

**APPENDIX 3D
GROUNDWATER
MONITORING DATA**

Summary of Groundwater Results 2023

Site	Water Level (mbgl)			pH			EC (uS/cm)		
	Min	Max	Ave	Min	Max	Ave	Min	Max	Ave
GWa1	0.00	0.00	#DIV/0!	0.00	0.00	0.00	0	0	#DIV/0!
GWa2	2.05	2.50	2.29	6.50	6.70	6.54	901	1090	983
GWa3	3.48	3.90	3.74	6.70	6.90	6.80	1790	2140	1964
GWa4	2.24	2.89	2.56	6.70	7.00	6.85	1560	2110	1823
GWa5	1.28	1.99	1.63	7.10	7.40	7.28	7880	12200	9571
GWa6	0.43	0.98	0.63	7.20	7.40	7.36	3680	4390	4121
GWa7	3.88	3.98	3.93						
GWa8	1.35	1.66	1.46	6.70	7.20	7.01	1920	2510	2177
GWa10	2.92	3.27	3.18	6.80	7.10	7.03	2870	3250	3005
GWa11	3.35	3.67	3.56	7.30	7.60	7.45	1110.00	1700.00	1383.64
GWa12	2.73	3.30	3.02	7.40	7.60	7.50	1410.00	1460.00	1435.00
GWa14									
GWa15	2.55	2.80	2.68	7.40	7.50	7.47	1540.00	1660.00	1583.33
GWa16	1.93	2.73	2.35	6.80	7.10	6.96	20000.00	21900.00	20708.33
GWa32	1.64	2.54	1.90	7.10	7.30	7.15	3340.00	3990.00	3745.83
GWa34	2.98	4.75	3.72	5.90	7.40	6.80	2550.00	3544.00	3544.00
GWa36	4.30	4.75	4.50	7.30	7.40	7.33	4500.00	5100.00	4793.33
GWc1	8.72	9.29	9.15	6.90	7.40	7.09	1740.00	2080.00	1920.00
GWc2	1.13	3.95	2.23	7.10	7.70	7.33	1210.00	1290.00	1232.50
GWc3	1.57	1.98	1.79	6.80	7.10	7.01	3660.00	4230.00	3975.00
GWc4	12.62	13.45	12.98	6.40	6.60	6.53	2340.00	2500.00	2409.09
GWc5	3.67	5.84	4.89	6.40	6.50	6.46	5110.00	5450.00	5279.17
GWc10	1.77	3.39	2.83	6.70	7.20	6.91	3640.00	3870.00	3729.17
GWc11	5.41	7.72	6.27	6.20	6.60	6.39	1400.00	1910.00	1687.50
GWc12	4.93	7.92	6.14	7.40	7.60	7.47	2300.00	2600.00	2456.67
GWc14	1.27	3.42	2.12	7.30	7.70	7.47	2710.00	3450.00	3080.00
GWc15	3.11	4.80	3.83	6.90	7.40	7.13	1880.00	4190.00	3028.33
GWc16	28.10	31.41	30.65	7.00	7.20	7.14	2300.00	2650.00	2456.36
GWc17									
GWc18									
GWc19									
GWc24									
GWc25	8.27	24.91	21.07	6.40	6.90	6.63	439.00	1360.00	1006.80
GWc26	52.24	52.76	52.53	7.20	11.60	8.12	1110.00	1500.00	1404.00
GWc27	14.76	15.09	14.95	3.80	4.20	3.98	14.76	15.09	14.95
GWc28									
GWc29									
GWc30	29.73	31.85	31.07	6.50	6.90	6.67	2900.00	3390.00	3196.67
GWc31	44.91	45.96	45.41	6.40	6.60	6.53	4910.00	5030.00	4960.00
GWc32	1.51	4.31	2.91	6.40	6.80	6.57	3360.00	3550.00	3472.50
GWc33	49.94	52.35	51.38	12.10	12.30	12.23	3890.00	4050.00	3972.50
GWc34									
GWc35									
GWc36	6.83	9.46	7.97	6.30	6.60	6.50	3620.00	3830.00	3741.82
GWc37	25.01	25.20	25.12	6.20	6.40	6.25	2400.00	2540.00	2447.27
GWf1	16.17	16.17	16.17						
GWf2									
GWf3	17.99	19.33	18.82	6.50	6.80	6.66	3740.00	4470.00	4259.09
GWf4									
GWf5	19.44	19.88	19.88	6.70	6.70	6.70	4010.00	4010.00	4010.00
GWf6									
GWf7									

Summary of Groundwater Results 2022

Site	Water Level (mbgl)			pH			EC (uS/cm)		
	Min	Max	Ave	Min	Max	Ave	Min	Max	Ave
GWa1	-	-	-	-	-	-	-	-	-
GWa2	0.82	1.19	1.04	6.60	7.00	6.76	447	884	587
GWa3	2.22	3.91	3.18	6.70	7.40	6.97	567	1740	1175
GWa4	-	-	-	7.20	7.20	7.20	-	-	-
GWa5	0.76	2.49	1.71	7.20	7.60	7.35	1300	16000	9248
GWa6	0.44	1.28	0.80	7.20	7.50	7.37	2120	4520	3131
GWa7	3.01	3.90	3.43	7.20	7.50	7.30	12700	14300	13500
GWa8	0.78	1.45	1.15	6.90	7.10	7.02	876	2540	2308
GWa10	2.64	3.10	2.95	6.80	7.10	6.95	2180	4070	3440
GWa11	2.96	3.54	3.37	7.30	7.70	7.51	1030.00	1610.00	1328.18
GWa12	2.00	3.51	2.91	7.50	7.90	7.66	540.00	1360.00	941.43
GWa14	1.44	4.42	2.93	7.30	7.30	0.00	911.00	911.00	911.00
GWa15	1.97	2.66	2.43	7.10	7.70	7.47	579.00	1310.00	1087.14
GWa16	0.89	2.05	1.48	7.00	7.40	7.18	2090.00	22600.00	18298.33
GWa32	1.18	1.83	1.54	7.10	7.30	7.20	2980.00	3940.00	3490.00
GWa34	2.59	4.87	3.63	4.40	7.40	6.25	117.00	3197.06	3197.06
GWa36	3.48	4.87	4.02	7.10	7.40	7.32	4600.00	6460.00	5448.33
GWc1	8.77	10.21	9.70	6.90	7.10	7.03	2920.00	3390.00	3176.00
GWc2	1.75	8.93	5.08	7.00	7.50	7.17	1150.00	1320.00	1247.27
GWc3	2.57	5.88	4.41	7.40	7.60	7.46	2630.00	4640.00	3852.00
GWc4	12.73	14.76	13.89	6.40	6.80	6.61	2140.00	2530.00	2400.83
GWc5	3.54	5.90	4.83	6.30	6.60	6.53	5250.00	5620.00	5460.83
GWc10	1.30	4.92	3.45	6.70	7.20	6.88	3430.00	3920.00	3660.00
GWc11	5.57	9.68	7.65	6.30	6.70	6.44	1490.00	3150.00	2038.33
GWc12	7.52	12.38	10.09	7.40	7.60	7.49	2150.00	2420.00	2251.43
GWc14	4.10	9.16	6.87	7.40	7.60	7.48	2550.00	2870.00	2626.25
GWc15	6.04	10.09	8.48	7.00	7.30	7.20	1440.00	1580.00	1494.29
GWc16	25.10	31.18	28.56	7.10	7.30	7.20	2180.00	2540.00	2349.17
GWc17	-	-	-	-	-	-	-	-	-
GWc18	-	-	-	-	-	-	-	-	-
GWc19	-	-	-	-	-	-	-	-	-
GWc24	-	-	-	-	-	-	-	-	-
GWc25	4.66	7.52	6.09	6.60	6.80	6.69	330.00	602.00	424.45
GWc26	47.59	51.27	49.21	7.10	9.20	7.63	716.00	1360.00	1178.00
GWc27	15.38	16.60	15.90	3.40	4.70	3.64	15.38	16.60	15.90
GWc28	-	-	-	-	-	-	-	-	-
GWc29	-	-	-	-	-	-	-	-	-
GWc30	21.61	30.35	28.73	6.60	7.60	6.86	1260.00	3350.00	2784.44
GWc31	47.99	50.56	49.28	6.70	6.70	6.70	4960.00	4960.00	4960.00
GWc32	1.74	4.03	3.45	6.40	7.00	6.61	3150.00	6250.00	3678.33
GWc33	43.73	48.77	47.04	12.10	12.70	12.39	4080.00	4910.00	4628.00
GWc34	19.42	20.24	19.75	6.80	7.10	6.97	4230.00	4350.00	4276.67
GWc35	-	-	-	-	-	-	-	-	-
GWc36	7.12	11.65	9.51	6.50	6.90	6.65	2950.00	3830.00	3487.50
GWc37	25.10	25.38	25.24	6.20	6.40	6.25	2310.00	2510.00	2445.00
GWf1	-	-	-	-	-	-	-	-	-
GWf2	24.15	24.26	24.20	-	-	-	-	-	-
GWf3	17.36	19.10	18.12	6.70	6.80	6.73	3700.00	3980.00	3840.00
GWf4	12.79	13.01	12.90	-	-	-	-	-	-
GWf5	-	-	-	-	-	-	-	-	-
GWf6	9.79	9.79	9.79	-	-	-	-	-	-
GWf7	9.96	9.96	9.96	-	-	-	-	-	-

Summary of Groundwater Results 2021

Site	Water Level (mbgl)			pH			EC (uS/cm)		
	Min	Max	Ave	Min	Max	Ave	Min	Max	Ave
GWa1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
GWa2	0.99	1.61	1.26	6.60	6.90	6.73	533.00	931.00	639.75
GWa3	2.70	4.28	3.94	6.80	7.40	7.16	604.00	1660.00	1241.42
GWa4	3.67	4.22	3.95	7.20	7.20	7.20	3300.00	4390.00	3845.00
GWa5	2.62	3.68	3.23	7.40	7.60	7.48	13600.00	21200.00	17480.00
GWa6	0.93	1.96	1.35	7.40	8.10	7.80	1710.00	5760.00	3251.00
GWa7	3.96	4.39	4.08	7.20	7.50	7.30	12700.00	14300.00	13500.00
GWa8	0.94	1.61	1.39	7.00	7.20	7.08	2500.00	2710.00	2604.17
GWa10	1.35	3.80	2.70	6.80	8.00	7.40	380.00	22100.00	4958.21
GWa11	3.39	3.77	3.53	7.40	7.60	7.48	1200.00	1430.00	1295.00
GWa12	1.35	13.35	5.15	7.40	8.00	7.87	380.00	1350.00	546.83
GWa14	2.39	2.39	2.39	7.20	7.20	0.00	1100.00	1100.00	1100.00
GWa15	2.36	2.74	2.59	6.80	7.70	7.15	1300.00	1430.00	1350.83
GWa16	1.35	2.17	1.72	7.40	7.50	7.43	19800.00	22100.00	20808.33
GWa32	1.52	20.30	9.74	3.70	14.59	7.13	166.00	6830.00	3344.28
GWa34	4.17	5.89	4.49	3.70	7.50	4.73	166.00	5353.54	5353.54
GWa36	15.03	15.03	15.03	3.50	3.50	3.50	1800.00	1800.00	1800.00
GWc1	9.23	10.35	10.04	7.00	7.20	7.08	3270.00	3660.00	3444.17
GWc2	9.91	13.35	12.01	7.10	7.20	7.18	1130.00	1270.00	1201.67
GWc3	6.90	7.50	7.13	5.75	14.59	10.59	4610.00	6640.00	5599.17
GWc4	14.65	15.76	14.91	6.60	6.70	6.68	2310.00	2460.00	2393.64
GWc5	5.22	5.71	5.53	6.50	6.80	6.68	5400.00	5690.00	5549.17
GWc10	2.02	4.21	3.44	6.80	7.10	6.91	3490.00	3790.00	3607.50
GWc11	10.49	12.92	11.98	6.50	6.60	6.56	3310.00	3490.00	3390.83
GWc12	14.10	20.30	17.70	7.40	7.60	7.54	1750.00	2100.00	1920.00
GWc14	10.54	18.45	14.41	7.20	7.60	7.40	1970.00	2570.00	2245.00
GWc15	3.86	49.01	23.34	3.50	12.50	7.28	183.00	4850.00	2605.86
GWc16	28.72	31.43	30.64	7.20	7.30	7.25	2010.00	2200.00	2110.00
GWc17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
GWc18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
GWc19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
GWc24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
GWc25	8.28	28.75	23.53	3.50	12.50	7.31	183.00	4850.00	2813.89
GWc26	3.86	49.01	34.87	3.50	12.50	7.39	183.00	4850.00	3012.36
GWc27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
GWc28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
GWc29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
GWc30	30.24	31.50	30.77	6.80	6.90	6.83	3050.00	3300.00	3163.33
GWc31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
GWc32	3.86	4.12	4.01	6.50	6.80	6.72	183.00	3560.00	2922.67
GWc33	42.65	46.74	36.57	7.20	12.50	10.60	2250.00	4850.00	3925.00
GWc34	20.29	20.46	20.39	7.20	7.40	7.25	4350.00	4490.00	4436.67
GWc35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
GWc36	12.95	14.71	13.68	6.50	6.70	6.61	2830.00	3630.00	3079.17
GWc37	25.10	25.11	25.11	6.30	6.40	6.37	2460.00	2500.00	2473.33

Summary of Groundwater Results 2020

Site	Water Level (mbgl)			pH			EC (uS/cm)		
	Min	Max	Ave	Min	Max	Ave	Min	Max	Ave
GWa1	4.97	5.02	5.00	0.00	0.00	0.00	0.00	0.00	
GWa2	1.33	5.42	2.32	6.80	6.90	6.82	916.00	1620.00	1371.60
GWa3	4.17	5.60	4.99	7.30	7.30	7.30	821.00	1160.00	
GWa4	4.91	5.17	5.04	7.20	7.30	0.00	0.00	0.00	0.00
GWa5	3.28	3.80	3.64	7.20	7.40	7.28	14600.00	17800.00	16450.00
GWa6	1.29	2.90	1.88	7.70	7.90	7.83	3060.00	10800.00	6436.00
GWa7	4.29	5.19	4.77	7.20	7.30	7.25	13500.00	13800.00	13650.00
GWa8	1.41	2.61	1.75	7.00	7.10	7.01	2450.00	2760.00	2632.73
GWa10	3.00	5.33	3.72	6.30	7.30	7.02	586.00	3430.00	1545.91
GWa11	3.47	4.74	3.78	7.40	7.60	7.51	1300.00	1520.00	1408.57
GWa12	3.05	5.80	3.80	7.60	8.10	7.83	394.00	1990.00	783.14
GWa14	1.72	4.96	2.61	7.60	7.70	0.00	907.00	1040.00	984.25
GWa15	2.50	4.02	2.77	7.00	7.00	7.00	1290.00	1780.00	1532.50
GWa16	1.40	4.05	2.41	0.00	0.00		15800.00	19400.00	17500.00
GWa32	1.72	2.72	1.95	7.10	7.40	7.29	3090.00	4780.00	3775.83
GWa34	3.89	4.80	4.41	3.80	5.70	4.63	748.00	4783.80	4783.80
GWa36	5.94	5.97	5.96	0.00	0.00		0.00	0.00	#DIV/0!
GWc1	10.64	21.11	12.58	7.00	7.30	7.11	2300.00	3960.00	2835.00
GWc2	13.34	21.19	16.74	7.10	7.20	7.16	1230.00	1390.00	1281.82
GWc3	13.97	16.46	15.24	7.00	7.00	7.00	4890.00	6000.00	5505.00
GWc4	15.19	16.42	15.88	6.50	6.80	6.70	2150.00	2460.00	2389.17
GWc5	5.71	6.74	6.32	6.60	6.90	6.71	5410.00	5630.00	5531.54
GWc10	5.74	11.60	7.45	6.90	7.30	7.10	3750.00	3910.00	3810.00
GWc11	13.95	22.68	17.18	6.20	6.60	6.42	2430.00	4280.00	3184.55
GWc12	21.74	39.59	29.33	7.00	7.50	7.24	1240.00	4740.00	3012.50
GWc14	21.29	37.13	28.41	7.10	7.50	7.33	1280.00	2060.00	1663.64
GWc15	22.31	32.91	27.46	7.10	7.20	7.14	1290.00	1780.00	1532.50
GWc16	30.39	32.36	31.54	7.20	7.30	7.26	1910.00	1990.00	1941.82
GWc17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
GWc18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
GWc19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
GWc24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
GWc25	32.44	35.27	34.05	6.80	6.90	6.85	2170.00	2190.00	2180.00
GWc26	43.01	44.91	43.76	7.00	7.50	7.28	1220.00	1350.00	1298.18
GWc27	16.62	16.62	16.62	4.80	5.90	5.23	16.62	16.62	16.62
GWc28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
GWc29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
GWc30	31.04	33.39	32.00	6.70	6.90	6.83	3070.00	3280.00	3126.67
GWc31	50.98	51.04	51.01	0.00	0.00		0.00	0.00	
GWc32	3.89	5.18	4.30	6.60	7.20	6.82	217.00	3590.00	2893.42
GWc33	40.54	49.57	42.60	12.10	12.40	12.28	2330.00	4450.00	3245.00
GWc34	20.26	20.51	20.35	7.20	7.20	7.20	4730.00	4730.00	4730.00
GWc35	49.95	49.95	49.95	0.00	0.00		0.00	0.00	
GWc36	15.31	18.67	16.49	6.00	6.50	6.34	3390.00	4160.00	3642.22

Summary of Groundwater Results 2019

Site	Water Level (mbgl)			pH			EC (uS/cm)		
	Min	Max	Ave	Min	Max	Ave	Min	Max	Ave
GWa1	4.97	4.97	4.97	0.00	0.00	0.00	0.00	0.00	0.00
GWa2	4.80	5.16	5.04	6.80	6.90	6.84	1390.00	1540.00	1482.73
GWa3	5.61	5.61	5.61	0.00	0.00	0.00	0.00	0.00	0.00
GWa4	5.12	5.17	5.15	0.00	0.00	0.00	0.00	0.00	0.00
GWa5	3.87	4.07	3.98	7.50	7.50	7.50	10900.00	11800.00	11225.00
GWa6	2.89	2.89	2.89	0.00	0.00	0.00	0.00	0.00	0.00
GWa7	5.19	5.19	5.19	0.00	0.00	0.00	0.00	0.00	0.00
GWa8	1.59	2.26	1.85	7.00	7.10	7.03	2220.00	2440.00	2355.00
GWa10	4.80	5.19	5.00	7.00	7.10	7.05	3260.00	3370.00	3340.83
GWa11	4.72	4.74	4.73	0.00	0.00	0.00	0.00	0.00	0.00
GWa12	5.80	5.80	5.80	0.00	0.00	0.00	0.00	0.00	0.00
GWa14	4.95	4.95	4.95	0.00	0.00	0.00	0.00	0.00	0.00
GWa15	3.80	3.88	3.84	0.00	0.00	0.00	0.00	0.00	0.00
GWa16	4.08	4.08	4.08	0.00	0.00	0.00	0.00	0.00	0.00
GWa32	1.92	2.54	2.13	7.20	7.50	7.29	3040.00	4070.00	3315.00
GWa34	4.51	4.73	4.63	4.30	4.90	4.60	6140.00	6298.33	6298.33
GWa36	5.94	5.94	5.94	0.00	0.00	0.00	0.00	0.00	#DIV/0!
GWc1	11.23	12.52	11.88	7.00	7.20	7.11	2740.00	3410.00	3010.00
GWc2	16.42	20.38	18.68	7.10	7.20	7.12	1190.00	1280.00	1249.17
GWc3	15.27	16.26	15.62	6.90	6.90	6.90	4380.00	4430.00	4413.33
GWc4	15.52	16.15	15.84	6.60	6.70	6.65	2340.00	2410.00	2374.17
GWc5	5.91	6.82	6.27	6.60	6.70	6.68	5310.00	5560.00	5447.50
GWc10	6.26	9.48	7.60	7.00	7.40	7.13	3750.00	3900.00	3835.00
GWc11	16.65	21.86	19.35	6.40	6.60	6.43	3760.00	4300.00	4160.00
GWc12	33.49	39.06	37.32	7.10	7.40	7.18	2040.00	4510.00	3645.00
GWc14	29.80	36.80	34.50	7.20	7.40	7.34	1110.00	1260.00	1180.00
GWc15	26.17	32.92	30.63	7.00	7.30	7.17	1570.00	1800.00	1702.50
GWc16	30.76	32.70	31.97	7.20	7.30	7.21	1870.00	2110.00	1935.83
GWc17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
GWc18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
GWc19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
GWc24	23.62	26.28	24.91	4.60	4.80	4.73	3470.00	3620.00	3523.33
GWc25	29.66	48.31	32.94	6.80	7.00	6.87	1690.00	2140.00	1991.67
GWc26	40.81	42.52	41.85	7.10	7.30	7.15	1200.00	1270.00	1235.83
GWc27	16.14	16.57	16.44	4.90	5.80	5.34	16.14	16.57	16.44
GWc28	43.21	44.61	43.80	6.70	6.80	6.78	3210.00	3310.00	3280.00
GWc29	44.00	45.21	44.54	6.80	7.00	6.86	2250.00	2440.00	2360.00
GWc30	31.90	33.02	32.48	6.70	6.90	6.80	2920.00	3150.00	3033.33
GWc31	51.14	51.34	51.26	0.00	0.00	0.00	0.00	0.00	0.00
GWc32	4.43	4.89	4.59	6.60	6.80	6.69	3400.00	3550.00	3470.00
GWc33	40.45	42.75	41.42	12.30	12.50	12.41	4470.00	5010.00	4668.33
GWc34	20.26	20.50	20.36	7.10	7.20	7.15	4610.00	4760.00	4682.50
GWc35	47.73	48.17	47.90	7.00	7.20	7.08	1180.00	1220.00	1202.00
GWc36	16.37	17.77	17.26	6.10	6.30	6.23	4010.00	4350.00	4215.56

Summary of Groundwater Results 2018

Site	Water Level (mbgl)			pH			EC (uS/cm)		
	Min	Max	Ave	Min	Max	Ave	Min	Max	Ave
GWa1	4.95	4.97	4.96	0.00	0.00	0.00	0.00	0.00	0.00
GWa2	3.96	4.66	4.40	6.70	7.00	6.91	1310.00	1440.00	1395.00
GWa3	5.61	5.61	5.61	0.00	0.00	0.00	0.00	0.00	0.00
GWa4	4.87	5.17	4.97	0.00	0.00	0.00	0.00	0.00	0.00
GWa5	3.87	4.21	3.99	7.40	7.70	7.52	11700.00	14800.00	13360.00
GWa6	2.89	2.89	2.89	0.00	0.00	0.00	0.00	0.00	0.00
GWa7	4.61	5.20	4.97	7.10	7.10	7.10	10800.00	11000.00	10900.00
GWa8	1.56	2.34	1.87	6.90	7.10	7.03	2000.00	2580.00	2156.67
GWa10	4.39	4.64	4.55	6.90	7.20	7.07	3220.00	3400.00	3285.00
GWa11	3.42	4.20	3.68	7.50	7.80	7.69	1560.00	3570.00	2062.22
GWa12	5.39	5.80	5.70	0.00	0.00	0.00	0.00	0.00	0.00
GWa14	4.96	4.97	4.97	0.00	0.00	0.00	0.00	0.00	0.00
GWa15	3.57	3.66	3.62	0.00	0.00	0.00	0.00	0.00	0.00
GWa16	3.95	4.07	4.04	0.00	0.00	0.00	0.00	0.00	0.00
GWa32	1.91	3.16	2.40	7.10	7.40	7.24	3250.00	3800.00	3385.83
GWa34	4.49	4.55	4.53	4.30	4.90	4.57	5970.00	6060.83	6060.83
GWa36	5.84	5.94	5.92	0.00	0.00	0.00	0.00	0.00	0.00
GWc1	10.59	11.31	10.93	6.90	7.20	7.10	3410.00	3660.00	3535.83
GWc2	14.50	15.87	15.26	7.00	7.20	7.12	1210.00	1290.00	1249.17
GWc3	13.10	15.32	14.35	6.70	6.90	6.82	3840.00	4500.00	4133.33
GWc4	14.98	15.43	15.17	6.60	6.70	6.64	2300.00	2580.00	2385.00
GWc5	5.56	6.02	5.83	6.50	6.70	6.63	3570.00	5740.00	5221.67
GWc10	4.60	5.63	5.10	6.70	7.40	7.11	3660.00	3800.00	3726.36
GWc11	15.15	16.02	15.64	6.50	6.70	6.54	3300.00	3850.00	3615.00
GWc12	32.02	36.57	34.92	7.20	7.60	7.43	1270.00	1660.00	1425.00
GWc14	22.89	33.27	30.42	7.30	7.70	7.39	940.00	1160.00	1083.64
GWc15	22.60	29.37	26.91	6.60	7.10	6.88	1600.00	3260.00	2286.67
GWc16	25.61	29.79	27.73	7.10	7.40	7.20	1940.00	2520.00	2179.17
GWc17	42.76	43.81	43.37	6.90	7.10	6.97	1920.00	2800.00	2171.11
GWc18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
GWc19	31.06	35.47	33.27	6.50	6.50	6.50	1860.00	1930.00	1895.00
GWc24	22.19	23.16	22.57	3.70	6.00	5.20	3450.00	3580.00	3530.00
GWc25	27.94	29.53	28.67	6.90	7.60	7.33	1550.00	1710.00	1653.33
GWc26	39.47	40.79	40.00	7.10	7.40	7.25	1240.00	1480.00	1333.33
GWc27	15.62	16.16	15.87	4.30	5.70	4.98	15.62	16.16	15.87
GWc28	39.16	44.77	41.81	6.70	6.80	6.78	3000.00	3540.00	3243.33
GWc29	39.91	45.01	42.21	6.80	7.10	6.93	2170.00	2580.00	2258.33
GWc30	31.09	33.25	32.21	6.70	7.00	6.80	2930.00	3100.00	3004.17
GWc31	50.61	51.29	51.03	6.80	6.80	6.80	4190.00	4190.00	4190.00
GWc32	4.06	4.36	4.24	6.50	6.80	6.68	3380.00	3650.00	3448.33
GWc33	39.39	42.22	40.62	12.40	12.60	12.48	5220.00	6950.00	6004.17
GWc34	20.31	20.70	20.48	7.00	7.10	7.08	4330.00	4700.00	4536.00
GWc35	42.06	47.37	44.13	6.90	7.40	7.10	538.00	1240.00	764.25
GWc36	15.13	15.89	15.67	6.30	6.50	6.41	3350.00	4150.00	3843.33

Summary of Groundwater Results 2017

Site	Water Level (mbgl)			pH			EC (uS/cm)		
	Min	Max	Ave	Min	Max	Max	Min	Max	Ave
GWa1	0.00	0.00	0.00	0.00	0.00	0.00	4.89	5.02	4.93
GWa2	2.58	3.70	3.33	6.50	6.60	6.53	1420.00	1690.00	1518.57
GWa3	4.10	4.51	4.31	7.20	7.30	7.22	1550.00	2000.00	1816.67
GWa4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
GWa5	3.60	4.01	3.83	7.40	7.60	7.49	10400.00	15800.00	13296.36
GWa6	1.16	2.15	1.75	7.60	7.60	7.60	8210.00	13600.00	12101.67
GWa7	4.52	4.60	4.56	7.00	7.00	7.00	10400.00	10500.00	10450.00
GWa8	1.42	1.98	1.59	6.90	7.10	7.02	2330.00	2520.00	2430.00
GWa10	3.82	4.17	3.96	6.90	7.10	6.98	3320.00	3470.00	3399.17
GWa11	3.34	3.75	3.49	7.20	7.80	7.65	1450.00	1960.00	1707.50
GWa12	3.86	4.97	4.48	7.70	7.80	7.74	820.00	870.00	843.00
GWa14	4.97	31.45	18.21	0.00	0.00	0.00	0.00	0.00	0.00
GWa15	2.81	3.21	3.07	7.10	7.10	7.10	710.00	710.00	710.00
GWa16	3.47	3.52	3.50	7.30	7.40	7.35	18300.00	18500.00	18400.00
GWa22	-	-	-	-	-	-	-	-	-
GWa32	1.81	3.93	2.19	7.10	7.30	7.21	3480.00	4430.00	4062.50
GWa34	2.43	4.49	4.246818182	4.30	4.90	4.51	5190.00	6210.00	5843.333333
GWc1	9.51	10.20	9.77	7.00	7.30	7.15	2080.00	3540.00	2913.33
GWc2	12.85	14.43	13.80	7.00	7.20	7.11	1240.00	1300.00	1271.67
GWc3	9.27	11.46	10.21	6.80	6.90	6.81	3920.00	4410.00	4037.50
GWc4	14.55	14.85	14.69	6.60	6.70	6.65	2370.00	3110.00	2467.50
GWc5	5.71	6.33	6.00	6.50	6.70	6.61	5340.00	5620.00	5515.00
GWc10	1.84	3.93	2.44	6.50	7.00	6.79	3530.00	3710.00	3605.00
GWc11	14.19	14.59	14.37	6.50	6.60	6.55	3510.00	3710.00	3649.17
GWc12	30.04	34.60	32.61	7.10	7.50	7.28	1160.00	3580.00	1975.00
GWc14	26.33	31.45	29.27	7.30	7.40	7.34	1090.00	1120.00	1104.17
GWc15	2.81	3.21	3.07	7.10	7.10	7.10	710.00	710.00	710.00

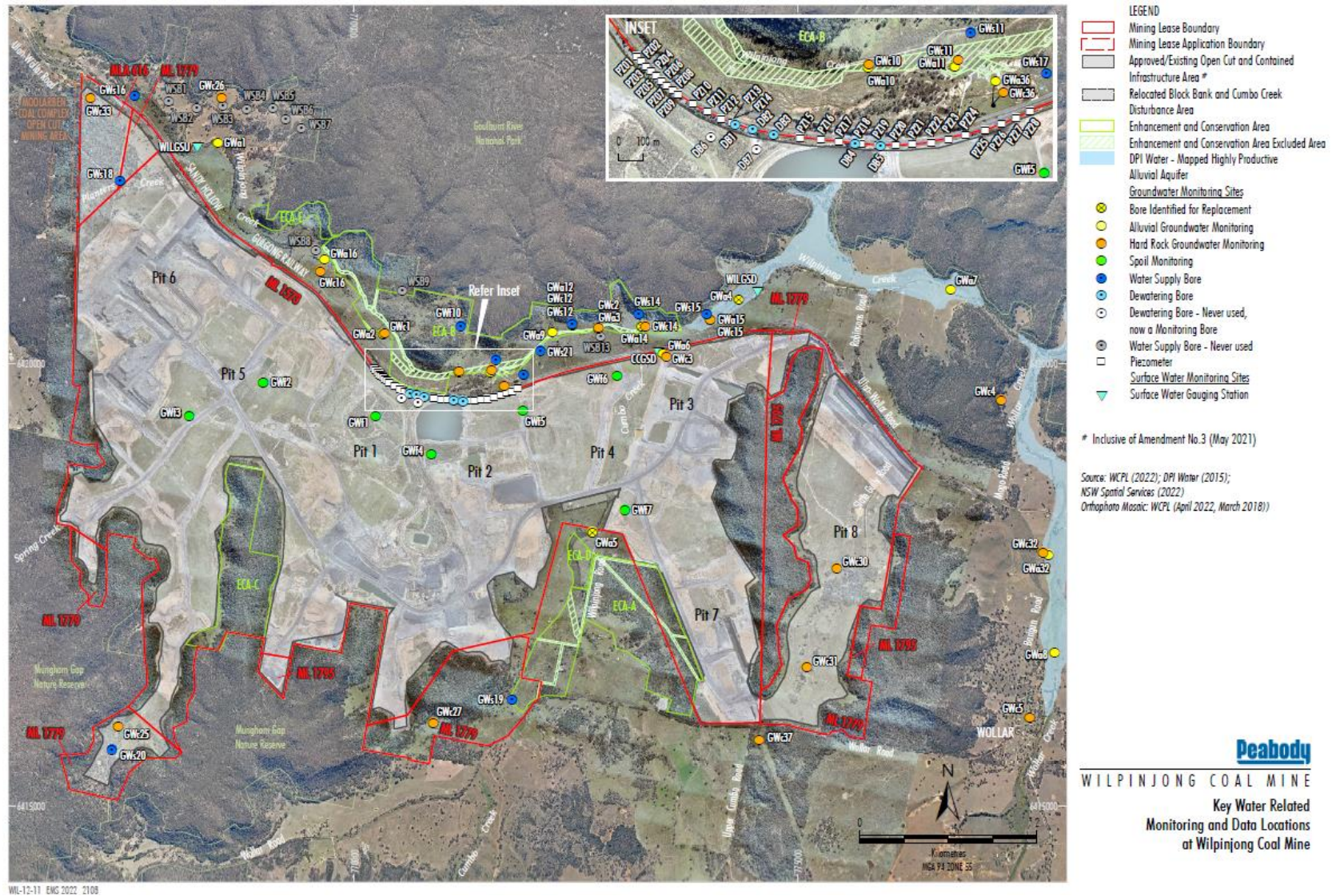
Summary of Groundwater Results 2016

Site	Water Level (mbgl)			pH			EC (uS/cm)		
	Min	Max	Ave	Min	Max	Ave	Min	Max	Ave
GWa1	4.85	5.20	4.94	0.00	0.00	0.00	0.00	0.00	0.00
GWa2	1.37	4.27	3.09	6.60	7.00	6.76	1480.00	1910.00	1621.82
GWa3	3.62	5.12	4.22	7.00	7.40	7.17	500.00	2580.00	1281.43
GWa4	4.02	4.89	4.56	7.00	7.20	7.10	3040.00	3850.00	3546.67
GWa5	2.54	4.33	3.68	7.20	7.60	7.40	8920.00	14200.00	11310.91
GWa6	1.04	2.44	1.62	7.50	7.80	7.63	6640.00	13600.00	9832.00
GWa7	3.25	4.87	4.12	7.00	7.80	7.26	12.83	10800.00	5788.21
GWa8	1.10	2.28	1.59	6.80	7.20	7.03	2080.00	2520.00	2234.55
GWa10	3.03	3.99	3.62	6.80	7.30	6.98	2660.00	3590.00	3350.83
GWa11	3.16	3.62	3.40	7.40	7.70	7.53	1700.00	3070.00	2289.17
GWa12	3.28	5.54	3.93	7.60	7.70	7.63	890.00	1250.00	1030.00
GWa14	1.53	1.53	1.53	7.80	7.80	7.80	790.00	790.00	790.00
GWa15	2.48	3.73	3.41	7.20	7.60	7.38	290.00	2910.00	2354.00
GWa16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
GWa22	3.87	3.92	3.90	6.90	7.10	7.00	5340.00	5470.00	5405.00
GWa32	1.56	2.85	2.11	7.00	7.30	7.16	3740.00	5550.00	4255.00
GWa34	2.80	4.71	4.2275	4.10	6.50	5.25	190.00	6640.00	4740
GWc1	8.62	9.61	9.19	6.90	7.20	7.05	2050.00	3370.00	2762.73
GWc2	12.23	14.62	13.83	7.00	7.20	7.06	1240.00	1290.00	1260.91
GWc3	8.93	14.23	10.77	6.70	7.00	6.82	3810.00	4250.00	4044.55
GWc4	14.26	14.57	14.45	6.70	7.00	6.82	1980.00	2470.00	2348.00
GWc5	5.91	6.56	6.18	6.40	6.80	6.58	5480.00	5700.00	5582.73
GWc10	1.40	2.37	1.97	6.50	7.30	6.94	3580.00	4020.00	3847.50
GWc11	13.34	14.32	13.79	6.20	6.50	6.34	3470.00	3710.00	3573.33
GWc12	26.52	32.29	29.51	6.90	7.30	7.11	1180.00	4130.00	1842.73
GWc14	22.97	30.37	27.10	7.20	7.30	7.25	1080.00	1170.00	1107.27
GWc15	19.37	25.55	22.56	6.50	6.70	6.55	3180.00	3370.00	3266.36

