

Appendix A
Field Sampling Logs

10/10/16 Paul Philimonoff Joe Joyner¹

Clear H-67° L-41°

0645 arrived at visitor center
for passes

0700 Left for Burning ground
- Safety responding to event
unavailable for permit signing

0850- Permits signed by safety

0851- Begin water level data
collection

<u>Well ID</u>	<u>WL (ft)</u>	<u>PID</u>
48 MW07	47.63	0.1
48 MW06	65.56	0.0
49 MW03	104.76	0.0
48 MW1	107.52	0.0
49 MW01	115.37	0.0
49 MW02	94.30	0.0
48 MW3	97.02	0.0
48 MW2	124.15	0.0
50 MW02	115.30	0.0

<u>Well ID</u>	<u>W.L. (VD)</u>	<u>PID</u>
54 MW1	18 19.00	0.0
54 MW12	25.64	0.0
54 MW13	22.10	0.0
54 MW10	15.52	0.0

1200 Attempted to sample at 54 MW10, but pump ~~bars~~ barbs on both pumps are wrong size for hoses.

Also connections on YSI flow cell are wrong size ~~both~~, one size too large other set too small to even connect to flow cell

Geotech called
2 New pumps + new flow cell
connections will be over
night UPSed ETA 10am
Tuesday 10/11/16

<u>Well ID</u>	<u>W.L.(∇)</u>	<u>SPID</u>
13 MW3	15.00	0.1
13 MW4	16.11	0.1
13 MW5	16.30	0.0
49 MW04	20.59	0.0
13 MW2	21.33	0.0
49 MW05	20.27	0.0

8/11/20

4

10/11/16

Paul Philimonoff Joe Joyner

Clear H: 69 L: 41

1000 Parts from GeoTech
arrive at hotel1030 visitor badging issue
had to re-register badge
until Friday1100 arrived at well 54MW
for sampling

1236 Pumping started

OTW = 19.00

Pump Depth = 36'

Time	Temp	Cond.	pH	DO	ORP	Turb
1241	15.90°	488	7.23	4.80	146	0.50
1246	14.63	476	7.19	3.30	143.9	0.18
1251	14.60	475	7.18	3.03	142.5	0.17
1256	14.54	475	7.18	2.75	140.8	0.19
1301	14.47	474	7.20	2.54	141.3	0.14
1306	14.48	474	7.28	2.60	138.2	0.14

Sample Timing 1311 ~ 2.5 gal
Purged

255 = F-E

290 = Manes

Final depth
2.37

Fe = 0.05 mg/L

Mn = 0.049 mg/L

1426 arrive at 54 MW 12

OTW = 25.64

Pump depth = 28

Pump start time = 1441

Time	Temp	Cond.	PH	DO	ORP	Turb
1449	16.84	574	6.46	9.10	-34.0	19.4
1455	16.22	573	6.37	5.62	-34.7	21.1
1500	16.03	575	6.39	5.48	-35.0	16.1
1505	15.59	577	6.40	5.34	4.9	9.01
1510	15.42	578	6.40	5.28	14.7	6.57
1515	15.63	577	6.25	5.01	30.0	4.63
1520	15.55	579	6.34	5.05	30.5	3.58
1525	15.55	579	6.37	5.24	30.4	3.02

Sampling @ 1530

MS/M50 collected

Final water level = 25.62

Fe = 0.00 mg/L

Mn = 0.038 mg/L

~2.5 gal purged

M. H. H.

10-12-16 Paul Philemanoff Jac Jayner

812 called security to open gate 19E

812 shift change @ Security did not pass on our gate request, start to set up for sampling @ 54 MW13

827 54 MW13

UTW = 22.1

pump depth = ~~24.8~~ 24.6

finger water level = 22.66

Time	Temp	cond	pH	DO	ORP	Turb
0845	12.90	748	7.17	3.73	85.6	216
0850	13.02	741	7.03	3.31	59.1	181
0855	13.01	722	6.99	3.08	48.5	98.8
0900	12.97	708	6.98	3.02	44.5	53.8
0905	12.96	695	6.97	3.16	41.7	32.8
0910	13.02	685	6.96	3.40	40.8	18.8
0915	13.08	678	6.95	3.39	41.8	12.7
0920	13.10	673	6.92	3.40	44.8	9.98

field out collected @ 955

sampling starting @ 0925

Fe = 0.08 mg/L

Mn = 0.061 mg/L

1040 arrived @ 54 MW P

OTW = 15.52

Pump depth = 22

1049 Pump start - 1055 discharge in bucket

final depth = 16.76

Time	Temp	Cond	pH	DO	ORP	Turb
1035	15.05	828	5.19	1.20	122.6	4.74
1100	14.62	843	5.69	0.63	89.2	4.69
1105	14.37	845	5.84	0.50	77.2	4.04
1110	14.43	843	5.88	0.53	72.0	3.22
1115	14.63	839	5.91	0.54	69.1	3.22

sampling start @ 1116

Fe = 0.52

Mn = 0.003

8

phil arrived on site 1200

B MW3

OTW = 15.62

End/final water level = 15.60

Start time 1250

Time	Temp	Cond	pH	DO	ORP	Turb
1255	12.48	500	7.34	5.3	75	7.92
1300	16.98	576	7.39	2.49	28.3	5.79
1305	16.93	581	7.14	2.00	11.0	2.94
1310	16.82	582	7.26	2.39	5.1	2.55
1315	16.79	582	8.04	2.32	4.6	1.87
1320	16.84	584	7.99	2.29	9.4	1.52

