

## MEMO

**TO:** George Wissmann, General Manager, Trinity Glen Rose Groundwater Conservation District

**FROM:** Uvashree Mohandass and Rohit Goswami, PhD, PE

**SUBJECT:** **Assessment of potential production from Statutorily Exempt (SE) wells in the Trinity Glen Rose Groundwater Conservation District (TGRGCD)**

**DATE:** **March 9, 2021**

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WSP supported the Trinity Glen Rose Groundwater Conservation District (TGRGCD, the District) in developing estimates of potential production from “grandfathered”, or statutorily exempt, wells in the District. For the purposes of this memo, statutorily exempt (SE) wells were those existing wells that were: a) not categorized as exempt due to their status as “domestic and livestock” wells, or b) were wells capable of producing more than 10,000 gallons per day but were still granted “exempt” status under the enacting legislation signed into law September 1, 2001 and confirmed by voters in 2002.

WSP reviewed Public Water Supply (PWS) well information, historic pumpage data provided by the District, well reports from Texas Water Development Board (TWDB), aquifer test results, and other information to assess the potential production from the SE wells. The District’s data was sorted and organized to determine the pumping data associated with each well. Further analysis results indicated the presence of 129 SE wells in the District’s database classified as PWS SE wells. Figure 1 shows the location of the 129 SE wells and more details on the estimated pumping rates are available for these identified 129 SE wells in Table 1. For the SE wells with production history, the pumping was estimated directly from the recent 5-year pumping data. However, for other wells where pumping history is not available, a subjective pumping factor of 0.75 was used to estimate production data from well. This pumping factor of 0.75 was multiplied by the estimated pumping rate from the aquifer test from the well. The intent of the pumping factor is to account for the potential reduced production capacity from the well on a long-term basis as compared to the 5-year pumping data estimate. The factors applied herein and other assumptions in the evaluation are meant to provide upper estimates of potential production during average and wet conditions. Production potential during dry seasons and extended droughts is projected to be lesser than these estimates.

## ESTIMATING POTENTIAL PRODUCTION FROM SE WELLS

### **Type A: SE wells with production history**

WSP estimated average use from all SE wells by calculating the use over the most recent 5-year pumping data (2015-2019) provided by the District. Out of the earlier identified 129 SE wells, 69 SE wells were found to have historical pumping data. Based on the 5-year averaging approach, the annual average production from the 69 SE wells with historic pumping data was estimated to be 12,629 acre-feet per year (afy).

### **Type B: SE wells with pumping Test**

Of the remaining 60 wells, 21 SE wells did not have historic pumping information but did have good information from 36-hour pumping tests. To estimate the potential long-term production from each of these wells, WSP used the 36-hour pumping rates in GPM and computed the potential annual production rate for each well, which was relatively consistent with the potential annual production from similar capacity wells located within the District. The total estimated production from these 21 SE wells was estimated to be 6,436 afy.

### **Type C: SE wells with Well Reports**

Of the remaining 39 wells, 28 wells did not have historical pumping data nor pumping test data from the District. For these 28 SE wells, pumpage data was obtained from well reports from the TWDB groundwater database. The total estimated production from these 28 SE wells was estimated to be 4,682 afy.

### **Type D: Estimating SE production for other wells**

The remaining 11 SE wells did not have historical pumping data or pumping test data. For these 11 SE wells, the potential production was estimated by evaluating information from similar nearby wells. The production data for the District has been obtained from other public well databases, including the TWDB Groundwater database, the State Drillers Report database, and Texas Commission on Environmental Quality (TCEQ) well records. Figure 2 shows the TWDB and TCEQ PWS wells in the District. To estimate the production from each of these wells, WSP used the kriging technique available from within the spatial analyst tool within ArcGIS®. The total estimated potential production from these 11 SE wells was determined to be 1,934 afy.

As reported earlier, Table 1 below summarizes the estimated potential production from each of the earlier identified 129 SE wells in the District. The total sum of the estimated potential production was determined to be 25,681 afy.