Summary of Groundwater Results 2015

Site	Water Level (mbgl)			pH			EC (uS/cm)		
	Min	Max	Ave	Min	Max	Ave	Min	Max	Ave
GWa1	4.94	5.21	5.05	0.00	0.00	-	0.00	0.00	-
GWa2	3.78	4.20	4.01	6.70	6.90	6.81	1400.00	1510.00	1431.67
GWa3	4.88	5.45	5.22	6.90	7.20	7.03	2120.00	2640.00	2396.67
GWa4	3.80	13.67	5.08	6.50	7.20	6.92	2350.00	5260.00	4381.11
GWa5	3.24	4.19	3.67	7.00	7.50	7.23	9950.00	11070.00	10511.67
GWa6	2.47	2.79	2.72	7.50	7.60	7.55	8370.00	8830.00	8600.00
GWa7	4.66	5.21	4.95	7.00	7.30	7.05	12330.00	15270.00	13656.00
GWa8	1.42	2.25	1.72	6.80	7.10	6.95	2060.00	2290.00	2174.17
GWa10	3.43	4.18	3.87	6.80	7.00	6.90	3470.00	3840.00	3575.83
GWa11	3.16	4.07	3.57	7.40	7.70	7.53	2060.00	3920.00	2789.17
GWa12	5.04	5.85	5.62	0.00	0.00	-	0.00	0.00	0.00
GWa14	4.54	5.01	4.85	0.00	0.00	-	0.00	0.00	-
GWa15	3.54	3.69	3.62	7.20	7.40	7.30	2860.00	2960.00	2934.00
GWc1	9.62	10.12	9.85	6.90	7.10	7.03	2200.00	3320.00	2682.50
GWc2	12.47	14.51	13.61	7.00	7.30	7.13	1180.00	1300.00	1240.83
GWc3	9.88	10.73	10.27	6.70	6.80	6.74	4190.00	4630.00	4511.67
GWc4	13.23	14.09	13.83	6.40	6.70	6.56	2240.00	2480.00	2380.83
GWc5	5.81	6.47	6.08	6.40	6.70	6.56	5520.00	5770.00	5659.17
GWc10	2.66	5.04	3.98	6.90	7.50	7.22	3730.00	4020.00	3910.83
GWc11	13.49	14.80	14.20	6.10	6.40	6.23	3670.00	3820.00	3761.67
GWc12	24.28	32.33	27.79	7.10	7.60	7.24	1400.00	1700.00	1568.33
GWc14	19.64	29.58	24.56	7.20	7.40	7.26	1120.00	1170.00	1148.33
GWc15	15.32	23.11	19.53	6.50	6.70	6.55	3270.00	3370.00	3321.67

Groundwater Monitoring Locations



WL-12-11 ENG 2022 2108

2023 Groundwater Monitoring Data

a Sample Num	a Sample Location	Sampling Date	Sampling Time	Aluminium mg/L	Arsenic mg/L	Barium mg/L	Bicarbonate Alkalinity as CaCO3 mg/L	Calcium - Dissolved mg/L	Carbonate Alkalinity as CaCO3 mg/L	Chloride mg/L	Conductivity @ 25oC µS/cm	Copper mg/L	Data Download	Depth to Standpipe m	Dissolved Oxygen - Dissolved mg/L	Free Carbon Dioxide as CO2 mg/L	Hydroxide Alkalinity as CaCO3 mg/L	Ionic Balance %	Iron mg/L	Lead mg/L	Magnesium - Dissolved mg/L	Manganese mg/L	Molybdenum mg/L	Nickel mg/L	pH pH Unit	Potassium - Dissolved mg/L	Selenium mg/L	Sodium - Dissolved mg/L	Strontium mg/L	Sulfate as SO4 - Turbidimetric mg/L	Temperature °C	Total Alkalinity as CaCO3 mg/L	Total Anions meq/L	Total Cations meq/L	Total Dissolved Solids @180° C - Dissolved mg/L	Zinc mg/L		
ME2 3000 6600 1	GWA 1	05-Jan-2023	1513											Dry																								
ME2 3000 6600 2	GWA 2	09-Jan-2023	1500																																			
ME2 3000 6600 3	GWA 3	13-Jan-2023	1315	1.21	<0.001	0.047	321	33	<1	299	1790	0.008		3.48	8	24	<1	1.8	0.92	0.005	47	0.358	0.001	0.01	6.7	2	<0.01	289	0.423	190	20	321	18.8	18.1	1120	0.007		
ME2 3000 6600 4	GWA 4	17-Jan-2023	1554	0.88	0.004	0.08	440	92	<1	244	1740	0.008		2.35	8.7	22	<1	0.6	3.26	0.005	62	0.535	0.001	0.016	6.9	15	<0.01	192	0.8	143	19	440	18.6	18.4	938	0.018		
ME2 3000 6600 5	GWA 5	10-Jan-2023	1046	0.14	0.002	0.046	656	405	<1	1140	9240	0.004		1.41	6.9	20	<1	4.34	0.33	<0.001	597	0.171	0.008	0.015	7.2	24	<0.01	1110	4.11	4020	20.5	656	129	118	7880	0.033		
ME2 3000 6600 6	GWA 6	09-Jan-2023	1500																																			
ME2 3000 6600 7	GWA 7	17-Jan-2023	1157											3.88																								
ME2 3000 6600 8	GWA 8	10-Jan-2023	1520	2.04	0.002	0.14	359	120	<1	378	2440	0.005		1.48	3.8	8	<1	4.93	4.85	0.005	100	11.2	<0.001	0.01	6.9	12	<0.01	234	1.24	453	21.5	359	27.3	24.7	1750	0.011		
ME2 3000 6600 9	GWC 1	09-Jan-2023	1500																																			
ME2 3000 6601 0	GWC 2	13-Jan-2023	1240	0.01	<0.001	0.394	500	50	<1	107	1250	<0.001		1.27	6.8	17	<1	0.36	0.51	<0.001	26	0.101	<0.001	0.002	7.1	28	<0.01	182	0.586	17	21.5	500	13.4	13.3	719	0.009		
ME2 3000 6601 1	GWC 3	09-Jan-2023	1500																																			
ME2 3000 6601 2	GWC 4	13-Jan-2023	1159	0.06	<0.001	0.038	635	164	<1	342	2410	0.005		12.88	6.3	75	<1	2.96	3.26	0.002	83	0.038	<0.001	0.001	6.5	54	<0.01	227	1.92	266	22	635	27.9	26.3	1480	0.016		
ME2 3000 6601 3	GWC 5	10-Jan-2023	1445	0.04	<0.001	0.186	2190	283	<1	527	5420	0.004		4.19	4.8	1030	<1	0.09	0.21	0.003	138	1.13	<0.001	0.025	6.4	99	<0.01	869	7.29	351	21	2190	65.9	65.8	3560	0.026		
ME2 3000 6601 4	GWA 10	05-Jan-2023	1245	5.9	0.005	0.06	418	139	<1	375	3250	0.042	05/01/2023	2.92	7.3	8	<1	3.73	6.25	0.006	121	2.1	<0.001	0.014	7.1	2	<0.01	411	1.06	643	19	418	32.3	34.8	2730	0.022		
ME2 3000 6601 5	GWC 10	05-Jan-2023	1215	0.02	<0.001	0.033	407	208	<1	377	3690	0.015	05/01/2023	3.39	7.6	10	<1	0.24	1.98	<0.001	122	0.211	<0.001	0.003	6.8	30	<0.01	471	1.83	1110	18.5	407	41.9	41.7	2740	0.012		
ME2 3000 6601 6	GWA 11	05-Jan-2023	1344	0.47	<0.001	0.026	521	32	<1	85	1320	0.001		3.35	7.2	5	<1	1.74	0.61	<0.001	27	0.219	<0.001	0.001	7.4	13	<0.01	225	0.421	78	18	521	14.4	13.9	809	0.006		
ME2 3000 6601 7	GWC 11	05-Jan-2023	1317	0.1	<0.001	0.014	214	41	<1	192	1400	0.003		5.41	7.6	8	<1	5.56	6.29	<0.001	35	0.752	<0.001	0.005	6.4	15	<0.01	189	0.361	261	19.5	214	15.1	13.5	906	0.017		

a Sample Num	a Sample Location	Sampling Date	Sampling Time	Aluminium mg/L	Arsenic mg/L	Barium mg/L	Bicarbonate Alkalinity as CaCO3 mg/L	Calcium - Dissolved mg/L	Carbonate Alkalinity as CaCO3 mg/L	Chloride mg/L	Conductivity @ 25oC µS/cm	Copper mg/L	Data Download	Depth to Standpipe m	Dissolved Oxygen - Dissolved mg/L	Free Carbon Dioxide as CO2 mg/L	Hydroxide Alkalinity as CaCO3 mg/L	Ionic Balance %	Iron mg/L	Lead mg/L	Magnesium - Dissolved mg/L	Manganese mg/L	Molybdenum mg/L	Nickel mg/L	pH pH Unit	Potassium - Dissolved mg/L	Selenium mg/L	Sodium - Dissolved mg/L	Strontium mg/L	Sulfate as SO4 - Turbidimetric mg/L	Temperature °C	Total Alkalinity as CaCO3 mg/L	Total Anions meq/L	Total Cations meq/L	Total Dissolved Solids @180°C - Dissolved mg/L	Zinc mg/L
ME2 3000 6601 8	GWA 12	17-Jan-2023	1239	1.27	<0.001	0.054	368	52	<1	153	1460	0.008		2.73	8.1	8	<1	0.22	0.47	0.003	38	0.078	0.001	0.005	7.4	3	<0.01	227	0.529	189	21	368	15.6	15.7	983	0.026
ME2 3000 6601 9	GWC 12	17-Jan-2023	1306	0.06	<0.001	0.109	738	91	<1	200	2300	0.003		5.04	8.2	14	<1	0.95	0.61	<0.001	42	0.195	<0.001	0.002	7.4	25	<0.01	406	0.801	308	21	738	26.8	26.3	1540	0.008
ME2 3000 6602 0	GWA 14	17-Jan-2023	1409											Dry																						
ME2 3000 6602 1	GWC 14	17-Jan-2023	1339	0.07	<0.001	0.103	453	170	<1	202	2710	0.007		1.44	8.9	9	<1	0.21	1.51	0.003	76	0.144	0.011	0.04	7.4	30	<0.01	359	1.23	780	21.5	453	31	31.1	2000	0.094
ME2 3000 6602 2	GWA 15	17-Jan-2023	1527	1.39	<0.001	0.043	310	37	<1	253	1540	0.035		2.55	7.8	9	<1	2.29	0.76	0.008	13	0.228	0.003	0.01	7.5	2	<0.01	294	0.297	152	22.5	310	16.5	15.8	1070	0.024
ME2 3000 6602 3	GWC 15	17-Jan-2023	1500	0.1	<0.001	0.11	530	82	<1	143	1880	0.01		3.23	8	16	<1	0.69	4.1	0.002	36	0.175	0.005	0.006	7.1	25	<0.01	293	0.861	293	22	530	20.7	20.4	1170	0.014
ME2 3000 6602 4	GWC 33	05-Jan-2023	1531										05/01/2023	Dry																						
ME2 3000 6602 5	GWC 26	09-Jan-2023	1500																																	
ME2 3000 6602 6	GWA 16	13-Jan-2023	1438	0.27	0.001	0.136	648	401	<1	6950	21400	0.005		1.93	8	28	<1	0.39	1.23	0.002	654	0.18	0.001	0.004	6.9	20	<0.01	3690	6.33	1330	22.5	648	237	235	15400	0.016
ME2 3000 6602 7	GWC 16	13-Jan-2023	1405	0.29	0.001	0.108	545	89	<1	478	2530	0.022		28.1	7.5	18	<1	2.01	2.08	0.008	52	0.07	0.002	0.004	7	28	<0.01	387	0.952	143	23.5	545	27.4	26.3	1530	0.036
ME2 3000 6602 8	GWC 30	10-Jan-2023	1243	0.11	<0.001	0.061	527	296	<1	472	2900	0.493		29.73	5.8	16	<1	1.78	1.06	0.001	118	0.132	<0.001	0.004	6.6	47	<0.01	151	2.43	460	23	527	33.4	32.2	2240	0.024
ME2 3000 6602 9	GWC 31	10-Jan-2023	1210											Dry																						
ME2 3000 6603 0	GWC 37	10-Jan-2023	1127	1.47	0.04	0.049	199	125	<1	181	2440	0.013		25.19	5.5	14	<1	2.87	9.97	0.007	103	1.12	0.003	0.019	6.2	50	<0.01	247	1.26	924	24	199	28.3	26.7	1850	0.07
ME2 3000 6603 1	GWC 27	17-Jan-2023	1030																																	
ME2 3000 6603 2	GWA 32	13-Jan-2023	1120	0.01	<0.001	0.044	685	155	<1	808	3860	0.023	13/01/2023	1.67	7.6	18	<1	0.98	<0.05	<0.001	209	0.205	0.003	0.003	7.1	24	<0.01	443	2.27	443	22	685	45.7	44.8	2590	0.006
ME2 3000 6603 3	GWC 32	13-Jan-2023	1035	0.03	<0.001	0.036	1350	142	<1	335	3520	0.004	13/01/2023	3.13	7	182	<1	0.1	2.77	<0.001	112	0.07	<0.001	0.002	6.4	48	<0.01	563	4.53	273	20	1350	42.1	42	2290	0.01
ME2 3000 6603 4	GWA 34	10-Jan-2023	1340	6.87	0.003	0.115	268	135	<1	334	2550	0.064	10/01/2023	2.98	6.8	8	<1	4.27	6.94	0.005	176	0.085	<0.001	0.022	6.7	7	0.02	175	1.29	808	21.5	268	31.6	29	2000	0.052
ME2 3000 6603 5	GWC 34	10-Jan-2023	1410											Dry																						

a Sample Num	a Sample Location	Sampling Date	Sampling Time	Aluminium mg/L	Arsenic mg/L	Barium mg/L	Bicarbonate Alkalinity as CaCO3 mg/L	Calcium - Dissolved mg/L	Carbonate Alkalinity as CaCO3 mg/L	Chloride mg/L	Conductivity @ 25oC µS/cm	Copper mg/L	Data Download	Depth to Standpipe m	Dissolved Oxygen - Dissolved mg/L	Free Carbon Dioxide as CO2 mg/L	Hydroxide Alkalinity as CaCO3 mg/L	Ionic Balance %	Iron mg/L	Lead mg/L	Magnesium - Dissolved mg/L	Manganese mg/L	Molybdenum mg/L	Nickel mg/L	pH pH Unit	Potassium - Dissolved mg/L	Selenium mg/L	Sodium - Dissolved mg/L	Strontium mg/L	Sulfate as SO4 - Turbidimetric mg/L	Temperature °C	Total Alkalinity as CaCO3 mg/L	Total Anions meq/L	Total Cations meq/L	Total Dissolved Solids @180°C - Dissolved mg/L	Zinc mg/L			
ME2 3000 6603 6	GWa 36	05-Jan-2023	1439	10	0.012	0.136	850	25	<1	795	4500	0.043		4.3	7.4	10	<1	5.28	18.4	0.029	123	1.87	<0.01	0.036	7.3	26	0.01	796	0.642	598	18.5	850	51.8	46.6	2860	0.074			
ME2 3000 6603 7	GWc 36	05-Jan-2023	1419	0.04	<0.01	0.016	321	159	<1	357	3640	<0.01		7.05	7.5	12	<1	4.73	18.7	<0.01	150	1.85	0.002	0.011	6.5	35	<0.01	477	1.16	1040	20.5	321	38.1	41.9	2840	0.024			
ME2 3000 6603 8	GWC 25	30-Jan-2023	1120																																				
ME2 3000 6603 9	PZ13	05-Jan-2023	1403											Dry																									
ME2 3000 6604 0	PZ20	30-Jan-2023	413	1.99	0.002	0.056	479	59	<1	98	1530	0.002		2.36	5.2	12	<1	0.05	2.16	0.003	61	0.76	<0.01	0.006	7.4	26	<0.01	188	0.638	214	20.5	479	16.8	16.8	949	0.022			
ME2 3000 6604 1	PZ21	30-Jan-2023	1443	1.77	0.002	0.041	400	26	<1	31	1050	0.004		3.46	5.2	18	<1	2.73	3.22	0.005	25	0.948	<0.01	0.008	7.6	10	<0.01	163	0.319	117	20	400	11.3	10.7	734	0.036			
ME2 3000 6604 2	PZ26	30-Jan-2023	1357											Dry																									
ME2 3000 6604 3	GWF 1	30-Jan-2023	1248											16.17																									
ME2 3000 6604 4	GWF 2	30-Jan-2023	1430																																				
ME2 3000 6604 5	GWF 3	30-Jan-2023	1155	0.52	<0.01	0.074	697	191	<1	308	3740	0.012		18.34	6.8	53	<1	2.14	1.15	0.007	258	1.24	<0.01	0.015	6.8	44	<0.01	295	1.8	972	22	697	42.8	44.7	3050	0.055			
ME2 3000 6604 6	GWF 4	30-Jan-2023	1430																																				
ME2 3000 6604 7	GWF 5	30-Jan-2023	1320											Dry																									
ME2 3000 6604 8	GWF 7	30-Jan-2023	1430																																				
ME2 3000 6704 9	Barol ogger Office	30-Jan-2023	1046										30/01/2023																										
ME2 3002 5300 1	GWA 1	03-Feb-2023	1434											Dry																									
ME2 3002 5300 2	GWA 2	03-Feb-2023	1500																																				
ME2 3002 5300 3	GWA 3	10-Feb-2023	1204	29.7	0.008	0.138	323	32	<1	304	1820	0.042		3.67	6.7	33	<1	4.19	25.1	0.03	42	0.724	0.002	0.062	6.8	2	<0.01	280	0.436	181	22	323	18.8	17.3	1190	0.066			
ME2 3002 5300 4	GWA 4	10-Feb-2023	1204	4.48	0.004	0.087	458	89	<1	240	1740	0.009		2.28	6.9	23	<1	3.86	6.12	0.004	56	0.599	<0.01	0.018	6.9	16	<0.01	186	0.785	146	23	458	19	17.5	1060	0.016			

a Sample Num	a Sample Location	Sampling Date	Sampling Time	Aluminium mg/L	Arsenic mg/L	Barium mg/L	Bicarbonate Alkalinity as CaCO3 mg/L	Calcium - Dissolved mg/L	Carbonate Alkalinity as CaCO3 mg/L	Chloride mg/L	Conductivity @ 25oC µS/cm	Copper mg/L	Data Download	Depth to Standpipe m	Dissolved Oxygen - Dissolved mg/L	Free Carbon Dioxide as CO2 mg/L	Hydroxide Alkalinity as CaCO3 mg/L	Ionic Balance %	Iron mg/L	Lead mg/L	Magnesium - Dissolved mg/L	Manganese mg/L	Molybdenum mg/L	Nickel mg/L	pH pH Unit	Potassium - Dissolved mg/L	Selenium mg/L	Sodium - Dissolved mg/L	Strontium mg/L	Sulfate as SO4 - Turbidimetric mg/L	Temperature °C	Total Alkalinity as CaCO3 mg/L	Total Anions meq/L	Total Cations meq/L	Total Dissolved Solids @180°C - Dissolved mg/L	Zinc mg/L
ME2 3002 5300 5	GWA 5	02-Feb-2023	1059	0.25	0.002	0.067	653	394	<1	1420	10500	0.004		1.28	8.9	18	<1	3.72	0.42	<0.001	670	0.331	0.014	0.023	7.3	26	<0.01	1260	5.41	4190	22	653	140	130	9040	0.039
ME2 3002 5300 6	GWA 6	03-Feb-2023	1500																																	
ME2 3002 5300 7	GWA 7	10-Feb-2023	1055											3.93																						
ME2 3002 5300 8	GWA 8	03-Feb-2023	1110	22.6	0.01	0.278	315	110	<1	401	2510	0.027		1.44	8.4	10	<1	3.84	33.7	0.03	107	16.2	0.002	0.05	7	11	<0.01	252	1.36	479	18.5	315	27.6	25.5	1750	0.09
ME2 3002 5300 9	GWC 1	03-Feb-2023	1500																																	
ME2 3002 5301 0	GWC 2	10-Feb-2023	1140	0.03	<0.001	0.365	504	60	<1	105	1290	0.001		1.13	7.1	14	<1	0.9	0.86	<0.001	24	0.095	<0.001	0.002	7.2	24	<0.01	172	0.516	13	21.5	504	13.3	13.1	753	0.009
ME2 3002 5301 1	GWC 3	03-Feb-2023	1330																																	
ME2 3002 5301 2	GWC 4	03-Feb-2023	1149	0.19	<0.001	0.042	642	151	<1	371	2500	0.004		12.81	7.2	44	<1	6.3	3.89	0.001	80	0.071	<0.001	0.002	6.6	49	<0.01	219	1.86	238	21	642	28.2	24.9	1460	0.02
ME2 3002 5301 3	GWC 5	02-Feb-2023	1445	0.04	<0.001	0.188	2090	246	<1	538	5370	0.002		4.32	6	590	<1	1.78	0.63	0.004	136	1.13	<0.001	0.025	6.5	84	<0.01	860	8.48	402	20.5	2090	65.3	63	3440	0.025
ME2 3002 5301 4	GWA 10	20-Feb-2023	1302	19.2	0.009	0.087	424	134	<1	526	3210	0.067	20/02/2023	3.15	8.9	12	<1	1.95	15.4	0.01	118	2.13	<0.001	0.031	6.9	2	<0.01	418	1.12	610	22.5	424	36	34.6	2500	0.066
ME2 3002 5301 5	GWC 10	20-Feb-2023	1159	0.05	<0.001	0.038	381	209	<1	419	3870	0.009	20/02/2023	2.87	8.8	11	<1	0.64	4.85	<0.001	126	0.23	0.002	0.008	6.8	31	<0.01	488	2.01	1150	21.5	381	43.4	42.8	2800	0.015
ME2 3002 5301 6	GWA 11	20-Feb-2023	1324	2.25	<0.001	0.047	508	41	<1	143	1700	0.007		3.57	8.3	8	<1	4.02	2.45	0.003	37	0.389	<0.001	0.005	7.4	14	<0.01	294	0.596	127	20.5	508	16.8	18.2	986	0.025
ME2 3002 5301 7	GWC 11	20-Feb-2023	1407	0.14	<0.001	0.019	218	43	<1	190	1480	0.002		5.47	8.2	18	<1	3.17	10.5	0.001	38	0.804	0.008	0.062	6.4	15	<0.01	200	0.394	268	20	218	15.3	14.4	854	0.027
ME2 3002 5301 8	GWA 12	10-Feb-2023	1302	13.6	0.003	0.087	367	46	<1	139	1410	0.017		3.3	6.4	7	<1	3.06	7.59	0.009	33	0.146	0.002	0.022	7.6	3	<0.01	211	0.501	188	23.5	367	15.2	14.3	1090	0.041
ME2 3002 5301 9	GWC 12	10-Feb-2023	1332	0.05	<0.001	0.11	749	92	<1	195	2450	0.012		4.93	5.9	15	<1	3.9	0.66	<0.001	41	0.219	0.001	0.003	7.5	24	<0.01	381	0.798	323	26.5	749	27.2	25.2	1520	0.005
ME2 3002 5302 0	GWA 14	10-Feb-2023	1338											Dry																						
ME2 3002 5302 1	GWC 14	10-Feb-2023	1343	0.06	<0.001	0.609	467	170	<1	199	2710	0.005		1.27	6.6	10	<1	1.55	2.43	0.001	72	0.154	0.008	0.008	7.5	30	<0.01	335	1.25	756	24	467	30.7	29.7	1930	0.01
ME2 3002 5302 2	GWA 15	20-Feb-2023	1040	11.1	0.002	0.059	345	38	<1	256	1660	0.041		2.64	8.1	7	<1	2.52	6.06	0.01	14	0.224	0.004	0.02	7.4	2	<0.01	306	0.358	151	20	345	17.2	16.4	1030	0.049

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ME2 3002 5302 3	GWC 15	20-Feb-2023	1119	0.18	<0.01	0.128	575	92	<1	157	1990	0.012		3.11	8.1	12	<1	3.01	4.56	0.002	41	0.177	0.004	0.008	7.1	25	<0.01	300	1.03	340	20	575	23	21.6	1240	0.016	
ME2 3002 5302 4	GWC 33	03-Feb-2023	1503										03/02/2023	Dry																							
ME2 3002 5302 5	GWC 26	03-Feb-2023	1330																																		
ME2 3002 5302 6	GWA 16	20-Feb-2023	1529	9.96	0.004	0.216	693	427	<1	7360	2190	0.021		2.02	8.9	18	<1	2.51	10.3	0.015	660	0.368	0.002	0.012	6.9	18	<0.01	3680	6.46	1290	24.5	693	248	236	1480	0.057	
ME2 3002 5302 7	GWC 16	20-Feb-2023	1439	0.24	0.001	0.098	685	95	<1	442	2580	0.012		29.88	8.6	13	<1	2.18	1.69	0.003	46	0.084	0.002	0.002	7.1	24	<0.01	425	0.954	130	25	685	28.9	27.6	1520	0.023	
ME2 3002 5302 8	GWC 30	02-Feb-2023	1305	0.14	<0.01	0.071	531	261	<1	501	2920	0.461		30.2	7.4	20	<1	5.82	0.86	<0.01	120	0.137	<0.01	0.006	6.7	49	<0.01	158	2.79	486	25	531	34.9	31	2200	0.028	
ME2 3002 5302 9	GWC 31	02-Feb-2023	1221	0.24	0.001	0.071	643	242	<1	1180	4910	0.006		44.91	7.9	26	<1	4.95	0.78	<0.01	230	0.098	<0.01	0.01	6.6	57	<0.01	395	2.09	417	26	643	54.8	49.6	3530	0.028	
ME2 3002 5303 0	GWC 37	02-Feb-2023	1140	1.43	0.037	0.058	188	113	<1	199	2440	0.016		25.07	6.9	30	<1	0.72	12.1	0.009	106	1.13	0.004	0.019	6.2	52	<0.01	255	1.39	855	24.5	188	27.2	26.8	1890	0.096	
ME2 3002 5303 1	GWC 27	03-Feb-2023	1500																																		
ME2 3002 5303 2	GWA 32	03-Feb-2023	1249	0.04	<0.01	0.032	521	113	<1	843	3910	0.018	03/02/2023	1.64	9.1	11	<1	3.62	0.07	<0.01	189	0.05	0.003	0.002	7.3	21	<0.01	418	1.75	419	21.5	521	42.9	39.9	2520	<0.05	
ME2 3002 5303 3	GWC 32	03-Feb-2023	1220	0.04	<0.01	0.035	1270	136	<1	352	3530	0.003	03/02/2023	3.2	7.5	108	<1	0.06	3.22	0.002	109	0.067	<0.01	0.002	6.6	44	<0.01	545	5.08	256	19	1270	40.6	40.6	2200	0.005	
ME2 3002 5303 4	GWA 34	02-Feb-2023	1350	4.92	0.002	0.124	329	139	<1	390	2880	0.031	02/02/2023	3.17	8.5	16	<1	3.96	6.37	0.004	204	0.043	0.002	0.022	6.7	6	0.02	224	1.54	904	22.5	329	36.4	33.6	2300	0.047	
ME2 3002 5303 5	GWC 34	02-Feb-2023	1420											Dry																							
ME2 3002 5303 6	GWA 36	03-Feb-2023	1400	13.6	0.02	0.296	829	19	<1	849	4780	0.068		4.45	8.6	12	<1	3.22	55.7	0.046	115	2.45	<0.01	0.057	7.4	28	0.01	867	0.632	556	19.5	829	52.1	48.8	2920	0.144	
ME2 3002 5303 7	GWC 36	03-Feb-2023	1325	0.07	0.002	0.021	312	132	<1	380	3710	<0.01		6.83	7.7	28	<1	2.54	26.9	<0.01	152	1.9	0.002	0.011	6.5	36	<0.01	479	1.21	1250	22	312	43	40.8	2830	0.024	
ME2 3002 5303 8	GWC 25	27-Feb-2023	1259	0.17	<0.01	0.128	135	30	<1	55	439	0.018	27/02/2023	8.27	7.6	10	<1	2.02	0.58	0.004	14	0.059	0.001	0.005	6.8	10	<0.01	33	0.31	13	21	135	4.52	4.34	250	0.019	
ME2 3002 5303 9	PZ13	03-Feb-2023	1422											Dry																							
ME2 3002 5304 0	PZ20	27-Feb-2023	1420	1.83	0.002	0.046	512	41	<1	43	1180	0.007		2.67	8.4	8	<1	0.72	1.84	0.003	44	0.464	0.002	0.006	7.5	20	<0.01	155	0.467	80	23.5	512	13.1	12.9	682	0.021	

a Sample Num	a Sample Location	Sampling Date	Sampling Time	Aluminium mg/L	Arsenic mg/L	Barium mg/L	Bicarbonate Alkalinity as CaCO3 mg/L	Calcium - Dissolved mg/L	Carbonate Alkalinity as CaCO3 mg/L	Chloride mg/L	Conductivity @ 25oC µS/cm	Copper mg/L	Data Download	Depth to Standpipe m	Dissolved Oxygen - Dissolved mg/L	Free Carbon Dioxide as CO2 mg/L	Hydroxide Alkalinity as CaCO3 mg/L	Ionic Balance %	Iron mg/L	Lead mg/L	Magnesium - Dissolved mg/L	Manganese mg/L	Molybdenum mg/L	Nickel mg/L	pH pH Unit	Potassium - Dissolved mg/L	Selenium mg/L	Sodium - Dissolved mg/L	Strontium mg/L	Sulfate as SO4 - Turbidimetric mg/L	Temperature °C	Total Alkalinity as CaCO3 mg/L	Total Anions meq/L	Total Cations meq/L	Total Dissolved Solids @180°C - Dissolved mg/L	Zinc mg/L	
ME2 3002 5304 1	PZ21	27-Feb-2023	1444	13.6	0.004	0.065	427	24	<1	27	1020	0.016		3.61	7.6	7	<1	1.43	6.95	0.01	22	0.75	0.002	0.021	7.5	10	<0.01	174	0.324	89	21.5	427	11.1	10.8	742	0.057	
ME2 3002 5304 2	PZ26	27-Feb-2023	1451											Dry																							
ME2 3002 5304 3	GWF 1	27-Feb-2023	1050											Dry																							
ME2 3002 5304 4	GWF 2	27-Feb-2023	1119																																		
ME2 3002 5304 5	GWF 3	27-Feb-2023	1134	3.28	0.004	0.163	662	211	<1	368	4110	0.025		18.61	7.6	24	<1	4.06	15.7	0.017	291	1.89	0.006	0.028	6.7	40	<0.01	354	2.12	1120	24.5	662	46.9	50.9	3270	0.091	
ME2 3002 5304 6	GWF 4	27-Feb-2023	1500																																		
ME2 3002 5304 7	GWF 5	27-Feb-2023	1520	6.98	0.009	0.272	577	202	<1	327	4260	0.039		19.44	8.1	13	<1	3.82	14.6	0.045	299	1.13	0.003	0.036	6.9	55	<0.01	366	1.56	1700	25	577	56.1	52	3330	0.107	
ME2 3002 5304 8	GWF 7	27-Feb-2023	1500																																		
ME2 3002 5404 9	Barol ogger Office	27-Feb-2023	1018										27/02/2023																								
ME2 3004 5500 1	GWA 1	06-Mar-2023	1109											Dry																							
ME2 3004 5500 2	GWA 2	07-Mar-2023	1500																																		
ME2 3004 5500 3	GWA 3	17-Mar-2023	1425	6.63	0.002	0.082	384	41	<1	394	1990	0.026		3.79	7.6	42	<1	7.12	5.58	0.014	47	0.525	0.002	0.025	6.9	2	<0.01	334	0.484	233	24	384	23.6	20.5	1860	0.018	
ME2 3004 5500 4	GWA 4	28-Mar-2023	1429	0.71	0.005	0.078	461	84	<1	221	1560	0.006		2.24	4.7	13	<1	2.9	4.34	0.002	54	1.06	<0.001	0.015	6.9	18	<0.01	191	0.768	144	21	461	18.4	17.4	872	0.008	
ME2 3004 5500 5	GWA 5	10-Mar-2023	1155	5.01	0.011	0.55	780	443	<1	1480	12200	0.013		1.55	6.7	17	<1	4.03	7.84	0.006	674	1.44	0.018	0.084	7.2	28	<0.01	1350	5.39	4380	22	780	148	137	10700	0.114	
ME2 3004 5500 6	GWA 6	07-Mar-2023	1500																																		
ME2 3004 5500 7	GWA 7	03-Mar-2023	1555											3.98																							
ME2 3004 5500 8	GWA 8	14-Mar-2023	1429																																		
ME2 3004 5500 9	GWC 1	07-Mar-2023	1440																																		

a Sample Num	a Sample Location	Sampling Date	Sampling Time	Aluminium mg/L	Arsenic mg/L	Barium mg/L	Bicarbonate Alkalinity as CaCO3 mg/L	Calcium - Dissolved mg/L	Carbonate Alkalinity as CaCO3 mg/L	Chloride mg/L	Conductivity @ 25oC µS/cm	Copper mg/L	Data Download	Depth to Standpipe m	Dissolved Oxygen - Dissolved mg/L	Free Carbon Dioxide as CO2 mg/L	Hydroxide Alkalinity as CaCO3 mg/L	Ionic Balance %	Iron mg/L	Lead mg/L	Magnesium - Dissolved mg/L	Manganese mg/L	Molybdenum mg/L	Nickel mg/L	pH pH Unit	Potassium - Dissolved mg/L	Selenium mg/L	Sodium - Dissolved mg/L	Strontium mg/L	Sulfate as SO4 - Turbidimetric mg/L	Temperature °C	Total Alkalinity as CaCO3 mg/L	Total Anions meq/L	Total Cations meq/L	Total Dissolved Solids @180°C - Dissolved mg/L	Zinc mg/L	
ME2 3004 5501 0	GWC 2	17-Mar-2023	1350	0.05	<0.001	0.368	501	62	<1	117	1220	0.004		1.68	7.4	21	<1	3.96	0.72	<0.001	22	0.085	<0.001	<0.001	7.2	25	<0.001	161	0.527	13	23.5	501	13.6	12.5	786	0.01	
ME2 3004 5501 1	GWC 3	07-Mar-2023	1500																																		
ME2 3004 5501 2	GWC 4	14-Mar-2023	1231	0.12	<0.001	0.044	647	174	<1	344	2450	0.005		12.86	6.1	40	<1	3.55	4.38	0.002	79	0.044	<0.001	0.001	6.5	50	<0.001	214	1.83	242	21.5	647	27.7	25.8	1380	0.031	
ME2 3004 5501 3	GWC 5	14-Mar-2023	1436	0.06	<0.001	0.176	2220	262	<1	503	5450	0.004		3.67	6.2	147	<1	2.81	1.24	0.005	133	1.1	<0.001	0.022	6.4	87	<0.001	846	7.25	391	19	2220	66.7	63	3340	0.023	
ME2 3004 5501 4	GWA 10	06-Mar-2023	1414	7.83	0.009	0.066	414	122	<1	454	3140	0.055		3.22	7.8	20	<1	2.16	9.12	0.007	103	1.98	<0.001	0.016	6.9	1	<0.001	378	1.05	544	22.5	414	32.4	31	2320	0.029	
ME2 3004 5501 5	GWC 10	06-Mar-2023	1335	0.08	<0.001	0.037	378	203	<1	345	3800	0.01		2.89	8.2	23	<1	6.86	4.63	0.001	113	0.225	0.001	0.005	6.7	28	<0.001	413	1.97	1270	21.5	378	43.7	38.1	2690	0.024	
ME2 3004 5501 6	GWA 11	06-Mar-2023	1433	0.36	<0.001	0.039	549	42	<1	123	1670	0.002		3.67	7.7	11	<1	3.47	1.03	0.001	36	0.326	<0.001	0.002	7.3	15	<0.001	256	0.628	160	22	549	17.8	16.6	916	0.01	
ME2 3004 5501 7	GWC 11	06-Mar-2023	1504	0.13	<0.001	0.018	214	43	<1	173	1540	0.003	06/03/2023	5.68	7.6	43	<1	3.27	11.4	0.001	37	0.856	0.005	0.034	6.3	15	<0.001	199	0.423	290	20.5	214	15.2	14.2	863	0.027	
ME2 3004 5501 8	GWA 12	28-Mar-2023	1058											Dry																							
ME2 3004 5501 9	GWC 12	22-Mar-2023	1440	0.1	<0.001	0.106	814	93	<1	192	2450	0.006		5.76	8	9	<1	4	0.7	<0.001	42	0.221	<0.001	0.002	7.4	26	<0.001	404	0.866	329	21	814	28.5	26.3	1640	0.009	
ME2 3004 5502 0	GWA 14	28-Mar-2023	1204											Dry																							
ME2 3004 5502 1	GWC 14	28-Mar-2023	1135	0.07	<0.001	0.103	493	169	<1	206	2770	0.006		1.61	9.6	7	<1	1.73	2	0.002	76	0.167	0.007	0.004	7.7	32	<0.001	357	1.41	791	21	493	32.1	31	2010	0.016	
ME2 3004 5502 2	GWA 15	28-Mar-2023	1301	1.82	<0.001	0.071	354	39	<1	245	1550	0.032		2.71	8.2	5	<1	2.4	1.21	0.009	15	0.266	0.002	0.011	7.5	2	<0.001	306	0.373	162	21.5	354	17.4	16.5	1210	0.033	
ME2 3004 5502 3	GWC 15	28-Mar-2023	1345	0.07	<0.001	0.108	540	100	<1	147	1920	0.003		3.12	6.3	12	<1	1.02	3.68	0.001	44	0.173	0.001	0.005	7.1	26	<0.001	307	1.11	392	20	540	23.1	22.6	1220	0.009	
ME2 3004 5502 4	GWC 33	06-Mar-2023	1043											Dry																							
ME2 3004 5502 5	GWC 26	07-Mar-2023	1500																																		
ME2 3004 5502 6	GWA 16	06-Mar-2023	1227	2.16	0.002	0.146	667	409	<1	6230	21200	0.009		2.13	8.6	27	<1	5.5	2.48	0.005	525	0.199	0.001	0.005	6.8	17	<0.001	3000	6.3	1350	23.5	667	217	194	14200	0.025	
ME2 3004 5502 7	GWC 16	06-Mar-2023	1139	0.89	0.002	0.12	663	90	<1	388	2650	0.019		30.13	8.1	23	<1	3.05	3.33	0.009	42	0.12	0.002	0.004	7.1	24	<0.001	389	0.933	139	22.5	663	27.1	25.5	1450	0.057	

