

Groundwater Concentration and Pilot Test Field Parameter Data

Boeing Field Chevron

Well	Date	pH	Conductivity (µS/cm)	Temp (deg C)	ORP (mV)	DO (mg/L)	GRO (µg/L)	DRO (µg/L)	Benzene (µg/L)	Initial Purge Water Color Observation	Petroleum Observation	Distance to Most Recent / Closest Injection Point (feet)	Distance to Injection Points by Event 1, 2, 3 (feet)
Upper Saturated Zone Wells													
AS-1	4/17/2019	6.49	589	13.1	71.1	0.4	4,150	270	702	Results shown for comparison to Aug 2022	--	--	--
AS-1	8/15/2022	6.6	900	17.1	-0.9	0.54	474	617	5.98	clear	--	--	--
AS-1	9/27/2022	7.67	3,254	17.5	-240.4	0.1	5,960	3,990	109	opaque orange/red rust color	--	Inj 1 - 7.6	7.6 ft
AS-1	2/23/2023	7.85	2,679	10	-258.9	8.09	9,200	4,400	43	grayish brown	organic odor	Inj 3 - 7.3	5.9, 7.3 ft
AS-1	4/25/2023	7.01	3,343	12.2	-73.3	0.68	3,000	< 450	16	very dark brown then reddish-brown	petro odor	Inj 3 - 7.3	--
AS-1	7/20/2023	7.23	2,554	16.5	520.9	0.41	2,900	720	25	grey cloudy	odor	Inj 3 - 7.3	--
IP-4	8/15/2022	6.53	992	16.6	-115.5	0.32	126,000	9,500	54.6	clear	odors present	--	--
IP-4	9/27/2022	6.66	1,100	17.3	-134.7	0.16	114,000	17,300	47.2	opaque	--	Inj 1 - 8.7	8.7
IP-4	2/23/2023	7.34	1,071	8.5	-98.5	8.06	63,000	3,300	27	clear	petro odor	Inj 3 - 10	8.6, 10
IP-4	4/25/2023	6.77	1,838	12.5	-56.1	0.43	57,000	< 4,500	26	clear	petro odor	Inj 3 - 10	--
IP-4	7/20/2023	6.7	1,000	16.4	368.4	0.7	66,000	6,300	41	clear	petro odor sheen	Inj 3 - 10	--
TW-1	2/22/2023	9.31	1,259	8.9	37.7	7.2	<100	130	< 0.20	brown cloudy	no odor	Inj 3 - 7.0	13.3, 14.8, 7.0
TW-1	4/24/2023	8.39	1,510	11.5	80.1	3.08	<100	< 210	< 0.20	orangey brown cloudy	no odor, no sheen	Inj 3 - 7.0	--
TW-1	7/19/2023	8.13	1,593	18.5	450.6	0.69	<100	230	0.33	brown cloudy	no odor	Inj 3 - 7.0	--
TW-2	2/22/2023	7.82	1,517	8.3	89.7	16.09	100	110	0.24	cloudy then clear	--	Inj 3 - 18.2	24.4, 25.4, 18.2
TW-2	4/24/2023	7.05	1,667	11.3	106.9	6.56	330	< 210	< 0.40	clear	no odor, no sheen	Inj 3 - 18.2	--
TW-2	7/19/2023	6.9	1,428	20.2	497.3	1.72	7,400	170	1.3	clear went dry	--	Inj 3 - 18.2	--
TW-3	2/22/2023	6.82	954	9.8	-134.1	8.25	14,000	4,800	2800	clear	petro odor	Inj 3 - 33.2	31.7, 28.8, 33.2
TW-3	4/24/2023	6.52	1,364	12.1	-86.2	0.6	13,000	< 3,700	2400	clear	no odor, no sheen	Inj 3 - 33.2	--
TW-3	7/19/2023	6.75	1,318	20.7	325.5	0.59	NS	NS	NS	clear went dry	no odor	Inj 3 - 33.2	--
TW-4	8/15/2022	6.73	864	18.2	-54.9	0.6	139	561	< 0.44	clear	--	--	--
TW-4	9/27/2022	6.73	734	18	-88.1	0.26	133	381	< 0.44	clear	--	Inj 1 - 8.4	8.4
TW-4	2/22/2023	9.52	1,441	10	-7.3	9.17	< 100	< 120	< 0.20	slightly cloudy and cloudy, brown	--	Inj 3 - 5.3	10.3, 5.3
TW-4	4/24/2023	7.84	1,406	12.4	-35.2	7.34	< 100	< 230	< 0.40	very brown cloudy	petro odor	Inj 3 - 5.3	--
TW-4	7/19/2023	7.5	1,640	19.6	299.2	0.47	< 100	120	< 0.20	brown cloudy	no odor	Inj 3 - 5.3	--
