

ATTACHMENT 5: WATER LEVEL MEASUREMENTS

This attachment contains water level measurements for the JPL relatively shallow standpipe monitoring wells (MW-1, MW-5 through MW-9, MW-10, MW-13, MW-15, and MW-16) and the Westbay™ multiport wells (MW-3, MW-4, MW-11, MW-12, MW-14, and MW-17 through MW-26) obtained during the 1st Quarter 2013. Water level measurements were recorded before the sampling event on January 25, 2013 for the relatively shallow standpipe monitoring wells and for the Westbay™ multiport wells. Water level measurements were recorded after the sampling event on February 8, 2013 for the relatively shallow standpipe monitoring wells and the Westbay™ multiport wells. Water levels for the shallow wells were measured using a Solinst™ water level meter. In the deep multiport wells, the hydraulic head at each sampling port was measured with a Westbay™ MOSDAX sampling probe. Water level measurements were conducted by Blaine Tech Services, Inc.

WELL GAUGING DATA

Project # 130125-AWI Date 1-25-13 Client Battelle

Site JPL Pasadena

Well ID	Time	Well Size (in.)	Sheen / Odor	Depth to Immiscible Liquid (ft.)	Thickness of Immiscible Liquid (ft.)	Volume of Immiscibles Removed (ml)	Depth to water (ft.)	Depth to well bottom (ft.)	Survey Point: TOB or TOC	Notes
MW-1	0953	4					27.33	Pump QED		
MW-5	0714	4					83.88			
MW-6	0919	4					189.43			
MW-7	0843	4					222.61			
MW-8	0818	4					148.60			
MW-10	0708	4					96.64			
MW-13	0639	4					194.40			
MW-15	0751	4					31.82			
MW-16	0853	4					209.94			
MW-9	1000	4					18.74	↓	↓	

**WESTBAY™ GROUNDWATER MONITORING WELL
WATER LEVEL MEASUREMENT LOG SHEET**

WELL ID: MW-4 PROBE TYPE: WESTBAY
 DATE: 08/20/13 SERIAL NO: EMS 2502
 LOCATION: JPL PROJECT: SPL PASADENA
 OPERATOR(S): A. WOLFE
 ELEV. TOP OF WESTBAY CASING: 1,052.54 ATM. PRESSURE (Patm): (start) 14.17 (finish) 14.18
 WEATHER: RAINY 16.95°C 19.26°C

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Trans. Temp. (oC)	Pressure Head Outside Port (ft) P(ft)=(P2-Patm)/2.307 ft/psi	Depth to Water Outside Port (ft) DTW = Dp-P(ft)	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm ² Outside Casing P2	mH ₂ O Inside Casing						
5	513	513	149.91	188.43	149.91	18.84	402.02	110.98	513	0720	
4	392	392	97.34	136.12	97.34	19.77	281.34	110.66	392	0721	
3	322	322	66.88	105.78	66.88	20.05	211.34	110.66	322	0722	
2	240	240	31.11	71.09	31.11	20.07	131.31	108.69	240	0723	
1	150	150	14.28	38.62	14.28	19.62	56.41	93.59	150	0724	

Comments: Collar defect is 2' above sample post

**WESTBAY™ GROUNDWATER MONITORING WELL
WATER LEVEL MEASUREMENT LOG SHEET**

WELL ID: WV-11
 DATE: 01/25/13
 LOCATION: JPL
 ELEV. TOP OF WESTBAY CASING: 1,139.30
 WEATHER: RAINY

PROBE TYPE: PESTBAY
 SERIAL NO.: EMS2502
 PROJECT: JPL PASADENA
 OPERATOR(S): A. WOLFF
 ATM. PRESSURE (P_{atm}): (start) 14.16 (finish) 14.14
17.09°C 18.39°C

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Trans. Temp. (°C)	Pressure Head Outside Port (ft) P(ft)=(P2-P _{atm})*2.307 ft(psi)	Depth to Water Outside Port (ft) DTW = Dp-P(ft)	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm ² Outside Casing P2	mH ₂ O Inside Casing						
5	639	638	222.70	206.84	222.70	19.31	444.51	194.49	639	0738	
4	524	523	173.02	172.71	173.02	19.98	365.77	158.23	524	0739	
3	429	427	132.34	130.34	132.34	20.00	268.03	160.97	429	0740	
2	259	258	58.67	60.37	58.67	19.41	106.61	152.39	259	0741	
1	149	149	14.23	28.26	14.23	18.75	32.53	116.47	149	0742	

Comments: Collar detect is 6" above sample port

**WESTBAY™ GROUNDWATER MONITORING WELL
WATER LEVEL MEASUREMENT LOG SHEET**

WELL ID: MW-12
 DATE: 01/25/13
 LOCATION: SPL
 ELEV. TOP OF WESTBAY CASING: 1,102.14
 WEATHER: RAINY

PROBE TYPE: WESTBAY
 SERIAL NO. FMS 2502
 PROJECT: SPL PASADENA
 OPERATOR(S): A WOLFF
 ATM. PRESSURE (P_{atm}): (start) 14.15 (finish) 14.17
 15.54°C 17.80°C

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Trans. Temp. (°C)	Pressure Head Outside Port (ft) P(ft)=[P2-P _{atm}]*2.307 ft/psi	Depth to Water Outside Port (ft) DTW = Dp-P(ft)	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm ² Outside Casing P2	mH ₂ O Inside Casing						
5	548	547	215.16	183.94	215.16	19.08	341.71	156.29	548	0759	
4	436	436	167.37	144.48	167.37	19.70	300.47	135.33	436	0800	
3	323	322	117.24	97.86	117.24	19.47	193.12	129.88	323	0801	
2	243	242	82.33	64.66	82.33	19.02	116.53	126.47	243	0802	
1	140	139	37.41	28.67	37.41	18.27	33.50	106.50	140	0803	

Comments: Collec detect is 6" above sample point

**WESTBAY™ GROUNDWATER MONITORING WELL
WATER LEVEL MEASUREMENT LOG SHEET**

WELL ID: MW-14 PROBE TYPE: VESTIBAL
 DATE: 01/25/13 SERIAL NO. EMS 2502
 LOCATION: JPL PROJECT JPL PASADENA
 OPERATOR(S) A. WOLFF
 ELEV. TOP OF WESTBAY CASING 1,173.47
 WEATHER: RAINY ATM. PRESSURE (P_{atm}): (start) 14.13 (finish) 14.16
17.82 19.09

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Trans. Temp. (oC)	Pressure Head Outside Port (ft) P(ft)=(P2-P _{atm})*2.307 ft/psi	Depth to Water Outside Port (ft) DTW = Dp-P(ft)	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm ² Outside Casing P2	mH ₂ O Inside Casing						
5	540	539	184.63	173.54	184.63	18.87	347.76	172.24	540	0904	
4	456	455	148.33	137.20	148.33	19.49	283.92	172.08	456	0905	
3	382	381	116.11	105.11	116.11	19.55	209.89	172.11	382	0906	
2	277	276	70.42	59.43	70.42	19.44	104.51	172.49	277	0907	
1	207	206	39.92	29.35	39.92	19.23	35.11	171.89	207	0908	

Comments: Collar detect is located 6" above sample port

**WESTBAY™ GROUNDWATER MONITORING WELL
WATER LEVEL MEASUREMENT LOG SHEET**

WELL ID: MW-18
 DATE: 01/25/13
 LOCATION: JPL
 ELEV. TOP OF WESTBAY CASING: 1,225.41
 WEATHER: LIGHT RAIN

PROBE TYPE: WESTBAY
 SERIAL NO.: EMS2502
 PROJECT: SPL PASADENA
 OPERATOR(S): A. WOLFF
 ATM. PRESSURE (Patm): (start) 14.10 (finish) 14.13
 17.32°C 17.44°C

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Trans. Temp. (°C)	Pressure Head Outside Port (ft) P(ft)=(P2-Patm)*2.307 ft/psi	Depth to Water Outside Port (ft) DTW = Dp-P(ft)	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm ² Outside Casing P2	mH ₂ O Inside Casing						
5	684	683	162.30	190.23	162.30	18.65	406.33	277.67	684	1059	
4	564	563	110.12	139.03	110.12	19.48	288.21	275.79	564	1100	
3	424	424	49.22	83.78	49.22	19.29	140.75	263.25	424	1101	
2	330	330	14.29	45.43	14.29	18.39	72.28	257.72	330	1102	
1	270	270	14.25	19.53	14.25	17.94	12.53	257.47	270	1103	

Comments: Collar detected is located 6" above sample port

**WESTBAY™ GROUNDWATER MONITORING WELL
WATER LEVEL MEASUREMENT LOG SHEET**

WELL ID: MW-19
 DATE: 01/25/13
 LOCATION: SPL
 ELEV. TOP OF WESTBAY CASING: 1,142.94
 WEATHER: LIGHT RAIN

PROBE TYPE: WESTBAY
 SERIAL NO.: EMS2502
 PROJECT: SPL PASADENA
 OPERATOR(S): A. WOLFE
 ATM. PRESSURE (Patm): (start) 14.16 (finish) 14.16
 16.74°C 17.26°C

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Trans. Temp. (°C)	Pressure Head Outside Port (ft) P(ft)=(P2-Patm)*2.307 ft/psi	Depth to Water Outside Port (ft) DTW = Dp-P(ft)	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm ² Outside Casing P2	mH ₂ O Inside Casing						
5	498	497	171.42	145.07	171.42	17.38	302.01	195.99	498	0939	
4	444	443	148.02	121.75	148.02	17.96	248.21	195.79	444	0940	
3	392	391	125.46	107.49	125.46	18.23	215.31	176.69	392	0941	
2	314	313	91.57	73.77	91.57	18.41	137.52	176.48	314	0942	
1	242	241	60.36	44.81	60.36	18.19	70.71	171.29	242	0943	

Comments: Collar detect is 6" above sample port

**WESTBAY™ GROUNDWATER MONITORING WELL
WATER LEVEL MEASUREMENT LOG SHEET**

WELL ID: MW-24
 DATE: 01/25/13
 LOCATION: SPL
 ELEV. TOP OF WESTBAY CASING: 1,200.94
 WEATHER: RAINY

PROBE TYPE: WESTBAY
 SERIAL NO.: EMS 2502
 PROJECT: SPL PASADENA
 OPERATOR(S): A WOLFF
 ATM. PRESSURE (Patm): (start) 14.12 (finish) 14.14
 15.60°C 21.06°C

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Trans. Temp. (oC)	Pressure Head Outside Port (ft) $P(ft) = (P2 - Patm) * 2.307$ ft/psi	Depth to Water Outside Port (ft) DTW = Dp - P(ft)	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm ² Outside Casing P2	mH ₂ O Inside Casing						
5	678	678	230.93	203.81	230.93	18.74	437.61	240.39	678	0826	
4	554	554	176.31	154.68	176.31	19.76	324.27	229.73	554	0827	
3	435	435	124.62	107.49	124.62	20.20	215.40	219.60	435	0828	
2	373	373	97.71	81.17	97.71	20.50	154.68	218.32	373	0829	
1	279	279	57.02	43.39	57.02	20.73	67.53	211.47	279	0830	

Comments: Collar detect is 6" above sample post

**WESTBAY™ GROUNDWATER MONITORING WELL
WATER LEVEL MEASUREMENT LOG SHEET**

WELL ID: MW-25
 DATE: 01/25/03
 LOCATION: SPL
 ELEV. TOP OF WESTBAY CASING 934.52
 WEATHER: LIGHT RAIN

PROBE TYPE WESTBAY
 SERIAL NO. EMS2502
 PROJECT SPL PASADENA
 OPERATOR(S) A WOLFF
 ATM. PRESSURE (Patm): (start) 14.24 (finish) 14.26
 17.11°C 19.84°C

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Trans. Temp. (°C)	Pressure Head Outside Port (ft) P(ft)=(P2-Patm)*2.307 ft/psi	Depth to Water Outside Port (ft) DTW = Dp-P(ft)	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm ² Outside Casing P2	mH ₂ O Inside Casing						
5	713	712	211.98	216.59	211.98	19.48	466.82	246.18	713	1152	
4	633	632	177.49	183.03	177.49	20.32	389.40	243.60	633	1153	
3	503	503	121.22	127.60	121.22	20.46	261.52	241.48	503	1154	
2	423	423	86.53	93.07	86.53	20.33	181.86	241.14	423	1155	
1	358	358	58.19	64.71	58.19	20.77	116.43	241.57	358	1156	