a Sample Num	a Sample Location	Sampling Date	Sampling Time	Aluminium mg/L	Arsenic mg/L	Barium mg/L	Bicarbonate Alkalinity as CaCO3 mg/L	Calcium - Dissolved mg/L	Carbonate Alkalinity as CaCO3 mg/L	Chloride mg/L	Conductivity @ 25oC µS/cm	Copper mg/L	Data Download	Depth to Standpipe m	Dissolved Oxygen - Dissolved mg/L	Free Carbon Dioxide as CO2 mg/L	Hydroxide Alkalinity as CaCO3 mg/L	Ionic Balance %	Iron mg/L	Lead mg/L	Magnesium - Dissolved mg/L	Manganese mg/L	Molybdenum mg/L	Nickel mg/L	pH pH Unit	Potassium - Dissolved mg/L	Selenium mg/L	Sodium - Dissolved mg/L	Strontium mg/L	Sulfate as SO4 - Turbidimetric mg/L	Temperature °C	Total Alkalinity as CaCO3 mg/L	Total Anions meq/L	Total Cations meq/L	Total Dissolved Solids @180°C - Dissolved mg/L	Zinc mg/L	
ME2 3004 5502 8	GWC 30	17-Mar-2023	1020	0.16	<0.01	0.076	535	309	<1	553	3000	0.403		30.44	7.5	68	<1	2.94	0.82	0.001	123	0.148	<0.01	0.005	6.7	58	<0.01	157	2.39	462	21.5	535	35.9	33.8	2340	0.038	
ME2 3004 5502 9	GWC 31	10-Mar-2023	1325	0.16	<0.01	0.053	667	280	<1	1070	5030	0.002		45.24	6.4	28	<1	0.66	0.27	<0.01	228	0.094	<0.01	0.004	6.4	52	<0.01	375	1.82	362	24.5	667	51	50.4	2810	0.017	
ME2 3004 5503 0	GWC 37	10-Mar-2023	1239	0.66	0.04	0.037	211	125	<1	191	2540	0.013		25.16	6.2	38	<1	4.34	10.8	0.007	104	1.06	0.002	0.017	6.2	46	<0.01	242	1.24	927	23	211	28.9	26.5	1900	0.07	
ME2 3004 5503 1	GWC 27	07-Mar-2023	1157																																		
ME2 3004 5503 2	GWA 32	14-Mar-2023	1405	0.02	<0.01	0.032	615	122	<1	755	3900	0.009	14/03/2023	1.74	8.1	10	<1	3.19	<0.05	<0.01	181	0.115	0.003	0.002	7.1	23	<0.01	413	1.81	411	20.5	615	42.1	39.5	2380	<0.05	
ME2 3004 5503 3	GWC 32	14-Mar-2023	1320	0.04	<0.01	0.034	1400	142	<1	328	3550	0.004	14/03/2023	1.93	6.3	81	<1	2.8	2.49	0.002	106	0.054	<0.01	0.004	6.4	45	<0.01	535	4.47	256	19.5	1400	42.6	40.2	2160	0.012	
ME2 3004 5503 4	GWA 34	17-Mar-2023	1139	4.16	<0.01	0.068	325	200	<1	434	3140	0.025	17/03/2023	3.55	7.9	36	<1	1.3	2.92	0.002	212	0.061	0.002	0.028	6.7	6	0.02	245	1.55	985	22.5	325	39.2	38.2	2780	0.055	
ME2 3004 5503 5	GWC 34	17-Mar-2023	1209											Dry																							
ME2 3004 5503 6	GWA 36	22-Mar-2023	1316	7.66	0.012	0.158	984	21	<1	876	5100	0.064		4.75	7.4	12	<1	2.6	15.2	0.03	114	2.68	<0.01	0.05	7.3	30	<0.01	965	0.589	559	22.5	984	56	53.2	3630	0.082	
ME2 3004 5503 7	GWC 36	22-Mar-2023	1119	0.21	0.002	0.029	289	154	<1	360	3620	0.006		7.64	5.7	14	<1	2.28	24.2	<0.01	154	1.98	0.003	0.014	6.5	36	<0.01	478	1.26	1350	21.5	289	44	42.1	3150	0.042	
ME2 3004 5503 8	GWC 25	03-Apr-2023	1235	0.35	<0.01	0.125	157	31	<1	75	579	0.042	03/04/2023	17.16	8.8	5	<1	2.71	0.58	0.006	19	0.063	0.002	0.008	6.8	9	<0.01	48	0.312	23	21.5	157	5.73	5.43	344	0.023	
ME2 3004 5503 9	PZ13	06-Mar-2023	1301											Dry																							
ME2 3004 5504 0	PZ20	03-Apr-2023	1505	4.36	0.003	0.066	445	34	<1	43	1060	0.018		1.36	8.6	7	<1	0.19	4.04	0.011	39	0.584	0.002	0.015	7.4	19	<0.01	147	0.394	83	21	445	11.8	11.8	653	0.053	
ME2 3004 5504 1	PZ21	03-Apr-2023	1539	7.86	0.002	0.044	396	26	<1	26	981	0.013		3.52	8.6	6	<1	1.23	5.05	0.006	21	0.464	0.002	0.016	7.5	9	<0.01	174	0.289	92	21	396	10.6	10.8	648	0.041	
ME2 3004 5504 2	PZ26	03-Apr-2023	1448											Dry																							
ME2 3004 5504 3	GWF 1	03-Apr-2023	1104											Dry																							
ME2 3004 5504 4	GWF 2	07-Mar-2023	1500																																		
ME2 3004 5504 5	GWF 3	03-Apr-2023	1153	0.94	0.001	0.087	800	227	<1	327	4160	0.008		17.99	8.6	27	<1	0.24	3.03	0.006	327	1.71	0.002	0.01	6.8	42	<0.01	354	1.93	1430	23	800	55	54.7	3280	0.049	

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ME2 3004 5504 6	GWF 4	07-Mar-2023	1500																																		
ME2 3004 5504 7	GWF 5	03-Apr-2023	1401	10.9	0.017	0.588	455	222	<1	332	4040	0.072		19.95	8.9	14	<1	0.26	29.9	0.069	264	1.94	0.004	0.065	6.8	54	<0.01	398	1.58	1600	23	455	51.8	51.5	3310	0.15	
ME2 3004 5504 8	GWF 7	07-Mar-2023	1500																																		
ME2 3004 5604 9	Barol ogger Office	04-Mar-2023	1047										03/04/2023																								
ME2 3007 3700 1	GWA 1	19-Apr-2023	1319											Dry																							
ME2 3007 3700 2	GWA 2	18-Apr-2023	1500																																		
ME2 3007 3700 3	GWA 3	26-Apr-2023	1520	2.49	0.002	0.059	416	34	<1	345	2140	0.024		3.88	5.9	52	<1	5.21	1.9	0.009	46	0.465	0.001	0.019	6.8	2	<0.01	344	0.438	226	20.5	416	22.7	20.5	1620	0.014	
ME2 3007 3700 4	GWA 4	27-Apr-2023	1445	0.8	0.007	0.076	582	82	<1	213	1620	0.003		2.29	5.9	11	<1	8.67	6.68	0.002	55	0.79	<0.001	0.013	6.9	18	<0.01	192	0.777	149	20.5	582	20.7	17.4	945	0.017	
ME2 3007 3700 5	GWA 5	17-Apr-2023	1028	2.82	0.006	0.292	746	510	<1	1580	11900	0.007		1.53	6.4	24	<1	5.64	3.62	0.002	828	1.38	0.024	0.072	7.3	31	<0.01	1590	4.9	4160	20	746	146	164	10200	0.068	
ME2 3007 3700 6	GWA 6	18-Apr-2023	1500																																		
ME2 3007 3700 7	GWA 7	26-Apr-2023	1425											Dry																							
ME2 3007 3700 8	GWA 8	18-Apr-2023	1500																																		
ME2 3007 3700 9	GWC 1	18-Apr-2023	1500																																		
ME2 3007 3701 0	GWC 2	26-Apr-2023	1451	0.05	<0.001	0.363	500	56	<1	109	1220	0.002		1.63	8.1	11	<1	2.48	0.64	<0.001	23	0.04	<0.001	0.002	7.4	23	<0.01	170	0.505	12	20.5	500	13.3	12.7	690	0.014	
ME2 3007 3701 1	GWC 3	18-Apr-2023	1500																																		
ME2 3007 3701 2	GWC 4	26-Apr-2023	1210	0.05	<0.001	0.034	637	170	<1	316	2350	0.003		12.8	6.7	70	<1	2.91	2.5	<0.001	76	0.033	<0.001	0.001	6.6	48	<0.01	208	1.8	234	20.5	637	26.5	25	1440	0.018	
ME2 3007 3701 3	GWC 5	17-Apr-2023	1340	0.02	<0.001	0.162	2160	286	<1	468	5110	<0.001		4.66	5.1	823	<1	1.88	2.42	0.003	140	1.08	<0.001	0.022	6.5	87	<0.01	885	6.39	370	19.5	2160	64.1	66.5	3450	0.014	
ME2 3007 3701 4	GWA 10	20-Apr-2023	1030	9.84	0.007	0.064	428	125	<1	495	3000	0.042	20/04/2023	3.24	6.6	24	<1	2.07	12.4	0.005	106	1.77	<0.001	0.016	7	2	<0.01	394	1	528	19	428	33.5	32.2	2160	0.028	

a Sample Num	a Sample Location	Sampling Date	Sampling Time	Aluminium mg/L	Arsenic mg/L	Barium mg/L	Bicarbonate Alkalinity as CaCO3 mg/L	Calcium - Dissolved mg/L	Carbonate Alkalinity as CaCO3 mg/L	Chloride mg/L	Conductivity @ 25oC µS/cm	Copper mg/L	Data Download	Depth to Standpipe m	Dissolved Oxygen - Dissolved mg/L	Free Carbon Dioxide as CO2 mg/L	Hydroxide Alkalinity as CaCO3 mg/L	Ionic Balance %	Iron mg/L	Lead mg/L	Magnesium - Dissolved mg/L	Manganese mg/L	Molybdenum mg/L	Nickel mg/L	pH pH Unit	Potassium - Dissolved mg/L	Selenium mg/L	Sodium - Dissolved mg/L	Strontium mg/L	Sulfate as SO4 - Turbidimetric mg/L	Temperature °C	Total Alkalinity as CaCO3 mg/L	Total Anions meq/L	Total Cations meq/L	Total Dissolved Solids @180°C - Dissolved mg/L	Zinc mg/L
ME2 3007 3701 5	GWC 10	20-Apr-2023	1033	0.06	<0.001	0.038	363	217	<1	375	3660	0.007	20/04/2023	2.88	6.8	34	<1	0.92	3.18	<0.001	125	0.183	0.002	0.006	6.9	33	<0.001	471	2.22	1220	19.5	363	43.2	42.4	2780	0.01
ME2 3007 3701 6	GWA 11	20-Apr-2023	1116	0.86	<0.001	0.042	530	61	<1	126	1590	0.002		3.56	4.9	14	<1	0.12	1.72	0.001	48	0.249	<0.001	0.003	7.4	15	<0.001	234	0.695	166	20.5	530	17.6	17.6	963	0.008
ME2 3007 3701 7	GWC 11	20-Apr-2023	1130	0.13	<0.001	0.019	212	50	<1	205	1610	0.002	20/04/2023	5.97	6.7	43	<1	2.98	8.02	0.001	42	0.853	0.002	0.008	6.5	16	<0.001	220	0.457	331	19.5	212	16.9	15.9	980	0.022
ME2 3007 3701 8	GWA 12	27-Apr-2023	1200											Dry																						
ME2 3007 3701 9	GWC 12	27-Apr-2023	1210	0.08	<0.001	0.094	960	100	<1	193	2330	0.002	27/04/2023	5.76	4.8	11	<1	6.41	0.68	<0.001	46	0.225	<0.001	0.004	7.5	28	<0.001	427	0.886	350	20.5	960	31.9	28.1	1530	0.007
ME2 3007 3702 0	GWA 14	27-Apr-2023	1241											Dry																						
ME2 3007 3702 1	GWC 14	27-Apr-2023	1249	0.05	<0.001	0.083	608	182	<1	206	2720	0.006	27/04/2023	1.66	5.2	8	<1	2.21	1.53	0.002	81	0.146	0.006	0.009	7.6	32	<0.001	364	1.41	764	19.5	608	33.9	32.4	1980	0.013
ME2 3007 3702 2	GWA 15	27-Apr-2023	1340											Dry																						
ME2 3007 3702 3	GWC 15	27-Apr-2023	1405	0.07	<0.001	0.087	669	101	<1	165	2350	0.008		3.19	6	12	<1	7.44	4.19	<0.001	60	0.164	<0.001	0.005	7	31	<0.001	351	1.48	586	19.5	669	30.2	26	1600	0.008
ME2 3007 3702 4	GWC 33	19-Apr-2023	1245										19/04/2023	Dry																						
ME2 3007 3702 5	GWC 26	18-Apr-2023	1500																																	
ME2 3007 3702 6	GWA 16	20-Apr-2023	959	0.42	<0.001	0.132	643	392	<1	6800	20500	0.004		2.18	7.2	34	<1	4.85	1.79	0.002	574	0.218	0.001	0.003	7	17	<0.001	3280	6.88	1280	20	643	231	210	14600	0.011
ME2 3007 3702 7	GWC 16	20-Apr-2023	921	0.42	0.001	0.133	652	87	<1	420	2500	0.011	20/04/2023	30.53	6.2	26	<1	2.91	3.48	0.01	42	0.057	<0.001	0.001	7.2	25	<0.001	402	0.84	125	19.5	652	27.5	25.9	1540	0.02
ME2 3007 3702 8	GWC 30	17-Apr-2023	1215	0.43	<0.001	0.1	624	280	<1	600	3340	0.643	17/04/2023	31.01	7.4	50	<1	2.63	3.83	0.003	169	0.152	<0.001	0.012	6.9	60	<0.001	202	2.51	329	21.5	624	36.2	38.2	2290	0.061
ME2 3007 3702 9	GWC 31	17-Apr-2023	1155											Dry																						
ME2 3007 3703 0	GWC 37	17-Apr-2023	1137	0.66	0.046	0.033	193	128	<1	182	2440	0.006		25.2	7.2	74	<1	4.55	10.6	0.005	107	1.16	0.002	0.012	6.4	54	<0.001	260	1.24	791	21.5	193	25.4	27.9	1760	0.059
ME2 3007 3703 1	GWC 27	18-Apr-2023	1500																																	
ME2 3007 3703 2	GWA 32	26-Apr-2023	1345	<0.001	<0.001	0.028	607	130	<1	648	3340	0.004		1.68	7.4	18	<1	3.49	<0.005	<0.001	146	0.144	0.003	0.002	7.2	19	<0.001	356	1.8	315	19.5	607	37	34.5	2100	<0.005

a Sample Num	a Sample Location	Sampling Date	Sampling Time	Aluminium mg/L	Arsenic mg/L	Barium mg/L	Bicarbonate Alkalinity as CaCO3 mg/L	Calcium - Dissolved mg/L	Carbonate Alkalinity as CaCO3 mg/L	Chloride mg/L	Conductivity @ 25oC µS/cm	Copper mg/L	Data Download	Depth to Standpipe m	Dissolved Oxygen - Dissolved mg/L	Free Carbon Dioxide as CO2 mg/L	Hydroxide Alkalinity as CaCO3 mg/L	Ionic Balance %	Iron mg/L	Lead mg/L	Magnesium - Dissolved mg/L	Manganese mg/L	Molybdenum mg/L	Nickel mg/L	pH pH Unit	Potassium - Dissolved mg/L	Selenium mg/L	Sodium - Dissolved mg/L	Strontium mg/L	Sulfate as SO4 - Turbidimetric mg/L	Temperature °C	Total Alkalinity as CaCO3 mg/L	Total Anions meq/L	Total Cations meq/L	Total Dissolved Solids @180°C - Dissolved mg/L	Zinc mg/L	
ME2 3007 3703 3	GWC 32	26-Apr-2023	1300	0.03	<0.01	0.031	1380	149	<1	308	3390	0.007	26/04/2023	2.1	6.6	142	<1	3.41	2.18	0.003	100	0.05	0.003	0.014	6.6	42	<0.01	510	4.24	260	19	1380	41.7	38.9	2130	0.011	
ME2 3007 3703 4	GWA 34	17-Apr-2023	1425	6.3	0.002	0.058	349	198	<1	396	3250	0.045	17/04/2023	3.65	8	26	<1	3.78	3.96	0.002	228	0.102	0.002	0.03	6.8	6	0.02	271	1.55	936	21.5	349	37.6	40.6	2530	0.057	
ME2 3007 3703 5	GWC 34	17-Apr-2023	1419											Dry																							
ME2 3007 3703 6	GWa 36	27-Apr-2023	1129											Dry																							
ME2 3007 3703 7	GWc 36	27-Apr-2023	1058	0.18	0.001	0.018	388	158	<1	354	3680	0.004		7.6	5.6	17	<1	1.99	23.5	0.001	164	2.04	0.002	0.012	6.6	40	<0.01	507	1.32	1370	20	388	46.3	44.4	2720	0.053	
ME2 3007 3703 8	GWC 25	02-May-2023	1500	0.73	<0.01	0.136	163	40	<1	81	600	0.057	02/05/2023	19.37	8.5	11	<1	2.88	0.97	0.008	22	0.078	0.004	0.012	6.9	13	<0.01	54	0.31	28	17.5	163	6.12	6.49	326	0.035	
ME2 3007 3703 9	PZ13	17-Apr-2023	1519											Dry																							
ME2 3007 3704 0	PZ20	02-May-2023	1308	3.76	0.002	0.031	302	35	<1	33	784	0.01		1.93	7.7	6	<1	2.47	2.47	0.004	28	0.15	0.001	0.009	7.6	15	<0.01	106	0.269	79	18.5	302	8.61	9.04	504	0.028	
ME2 3007 3704 1	PZ21	02-May-2023	1229	17.6	0.005	0.088	385	21	<1	25	915	0.026		3.38	7.2	11	<1	3.64	11.5	0.015	13	0.655	0.002	0.03	7.6	6	<0.01	166	0.292	87	18	385	10.2	9.49	628	0.092	
ME2 3007 3704 2	PZ26	02-May-2023	1255											Dry																							
ME2 3007 3704 3	GWF 1	02-May-2023	1550											Dry																							
ME2 3007 3704 4	GWF 2	18-Apr-2023	1500																																		
ME2 3007 3704 5	GWF 3	02-May-2023	1520	1.23	0.002	0.092	764	250	<1	365	4150	0.011		18.21	7.1	43	<1	3.37	4.14	0.007	362	1.67	0.003	0.015	6.7	33	<0.01	385	2.14	1460	19.5	764	56	59.8	3170	0.038	
ME2 3007 3704 6	GWF 4	18-Apr-2023	1500																																		
ME2 3007 3704 7	GWF 5	02-May-2023	1213	6.08	0.009	0.225	355	207	<1	338	4010	0.038		19.88	7.4	155	<1	9.26	12.6	0.033	216	1.95	0.002	0.045	6.7	46	<0.01	340	1.76	1750	20	355	53.1	44.1	3140	0.08	
ME2 3007 3704 8	GWF 7	18-Apr-2023	1500																																		
ME2 3007 3804 9	Barol ogger Office	02-May-2023	1200										02/05/2023																								
ME2 3008 5100 1	GWA 1	04-May-2023	1506											Dry																							

a Sample Num	a Sample Location	Sampling Date	Sampling Time	Aluminium mg/L	Arsenic mg/L	Barium mg/L	Bicarbonate Alkalinity as CaCO3 mg/L	Calcium - Dissolved mg/L	Carbonate Alkalinity as CaCO3 mg/L	Chloride mg/L	Conductivity @ 25oC µS/cm	Copper mg/L	Data Download	Depth to Standpipe m	Dissolved Oxygen - Dissolved mg/L	Free Carbon Dioxide as CO2 mg/L	Hydroxide Alkalinity as CaCO3 mg/L	Ionic Balance %	Iron mg/L	Lead mg/L	Magnesium - Dissolved mg/L	Manganese mg/L	Molybdenum mg/L	Nickel mg/L	pH pH Unit	Potassium - Dissolved mg/L	Selenium mg/L	Sodium - Dissolved mg/L	Strontium mg/L	Sulfate as SO4 - Turbidimetric mg/L	Temperature °C	Total Alkalinity as CaCO3 mg/L	Total Anions meq/L	Total Cations meq/L	Total Dissolved Solids @180°C - Dissolved mg/L	Zinc mg/L	
ME2 3008 5100 2	GWA 2	18-May-2023	1114	1.35	0.002	0.063	93	38	<1	118	927	0.004		2.05	6.1	14	<1	6.54	3.86	0.002	40	2.36	<0.01	0.009	6.7	7	<0.01	82	0.362	240	14.5	93	10.2	8.93	550	0.01	
ME2 3008 5100 3	GWA 3	18-May-2023	1401	23.3	0.006	0.145	398	42	<1	349	2080	0.053		3.9	6.3	30	<1	6.11	21.1	0.026	44	0.918	0.002	0.062	6.8	2	<0.01	337	0.503	254	18.5	398	23.1	20.4	1930	0.067	
ME2 3008 5100 4	GWA 4	15-May-2023	1037	0.73	0.008	0.077	455	72	<1	253	1810	0.002		2.47	6.4	31	<1	6.93	9.43	<0.01	58	0.72	<0.01	0.013	7	19	<0.01	197	0.812	182	17.5	455	20	17.4	938	0.016	
ME2 3008 5100 5	GWA 5	04-May-2023	1010	0.32	0.005	0.062	880	500	<1	1130	10100	0.002		1.51	8.8	23	<1	2.64	0.4	<0.01	792	0.413	0.014	0.038	7.2	27	<0.01	1250	5.79	4240	17	880	138	145	9880	0.045	
ME2 3008 5100 6	GWA 6	18-May-2023	1300																																		
ME2 3008 5100 7	GWA 7	05-May-2023	1248											Dry																							
ME2 3008 5100 8	GWA 8	04-May-2023	1339																																		
ME2 3008 5100 9	GWC 1	18-May-2023	1125	0.16	0.001	0.032	278	72	<1	285	1740	0.005		8.72	8.3	13	<1	5.67	1.66	0.002	44	0.452	<0.01	0.005	7.1	11	<0.01	222	0.607	270	16	278	19.2	17.2	988	0.017	
ME2 3008 5101 0	GWC 2	18-May-2023	1349	0.02	<0.01	0.384	506	67	<1	104	1220	0.002		2.09	6.3	9	<1	1.37	0.66	<0.01	22	0.03	<0.01	0.002	7.5	22	<0.01	165	0.489	10	18.5	506	13.2	12.9	699	0.011	
ME2 3008 5101 1	GWC 3	18-May-2023	1245	0.12	0.002	0.03	520	169	<1	425	4160	0.003		1.98	6.8	26	<1	6.36	6.95	0.004	173	0.523	0.002	0.11	6.8	37	<0.01	500	1.71	1400	17.5	520	51.5	45.4	3110	0.021	
ME2 3008 5101 2	GWC 4	05-May-2023	1125	0.01	<0.01	0.036	648	182	<1	343	2350	<0.01		12.65	8.3	84	<1	0.56	2.11	<0.01	84	0.033	<0.01	<0.01	6.5	52	<0.01	230	2.07	241	18	648	27.6	27.3	1490	0.006	
ME2 3008 5101 3	GWC 5	04-May-2023	1318	0.05	<0.01	0.193	2220	285	<1	530	5170	0.007		4.7	7.2	572	<1	0.26	1.26	0.004	142	1.18	<0.01	0.022	6.4	91	<0.01	902	8.37	409	17.5	2220	67.8	67.5	3520	0.02	
ME2 3008 5101 4	GWA 10	23-May-2023	1415	6.86	0.008	0.061	450	106	<1	479	3010	0.037	23/05/2023	3.21	8.8	9	<1	8.17	10.2	0.004	101	1.71	<0.01	0.014	6.8	<1	<0.01	374	0.941	609	17.5	450	35.2	29.9	2060	0.027	
ME2 3008 5101 5	GWC 10	23-May-2023	1408	0.36	<0.01	0.036	401	183	<1	374	3730	0.017	23/05/2023	1.77	8.1	8	<1	9.4	1.67	<0.01	122	0.07	0.002	0.006	7.1	30	<0.01	446	2.19	1390	17.5	401	47.5	39.3	2780	0.018	
ME2 3008 5101 6	GWA 11	23-May-2023	1433	2	<0.01	0.04	610	40	<1	102	1550	0.007		3.6	6	7	<1	7.66	2.49	0.001	37	0.246	<0.01	0.005	7.3	8	<0.01	236	0.596	145	18	610	18.1	15.5	850	0.014	
ME2 3008 5101 7	GWC 11	23-May-2023	1441	0.14	<0.01	0.016	241	45	<1	197	1630	0.002	23/05/2023	5.99	6.8	17	<1	9.24	7.24	<0.01	41	0.805	0.001	0.007	6.2	15	<0.01	212	0.436	382	18.5	241	18.3	15.2	1020	0.024	
ME2 3008 5101 8	GWA 12	15-May-2023	1315											Dry																							
ME2 3008 5101 9	GWC 12	15-May-2023	1324	0.04	<0.01	0.094	729	81	<1	195	2450	0.001	15/05/2023	6.03	6.3	14	<1	1.86	0.68	<0.01	44	0.212	0.001	0.005	7.5	27	<0.01	423	0.856	370	18.5	729	27.8	26.8	1610	0.006	

a Sample Num	a Sample Location	Sampling Date	Sampling Time	Aluminium mg/L	Arsenic mg/L	Barium mg/L	Bicarbonate Alkalinity as CaCO3 mg/L	Calcium - Dissolved mg/L	Carbonate Alkalinity as CaCO3 mg/L	Chloride mg/L	Conductivity @ 25oC µS/cm	Copper mg/L	Data Download	Depth to Standpipe m	Dissolved Oxygen - Dissolved mg/L	Free Carbon Dioxide as CO2 mg/L	Hydroxide Alkalinity as CaCO3 mg/L	Ionic Balance %	Iron mg/L	Lead mg/L	Magnesium - Dissolved mg/L	Manganese mg/L	Molybdenum mg/L	Nickel mg/L	pH pH Unit	Potassium - Dissolved mg/L	Selenium mg/L	Sodium - Dissolved mg/L	Strontium mg/L	Sulfate as SO4 - Turbidimetric mg/L	Temperature °C	Total Alkalinity as CaCO3 mg/L	Total Anions meq/L	Total Cations meq/L	Total Dissolved Solids @180°C - Dissolved mg/L	Zinc mg/L		
ME2 3008 5102 0	GWA 14	15-May-2023	1215											Dry																								
ME2 3008 5102 1	GWC 14	15-May-2023	1225	0.04	<0.001	0.117	437	168	<1	222	3080	0.003	15/05/2023	1.95	6.1	12	<1	4.08	1.48	0.001	91	0.134	0.002	0.006	7.4	31	<0.01	362	1.47	969	17.5	437	35.2	32.4	2300	0.009		
ME2 3008 5102 2	GWA 15	15-May-2023	1105											Dry																								
ME2 3008 5102 3	GWC 15	15-May-2023	1130	0.07	<0.001	0.068	484	121	<1	176	2750	0.002		3.35	7.1	25	<1	5.28	4.37	<0.001	69	0.164	0.001	0.004	7	22	<0.01	355	1.61	777	17	484	30.8	27.7	1960	0.008		
ME2 3008 5102 4	GWC 33	05-May-2023	1326										05/05/2023	Dry																								
ME2 3008 5102 5	GWC 26	08-May-2023	1500																																			
ME2 3008 5102 6	GWA 16	23-May-2023	1345	3.06	0.003	0.129	737	577	<1	6890	20700	0.017		2.28	8.7	15	<1	4.8	4.34	0.01	572	0.218	0.001	0.005	6.9	16	<0.01	3230	6.57	1420	16.5	737	239	217	15800	0.03		
ME2 3008 5102 7	GWC 16	23-May-2023	1320	0.73	0.002	0.123	731	68	<1	390	2470	0.019	23/05/2023	30.7	6.8	10	<1	7.83	2.95	0.006	38	0.053	0.001	0.002	7.1	24	<0.01	378	0.827	95	18.5	731	27.6	23.6	1450	0.038		
ME2 3008 5102 8	GWC 30	04-May-2023	1133	0.3	<0.001	0.082	661	276	<1	685	3380	0.647	04/05/2023	30.98	9	43	<1	0.75	2.98	0.004	180	0.157	<0.001	0.008	6.7	55	<0.01	208	3.01	341	19.5	661	39.6	39	2310	0.051		
ME2 3008 5102 9	GWC 31	04-May-2023	1118											Dry																								
ME2 3008 5103 0	GWC 37	04-May-2023	1104	0.91	0.042	0.038	188	131	<1	184	2430	0.01		25.17	9.3	60	<1	4.17	12.9	0.009	110	1.26	0.002	0.01	6.2	56	<0.01	261	1.48	824	19.5	188	26.1	28.4	1810	0.07		
ME2 3008 5103 1	GWC 27	08-May-2023	1500																																			
ME2 3008 5103 2	GWA 32	04-May-2023	1408	0.01	<0.001	0.034	613	142	<1	703	3410	0.004		1.67	9.8	16	<1	0.2	<0.05	<0.001	162	0.121	0.004	0.002	7.2	23	<0.01	407	2.01	311	17	613	38.6	38.7	2110	0.007		
ME2 3008 5103 3	GWC 32	04-May-2023	1359	0.02	<0.001	0.035	1400	161	<1	327	3400	0.009		2.06	8.2	203	<1	1.29	2.38	0.001	114	0.058	<0.001	0.002	6.5	49	<0.01	575	5	258	17.5	1400	42.6	43.7	2230	0.01		
ME2 3008 5103 4	GWA 34	04-May-2023	1237	20.5	0.006	0.133	359	204	<1	428	3230	0.077	04/05/2023	3.61	10.3	21	<1	2.88	16.7	0.015	238	0.127	0.003	0.048	6.8	6	0.02	293	1.9	1010	19	359	40.3	42.7	2530	0.141		
ME2 3008 5103 5	GWC 34	04-May-2023	1244											Dry																								
ME2 3008 5103 6	GWA 36	23-May-2023	1511											Dry																								
ME2 3008 5103 7	GWC 36	23-May-2023	1520	0.14	<0.001	0.02	324	137	<1	362	3830	0.003		7.61	9.2	22	<1	8.33	21.2	<0.001	151	2	0.002	0.011	6.3	36	<0.01	464	1.31	1490	18.5	324	47.7	40.4	2830	0.035		

a Sample Num	a Sample Location	Sampling Date	Sampling Time	Aluminium mg/L	Arsenic mg/L	Barium mg/L	Bicarbonate Alkalinity as CaCO3 mg/L	Calcium - Dissolved mg/L	Carbonate Alkalinity as CaCO3 mg/L	Chloride mg/L	Conductivity @ 25oC µS/cm	Copper mg/L	Data Download	Depth to Standpipe m	Dissolved Oxygen - Dissolved mg/L	Free Carbon Dioxide as CO2 mg/L	Hydroxide Alkalinity as CaCO3 mg/L	Ionic Balance %	Iron mg/L	Lead mg/L	Magnesium - Dissolved mg/L	Manganese mg/L	Molybdenum mg/L	Nickel mg/L	pH pH Unit	Potassium - Dissolved mg/L	Selenium mg/L	Sodium - Dissolved mg/L	Strontium mg/L	Sulfate as SO4 - Turbidimetric mg/L	Temperature °C	Total Alkalinity as CaCO3 mg/L	Total Anions meq/L	Total Cations meq/L	Total Dissolved Solids @180°C - Dissolved mg/L	Zinc mg/L			
ME2 3008 5103 8	GWC 25	08-May-2023	1500																																				
ME2 3008 5103 9	PZ13	04-May-2023	1447											Dry																									
ME2 3008 5104 0	PZ20	08-May-2023	1500																																				
ME2 3008 5104 1	PZ21	08-May-2023	1119																																				
ME2 3008 5104 2	PZ26	08-May-2023	1119																																				
ME2 3008 5104 3	GWF 1	08-May-2023	1119																																				
ME2 3008 5104 4	GWF 2	08-May-2023	1119																																				
ME2 3008 5104 5	GWF 3	08-May-2023	1119																																				
ME2 3008 5104 6	GWF 4	08-May-2023	1119																																				
ME2 3008 5104 7	GWF 5	08-May-2023	1119																																				
ME2 3008 5104 8	GWF 7	08-May-2023	1119																																				
ME2 3008 5204 9	Barol ogger Office	01-Jun-2023	1500										01/06/2023																										
ME2 3009 6400 1	GWA 1	24-May-2023	1538											Dry																									
ME2 3009 6400 2	GWA 2	20-Jun-2023	1229	1.08	<0.001	0.054	81	29	<1	121	916	0.002		2.23	7.1	45	<1	4.24	2.68	0.002	36	1.61	<0.001	0.006	6.6	7	<0.001	90	0.345	213	14.5	81	9.47	8.7	593	<0.005			
ME2 3009 6400 3	GWA 3	20-Jun-2023	1348											Dry																									
ME2 3009 6400 4	GWA 4	01-Jun-2023	1123	0.64	0.008	0.081	466	83	<1	273	1880	0.002		2.67	6.2	12	<1	7.67	6.97	<0.001	59	0.727	<0.001	0.014	6.8	19	<0.001	199	0.875	199	17	466	21.2	18.1	1090	0.017			
ME2 3009 6400 5	GWA 5	25-May-2023	1119	0.15	0.002	0.046	944	560	<1	1080	10100	0.004		1.58	8	19	<1	2.69	0.34	<0.001	830	0.216	0.007	0.027	7.3	27	<0.001	1170	5.5	4360	15.5	944	140	148	9760	0.041			
ME2 3009 6400 6	GWA 6	21-Jun-2023	1136	0.08	0.006	0.117	629	178	<1	330	3680	<0.001		0.63	7.8	35	<1	3.25	19.7	<0.001	167	1.46	0.002	0.006	7.4	10	<0.001	461	1.65	1150	12	629	45.8	42.9	2660	<0.005			

