquake catalog resulted in no (0) earthquakes above a magnitude 2.5 within 6 miles (9.7 km) of the proposed deep disposal site since 1970 (Fig 1). The nearest historical earthquake, according to this dataset, occurred in 2003 about 20 miles (~32 km) away and had a magnitude of 3.6.

Basement Faults and Subsurface Conditions

A structure contour map (Fig. 1) of the Precambrian basement shows the Guerrero 34 State #1 is approximately 20 miles from several basement-penetrating faults inferred by Ewing et al (1990). Based on GIS data from Ruppel et al. (2009), **basic information about these faults are calculated and listed in Table 1.**

Snee and Zoback (2018) state, "In the western part of Eddy County, New Mexico, S_{Hmax} is ~north-south (consistent with the state of stress in the Rio Grande Rift; Zoback and Zoback, 1980) but rotates to ~east-northeast-west-southwest in southern Lea County, New Mexico and the northernmost parts of Culberson and Reeves counties, Texas." Around the Guerrero 34 State #1 site, Snee and Zoback indicate an **S_{Hmax} direction of N010°E and an A_φ of 0.57, indicating an extensional (normal) stress regime.**

Induced seismicity is a growing concern of deep SWD wells. Relatively new software developed by the Stanford Center for Induced and Triggered Seismicity allows for the probabilistic screening of deeply penetrating faults near the proposed injection zone (Walsh et al., 2016; Walsh et al., 2017). This software uses parameters such as stress orientations, fault strike/dip, injection rates, fault friction coefficients, etc. to estimate the potential for fault slip. Using the best available data as input parameters (Table 2), the Fault Slip Potential (FSP) models suggest the fault with the highest risk is fault 24 (Fig 2; Table 1). Fault 24 has an eight (0.08) percent chance of slip through the year 2042. **This model also suggests a minor pore pressure increase of 0.2 psi on fault 24 (Fig. 3; Table 1) due to the proposed SWD well.** A pressure increase of 1740 psi on this fault would result in a 100% probability of fault slip while an increase of 430 psi results in a 50% probability of fault slip.

GROUNDWATER SOURCES

Quaternary Alluvium acts as the principal aquifer used for potable ground water near the Guerrero 34 State #1 location (Hendrickson and Jones, 1952). Nicholson and Clebsch (1961) state, "Potable ground water is not available below the Permian and Triassic unconformity but, because this

boundary is not easily defined, the top of the Rustler anhydrite formation is regarded as the effective lower limit of 'potable' ground water." Around the Guerrero 34 State #1, the top of a thick anhydrite unit interpreted to represent the Rustler Formation lies at a depth of ~450 feet bgs.

STRATIGRAPHY

Thick permeability barriers exist above (Woodford shale; 40 ft thick) and below (Simpson Group; 95 ft thick) the targeted Devonian injection zone (Plate 2, Comer et al., 1991; Fig. 8, Frenzel et al., 1988). Well data indicates ~11,600 ft of rock separating the top of the Devonian from the previously stated lower limit of potable water at the top of the Rustler anhydrite formation.

CONCLUDING STATEMENT

Geologic and engineering data evaluated around the Guerrero 34 State #1 well show no potential structural or stratigraphic connection between the Devonian injection zone and any subsurface potable water sources. Based on Fault Slip Potential modeling there is an 8% probability (0.08) of inducing seismic activity along nearby deeply penetrating Precambrian faults.