Comments: Collar detect is 2' below sample port

WELL GAUGING DATA

Project # 130125-AWI Date 2-8-13 Client Battelle

Site JPL, Pasadena

Well ID	Time	Well Size (in.)	Sheen / Odor	Depth to Immiscible Liquid (ft.)	Thickness of Immiscible Liquid (ft.)	Volume of Immiscibles Removed (ml)	Depth to water (ft.)	Depth to well bottom (ft.)	Survey Point: TOB or TOC	Notes
MW-1	0849	4					27.51	Pump GED	↓	
MW-5	0651	4				80.80				
MW-6	0833	4				187.52				
MW-7	0867	4				219.49				
MW-8	1200	4				146.70				
MW-9	0853	4				19.09				
MW-10	0647	4				98.01				
MW-13	0623	4				192.53				
MW-15	0728	4				32.18				
MW-16	1315 27 th	4				245.18	↓	↓		

**WESTBAY™ GROUNDWATER MONITORING WELL
WATER LEVEL MEASUREMENT LOG SHEET**

WELL ID: MWS-3
 DATE: 2/8/13
 LOCATION: JPL
 ELEV. TOP OF WESTBAY CASING: 1,100.34
 WEATHER: MOSTLY CLOUDY

PROBE TYPE: WESTBAY
 SERIAL NO.: EMS 2568
 PROJECT: JPL PASADENA
 OPERATOR(S): A WILKIE
 ATM. PRESSURE (Patm): (start) 14.13 (finish) 14.10
12.00°C 17.53°C

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Trans. Temp. (°C)	Pressure Head Outside Port (ft) P(ft)=(P2-Patm)*2.307 ft/psi	Depth to Water Outside Port (ft) DTW = Dp-P(ft)	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm ² Outside Casing P2	mH ₂ O Inside Casing						
5	653	651	223.51	231.28	223.51	19.03	500.97	152.04	653	0919	
4	558	557	182.24	190.01	182.24	19.72	405.76	152.24	558	0922	
3	346	345	90.08	101.86	90.08	20.09	202.39	143.61	346	0923	
2	252	251	49.13	65.92	49.13	19.84	119.48	132.52	252	0924	
1	172	172	14.22	37.70	14.22	18.88	54.38	117.62	172	0925	

Comments: Collar defect is located 2' above sample port

**WESTBAY™ GROUNDWATER MONITORING WELL
WATER LEVEL MEASUREMENT LOG SHEET**

WELL ID: MW-4
 DATE: 2/8/13
 LOCATION: SPL
 ELEV. TOP OF WESTBAY CASING: 1,052.84
 WEATHER: PARTLY CLOUDY

PROBE TYPE: WESTBAY
 SERIAL NO.: EMS 2568
 PROJECT: JOL PASADENA
 OPERATOR(S): A. WOLFF
 ATM. PRESSURE (P_{atm}): (start) 14.11 (finish) 14.14 (8.80°C)

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Trans. Temp. (°C)	Pressure Head Outside Port (ft) P(ft) = (P ₂ - P _{atm}) * 2.307 ft/psi	Depth to Water Outside Port (ft) DTW = Dp - P(ft)	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm ² Outside Casing P ₂	mH ₂ O Inside Casing						
5	513	512	150.01	159.62	150.01	17.59	403.52	109.48	513	0658	
4	392	391	97.30	130.63	97.30	18.82	282.65	109.35	392	0659	
3	322	321	66.82	106.32	66.82	19.31	212.73	109.27	322	0700	
2	240	239	31.18	71.63	31.18	19.49	132.70	107.30	240	0701	
1	150	149	14.25	39.90	14.25	19.28	59.50	90.50	150	0702	

Comments: Collar defect 5' above sample port

**WESTBAY™ GROUNDWATER MONITORING WELL
WATER LEVEL MEASUREMENT LOG SHEET**

WELL ID: MW-17
 DATE: 02/8/13
 LOCATION: JPL
 ELEV. TOP OF WESTBAY CASING: 1,102.10
 WEATHER: PARTLY CLOUDY

PROBE TYPE: WESTBAY
 SERIAL NO.: EMS 2508
 PROJECT: JPL PASADENA
 OPERATOR(S): AWLFF
 ATM. PRESSURE (P_{atm}): (start) 14.11 (finish) 14.14
 14.320 17 23.0

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Trans. Temp. (°C)	Pressure Head Outside Port (ft) P(ft)=(P ₂ -P _{atm})/2.307 ft/psi	Depth to Water Outside Port (ft) DTW = Dp-P(ft)	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm ² Outside Casing P ₂	mH ₂ O Inside Casing						
5	548	548	207.34	184.65	207.34	16.95	393.44	154.56	548	0733	
4	436	436	158.71	144.93	158.71	18.59	301.80	134.20	436	0734	
3	323	323	104.52	98.33	104.52	18.71	194.30	128.70	323	0735	
2	243	243	74.67	65.21	74.67	18.35	117.89	125.11	243	0736	
1	140	140	29.81	30.08	29.81	17.92	36.84	103.16	140	0737	

Comments: Collar defect is 6" above sample port

**WESTBAY™ GROUNDWATER MONITORING WELL
WATER LEVEL MEASUREMENT LOG SHEET**

WELL ID: MW-14
 DATE: 2/8/13
 LOCATION: JPL
 ELEV. TOP OF WESTBAY CASING: 1,173.47
 WEATHER: MOSTLY CLOUDY

PROBE TYPE: WESTBAY
 SERIAL NO. EMS 2508
 PROJECT: JPL PASADENA
 OPERATOR(S): A WOLFF
 ATM. PRESSURE (P_{atm}): (start) 14.10 (finish) 14.10
 14.84°C 18.94°C

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Trans. Temp. (oC)	Pressure Head Outside Port (ft) P(ft)=(P2-Patm)*2.307 ft/psi	Depth to Water Outside Port (ft) DTW = Dp-P(ft)	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm ² Outside Casing P2	mH ₂ O Inside Casing						
5	540	540	184.58	173.02	184.58	15.02	368.70	171.30	540	0820	
4	456	456	148.95	137.56	148.95	14.43	284.82	171.18	456	0821	
3	382	382	115.72	105.45	115.72	14.54	210.74	171.26	382	0822	
2	277	277	76.10	59.82	76.10	14.34	105.48	171.52	277	0823	
1	207	207	39.70	29.71	39.70	14.15	36.01	170.99	207	0825	

Comments: Collar defect is 6" above sample port

**WESTBAY™ GROUNDWATER MONITORING WELL
WATER LEVEL MEASUREMENT LOG SHEET**

WELL ID: MW-17
 DATE: 2/8/13
 LOCATION: JPL
 ELEV. TOP OF WESTBAY CASING: 1,191.21
 WEATHER: PARTLY CLOUDY

PROBE TYPE: WESTBAY
 SERIAL NO.: EMS 2508
 PROJECT: JPL PASADENA
 OPERATOR(S): A WOLFF
 ATM. PRESSURE (Patm): (start) 14.10 (finish) 14.10
 14.42°C 16.75°C

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Trans. Temp. (°C)	Pressure Head Outside Port (ft) P(ft)=(P2-Patm)*2.307 ft/psi	Depth to Water Outside Port (ft) DTW = Dp-P(ft)	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm ² Outside Casing P2	mH ₂ O Inside Casing						
5	726	725	240.58	218.55	240.58	16.73	471.67	254.33	726	1001	
4	582	581	178.03	158.71	178.03	18.14	333.62	248.88	582	1005	
3	468	468	128.78	115.71	128.78	18.04	234.41	233.59	468	1008	
2	370	370	86.21	75.70	86.21	17.67	142.11	227.89	370	1007	
1	250	250	34.16	28.89	34.16	16.97	34.12	215.88	250	1008	

Comments: Collar detect is 6' above sample port

WESTBAY™ GROUNDWATER MONITORING WELL
WATER LEVEL MEASUREMENT LOG SHEET

WELL ID: MW-18
 DATE: 2/8/13
 LOCATION: JOL
 ELEV. TOP OF WESTBAY CASING: 1,225.41
 WEATHER: PARTLY CLOUDY

PROBE TYPE: WESTBAY
 SERIAL NO. EMS 2508
 PROJECT: JOL PASADENA
 OPERATOR(S): A WOLFF
 ATM. PRESSURE (Patm): (start) 14.07 (finish) 14.04
 16.62°C 17.11°C

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Trans. Temp. (°C)	Pressure Head Outside Port (ft) P(ft)=(P2-Patm)*2.307 ft/psi	Depth to Water Outside Port (ft) DTW = Dp-P(ft)	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm ² Outside Casing P2	mH ₂ O Inside Casing						
5	654	652	102.15	140.54	162.15	18.17	407.01	276.19	604	1021	
4	564	563	110.02	140.16	110.02	19.35	290.89	273.11	564	1022	
3	424	422	49.20	83.89	49.20	19.11	161.07	202.73	424	1023	
2	330	328	14.22	45.69	14.22	18.27	72.95	257.05	330	1024	
1	270	268	14.18	19.00	14.18	17.72	13.45	256.55	270	1025	

Comments: Collar detect is 6" above sample port

**WESTBAY™ GROUNDWATER MONITORING WELL
WATER LEVEL MEASUREMENT LOG SHEET**

WELL ID: MW-19 PROBE TYPE: WESTBAY
 DATE: 2/8/13 SERIAL NO. EMS 2508
 LOCATION: JPL PROJECT: JPL PASADENA
 ELEV. TOP OF WESTBAY CASING: 1,142.94 OPERATOR(S): A WOLFF
 WEATHER: CLOUDY COLD ATM. PRESSURE (Patm): (start) 14.12 (finish) 14.13
13.00°C 16.5°C

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Trans. Temp. (°C)	Pressure Head Outside Port (ft) P(ft)=(P2-Patm)/2.307 ft/psi	Depth to Water Outside Port (ft) DTW = Dp-P(ft)	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm ² Outside Casing P2	mH ₂ O Inside Casing						
5	498	497	171.42	145.77	171.42	15.54	303.72	194.20	498	0944	
4	444	443	148.00	122.47	148.00	16.78	249.46	194.04	444	0945	
3	392	391	125.47	107.94	125.47	17.29	216.44	175.56	392	0946	
2	314	314	91.62	74.21	91.62	17.74	138.63	175.37	314	0947	
1	242	241	60.44	45.17	60.44	17.65	71.63	170.37	242	0948	

Comments: Collar defect is 6" above sample port

**WESTBAY™ GROUNDWATER MONITORING WELL
WATER LEVEL MEASUREMENT LOG SHEET**

WELL ID: WAW-20
 PROBE TYPE: WESTBAY
 SERIAL NO.: EMS 2503
 PROJECT: SPL PASADENA
 OPERATOR(S): R WOLFE
 ATM. PRESSURE (Patm): (start) 14.10 (finish) 14.06
15.74°C 17.53°C

DATE: 2/8/13
 LOCATION: JPL
 ELEV. TOP OF WESTBAY CASING: 1,165.05
 WEATHER: PARTLY CLOUDY

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Trans. Temp. (oC)	Pressure Head Outside Port (ft) P(ft)=(P2-Patm)*2.307 ft/psi	Depth to Water Outside Port (ft) DTW = Dp-P(ft)	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm ² Outside Casing P2	mH ₂ O Inside Casing						
5	400	505	321.32	317.52	321.32	18.54	699.99	200.01	900	1040	
4	700	648	234.63	225.17	234.63	20.00	406.94	213.06	700	1042	
3	562	560	175.02	163.35	175.02	20.71	344.82	217.60	502	1043	
2	392	390	101.10	94.95	101.10	19.68	186.52	205.40	392	1044	
1	230	228	30.85	24.58	30.85	18.23	24.10	205.02	230	1045	

Comments: Collar detect is 6' above sample port

WESTBAY™ GROUNDWATER MONITORING WELL
WATER LEVEL MEASUREMENT LOG SHEET

WELL ID: MW-21
 DATE: 2/8/13
 LOCATION: JPL
 ELEV. TOP OF WESTBAY CASING: 1,059.10
 WEATHER: MOSTLY CLOUDY

PROBE TYPE: WESTBAY
 SERIAL NO.: EMS 2508
 PROJECT: JPL PASADENA
 OPERATOR(S): A WILFF
 ATM. PRESSURE (Palm): (start) 14.10 (finish) 14.13
 16.72" - 18.40"