a Sample Num	a Sample Location	Sampling Date	Sampling Time	Aluminium mg/L	Arsenic mg/L	Barium mg/L	Bicarbonate Alkalinity as CaCO3 mg/L	Calcium - Dissolved mg/L	Carbonate Alkalinity as CaCO3 mg/L	Chloride mg/L	Conductivity @ 25oC µS/cm	Copper mg/L	Data Download	Depth to Standpipe m	Dissolved Oxygen - Dissolved mg/L	Free Carbon Dioxide as CO2 mg/L	Hydroxide Alkalinity as CaCO3 mg/L	Ionic Balance %	Iron mg/L	Lead mg/L	Magnesium - Dissolved mg/L	Manganese mg/L	Molybdenum mg/L	Nickel mg/L	pH pH Unit	Potassium - Dissolved mg/L	Selenium mg/L	Sodium - Dissolved mg/L	Strontium mg/L	Sulfate as SO4 - Turbidimetric mg/L	Temperature °C	Total Alkalinity as CaCO3 mg/L	Total Anions meq/L	Total Cations meq/L	Total Dissolved Solids @180°C - Dissolved mg/L	Zinc mg/L		
ME2 3009 6400 7	GWA 7	25-May-2023	1329											Dry																								
ME2 3009 6400 8	GWA 8	01-Jun-2023	1400	4.48	0.005	0.167	346	99	<1	326	2240	0.012		1.39	4.5	8	<1	8.07	8.64	0.023	91	9.98	<0.001	0.038	7	10	<0.01	216	1.28	473	16	346	26	22.1	1530	0.051		
ME2 3009 6400 9	GWC 1	20-Jun-2023	1243	0.07	<0.001	0.026	276	62	<1	287	1790	0.003		9.02	8	36	<1	4.16	0.28	<0.001	45	0.074	<0.001	0.001	7.2	12	<0.01	236	0.698	253	17	276	18.9	17.4	1030	0.006		
ME2 3009 6401 0	GWC 2	20-Jun-2023	1402	0.05	<0.001	0.411	498	58	<1	110	1240	<0.001		2.07	9.5	20	<1	1.53	0.29	<0.001	22	0.019	<0.001	0.001	7.7	23	<0.01	174	0.584	10	17.5	498	13.3	12.9	715	<0.005		
ME2 3009 6401 1	GWC 3	21-Jun-2023	1153	0.01	<0.001	0.022	545	187	<1	408	4230	<0.001		1.92	8.1	74	<1	3.29	1.97	<0.001	183	0.507	0.002	0.098	7	42	<0.01	533	1.91	1420	17.5	545	52	48.6	3060	0.005		
ME2 3009 6401 2	GWC 4	25-May-2023	1250	0.03	<0.001	0.036	617	188	<1	339	2340	0.004		12.62	8.2	28	<1	1.07	1.86	0.001	80	0.032	<0.001	0.002	6.4	50	<0.01	217	1.9	258	18.5	617	27.3	26.7	1460	0.013		
ME2 3009 6401 3	GWC 5	24-May-2023	1452	0.01	<0.001	0.179	2160	291	<1	530	5110	0.001		4.79	4.8	176	<1	0.66	2.78	0.003	137	1.02	<0.001	0.022	6.4	87	<0.01	858	9.12	389	18	2160	66.2	65.3	3490	0.019		
ME2 3009 6401 4	GWA 10	21-Jun-2023	1039	0.52	0.007	0.041	397	118	<1	464	3000	0.012	21/06/2023	3.21	7.9	47	<1	0.47	7.53	<0.001	108	1.56	<0.001	0.005	7.1	1	<0.01	392	0.998	506	14.5	397	31.6	31.8	1950	<0.005		
ME2 3009 6401 5	GWC 10	21-Jun-2023	1100	0.06	<0.001	0.036	359	198	<1	334	3730	0.012	21/06/2023	2.41	9.1	34	<1	6.31	0.72	<0.001	123	0.199	0.002	0.008	7.2	29	<0.01	433	2.11	1360	14.5	359	44.9	39.6	2760	0.008		
ME2 3009 6401 6	GWA 11	21-Jun-2023	944	0.55	<0.001	0.034	438	46	<1	84	1320	0.001		3.58	7.5	19	<1	1.04	0.71	<0.001	37	0.215	<0.001	0.004	7.5	12	<0.01	189	0.621	146	15	438	14.2	13.9	797	<0.005		
ME2 3009 6401 7	GWC 11	21-Jun-2023	1016	0.14	<0.001	0.02	220	53	<1	201	1730	<0.001	21/06/2023	5.97	6.5	96	<1	2.79	12.4	<0.001	45	0.884	0.002	0.012	6.4	16	<0.01	231	0.509	370	16.5	220	17.8	16.8	1010	0.012		
ME2 3009 6401 8	GWA 12	01-Jun-2023	1307											Dry																								
ME2 3009 6401 9	GWC 12	01-Jun-2023	1335	0.07	<0.001	0.107	773	74	<1	197	2460	0.006	01/06/2023	5.66	5.1	9	<1	6.11	0.76	<0.001	43	0.269	0.002	0.013	7.5	27	<0.01	412	0.889	394	18.5	773	29.2	25.8	1570	0.012		
ME2 3009 6402 0	GWA 14	01-Jun-2023	1215											Dry																								
ME2 3009 6402 1	GWC 14	01-Jun-2023	1230	0.1	<0.001	0.239	447	194	<1	234	3190	0.019	01/06/2023	1.83	8.4	6	<1	9.63	1.04	0.002	98	0.193	0.002	0.011	7.3	33	<0.01	376	1.76	1290	17	447	42.4	34.9	2360	0.016		
ME2 3009 6402 2	GWA 15	01-Jun-2023	1148											Dry																								
ME2 3009 6402 3	GWC 15	01-Jun-2023	1159	0.08	<0.001	0.075	497	168	<1	195	2970	0.01	01/06/2023	3.59	6.6	10	<1	0.98	2.99	0.001	83	0.208	0.004	0.019	7.1	34	<0.01	393	2.09	884	17.5	497	33.8	33.2	2160	0.019		
ME2 3009 6402 4	GWC 33	20-Jun-2023	957										20/06/2023	Dry																								

a Sample Num	a Sample Location	Sampling Date	Sampling Time	Aluminium mg/L	Arsenic mg/L	Barium mg/L	Bicarbonate Alkalinity as CaCO3 mg/L	Calcium - Dissolved mg/L	Carbonate Alkalinity as CaCO3 mg/L	Chloride mg/L	Conductivity @ 25oC µS/cm	Copper mg/L	Data Download	Depth to Standpipe m	Dissolved Oxygen - Dissolved mg/L	Free Carbon Dioxide as CO2 mg/L	Hydroxide Alkalinity as CaCO3 mg/L	Ionic Balance %	Iron mg/L	Lead mg/L	Magnesium - Dissolved mg/L	Manganese mg/L	Molybdenum mg/L	Nickel mg/L	pH pH Unit	Potassium - Dissolved mg/L	Selenium mg/L	Sodium - Dissolved mg/L	Strontium mg/L	Sulfate as SO4 - Turbidimetric mg/L	Temperature °C	Total Alkalinity as CaCO3 mg/L	Total Anions meq/L	Total Cations meq/L	Total Dissolved Solids @180°C - Dissolved mg/L	Zinc mg/L	
ME2 3009 6402 5	GWC 26	25-May-2023	1154																																		
ME2 3009 6402 6	GWA 16	20-Jun-2023	1139	1.54	<0.001	0.125	641	423	<1	6360	20600	0.004		2.36	8.6	48	<1	1.57	1.53	0.002	596	0.086	0.001	0.004	7.1	16	<0.01	3300	6.85	1380	16	641	221	214	15800	0.013	
ME2 3009 6402 7	GWC 16	20-Jun-2023	1109											Dry																							
ME2 3009 6402 8	GWC 30	25-May-2023	1203	0.1	<0.001	0.052	627	292	<1	688	3340	0.192	25/05/2023	30.83	8	24	<1	0.57	3.2	0.002	178	0.115	<0.001	0.003	6.5	51	<0.01	203	2.71	335	18.5	627	38.9	39.4	2320	0.028	
ME2 3009 6402 9	GWC 31	24-May-2023	1424											Dry																							
ME2 3009 6403 0	GWC 37	24-May-2023	1316	0.31	0.038	0.031	181	130	<1	188	2400	0.006		25.2	6	29	<1	1.36	13.4	0.007	107	1.26	<0.001	0.011	6.2	53	<0.01	250	1.76	858	19	181	26.8	27.5	1770	0.064	
ME2 3009 6403 1	GWC 27	25-May-2023	1500																																		
ME2 3009 6403 2	GWA 32	15-Jun-2023	1215	0.01	<0.001	0.04	590	132	<1	730	3550	0.002		1.71	7.9	23	<1	1.99	<0.05	<0.001	161	0.055	0.002	<0.001	7.1	21	<0.01	396	1.81	324	14	590	39.1	37.6	2120	<0.005	
ME2 3009 6403 3	GWC 32	15-Jun-2023	1141	0.04	<0.001	0.033	1300	146	<1	342	3520	0.008		1.51	7.8	140	<1	1.26	1.33	0.003	110	0.062	0.001	0.005	6.6	43	<0.01	541	4.41	307	16.5	1300	42	41	2170	0.012	
ME2 3009 6403 4	GWA 34	15-Jun-2023	1326	2.07	<0.001	0.04	337	193	<1	431	3360	0.147	15/06/2023	3.58	8.4	33	<1	4.87	0.64	<0.001	228	0.035	0.002	0.023	6.8	5	0.01	281	1.62	1250	17.5	337	44.9	40.7	2540	0.049	
ME2 3009 6403 5	GWC 34	15-Jun-2023	1301											Dry																							
ME2 3009 6403 6	GWA 36	20-Jun-2023	1312											Dry																							
ME2 3009 6403 7	GWC 36	20-Jun-2023	1322	0.1	<0.001	0.02	290	151	<1	348	3830	0.002		7.62	7.6	103	<1	4.68	19.6	<0.001	154	1.94	<0.001	0.01	6.6	36	<0.01	486	1.3	1480	18	290	46.4	42.3	2900	0.025	
ME2 3009 6403 8	GWC 25	28-May-2023	1232	0.33	0.005	0.102	269	26	<1	153	1040	0.023	28/06/2023	23.08	6.6	34	<1	4.48	4.47	0.016	41	0.324	<0.001	0.018	6.6	6	<0.01	126	0.345	76	16.5	269	11.3	10.3	586	0.022	
ME2 3009 6403 9	PZ13	24-May-2023	1521											Dry																							
ME2 3009 6404 0	PZ20	28-May-2023	944	0.25	<0.001	0.023	347	29	<1	43	917	0.004		2.34	8	8	<1	2.6	0.39	<0.001	34	0.272	0.001	0.005	7.8	15	<0.01	115	0.318	96	13.5	347	10.1	9.63	569	0.011	
ME2 3009 6404 1	PZ21	28-May-2023	1017	2.87	0.002	0.033	374	19	<1	22	864	0.006		3.74	8.5	10	<1	2.9	2.06	0.004	17	0.343	0.002	0.008	7.6	7	<0.01	150	0.241	72	15	374	9.59	9.05	566	0.033	
ME2 3009 6404 2	PZ26	28-May-2023	926											Dry																							

a Sample Num	a Sample Location	Sampling Date	Sampling Time	Aluminium mg/L	Arsenic mg/L	Barium mg/L	Bicarbonate Alkalinity as CaCO3 mg/L	Calcium - Dissolved mg/L	Carbonate Alkalinity as CaCO3 mg/L	Chloride mg/L	Conductivity @ 25oC µS/cm	Copper mg/L	Data Download	Depth to Standpipe m	Dissolved Oxygen - Dissolved mg/L	Free Carbon Dioxide as CO2 mg/L	Hydroxide Alkalinity as CaCO3 mg/L	Ionic Balance %	Iron mg/L	Lead mg/L	Magnesium - Dissolved mg/L	Manganese mg/L	Molybdenum mg/L	Nickel mg/L	pH pH Unit	Potassium - Dissolved mg/L	Selenium mg/L	Sodium - Dissolved mg/L	Strontium mg/L	Sulfate as SO4 - Turbidimetric mg/L	Temperature °C	Total Alkalinity as CaCO3 mg/L	Total Anions meq/L	Total Cations meq/L	Total Dissolved Solids @180°C - Dissolved mg/L	Zinc mg/L		
ME2 3009 6404 3	GWF 1	28-May-2023	1058											Dry																								
ME2 3009 6404 4	GWF 2	28-May-2023	856																																			
ME2 3009 6404 5	GWF 3	28-May-2023	1130	0.14	<0.001	0.075	722	230	<1	422	4300	0.003		18.73	7.1	59	<1	6.94	0.53	0.002	319	1.81	0.001	0.011	6.7	38	<0.01	366	2.37	1750	19	722	62.8	54.6	3660	0.029		
ME2 3009 6404 6	GWF 4	28-May-2023	856																																			
ME2 3009 6404 7	GWF 5	28-May-2023	856											Dry																								
ME2 3009 6404 8	GWF 7	28-May-2023	856																																			
ME2 3009 6504 9	Barol ogger Office	28-Jun-2023	1413										28/06/2023																									
ME2 3012 5300 1	GWA 1	10-Jul-2023	1134											Dry																								
ME2 3012 5300 2	GWA 2	10-Jul-2023	1443	0.49	<0.001	0.048	86	32	<1	116	901	0.001		2.22	7.5	22	<1	1.43	1.77	<0.001	43	0.443	<0.001	0.003	6.5	6	<0.01	93	0.317	196	14	86	9.07	9.33	607	<0.005		
ME2 3012 5300 3	GWA 3	13-Jul-2023	1237											Dry																								
ME2 3012 5300 4	GWA 4	14-Jul-2023	1221	0.08	0.028	0.103	461	114	<1	368	2050	<0.001		2.84	6.3	37	<1	5.88	19.6	<0.001	72	0.726	<0.001	0.015	6.9	19	<0.01	220	1.09	230	15.5	461	24.4	21.7	1240	<0.005		
ME2 3012 5300 5	GWA 5	21-Jul-2023	1107	0.05	0.002	0.033	952	523	<1	989	9340	0.004		1.69	9.2	32	<1	3.19	0.11	<0.001	750	0.16	0.004	0.023	7.3	26	<0.01	1110	5.52	3910	13	952	128	137	8260	0.037		
ME2 3012 5300 6	GWA 6	13-Jul-2023	1311	0.08	0.006	0.139	603	218	<1	452	4330	<0.001		0.48	7.3	12	<1	4.85	12.9	<0.001	214	2.05	0.002	0.008	7.4	18	<0.01	538	2.19	1580	12.5	603	57.7	52.4	3390	<0.005		
ME2 3012 5300 7	GWA 7	18-Jul-2023	1004											Dry																								
ME2 3012 5300 8	GWA 8	18-Jul-2023	1225	1.85	0.003	0.022	325	112	<1	302	2200	0.002		1.35	6.7	20	<1	1.58	7.19	<0.001	96	1.21	<0.001	0.004	7.1	12	<0.01	224	1.44	446	13.5	325	24.3	23.5	1390	0.007		
ME2 3012 5300 9	GWC 1	10-Jul-2023	1458	0.04	<0.001	0.026	275	65	<1	289	1780	0.002		9.26	8.1	14	<1	0.54	0.16	<0.001	51	0.034	<0.001	<0.001	7.2	14	<0.01	249	0.664	249	16.5	275	18.8	18.6	1050	<0.005		
ME2 3012 5301 0	GWC 2	13-Jul-2023	1246	0.02	<0.001	0.4	491	57	<1	118	1210	<0.001		1.99	7.8	6	<1	1.98	0.19	<0.001	23	0.012	<0.001	0.001	7.5	24	<0.01	171	0.544	8	16.5	491	13.3	12.8	714	<0.005		
ME2 3012 5301 1	GWC 3	13-Jul-2023	1325	0.01	<0.001	0.024	540	183	<1	437	4110	<0.001		1.78	9.4	19	<1	5.07	1.1	<0.001	180	0.246	0.002	0.09	7.1	41	<0.01	524	2.05	1430	18	540	52.9	47.8	3090	<0.005		

a Sample Num	a Sample Location	Sampling Date	Sampling Time	Aluminium mg/L	Arsenic mg/L	Barium mg/L	Bicarbonate Alkalinity as CaCO3 mg/L	Calcium - Dissolved mg/L	Carbonate Alkalinity as CaCO3 mg/L	Chloride mg/L	Conductivity @ 25oC µS/cm	Copper mg/L	Data Download	Depth to Standpipe m	Dissolved Oxygen - Dissolved mg/L	Free Carbon Dioxide as CO2 mg/L	Hydroxide Alkalinity as CaCO3 mg/L	Ionic Balance %	Iron mg/L	Lead mg/L	Magnesium - Dissolved mg/L	Manganese mg/L	Molybdenum mg/L	Nickel mg/L	pH pH Unit	Potassium - Dissolved mg/L	Selenium mg/L	Sodium - Dissolved mg/L	Strontium mg/L	Sulfate as SO4 - Turbidimetric mg/L	Temperature °C	Total Alkalinity as CaCO3 mg/L	Total Anions meq/L	Total Cations meq/L	Total Dissolved Solids @180°C - Dissolved mg/L	Zinc mg/L	
ME2 3012 5301 2	GWC 4	18-Jul-2023	1038											Dry																							
ME2 3012 5301 3	GWC 5	18-Jul-2023	1252	0.02	<0.001	0.16	2100	294	<1	500	5310	0.005		5.05	5.5	621	<1	0.56	7.28	0.006	139	1.02	<0.001	0.022	6.5	92	<0.001	849	9.29	413	17.5	2100	64.7	65.4	3420	0.024	
ME2 3012 5301 4	GWA 10	13-Jul-2023	1127	0.21	0.01	0.036	398	119	<1	509	2930	0.009	13/07/2023	3.17	7.3	17	<1	4.32	7.98	<0.001	107	1.45	<0.001	0.005	7.1	2	<0.001	380	1	569	14.5	398	34.2	31.3	1910	<0.005	
ME2 3012 5301 5	GWC 10	13-Jul-2023	1147	0.03	<0.001	0.036	357	211	<1	367	3640	0.013	13/07/2023	2.72	8.7	12	<1	2.63	0.56	<0.001	142	0.065	0.001	0.004	7.1	32	<0.001	483	2.04	1390	15	357	46.4	44	2750	<0.005	
ME2 3012 5301 6	GWA 11	13-Jul-2023	1036	0.24	<0.001	0.029	460	43	<1	88	1260	<0.001		3.56	7.2	8	<1	2.37	1.12	<0.001	36	0.177	<0.001	0.002	7.5	11	<0.001	190	0.546	127	15.5	460	14.3	13.6	768	<0.005	
ME2 3012 5301 7	GWC 11	13-Jul-2023	1104	0.12	<0.001	0.018	219	59	<1	215	1760	0.001	13/07/2023	6.05	6.8	45	<1	1.99	7.71	<0.001	52	0.928	0.001	0.008	6.4	17	<0.001	251	0.517	427	17	219	19.3	18.6	1060	0.02	
ME2 3012 5301 8	GWA 12	14-Jul-2023	1042											Dry																							
ME2 3012 5301 9	GWC 12	14-Jul-2023	1053	0.04	<0.001	0.082	706	88	<1	207	2390	0.002	14/07/2023	5.81	6.8	13	<1	2.56	0.29	<0.001	44	0.215	0.002	0.011	7.5	26	<0.001	419	0.856	402	17	706	28.3	26.9	1600	<0.005	
ME2 3012 5302 0	GWA 14	14-Jul-2023	1143											Dry																							
ME2 3012 5302 1	GWC 14	14-Jul-2023	1155	0.05	<0.001	0.041	431	232	<1	245	3150	0.008	14/07/2023	1.89	6.6	8	<1	2.82	1.44	0.004	107	0.056	0.002	0.009	7.6	34	<0.001	396	1.73	1210	15.5	431	40.7	38.5	2440	0.011	
ME2 3012 5302 2	GWA 15	14-Jul-2023	1114											Dry																							
ME2 3012 5302 3	GWC 15	14-Jul-2023	1123	0.04	<0.001	0.056	468	226	<1	224	3200	0.006	14/07/2023	3.75	8.4	9	<1	2.1	1.02	0.002	102	0.024	0.006	0.046	7.4	35	<0.001	428	2.41	1210	16	468	40.9	39.2	2460	0.026	
ME2 3012 5302 4	GWC 33	10-Jul-2023	1043	1.02	<0.001	0.255	<1	304	69	105	4050	0.013	10/07/2023	49.94	8.1	<1	668	1.83	0.17	0.001	<1	0.01	0.001	0.002	12.3	18	<0.001	47	0.268	31	20.5	737	18.3	17.7	1170	0.037	
ME2 3012 5302 5	GWC 26	10-Jul-2023	1255	0.19	<0.001	0.337	<1	10	137	98	1110	0.115		52.37	8.6	<1	16	0.84	0.91	0.003	<1	0.013	0.004	0.004	11.6	25	<0.001	126	0.629	33	19.5	153	6.51	6.62	386	0.025	
ME2 3012 5302 6	GWA 16	10-Jul-2023	1343	0.35	<0.001	0.13	669	417	<1	6380	20200	0.006		2.37	8.3	29	<1	1.63	0.38	0.001	646	0.048	0.001	0.003	7.1	16	<0.001	3520	7.3	1290	14.5	669	220	227	14200	0.013	
ME2 3012 5302 7	GWC 16	10-Jul-2023	1415	0.46	<0.001	0.131	658	82	<1	386	2460	0.011		31.08	7.1	23	<1	0.72	1.97	0.015	44	0.062	<0.001	<0.001	7.2	24	<0.001	424	1.01	113	19.5	658	26.4	26.8	1500	0.01	
ME2 3012 5302 8	GWC 30	21-Jul-2023	1256	0.08	0.001	0.05	588	249	<1	672	3220	0.136	21/07/2023	31.1	7.2	76	<1	1.92	4.67	0.002	167	0.158	<0.001	0.003	6.6	51	<0.001	192	2.76	181	18.5	588	34.5	35.8	2240	0.023	
ME2 3012 5302 9	GWC 31	21-Jul-2023	1228	0.04	<0.001	0.058	611	291	<1	1210	4940	0.004		45.54	7.2	77	<1	0.45	0.09	<0.001	239	0.091	<0.001	0.006	6.6	59	<0.001	392	2.25	285	20	611	52.3	52.8	3480	0.024	

a Sample Num	a Sample Location	Sampling Date	Sampling Time	Aluminium mg/L	Arsenic mg/L	Barium mg/L	Bicarbonate Alkalinity as CaCO3 mg/L	Calcium - Dissolved mg/L	Carbonate Alkalinity as CaCO3 mg/L	Chloride mg/L	Conductivity @ 25oC µS/cm	Copper mg/L	Data Download	Depth to Standpipe m	Dissolved Oxygen - Dissolved mg/L	Free Carbon Dioxide as CO2 mg/L	Hydroxide Alkalinity as CaCO3 mg/L	Ionic Balance %	Iron mg/L	Lead mg/L	Magnesium - Dissolved mg/L	Manganese mg/L	Molybdenum mg/L	Nickel mg/L	pH pH Unit	Potassium - Dissolved mg/L	Selenium mg/L	Sodium - Dissolved mg/L	Strontium mg/L	Sulfate as SO4 - Turbidimetric mg/L	Temperature °C	Total Alkalinity as CaCO3 mg/L	Total Anions meq/L	Total Cations meq/L	Total Dissolved Solids @180°C - Dissolved mg/L	Zinc mg/L		
ME2 3012 5303 0	GWc 37	21-Jul-2023	1154											Dry																								
ME2 3012 5303 1	GWC 27	21-Jul-2023	1026										21/07/2023	Dry																								
ME2 3012 5303 2	GWA 32	18-Jul-2023	1136	<0.01	<0.001	0.047	634	142	<1	721	3770	0.004		1.82	6.7	38	<1	0.85	<0.05	<0.001	178	0.16	0.002	0.002	7.1	21	<0.01	400	2.29	353	15	634	40.4	39.7	2290	0.006		
ME2 3012 5303 3	GWC 32	18-Jul-2023	1112	0.02	<0.001	0.032	1330	143	<1	319	3490	0.013		3.04	6.8	116	<1	0.22	0.81	0.002	112	0.043	<0.001	0.004	6.8	44	<0.01	548	4.84	267	17.5	1330	41.1	41.3	2150	0.006		
ME2 3012 5303 4	GWA 34	18-Jul-2023	1334	2	<0.001	0.036	332	174	<1	393	3220	0.076	18/07/2023	3.56	7.4	37	<1	0.3	0.79	<0.001	212	0.035	0.002	0.027	6.7	4	0.01	257	1.69	935	17	332	37.2	37.4	2360	0.049		
ME2 3012 5303 5	GWC 34	18-Jul-2023	1312											Dry																								
ME2 3012 5303 6	GWa 36	13-Jul-2023	1215											Dry																								
ME2 3012 5303 7	GWc 36	13-Jul-2023	1210											Dry																								
ME2 3012 5303 8	GWC 25	26-Jul-2023	1156	0.33	0.006	0.114	251	30	<1	171	1200	0.026	26/07/2023	23.4	6.2	110	<1	3.33	3.38	0.009	43	0.376	<0.001	0.018	6.6	7	<0.01	128	0.399	81	18.5	251	11.5	10.8	604	0.011		
ME2 3012 5303 9	PZ13	21-Jul-2023	1343											Dry																								
ME2 3012 5304 0	PZ20	26-Jul-2023	938	0.21	<0.001	0.026	335	31	<1	61	886	0.003		2.63	6.9	24	<1	3	0.5	<0.001	35	0.374	<0.001	0.004	7.7	14	<0.01	110	0.333	84	13.5	335	10.2	9.57	526	0.008		
ME2 3012 5304 1	PZ21	26-Jul-2023	959	0.61	0.002	0.022	354	20	<1	20	836	0.005		3.87	6.6	22	<1	0.12	0.7	0.002	18	0.352	0.002	0.005	7.7	7	<0.01	148	0.23	69	14.5	354	9.07	9.1	528	0.017		
ME2 3012 5304 2	PZ26	26-Jul-2023	917											Dry																								
ME2 3012 5304 3	GWF 1	26-Jul-2023	1046											Dry																								
ME2 3012 5304 4	GWF 2	26-Jul-2023	905																																			
ME2 3012 5304 5	GWF 3	26-Jul-2023	1239								4390			19.07										6.7							21.5							
ME2 3012 5304 6	GWF 4	26-Jul-2023	905																																			
ME2 3012 5304 7	GWF 5	26-Jul-2023	904											Dry																								

a Sample Num	a Sample Location	Sampling Date	Sampling Time	Aluminium mg/L	Arsenic mg/L	Barium mg/L	Bicarbonate Alkalinity as CaCO3 mg/L	Calcium - Dissolved mg/L	Carbonate Alkalinity as CaCO3 mg/L	Chloride mg/L	Conductivity @ 25oC µS/cm	Copper mg/L	Data Download	Depth to Standpipe m	Dissolved Oxygen - Dissolved mg/L	Free Carbon Dioxide as CO2 mg/L	Hydroxide Alkalinity as CaCO3 mg/L	Ionic Balance %	Iron mg/L	Lead mg/L	Magnesium - Dissolved mg/L	Manganese mg/L	Molybdenum mg/L	Nickel mg/L	pH pH Unit	Potassium - Dissolved mg/L	Selenium mg/L	Sodium - Dissolved mg/L	Strontium mg/L	Sulfate as SO4 - Turbidimetric mg/L	Temperature °C	Total Alkalinity as CaCO3 mg/L	Total Anions meq/L	Total Cations meq/L	Total Dissolved Solids @180°C - Dissolved mg/L	Zinc mg/L	
ME2 3012 5304 8	GWF 7	26-Jul-2023	905																																		
ME2 3012 6304 9	Barol ogger Office	26-Jul-2023	1303										26/07/2023																								
ME2 3014 0400 1	GWA 1	18-Aug-2023	1102											Dry																							
ME2 3014 0400 2	GWA 2	17-Aug-2023	1029	0.1	<0.001	0.059	90	39	<1	142	1030	0.007		2.29	7.5	25	<1	0.24	0.63	<0.001	53	0.366	<0.001	0.003	6.5	8	<0.001	107	0.475	255	13	90	11.1	11.2	643	<0.005	
ME2 3014 0400 3	GWA 3	10-Aug-2023	1209											Dry																							
ME2 3014 0400 4	GWA 4	03-Aug-2023	1040	1.31	0.024	0.105	447	130	<1	349	2110	0.002		2.89	7.1	48	<1	0.71	18	0.002	78	0.796	<0.001	0.016	6.8	19	<0.001	230	0.977	206	15	447	23.1	23.4	1240	0.007	
ME2 3014 0400 5	GWA 5	21-Aug-2023	1124	0.06	0.001	0.028	926	479	<1	821	8660	0.003		1.73	7.5	30	<1	2	0.09	<0.001	687	0.034	0.002	0.014	7.3	26	<0.001	1040	4.28	3830	13.5	926	121	126	7830	0.024	
ME2 3014 0400 6	GWA 6	10-Aug-2023	1035	0.02	0.006	0.12	575	235	<1	351	3940	<0.001		0.62	7.5	8	<1	1.49	18.8	<0.001	197	1.42	0.002	0.007	7.4	12	<0.001	523	1.77	1350	12.5	575	49.5	51	3020	<0.005	
ME2 3014 0400 7	GWA 7	07-Aug-2023	1142											Dry																							
ME2 3014 0400 8	GWA 8	07-Aug-2023	1507	10.9	0.002	0.092	350	112	<1	319	2160	0.014		1.37	6.2	13	<1	2.13	5.47	0.012	96	6.3	<0.001	0.023	7.2	12	<0.001	225	1.19	414	13.5	350	24.6	23.6	1410	0.028	
ME2 3014 0400 9	GWC 1	17-Aug-2023	957	0.07	<0.001	0.029	282	74	<1	304	1860	0.004		9.2	9	9	<1	1.93	0.17	<0.001	54	0.03	<0.001	0.002	7.4	16	<0.001	264	0.738	243	16	282	19.3	20	998	<0.005	
ME2 3014 0401 0	GWC 2	10-Aug-2023	1202	<0.001	<0.001	0.404	470	64	<1	116	1220	<0.001		1.79	7.9	6	<1	4.28	0.16	<0.001	26	0.009	<0.001	0.002	7.5	25	<0.001	184	0.571	8	16	470	12.8	14	711	<0.005	
ME2 3014 0401 1	GWC 3	10-Aug-2023	1051	0.01	<0.001	0.024	550	216	<1	380	4080	<0.001		1.85	8.6	9	<1	0.55	1.43	<0.001	197	0.34	0.003	0.115	7	46	<0.001	520	1.97	1370	17.5	550	50.2	50.8	3050	<0.005	
ME2 3014 0401 2	GWC 4	07-Aug-2023	1227	0.07	<0.001	0.043	642	177	<1	355	2410	0.003		12.89	6.4	47	<1	2.92	2.78	<0.001	82	0.036	<0.001	0.002	6.6	49	<0.001	218	1.9	243	19	642	27.9	26.3	1450	0.015	
ME2 3014 0401 3	GWC 5	14-Aug-2023	1413	0.04	<0.001	0.174	2080	273	<1	481	5270	0.003		5.63	4.8	338	<1	0.53	1.38	0.009	137	1.02	<0.001	0.022	6.5	86	<0.001	828	7.58	416	16.5	2080	63.8	63.1	3470	0.022	
ME2 3014 0401 4	GWA 10	10-Aug-2023	1345	0.16	0.013	0.04	402	135	<1	441	2930	0.011	10/08/2023	3.18	7.6	5	<1	4.38	7.5	<0.001	115	1.53	<0.001	0.006	7.1	1	<0.001	401	1	498	14	402	30.8	33.7	1940	<0.005	
ME2 3014 0401 5	GWC 10	10-Aug-2023	1358	0.02	<0.001	0.037	366	219	<1	344	3690	0.013	10/08/2023	3.03	8.6	5	<1	1.83	0.61	<0.001	148	0.086	0.001	0.004	7.1	34	<0.001	510	2.15	1320	15	366	44.5	46.2	2780	<0.005	
ME2 3014 0401 6	GWA 11	10-Aug-2023	1303	0.79	<0.001	0.035	459	41	<1	80	1250	<0.001		3.57	7.6	3	<1	1.93	1.28	0.001	36	0.211	<0.001	0.004	7.6	13	<0.001	206	0.534	112	15	459	13.8	14.3	746	<0.005	

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ME2 3014 0401 7	GWC 11	10-Aug-2023	1325	0.1	<0.001	0.02	225	57	<1	197	1810	<0.001	10/08/2023	5.86	7.8	7	<1	1.58	4.29	0.002	55	0.962	0.001	0.008	6.6	18	<0.01	268	0.541	424	17	225	18.9	19.5	1090	0.03
ME2 3014 0401 8	GWA 12	03-Aug-2023	1235											Dry																						
ME2 3014 0401 9	GWC 12	03-Aug-2023	1302	0.02	<0.001	0.079	686	115	<1	205	2450	0.002	03/08/2023	5.99	7	16	<1	2.04	0.44	<0.001	47	0.215	0.002	0.012	7.6	26	<0.01	426	0.864	392	18	686	27.6	28.8	1570	0.008
ME2 3014 0402 0	GWA 14	03-Aug-2023	1159											Dry																						
ME2 3014 0402 1	GWC 14	03-Aug-2023	1217	0.08	<0.001	0.052	413	244	<1	241	3240	0.008		2.17	7.7	12	<1	2.65	0.74	0.002	111	0.076	0.002	0.008	7.6	34	<0.01	400	1.63	1080	16	413	37.5	39.6	2430	0.009
ME2 3014 0402 2	GWA 15	03-Aug-2023	1108											Dry																						
ME2 3014 0402 3	GWC 15	03-Aug-2023	1134	0.02	<0.001	0.058	448	258	<1	238	3450	0.008		4.8	8.9	16	<1	2.22	0.68	<0.001	113	0.06	0.005	0.033	7.4	36	<0.01	446	2.47	1200	17.5	448	40.6	42.5	2630	0.022
ME2 3014 0402 4	GWC 33	18-Aug-2023	1032										18/08/2023	50.83																						
ME2 3014 0402 5	GWC 26	17-Aug-2023	1405											52.24																						
ME2 3014 0402 6	GWA 16	17-Aug-2023	1124	0.14	<0.001	0.122	660	414	<1	6260	20100	0.003		2.4	8.2	32	<1	3	0.16	<0.001	647	0.031	0.001	0.003	7	15	<0.01	3540	6.07	1210	13.5	660	215	228	14000	0.008
ME2 3014 0402 7	GWC 16	17-Aug-2023	1150	0.72	<0.001	0.142	651	81	<1	379	2440	0.009		31.3	7.7	25	<1	1.16	1.7	0.009	43	0.048	<0.001	<0.001	7.1	24	<0.01	425	0.901	114	20	651	26.1	26.7	1420	0.015
ME2 3014 0402 8	GWC 30	18-Aug-2023	1326	0.12	<0.001	0.064	618	240	<1	609	3300	0.04	18/08/2023	31.58	7.7	58	<1	0.15	2.49	0.002	170	0.159	<0.001	0.002	6.7	51	<0.01	197	2.61	298	18	618	35.7	35.8	2190	0.028
ME2 3014 0402 9	GWC 31	18-Aug-2023	1442											45.96																						
ME2 3014 0403 0	GWC 37	21-Aug-2023	1209	0.7	0.026	0.035	198	135	<1	182	2440	0.008		25.17	6.8	77	<1	1.88	7.1	0.003	108	1.1	0.002	0.014	6.3	53	<0.01	263	1.39	878	20	198	27.4	28.4	1790	0.054
ME2 3014 0403 1	GWC 27	21-Aug-2023	1027	0.85	0.009	0.061	2	16	<1	327	1580	0.052	21/08/2023	14.76	7	124	<1	3.19	3.09	0.003	26	2.14	<0.001	0.024	4.2	31	<0.01	238	0.117	276	18	2	15	14.1	929	0.296
ME2 3014 0403 2	GWA 32	07-Aug-2023	1429	<0.01	<0.001	0.051	671	159	<1	811	3850	0.002		2.02	7.1	16	<1	1.24	<0.005	<0.001	189	0.109	0.002	<0.001	7.2	21	<0.01	428	2.16	357	15	671	43.7	42.6	2380	<0.005
ME2 3014 0403 3	GWC 32	07-Aug-2023	1333	0.01	<0.001	0.033	1360	156	<1	329	3470	0.013		3.19	7.2	53	<1	0.43	0.3	<0.001	113	0.05	<0.001	0.003	6.8	45	<0.01	552	4.59	261	17.5	1360	41.9	42.2	2180	0.007
ME2 3014 0403 4	GWA 34	14-Aug-2023	1545	1.09	<0.001	0.033	313	186	<1	353	3130	0.033	14/08/2023	3.57	7.5	16	<1	5.29	0.15	<0.001	205	0.04	0.002	0.03	6.7	5	<0.01	248	1.49	823	15.5	313	33.3	37.1	2380	0.048