Sampling 1320

No Fe reading

Fe = 0.00

13 MW 4

set up 1340

OTW = 17.03

Final W.L. = 17.04

Pump start 1350

Time	Temp	Cond	PH	DO	ORP	Turb
1352	16.96	574	9.00	1.25	83.6	1.19
1357	15.67	615	9.11	0.29	76.4	0.76
1402	15.80	612	9.44	0.44	69.3	0.82
1407	15.86	513	9.26	2.38	70.3	1.01
1412	16.07	475	9.42	3.07	73.7	1.33
1417	16.01	474	9.36	3.56	74.0	1.31
1422	16.0	472	9.32	3.36	74.6	1.43

sample time 1425

Fe = 0.01

MS/MSD
collected

13 MW2

	OTW	21.64				
	Temp	Cond	pH	DO	ORP	T
1455	16.5	754	8.6	5.8	105.5	1.73
1500	15.4	754	9.32	4.6	109.6	1.12
1505	14.96	746	9.42	4.31	103.1	1.05
1510	15.06	743	9.37	4.4	101.1	1.07
1515	15.04	742	9.3	4.6	98.5	1.79

Sample @ 1515

Fe = 0.04 mg/L

Final ORP 24.1

49 MW04

OTW = 20.49

	Temp	Cond	pH	DO	ORP	Turb
1555	16.7	341	7.5	12.5	133.9	4.93
1600	16.5	652	7.7	2.74	136.4	4.82
1605	15.9	649	8.5	2.65	131.4	8.65
1610	15.5	647	8.5	1.45	167.2	8.78
1615	15.3	646	8.6	1.67	165.3	

Sampling @ 1620

Fe = 0.00 mg/L

final depth @ 26.95

Pulse 1530

Rinse 1530

12

10/13/16

Paul Philomatos Joe Joyner

cloud to partly sunny
foggy morning

H = 72° 2-46°

Twells + field dup + Rin safe blank
+ pulse water samples left to
complete, ~~samples left to~~

0741 start set up @ 50MW02

50MW02

OTW = 115.3 final depth = 115.30
pump @ 118

start pump @ 0755

water flow @ 0804

Time	Temp	Cond	pH	DO	ORP	Turb
0810	12.72	697	9.22	3.99	180.0	33.8
0815	12.75	708	9.23	3.51	156.2	30.7
0820	12.80	710	9.25	3.49	149.4	25.6
0825	12.79	711	9.25	3.49	146.6	20.4
0830	12.80	711	9.25	3.57	144.9	15.9
sampling @ 0835						

Fe = 0.06 mg/L

49 MW02

OTW = 94.30

Sample depth = 108

final depth = 98.62

Pumping starting @ 0930

water in pump @ 0938

Time	Temp	Cond	pH	DO	ORP	Turb
0940	12.96	540	9.30	8.47	163.3	35.7
0945	12.96	550	9.26	2.01	150.9	25.6
0950	12.95	550	9.25	1.75	143.8	19.1
0955	12.99	550	9.18	2.03	139.4	12.2
1000	13.02	550	9.17	2.21	138.1	10.6

Sampling @ 1005

Fe = 0.27 mg/L

48 MW3

1100 start set up

DTW=104.76

Sample depth = ~~100~~ 107

Final depth = 98.06

Pump start time = 1125

water in Bucket = 1143

Time	Temp	Cond	pH	DO	ORP	Turb.
1145	14.16	730	10.20	8.42	194.3	2.05
1150	13.83	739	10.15	4.25	186.0	1.15
1155	13.69	740	10.16	3.87	182.3	1.30
1200	13.62	740	10.14	3.75	179.6	1.46

Sampling starting @ 1205

Fe = 0.00 mg/L

field dup taken @ 1210

49 TM01

48 MW2

O₁W = 124.15

Sample Depth = 130

final Depth = 124.66

well produces

better @

pump setting

40/30

pump start: 1305

water in Bucket: 1325

Time	Temp	Cond	pH	DO	ORP	Turb
1325	15.92	501	9.20	7.40	191.2	43.9
1330	14.97	504	9.48	6.72	191.4	51.1
1335	14.57	505	9.67	6.22	192.4	48.9
1340	14.38	504	9.74	6.12	192.7	42.0

Sampling @ 1345

Fe = 0.21 mg/L

49 MW ②

OTW = ~~150.3~~ 115.30
 Sample Depth = 120 ← suggest ~ 119'
 Final Depth = 115.62
 Pump depth
 Next Sampling

Pump Start : ~~1505~~ 1440

Water in bucket : ~~1505~~ 1505

Time	Temp	Cond	PH	DO	ORP	Turb
1505	16.65	483	9.65	6.69	190.2	205
1510	16.41	482	10.06	5.48	189.1	234
1515	16.12	482	10.17	5.13	187.9	236
1520	16.03	481	10.23	5.33	187.9	206
1525	15.76	481	10.30	5.67	188.2	180
1530	15.62	480	10.33	5.58	188.8	168
1535	15.44	480	10.37	5.85	189.6	145
1540	15.40	480	10.38	5.88	190.4	125
1545	15.23	479	10.39	5.98	191.3	97.2

Sampling @ 1550

Fe = 0.92 mg/L

[Signature]