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Trans. Temp. (oC)	Pressure Head Outside Port (ft) P(ft)=(P2-Patm)*2.307 ft/psi	Depth to Water Outside Port (ft) DTW = Dp-P(ft)	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm ² Outside Casing P2	mH ₂ O Inside Casing						
5	372	372	125.77	147.17	125.77	17.77	306.99	65.01	372	1139	
4	310	310	98.62	120.32	98.62	18.37	245.05	64.95	310	1140	
3	240	241	68.74	90.43	68.74	18.61	176.09	63.91	240	1141	
2	161	162	34.30	56.21	34.30	18.57	97.15	63.85	161	1142	
1	90	90	14.19	24.67	14.19	18.48	24.38	65.62	90	1143	

Comments: Collar detect is 2' above sample port

**WESTBAY™ GROUNDWATER MONITORING WELL
WATER LEVEL MEASUREMENT LOG SHEET**

WELL ID: MW-22
 DATE: 2/8/13
 LOCATION: JPL
 ELEV. TOP OF WESTBAY CASING: 1,176.95
 WEATHER: PARTLY CLOUDY

PROBE TYPE: WESTBAY
 SERIAL NO.: EMS2508
 PROJECT: JPL PASADENA
 OPERATOR(S): A WOLFF
 ATM. PRESSURE (P_{atm}): (start) 14.05 (finish) 14.07
 13.70°C 19.49°C

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Trans. Temp. (°C)	Pressure Head Outside Port (ft) P(ft)=(P2-P _{atm})*2.307 ft/psi	Depth to Water Outside Port (ft) DTW = Dp-P(ft)	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm ² Outside Casing P2	mH ₂ O Inside Casing						
5	588	588	200.61	181.71	200.61	17.10	380.72	201.28	588	0607	
4	467	467	148.10	132.26	148.10	19.04	272.64	194.36	467	0608	
3	389	389	114.29	102.73	114.29	19.47	204.52	187.48	389	0609	
2	329	329	88.12	76.53	88.12	19.71	144.07	104.93	329	0610	
1	245	245	51.41	40.33	51.41	19.63	60.56	184.44	245	0611	

Comments: Collar is located 1' above sample port

**WESTBAY™ GROUNDWATER MONITORING WELL
WATER LEVEL MEASUREMENT LOG SHEET**

WELL ID: MW-23
 DATE: 2/5/13
 LOCATION: JPL
 ELEV. TOP OF WESTBAY CASING: 1,165.84
 WEATHER: PARTLY CLOUDY

PROBE TYPE: WESTBAY
 SERIAL NO.: EMS 2508
 PROJECT: JPL PASADENA
 OPERATOR(S): A WOLFF
 ATM. PRESSURE (Patm): (start) 14.11 (finish) 14.12
 14.33°C 14.25°C

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Trans. Temp. (°C)	Pressure Head Outside Port (ft) P(ft)=(P2-Patm)*2.307 ft/psi	Depth to Water Outside Port (ft) DTW = Dp-P(ft)	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm ² Outside Casing P2	mH ₂ O Inside Casing						
5	542	540	203.21	141.34	203.21	17.44	408.87	133.13	542	0635	
4	445	443	161.23	149.46	161.23	18.64	312.25	132.75	445	0636	
3	319	318	106.68	99.31	106.68	19.25	196.50	122.44	319	0637	
2	254	253	78.41	71.22	78.41	19.32	131.75	122.25	254	0638	
1	174	173	43.72	38.41	43.72	19.33	56.06	117.94	174	0639	

Comments: Casing defect is 1' above sample port

WESTBAY™ GROUNDWATER MONITORING WELL
WATER LEVEL MEASUREMENT LOG SHEET

WELL ID: MW-24
 DATE: 2/8/13
 LOCATION: JPL
 ELEV. TOP OF WESTBAY CASING: 1,200.94
 WEATHER: PARTLY CLOUDY

PROBE TYPE: WEST BAY
 SERIAL NO.: EMS 2508
 PROJECT: JPL PASADENA
 OPERATOR(S): A WOLFF

ATM. PRESSURE (Patm): (start) 14.10 (finish) 14.13
 14.32°C 20.93°C

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Trans. Temp. (°C)	Pressure Head Outside Port (ft) P(ft)=(P2-Patm)*2.307 ft/psi	Depth to Water Outside Port (ft) DTW = Dp-P(ft)	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm ² Outside Casing P2	mH ₂ O Inside Casing						
5	678	676	222.64	204.38	222.64	18.44	438.98	239.02	678	0751	
4	554	553	168.97	155.16	168.97	19.56	325.43	228.57	554	0752	
3	435	434	117.41	107.99	117.41	19.99	216.60	218.40	435	0753	
2	373	372	90.60	81.73	90.60	20.28	156.02	216.98	373	0754	
1	279	278	49.78	44.05	49.78	26.54	69.09	209.91	279	0755	

Comments: Collar detect is 6" above sample port

**WESTBAY™ GROUNDWATER MONITORING WELL
WATER LEVEL MEASUREMENT LOG SHEET**

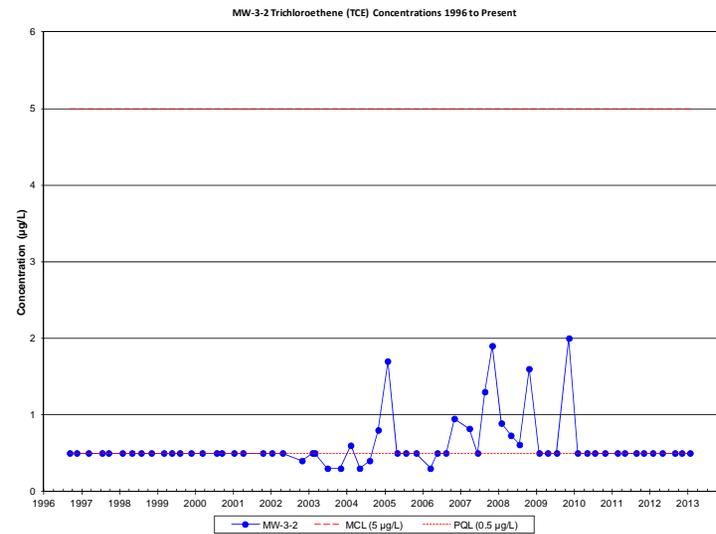
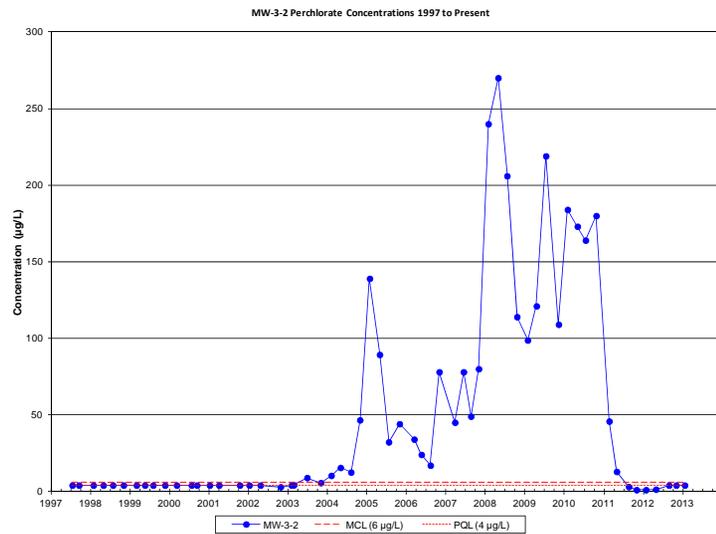
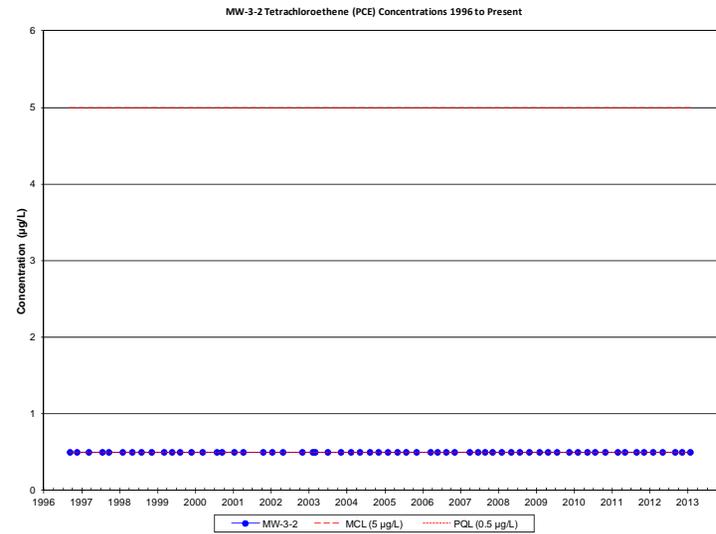
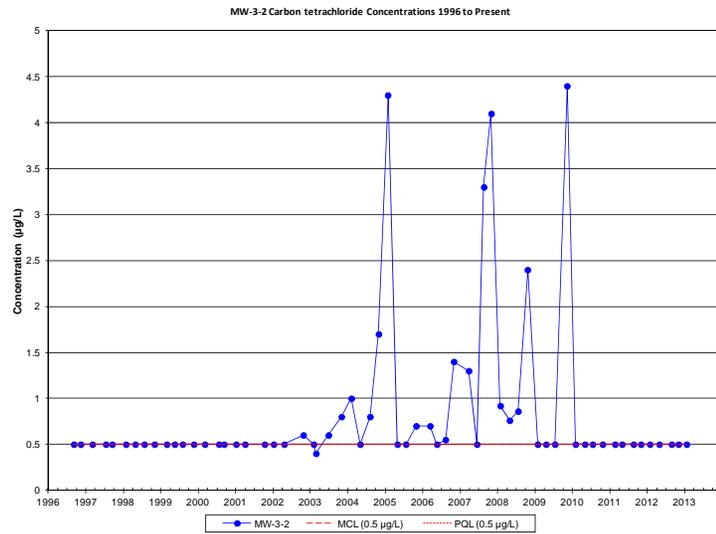
WELL ID: MW-25
 DATE: 2/8/13
 LOCATION: JPL
 ELEV. TOP OF WESTBAY CASING: 934.52
 WEATHER: MOSTLY CLOUDY

PROBE TYPE: WESTBAY
 SERIAL NO.: EMS 2508
 PROJECT: JPL PASADENA
 OPERATOR(S): B WOLFF
 ATM. PRESSURE (P_{atm}): (start) 14.20 (finish) 14.21
 16.23°C 19.60°C