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ME2 3014 0403 5	GWC 34	14-Aug-2023	1520											Dry																								
ME2 3014 0403 6	GWA 36	10-Aug-2023	1237											Dry																								
ME2 3014 0403 7	GWC 36	04-Aug-2023	1231	0.05	<0.001	0.025	284	153	<1	355	3770	<0.001		7.48	7.7	7	<1	2.43	17.7	<0.001	171	2.13	0.002	0.014	6.5	39	<0.01	525	1.3	1330	18	284	43.4	45.5	2780	0.025		
ME2 3014 0403 8	GWC 25	29-Aug-2023	1215	0.26	0.003	0.097	242	27	<1	146	1090	0.005	29/08/2023	23.24	6.8	16	<1	5.44	1.49	0.002	38	0.303	<0.001	0.02	6.6	5	<0.01	111	0.43	75	19	242	10.5	9.43	576	<0.005		
ME2 3014 0403 9	PZ13	29-Aug-2023	920											Dry																								
ME2 3014 0404 0	PZ20	29-Aug-2023	1044	0.66	<0.001	0.028	354	31	<1	67	934	0.001		2.61	6.9	4	<1	6.14	0.65	<0.001	35	0.327	<0.001	0.004	7.6	14	<0.01	112	0.384	94	14.5	354	10.9	9.66	550	<0.005		
ME2 3014 0404 1	PZ21	29-Aug-2023	1110	2.08	0.002	0.024	354	19	<1	22	816	0.003		3.88	7.5	4	<1	0.1	1.31	0.002	17	0.243	0.002	0.006	7.6	7	<0.01	149	0.24	64	15.5	354	9.03	9.01	499	0.013		
ME2 3014 0404 2	PZ26	29-Aug-2023	1020											Dry																								
ME2 3014 0404 3	GWF 1	29-Aug-2023	1323											Dry																								
ME2 3014 0404 4	GWF 2	29-Aug-2023	1006																																			
ME2 3014 0404 5	GWF 3	29-Aug-2023	1300	0.43	<0.001	0.098	715	210	<1	489	4400	0.002		19.07	6.8	36	<1	5.59	1.37	0.002	291	1.76	0.001	0.012	6.6	36	<0.01	368	2.29	1410	22	715	57.4	51.4	3420	0.049		
ME2 3014 0404 6	GWF 4	29-Aug-2023	1006																																			
ME2 3014 0404 7	GWF 5	29-Aug-2023	1003											Dry																								
ME2 3014 0404 8	GWF 7	29-Aug-2023	1006																																			
ME2 3014 0504 9	Barol ogger Office	29-Aug-2023	1347										29/08/2023																									
ME2 3015 4400 1	GWA 1	25-Sep-2023	1101											Dry																								
ME2 3015 4400 2	GWA 2	14-Sep-2023	1312	0.35	<0.001	0.055	89	40	<1	143	1090	<0.001		2.3	7.6	22	<1	2.01	0.75	<0.001	58	0.398	<0.001	0.003	6.5	7	<0.01	107	0.443	301	15	89	12.1	11.6	692	<0.005		
ME2 3015 4400 3	GWA 3	08-Sep-2023	1100											Dry																								

a Sample Num	a Sample Location	Sampling Date	Sampling Time	Aluminium mg/L	Arsenic mg/L	Barium mg/L	Bicarbonate Alkalinity as CaCO3 mg/L	Calcium - Dissolved mg/L	Carbonate Alkalinity as CaCO3 mg/L	Chloride mg/L	Conductivity @ 25oC µS/cm	Copper mg/L	Data Download	Depth to Standpipe m	Dissolved Oxygen - Dissolved mg/L	Free Carbon Dioxide as CO2 mg/L	Hydroxide Alkalinity as CaCO3 mg/L	Ionic Balance %	Iron mg/L	Lead mg/L	Magnesium - Dissolved mg/L	Manganese mg/L	Molybdenum mg/L	Nickel mg/L	pH pH Unit	Potassium - Dissolved mg/L	Selenium mg/L	Sodium - Dissolved mg/L	Strontium mg/L	Sulfate as SO4 - Turbidimetric mg/L	Temperature °C	Total Alkalinity as CaCO3 mg/L	Total Anions meq/L	Total Cations meq/L	Total Dissolved Solids @180°C - Dissolved mg/L	Zinc mg/L
ME2 3015 4400 4	GWA 4	24-Aug-2023	1102	0.14	0.015	0.085	458	101	<1	286	1960	<0.001		2.76	6.6	28	<1	1.49	12.4	<0.001	69	0.646	<0.001	0.015	6.7	18	<0.001	222	0.903	204	15	458	21.5	20.8	1030	<0.005
ME2 3015 4400 5	GWA 5	07-Sep-2023	1100	0.02	<0.001	0.031	865	456	<1	770	8350	0.002		1.68	7.4	33	<1	0.67	0.07	<0.001	652	0.032	0.002	0.011	7.4	24	<0.001	928	4.51	3690	15	865	116	117	7620	0.023
ME2 3015 4400 6	GWA 6	08-Sep-2023	1233	0.02	0.001	0.065	532	181	<1	379	4150	<0.001		0.43	7.9	13	<1	6.31	2.01	<0.001	221	0.56	0.002	0.003	7.4	18	<0.001	576	1.69	1850	13	532	59.8	52.7	3160	<0.005
ME2 3015 4400 7	GWA 7	08-Sep-2023	1322											Dry																						
ME2 3015 4400 8	GWA 8	19-Sep-2023	1327	8.55	0.003	0.082	351	110	<1	311	2060	0.009		1.43	6.9	18	<1	3.87	9.75	0.009	92	3.62	<0.001	0.02	7.1	11	<0.001	217	1.08	424	15.5	351	24.6	22.8	1360	0.03
ME2 3015 4400 9	GWC 1	14-Sep-2023	1333	0.01	<0.001	0.032	304	79	<1	376	2060	<0.001		9.21	7.1	22	<1	2.69	<0.005	<0.001	65	0.215	<0.001	0.003	7	15	<0.001	287	0.844	322	17.5	304	23.4	22.2	1240	<0.005
ME2 3015 4401 0	GWC 2	08-Sep-2023	1113	0.03	<0.001	0.4	480	57	<1	123	1230	<0.001		2.36	7.5	12	<1	0.94	0.28	<0.001	25	0.044	<0.001	<0.001	7.3	25	<0.001	182	0.544	7	14.5	480	13.2	13.4	674	<0.005
ME2 3015 4401 1	GWC 3	08-Sep-2023	1157	0.02	<0.001	0.04	566	204	<1	390	4060	0.001		1.76	8	26	<1	6.87	1.52	0.001	216	0.762	0.004	0.158	7	50	<0.001	488	1.94	1710	17	566	57.9	50.5	3050	0.006
ME2 3015 4401 2	GWC 4	07-Sep-2023	1200	0.02	<0.001	0.035	602	195	<1	326	2390	0.002		12.99	7.4	112	<1	0.13	2.76	<0.001	83	0.034	<0.001	<0.001	6.5	49	<0.001	214	1.98	280	21	602	27	27.1	1490	0.005
ME2 3015 4401 3	GWC 5	19-Sep-2023	1406	0.04	<0.001	0.159	2180	290	<1	542	5190	0.002		5.31	5.5	416	<1	2.56	1.17	0.008	137	1.06	<0.001	0.021	6.5	84	<0.001	830	8.09	409	19	2180	67.4	64	3470	0.015
ME2 3015 4401 4	GWA 10	14-Sep-2023	1157	0.32	0.009	0.038	374	115	<1	523	2900	0.009		3.19	7.1	19	<1	0.73	6.03	<0.001	113	1.34	<0.001	0.005	7.1	1	<0.001	395	0.992	504	15	374	32.7	32.2	1900	<0.005
ME2 3015 4401 5	GWC 10	14-Sep-2023	1233	0.02	<0.001	0.041	365	235	<1	406	3710	0.006		2.85	7.1	34	<1	2.22	2.55	<0.001	136	0.307	<0.001	0.001	6.8	36	<0.001	519	2.15	1430	16	365	48.5	46.4	2720	<0.005
ME2 3015 4401 6	GWA 11	14-Sep-2023	1036	1.53	<0.001	0.03	406	35	<1	67	1130	0.002		3.59	7.5	8	<1	2.16	1.48	0.001	33	0.225	<0.001	0.003	7.6	11	<0.001	188	0.473	114	15.5	406	12.4	12.9	698	0.005
ME2 3015 4401 7	GWC 11	14-Sep-2023	1110	0.14	<0.001	0.019	217	61	<1	240	1780	0.002	14/09/2023	6.59	6.6	39	<1	0.78	6.28	0.001	55	0.94	<0.001	0.006	6.4	19	<0.001	266	0.532	424	17.5	217	19.9	19.6	1140	0.017
ME2 3015 4401 8	GWA 12	24-Aug-2023	1404											Dry																						
ME2 3015 4401 9	GWC 12	24-Aug-2023	1353	0.02	<0.001	0.076	709	116	<1	194	2490	<0.001	24/08/2023	5.96	6.9	14	<1	2.63	0.57	<0.001	48	0.239	0.001	0.005	7.4	27	<0.001	452	0.938	428	17.5	709	28.5	30.1	1580	<0.005
ME2 3015 4402 0	GWA 14	24-Aug-2023	1318											Dry																						
ME2 3015 4402 1	GWC 14	24-Aug-2023	1308	0.03	<0.001	0.052	433	273	<1	226	3240	0.01		2.12	7.1	9	<1	1.99	0.11	<0.001	113	0.128	0.002	0.014	7.4	36	<0.001	419	1.8	1220	14.5	433	40.4	42.1	2330	0.017

a Sample Num	a Sample Location	Sampling Date	Sampling Time	Aluminium mg/L	Arsenic mg/L	Barium mg/L	Bicarbonate Alkalinity as CaCO3 mg/L	Calcium - Dissolved mg/L	Carbonate Alkalinity as CaCO3 mg/L	Chloride mg/L	Conductivity @ 25oC µS/cm	Copper mg/L	Data Download	Depth to Standpipe m	Dissolved Oxygen - Dissolved mg/L	Free Carbon Dioxide as CO2 mg/L	Hydroxide Alkalinity as CaCO3 mg/L	Ionic Balance %	Iron mg/L	Lead mg/L	Magnesium - Dissolved mg/L	Manganese mg/L	Molybdenum mg/L	Nickel mg/L	pH pH Unit	Potassium - Dissolved mg/L	Selenium mg/L	Sodium - Dissolved mg/L	Strontium mg/L	Sulfate as SO4 - Turbidimetric mg/L	Temperature °C	Total Alkalinity as CaCO3 mg/L	Total Anions meq/L	Total Cations meq/L	Total Dissolved Solids @180°C - Dissolved mg/L	Zinc mg/L	
ME2 3015 4402 2	GWA 15	24-Aug-2023	1135											2.8																							
ME2 3015 4402 3	GWC 15	24-Aug-2023	1204	0.02	<0.001	0.057	463	312	<1	239	3680	0.007	24/08/2023	4.22	7.8	12	<1	1.51	0.42	<0.001	128	0.085	0.004	0.023	7.2	41	<0.001	480	2.83	1470	16	463	46.6	48	2850	0.032	
ME2 3015 4402 4	GWC 33	25-Sep-2023	1025	0.67	<0.001	0.255	<1	355	62	136	3990	0.005	25/09/2023	51.72	8.5	<1	654	3.86	0.06	<0.001	<1	0.004	0.001	0.002	12.3	21	<0.001	47	0.267	30	21	717	18.8	20.3	1090	0.011	
ME2 3015 4402 5	GWC 26	20-Sep-2023	1407	0.19	<0.001	0.223	530	32	<1	152	1450	0.015		52.39	7.2	40	<1	3.62	0.72	0.002	17	0.019	0.001	<0.001	7.3	19	<0.001	298	0.379	20	22	530	15.3	16.4	1140	0.008	
ME2 3015 4402 6	GWA 16	20-Sep-2023	1143	0.58	<0.001	0.111	634	435	<1	6740	20000	0.003		2.48	7.9	73	<1	2	0.52	<0.001	652	0.063	0.001	0.002	7	18	<0.001	3430	6.15	1510	16	634	234	225	13700	0.01	
ME2 3015 4402 7	GWC 16	20-Sep-2023	1300	2.08	0.002	0.139	621	78	<1	370	2310	0.018		31.34	7.5	52	<1	0.01	3.27	0.018	40	0.06	<0.001	0.002	7.2	25	<0.001	406	0.774	127	21.5	621	25.5	25.5	1440	0.031	
ME2 3015 4402 8	GWC 30	18-Sep-2023	1212	0.15	<0.001	0.052	643	254	<1	664	3390	0.051	18/09/2023	31.85	6.1	55	<1	1.02	3.01	0.001	182	0.12	<0.001	0.002	6.7	51	<0.001	206	2.7	342	21	643	38.7	37.9	2390	0.016	
ME2 3015 4402 9	GWC 31	18-Sep-2023	1303											Dry																							
ME2 3015 4403 0	GWC 37	18-Sep-2023	1348	0.19	0.027	0.024	189	123	<1	186	2420	0.003		25.11	6.5	64	<1	3.46	8.29	0.001	111	1.11	0.001	0.01	6.2	54	<0.001	255	1.36	810	21.5	189	25.9	27.7	1770	0.039	
ME2 3015 4403 1	GWC 27	19-Sep-2023	1016	0.81	0.006	0.051	<1	15	<1	352	1560	0.023	19/09/2023	14.89	6.9	<1	<1	7.97	2.5	0.004	26	2.31	<0.001	0.022	3.9	31	<0.001	225	0.114	282	20	<1	15.8	13.5	930	0.302	
ME2 3015 4403 2	GWA 32	19-Sep-2023	1224	0.07	<0.001	0.052	674	167	<1	861	3990	0.005	19/09/2023	2.09	6.9	36	<1	1.58	0.07	<0.001	201	0.246	0.003	0.003	7.1	23	<0.001	453	2.17	426	16	674	46.6	45.2	2570	0.007	
ME2 3015 4403 3	GWC 32	19-Sep-2023	1254	0.01	<0.001	0.032	1360	159	<1	353	3360	0.011		4.31	6.6	124	<1	0.7	0.34	<0.001	114	0.059	<0.001	0.002	6.7	46	<0.001	554	4.45	291	19	1360	43.2	42.6	2150	0.006	
ME2 3015 4403 4	GWA 34	18-Sep-2023	1032	1.52	<0.001	0.033	327	177	<1	396	3130	0.047	18/09/2023	3.6	7	27	<1	0.08	1.15	<0.001	213	0.045	0.002	0.027	6.7	4	0.01	259	1.46	959	17.5	327	37.7	37.7	2270	0.048	
ME2 3015 4403 5	GWC 34	18-Sep-2023	1054											Dry																							
ME2 3015 4403 6	GWA 36	14-Sep-2023	924											Dry																							
ME2 3015 4403 7	GWC 36	14-Sep-2023	936	0.06	0.001	0.019	266	160	<1	380	3780	<0.001		8.28	6.3	44	<1	3.95	22.2	<0.001	169	2.06	0.002	0.012	6.5	39	<0.001	522	1.23	1600	19	266	49.3	45.6	2800	0.026	
ME2 3015 4403 8	GWC 25	27-Sep-2023	1016	0.67	0.006	0.132	263	37	<1	206	1200	0.005	27/09/2023	23.67	7.4	12	<1	4.15	3.22	0.005	48	0.36	<0.001	0.019	6.5	8	<0.001	138	0.474	95	20	263	13	12	638	0.008	
ME2 3015 4403 9	PZ13	08-Sep-2023	1035											Dry																							

a Sample Num	a Sample Location	Sampling Date	Sampling Time	Aluminium mg/L	Arsenic mg/L	Barium mg/L	Bicarbonate Alkalinity as CaCO3 mg/L	Calcium - Dissolved mg/L	Carbonate Alkalinity as CaCO3 mg/L	Chloride mg/L	Conductivity @ 25oC µS/cm	Copper mg/L	Data Download	Depth to Standpipe m	Dissolved Oxygen - Dissolved mg/L	Free Carbon Dioxide as CO2 mg/L	Hydroxide Alkalinity as CaCO3 mg/L	Ionic Balance %	Iron mg/L	Lead mg/L	Magnesium - Dissolved mg/L	Manganese mg/L	Molybdenum mg/L	Nickel mg/L	pH pH Unit	Potassium - Dissolved mg/L	Selenium mg/L	Sodium - Dissolved mg/L	Strontium mg/L	Sulfate as SO4 - Turbidimetric mg/L	Temperature °C	Total Alkalinity as CaCO3 mg/L	Total Anions meq/L	Total Cations meq/L	Total Dissolved Solids @180°C - Dissolved mg/L	Zinc mg/L
ME2 3015 4404 0	PZ20	27-Sep-2023	1220	0.72	0.001	0.027	335	26	<1	62	868	0.003		2.72	7.4	4	<1	6.69	0.87	<0.01	32	0.428	0.001	0.004	7.7	14	<0.01	113	0.334	100	16	335	10.5	9.2	472	0.01
ME2 3015 4404 1	PZ21	27-Sep-2023	1246	2.1	0.003	0.021	334	12	13	19	792	0.004		3.93	7.5	3	<1	2.36	1.68	0.002	14	0.282	0.002	0.006	7.8	7	<0.01	150	0.21	67	16	347	8.86	8.45	476	0.014
ME2 3015 4404 2	PZ26	27-Sep-2023	1152											Dry																						
ME2 3015 4404 3	GWF 1	27-Sep-2023	1122											Dry																						
ME2 3015 4404 4	GWF 2	27-Sep-2023	1306																																	
ME2 3015 4404 5	GWF 3	27-Sep-2023	1056	0.66	<0.01	0.108	703	213	<1	434	4390	0.006		19.19	7	26	<1	0.8	1.87	0.002	311	1.77	0.002	0.012	6.6	39	<0.01	408	2.31	1420	22	703	55.8	55	3450	0.032
ME2 3015 4404 6	GWF 4	27-Sep-2023	1306																																	
ME2 3015 4404 7	GWF 5	27-Sep-2023	1144											Dry																						
ME2 3015 4404 8	GWF 7	27-Sep-2023	1306																																	
ME2 3015 4504 9	Barol ogger Office	27-Sep-2023	1324										27/09/2023																							
ME2 3018 2700 1	GWA 1	17-Oct-2023	1159											Dry																						
ME2 3018 2700 2	GWA 2	06-Oct-2023	1331	0.04	<0.01	0.048	96	39	<1	137	1070	<0.01		2.32	7.3	7	<1	2.46	0.28	<0.01	54	0.288	<0.01	0.003	6.5	7	<0.01	99	0.412	271	15	96	11.4	10.9	646	<0.05
ME2 3018 2700 3	GWA 3	12-Oct-2023	1330											Dry																						
ME2 3018 2700 4	GWA 4	12-Oct-2023	1017	0.16	0.028	0.075	443	100	<1	317	1890	<0.01		2.68	6.4	22	<1	4.8	11.5	<0.01	66	0.526	<0.01	0.015	6.8	19	<0.01	203	0.79	189	16	443	21.7	19.7	1070	0.007
ME2 3018 2700 5	GWA 5	25-Oct-2023	1222	0.08	0.001	0.029	850	437	<1	749	8140	0.002		1.85	7.3	18	<1	0.28	0.16	<0.01	632	0.049	0.002	0.01	7.4	25	<0.01	878	4.46	3550	19	850	112	113	7210	0.028
ME2 3018 2700 6	GWA 6	12-Oct-2023	1357	0.02	0.001	0.06	580	187	<1	388	4150	<0.01		0.78	7.2	11	<1	4.87	1.24	<0.01	227	0.293	0.001	0.002	7.4	22	<0.01	499	1.73	1580	16.5	580	55.4	50.3	3220	<0.05
ME2 3018 2700 7	GWA 7	17-Oct-2023	1357											Dry																						
ME2 3018 2700 8	GWA 8	18-Oct-2023	1224	2.03	<0.01	0.026	365	116	<1	323	2080	0.002		1.51	6.7	14	<1	3.85	1.75	0.002	88	7.63	<0.01	0.009	7	12	<0.01	218	1.09	396	15	365	24.6	22.8	1450	0.01

a Sample Num	a Sample Location	Sampling Date	Sampling Time	Aluminium mg/L	Arsenic mg/L	Barium mg/L	Bicarbonate Alkalinity as CaCO3 mg/L	Calcium - Dissolved mg/L	Carbonate Alkalinity as CaCO3 mg/L	Chloride mg/L	Conductivity @ 25oC µS/cm	Copper mg/L	Data Download	Depth to Standpipe m	Dissolved Oxygen - Dissolved mg/L	Free Carbon Dioxide as CO2 mg/L	Hydroxide Alkalinity as CaCO3 mg/L	Ionic Balance %	Iron mg/L	Lead mg/L	Magnesium - Dissolved mg/L	Manganese mg/L	Molybdenum mg/L	Nickel mg/L	pH pH Unit	Potassium - Dissolved mg/L	Selenium mg/L	Sodium - Dissolved mg/L	Strontium mg/L	Sulfate as SO4 - Turbidimetric mg/L	Temperature °C	Total Alkalinity as CaCO3 mg/L	Total Anions meq/L	Total Cations meq/L	Total Dissolved Solids @180°C - Dissolved mg/L	Zinc mg/L	
ME2 3018 2700 9	GWC 1	06-Oct-2023	1355	<0.01	<0.001	0.033	319	82	<1	316	2080	<0.001		9.29	7	9	<1	0.03	<0.005	<0.001	62	0.639	<0.001	0.004	7	16	<0.001	276	0.846	303	17.5	319	21.6	21.6	1320	<0.005	
ME2 3018 2701 0	GWC 2	12-Oct-2023	1318	0.02	0.001	0.393	508	60	<1	132	1220	<0.001		3.2	6.7	12	<1	3.37	2.34	<0.001	24	0.081	<0.001	0.001	7.2	25	<0.001	171	0.518	4	18	508	14	13	707	<0.005	
ME2 3018 2701 1	GWC 3	12-Oct-2023	1417	0.01	<0.001	0.029	615	185	<1	383	3790	<0.001		1.66	7.3	18	<1	4.7	2.6	0.005	181	0.602	0.005	0.134	7.1	45	<0.001	438	1.73	1230	20	615	48.7	44.3	2810	<0.005	
ME2 3018 2701 2	GWC 4	18-Oct-2023	1030	0.07	<0.001	0.04	653	196	<1	387	2430	<0.001		13.45	6.2	37	<1	3.74	2.51	<0.001	80	0.037	<0.001	0.002	6.5	50	<0.001	217	1.97	251	19.5	653	29.2	27.1	1500	0.008	
ME2 3018 2701 3	GWC 5	18-Oct-2023	1312	0.02	<0.001	0.146	2180	260	<1	521	5280	<0.001		5.32	5.5	331	<1	3.58	0.15	<0.001	130	1.06	<0.001	0.02	6.5	83	<0.001	831	7.24	398	17.5	2180	66.5	61.9	3470	0.013	
ME2 3018 2701 4	GWA 10	06-Oct-2023	1207	0.12	0.005	0.033	392	118	<1	437	2870	0.006	06/10/2023	3.2	7.2	8	<1	0.48	3.38	<0.001	107	1.25	<0.001	0.004	7.1	1	<0.001	375	0.949	508	15	392	30.7	31	1920	<0.005	
ME2 3018 2701 5	GWC 10	06-Oct-2023	1242	<0.001	<0.001	0.043	381	232	<1	336	3700	0.006	06/10/2023	3.04	7.1	12	<1	2.64	2.72	<0.001	132	0.286	<0.001	0.001	6.8	34	<0.001	499	2.31	1230	16	381	42.7	45	2830	<0.005	
ME2 3018 2701 6	GWA 11	06-Oct-2023	1102											Dry																							
ME2 3018 2701 7	GWC 11	06-Oct-2023	1123	0.09	<0.001	0.019	220	58	<1	197	1750	<0.001	06/10/2023	7	7	19	<1	0.09	8.8	<0.001	51	0.952	<0.001	0.004	6.4	18	<0.001	244	0.55	396	17	220	18.2	18.2	1050	0.015	
ME2 3018 2701 8	GWA 12	12-Oct-2023	1240											Dry																							
ME2 3018 2701 9	GWC 12	12-Oct-2023	1229	0.04	<0.001	0.074	704	104	<1	227	2530	0.003	12/10/2023	7.29	6	12	<1	1.6	0.77	<0.001	47	0.225	0.001	0.002	7.5	27	<0.001	424	0.871	415	18.5	704	29.1	28.2	1710	<0.005	
ME2 3018 2702 0	GWA 14	12-Oct-2023	1133											Dry																							
ME2 3018 2702 1	GWC 14	12-Oct-2023	1152	0.06	<0.001	0.105	433	236	<1	270	3310	0.004		2.92	6.4	9	<1	4.29	0.18	<0.001	114	0.139	0.002	0.02	7.4	35	<0.001	394	1.74	1270	17	433	42.7	39.2	2290	0.014	
ME2 3018 2702 2	GWA 15	12-Oct-2023	1040											Dry																							
ME2 3018 2702 3	GWC 15	12-Oct-2023	1117	0.05	<0.001	0.05	451	296	<1	302	3910	0.005	12/10/2023	4.38	7.7	21	<1	3.48	0.56	0.001	144	0.03	0.003	0.016	7.2	41	<0.001	463	2.75	1620	17.5	451	51.2	47.8	3100	0.015	
ME2 3018 2702 4	GWC 33	17-Oct-2023	1027	0.96	<0.001	0.258	<1	267	61	138	3960	0.005	17/10/2023	52.07	8.4	<1	606	6.42	0.1	<0.001	<1	0.006	0.002	<0.001	12.2	18	<0.001	46	0.288	36	20	666	17.9	15.8	1170	0.013	
ME2 3018 2702 5	GWC 26	17-Oct-2023	1135	0.06	<0.001	0.23	577	21	<1	154	1480	0.007		52.74	6.8	9	<1	3.87	0.5	<0.001	14	0.016	0.001	<0.001	7.2	16	<0.001	287	0.372	21	20.5	577	16.3	15.1	850	<0.005	
ME2 3018 2702 6	GWA 16	17-Oct-2023	1319	0.74	<0.001	0.13	687	418	<1	6790	20500	0.004		2.63	7.2	20	<1	1.98	0.77	0.002	647	0.151	0.001	0.002	7	15	<0.001	3440	6.54	1340	16	687	233	224	15100	0.009	

a Sample Num	a Sample Location	Sampling Date	Sampling Time	Aluminium mg/L	Arsenic mg/L	Barium mg/L	Bicarbonate Alkalinity as CaCO3 mg/L	Calcium - Dissolved mg/L	Carbonate Alkalinity as CaCO3 mg/L	Chloride mg/L	Conductivity @ 25oC µS/cm	Copper mg/L	Data Download	Depth to Standpipe m	Dissolved Oxygen - Dissolved mg/L	Free Carbon Dioxide as CO2 mg/L	Hydroxide Alkalinity as CaCO3 mg/L	Ionic Balance %	Iron mg/L	Lead mg/L	Magnesium - Dissolved mg/L	Manganese mg/L	Molybdenum mg/L	Nickel mg/L	pH pH Unit	Potassium - Dissolved mg/L	Selenium mg/L	Sodium - Dissolved mg/L	Strontium mg/L	Sulfate as SO4 - Turbidimetric mg/L	Temperature °C	Total Alkalinity as CaCO3 mg/L	Total Anions meq/L	Total Cations meq/L	Total Dissolved Solids @180°C - Dissolved mg/L	Zinc mg/L	
ME2 3018 2702 7	GWC 16	17-Oct-2023	1250	0.34	<0.01	0.128	661	71	<1	391	2370	0.007		31.39	6.7	15	<1	4.32	1.98	0.011	39	0.042	<0.01	<0.01	7.2	22	<0.01	392	0.837	112	20	661	26.6	24.4	1440	0.01	
ME2 3018 2702 8	GWC 30	25-Oct-2023	1029	0.03	<0.01	0.041	599	217	<1	619	3200	0.014	25/10/2023	31.54	6.9	24	<1	4.62	3.14	<0.01	152	0.161	<0.01	0.002	6.7	45	<0.01	179	2.51	287	21.5	599	35.4	32.3	2040	0.008	
ME2 3018 2702 9	GWC 31	25-Oct-2023	1104											Dry																							
ME2 3018 2703 0	GWC 37	25-Oct-2023	1137	0.16	0.03	0.026	195	118	<1	155	2430	0.005		25.02	6.6	28	<1	2.16	7.66	0.002	102	1.12	0.001	0.011	6.3	50	<0.01	234	1.4	787	23	195	24.6	25.7	1740	0.041	
ME2 3018 2703 1	GWC 27	25-Oct-2023	1327	0.64	0.005	0.046	<1	15	<1	293	1560	0.024	25/10/2023	14.92	6.6	<1	<1	3.32	3.01	0.005	24	2.41	<0.01	0.026	4.1	30	<0.01	214	0.125	260	21	<1	13.7	12.8	986	0.326	
ME2 3018 2703 2	GWA 32	18-Oct-2023	1155	0.01	<0.01	0.048	686	168	<1	796	3890	0.004		2.54	6.8	17	<1	0.11	<0.05	<0.01	191	0.24	0.003	0.002	7.1	23	<0.01	455	2.09	395	15.5	686	44.4	44.5	2570	<0.05	
ME2 3018 2703 3	GWC 32	18-Oct-2023	1111	0.02	<0.01	0.033	1400	168	<1	351	3450	<0.01	18/10/2023	3.46	5.8	77	<1	0.17	0.48	<0.01	114	0.052	<0.01	<0.01	6.5	48	<0.01	571	4.5	279	17.5	1400	43.7	43.8	2180	<0.05	
ME2 3018 2703 4	GWA 34	18-Oct-2023	1405	1.27	<0.01	0.03	338	203	<1	398	3130	0.024	18/10/2023	3.67	8	12	<1	10.3	0.2	<0.01	212	0.046	0.003	0.028	6.8	5	0.01	258	1.47	658	17.5	338	31.7	38.9	2490	0.046	
ME2 3018 2703 5	GWC 34	18-Oct-2023	1422											Dry																							
ME2 3018 2703 6	GWA 36	06-Oct-2023	947											Dry																							
ME2 3018 2703 7	GWC 36	06-Oct-2023	1001	0.03	0.002	0.024	283	154	<1	336	3740	<0.01		8.73	6.5	26	<1	0.24	30.5	<0.01	161	2.1	0.002	0.012	6.5	38	<0.01	500	1.29	1380	18	283	43.9	43.6	2830	0.027	
ME2 3018 2703 8	GWC 25	30-Oct-2023	1048	1.1	0.006	0.126	265	40	<1	190	1240	0.007		23.27	6.1	20	<1	1.86	4.17	0.009	52	0.415	0.001	0.019	6.5	8	<0.01	146	0.486	82	20.5	265	12.4	12.8	690	0.011	
ME2 3018 2703 9	PZ13	17-Oct-2023	1420											Dry																							
ME2 3018 2704 0	PZ20	30-Oct-2023	1319	1	0.001	0.03	376	35	<1	34	918	0.002		3.09	6.5	6	<1	2.21	1.44	0.002	37	0.608	0.002	0.004	7.7	16	<0.01	122	0.357	76	18	376	10	10.5	581	0.009	
ME2 3018 2704 1	PZ21	30-Oct-2023	1346	10.6	0.006	0.052	355	15	<1	20	803	0.013		4.17	5.9	6	<1	0.23	8.43	0.009	14	0.456	0.001	0.02	7.8	7	<0.01	155	0.203	54	17.5	355	8.78	8.82	529	0.05	
ME2 3018 2704 2	PZ26	30-Oct-2023	1255											Dry																							
ME2 3018 2704 3	GWF 1	30-Oct-2023	1228											Dry																							
ME2 3018 2704 4	GWF 2	30-Oct-2023	1409																																		