10-14-16 Paul Philemon Joe Joyner

0640 Enter RAAP

2 wells left to sample

Plus Rinse and purge water

0735 setting up @ 48 MW06

OTW = 65.55

Pump depth = 73

final depth = 67.05

Pump start: 0800

Water in bucket: 0806

Time	Temp	Cond	pH	DO	ORP	Turb
0810	13.01	485	11.78	3.01	212.2	28.7
0815	13.10	494	11.76	2.06	195.2	28.4
0820	13.18	516	11.73	2.07	182.5	31.8
0825	13.18	539	11.72	2.04	175.1	37.9
0830	13.18	559	11.74	2.10	171.1	55.1

Sampling @ 0835

Fe = 0.9 mg/L

~~48 MW~~ 48 MW1

~~Pump~~ Pump set to
35/40

OTW = 107.25

Sample ~~depump~~ depth = ~~110~~ 110.72

final depth = 108.27

Pump start: ~~09~~ 0940

water in Bucket: 0959

Time	Temp	Cond	pH	DO	ORP	Turb
1000	13.21	422	13.63	5.36	192.4	2.06
1005	13.19	426	13.62	4.71	190.0	1.18
1010	13.20	427	13.47	4.36	187.8	2.10
1015	13.21	427	13.42	4.30	186.3	2.02

Sample @ 1020

Fe = 0.00 mg/L

Rinsate + Purge
water samples
collected

Rinsate: 101416(R) - 1100

Purge: 49 ADW01 - 1105

Tri Blank: 101418(T) - 1110



LOW-FLOW GROUNDWATER SAMPLING DATA SHEET

Log Book #

Page 1 of 1

ID SAMW1	Date 1/10/17	Purge/Sample Equipment		Water-quality Equipment					
Samplers' Initials SX/PTP	Time 0830	☐ Peristaltic:		GEOTECH 100' Water-level Meter:					
Casing Diameter (in) 4"	Casing Stickup (ft)	GEOTECH 1.44x18		Oil-water Interface Meter:					
Initial Water Level (ft-btoc) 19.30	Total Well Depth (ft-btoc) 62	☐ Bladder:		YSI PRO PLUS Parameter Meter(s): T Cond pH DO ORP NTU					
Final Water Level (ft-btoc) 22.57	Screened Interval (ft-btoc) 34.9-54.8	☐ Other:		FE / MN! HACH DR900					
Purge Volume (liters) 1.5 GAL	Sample Depth (ft-btoc) 30			HACH 2100P Turbidity Meter:					
Time	Depth to Water (ft)	Pumping Rate (l/min)	Purge Volume (liters)	Temp. (°C/°F)	Cond. (µS/cm)	pH	DO %/mg/L	ORP (mV)	Turb. (NTU)
0835		150 mL/MIN		12.4	483.0	7.32	4.15	97.6	0.52
0840				12.8	485.8	7.41	3.03	83.6	0.35
0845				12.7	484.9	7.43	2.42	80.0	0.28
0850				12.8	484.3	7.44	2.23	77.5	0.28
0855				12.8	484.3	7.45	2.20	74.7	0.26
0900				12.8	480.2	7.43	2.21	74.8	0.28
☒ Full Sample Suite Obtained		Condition of Well, Remarks: CONTROLLER SETTING: 15/30 FIRST DISCHARGE: 0831; CLEAR EXPOSURES TOX TIC/NITRATE/SULFATE/CHLORIDE MW/DMX/TMX CHLORATE/CHLORITE PERCHLORATE							
☐ Partial Sample Suite Obtained									
☐ No Sample Obtained									
QC Samples: FD FS RB AB MS/MSD									
See COC for analyses requested		QC Sample ID: NONE							
Sample ID: SAMW1		Sample Time: 0905							
Protective Level: Dermal ☐ C B A		Checked by: SX							
Respiratory ☒ C B A		Date:							

FE = 0.00 MG/L

MN = 0.036 MG/L



LOW-FLOW GROUNDWATER SAMPLING DATA SHEET

Log Book # _____

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ID 54MW10	Date 1/9/17	Purge/Sample Equipment		Water-quality Equipment	
Samplers' Initials SJL/PTP	Time 1235	() Peristaltic:		GEOTECH 100' Water-level Meter:	
Casing Diameter (in) 4"	Casing Stickup (ft)	GEOTECH 1.66x18			
Initial Water Level (ft btoc) 17.50	Total Well Depth (ft-btoc) 35	☒ Bladder:		Oil-water Interface Meter:	
Final Water Level (ft-btoc) 17.59 17.59	Screened Interval (ft-btoc) 12-27	() Other:		YS PRO PLUS Parameter Meter(s): T Cond pH DO ORP NTU	
Purge Volume (liters) ~1.5 GAL	Sample Depth (ft-btoc) 22			HACH DR900 HACH 2100Q Turbidity Meter:	

Time	Depth to Water (ft)	Pumping Rate (l/min)	Purge Volume (liters)	Temp. (°C/F)	Cond. (µS/cm)	pH	DO %/mg/L	ORP (mV)	Turb. (NTU)
1240		150ML/MIN		11.7	865	7.13	3.62	99.2	3.07
1245				12.5	872	7.21	1.61	74.1	3.46
1250				12.5	868	7.22	1.45	61.2	1.99
1255				12.5	861	7.21	1.38	55.3	1.99
1300				12.5	855	7.19	1.40	52.2	1.65
1305				12.5	354	7.19	1.40	49.0	1.39