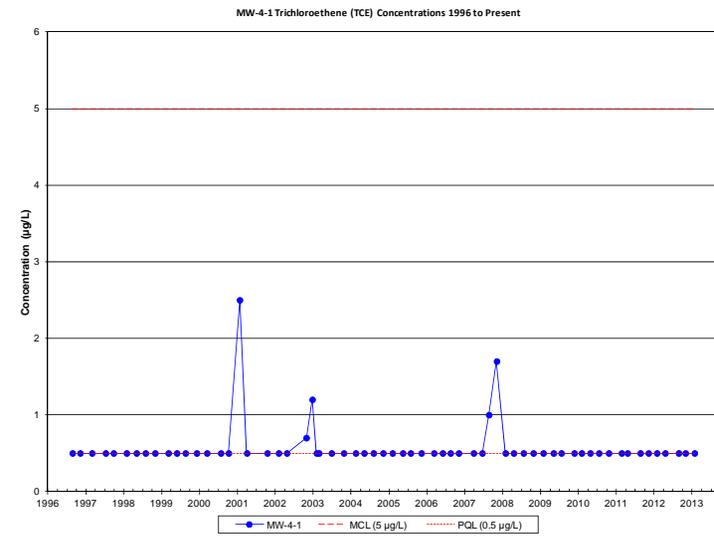
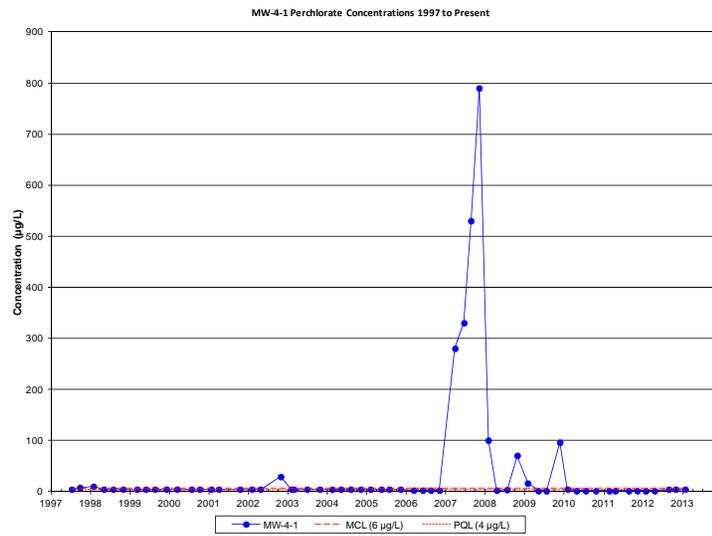
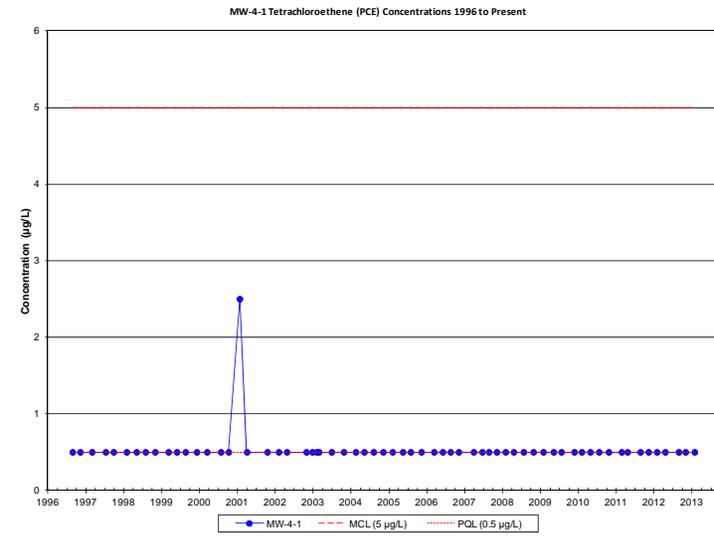
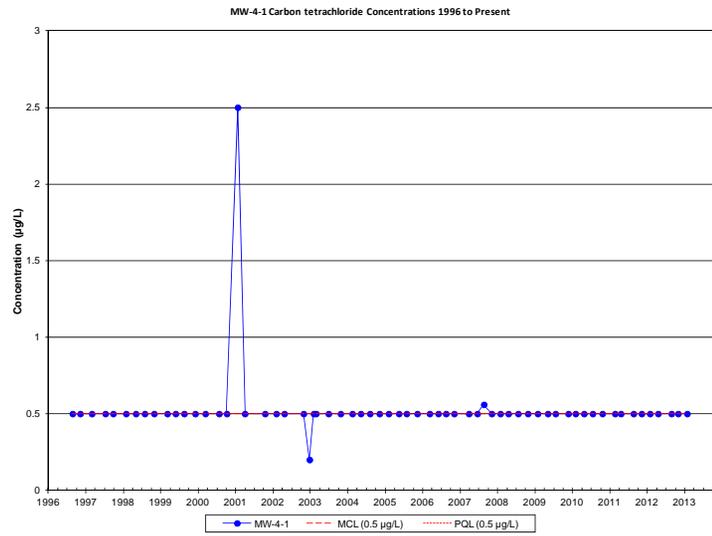
Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Trans. Temp. (°C)	Pressure Head Outside Port (ft) P(ft)=(P2-P _{atm})*2.307 ft/psi	Depth to Water Outside Port (ft) DTW = Dp-P(ft)	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm ² Outside Casing P2	mH ₂ O Inside Casing						
5	713	712	211.88	217.31	211.88	18.79	408.57	244.43	713	1117	
4	633	632	177.46	183.56	177.46	19.66	340.71	242.29	633	1118	
3	503	502	121.10	128.07 128.00	121.10	20.03	262.70	240.30	503	1119	
2	423	423	86.47	93.44	86.47	20.00	182.81	240.19	423	1120	
1	358	358	58.20	65.04	58.20	19.81	117.29	240.71	358	1121	

Comments: Collar defect ~ 2' below sample port

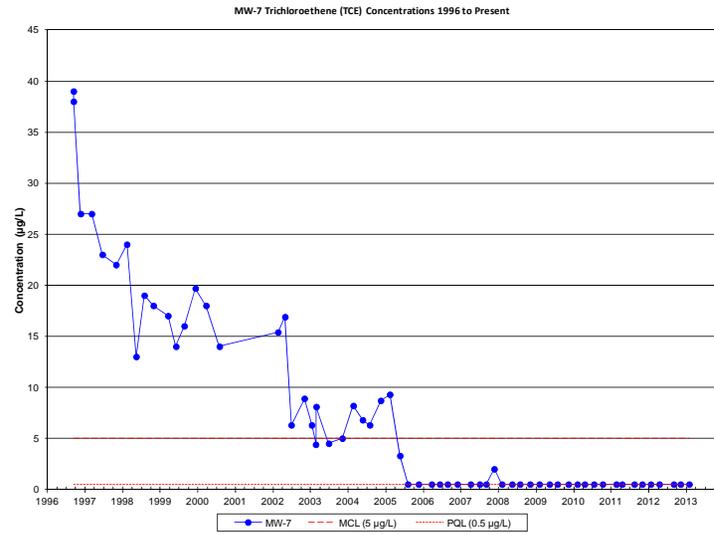
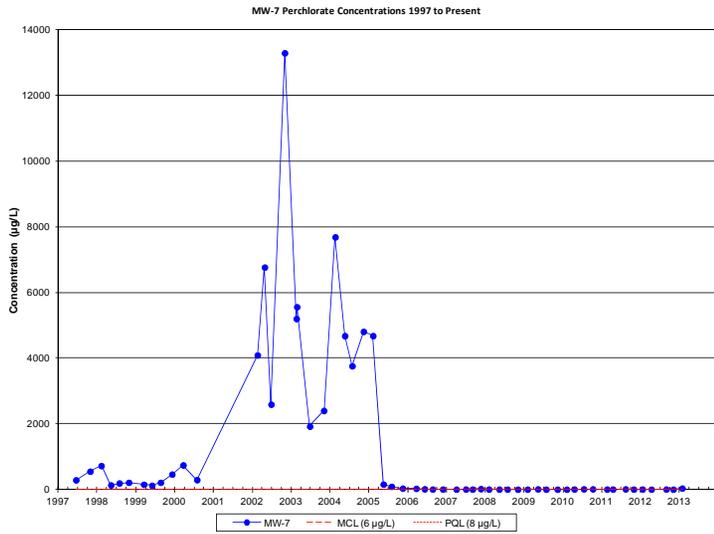
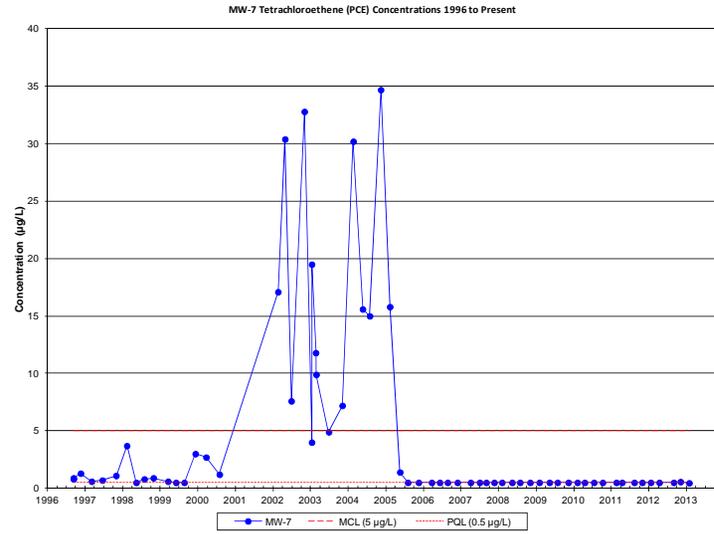
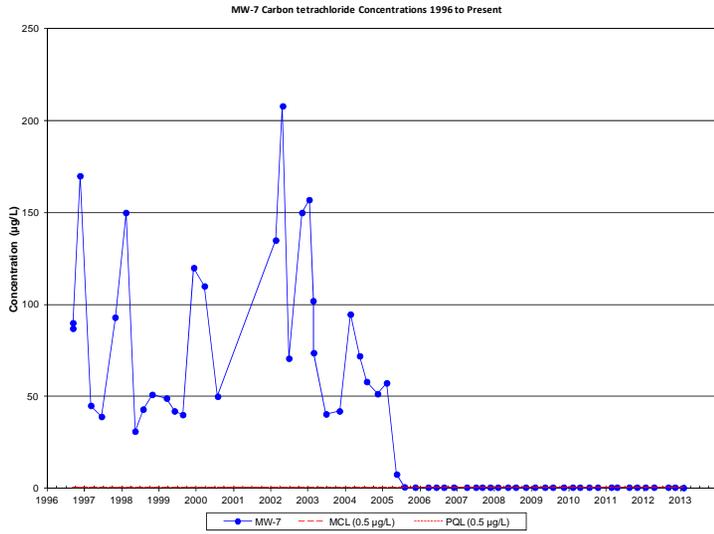
ATTACHMENT 6: TIME SERIES PLOTS



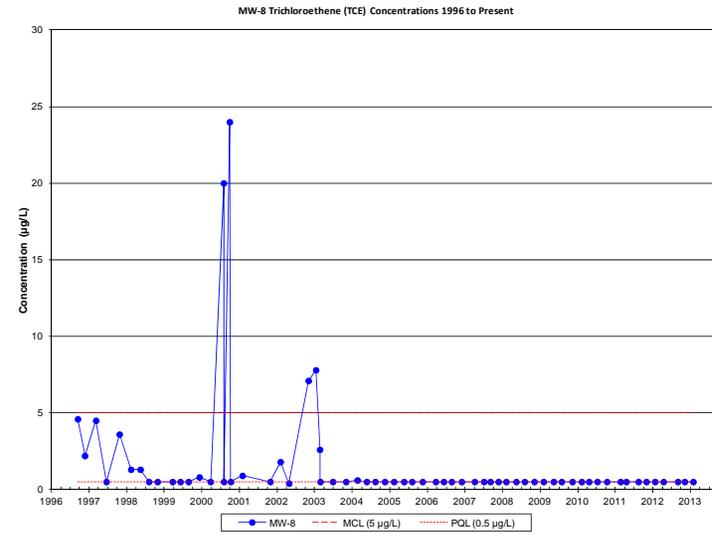
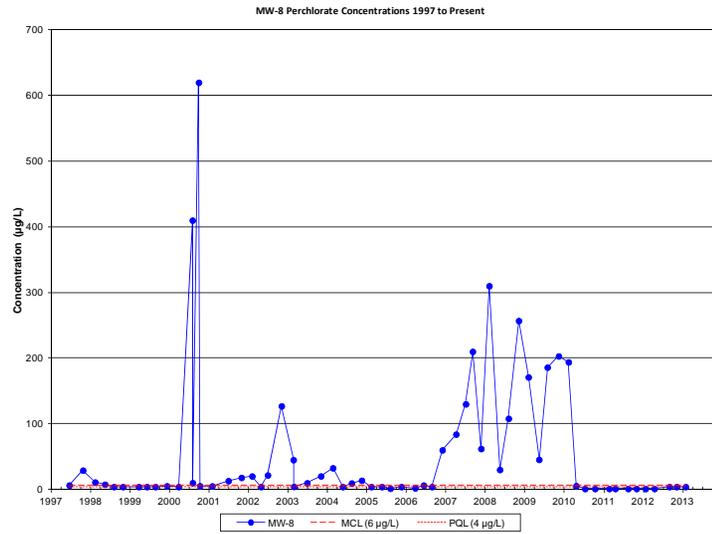
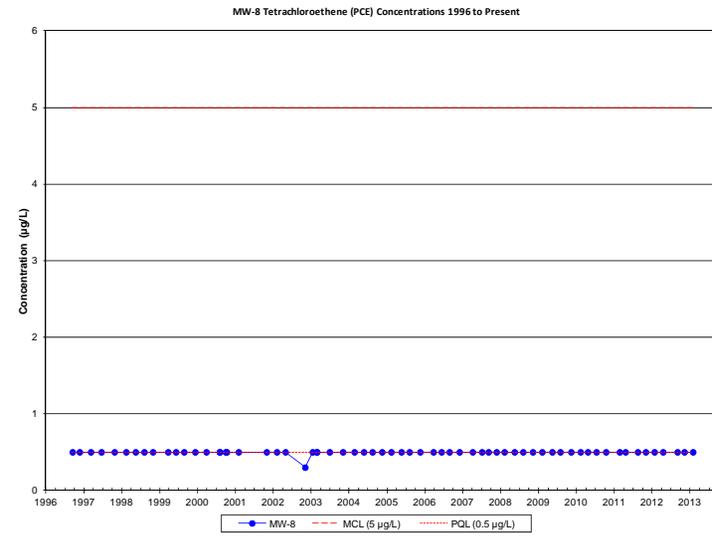
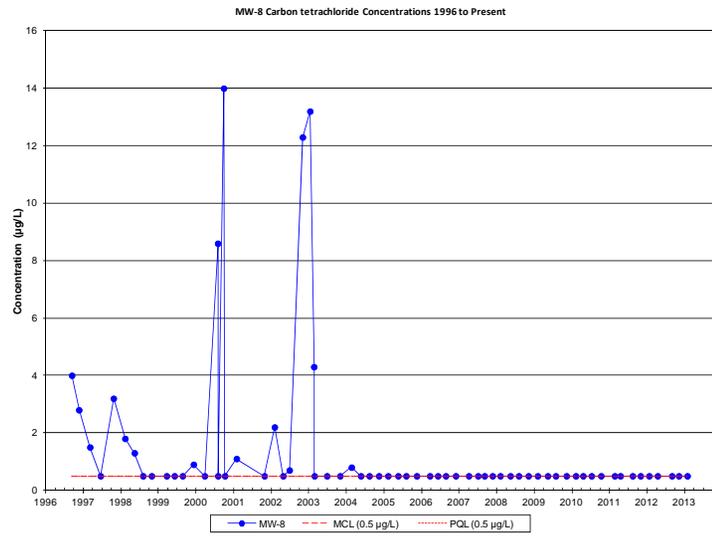
VOCs and Perchlorate Time Series Plots for MW-3-2