TW-5	8/15/2022	6.62	829	16.6	-87.9	1.18	214,000	8,850	351	clear	slight odor	--	--
TW-5	9/27/2022	6.42	812	17.2	-147.9	0.25	178,000	8,520	258	clear	--	Inj 1 - 9.9	9.9
TW-5	2/22/2023	9.78	7,786	10.3	-428.6	5.47	140,000	9,200	220	cloudy brownish-red then dark amber color	petro odor	Inj 3 - 6.0	7.0, 6.0
TW-5	4/24/2023	8.74	7,506	12.8	-383.6	0.25	150,000	< 4,400	220	dark brown cloudy	petro odor	Inj 3 - 6.0	--
TW-5	7/19/2023	8.87	3,958	16.8	-246.3	0.26	150,000	3,400	340	slightly brown cloudy	slight odor sheen	Inj 3 - 6.0	--
Lower Saturated Zone Wells													
IP-3	8/15/2022	6.35	400	15.9	-37.1	0.24	4,540	306	1,080	clear	--	--	--
IP-3	2/23/2023	9.39	3,353	10.4	-319.4	13.05	29,000	2,100	3,100	grayish brown	strong petro odor	Inj 3 - 2.5	4.7, 4.4, 2.5
IP-3	4/25/2023	7.75	3,526	13.6	-133.5	0.35	21,000	< 930	2,100	clear	petro odor	Inj 3 - 2.5	--
IP-3	7/20/2023	7.44	3,342	15.4	237.2	0.55	20,000	1,600	1,100	clear	petro odor	Inj 3 - 2.5	--
IP-5	8/15/2022	5.89	222.8	15.5	31	0.34	13,200	625	1,940	clear	--	--	--
IP-5	2/22/2023	10.38	4,682	11.8	-147.9	7.2	21,000	3,400	3,000	grey, cloudy then amber	petro odor sheen	Inj 3 - 4.1	5.3, 7.9, 4.1
IP-5	4/24/2023	9.06	3,037	14.4	-307.1	0.29	14,000	< 2,000	1,700	slightly reddish brown cloudy	petro odor	Inj 3 - 4.1	--
IP-5	7/19/2023	7.62	2,975	16.8	268.9	0.3	25,000	2,600	4,900	dark brown cloudy then slightly cloudy	petro odor	Inj 3 - 4.1	--
IP-7	8/15/2022	NM	NM	NM	NM	NM	111,000	49,300	1,040		LNAPL	--	--
IP-7	2/23/2023	6.58	501	11.4	-103.9	14.14	82,000	16,000	850	clear	LNAPL, strong odor	Inj 3 - 32.5	37.6, 39, 32.5
IP-7	4/25/2023	6.32	679	13.3	-15.5	0.45	53,000	< 2,200	450	clear	petro odor sheen	Inj 3 - 32.5	--
IP-7	7/20/2023	6.52	574	17.3	398.6	0.54	54,000	4,000	840	clear	petro odor sheen	Inj 3 - 32.5	--

Statistic	pH	Cond	Values from Table 7 of RI Report (Oct 2020) - 140 pH and 143 conductivity measurements. 3 statistical outliers for pH removed.
Minimum	5.88	166	
Maximum	7.09	1295	
Average	6.46	520	

Event	Date
Injection #1	9/7/2022
Injection #2	10/18/2022
Injection #3	12/20/2022

- Indicates potential increase in pH or Conductivity; or slight decrease in GRO, DRO, or benzene concentration.
- Indicates increase in pH or Conductivity; or decrease in GRO, DRO, or benzene concentration; or injection within approximately 7 to 8 feet of the well.
- Indicates increase in GRO, DRO, or benzene concentration (light yellow for slight increase) or presence of sheen or LNAPL in a well.
- Indicates observation of amber/orange/brownish colored water in well that may indicate presence of PetroCleanze related reactions.
- Gray indicates hydrocarbons in the gasoline range (toluene-naphthalene) are present in the DRO sample results.

Extraction #1	10/7/2022
Extraction #2	12/16/2022
Extraction #3	1/20/2023