☒ Full Sample Suite Obtained	Condition of Well, Remarks: SETTING: 10/50 FIRST WATER DISCHARGE @ 1239; CLEAR EXPLOSIVES; MNX/DNX/TNX TIC/NITRATE/CHLORIDE/ TDC SULFATE PERCHLORATE CHLORATE/CHLORITE	
() Partial Sample Suite Obtained		
() No Sample Obtained		
QC Samples: FD FS RB AB <u>MS/MSD</u>		
See COC for analyses requested		
Sample ID: 54MW10	QC Sample ID: 54MW10	Sampler's Signature: _____
Protective Level Dermal ☒ C B A	Sample Time: 1310	Checked by: _____
Respiratory: ☒ C B A	() Metals Sample Filtered	Filter Date: _____

MN = 0.069 MG/L

FE = 0.04 ~~0.04~~ MG/L



LOW-FLOW GROUNDWATER SAMPLING DATA SHEET

Log Book # _____

Page 1 of 1

ID 54MW12	Date 1/10/17	Purge/Sample Equipment		Water-quality Equipment					
Samplers' Initials SJH/PP	Time 1005	☐ Peristaltic:		GEOTECH 100' Water-level Meter:					
Casing Diameter (in) 2"	Casing Stickup (ft)	GEOTECH 1.66x18 ☒ Bladder:		Oil-water Interface Meter:					
Initial Water Level (ft btoc) 25.99	Total Well Depth (ft-btoc) 30	☐ Other:		YSI PRO PLUS Parameter Meter(s): T Cond pH DO ORP NTU					
Final Water Level (ft-btoc) 26.01	Screened Interval (ft-btoc) 20-30			FE / MN: HACH DR900					
Purge Volume (liters) ~1.5 GAL	Sample Depth (ft-btoc) 28			HACH 2100Q Turbidity Meter:					
Time	Depth to Water (ft)	Pumping Rate (l/min)	Purge Volume (liters)	Temp. (°C/°F)	Cond. (µS/cm)	pH	DO %/mg/L	ORP (mV)	Turb. (NTU)
1210				10.2	601.7	6.63	6.81	112.2	3.5
1015				11.1	634.8	6.72	6.39	92.0	3.63
1020				11.3	639.9	6.71	5.64	85.7	2.46
1025				11.7	644.5	6.70	5.62	80.9	1.78
1030				11.7	647.9	6.70	5.46	78.4	1.51
1035				11.8	644.1	6.69	5.43	76.3	1.06
1040				11.8	647.5	6.70	5.40	75.0	1.04
☐ Full Sample Suite Obtained		Condition of Well, Remarks: CONTROLLER SETTING: 10/50 FIRST DISCHARGE @ 1003; CLEAR EXPOSURES PERCHLORATE TIL / SULFATE / NITRATE MN / TNX / DNX CHLORATE / CHLORITE CHLORIDE							
☐ Partial Sample Suite Obtained									
☐ No Sample Obtained									
QC Samples ☒ FD ☐ FS ☐ RB ☐ AB ☐ MS/MSD		TOL 54TM12							
See COC for analyses requested.		Sampler's Signature: SJH							
Sample ID: 54MW12		QC Sample ID: 54TM12							
Protective Level Dermal: D C B A		Sample Time: 1045							
Respiratory: D C B A		Checked by: _____ Date: _____							

FIELD DUP 54TM12 @ 1050

FE = 0.00 MG/L

MN = 0.040 MG/L



LOW-FLOW GROUNDWATER SAMPLING DATA SHEET

Log Book # _____

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ID: 54HW13		Date: 1/9/17		Purge/Sample Equipment		Water-quality Equipment			
Samplers Initials: SJL/PTP		Time: 510		☐ Peristaltic		GEOTECH 100' Water-level Meter			
Casing Diameter (in): 2"		Casing Stock (in): 25.33		GEOTECH 1.000 X 18					
Initial Water Level (ft): 23.45		Total Well Depth (ft): 25.33		☒ Bladder		Oil-water Interface Meter:			
Final Water Level (ft): 23.90		Screened Interval (ft): 24.50		☐ Other:		YSI PRO PWS Parameter Meter(s): T Cond pH DO ORP NTU			
Purge Volume (liters): 1.5 GAL		Sample Depth (ft): 24.2				FE/MN: HACH DR 900			
						HACH 2100Q Turbidity Meter			
Time	Depth to Water (ft)	Pumping Rate (l/min)	Purge Volume (liters)	Temp (°F)	Cond. (µS/cm)	pH	DO (% sat)	ORP (mV)	Turb. (NTU)
515		150 mL/min		11.7	790	7.09	4.40	83.9	56.7
1520				11.8	782	7.11	3.21	77.4	36.1
1525				11.7	764	7.09	2.80	74.4	21.2
1530				11.6	750	7.07	3.10	73.3	13.6
1535				11.6	747	7.07	3.25	72.3	12.6
1540				11.7	740	7.04	3.29	71.0	8.20
☒ Full Sample Suite Obtained				Condition of Well, Remarks: SETTING: 10/50 FIRST DISCHARGE @ 1512; SLIGHTLY CLOUDY EXPLOSIVES; MNX/DNX/TNX TC/NITRATE/SULFATE/ TDC PERCHLORATE CHLORIDE CHLORATE/CHLORITE					
☐ Partial Sample Suite Obtained									
☐ No Sample Obtained									
QC Samples: PD PS RB AB MS/MSSO									
See 1501 for analytes requested				Sampler's Signature: S. Li					
Sample ID: 54HW13				QC Sample ID: NONE					
Corrective Action: C B A				Sample Time: 1545					
Receptor ID: C B A				Checked by: _____					
				Filter: _____ Date: _____					