EXHIBIT H

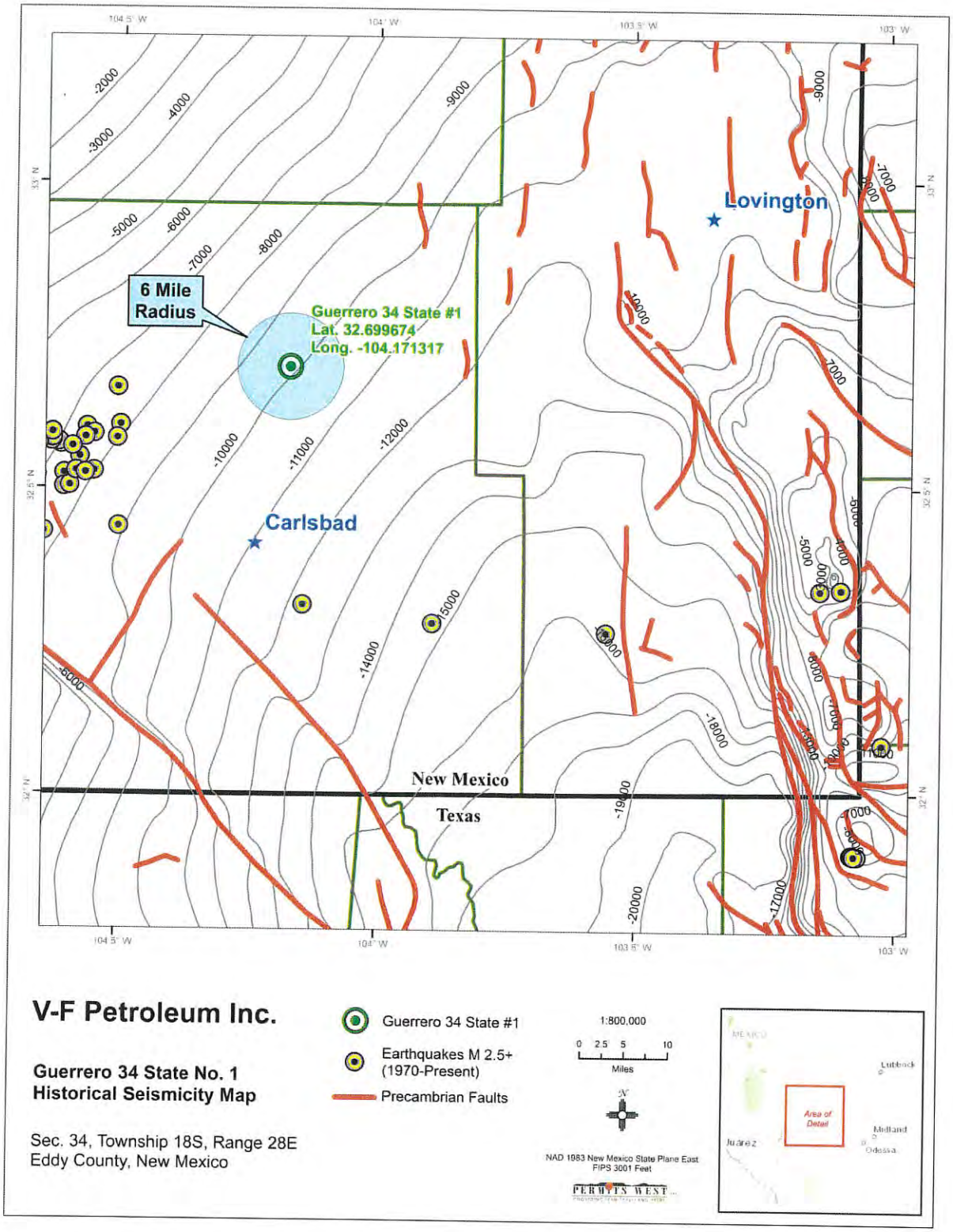

Figure 1. Structural contour map of the Precambrian basement in feet below sea level. Red lines represent the locations of Precambrian basement-penetrating faults (Ewing et al., 1990). The Guerrero 34 State #1 well lies ~20 miles W of the closest deeply penetrating fault and 20 miles from the closest historic earthquake.