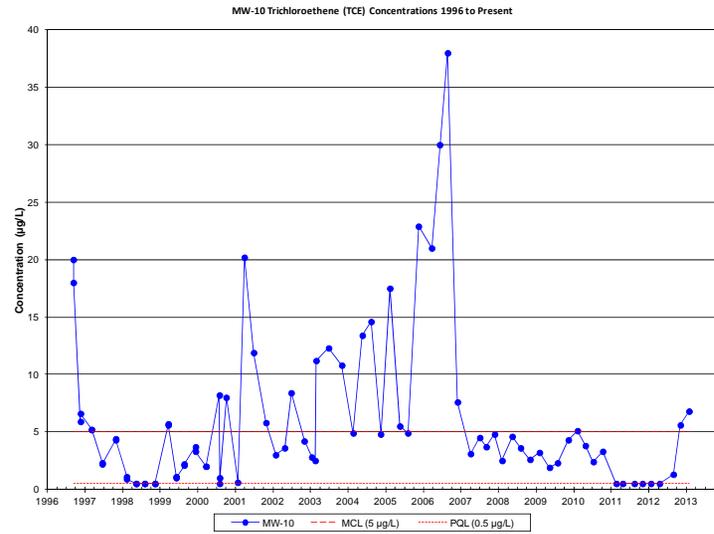
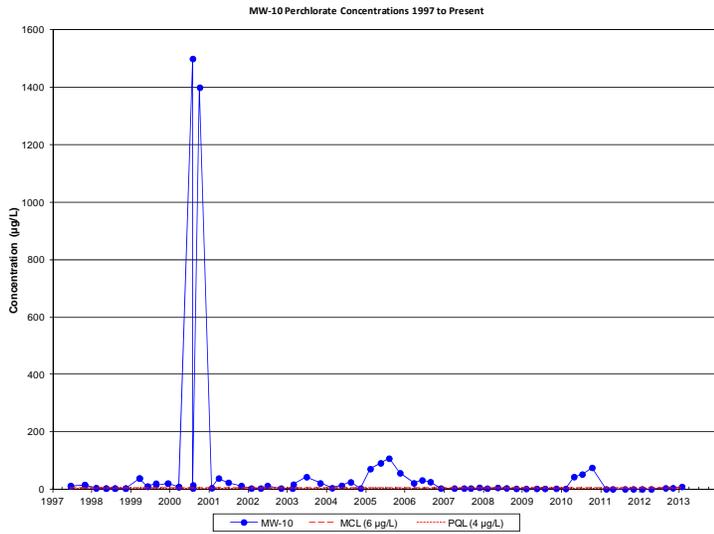
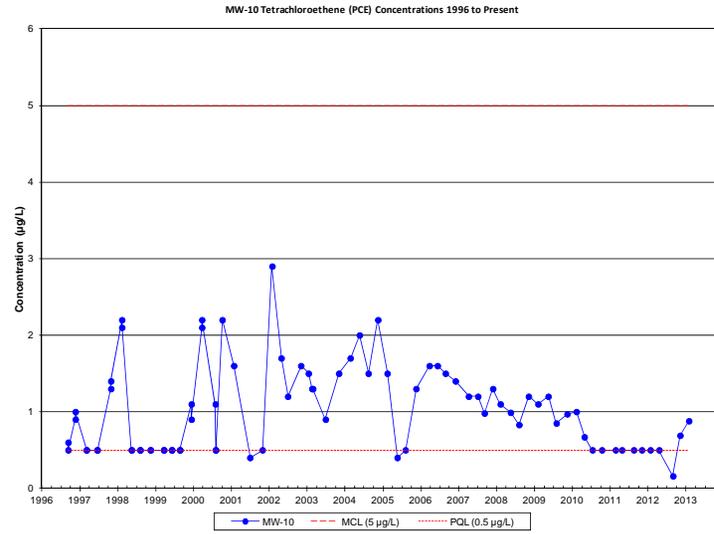
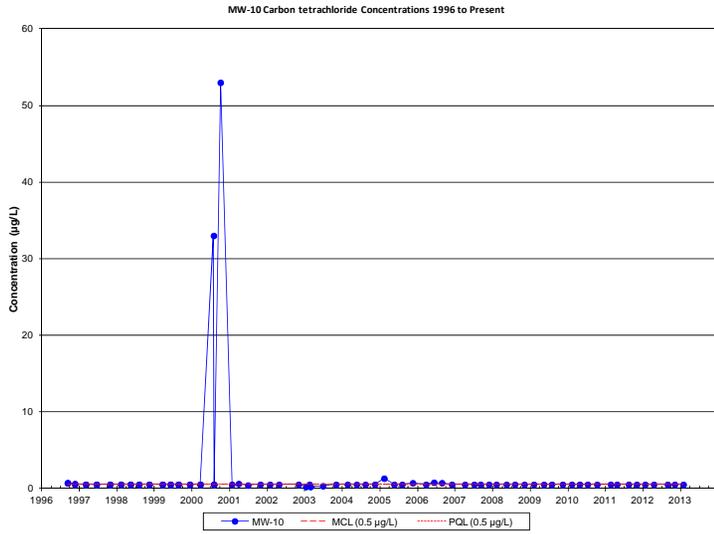
VOCs and Perchlorate Time Series Plots for MW-4-1



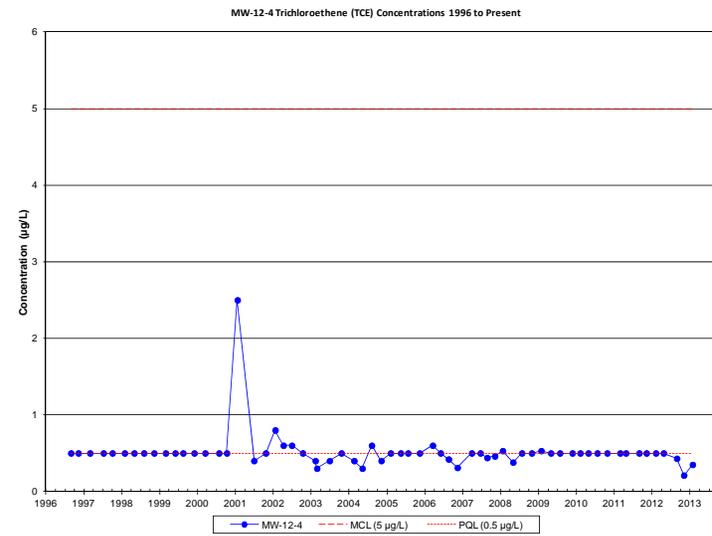
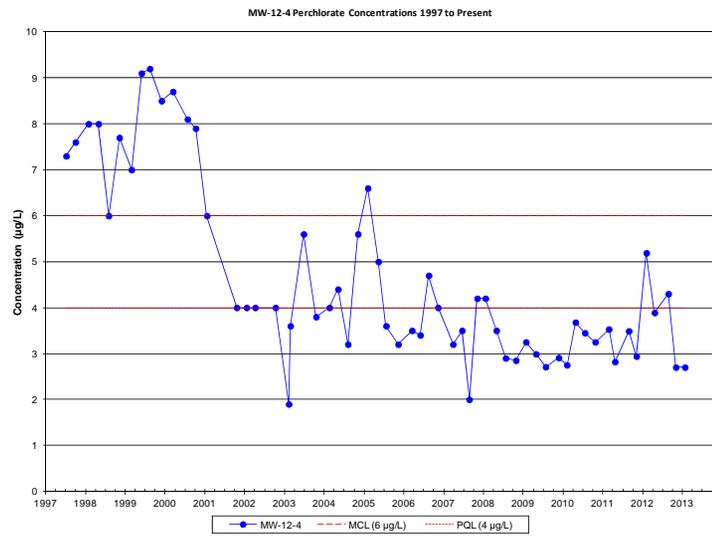
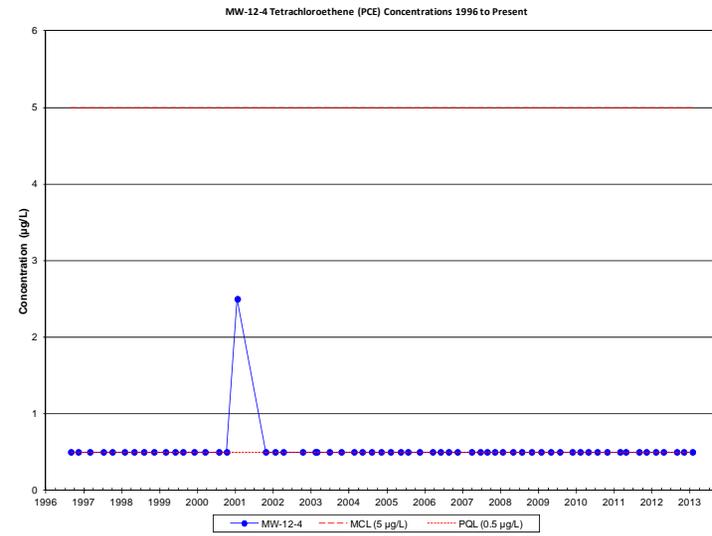
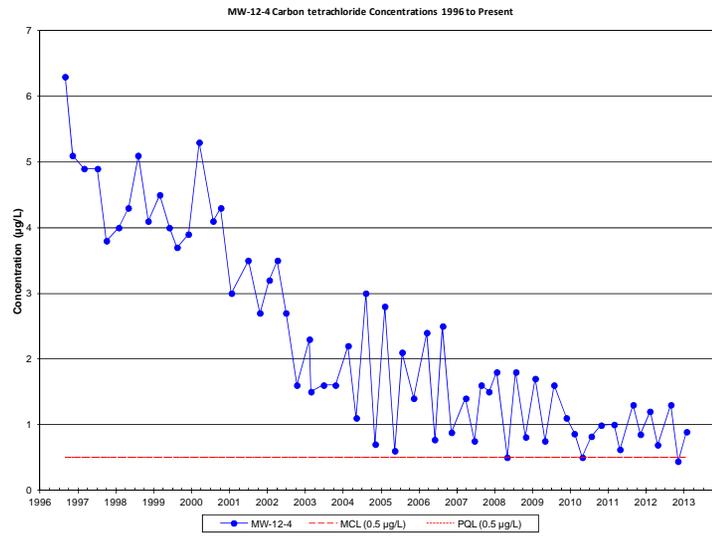
VOCs and Perchlorate Time Series Plots for MW-7