MN = 0.060 MG/L

FE = 0.03 MG/L



LOW-FLOW GROUNDWATER SAMPLING DATA SHEET

Log Book # _____

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ID 54MW1	Date 4/11/17	Purge/Sample Equipment		Water-quality Equipment					
Samplers' Initials SJL/PTP	Time 0811	☐ Peristaltic: ☒ Bladder: GEOTECH 1.66X18		Water-level Meter: KECK 200'					
Casing Diameter (in) X 4"	Casing Stickup (ft)			Oil-water Interface Meter:					
Initial Water Level (ft-bloc) 18.56	Total Well Depth (ft-bloc)	☐ Other:		YSI PROBUS Parameter Meter(s): T Cond pH DO ORP NTU					
Final Water Level (ft-bloc) 21.53	Screened Interval (ft-bloc) 34.8-54.9			FE/MN HACH DR900					
Purge Volume (liters) 21.5 GAL	Sample Depth (ft-bloc) 36			HACH 2100C Turbidity Meter:					
Time	Depth to Water (ft)	Pumping Rate (l/min)	Purge Volume (liters)	Temp. (°C/°F)	Cond. (µS/cm)	pH	DO % (mg/L)	ORP (mV)	Turb. (NTU)
0815		150 mL		13.0	0.451	7.42	9.35	121.2	0.67
0820				13.0	0.445	7.51	9.13	107.6	0.27
0825				13.0	0.443	7.62	8.79	99.7	0.28
0830				13.0	0.443	7.67	8.68	95.9	0.23
0835				13.1	0.442	7.67	8.48	92.8	0.28
0840				13.1	0.443	7.65	8.38	91.0	0.25
☒ Full Sample Suite Obtained		Condition of Well, Remarks: SETTING: 15/30 FIRST DISCHARGE: 0813 EXPLOSIVES PERCHLORATE TOC MNX / DUX HMX CHLORATE / CHLORITE TIC/NITR HTE / SULFATE, CHLORIDE							
☐ Partial Sample Suite Obtained									
☐ No Sample Obtained									
QC Samples: FD FS RB AB MS/MSD		Sampler's Signature: _____							
See GC for analysis requested		Sample ID: 54MW1 QC Sample ID: NONE							
Sample ID: 54MW1		Sample Time: 0845 Checked by: _____							
Protective Level: D C B A		Date: _____							
Respiratory: D C B A		Filter: _____							

FE = 0.00 MG/L

MN = 0.049 MG/L



LOW-FLOW GROUNDWATER SAMPLING DATA SHEET

Log Book #

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ID SAMW10	Date 4/10/17	Purge/Sample Equipment		Water-quality Equipment					
Samplers' Initials SJY/DTP	Time 1135	☐ Peristaltic: ☒ Bladder: GEOTECH 1.400 x 13		Water-level Meter: KECK 200'					
Casing Diameter (in) 4"	Casing Stickup (ft)			Oil-water Interface Meter:					
Initial Water Level (ft) 15.57	Total Well Depth (ft-btoc) 35	☐ Other:		YSI PROBUS Parameter Meter(s): T Cond pH DO ORP NTU					
Final Water Level (ft-btoc) 15.66	Screened Interval (ft-btoc) 12-27			CALORIMETER (FE/MN) HACH DR900					
Purge Volume (liters) 1.1 GAL	Sample Depth (ft-btoc) 22			HACH 2100 Q Turbidity Meter:					
Time	Depth to Water (ft)	Pumping Rate (l/min)	Purge Volume (liters)	Temp. (°C/°F)	Cond. (µS/cm)	pH	DO %/mg/L	ORP (mV)	Turb. (NTU)
1140		125 mL		11.1	0.620	6.88	4.74	86.0	3.32
1145				13.5	0.616	6.88	3.94	69.4	0.90
1150				13.6	0.614	6.88	3.68	63.6	0.72
1155				13.8	0.614	6.89	3.43	59.8	0.80
1200				13.8	0.613	6.88	3.33	58.1	0.65
1205				13.8	0.614	6.88	3.20	57.3	0.71
1210									
☒ Full Sample Suite Obtained		Condition of Well, Remarks: SETTING: 10/50 FIRST DISCHARGE @ 1136; WEAR EXPLOSIVES CHLORATE/CHLORITE MNX/DOX/TNX TIC/TIC PERCHLORATE SULFATE/CHLORIDE/NITRATE							
☐ Partial Sample Suite Obtained									
☐ No Sample Obtained									
QC Samples: ☒ FD ☐ FS ☐ RB ☐ AB ☐ MS/MSD		QC Sample ID: SAMW10 @ 1215							
See COC for analyses requested.		Sample Time: 1210							
Sample ID: SAMW10		Checked by:							
Protective Level Dermal ☐ D ☐ C ☐ B ☐ A		Date:							
Respiratory: ☐ D ☐ C ☐ B ☐ A		☐ Metals Sample Filtered ☐ Filter							