EXHIBIT H

Table 1: Nearby Basement Fault Information

ID	Distance from proposed Guerrero 34 State (mi)	Strike (°)	Dip (°)	FSP	Pore Pressure change after 20 years (psi)
Fault 24	19.9	350	70	0.08	0.20
Fault 25	20.2	350	70	0.09	0.10
Fault 2	23.3	33	70	0.06	0.00

Table 2: Fault Slip Potential model input parameters

Faults	Value	Notes
Friction Coefficient	0.58	Ikari et al. (2011)
Dip Angle (deg)	70	Snee and Zoback (2018)
Stress		
Vertical stress gradient (psi/ft)	1.1	Hurd and Zoback (2012)
Max Horizontal Stress Direction (deg)	10	Snee and Zoback (2018)
Depth for calculations (ft)	14000	Proposed injection zone
Initial Reservoir Pressure Gradient (psi/ft)	0.7	calculated from mud wt (ppg) used in drilling at these depths
A Phi Parameter	0.57	Snee and Zoback (2018)
Reference Friction Coefficient	0.58	Ikari et al. (2011)
Hydrology		
Aquifer thickness (ft)	2000	Proposed injection zone
Porosity (%)	4	
Permeability (mD)	150	
Injection Rate (bbl/day)	25000	Maximum proposed injection rate