a Sample Num	a Sample Location	Sampling Date	Sampling Time	Aluminium mg/L	Arsenic mg/L	Barium mg/L	Bicarbonate Alkalinity as CaCO3 mg/L	Calcium - Dissolved mg/L	Carbonate Alkalinity as CaCO3 mg/L	Chloride mg/L	Conductivity @ 25oC µS/cm	Copper mg/L	Data Download	Depth to Standpipe m	Dissolved Oxygen - Dissolved mg/L	Free Carbon Dioxide as CO2 mg/L	Hydroxide Alkalinity as CaCO3 mg/L	Ionic Balance %	Iron mg/L	Lead mg/L	Magnesium - Dissolved mg/L	Manganese mg/L	Molybdenum mg/L	Nickel mg/L	pH pH Unit	Potassium - Dissolved mg/L	Selenium mg/L	Sodium - Dissolved mg/L	Strontium mg/L	Sulfate as SO4 - Turbidimetric mg/L	Temperature °C	Total Alkalinity as CaCO3 mg/L	Total Anions meq/L	Total Cations meq/L	Total Dissolved Solids @180°C - Dissolved mg/L	Zinc mg/L	
ME2 3018 2704 5	GWF 3	30-Oct-2023	1154	0.81	<0.01	0.106	706	201	<1	423	4330	0.007		19.25	6.6	56	<1	1.64	2.69	0.003	290	1.67	0.003	0.013	6.7	38	<0.01	389	2.09	1320	22	706	53.5	51.8	3580	0.035	
ME2 3018 2704 6	GWF 4	30-Oct-2023	1409																																		
ME2 3018 2704 7	GWF 5	30-Oct-2023	1246											Dry																							
ME2 3018 2704 8	GWF 7	09-Oct-2023	1409																																		
ME2 3020 0400 1	GWA 1	13-Nov-2023	1200											Dry																							
ME2 3020 0400 2	GWA 2	13-Nov-2023	1412	0.1	<0.01	0.044	83	32	<1	140	984	0.01		2.41	7.4	21	<1	4.58	0.6	<0.01	45	0.249	<0.01		6.5	8	<0.01	148	0.365	254	17	83	10.9	11.9	623	<0.05	
ME2 3020 0400 3	GWA 3	09-Nov-2023	1058											Dry																							
ME2 3020 0400 4	GWA 4	03-Nov-2023	930	0.12	0.016	0.075	446	101	<1	254	1900	<0.01		2.64	7.4	23	<1	0.57	8.66	<0.01	66	0.548	<0.01		6.8	19	<0.01	211	0.805	184	16	446	19.9	20.1	1050	<0.05	
ME2 3020 0400 5	GWA 5	16-Nov-2023	1221	0.05	0.001	0.028	727	430	<1	753	7880	0.001		1.78	8	33	<1	2.6	0.07	<0.01	609	0.062	0.001		7.3	26	<0.01	833	4.37	3770	19.5	727	114	108	7550	0.018	
ME2 3020 0400 6	GWA 6	09-Nov-2023	953	0.09	0.001	0.085	484	217	<1	378	4390	<0.01		0.52	6.4	20	<1	3.22	1.76	<0.01	235	0.811	0.002		7.3	24	<0.01	525	1.88	1770	17	484	57.2	53.6	3640	<0.05	
ME2 3020 0400 7	GWA 7	15-Nov-2023	1200											Dry																							
ME2 3020 0400 8	GWA 8	16-Nov-2023	1130	2.3	0.002	0.087	323	94	<1	280	1980	0.009		1.54	7	22	<1	1.69	2.67	0.01	86	9.6	<0.01		7.1	11	<0.01	215	1.02	374	17.5	323	22.1	21.4	1200	0.021	
ME2 3020 0400 9	GWC 1	13-Nov-2023	1437	<0.01	<0.01	0.032	288	71	<1	351	1970	<0.01		9.29	7.3	26	<1	1.63	<0.05	<0.01	56	0.98	<0.01		6.9	15	<0.01	293	0.774	304	18.5	288	22	21.3	1140	<0.05	
ME2 3020 0401 0	GWC 2	09-Nov-2023	1048	0.04	0.001	0.37	453	59	<1	121	1230	<0.01		3.64	6	19	<1	2.82	2.22	<0.01	24	0.092	<0.01		7.2	24	<0.01	178	0.532	4	18.5	453	12.5	13.3	712	<0.05	
ME2 3020 0401 1	GWC 3	09-Nov-2023	1019	0.02	<0.01	0.026	554	167	<1	329	3660	<0.01		1.57	6.7	31	<1	0.21	0.97	<0.01	169	0.524	0.006		7.1	43	<0.01	462	1.54	1100	19.5	554	43.2	43.4	2670	<0.05	
ME2 3020 0401 2	GWC 4	15-Nov-2023	1249	0.02	<0.01	0.038	568	175	<1	359	2390	0.002		13.42	6.7	92	<1	0.7	2.64	0.001	83	0.04	<0.01		6.5	52	<0.01	217	1.88	251	21.5	568	26.7	26.3	1460	0.009	
ME2 3020 0401 3	GWC 5	16-Nov-2023	1058	<0.01	<0.01	0.141	1960	273	<1	534	5250	0.003		5.24	7.4	471	<1	3.02	0.06	0.001	145	0.93	<0.01		6.5	92	<0.01	885	7.48	398	18.5	1960	62.5	66.4	3530	0.015	
ME2 3020 0401 4	GWA 10	09-Nov-2023	1306	0.68	0.003	0.034	350	120	<1	470	2910	0.006	09/11/2023	3.22	6.6	19	<1	0.44	2.28	<0.01	109	1.3	<0.01		7	1	<0.01	385	0.912	565	16	350	32	31.7	2060	<0.05	

a Sample Num	a Sample Location	Sampling Date	Sampling Time	Aluminium mg/L	Arsenic mg/L	Barium mg/L	Bicarbonate Alkalinity as CaCO3 mg/L	Calcium - Dissolved mg/L	Carbonate Alkalinity as CaCO3 mg/L	Chloride mg/L	Conductivity @ 25oC µS/cm	Copper mg/L	Data Download	Depth to Standpipe m	Dissolved Oxygen - Dissolved mg/L	Free Carbon Dioxide as CO2 mg/L	Hydroxide Alkalinity as CaCO3 mg/L	Ionic Balance %	Iron mg/L	Lead mg/L	Magnesium - Dissolved mg/L	Manganese mg/L	Molybdenum mg/L	Nickel mg/L	pH pH Unit	Potassium - Dissolved mg/L	Selenium mg/L	Sodium - Dissolved mg/L	Strontium mg/L	Sulfate as SO4 - Turbidimetric mg/L	Temperature °C	Total Alkalinity as CaCO3 mg/L	Total Anions meq/L	Total Cations meq/L	Total Dissolved Solids @180°C - Dissolved mg/L	Zinc mg/L
ME2 3020 0401 5	GWC 10	09-Nov-2023	1339	0.05	<0.001	0.046	342	230	<1	380	3770	0.005	09/11/2023	3.34	7.5	27	<1	1.17	2.4	<0.001	128	0.254	<0.001		6.8	33	<0.001	500	2.26	1350	17.5	342	45.6	44.6	2890	0.006
ME2 3020 0401 6	GWA 11	09-Nov-2023	1156	3.06	<0.001	0.036	456	34	<1	90	1320	0.012		3.58	6.6	11	<1	4.09	2.88	0.001	31	0.215	<0.001		7.5	12	<0.001	227	0.465	79	18	456	13.3	14.4	812	0.012
ME2 3020 0401 7	GWC 11	09-Nov-2023	1235	0.26	<0.001	0.027	195	62	<1	234	1850	0.003	09/11/2023	7.58	6.7	53	<1	4.14	19.8	0.001	55	0.992	<0.001		6.4	18	<0.001	250	0.575	485	18.5	195	20.6	19	1150	0.02
ME2 3020 0401 8	GWA 12	03-Nov-2023	1109											Dry																						
ME2 3020 0401 9	GWC 12	03-Nov-2023	1128	0.03	<0.001	0.067	694	101	<1	184	2600	0.002		7.55	6.5	14	<1	0.81	0.85	<0.001	46	0.236	0.001		7.4	25	<0.001	416	0.907	430	18	694	28	27.6	1680	<0.005
ME2 3020 0402 0	GWA 14	03-Nov-2023	1030											Dry																						
ME2 3020 0402 1	GWC 14	03-Nov-2023	1049	0.03	<0.001	0.032	434	269	<1	210	3450	0.004		3.1	6.8	11	<1	1.9	0.19	<0.001	117	0.177	0.002		7.4	36	<0.001	394	1.83	1200	17	434	39.6	41.1	2620	0.013
ME2 3020 0402 2	GWA 15	03-Nov-2023	951											Dry																						
ME2 3020 0402 3	GWC 15	03-Nov-2023	1011	0.03	<0.001	0.051	455	328	<1	286	4190	0.004	03/11/2023	4.49	7	19	<1	1.24	0.69	<0.001	154	0.21	0.001		7	40	<0.001	450	3	1620	17	455	50.9	49.6	3340	0.013
ME2 3020 0402 4	GWC 33	13-Nov-2023	953	1.22	<0.001	0.268	<1	300	52	121	3890	0.003	13/11/2023	52.35	8.7	<1	678	2.97	0.17	<0.001	<1	0.007	<0.001		12.1	20	<0.001	48	0.286	31	21	730	18.6	17.6	1110	0.009
ME2 3020 0402 5	GWC 26	13-Nov-2023	1125	0.18	<0.001	0.268	571	30	<1	144	1500	0.019		52.76	7.6	21	<1	0.27	1.35	0.004	17	0.039	<0.001		7.3	17	<0.001	294	0.404	27	21	571	16	16.1	860	0.02
ME2 3020 0402 6	GWA 16	13-Nov-2023	1318	0.6	<0.001	0.14	695	430	<1	6800	20700	0.005		2.69	7.8	48	<1	0.11	1.18	0.003	689	0.298	0.001		6.9	17	<0.001	3590	6.49	1420	18.5	695	235	235	15400	0.01
ME2 3020 0402 7	GWC 16	13-Nov-2023	1246	0.11	<0.001	0.132	657	78	<1	379	2410	0.001		31.41	6.8	32	<1	2.16	1.22	0.004	42	0.037	<0.001		7.1	25	<0.001	398	0.831	125	22	657	26.4	25.3	1430	0.04
ME2 3020 0402 8	GWC 30	22-Nov-2023	1054	0.05	0.001	0.047	586	236	<1	618	3110	0.016	22/11/2023	31.75	7.6	59	<1	1.78	3.38	<0.001	160	0.196	<0.001		6.6	48	<0.001	188	2.53	310	21	586	35.6	34.4	2420	0.012
ME2 3020 0402 9	GWC 31	06-Nov-2023	1125											Dry																						
ME2 3020 0403 0	GWC 37	22-Nov-2023	1302	0.19	0.039	0.027	192	130	<1	188	2410	0.004		25.06	6.8	82	<1	2.9	9.09	0.001	104	1.25	<0.001		6.2	51	<0.001	244	1.44	783	21.5	192	25.4	27	1990	0.041
ME2 3020 0403 1	GWC 27	22-Nov-2023	1213	0.66	0.003	0.05	<1	16	<1	337	1570	0.024	22/11/2023	15.07	7.8	<1	<1	5.06	1.96	0.006	27	2.61	<0.001		3.9	31	<0.001	224	0.131	264	20	<1	15	13.6	1120	0.353
ME2 3020 0403 2	GWA 32	15-Nov-2023	1422	0.01	<0.001	0.04	560	122	<1	788	3650	0.002		2.09	9.1	23	<1	3.17	<0.005	<0.001	160	0.132	0.004		7.2	20	<0.001	418	1.84	337	19	560	40.4	37.9	2150	0.006

a Sample Num	a Sample Location	Sampling Date	Sampling Time	Aluminium mg/L	Arsenic mg/L	Barium mg/L	Bicarbonate Alkalinity as CaCO3 mg/L	Calcium - Dissolved mg/L	Carbonate Alkalinity as CaCO3 mg/L	Chloride mg/L	Conductivity @ 25oC µS/cm	Copper mg/L	Data Download	Depth to Standpipe m	Dissolved Oxygen - Dissolved mg/L	Free Carbon Dioxide as CO2 mg/L	Hydroxide Alkalinity as CaCO3 mg/L	Ionic Balance %	Iron mg/L	Lead mg/L	Magnesium - Dissolved mg/L	Manganese mg/L	Molybdenum mg/L	Nickel mg/L	pH pH Unit	Potassium - Dissolved mg/L	Selenium mg/L	Sodium - Dissolved mg/L	Strontium mg/L	Sulfate as SO4 - Turbidimetric mg/L	Temperature °C	Total Alkalinity as CaCO3 mg/L	Total Anions meq/L	Total Cations meq/L	Total Dissolved Solids @180°C - Dissolved mg/L	Zinc mg/L	
ME2 3020 0403 3	GWC 32	15-Nov-2023	1342	0.01	<0.001	0.032	1220	153	<1	350	3440	0.004	15/11/2023	3.46	6.9	238	<1	0.29	1.74	<0.001	106	0.056	<0.001		6.5	42	<0.001	524	4.47	276	19	1220	40	40.2	2220	<0.005	
ME2 3020 0403 4	GWA 34	16-Nov-2023	1020	1.16	<0.001	0.031	280	173	<1	423	3110	0.018	22/11/2023	3.65	7.8	34	<1	0.08	0.35	<0.001	195	0.043	0.002		6.7	5	<0.001	250	1.43	875	19	280	35.7	35.7	2030	0.058	
ME2 3020 0403 5	GWC 34	16-Nov-2023	1000											Dry																							
ME2 3020 0403 6	GWa 36	09-Nov-2023	1127											Dry																							
ME2 3020 0403 7	GWc 36	09-Nov-2023	1120	0.1	0.004	0.046	261	157	<1	350	3780	0.001		9.38	6.2	66	<1	0.9	34	0.002	165	1.98	0.004		6.5	38	0.01	517	1.27	1470	20.1	261	45.7	44.9	2950	0.031	
ME2 3020 0403 8	GWC 25	29-Nov-2023	1018	0.54	0.005	0.13	267	36	<1	249	1320	0.005	29/11/2023	24.36	6.4	34	<1	4.85	2.79	0.006	53	0.371	<0.001		6.4	8	<0.001	158	0.503	107	19.5	267	14.6	13.2	694	0.009	
ME2 3020 0403 9	PZ13	13-Nov-2023	1340											Dry																							
ME2 3020 0404 0	PZ20	29-Nov-2023	1512	1.07	<0.001	0.021	338	24	<1	27	792	0.006		1.68	6.6	10	<1	1.44	0.72	<0.001	31	0.075	0.002		7.4	15	<0.001	104	0.307	67	19.5	338	8.91	8.66	416	0.01	
ME2 3020 0404 1	PZ21	30-Nov-2023	952	0.65	<0.001	0.015	313	22	<1	18	741	0.003		3.44	9.1	4	<1	1.5	0.38	0.001	17	0.146	0.001		7.6	7	<0.001	120	0.223	66	16.5	313	8.14	7.9	483	0.01	
ME2 3020 0404 2	PZ26	29-Nov-2023	1204											Dry																							
ME2 3020 0404 3	GWF 1	29-Nov-2023	1136											Dry																							
ME2 3020 0404 4	GWF 2	29-Nov-2023	1620																																		
ME2 3020 0404 5	GWF 3	29-Nov-2023	1101	1.16	0.001	0.115	704	204	<1	505	4470	0.01		19.22	6.6	67	<1	4.25	3.98	0.005	312	1.77	0.002		6.5	38	<0.001	428	2.24	1540	22	704	60.4	55.4	3640	0.036	
ME2 3020 0404 6	GWF 4	29-Nov-2023	1620																																		
ME2 3020 0404 7	GWF 5	29-Nov-2023	1156											Dry																							
ME2 3020 0404 8	GWF 7	29-Nov-2023	1620																																		
ME2 3020 0504 9	Barol ogger Office	30-Nov-2023	1032										30/11/2023																								
ME2 3021 7501 8	GWA 12	07-Dec-2023	1320												Dry																						

a Sample Num	a Sample Location	Sampling Date	Sampling Time	Aluminium mg/L	Arsenic mg/L	Barium mg/L	Bicarbonate Alkalinity as CaCO3 mg/L	Calcium - Dissolved mg/L	Carbonate Alkalinity as CaCO3 mg/L	Chloride mg/L	Conductivity @ 25oC µS/cm	Copper mg/L	Data Download	Depth to Standpipe m	Dissolved Oxygen - Dissolved mg/L	Free Carbon Dioxide as CO2 mg/L	Hydroxide Alkalinity as CaCO3 mg/L	Ionic Balance %	Iron mg/L	Lead mg/L	Magnesium - Dissolved mg/L	Manganese mg/L	Molybdenum mg/L	Nickel mg/L	pH pH Unit	Potassium - Dissolved mg/L	Selenium mg/L	Sodium - Dissolved mg/L	Strontium mg/L	Sulfate as SO4 - Turbidimetric mg/L	Temperature °C	Total Alkalinity as CaCO3 mg/L	Total Anions meq/L	Total Cations meq/L	Total Dissolved Solids @180°C - Dissolved mg/L	Zinc mg/L		
ME2 3021 7501 9	GWC 12	07-Dec-2023	1312	0.02	<0.001	0.066	698	107	<1	200	2580	0.006			7.92	4.8	<1	2.33	1.24	<0.001	46	0.24	0.001	0.002	7.4	26	<0.001	424	0.861	480	20	698	29.6	28.2	1740	<0.005		
ME2 3021 7502 0	GWA 14	07-Dec-2023	1230												Dry																							
ME2 3021 7502 1	GWC 14	07-Dec-2023	1221	0.04	<0.001	0.048	429	273	<1	236	3390	0.003			3.42	5.8	<1	0.35	0.56	<0.001	116	0.188	0.002	0.017	7.3	34	<0.001	388	1.73	1220	19.5	429	40.6	40.9	2930	0.011		
ME2 3021 7502 2	GWA 15	07-Dec-2023	1159												Dry																							
ME2 3021 7502 3	GWC 15	07-Dec-2023	1149	0.03	<0.001	0.044	462	352	<1	298	4050	0.002			4.73	6.3	<1	3.32	1.46	0.003	163	0.226	<0.001	0.003	6.9	44	<0.001	483	2.73	1540	19	462	49.7	53.1	3660	0.007		
ME2 3021 7502 4	GWC 33	01-Dec-2023	1137												Dry																							
ME2 3021 7502 5	GWC 26	01-Dec-2023	1250	0.03	<0.001	0.215	566	24	<1	136	1480	0.004			52.67	6.4	<1	0.68	0.34	<0.001	14	0.018	<0.001	0.002	7.2	15	<0.001	291	0.36	22	22	566	15.6	15.4	802	<0.005		
ME2 3021 7502 6	GWA 16	01-Dec-2023	1429	0.74	0.001	0.134	658	460	<1	6540	20700	0.004			2.73	7.3	<1	2.58	1.4	0.002	683	0.164	<0.001	0.005	6.9	16	<0.001	3590	6.14	1260	20	658	224	236	14600	0.01		
ME2 3021 7502 7	GWC 16	01-Dec-2023	1404	0.24	<0.001	0.117	616	75	<1	355	2300	0.005			31.33	6.4	<1	1.17	1.9	0.006	38	0.035	<0.001	0.003	7.2	22	<0.001	401	0.759	95	21.5	616	24.3	24.9	1380	0.01		
ME2 3021 7502 8	GWC 30	14-Dec-2023	1310	0.1	<0.001	0.046	588	236	<1	604	3260	0.014			31.81	6.9	<1	0.47	2.72	<0.001	166	0.186	<0.001	<0.001	6.6	48	<0.001	199	2.31	330	22	588	35.6	35.3	2260	0.013		
ME2 3021 7502 9	GWC 31	14-Dec-2023	1330												Dry																							
ME2 3021 7503 0	GWC 37	11-Dec-2023	1505	0.32	0.032	0.029	184	124	<1	173	2530	0.004			25.01	6.2	<1	2.75	12.4	0.002	107	1.29	0.002	0.007	6.4	48	<0.001	243	1.48	807	22.5	184	25.4	26.8	2140	0.033		
ME2 3021 7503 1	GWC 27	14-Dec-2023	1516	0.6	0.002	0.045	<1	18	<1	328	1640	0.033			15.09	7	<1	1.48	1.8	0.006	30	2.68	<0.001	0.021	3.8	31	<0.001	241	0.116	280	21	<1	15.1	14.6	1030	0.329		
ME2 3021 7503 2	GWA 32	11-Dec-2023	1247	0.02	<0.001	0.044	647	142	<1	713	3830	0.003			2.18	6.7	<1	2.41	0.1	<0.001	175	0.388	0.004	0.003	7.1	21	<0.001	449	2.01	315	19.5	647	39.6	41.6	2540	<0.005		
ME2 3021 7503 3	GWC 32	11-Dec-2023	1314	0.03	<0.001	0.036	1370	185	<1	283	3550	0.004			3.54	5.9	<1	5.54	2.18	<0.001	119	0.056	<0.001	<0.001	6.4	46	<0.001	577	4.63	249	19.5	1370	40.5	45.3	2210	<0.005		
ME2 3021 7503 4	GWA 34	14-Dec-2023	1146	4.56	0.001	0.04	71	358	<1	356	4650	0.261			3.74	6.2	<1	0.83	34	<0.001	364	8.07	<0.001	0.425	5.9	6	<0.001	333	1.37	2500	21.5	71	63.5	62.5	4380	1.19		
ME2 3021 7503 5	GWC 34	14-Dec-2023	1217												Dry																							
ME2 3021 7503 6	GWA 36	07-Dec-2023	1016												Dry																							

a Sample Num	a Sample Location	Sampling Date	Sampling Time	Aluminium mg/L	Arsenic mg/L	Barium mg/L	Bicarbonate Alkalinity as CaCO3 mg/L	Calcium - Dissolved mg/L	Carbonate Alkalinity as CaCO3 mg/L	Chloride mg/L	Conductivity @ 25oC µS/cm	Copper mg/L	Data Download	Depth to Standpipe m	Dissolved Oxygen - Dissolved mg/L	Free Carbon Dioxide as CO2 mg/L	Hydroxide Alkalinity as CaCO3 mg/L	Ionic Balance %	Iron mg/L	Lead mg/L	Magnesium - Dissolved mg/L	Manganese mg/L	Molybdenum mg/L	Nickel mg/L	pH pH Unit	Potassium - Dissolved mg/L	Selenium mg/L	Sodium - Dissolved mg/L	Strontium mg/L	Sulfate as SO4 - Turbidimetric mg/L	Temperature °C	Total Alkalinity as CaCO3 mg/L	Total Anions meq/L	Total Cations meq/L	Total Dissolved Solids @180°C - Dissolved mg/L	Zinc mg/L		
ME2 3021 7503 7	GWc 36	07-Dec-2023	1028	0.03	0.001	0.018	296	148	<1	351	3780	<0.001			9.46	5.6	<1	1.23	22.5	<0.001	150	2.01	0.002	0.011	6.5	34	<0.001	479	1.13	1280	20.5	296	42.5	41.4	3230	0.026		
ME2 3021 7503 8	GWC 25	20-Dec-2023	1043	0.54	0.003	0.136	260	43	<1	263	1360	0.007			24.91	7.8	<1	4.21	1.85	0.006	54	0.374	<0.001	0.019	6.6	9	<0.001	152	0.531	96	19.5	260	14.6	13.4	727	0.012		
ME2 3021 7503 9	PZ13	30-Nov-2023	1051											Dry																								
ME2 3021 7504 0	PZ20	20-Dec-2023	1252	0.26	0.001	0.026	418	36	<1	32	958	0.003			2.71	7.8	<1	0.18	0.45	<0.001	39	0.732	0.001	0.006	7.7	16	<0.001	118	0.404	64	19.5	418	10.6	10.5	580	0.01		
ME2 3021 7504 1	PZ21	20-Dec-2023	1332	4.95	0.004	0.047	378	16	<1	21	818	0.012			3.88	7.6	<1	3.63	5.28	0.01	15	0.613	0.001	0.016	7.9	7	<0.001	150	0.235	60	17.5	378	9.39	8.74	495	0.058		
ME2 3021 7504 2	PZ26	20-Dec-2023	1225											Dry																								
ME2 3021 7504 3	GWF 1	20-Dec-2023	1148											Dry																								
ME2 3021 7504 4	GWF 2	20-Dec-2023	1410																																			
ME2 3021 7504 5	GWF 3	20-Dec-2023	1121	0.61	0.001	0.112	695	208	<1	487	4410	0.011			19.33	6.7	<1	1.77	2.8	0.004	292	1.71	0.002	0.015	6.5	38	<0.001	414	2.29	1330	21.5	695	55.3	53.4	3360	0.058		
ME2 3021 7504 6	GWF 4	20-Dec-2023	1410																																			
ME2 3021 7504 7	GWF 5	20-Dec-2023	1219											Dry																								
ME2 3021 7504 8	GWF 7	20-Dec-2023	1410																																			
ME2 3021 7604 9	Barol ogger Office	20-Dec-2023	1420										20/12/2023																									

Groundwater Review



Annual Review – Wilpinjong Coal Mine

2023 Groundwater Compliance

Wilpinjong Coal Mine

1434 Ulan-Wollar Road Wilpinjong, NSW

Prepared by:

SLR Consulting Australia

Level 1, The Central Building, UoW Innovation
Campus, North Wollongong NSW 2500, Australia

SLR Project No.: 665.v10014.02411

28 March 2024

Revision: 2.0

Revision Record

Revision	Date	Prepared By	Checked By	Authorised By
1.0	22 March 2024	T McIntyre	A Skorulis	D Western
2.0	28 March 2024	T McIntyre	A Skorulis	D Western

Basis of Report

This report has been prepared by SLR Consulting Australia (SLR) with all reasonable skill, care and diligence, and taking account of the timescale and resources allocated to it by agreement with Wilpinjong Coal Mine (the Client). Information reported herein is based on the interpretation of data collected, which has been accepted in good faith as being accurate and valid.

This report is for the exclusive use of the Client. No warranties or guarantees are expressed or should be inferred by any third parties. This report may not be relied upon by other parties without written consent from SLR.

SLR disclaims any responsibility to the Client and others in respect of any matters outside the agreed scope of the work.



Executive Summary

The annual groundwater review for Wilpinjong Coal Mine (WCM) contributes to the requirements of the Annual Review (AR) for WCM for the 2023 calendar year. It also contains the analysis and information required to address the relevant water licence conditions 'water year' 01 July 2022 - 30 June 2023. The report addresses the following objectives:

- 1 Reporting against the commitments in the WCM Groundwater Monitoring Program (GWMP) – 01 January 2023 to 31 December 2023.
- 2 Reporting against water licence conditions for WAL41862 – 01 July 2022 to 30 June 2023 with review of inferred inflows from water balance modelling and groundwater modelling.

Below average rainfall conditions were experienced in 2023 following above average rainfall from conditions from 2020-2022. This has resulted in the stabilisation or decline in groundwater levels across many alluvial and coal measures monitoring sites compared to increasing groundwater levels in previous years.

The following assessment has been made with respect to compliance triggers:

- Alluvium bores GWa3, GWa12, GWa14, and GWa15 have exceeded the lower depth-to-water trigger level during 2023. This review has identified that these sites GWa3, GWa12, and GWa15 may be silted-up or obstructed, or not responding as expected to climatic trends (GWa14) and should be investigated and/ or purged and redeveloped in 2024.
- Coal measures bores GWc3 and GWc5 have exceeded the EC trigger level during 2023. EC at GWc3 may be influenced by downwards seepage from overlying strata, lateral flow from backfilled open cuts, or related to difficulties in removing stagnant water from the bores to gain representative groundwater samples. Replacement of GWc3 and further investigation into groundwater quality trends is scheduled for 2024. GWc5 has been recording stable observations above the trigger level since 2015 and shows limited impacts from WCM operations. The trigger level at GWc5 will be updated to reflect 80% of available data in the next revision of the Groundwater Management Plan (GWMP).
- No pumping occurred from the WCPL supply borefield in 2023 and none of the cease-to-pump trigger levels were exceeded.

The assessment of modelled vs observed levels for 2023 within the shallow groundwater system indicates the timing and magnitude of predicted WCM impacts generally correlate well, often predicting a repressed response to rainfall that is also seen in the observed data. Modelled groundwater levels at the coal monitoring bores generally continue to show a good correlation with the timing and magnitude of observed drawdown. As the last numerical model review was completed in early 2020 (SLR, 2020a), recent (2020-2023) climatic conditions are not captured in the model used for this AR, and the observed responses to recent climatic conditions during this time are not reproduced by the groundwater model. Update of the numerical groundwater model commenced in 2023 for the assessment of proposed updates and expansion of Wilpinjong mining operations. This model will include updated climate and stream flow series, and actual and proposed mining. It is intended that the updated model will be utilised in future reviews.

WCPL holds a groundwater licence for 3,212 ML/a under WAL 41862 for the Sydney Basin North Coast Groundwater Source. For the 2022-2023 water year the numerical model (SLR, 2020a) predicts an inflow of 660 ML/a while the water balance model estimates groundwater



inflow of 913 ML/a (SLR, 2024). Both these values are considerably below WCPL's entitlement, indicating WCPL is compliant with licence conditions for WAL 41862.

WCPL holds a groundwater licence for 474 ML/a for the Wollar Creek Water Source to account for alluvial groundwater take. The SLR (2020a) numerical model predicts alluvial groundwater take of around 172 ML/year, this predicted take is below and compliant with the licence volume held by WCM.



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Appendix A Groundwater Level Hydrographs

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Appendix C Metal Species and Major Ion Charts

Appendix D Model Performance



1.0 Introduction

SLR Consulting Australia Pty Ltd (SLR) was commissioned by Wilpinjong Coal Pty Ltd (WCPL) to conduct the groundwater component of the 2023 Annual Review for Wilpinjong Coal Mine (WCM).

This report contributes to the requirements of the Annual Review (AR) for the WCM for the 2023 calendar year. It also contains the analysis and information required to address the relevant water licence conditions ‘water year’ 01 July 2022 - 30 June 2023. The report addresses two main objectives:

- 3 Reporting against the commitments in the WCM Groundwater Monitoring Program (GWMP) – 01 January 2023 to 31 December 2023.
- 4 Reporting against water licence conditions for WAL41862 – 01 July 2022 to 30 June 2023 with review of inferred inflows from water balance modelling and groundwater modelling.

While the commitments in the GWMP postdate the water licence conditions, the data presented to meet the GWMP commitments is relevant to addressing water licence conditions.

Open cut pit names and mining progression during 2023 is presented in **Figure 1**. Groundwater monitoring bore locations are shown in **Figure 2**.

1.1 Groundwater Works Undertaken in 2023

The following groundwater works were commissioned by Wilpinjong Coal Mine and undertaken in 2023 in line with the recommendations of previous Annual Reviews and requests from the Department of Planning and the Environment, and to maintain the monitoring network:

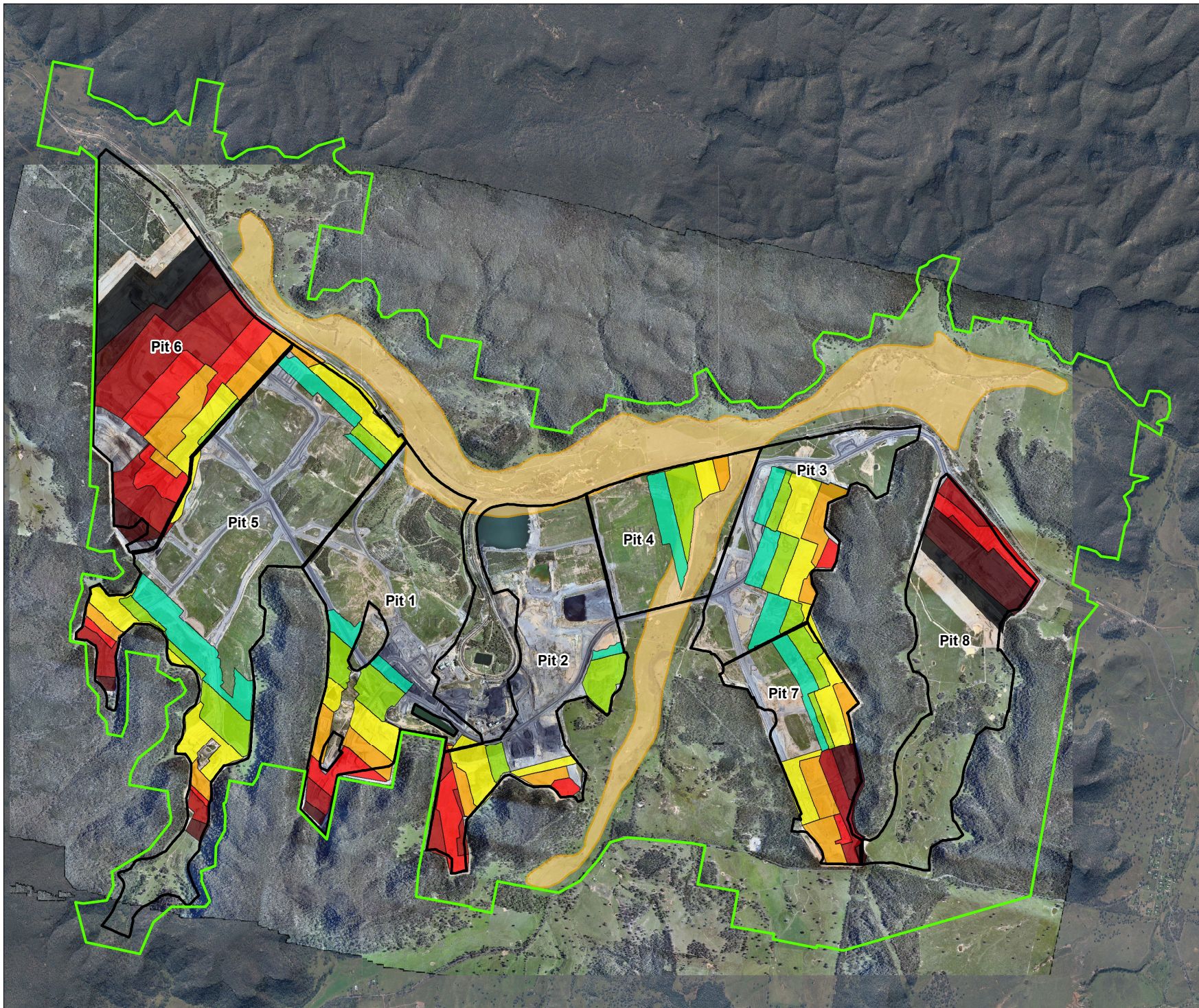
- Completed the 2022 annual compliance reporting for groundwater (SLR, 2023a).
- Commenced works in relation to additional alluvial bores close to Pit 6. As per advice from Department of Planning and Environment dated 9 August 2022 (OUT22/11868) (SLR, 2023b). Locations have been selected and work is ongoing.
- Completed a sampling study where groundwater samples were collected using different methodologies to assess whether a particular methodology would influence the sampling results (SLR, 2023c). The study concluded that adequate purging of bores was an important factor in collecting representative groundwater samples.
- Completed an Electrical Conductivity (EC) Trigger Investigation of GWc1, GWc3, GWc4 and GWc5 (SLR, 2023d), following ongoing or historical exceedances of EC trigger values.
- Site groundwater inspection and maintenance works that included:
 - Survey and inspection of 34 bores within the network on the 29th and 31st of May 2023 to verify locations, monitoring well stickup height, and groundwater.
 - Installation of telemetered water level monitoring loggers in spoil bores. On 11 November 2022, but data portal was online and in-use in 2023.
- Monthly review of groundwater level and quality data to assess compliance with trigger levels (April – December). Reporting detailing actions against observed trigger exceedances provided to regulator in monthly intervals.



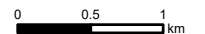
WILPINJONG COAL

Open Cut Progression 2022-2023

FIGURE 1



- 2023 Mining Area
- 2022 Mining Area
- 2021 Mining Area
- 2020 Mining Area
- 2019 Mining Area
- 2018 Mining Area
- 2017 Mining Area
- 2016 Mining Area
- WEP DA Boundary
- Approved Pit Extent
- Western Coalfield Geological Mapping**
- Quaternary Alluvium



Coordinate System:	GDA 1994 MGA Zone 55
Scale:	1:52,000 at A4
Project Number:	665.10014
Date:	13-Mar-2024
Drawn by:	JH



Figure 2: Groundwater Monitoring Sites at Wilpinjong Coal Mine Annual Groundwater Trends

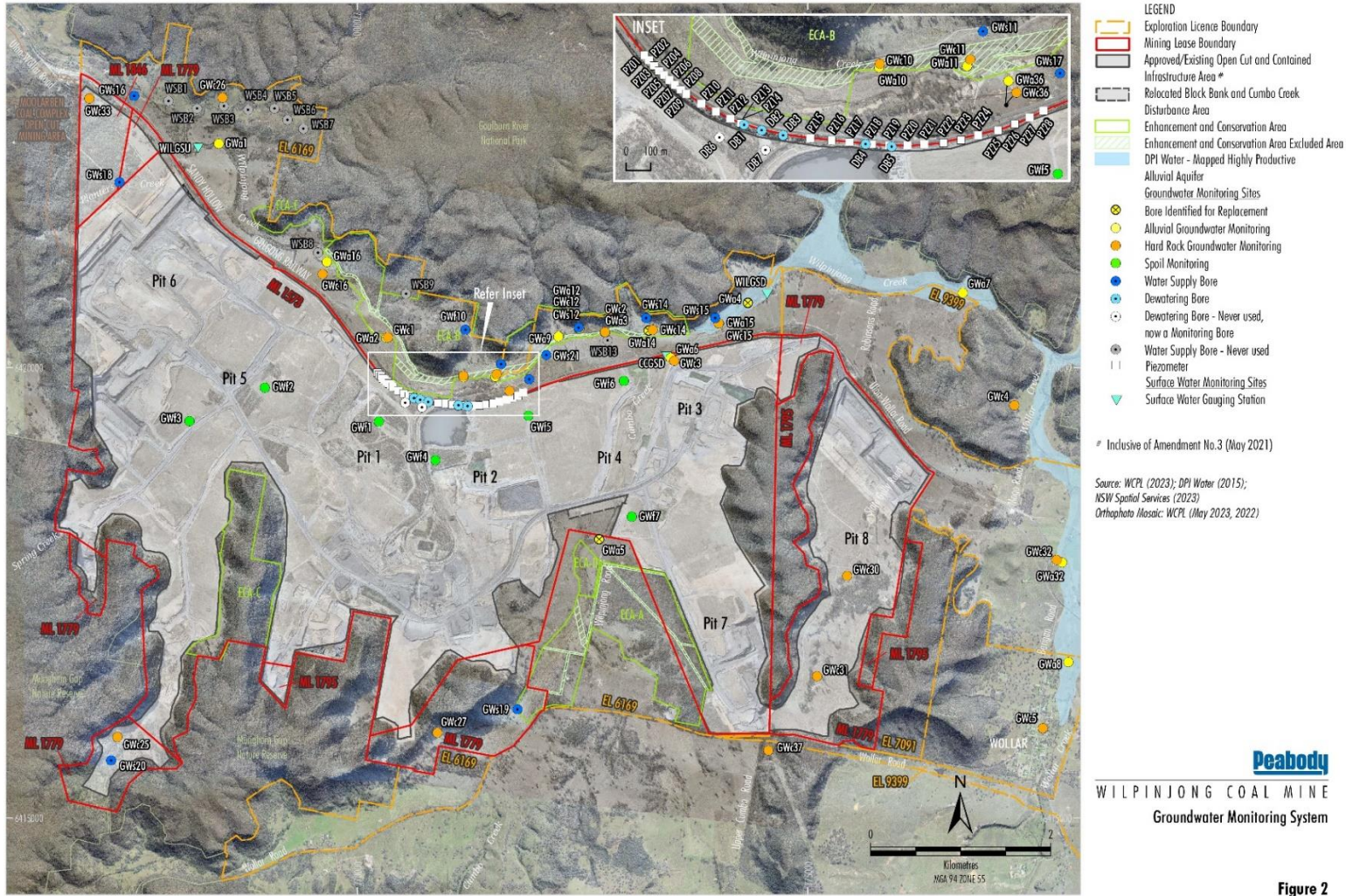


Figure 2



The WCM groundwater monitoring network has been in place since April 2006. Many paired monitoring bores have been drilled and installed along the Wilpinjong Creek alluvium, with a shallow bore screened in the alluvium and a deeper bore screened across the target coal seam. Several additional monitoring bores were drilled in late 2013 around the periphery of the site, in Pit 8 and along Wollar Creek (**Figure 2**).