**Table 1 Estimated potential production from each well**

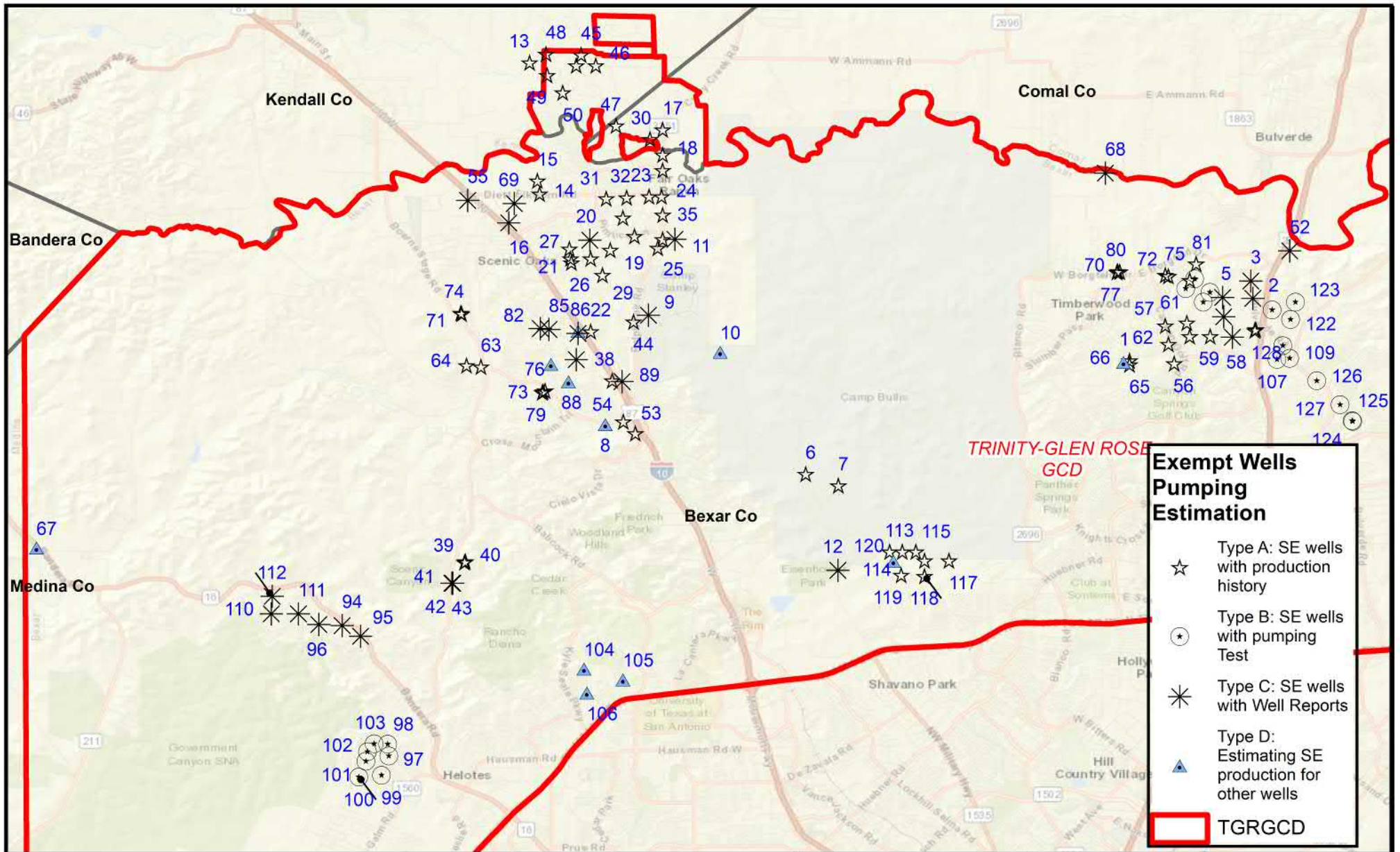
<b>Well No.</b>	<b>Name</b>	<b>Data Source</b>	<b>Pumping in GPM</b>	<b>Factor for estimating Production data</b>	<b>Net Production in GPM</b>	<b>Net Production in Ac-Ft/Yr</b>
<b>TYPE A: SE Wells with Production History</b>						
1	SAWS-095WP1 Wild Turkey 1	Historic Pumping Data	138.00	1	138	223
2	Bullis - Well 15	Historic Pumping Data	50.00	1	50	81
3	Bullis - Well 3	Historic Pumping Data	32.00	1	32	52
4	CR-1	Historic Pumping Data	10.50	1	10.5	17
5	Enchanted Oaks Well 1	Historic Pumping Data	1.85	1	1.85	3
6	Enchanted Oaks Well 2	Historic Pumping Data	15.00	1	15	24
7	Estates of Stonegate #1	Historic Pumping Data	17.41	1	17.41	28.08
8	Estates of Stonegate #2	Historic Pumping Data	17.40	1	17.4	28.07
9	FOR 10	Historic Pumping Data	12.39	1	12.39	20
10	FOR 12	Historic Pumping Data	11.77	1	11.77	19
11	FOR 13	Historic Pumping Data	8.05	1	8.05	13
12	FOR 16	Historic Pumping Data	8.05	1	8.05	13
13	FOR 17	Historic Pumping Data	13.60	1	13.6	22
14	FOR 2	Historic Pumping Data	16.11	1	16.11	26
15	FOR 21	Historic Pumping Data	11.00	1	11	18
16	FOR 22	Historic Pumping Data	15.00	1	15	24
17	FOR 25	Historic Pumping Data	11.00	1	11	18
18	FOR 26	Historic Pumping Data	12.00	1	12	19
19	FOR 27	Historic Pumping Data	6.00	1	6	10
20	FOR 28	Historic Pumping Data	20.00	1	20	32
21	FOR 31	Historic Pumping Data	18.60	1	18.60	30
22	FOR 32	Historic Pumping Data	6.00	1	6	10
23	FOR 4	Historic Pumping Data	13.02	1	13.02	21