EXHIBIT H

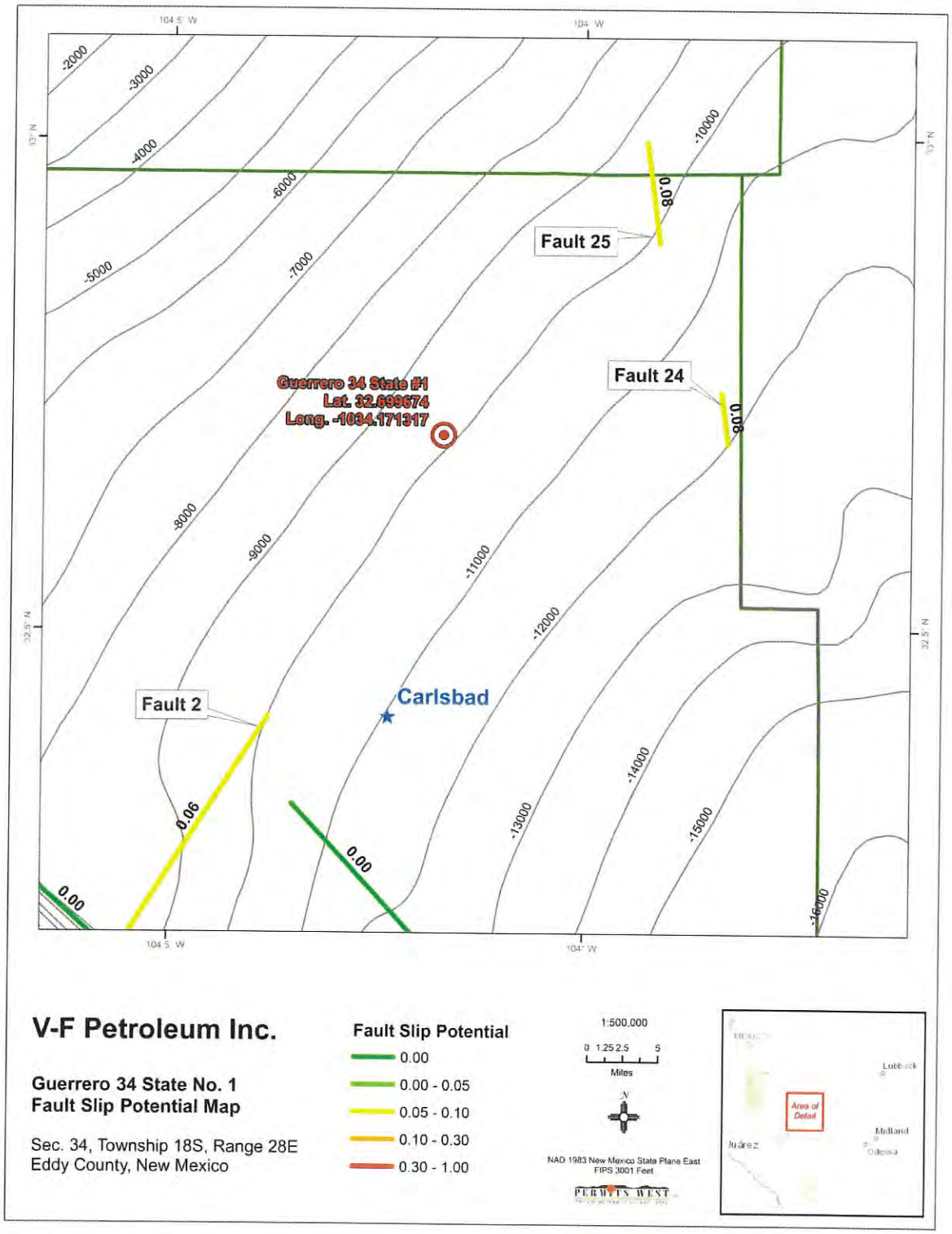

Figure 2. Precambrian fault map of southeastern New Mexico as mapped by Ewing et al. (1990). Faults are colored based on probability of fault slip as modeled using Fault Slip Potential software (Walsh and Zoback, 2016). Labeled values represent the calculated fault slip potential using the parameters indicated in Table 1. Contours show the top of the Precambrian basement in feet below sea level.