The numerical modelling conducted for the Wilpinjong Coal Mine predicts minimal drawdown (approximately 1 m) in the shallow alluvial groundwater system along Wilpinjong Creek. Drawdowns are predicted to be less pronounced in the more distant alluvium associated with Wollar Creek to the east of WCM (Peabody, 2017). Numerical modelling predicts a substantial reduction in potentiometric head in the Illawarra Coal Measures near WCM due to depressurisation from cumulative mining activity (which includes WCM, Moolarben Coal and Ulan Coal operations). Accordingly, trigger levels for water levels in the coal measures are considered unwarranted (Peabody, 2017).

For monitoring bores with sufficient records, a brief cause-and-effect review of temporal changes in groundwater level and quality has been completed in **Section 1.3** and **1.4**, with potential causes being variation in rainfall recharge, creek flow, short-term dewatering/production pumping, and mining effects.

The hydrographs for additional selected alluvial and coal measures bores that demonstrate gradients between the shallow and deeper aquifers through time are included in Appendix A (**Figure A 1** to **Figure A 17**).

1.2 Review of Climate Data

Table 1 displays monthly and annual rainfall compared to the long-term average at the Wollar (Barrigan St) BOM station for 2016-2023. Below average rainfall conditions were experienced in 2023 preceded by wet conditions from 2020 to 2022. The annual total rainfall recorded in 2023 was 516 mm, 15% lower than the long-term average of 600.3 mm.

Table 2 presents the total rainfall observed by the on-site rainfall gauge in 2023. Overall, in 2023 rainfall recorded on-site at WCM is slightly lower than at the Wollar BOM station with a total of 477.6 mm.

Variation in annual rainfall has been identified as a key influence on groundwater levels and trends.

Table 1: BOM Rainfall Station 062032 (Wollar, Barrigan St) Rainfall Data

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Avg	67.2	62.3	55.1	39.3	37.0	43.7	42.9	41.1	41.7	52.1	57.0	60.9	600.7
2016	101.2	10.4	21.4	3.0	67.0	114.2	82.4	44.0	181.2	74.2	41.0	36.2	776.2
2017	13*	31.0	127.0	19.0	24.4	12.0	1.4	25.6	2.0	30.0	62.6	86.4	421.4
2018	13.4	66.2	41.4	47.0	12.6	22.0	6.5	25.5	51.0	48.5	44.4	117.6	496.1
2019	72.0	5.0	110.5	0.0	20.0	6.0	4.0	10.0	23.0	7.0	30.0	6.0	293.5
2020	37.0	151.0	110.2	118.0	35.0	31.3	86.0	36.0	75.7	128.0	21.5	149.3	979.0
2021	43.8	107.0	157.5	2.5	11.0	82.0	68.2	21.0	45.0	72.0	183.0	134.0	927.0
2022	169.0	17.0	139.5	65.0	38.0	14.5	109.0	100.5	94.5	126.0	85.0	31.0	989.0
2023	49.0	28.5	55.0	43.5	4.0	30.5	24.0	39.0	16.5	42.5	97.5	85.5	515.5

* No rainfall recorded at Wollar (Barrigan St). Rainfall from Bylong (Glenview) – 062107 used.



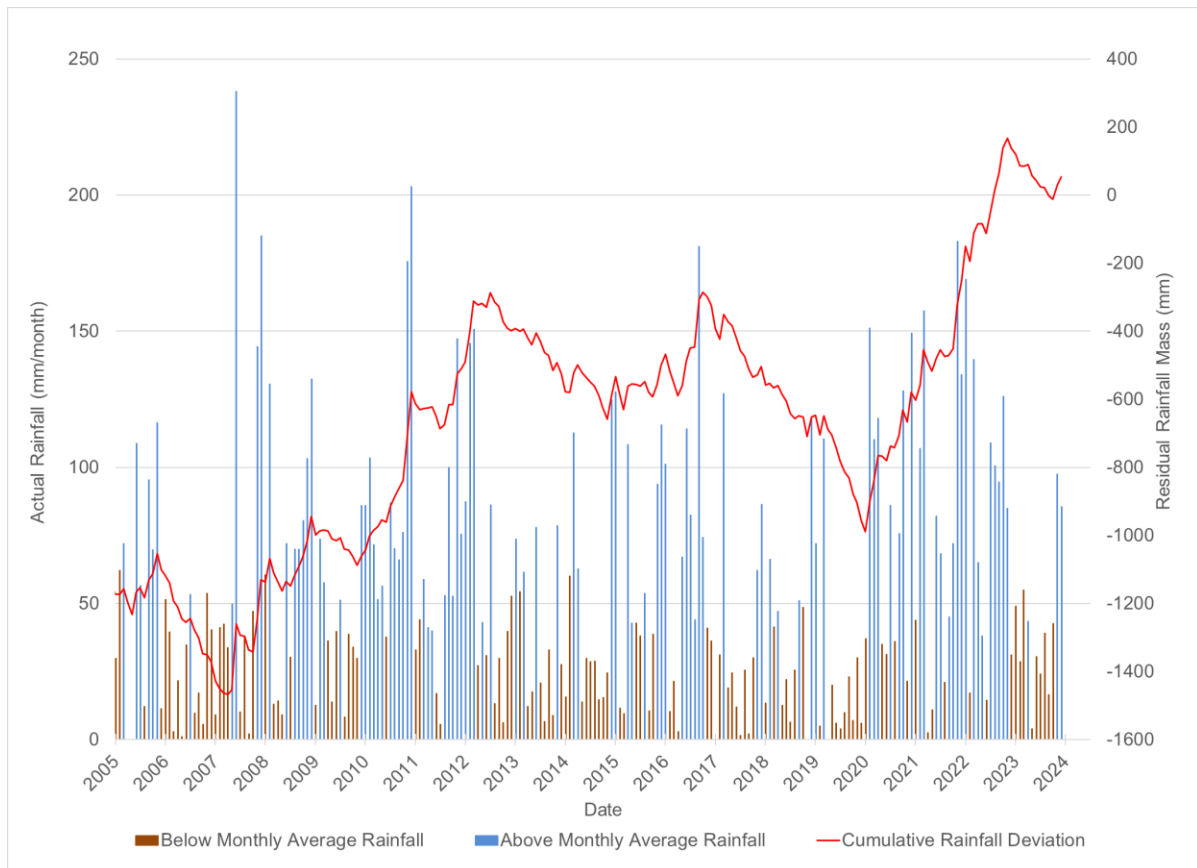
Table 2: Wilpinjong Site 24-hour Rainfall Data

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
2019	54.8	7.4	108.8	0	17.6	10.6	2.6	10.2	23	5.6	22	3	265.6
2020	27.2	127	92	117	16	23.4	70	36.4	77.2	150.6	17.4	161.6	915.8
2021	52.6	126.6	159.8	1.8	9.4	84.4	66.6	25.4	44.2	40.8	249.2	81.4	942.2
2022	101.4	16	119.8	95	43.6	13	136.4	103.2	93.8	185.4	64	26.6	998.2
2023	48.6	24.6	64.6	47.8	2.8	28.8	23.2	29.6	18	36.2	94	59.4	477.6

The cumulative rainfall departure (CRD) shows trends in actual rainfall over time relative to the long-term average and provides a historical record of relatively wet and dry periods. A positive slope in the CRD indicates periods of above average rainfall, while a negative slope indicates periods of below average rainfall. A level trace indicates rainfall conditions are equal to average rainfall conditions.

In 2023, WCM experienced below average rainfall, shown in the downward trend in **Figure 3** which was preceded by above average rainfall conditions from 2020-2022, as indicated by a sharp upward trend in the CRD.

Figure 3: Monthly Rainfall and CRD



1.3 Review of Groundwater Level Data

Figure 4 presents the groundwater hydrographs for alluvial bores near Wilpinjong Creek, in relation to the long-term rainfall trend. The groundwater table in the alluvium varies between approximately 374 mAHD (at GWa2 in the west) and 355 mAHD (at GWa4 in the east) over approximately 4.0 km, with a hydraulic gradient of 0.475% (0.00475) towards the east.

The water table in the alluvium is stable to slightly decreasing at most bores in 2023 and correlates with below average rainfall through 2023, confirming that rainfall is a key recharge mechanism for the alluvial aquifer.

There is also historical evidence of upward hydraulic gradients from Permian strata to the Wilpinjong Creek alluvium which would have provided a source of recharge. Drawdown due to WCM operations is observed at the coal measures (Permian aged Illawarra Coal Measures) monitoring bores displayed on **Figure 5**, with coal measures no longer recharging the alluvium. However, **Figure 5** also shows recovery in Permian strata in response to above average rainfall conditions since 2020, with upward gradients from Permian to alluvial strata observed for some of 2023.

Figure 6 presents the groundwater hydrographs for all coal monitoring bores from the west (higher elevations) to the east (lower elevations), in relation to rainfall residual mass and the commencement of mining in each Pit. The hydrographs show the expected response of drawdown varying with distance from mining activity, with many sites showing recovery in response to the above average rainfall experienced from 2020 to 2022. A decrease is observed in 2023 that coincides with the below average rainfall conditions.

Based on the analysis of the hydrographs in the Wilpinjong alluvium and Cumbo Creek alluvium, mining effects are considered to have occurred historically at some locations on Wilpinjong Creek. These have been discussed and investigated in previous annual reviews (SLR, 2020, 2021a, 2022 & HydroSimulations, 2017, 2018, 2019).



Figure 4: Transition in Alluvial Bore Groundwater Levels from West to East Along Wilpinjong Creek

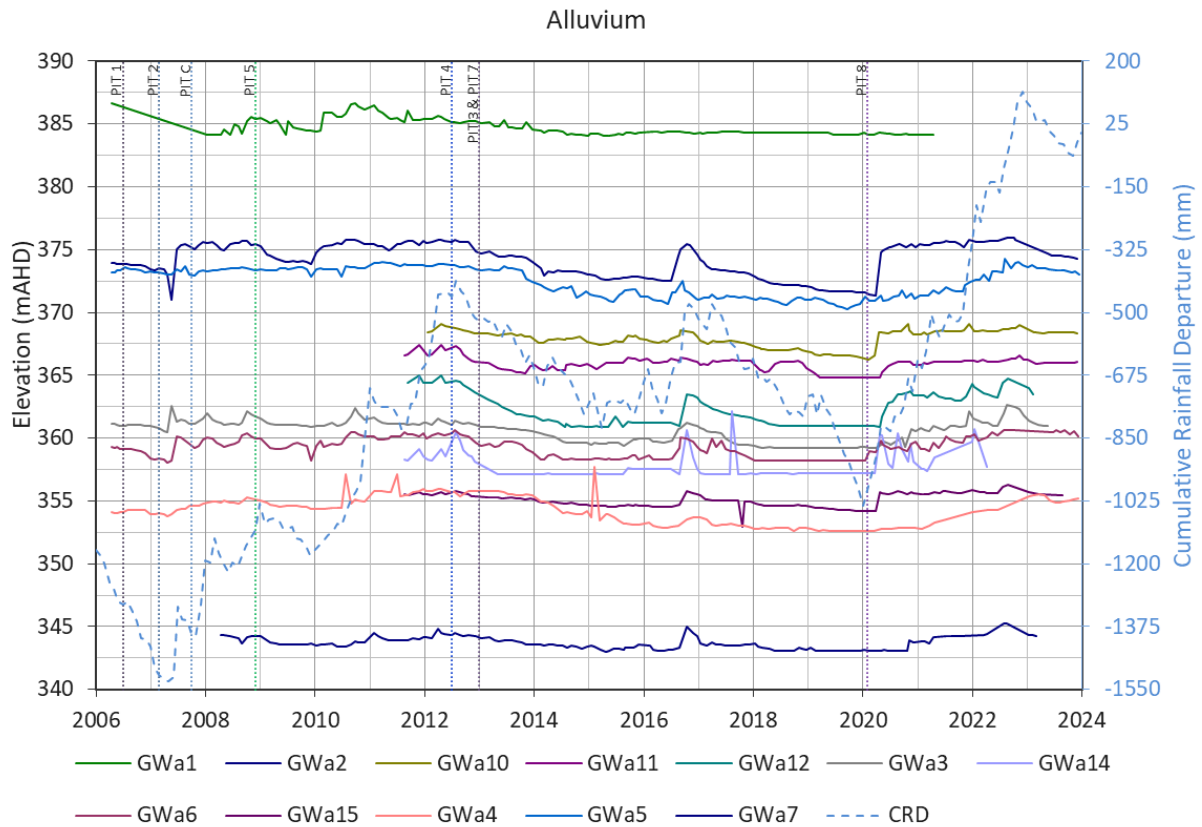


Figure 5: Example Hydrographs showing Vertical Gradient between Permian and Alluvial Strata.

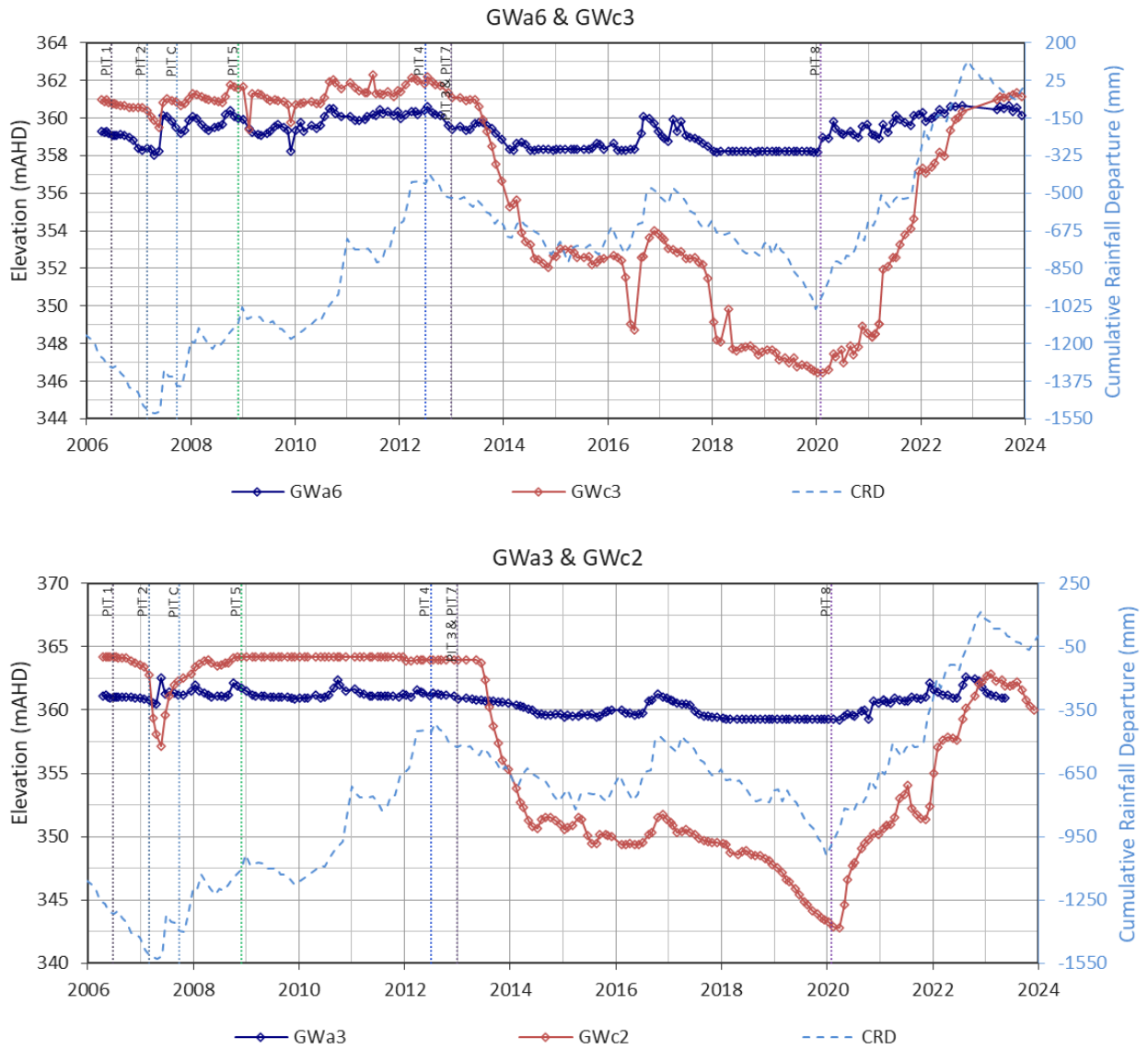
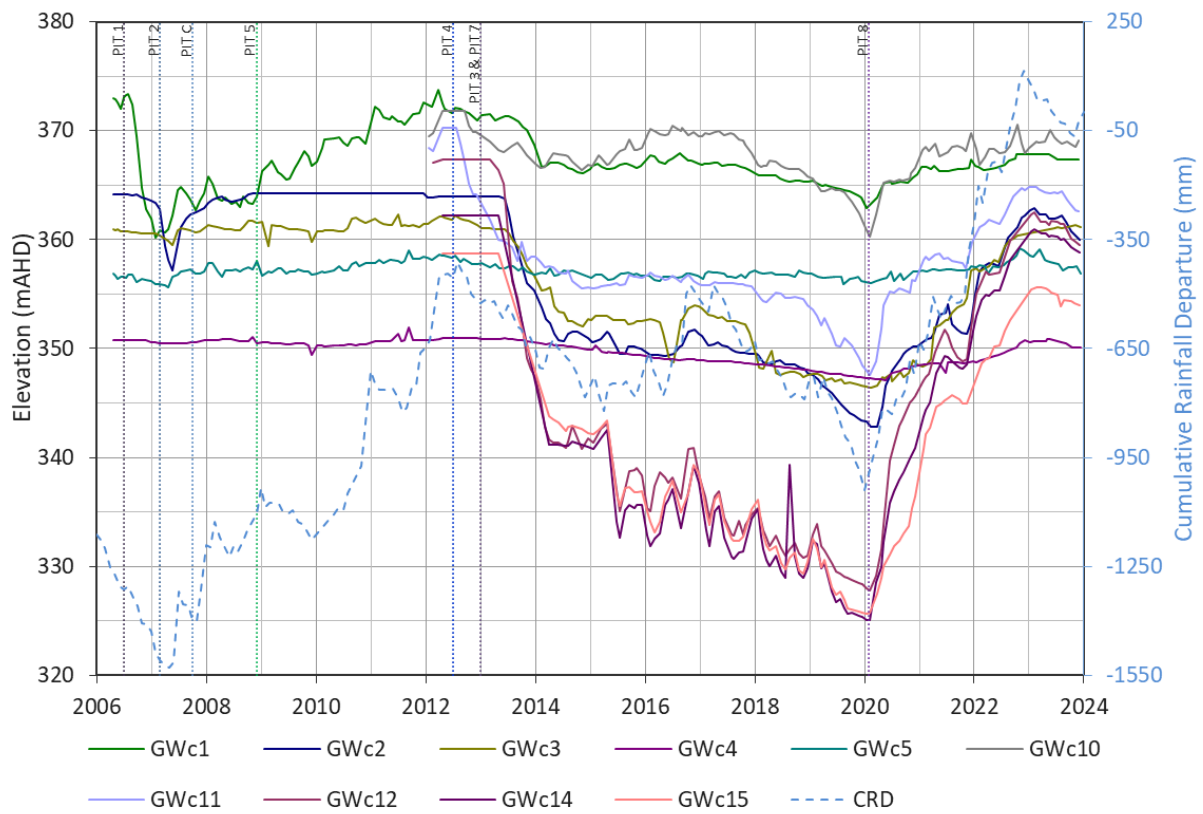


Figure 6: Coal Measures Bore Groundwater Levels



1.4 Review of Groundwater Quality Data

Groundwater electrical conductivity (EC) statistics have been computed for the longest-term monitoring sites at WCM, using a total 2,152 measurements from April 2006 to December 2023 (**Table 3**). The lowest mean salinity in the alluvial monitoring bores is 1,356 $\mu\text{S/cm}$ at GWa2, whereas the highest mean is 11,030 $\mu\text{S/cm}$ at GWa5. The lowest mean salinity in the coal monitoring bores is 1,188 $\mu\text{S/cm}$ at GWc2, whereas the highest mean is 5,225 $\mu\text{S/cm}$ at GWc5. Box and Whisker plots of alluvial and coal measures EC observations are also presented in **Figure 7**. These plots enable visual comparison of water quality differences between coal measures and alluvial sites and are presented from upstream to downstream along Wilpinjong Creek.

Overall, groundwater at alluvial monitoring sites is more saline than groundwater at coal seam monitoring sites. This suggests that the alluvial waters sourced from Permian sediments (i.e. an upward gradient is observed) may be concentrated through evapotranspiration or evaporation.

Table 3: Groundwater Electrical Conductivity Statistics

Alluvium Monitoring Bores	Mean ($\mu\text{S/cm}$)	Std. Dev ($\mu\text{S/cm}$)	Coal Monitoring Bores	Mean ($\mu\text{S/cm}$)	Std. Dev ($\mu\text{S/cm}$)	Location
GWa1	8106	3231	-	-	-	North of Pit 6: Far west
GWa2	1356	488	GWc1	2574	666	North of Pit 1
GWa3	1660	498	GWc2	1188	111	North of Pit 4
GWa4	2453	783	-	-	-	North-east of Pit 3
GWa5	11030	3430	-	-	-	South of Pit 4 on Cumbo Ck
GWa6	5723	2832	GWc3	3889	790	Northern end of Cumbo Ck
GWa7	10127	2408	GWc4	2360	157	North-east of Slate Gully
GWa8	2241	395	GWc5	5225	478	Wollar: SE of Slate Gully

The highest salinities recorded occur near Cumbo Creek to the south of Pit 4, near Wilpinjong Creek north of Pit 6 and near Wilpinjong Creek to the north-east of Pit 8. The lowest salinities recorded are along Wilpinjong Creek from Pit 1 to Pit 4, upstream of the Cumbo Creek junction, and on Wollar Creek.

Temporal variations in groundwater salinity in the alluvium and coal seam bores have been plotted with rainfall residual mass and the commencement of mining in each pit (**Figure 8** and

Figure 9). Alluvial sites have a large variability in salinities, from very high with large fluctuations to near fresh and stable that bear some relationship with rainfall and flow in Wilpinjong Creek. The salinities in the coal monitoring bores are generally more stable.



Figure 7: Box Plots for Electrical Conductivity in Alluvium and Coal Measures Monitoring Bores

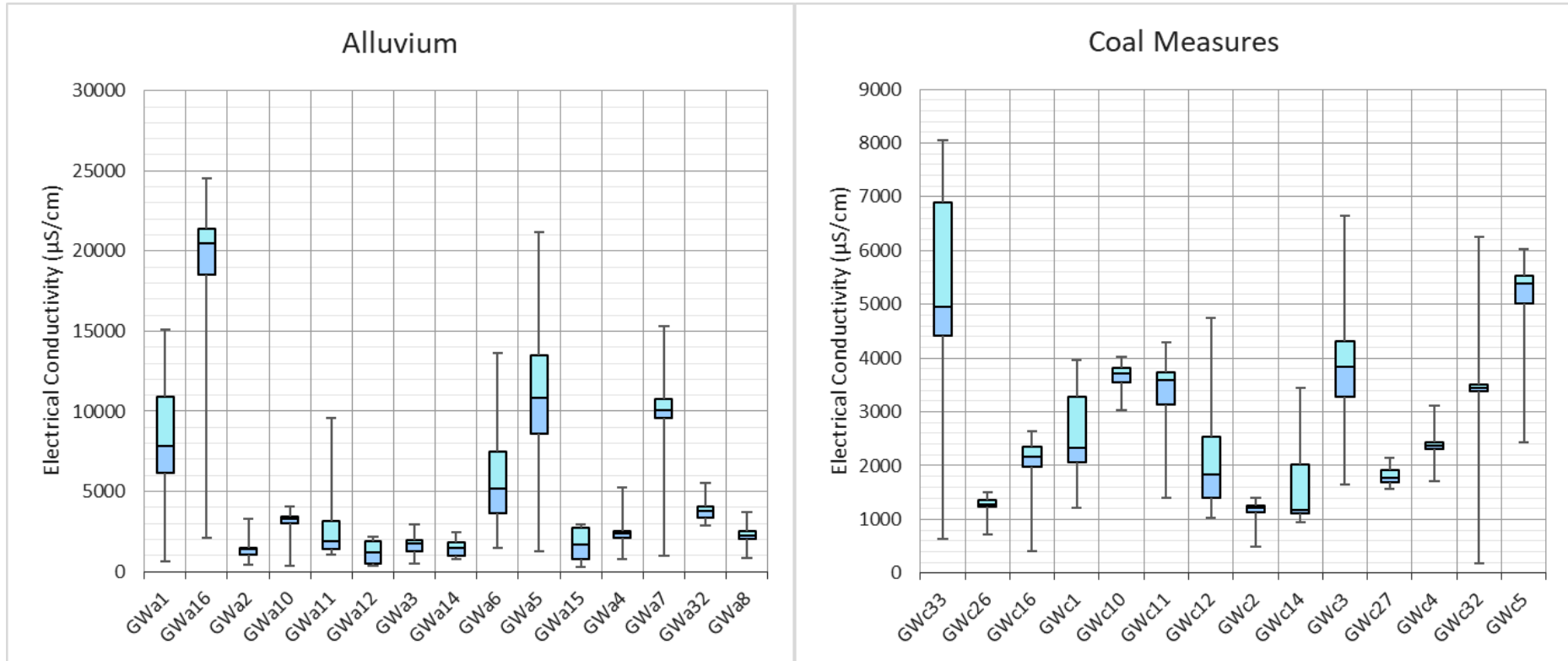


Figure 8: Alluvial Bore Groundwater Electrical Conductivity along Wilpinjong Creek

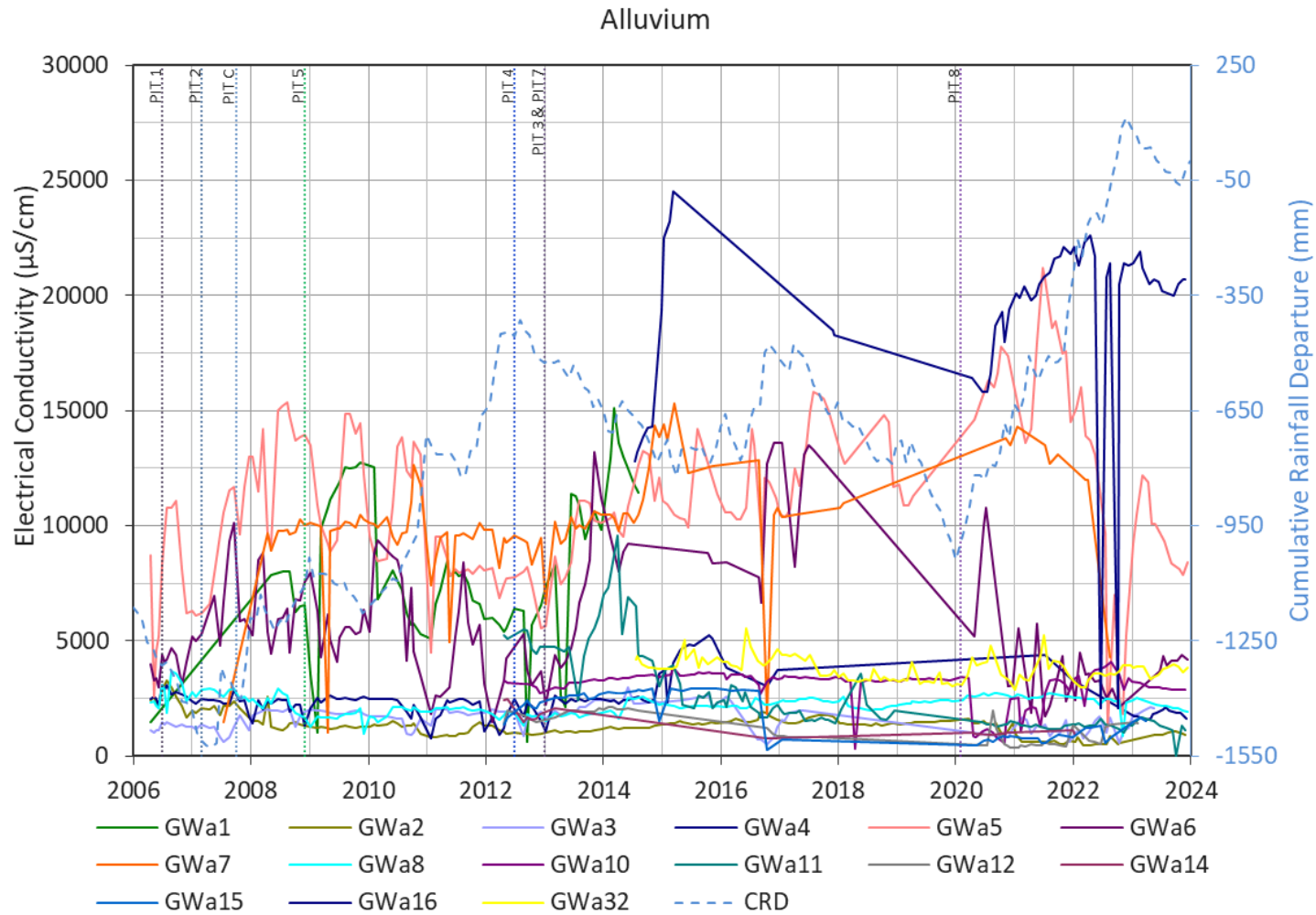
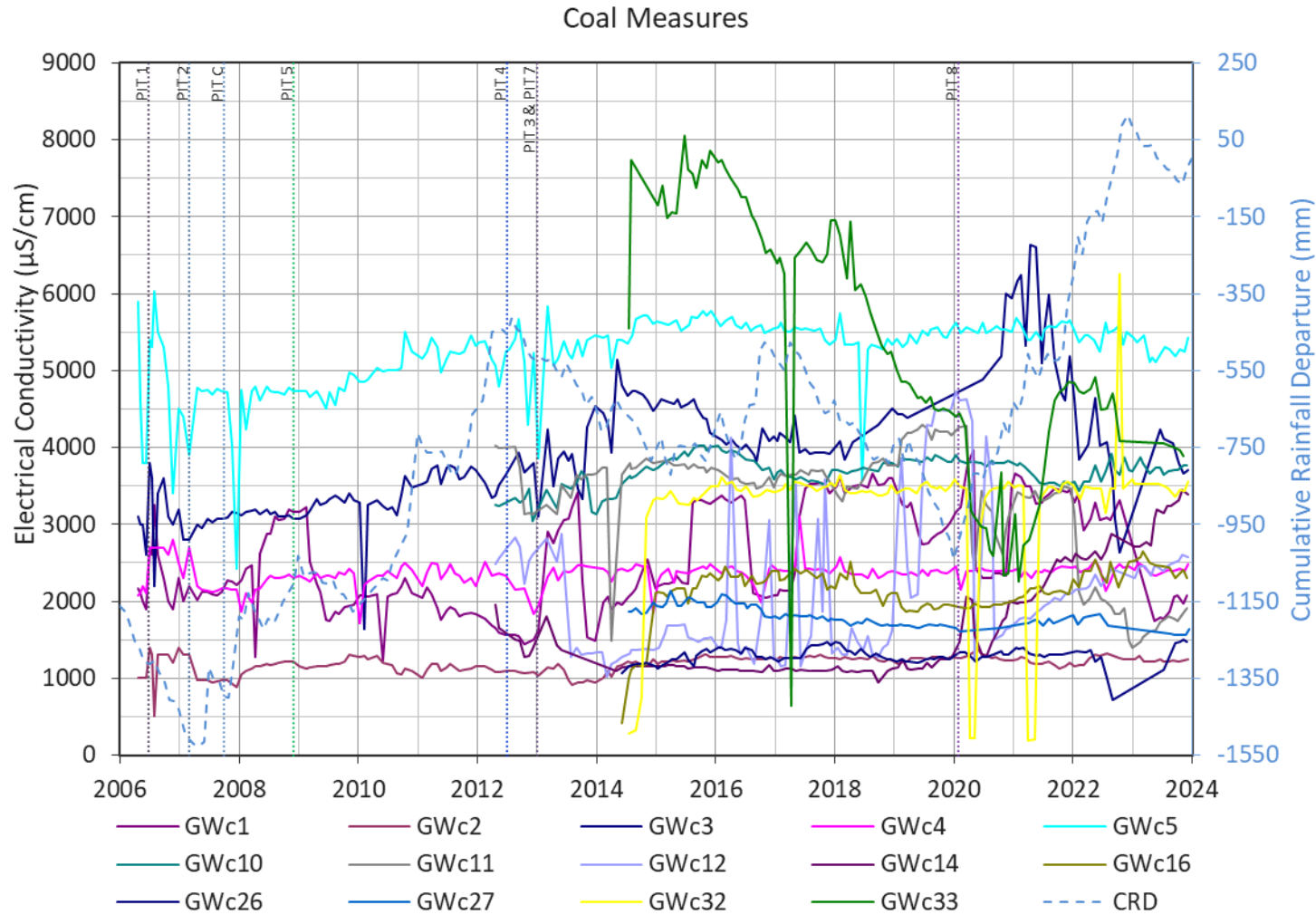


Figure 9: Coal Bore Groundwater Electrical Conductivity along Wilpinjong Creek



2.0 Trigger Compliance

The following section addresses the compliance of groundwater level and groundwater quality observations in relation to trigger levels during the 2023 reporting period. **Table 4** presents the trigger levels from the GWMP (Peabody, 2017).

Time series charts showing groundwater level, electrical conductivity (EC) and pH in comparison with the trigger levels can be found in **Appendix B**.