<b>Well No.</b>	<b>Name</b>	<b>Data Source</b>	<b>Pumping in GPM</b>	<b>Factor for estimating Production data</b>	<b>Net Production in GPM</b>	<b>Net Production in Ac-Ft/Yr</b>
24	FOR 5	Historic Pumping Data	15.50	1	15.5	25
25	FOR 6	Historic Pumping Data	12.40	1	12.4	20
26	FOR 7	Historic Pumping Data	22.00	1	22	35
27	FOR 8	Historic Pumping Data	17.36	1	17.36	28
28	FOR 9	Historic Pumping Data	18.00	1	18	29
29	Gentry Research Group	Historic Pumping Data	12.00	1	12	19
30	Grey Forest Well 1	Historic Pumping Data	32.24	1	32.24	52
31	Grey Forest Well 2	Historic Pumping Data	2.00	1	2	3
32	J-1	Historic Pumping Data	3.00	1	3	5
33	K-1	Historic Pumping Data	11.77	1	11.77	19
34	K-2	Historic Pumping Data	9.30	1	9.30	15
35	K-3	Historic Pumping Data	12.39	1	12.39	20
36	K-5	Historic Pumping Data	14.25	1	14.25	23
37	K-6	Historic Pumping Data	14.87	1	14.87	24
38	K-7	Historic Pumping Data	8.68	1	8.68	14
39	K-8	Historic Pumping Data	14.26	1	14.26	23
40	Las Palapas	Historic Pumping Data	1.86	1	1.86	3
41	Leon Springs Business Park	Historic Pumping Data	50.00	1	50	81
42	Oliver Ranch 10	Historic Pumping Data	241.78	1	241.78	390
43	Oliver Ranch 2	Historic Pumping Data	320.52	1	320.52	517
44	Oliver Ranch 5	Historic Pumping Data	193.43	1	193.43	312
45	Oliver Ranch 6	Historic Pumping Data	378.18	1	378.18	610
46	Oliver Ranch 7	Historic Pumping Data	260.38	1	260.38	420
47	Oliver Ranch 9	Historic Pumping Data	208.93	1	208.93	337
48	Rose Palace/Scenic Loop	Historic Pumping Data	12.50	1	12.5	20
49	Rose Palace/Scenic Loop	Historic Pumping Data	12.50	1	12.5	20
50	SAWS-095WP2 Wild Turkey 2	Historic Pumping Data	37.20	1	37.20	60
51	SWWC-#1BVNH	Historic Pumping Data	25.00	1	25	40
52	SWWC-#1CNTYB	Historic Pumping Data	60.00	1	60	97
53	SWWC-#1OaksN	Historic Pumping Data	40.00	1	40	65
54	SWWC-#1STGCH	Historic Pumping Data	32.00	1	32	52