EXHIBIT H

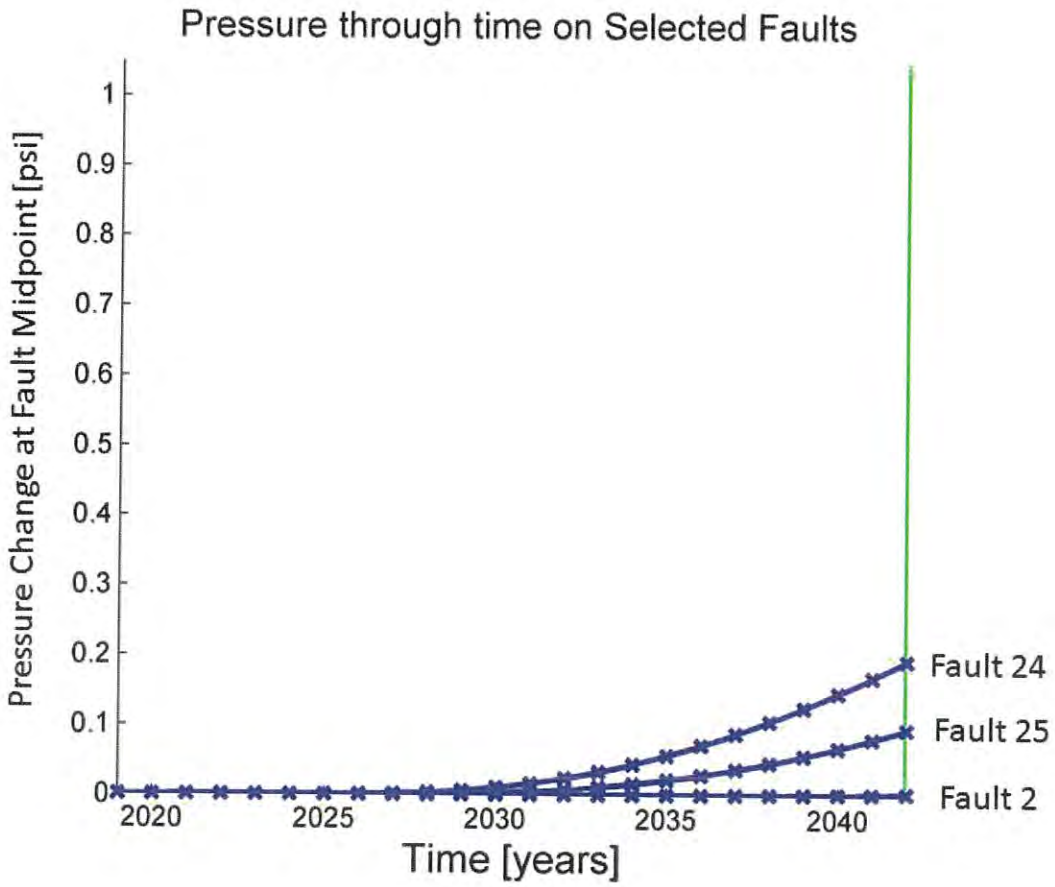

Figure 3. A scatter plot showing the modeled change of pore pressure on faults 24, 25, and 2 through time, as a response to the proposed SWD well.

EXHIBIT H

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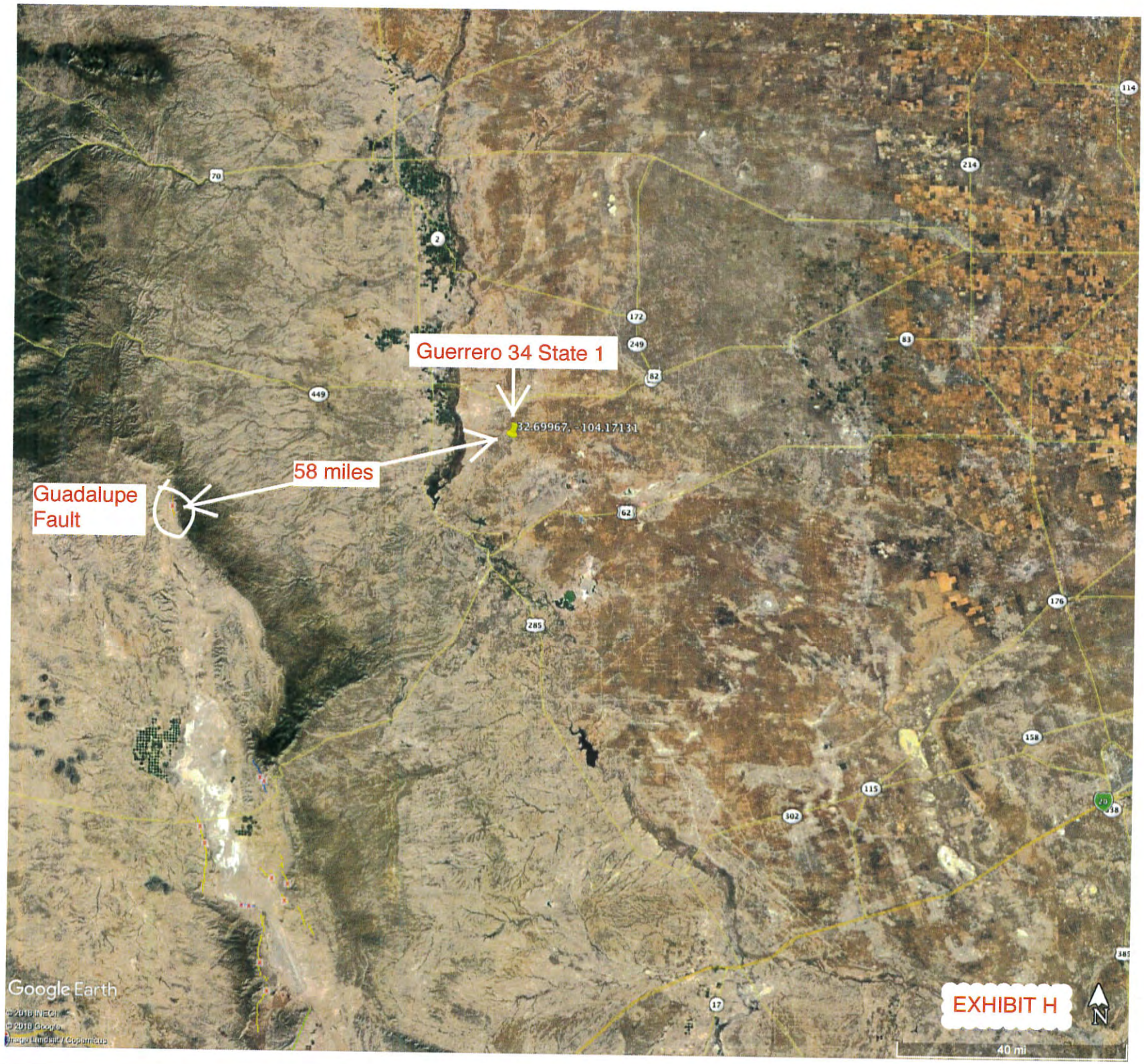
Guerrero 34 State 1
32.69967, -104.17131
58 miles
Guadalupe Fault
EXHIBIT H
N
40 mi
Google Earth