FE = 0.04 mg/L

MN = 0.039 mg/L



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ID SAMW12	Date 4/11/17	Purge/Sample Equipment		Water-quality Equipment					
Samplers' Initials SJL/PTP	Time 0931	☐ Peristaltic		Water-level Meter: Keck 200'					
Casing Diameter (in) 2"	Casing Stickup (ft)	☒ Bladder Geotech 1.66 x 18		Oil-water Interface Meter:					
Initial Water Level (ft btoe) 24.30	Total Well Depth (ft btoe) 30	☐ Other:		YSI Pro Plus Parameter Meter(s): T Cond pH DO ORP NTU					
Final Water Level (ft btoe) 24.30	Screened Interval (ft btoe) 20-30			Fe/Mn: Hach DR900					
Purge Volume (liters) ~16.6L	Sample Depth (ft btoe) 28			Turbidity Meter Hach 2100Q					
Time	Depth to Water (ft)	Pumping Rate (l/min)	Purge Volume (liters)	Temp. (°C/°F)	Cond. (µS/cm)	pH	DO %/mg/L	ORP (mV)	Turb. (NTU)
0935		120 mL		13.0	0.621	6.64	7.29	133.4	6.56
0940				13.2	0.613	6.67	5.87	109.5	5.65
0945				13.2	0.620	6.69	5.90	102.6	2.84
0950				13.0	0.624	6.69	5.39	97.0	2.36
0955				13.2	0.621	6.70	5.39	93.4	1.92
Condition of Well, Remarks: SETTING: 10/50 FIRST DISCHARGE @ 0935 EXPOSURES PERCHLORATE NW/DRX/TMX CHLORATE/CHLORITE TC/SULFATE/NITRATE/CHLORIDE									
☒ Full Sample Suite Obtained				Sampler's Signature: _____					
☐ Partial Sample Suite Obtained				Sample ID: SAMW12					
☐ No Sample Obtained				Sample Time: 10:00					
QC Samples: FD FS AB AB (MS/MSD)				Checked by: _____					
See CCL for analyses requested				Filter: _____					
Protective Level: Chemical (C B A)				Date: _____					
Respiratory (C B A)									

FE = 0.02 MG/L

MN = 0.036 MG/L



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ID	Date	Purge/Sample Equipment		Water-quality Equipment					
SAHW03	4/10/17								
Samplers' Initials	Time	Purge/Sample Equipment		Water-quality Equipment					
SL/PTP	1411			KECK 200'					
Casing Diameter (in)	Casing Stickup (ft)			Water-level Meter:					
2"		GEOTECH 1.40X13							
Initial Water Level (ft btoc)	Total Well Depth (ft btoc)	Bladder:		Oil-water Interface Meter:					
20.64	25.33			YSI PRO PLUS					
Final Water Level (ft btoc)	Screened Interval (ft btoc)	Other:		Parameter Meter(s): T Cond pH DO ORP NTU					
	34			CALORIMETER (FE/MN)					
Purge Volume (liters)	Sample Depth (ft btoc)			HACH DR900					
~1 gallon	24 ft			HACH 21004					
				Turbidity Meter:					
Time	Depth to Water (ft)	Pumping Rate (l/min)	Purge Volume (liters)	Temp. (°C/°F)	Cond. (µS/cm)	pH	DO (%/mg/L)	ORP (mV)	Turb. (NTU)
1440		125 mL		14.7	0.452	6.84	4.68	93.6	225
1445				14.4	0.410	6.87	4.78	81.7	187
1450				14.4	0.481	6.87	4.56	84.0	122
1455				13.9	0.474	6.86	4.72	79.5	32.5
1500				14.0	0.412	6.86	4.74	78.1	19.7
1505				14.0	0.474	6.87	4.74	77.5	14.2
Full Sample Suite Obtained		Condition of Well, Remarks:							
() Partial Sample Suite Obtained		SETTING: 10/50 VERY							
() No Sample Obtained		FIRST DISCHARGE @ 1436; SLIGHTLY cloudy							
QC Samples: FD FS RB AB MS/MSD		EXPLOSIVES CHLORATE / CHLORITE							
Time COC for analysis requested		MNX / DN / TXN TOL							
Sample ID: SAHW03		TIC / NITRATE / SULFATE / CHLORIDE							
Protective Level Desired: C B A		PERCHLORATE							
Respiratory: C B A		Sample ID: LNE							
		Sample Time: 1510							
		Sampler's Signature:							
		Checked by:							
		Date:							

FE = 0.14 mg/L

MN = 0.007 mg/L

NO WATER @ 1420; PULLED PUMP AND REPAIRED. RESTARTED @ 1433
- INSPECTED PUMP REMOVED; LOOSE DISCHARGE BARB. WILL
TRY TO ~~REPAIR~~ TIGHTEN TO REPAIR



LOW-FLOW GROUNDWATER SAMPLING DATA SHEET

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ID S4 MW1	Date 7/10/17	Purge/Sample Equipment		Water-quality Equipment	
Samplers' Initials PTP	Time 1305	☐ Peristaltic:		Water-level Meter: Keck 200'	
Casing Diameter (in) 4"	Casing Stickup (ft)	☒ Bladder: Geotech 1.66 x 18		Oil-water Interface Meter:	
Initial Water Level (ft btoc) 18.61	Total Well Depth (ft-btoc) 62	☐ Other:		YSI Pro Plus Parameter Meter(s): T Cond pH DO ORP NTU	
Final Water Level (ft-btoc) 22.13	Screened Interval (ft-btoc) 34.8-54.8			Fe/Mn: Hach DR900	
Purge Volume (liters) ~1.5 GAL	Sample Depth (ft-btoc) 36			Turbidity Meter: Hach 2100Q	