<b>Well No.</b>	<b>Name</b>	<b>Data Source</b>	<b>Pumping in GPM</b>	<b>Factor for estimating Production data</b>	<b>Net Production in GPM</b>	<b>Net Production in Ac-Ft/Yr</b>
55	SWWC-#2CNTYB	Historic Pumping Data	32.00	1	32	52
56	SWWC-#2OaksN	Historic Pumping Data	6.20	1	6.20	10
57	SWWC-#2STGCH	Historic Pumping Data	17.00	1	17	27
58	SWWC-#3BVNH	Historic Pumping Data	13.00	1	13	21
59	SWWC-#3OaksN	Historic Pumping Data	3.10	1	3.10	5
60	SWWC-#3STGCH	Historic Pumping Data	16.00	1	16	26
61	SWWC-#4BVNH	Historic Pumping Data	10.54	1	10.54	17
62	SWWC-#7OaksN	Historic Pumping Data	35.34	1	35.34	57
63	WECO-Stein Ranch #17 195WP1	Historic Pumping Data	23.00	1	23	37
64	WECO-Stein Ranch #18 194WP1	Historic Pumping Data	366.00	1	366	590
65	WECO-Stein Ranch #19 193WP1	Historic Pumping Data	1,241.00	1	1241	2,002
66	WECO-Stein Ranch #20 192WP1	Historic Pumping Data	472.00	1	472	761
67	WECO-Stein Ranch #22 191WP1	Historic Pumping Data	525.00	1	525	847
68	WECO-Stein Ranch #24 190WP1	Historic Pumping Data	2,169.00	1	2169	3,499
69	WECO-Stein Ranch #27 197WP1	Historic Pumping Data	381.00	1	381	615
<b>TYPE B: SE Wells with Pump Test</b>						
70	WECO-185WP1	Pump Test	312.00	0.75	234	377
71	WECO-185WP2	Pump Test	312.00	0.75	234	377
72	WECO-185WP3	Pump Test	591.00	0.75	443.25	715
73	WECO-185WP4	Pump Test	591.00	0.75	443.25	715
74	WECO-De La Vega #83	Pump Test	452.00	0.75	339	547
75	WECO-De La Vega #84	Pump Test	339.00	0.75	254.25	410
76	WECO-De La Vega #85	Pump Test	387.00	0.75	290.25	468
77	WECO-Indian Springs # 90	Pump Test	169.00	0.75	126.75	204
78	WECO-Indian Springs #100	Pump Test	306.00	0.75	229.5	370
79	WECO-Indian Springs #102	Pump Test	142.00	0.75	106.5	172
80	WECO-Indian Springs #88	Pump Test	166.00	0.75	124.5	201
81	WECO-Iron Horse #36	Pump Test	216.00	0.75	162	261
82	WECO-Iron Horse #37	Pump Test	331.00	0.75	248.25	400
83	WECO-Iron Horse #39	Pump Test	176.00	0.75	132	213