Affidavit of Publication

No. 25175

State of New Mexico

County of Eddy:

Danny Scott

being duly sworn says that he is the **Publisher**

of the Artesia Daily Press, a daily newspaper of General circulation, published in English at Artesia, said county and state, and that the hereto attached

Legal Ad

was published in a regular and entire issue of the said Artesia Daily Press, a daily newspaper duly qualified for that purpose within the meaning of Chapter 167 of the 1937 Session Laws of the state of New Mexico for

1 Consecutive weeks/day on the same day as follows:

First Publication	June 26, 2019
Second Publication	
Third Publication	
Fourth Publication	
Fifth Publication	
Sixth Publication	
Seventh Publication	

Subscribed and sworn before me this 26th day of June 2019

OFFICIAL SEAL
Latisha Romine
NOTARY PUBLIC-STATE OF NEW MEXICO
My commission expires: 5/12/2023

Latisha Romine

Latisha Romine
Notary Public, Eddy County, New Mexico

Copy of Publication:

EXHIBIT I

Legal Notice

V-F Petroleum Inc. will apply to re-enter, directionally drill, deepen, and convert the Guerrero 34 State 1 to a saltwater disposal well. The well will dispose into the Devonian formation from 12,060' to 14,000' (TVD). It is 16 miles southeast of Artesia, NM and 19 miles north-northeast of Carlsbad, NM. SHL is at 990 FSL & 329 FWL Sec. 34, T. 18 S., R. 28 E., Eddy County, NM. BHL will be at 990 FSL & 480 FWL Sec. 34, T. 18 S., R. 28 E., Eddy County, NM. Maximum disposal rate will be 25,000 bwpd. Maximum injection pressure will be 2,412 psi. Interested parties must file objections or requests for hearing with the NM Oil Conservation Division, 1220 South Saint Francis Dr., Santa Fe, NM 87505 within 15 days. Additional information can be obtained by contacting: Brian Wood, Permits West, Inc., 37 Verano Loop, Santa Fe, NM 87508. Phone number is (505) 466-8120.

Published in the Artesia Daily Press, Artesia, N.M., June 26, 2019 Legal No. 25175.

CARLSBAD
CURRENT-ARGUS

EXHIBIT I

AFFIDAVIT OF PUBLICATION

Ad No.
0001289646

PERMITS WEST, INC.
37 VERANO LOOP

SANTA FE NM 87508

I, a legal clerk of the **Carlsbad Current-Argus**, a newspaper published daily at the City of Carlsbad, in said county of Eddy, state of New Mexico and of general paid circulation in said county; that the same is a duly qualified newspaper under the laws of the State wherein legal notices and advertisements may be published; that the printed notice attached hereto was published in the regular and entire edition of said newspaper and not in supplement thereof on the date as follows, to wit:

06/26/19

Legal Clerk

Subscribed and sworn before me this
26th of June 2019.