Time	Depth to Water (ft)	Pumping Rate (l/min)	Purge Volume (liters)	Temp. (°C/°F)	Cond. (µS/cm)	pH	DO %/mg/L	ORP (mV)	Turb. (NTU)
1305		150mL		18.2	0.985	6.73	1.76	132.1	1.60
1310				15.3	0.983	6.95	1.27	174.5	0.53
1315				15.1	0.478	7.17	0.90	142.2	0.40
1320				15.4	0.475	7.28	0.79	130.5	0.54
1325				14.8	0.971	7.35	0.68	123.6	0.54
1330				14.8	0.968	7.41	0.63	119.3	0.43
1335				14.8	0.968	7.43	0.69	116.5	0.52

☒ Full Sample Suite Obtained	Condition of Well, Remarks: CONTROLLER SETTINGS 15/30 FIRST DISCHARGE: 1305 EXPLOSIVES CHLORATE / CHLORITE MMX/DMX/TMX TOL PERCHLORATE TIC / NITRATE / SULFATE / CHLORATE
☐ Partial Sample Suite Obtained	
☐ No Sample Obtained	
QC Samples: FD FS RB AB MS/MSD	
See COC for analyses requested	
Sample ID: S4 MW1	QC Sample ID: None
Protective Level Dermal ☒ C B A	Sample Time: 1340
Respiratory: ☒ C B A	☐ Metals Sample Filtered
	Filter
	Checked by: [Signature]
	Date: 7/10/17

FE = 0.00 mg/L

MN = 0.031 mg/L



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ID SAPW10	Date 7/10/17	Purge/Sample Equipment		Water-quality Equipment					
Samplers' Initials PTP	Time 1040	☐ Peristaltic:		Water-level Meter: Keck 200'					
Casing Diameter (in) 4"	Casing Stickup (ft)	☒ Bladder: Geotech 1.66 x 18		Oil-water Interface Meter:					
Initial Water Level (ft btoc) 16.50	Total Well Depth (ft-btoc) 35	☐ Other:		YSI Pro Plus Parameter Meter(s): T Cond pH DO ORP NTU					
Final Water Level (ft-btoc) 16.50	Screened Interval (ft-btoc) 12-27			Fe/Mn: Hach DR900					
Purge Volume (liters) ~1.5 GAL	Sample Depth (ft-btoc) 22			Turbidity Meter: Hach 2100Q					
Time	Depth to Water (ft)	Pumping Rate (l/min)	Purge Volume (liters)	Temp. (°C/°F)	Cond. (µS/cm)	pH	DO %/mg/L	ORP (mV)	Turb. (NTU)
1045		50 mL		16.5	0.75	6.65	1.47	74.4	1.46
1050				15.3	0.77	6.71	1.42	60.1	1.05
1055				15.2	0.77	6.83	1.22	43.5	1.00
1100				15.1	0.75	6.94	1.04	34.1	0.75
1105				15.0	0.75	6.96	0.96	29.6	0.53
1110				15.0	0.75	6.98	0.87	26.8	0.64
1115				14.9	0.74	7.00	0.83	24.1	0.52
☒ Full Sample Suite Obtained				Condition of Well, Remarks: SETTING: 10/50 FIRST DISCHARGE: 1044 EXPLOSIVES PERCHLORATE MX/ANX/TNX CHLORATE/CHLORITE SAMPLER'S SIGNATURE: <i>[Signature]</i>					
☐ Partial Sample Suite Obtained									
☐ No Sample Obtained									
QC Samples ☒ FS ☐ RB ☐ AB ☐ MS/MSD				QC Sample ID: SAPW10C1125					
See COC for analyses requested				Sample Time: 1120					
Protective Level Dermal ☐ C ☐ B ☐ A				Checked by: 7/10/17					
Respiratory ☐ C ☐ B ☐ A				Date: 7/10/17					