<i>Well No.</i>	<i>Name</i>	<i>Data Source</i>	<i>Pumping in GPM</i>	<i>Factor for estimating Production data</i>	<i>Net Production in GPM</i>	<i>Net Production in Ac-Ft/Yr</i>
84	WECO-Iron Horse #41	Pump Test	20.00	0.75	15	24
85	WECO-Iron Horse #42	Pump Test	40.00	0.75	30	48
86	WECO-Iron Horse #43	Pump Test	170.00	0.75	127.5	206
87	WECO-Iron Horse #44	Pump Test	240.00	0.75	180	290
88	WECO-Peerman 80	Pump Test	134.00	0.75	100.5	162
89	WECO-Peerman 81	Pump Test	108.00	0.75	81	131
90	WECO-Peerman 82	Pump Test	118.00	0.75	88.5	143
	<i>TYPE C: SE Wells with Well Reports</i>					
91	Oak Hills MHP	WellData_6819212	18.00	0.75	13.5	22
92	FOR 15	WellData_6819309	70.00	0.75	52.5	85
93	Fair Oaks Ranch Center	WellData_6819325	16.00	0.75	12	19
94	Spring Creek UMC	WellData_6819330	10.00	0.75	7.5	12
95	The Oaks-Dairy Barn	WellData_6819624	154.00	0.75	115.5	186
96	The Oaks-Barn Owl	WellData_6819624 (1)	150.00	0.75	112.5	181
97	The Oaks-Hazy Hollow 1	WellData_6819626	105.00	0.75	78.75	127
98	The Oaks-Hazy Hollow 2	WellData_6819634	35.00	0.75	26.25	42
99	US Storage Center	WellData_6819637	32.00	0.75	24	39
100	Camp Stanley McFarland Well 10	WellData_6819644	40.00	0.75	30	48
101	Camp Stanley	WellData_6820410	48	0.75	36	58.07
102	112 Specht Rd, San Antonio, Tx	WellData_6821112	18	0.75	13.5	21.78
103	28190 US Hwy 281 N	WellData_6821216	8	0.75	6	9.68
104	Oliver Ranch Project	WellData_6821416	400	0.75	300	483.90
105	Bulverde Rd.	WellData_6821422	380	0.75	285	459.71
106	Bulverde Rd.	WellData_6821423	343	0.75	257.25	414.95
107	Bulverde Rd.	WellData_6821509	200	0.75	150	241.95
108	Bulverde Rd.	WellData_6821510	500	0.75	375	604.88
109	WECO-Shadow Canyon #59	WellData_6827101	66	0.75	49.5	79.84
110	WECO-Camp #104	WellData_6827107	315	0.75	236.25	381.07
111	WECO-Camp #105	WellData_6827108	286	0.75	214.5	345.99
112	WECO-Camp #114	WellData_6827109	280	0.75	210	338.73

<b>Well No.</b>	<b>Name</b>	<b>Data Source</b>	<b>Pumping in GPM</b>	<b>Factor for estimating Production data</b>	<b>Net Production in GPM</b>	<b>Net Production in Ac-Ft/Yr</b>
113	WECO-Shadow Canyon #57	WellData_6827110	60	0.75	45	72.59
114	WECO-Shadow Canyon #61	WellData_6827112	280	0.75	210	338.73
115	19010 Scenic Loop Rd, Helotes, TX 78023	WellData_6827206	8	0.75	6	9.68
116	19010 Scenic Loop Rd, Helotes, TX 78023	WellData_6827207	8	0.75	6	9.68
117	19010 Scenic Loop Rd, Helotes, TX 78023	WellData_6827209	8	0.75	6	9.68
118	19399 NW Military Hwy, San Antonio	WellData_6828212	32	0.75	24	38.71
<b>TYPE D: Estimated SE Production</b>						
119	24161 Boerne Stage, San Antonio	Estimation	16	0.75	12	19.36
120	Camp Stanley	Estimation	65	0.75	48.75	78.63
121	25734 Wild Turkey Rd SA TX 78224	Estimation	97.34	0.75	73	117.75
122	20145 Bandera Rd, Helotes, TX, 78023	Estimation	50	0.75	37.5	60.49
123	26058 Hazy Hollow Dr	Estimation	80	0.75	60	96.78
124	26058 Hazy Hollow Dr	Estimation	80	0.75	60	96.78
125	26058 Hazy Hollow Dr	Estimation	110	0.75	82.5	133.07
126	WECO-Kyle Seal # 13	Estimation	200	0.75	150	241.95
127	WECO-Kyle Seal # 15	Estimation	200	0.75	150	241.95
128	WECO-Kyle Seal #30	Estimation	200	0.75	150	241.95
129	WECO-Stein Ranch #28	Estimation	500	0.75	375	604.88