State of WI, County of Brown
NOTARY PUBLIC

11/9/22
My Commission Expires

KAZOUA YANG
NOTARY PUBLIC
STATE OF WISCONSIN

V-F Petroleum Inc. will apply to re-enter, directionally drill, deepen, and convert the Guerrero 34 State 1 to a saltwater disposal well. The well will dispose into the Devonian formation from 12,060' to 14,000' (TVD). It is 16 miles southeast of Artesia, NM and 19 miles northnortheast of Carlsbad, NM. SHL is at 990 FSL & 329 FWL Sec. 34, T. 18 S., R. 28 E., Eddy County, NM. BHL will be at 990 FSL & 480 FWL Sec. 34, T. 18 S., R. 28 E., Eddy County, NM. Maximum disposal rate will be 25,000 bwpd. Maximum injection pressure will be 2,412 psi. Interested parties must file objections or requests for hearing with the NM Oil Conservation Division, 1220 South Saint Francis Dr., Santa Fe, NM 87505 within 15 days. Additional information can be obtained by contacting: Brian Wood, Permits West, Inc., 37 Verano Loop, Santa Fe, NM 87508. Phone number is (505) 466-8120.
Pub: June 26, 2019 #1289646

Ad#:0001289646
P O : 0001289646
# of Affidavits :0.00

PERMITS WEST, INC.
PROVIDING PERMITS for LAND USERS
37 Verano Loop, Santa Fe, New Mexico 87508 (505) 466-8120

EXHIBIT J

August 13, 2018

NM State Land Office
PO Box 1148
Santa Fe NM 87504

TYPICAL NOTICE

V-F Petroleum Inc. is applying (see attached application) to re-enter, directionally drill, deepen, and convert the Guerrero 34 State 1 to a saltwater disposal well. As required by NM Oil Conservation Division (NMOCD) rules, I am notifying you of the following proposal. This letter is a notice only. No action is needed unless you have questions or objections.

Well: Guerrero 34 State 1 TD = 14,000'
Proposed Disposal Zone: Devonian (12,060' - 14,000')
Surface Hole Location: 990' FSL & 330' FWL Sec. 34, T. 18 S., R. 28 E.
Bottom Hole Location: 990' FSL & 480' FWL Sec. 34, T. 18 S., R. 28 E.
Approximate Location: in Eddy County 16 miles southeast of Artesia, NM
Applicant Name: V-F Petroleum Inc. (432) 683-3344
Applicant's Address: PO Box 1889, Midland TX 79702

Submittal Information: Application for a saltwater disposal well will be filed with the NMOCD. If you have an objection, or wish to request a hearing, then it must be filed with the NMOCD within 15 days of receipt of this letter. The New Mexico Oil Conservation Division address is 1220 South St. Francis Dr., Santa Fe, NM 87505. Their phone number is (505) 476-3440.

Please call me if you have any questions.

Sincerely,

B. Wood

Brian Wood

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Midland TX 79701
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Oklahoma City OK 73102
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Finney Oil Company
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Artesia NM 88211
VF Guerrero 34 State 1

7019 0140 0000 9915 7160

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1306 S 9th St.
Artesia NM 88210
VF Guerrero 34 State 1

7019 0140 0000 9915 7177

Hanagan & Hanagan
PO Box 1737
Roswell NM 88201
VF Guerrero 34 State 1

7019 0140 0000 9915 7184

Marathon Oil Co
5555 San Felipe St, Mail Stop #3308
Houston TX 77056
VF Guerrero 34 State 1

7019 0140 0000 9915 7191

Marathon Oil Co
PO Box 2069
Houston TX 77252
VF Guerrero 34 State 1

7019 0140 0000 9915 7207

Marathon Oil Permian LLC
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Houston TX 77056
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VF Guerrero 34 State 1

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Sent To: 609 Elora Drive
Carlsbad NM 88220
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VF Guerrero 34 State 1

7019 0140 0000 9915 7306

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