FE = 0.05 mg/L

MN = ~~0.00~~ 0.000 mg/LTIC/TOL
SULFATE/
NITRATE/
CHLORIDE



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ID 54HW12		Date 7/11/17		Purge/Sample Equipment		Water-quality Equipment			
Samplers' Initials DTP		Time 0805		☐ Peristaltic		Water-level Meter: Keck 200'			
Casing Diameter (in) 2"		Casing Stickup (ft)		☒ Bladder: Geotech 1.66 x 18		Oil-water Interface Meter:			
Initial Water Level (ft-btoc) 24.94		Total Well Depth (ft-btoc) 30		☐ Other:		YSI Pro Plus Parameter Meter(s): T Cond pH DO ORP NTU			
Final Water Level (ft-btoc) 24.95		Screened Interval (ft-btoc) 20-30				Fe/Mn: Hach DR900			
Purge Volume (liters) ~2 GAL		Sample Depth (ft-btoc) 23				Turbidity Meter: Hach 2100Q			
Time	Depth to Water (ft)	Pumping Rate (l/min)	Purge Volume (liters)	Temp. (°C/°F)	Cond. (µS/cm)	pH	DO %/mg/L	ORP (mV)	Turb. (NTU)
0810		125 mL		15.5	0.534	6.16	0.85	69.2	14.8
0815				14.2	0.516	6.23	0.65	81.7	7.85
0820				14.0	0.511	6.33	0.59	76.8	4.49
0825				13.7	0.509	6.46	0.42	71.5	2.57
0830				13.7	0.509	6.51	0.30	69.4	2.32
0835				13.7	0.506	6.56	0.26	72.0	1.36
0840				13.7	0.507	6.57	0.25	74.9	1.91
0845				13.7	0.505	6.59	0.18	76.4	1.21
0850				13.6	0.508	6.60	0.17	82.9	1.03
☒ Full Sample Suite Obtained				Condition of Well, Remarks: SETTING: 10/50 FIRST DISCHARGE: 0808 EXPOSURES PERCHLORATE TOC MMX/DMX/TMX CHLORATE/CHLORITE T/C NITRATE/					
☐ Partial Sample Suite Obtained									
☐ No Sample Obtained									
QC Samples: FD FS RB AB MS/MSD				Sampler's Signature: [Signature]					
Date CDC for analyses requested									
Sample ID: 54HW12				QC Sample ID: 54HW12		Checked by:			
Protective Level: Thermal ☒ C ☐ B ☐ A				Sample Time: 0910		Date: 7/11/17			
Respiratory: ☒ C ☐ B ☐ A				☐ Metals Sample Filtered		Filter			

FE = 0.07 MG/L
MN = 0.073 MG/L



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ID SAHW2	Date 7/11/17	Purge/Sample Equipment		Water-quality Equipment					
Samplers' Initials PTP	Time	☐ Peristaltic:		Water-level Meter: Keck 200'					
Casing Diameter (in) 2"	Casing Stickup (ft)	☒ Bladder: Geotech 1.66 x 18		Oil-water Interface Meter:					
Initial Water Level (ft-btoc)	Total Well Depth (ft-btoc)	☐ Other:		YSI Pro Plus Parameter Meter(s): T Cond pH DO ORP NTU					
Final Water Level (ft-btoc)	Screened Interval (ft-btoc)			Fe/Mn: . Hach DR900					
Purge Volume (liters) ~2 GAL	Sample Depth (ft-btoc)			Turbidity Meter: Hach 2100Q					
Time	Depth to Water (ft)	Pumping Rate (l/min)	Purge Volume (liters)	Temp. °C/°F	Cond. (µS/cm)	pH	DO %/mg/L	ORP (mV)	Turb. (NTU)
0855				13.6	0.505	6.61	0.12	84.3	1.15
0900				13.7	0.506	6.62	0.12	84.2	0.80
0905				13.7	0.505	6.63	0.11	85.5	0.71
☐ Full Sample Suite Obtained			Condition of Well, Remarks:						
☐ Partial Sample Suite Obtained									
☐ No Sample Obtained									
QC Samples FD FS RB AB MS/MSD									
See COC for analyses requested			QC Sample ID:				Sampler's Signature:		
Sample ID			Sample Time				Checked by:		
Protective Level Dermal D C B A			☐ Metals Sample Filtered				Filter		
Respiratory D C B A							Date:		



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ID 54MW03	Date 7/11/17		
Samplers' Initials PTP		Purge/Sample Equipment () Peristaltic: (X) Bladder: Geotech 1.66 x 18 () Other:	Water-quality Equipment Water-level Meter: Keck 200' Oil-water Interface Meter: YSI Pro Plus Parameter Meter(s): T Cond pH DO ORP NTU Fe/Mn: Hach DR900 Turbidity Meter: Hach 2100Q
Casing Diameter (in) 2"	Casing Stickup (ft)		
Initial Water Level (ft btoc) 21.57	Total Well Depth (ft-btoc) 25.33		
Final Water Level (ft-btoc) 21.91	Screened Interval (ft-btoc)		
Purge Volume (liters) 1.5 GAL	Sample Depth (ft-btoc) 24		

Time	Depth to Water (ft)	Pumping Rate (l/min)	Purge Volume (liters)	Temp. (°C/°F)	Cond. (µS/cm)	pH	DO %/(mg/L)	ORP (mV)	Turb. (NTU)
1040		125 mL		16.5	0421	6.47	0.54	43.3	16.0
1045				15.7	0478	6.48	0.27	40.8	9.28
1050				15.4	0486	6.76	0.12	31.3	5.90
1055				15.0	0522	6.90	0.08	24.7	4.22
1100				14.9	0539	6.94	0.05	20.8	3.04
1105				14.7	0546	6.99	0.01	17.8	2.94
1110				14.8	0549	6.99	0.01	16.8	1.96
1115				14.8	0552	7.00	0.01	15.5	1.36

☒ Full Sample Suite Obtained	Condition of Well, Remarks: SETTING 10/50 FIRST DISCHARGE @ 1033 EXPOSURES CHLORATE/CHLORITE MAX/DMX/TMX TOC PERCHLORATE TIC/NITRATE/SULFATE/CHLORIDE	
☐ Partial Sample Suite Obtained		
☐ No Sample Obtained		
QC Samples: FD FS RB AB MS/MSD		
See COC for analyses requested.		
Sample ID: 54MW13	QC Sample ID: PIA	Sampler's Signature: [Signature]
Protective Level Dermal: D C B A	Sample Time: 1122	Checked by: _____
Respiratory: D C B A	☐ Metals Sample Filtered	Filter Date: 7/11/17

FE = 0.08 MG/L

MN = 0.034 MG/L