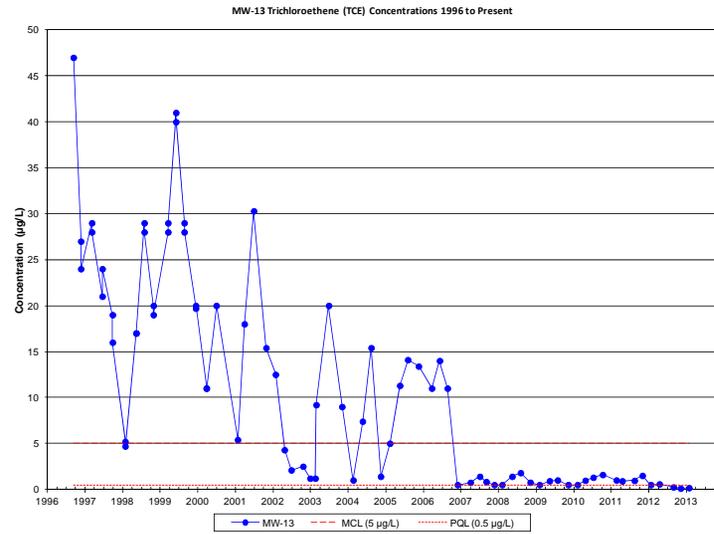
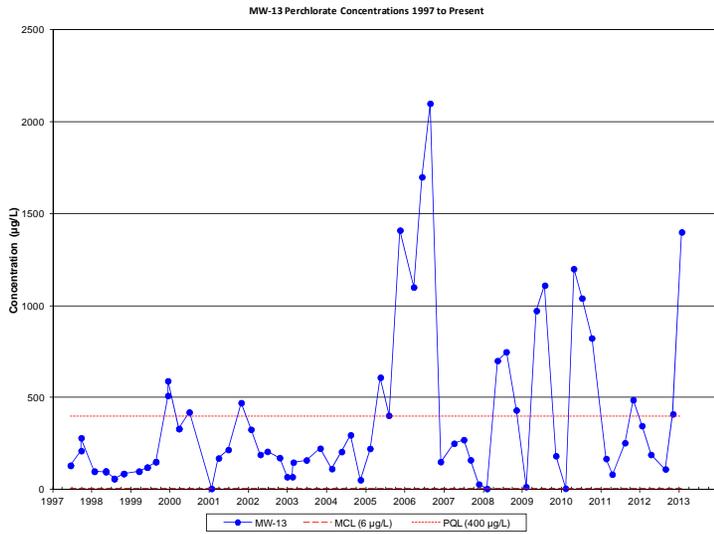
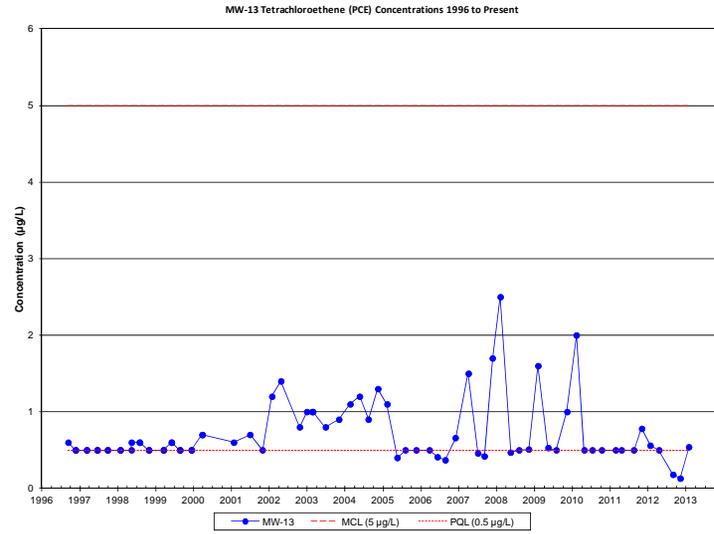
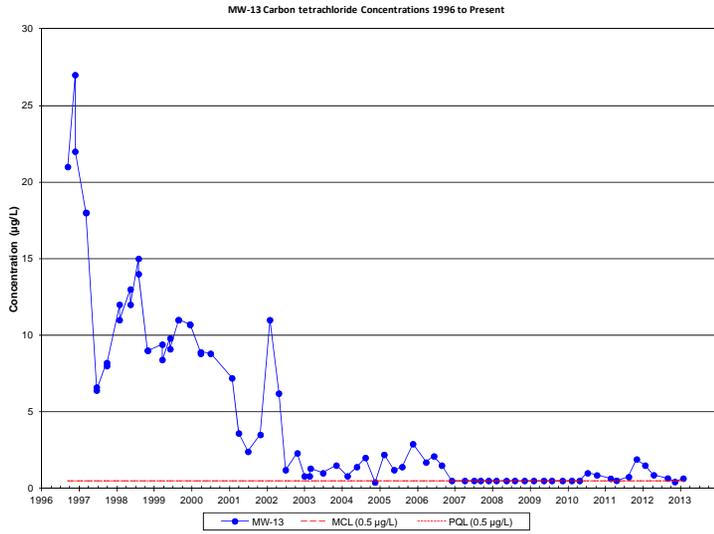
VOCs and Perchlorate Time Series Plots for MW-8



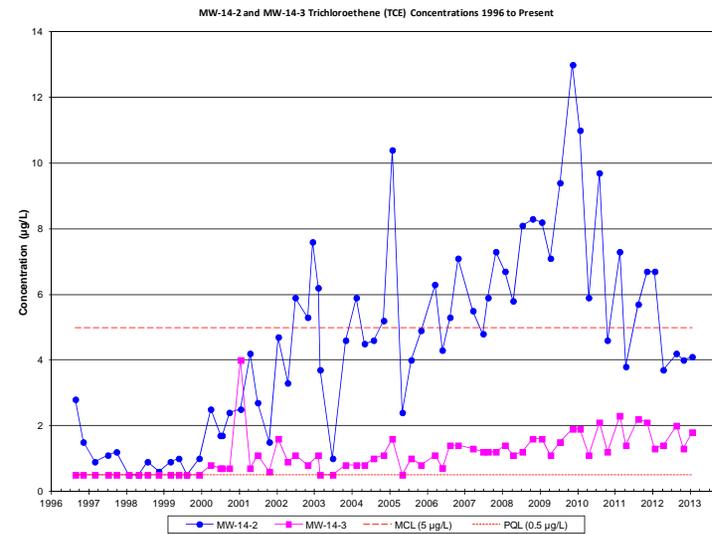
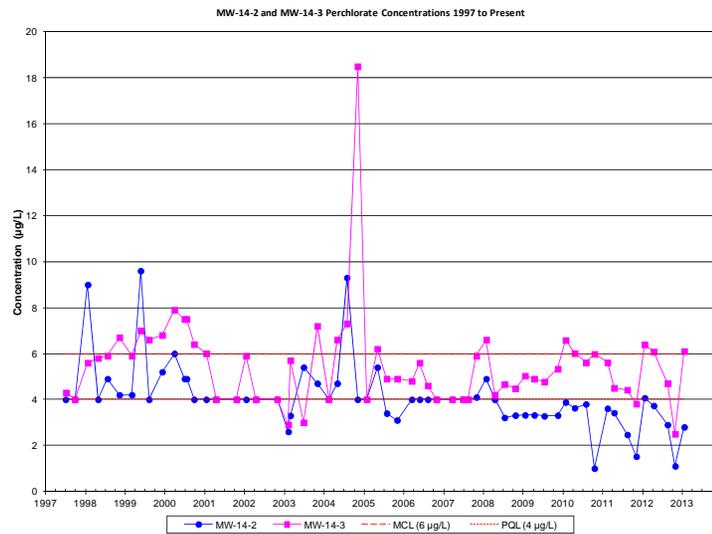
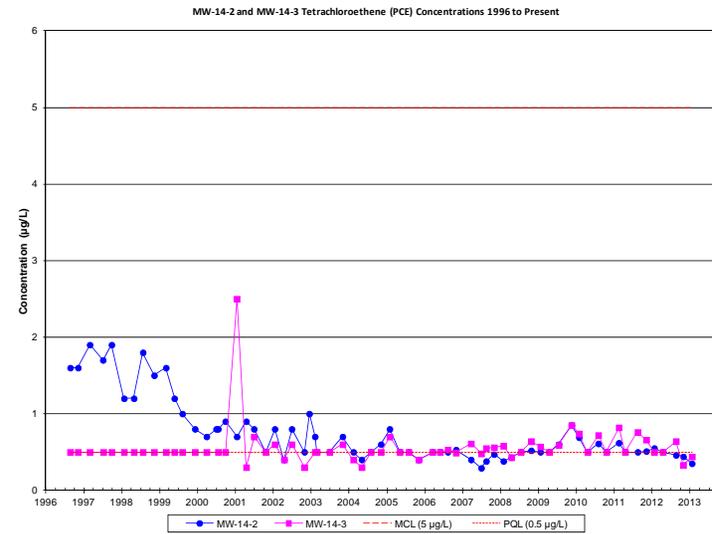
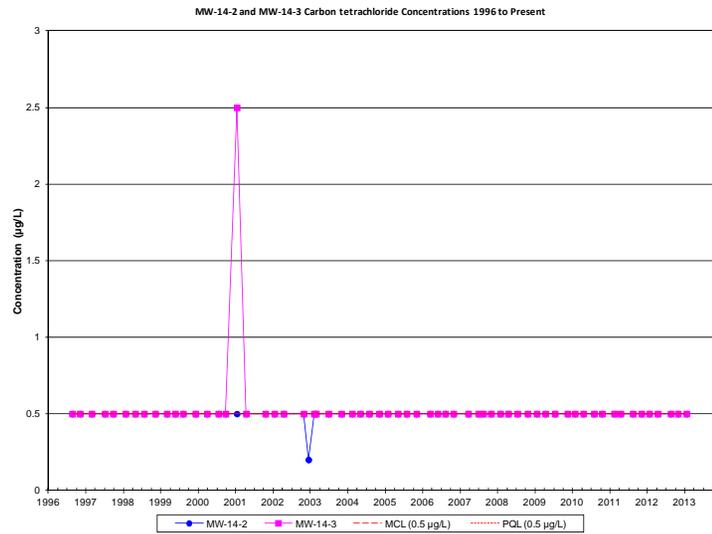
VOCs and Perchlorate Time Series Plots for MW-10