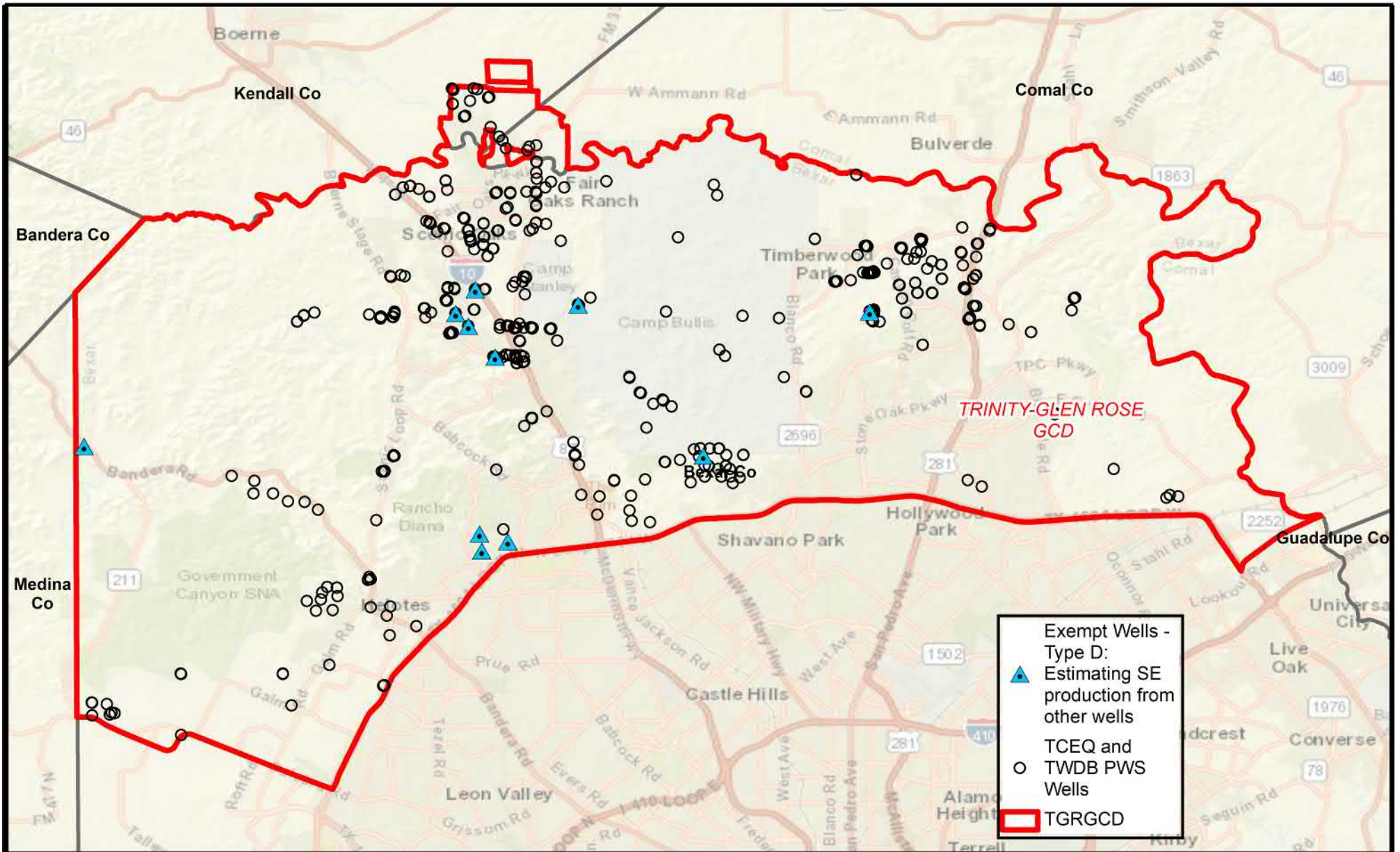


WSP USA Inc.  
1101 S Capital of Texas Hwy  
Suite B-220  
Austin, Texas 78746  
512-327-9640

FIGURE 1

Location of method used to estimate the potential production from each GE well





- Exempt Wells - Type D:
- ▲ Estimating SE production from other wells
- TCEQ and TWDB PWS Wells
- ▭ TGRGCD



**wsp**  
 WSP USA Inc.  
 1101 S Capital of Texas Hwy  
 Suite B-220  
 Austin, Texas 78746  
 512-327-9640

FIGURE 2  
 TCEQ and TWDB PWS Wells  
 within Trinity Glen Rose GCD