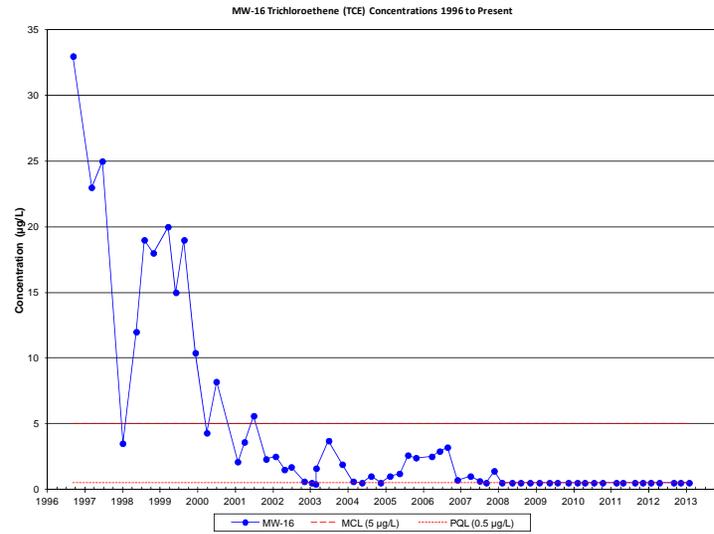
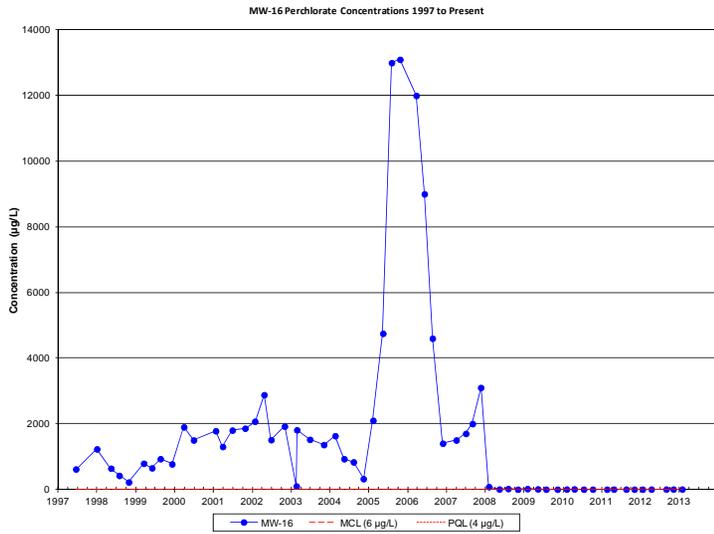
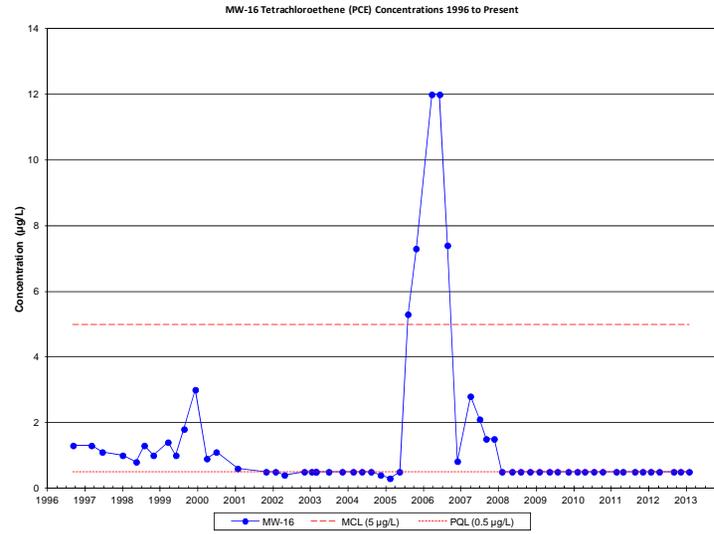
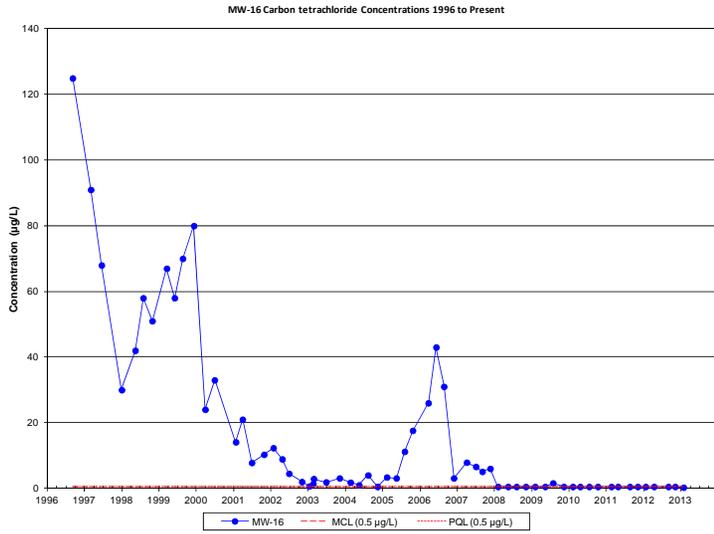
VOCs and Perchlorate Time Series Plots for MW-12-4



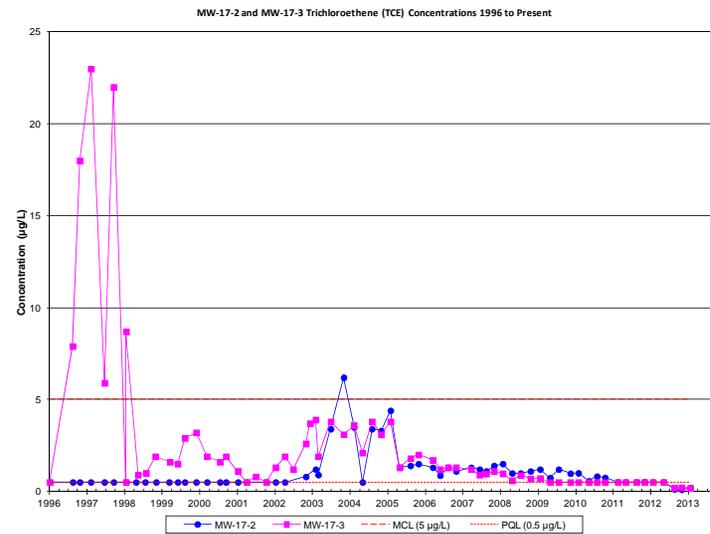
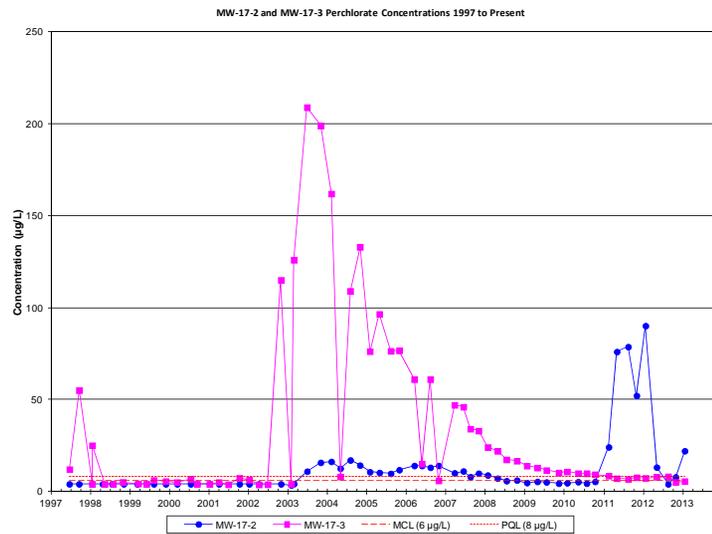
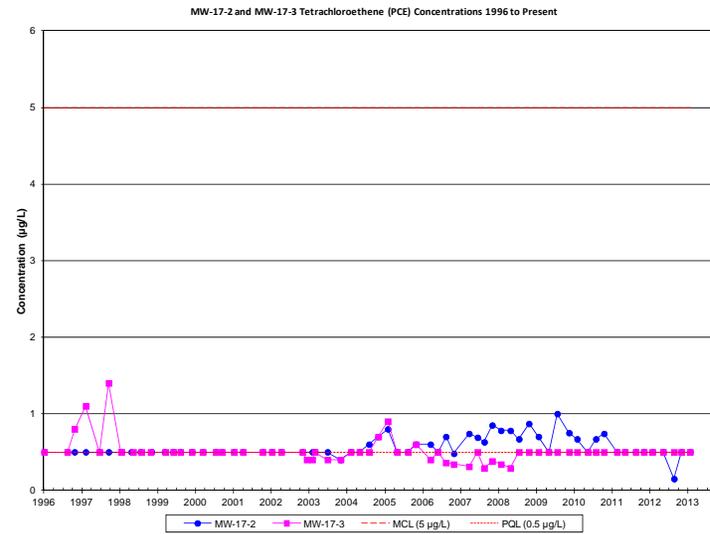
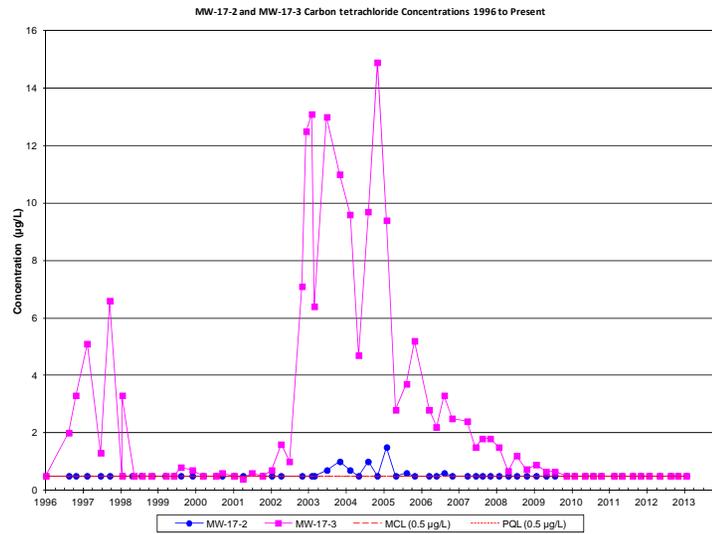
VOCs and Perchlorate Time Series Plots for MW-13



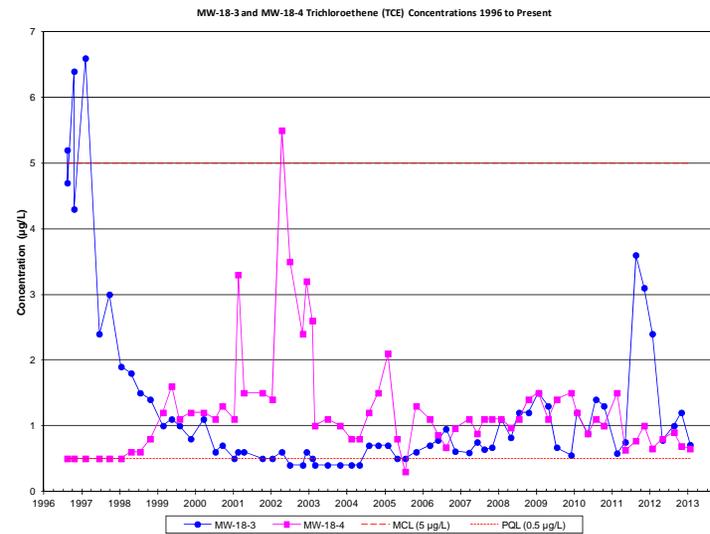
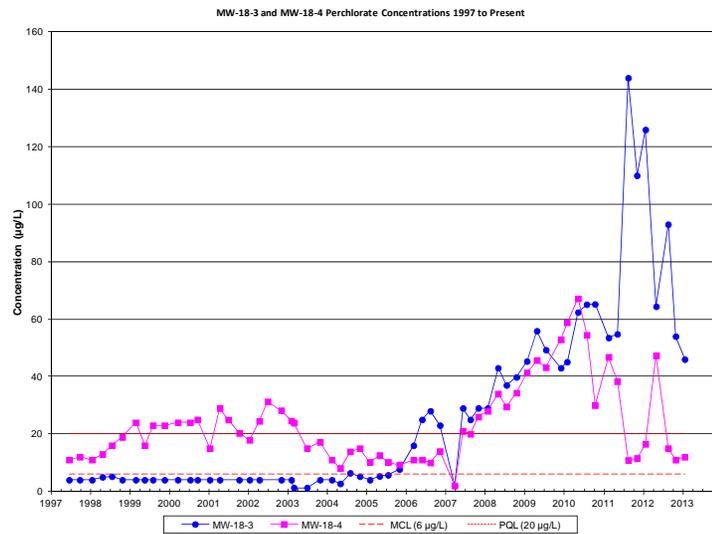
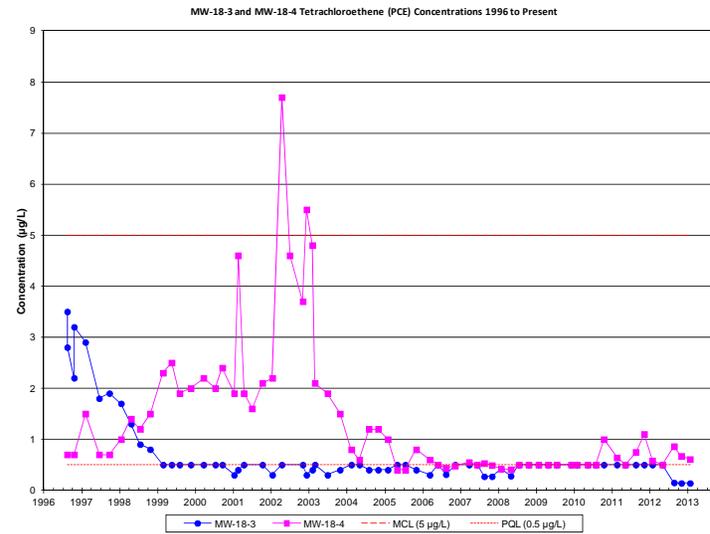
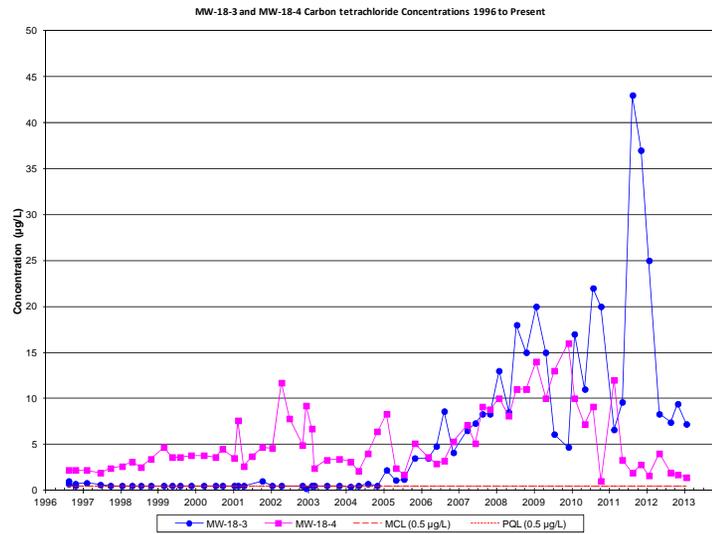
VOCs and Perchlorate Time Series Plots for MW-14-2 and MW-14-3



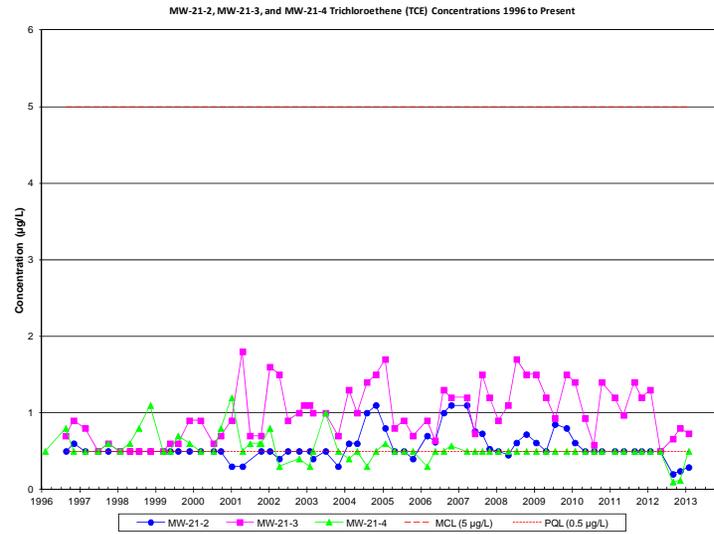
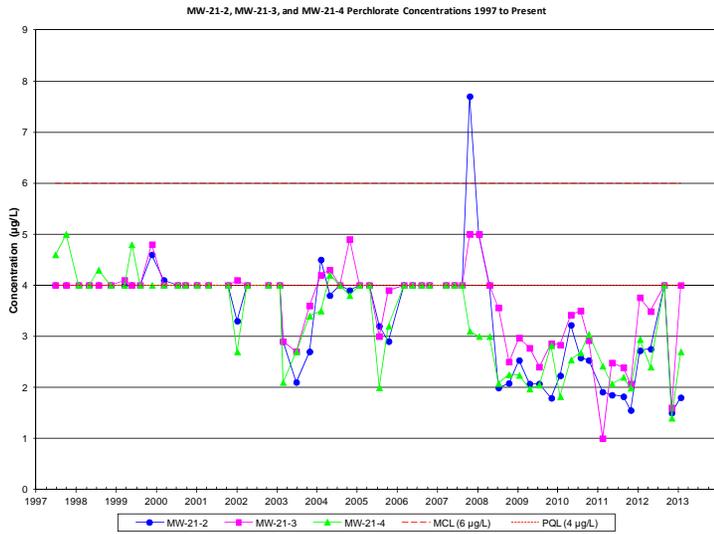
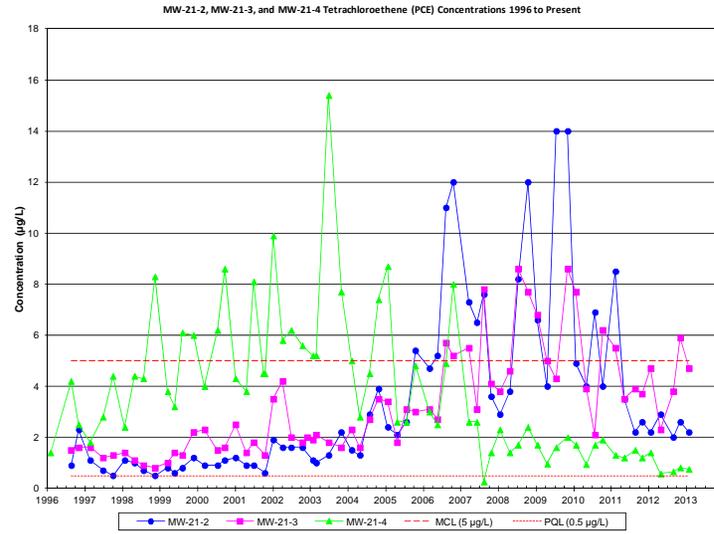
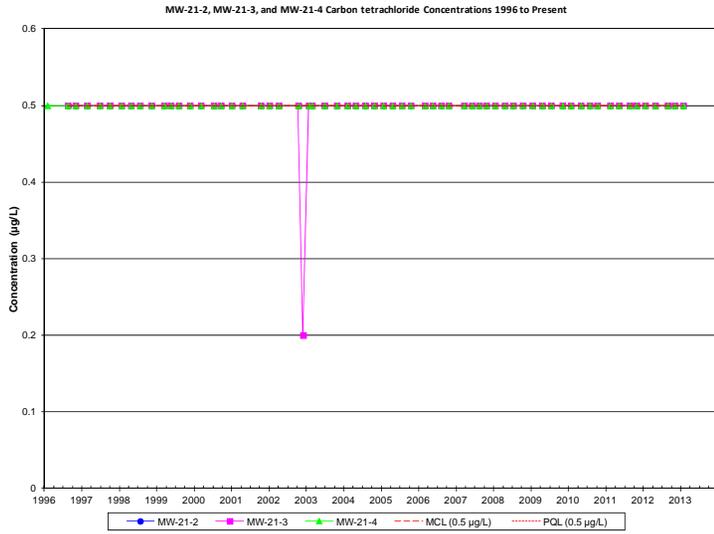
VOCs and Perchlorate Time Series Plots for MW-16



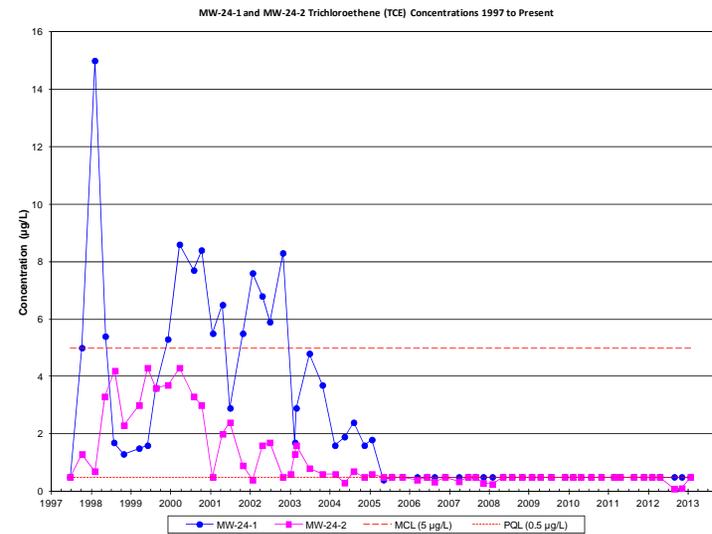
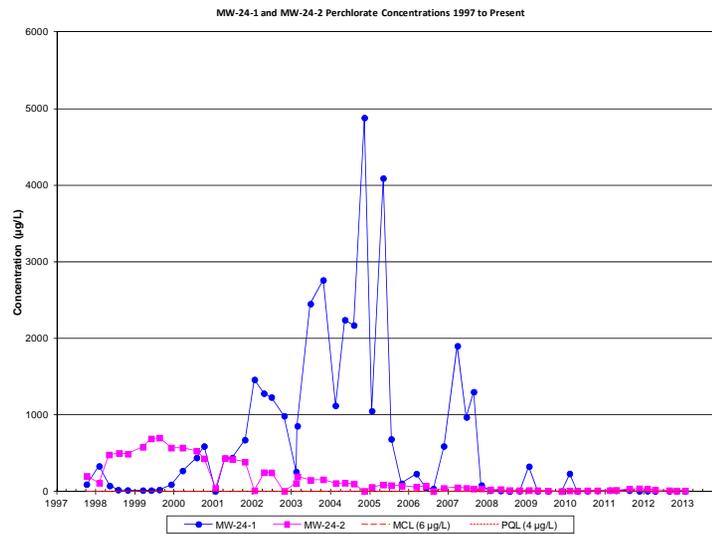
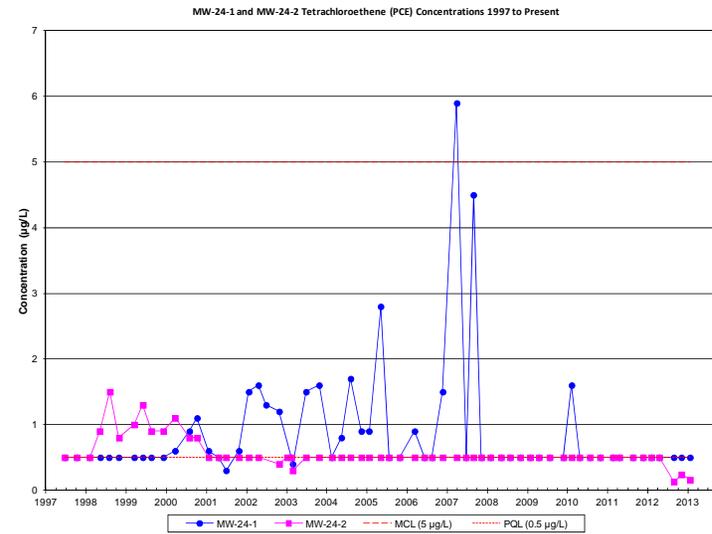
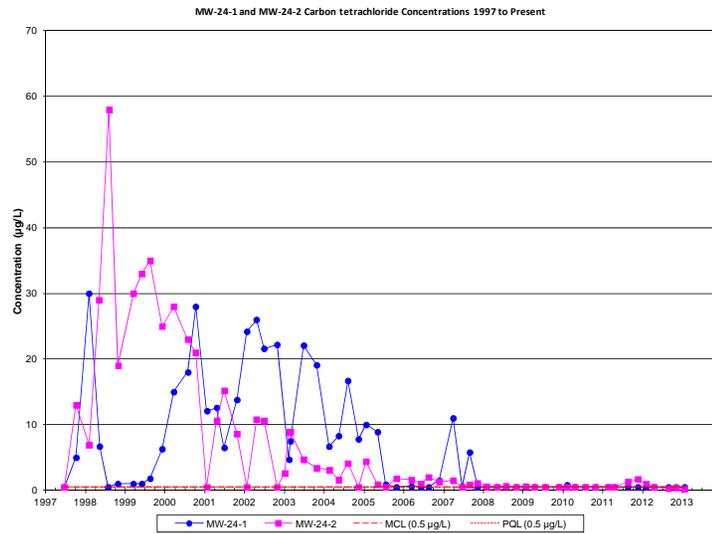
VOCs and Perchlorate Time Series Plots for MW-17-2 and MW-17-3



VOCs and Perchlorate Time Series Plots for MW-18-3 and MW-18-4



VOCs and Perchlorate Time Series Plots for MW-21-2 and MW-21-3 and MW-21-4



VOCs and Perchlorate Time Series Plots for MW-24-1 and MW-24-2