Table 4: WCPL (2017) Groundwater Level and Quality Trigger Levels

Monitoring Site	Aquifer Type	Groundwater Level		Groundwater Quality		
		Trigger RWL (mAHD)	Trigger depth (mbgl)	EC (µS/cm)	pH min	pH max
GWa1	Alluvium	No Trigger ¹		12,272	6.5	8
GWa2	Alluvium	372.4	3.8	2,280		
GWa3	Alluvium	Dry ²		1,970		
GWa4	Alluvium	Dry ²		2,596		
GWa5	Alluvium	371.4	2.6	13,926		
GWa6	Alluvium	N/A [#]		6,720		
GWa7	Alluvium	No Trigger ¹		10,126		
GWa8	Alluvium	Dry ²		2,898		
GWa10	Alluvium	366.1	4.5	N/A [#]	N/A [#]	N/A [#]
GWa11	Alluvium	Dry ²				
GWa12	Alluvium	361.3	4.3			
GWa14	Alluvium	Dry ²				
GWa15	Alluvium	Dry ²				
GWc1	Coal	N/A [#]		2,844	6.5	8
GWc2	Coal			1,290		
GWc3	Coal			3,304		
GWc4	Coal			2,412		
GWc5	Coal			4,798		

Not applicable – No trigger defined in GWMP (Peabody, 2017)

¹ GWa1 and GWa7 both had 'dry' observations prior to mining. No effective trigger level could be developed for these bores.

² Historical observations at these groundwater bores have indicated SWLs that represent less than 1 m of head in the bore. Therefore, these bores could go dry without indicating a mining effect that exceeds the predicted 1 m drawdown.



2.1 Trigger Exceedance Summary

Numerical modelling conducted for WCM (SLR, 2020a and HydroSimulations, 2015b) predicts minimal drawdown (approximately 1 m) to the alluvial groundwater system along Wilpinjong Creek, and less in the more distant alluvial aquifers associated with Wollar Creek.

Trigger levels have been established for alluvial monitoring bores at 1m below the minimum recorded water level during the baseline period. Three consecutive monthly exceedances (or two successive quarterly exceedances) of the lower threshold will trigger an investigation (Peabody, 2017).

An alluvium monitoring bore that has indicated a head of less than 1 m prior to the approach of Wilpinjong Mining has a trigger level set at the base of the bore (**Table 4**). These monitoring bores could go dry without necessarily exceeding the predicted 1 m drawdown. A statistical analysis on the number of dry observations at these bores is recommended within the GWMP (Peabody, 2017) to determine whether more dry days are occurring than under normal climatic variation. No statistical analysis has been completed for the 2023 period, with each bore was assessed qualitatively considering historical responses to rainfall and nearby mining.

Water quality data from April 2006 to December 2009 were analysed at alluvium and coal monitoring bores to develop trigger levels for EC and pH. An exceedance of a trigger level on three consecutive monthly (or two consecutive quarterly) observations will result in the initiation of the groundwater impact investigation protocol found in the WCM Groundwater Trigger Action Response Plans (TARPs) in Section 8 of the GWMP (Peabody, 2017).

- EC trigger levels are based on 80th percentile values from the baseline monitoring period.
- The 20th and 80th percentile values for pH measured at Wilpinjong monitoring locations between April 2006 and December 2009 fall within the ANZECC and ARMCANZ (2000) default guidelines for pH of 6.5 to 8. As such, these guidelines are used as triggers at all coal and alluvial monitoring sites.

Table 5 presents trigger level exceedances for the 2023 AR monitoring period.

Table 5: Groundwater Trigger Level Exceedances in 2023

Bore	Trigger Level Exceedance in 2023 Observations			
	Minimum RWL (mAHD)	EC	pH min	pH max
GWa1 [^]	N/A [#]	nd* Dry through 2022 and 2023		
GWa2	N	N	N	N
GWa3	Y (bore dry June-Dec 2023)	Y (March-May 2023 above trigger level before reporting dry in June – Nov 2023)	N	N
GWa4	N	N	N	N
GWa5	N	N	N	N
GWa6	N/A [#]	N	N	N
GWa7	N/A [#]	nd*	nd*	nd*
GWa8	N	N/A [#]	N/A [#]	N/A [#]
GWa10	N	N/A [#]	N/A [#]	N/A [#]
GWa11	N			



Bore	Trigger Level Exceedance in 2023 Observations			
	Minimum RWL (mAHD)	EC	pH min	pH max
GWa12	Y (bore dry March-Dec 2023)			
GWa14^	Y (bore dry in 2022 and 2023)			
GWa15	Y (bore dry April-Dec 2023)			
GWc1	N/A#	N	N	N
GWc2		N	N	N
GWc3		Y (Trigger exceedance May to Dec 2023)	N	N
GWc4		N	N	N
GWc5		Y (EC obs above trigger since 2010)	N	N

N/A# = No trigger defined, Y= Yes (trigger exceedances recorded), N= No (trigger exceedances not recorded) nd* = no data/ bore dry

2.2 Groundwater Level Trigger Exceedances

The following section discusses trigger exceedances in alluvial monitoring bores during the 2023 AR monitoring period (**Table 5**), to identify whether their cause can be attributed to a climatic or mining effect. If a mining effect is likely, further investigation may be required as per the GWMP (Peabody, 2017). All graphs showing the water levels within each monitoring bore and their associated trigger levels are shown in **Appendix B**.

2.2.1 Alluvial Bores

Alluvial monitoring locations GWa3, GWa12, GWa14 and GWa15 exceeded groundwater level triggers in 2023.

2.2.1.1 GWa3

GWa3 was reported as dry from June 2023 to December 2023. Groundwater elevations in this bore have declined from 364.0 mAHD in January 2023 to 363.44 mAHD in May 2023 (0.56 m) before being reported as dry in June 2023. This is approximately 1.8 m above the trigger value for the groundwater level in this bore (i.e. the base of the bore) noting that the bore inspection undertaken in May 2023 also identified a measured well depth ~1.3 m shallower than previously reported (4.36 m vs 5.65 m).

The dry observations recorded at GWa3 from June to December 2023 could be due to below average rainfall conditions or related to siltation or an obstruction limiting the ability to sample the well. GWa3 should be scheduled for further investigation and remediation in 2024 which may include downhole camera investigation prior to the development of the well using a hydro lift or compressed air.

2.2.1.2 GWa12

GWa12 was dry from March to December 2023. Groundwater elevations in this bore have declined from 361.4 mAHD in January 2023 to 360.96 AHD (0.44 mAHD) in May 2023 before being reported as dry in June 2023. This is approximately 1.5 m above the trigger



value for the groundwater level in this bore, noting that the inspection undertaken in May 2023 also identified a well depth ~1.6 m shallower than previously reported (3.1 m vs 4.7 m)

The dry observations recorded at GWa12 from June to December 2023 could be due to below average rainfall conditions or related to siltation or an obstruction limiting the ability to sample the well. GWa12 should be scheduled for further investigation and remediation in 2024 which may include downhole camera investigation prior to the development of the well using a hydro lift or compressed air.

2.2.1.3 GWa14

GWa14 was dry at every monitoring event in 2023 and has been dry since January 2022. It is currently thought that no significant obstruction or siltation of the well is occurring as the measured well depth from May 2023 is near the previously understood depth (3.96 m vs 4.13 m). The understood screened interval is 2.33-3.73 mbgl.

The dry observations at GWa14 in 2023 are consistent with dry observations in 2014-15 and 2017-19 during periods of below average rainfall. However, dry observations in 2021 and 2022, when more consistent groundwater response was observed to similar rainfall conditions in 2020 may indicate some impact to bore function. It is noted that other nearby alluvial/ shallow bores (e.g. GWa3 – See Appendix B) recovered to a greater extent in response to above average rainfall from 2020 to 2022 while there has been limited response at GWa14.

The construction bore log (AGE, 2007) indicates that the base of alluvium was not encountered during construction. Investigation into the function of GWa14 or consideration of a replacement monitoring site that is installed to full depth of alluvium at this location may provide more consistent groundwater data and help evaluate the presence and magnitude of any mining effect at GWa14.

2.2.1.4 GWa15

GWa15 was dry from April to December 2023. Groundwater elevations in this bore have declined 0.16 m from 355.7 mAHD (2.55 m depth) in January 2023 to 355.55 mAHD (2.71 m depth) in March 2023 before being reported as dry in June 2023. depth to water observation of 2.8 m in August 2023, did not contain sufficient water to collect a sample. These dry observations are approximately 1 m above the trigger value for the groundwater level in this bore (i.e. the base of the bore) noting that the bore inspection undertaken in May 2023 also identified a measured well depth ~0.5 m shallower than previously reported (3.4 m vs 3.9 m).

The dry observations recorded at GWa15 from March to December 2023 could be due to below average rainfall conditions or related to a potential obstruction limiting the ability to sample the well. GWa15 should be scheduled for further investigation and remediation in 2024 which may include downhole camera investigation prior to the development of the well using a hydro lift or compressed air.



2.3 EC Trigger Exceedances

The following section discusses the EC trigger exceedances summarised in **Table 5** based on the time series plots in **Appendix B**.

2.3.1 Alluvial Bores

Exceedances of the EC trigger value at coal monitoring bores in 2023 occurred at GWa3 only.

2.3.1.1 GWa3

The EC trigger level was exceeded at GWa3 in March, April and May 2023 before the bore was observed as dry for the remainder of 2023. It is noted that the EC values constituting the trigger exceedance are lower than previous EC observations during periods of below average rainfall (2014-2016), and specific investigation into the trigger exceedance is not currently recommended. As identified in **Section 2.2.1.1**, there may be an obstruction or some loss of bore function at GWa3 that should be resolved prior to further review of water quality results.

2.3.2 Coal Measures Bores

Exceedances of the EC trigger value at coal monitoring bores in 2023 occurred at GWc3, GWc4, and GWc5 (**Appendix B** and **Table 5**). The trigger exceedances for EC observed at GWc3, GWc4 and GWc5 appear to be occurring independently of climatic and groundwater level influences.

2.3.2.1 GWc3

EC measurements followed a declining trend throughout 2023 (from 4230 to 3710 $\mu\text{S}/\text{cm}$) but were above the EC trigger level (3,304 $\mu\text{S}/\text{cm}$) in all observations. EC has been exceeding the defined trigger level at GWc3 since 2013 except for 2 measurements in 2022 and has previously been suggested to be occurring due to WCM mining activity, corresponding to the 8 m decline in groundwater level following extraction at Pit 3 (HydroSimulations, 2018).

EC observations at GWa6 (monitoring the overlying Cumbo Creek alluvium) have shown similar trends to those at GWc3 through 2021 and 2022 (Figure 10). Continuous monitoring of EC at the Cumbo Creek upstream gauging station (CCGSU) also shows similar trends to GWc3.

Groundwater level recovery in GWc3 (12 m since April 2020) also shows potential correlation with stored water level change in Pit 3 and Pit 4 voids which are adjacent to the east and west of GWc3 respectively (**Figure 11**).

The 2023 EC trigger investigation (SLR, 2023) carried out at GWc3, compared the groundwater level and variation at GWc3 to the stored water levels in adjacent Pit 3 and Pit 4, and the EC at GWc3 to the EC of collected mine water. The investigation concluded that the observed EC trends at GWc3 may have been influenced by a combination of mining and climatic drivers and recommends further investigation be done at GWc3. This may include replacing the bore (to eliminate bore construction as an influence of the observed EC exceedances) and further investigation of any connection between the stored water in Pit 3 and/or Pit 4 and the adjacent Permian and alluvial aquifers at this location.



2.3.2.2 GWc5

GWc5 is located on Wollar Creek, upstream of the confluence of Wilpinjong Creek, and 3.5 km from active mining in Pit 7 and Pit 8. EC increased gradually from early 2010 to 2015, separate to climatic or groundwater level influence, and stabilised around 5,500 $\mu\text{S}/\text{cm}$ at the end of 2017 through to 2023. GWc5 is continuing to show EC levels consistently above the trigger level set for this bore, but below the maximum values observed prior to the commencement of WCM operations.

The 2023 EC trigger investigation (SLR, 2023b) carried out at GWc5 concluded that this bore is not showing mining related impacts to water quality and that the trigger values should be updated to the 80th percentile of the entire length of record (5,560 $\mu\text{S}/\text{cm}$). EC measurements in 2023 have not exceeded 5,560 $\mu\text{S}/\text{cm}$.

Updates to the GWMP to incorporate this revised EC trigger level are scheduled for 2024.

2.4 pH Trigger Exceedances

No exceedances of pH trigger levels were observed at alluvial or coal measures monitoring bores during the 2023 AR monitoring period.



3.0 Metal and Major Ion Concentrations

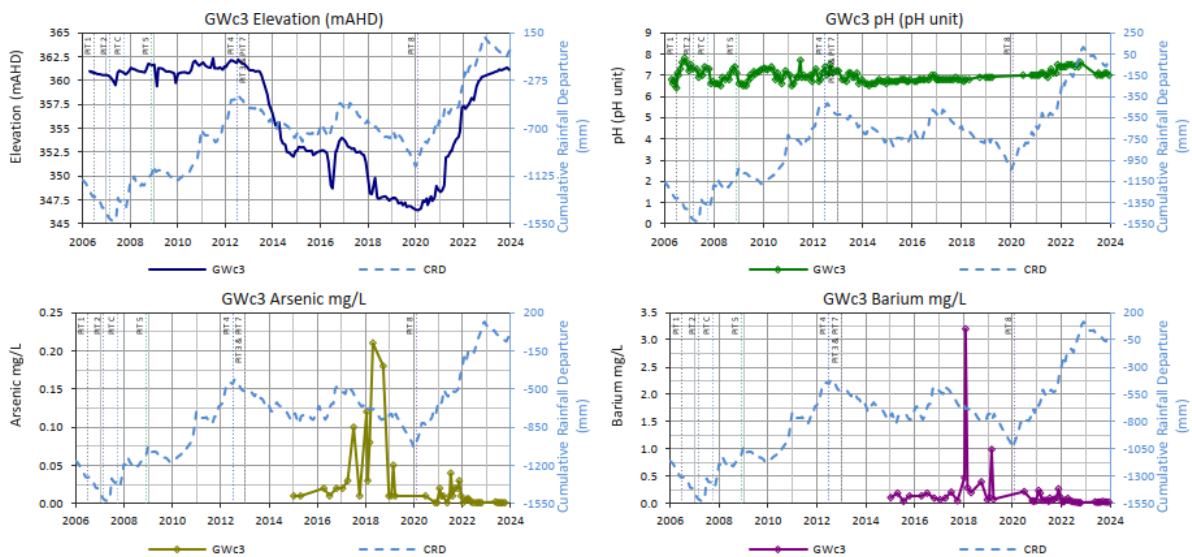
For the 2023 annual review, the following groundwater quality time-series graphs are presented in **Appendix C**. These charts demonstrate compliance with the GWMP (Peabody, 2017) requirement to collect monthly and event-based metals monitoring data and demonstrate the volume of chemistry data collected and trends over time:

- Major ions and analytes: TDS, Sodium (Na), Potassium (K), Magnesium (Mg), Calcium (Ca), Chloride (Cl), Carbonate (HCO₃), Bicarbonate (CaCO₃), Sulfate (SO₄).
- Metal species: Aluminium (Al), Arsenic (As), Barium (Ba), Copper (Cu), Lead (Pb), Manganese (Mn), Nickel (Ni), Selenium (Se), Molybdenum (Mo).

Figure 10 shows an example plot for the plots shown in **Appendix C**, with each page of the Appendix showing data for one bore. Groundwater level and EC are displayed on the major ion charts, while groundwater level and pH are displayed on the metal ion charts for context together with the cumulative rainfall departure (CRD).

Ongoing review of water quality monitoring is recommended to further understand of the hydrochemistry of the Permian strata and alluvium as well as areas of spoil deposition. This will allow the identification of trends and increases in concentrations that may prompt the need for additional investigation.

Figure 10: Example Plot of Water Quality vs CRD as Presented in Appendix C for Selected Bores



4.0 Groundwater Model Review

Previous reporting (HydroSimulations, 2015a; Peabody, 2016) has utilised the HydroSimulations (2013) and (2015b) groundwater model to assess likely impacts of WCM and ensure sufficient water licences are purchased prior to a water year. This groundwater model was converted from the original numerical groundwater model used by AGE (2005).

The 2015 version of the groundwater model (HydroSimulations, 2015b) was updated in 2020 by SLR (2020a), in line with the recommendations from the 2018 Annual Review (HydroSimulations, 2019). These changes aimed to verify if the model calibration was still appropriate by updating climatic inputs, updating available groundwater level observations, and revising mine progression to reflect actual extraction.

As is required by the GWMP (Peabody, 2017), the following section reports on the new model (SLR, 2020a) and presents the results of the model verification. SLR is also required to assess the performance and suitability of the model triennially to ensure predictions are consistent with observed data. A new groundwater model commenced construction in 2023 and is currently being developed to support proposed changes and extensions of mining operations. It is anticipated that this model will be used for the 2024 Annual Groundwater Monitoring Report and satisfies the GWMP requirement for triennial updates.

4.1 Model Updates (2020)

Further updates to the Hydrosimulations model (HydroSimulations, 2015b), were made in 2020 (SLR, 2020a). The 2020 model revisions included:

- Update of the rainfall-recharge to reflect the actual rainfall experienced in the years following the creation of the model in 2015 up to 2020.
- Update of the mining progression to reflect the actual schedule and extent of mining more closely in the years following the creation of the model in 2015 up to 2020.
- Update of the MODFLOW River (RIV) stage heights to reflect time-series observations made in the years since the creation of the model in 2015 up to 2020.
- Incorporation of pumping from water supply bores using pumping rates based on site data up to 2020.
- Update of the observation target file with new monitoring bores and new observed groundwater level data up to 2020.

4.2 Model Verification

Hydrographs of observed and modelled groundwater levels are presented in **Appendix D (Figure D 1 to Figure D 19)**. The following section contains an assessment of the modelled vs observed groundwater levels where potential mining impacts are observed.

It is noted that climatic conditions from 2020 to 2023 are not captured in the model used for this verification exercise. The model updates were completed in early 2020. Updated climate and stream flow series, and actual and proposed mining will be included in the next model update, which commenced in 2023. The updated model is intended to be used for future reviews.



4.2.1 Predictions at Alluvial Bores

The SLR (2020a) modelling predictions are consistent with HydroSimulations (2015b) predictions at the alluvial monitoring sites along Wilpinjong Creek, with approximately 1 m drawdown for the life of approved mining (GWA6 has the maximum predicted drawdown in an alluvial monitoring bore of about 1.5 m occurring in 2029).

The timing of the mining effects modelled at the alluvial monitoring bores shows good correlation with the observed effect and often indicates a repressed response to rainfall that is also seen in the observed data. Most of the modelled groundwater levels at the alluvial monitoring bores respond to the updated (SLR, 2020a) modelled rainfall recharge series.

Groundwater levels along Wilpinjong Creek and Cumbo Creek are generally well represented in the alluvium (GWA1, GWA2, GWA5, GWA6, GWA12, GW14 and GWA15) although recent observations in the shallow bores are not well replicated by the groundwater model due to the above average rainfall conditions not being captured in the model (which was developed in early 2020). The groundwater model commenced updates in 2023 and will better reflect recent climatic conditions. It is anticipated the ability of the updated model to replicate observed groundwater elevations from 2020 to 2023 is likely to improve.

The observed desaturation of the alluvium (GWA4, GWA5, GWA6, GWA12, GWA14) occurs earlier than was predicted by the model, while differences between observations and the model simulation at GWA6, GWA12, and GWA14 (**Figure D.6, Figure D.7, Figure D.8**) are similar for a majority of the WCM alluvial monitoring locations. The decline in observed groundwater level from 2013 to 2016 and from 2017 to 2020 is about 1.5 m greater than that predicted by the model, with dry observations during these periods of below average rainfall not being replicated by the model. This may be attributed to differences between actual and modelled alluvial thickness, or the bed elevation of creeks as represented in the model. Some improvements to model performance may be made by making minor revisions to the aquifer properties and geometry of the alluvium (with a focus on including information from any recent drilling). The current updates to the numerical model which commenced in 2023 will include a rebuild of model geometry and recalibration of hydraulic parameters which is anticipated to improve the match between modelled and observed groundwater elevations at these locations.

4.2.1.1 Comments

Observed drawdown at GWA5 (**Figure D.5**) is approximately 1.5 to 2.5 m greater than the drawdown predicted by the model for the period between 2013 and the end of 2021. Previous reporting sighted a lack of inflow at Cumbo Creek due to reduced rainfall and a possible under-prediction of Pit 3 and Pit 7 mining impacts as the reason for the difference (HydroSimulations, 2018, 2019 and SLR, 2020b).

Additional investigation at GWA5 undertaken in 2021 was not able to explicitly determine whether it is still connected to the Cumbo Creek alluvial aquifer and returning representative data. The installation of a supplementary bore should be considered in this area to help understand potential impacts to the Cumbo Creek alluvium.

While the model captures alluvial groundwater response for periods of above average rainfall, low water/ dry observations in drier periods such as 2015 and 2017-2020 are often not well represented in the modelling. The relationship between different recharge sources to the alluvium (i.e. flow from Permian strata, surface water flow, rainfall recharge) will be considered in the current revision and recalibration of the groundwater model.



4.2.2 Predictions at Coal Measures Bores

Figure D.10 to Figure D.19 compare modelled and observed groundwater levels at coal monitoring bores identified as being affected by mining. The largest drawdowns predicted by the model were during the excavation of Pit 3 and Pit 4, with continued drawdown predicted at several bores following mining at Pit 5. Noting the uncertainty in distinguishing between climate and mining-related drawdown in the observed data, modelled groundwater levels at the coal monitoring bores generally show a good correlation with the timing and magnitude of observed drawdown.

It is noted that many bores within the coal measures have significantly recovered in response to above average rainfall in 2020, 2021 and 2022. As this above average rainfall has not been captured within the SLR (2020a) updated model, similar responses are not expected within the modelled groundwater levels. The relationship between coal measures bores and WCM site water storages has been suggested for further investigation (**Section 2.3.2.1**), with water storages being considered for inclusion in updated model.

The revised groundwater model (SLR, 2020a) predicts a reduction in the rate of drawdown between 2006 and 2009 (when mining starts at Pit 1, 2 and 5) at GWc2, GWc3, GWc12, GWc14 and GWc15. The timing of drawdown is still captured in (SLR, 2020a) for these bores and the simulated groundwater levels match the observed levels prior to the extraction of Pit 4 in 2013. The model (SLR, 2020a) better captures the maximum drawdown following mining at Pit 1 and 2 at GWc1 and GWc11 located near Pit 2, although the groundwater level recovers quicker and above the observed levels.

Revised model predictions (SLR, 2020a) improved the timing of drawdown after mining Pit 4 and following below average rainfall conditions at GWc1 and GWc2. The maximum predicted drawdown better aligns with the observed depressurisation at GWc3 (Cumbo Creek) and matches the drawdown gradient at GWc15 following the mining of Pits 4, 3 and 7. The observed data at Pit 8 monitoring bores GWc28 and GWc29 is relatively well matched by the model although observed drawdown is greater than the model predicts.

The simulated depressurisation of the coal seams in the revised model (SLR, 2020a) between 2013 and 2019 is generally lower than the observed data at GWc12, GWc15, GWc14, GWc28 and higher at GWc1, GWc2 and GWc3. Predicted recovery from 2020-22 and ongoing in 2023 is generally less than that observed at all coal monitoring bores, as discussed above.



5.0 Review of Water Balance Groundwater ‘take’

The following section describes a review water balance model outputs at WCM, and the method used to estimate ‘groundwater take’ from those records and water balance model outputs.

5.1 Assessment of Annualised Groundwater Inflow against Licence

WCPL holds a consolidated licence (WAL41862) to cover the extraction of water from all Pits.

The total authorised volume of groundwater extraction is 3,121 Unit Shares which is the combined total of the individual Pit entitlements for the 2019-21 water year (authorised by licences 20BL173513, 20BL173514, 20BL173515, 20BL173516, and 20BL173517).

When annualised from a daily inflow value of 2.5 ML/day, the SLR (2024) water balance model estimate for the 2022-2023 water year is about 913 ML/a. This is informed by groundwater model predictions (SLR, 2020a) and factored based on observed 6-monthly rainfall totals compared to the long-term average.

Table 6 presents the relevant entitlement volume for the consolidated licence, the estimated inflow or ‘take’ for 2022-23 and compares these water balance model estimates to numerical model predictions. The SLR (2022) annualised inflow estimate (660 ML/yr) is within the allocated licence volume for the 2022-23 water year.

Table 6: Summary of Annual Volume of Inferred Maximum Groundwater Take

Water Access License	Limit [ML/a]	2021-2022		2022-2023	
		SLR Water Balance Inflow (SLR, 2023)	Modelled inflow (SLR, 2020)	SLR Water Balance Inflow (SLR, 2024)	Modelled inflow (SLR, 2020)
Pits	3,121 ML/a (WAL 41862)	840	870	913	660
Dewatering Bores		0		0	
TOTAL		840	870	913	660

Figure 11 shows the inflow estimates from the SLR (2020a) groundwater model. Inflow in 2022 and 2023 is predicted to be sourced from Pit 6 and Pit 8, this is consistent with conceptual understanding as most new mining during this period occurred in those locations.

Inflows predicted by both the groundwater model and the independent water balance assessments (SLR, 2022) are well below the licenced allocation of 3,121 ML/a.

5.2 Assessment of Annualised Groundwater Take

Comparisons of the annualised total inferred groundwater inflow to the compared to WCPL’s groundwater extraction licence are made in **Figure 11** using predicted total annual inflows from the updated groundwater model for WCM (SLR, 2020a).

Figure 11 shows the inflow estimates from the SLR (2020a) groundwater model. Most inflow in 2022 and 2023 is predicted to be sourced from Pit 6 and Pit 8, this is consistent with conceptual understanding as most new mining during this period occurred in those locations.

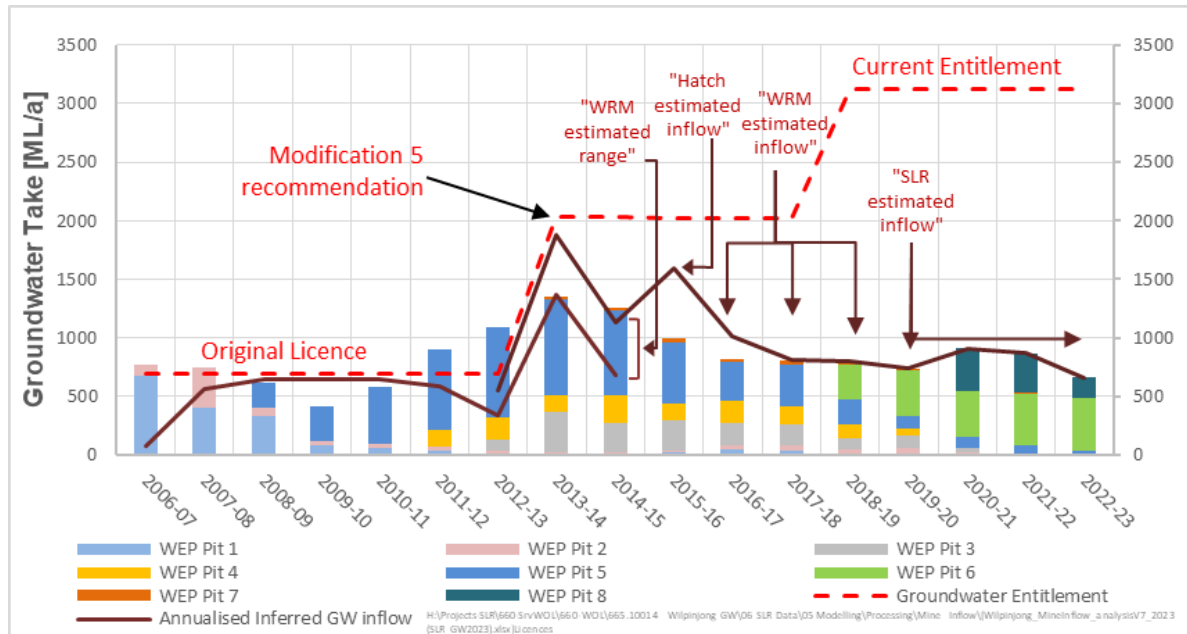
Figure 11 displays the total entitlement volumes as a red dashed line and the bar charts show the annualised groundwater inflow estimates from modelling (predicted inflows for Pits 1 to 8). The groundwater inflow estimates from water balance modelling (WRM, 2019



and SLR, 2020a) are shown as a continuous brown line (the “Annualised Inferred GW inflow”).

For the 2022-2023 water year the groundwater model predicts an inflow of 660 ML/a. These estimates are lower than the 913 ML/a estimated by SLR for the 2022-2023 water year using the site water balance model (SLR, 2024).

Figure 11: Comparison of Predicted Inflow Volumes against Groundwater Entitlement for the SLR (2020a) Groundwater Model



5.3 Alluvial Groundwater Inflow

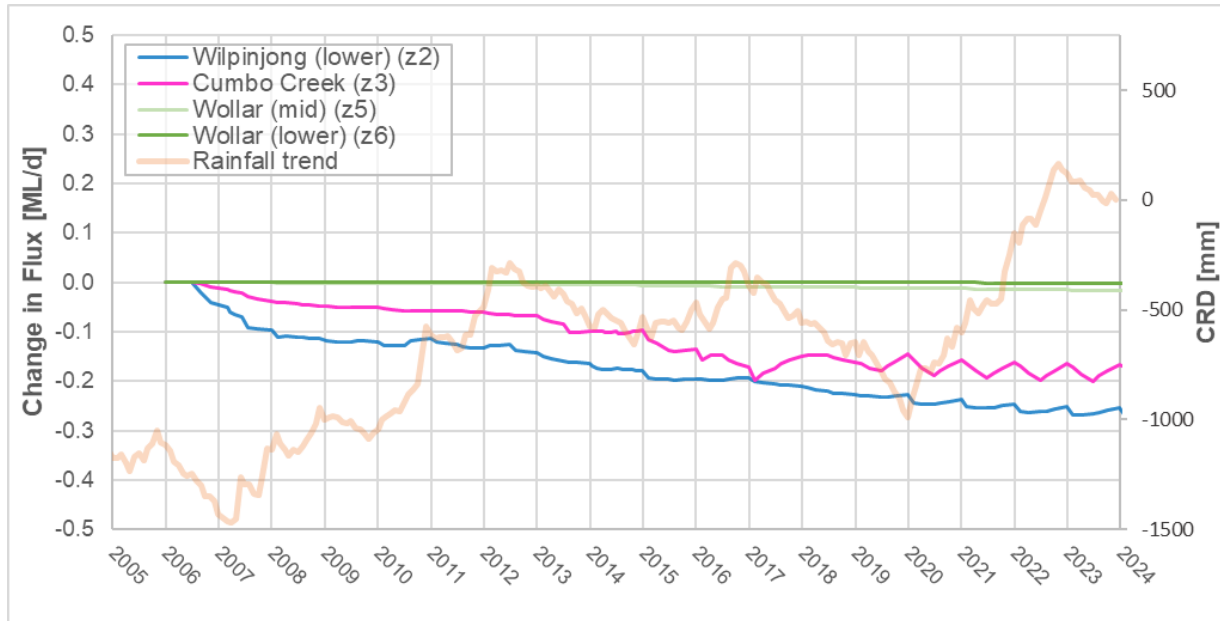
Groundwater can be lost from alluvium to underlying Permian sediments through natural processes or as incidental take in response to mining (i.e. by a mining induced increase in the downward vertical hydraulic gradient from the alluvium to the Permian). As there are no physical means by which this volume of alluvial water can be measured, groundwater modelling is necessary to quantify the expected loss of alluvial groundwater to the underlying Permian strata.

The SLR model (2020a) has predicted the likely alluvial take during the 2022-2023 water year, as shown in **Figure 12** for both Wilpinjong Creek alluvium and Cumbo Creek alluvium. The predicted loss from Wollar Creek is negligible.

For the 2022-2023 water year the additional alluvial water loss, over and above what occurs naturally, is estimated to be about 0.27 ML/day from Wilpinjong Creek alluvium and about 0.2 ML/day from Cumbo Creek alluvium. This gives a predicted alluvial groundwater take of about 172 ML/year. WCM holds an allocation of 474 ML for the Wollar Creek Water Source under the *Water Sharing Plan for the Hunter Unregulated and Alluvial Sources, 2009*. This estimated take is within and compliant with the licence volume held by WCM.



Figure 12: Modelled take from Alluvium (SLR, 2020a)



6.0 Dewatering Bores

6.1 Groundwater Take

Six water supply production bores (GWs10, GWs11, GWs12, GWs14, GWs15, PB1) are located north of the active WCM mine area at locations both north and south of Wilpinjong Creek (**Figure 2**). In addition, one production bore designed for dewatering was constructed near a turkey's nest dam north of Pit 2 and Pit 4 during the 2018-19 water year. Of these seven production bores, none were extracted from in the 2022-23 water year, or the 2023 calendar year.

The consolidated licence WAL 41862 now covers groundwater extraction for both water supply bores and WCM open cut pits. The water supply production bores have recorded an extraction volume of 0 ML during the 2022-23 water year and 2023 annual review period. Compliance of this extraction with the relevant licence conditions is addressed in **Section 5.1**.

6.2 Cease-to-pump Trigger Levels

Trigger levels are designated to coal monitoring bores close to each of the originally installed production bores (GWs10, GWs11, GWs12, GWs14, and GWs15) and have been determined based on the expected maximum drawdown, as a result of the development of the open cut and water supply borefield. The cease-to-pump trigger levels and the minimum groundwater levels recorded during 2022-2023 water year, and 2023 reporting period is shown in **Table 7**.

Table 7: Water Supply Borefield - Cease to Pump Trigger Level Exceedances

Production Bore	Monitoring Bore	Cease-to-pump trigger level (mAHD)	Lowest observed water level 2022-2023 (mAHD)	Trigger Exceedance (Yes/No)
GWs10	GWc10	346	366.5	No
GWs11	GWc11	348.5	357.3	No
GWs12	GWc12	332.5	348.4	No
GWs14	GWc14	319.5	347.9	No
GWs15	GWc15	314.5	344.7	No

There were no breaches of the cease-to-pump trigger levels during 2023.



7.0 Recommendations

Following the 2023 annual review of groundwater data and in line with recommendations from previous Annual Reviews and associated trigger investigations, the following recommendations are made:

- Address those recommendations from the 2022 AR (SLR, 2023a) and from the EC trigger investigation report (SLR, 2023d):
 - Redrill or replacement of GWc1 and GWc3 so that bore construction can be ruled out as influencing water quality observations. GWc16 is proposed as a replacement site for GWc1.
 - Undertake further investigation of the potential connection between the alluvial and Permian aquifers in lower Cumbo Creek (monitored by GWa6 and GWc3), and the adjacent Pit 3 and Pit4 water storages. This will likely involve the redrill or replacement of GWc3 and GWa6 so that bore construction can be ruled out as influencing water quality observations.
 - Update the GWc4 EC trigger level to 2,440 $\mu\text{S}/\text{cm}$ based on the 80th percentile EC value from the entire monitoring record.
 - Update the GWc5 EC trigger level to 5,560 $\mu\text{S}/\text{cm}$ based on the 80th percentile EC value from the entire monitoring record.
 - Undertake holistic review of groundwater monitoring network and GWMP to focus on active and future mine areas with a focus on the collection of high quality and representative groundwater data.
- The purging and development of GWa3, GWa12, GWa14 and GWa15 using a hydro lift or air compressor. These bores were all observed to be dry on some occasion in 2023 often indicated a shallow bore depth than previously measured. Redevelopment of the well will confirm that there is no accumulated silt blocking the well screen and affected well performance.
- Supplementary bores could be considered near GWa4, GWa14 and GWa5. These sites appear to show impacts associated with WCM operations. However, as geology and construction details are unavailable at GWa4 and GWa5, there is reduced confidence in the data. Alluvial saturation and response to climatic or mining effects will be better understood near GWa14 if a replacement bore is drilled to the base of the alluvium. The replacement of GWa14 should be subject to the success of purging and development recommended in the previous point.



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Appendix A Groundwater Level Hydrographs

Annual Review – Wilpinjong Coal Mine

2023 Groundwater Compliance

Wilpinjong Coal Mine

SLR Project No.: 665.v10014.02411

28 March 2024

Figure A 1:

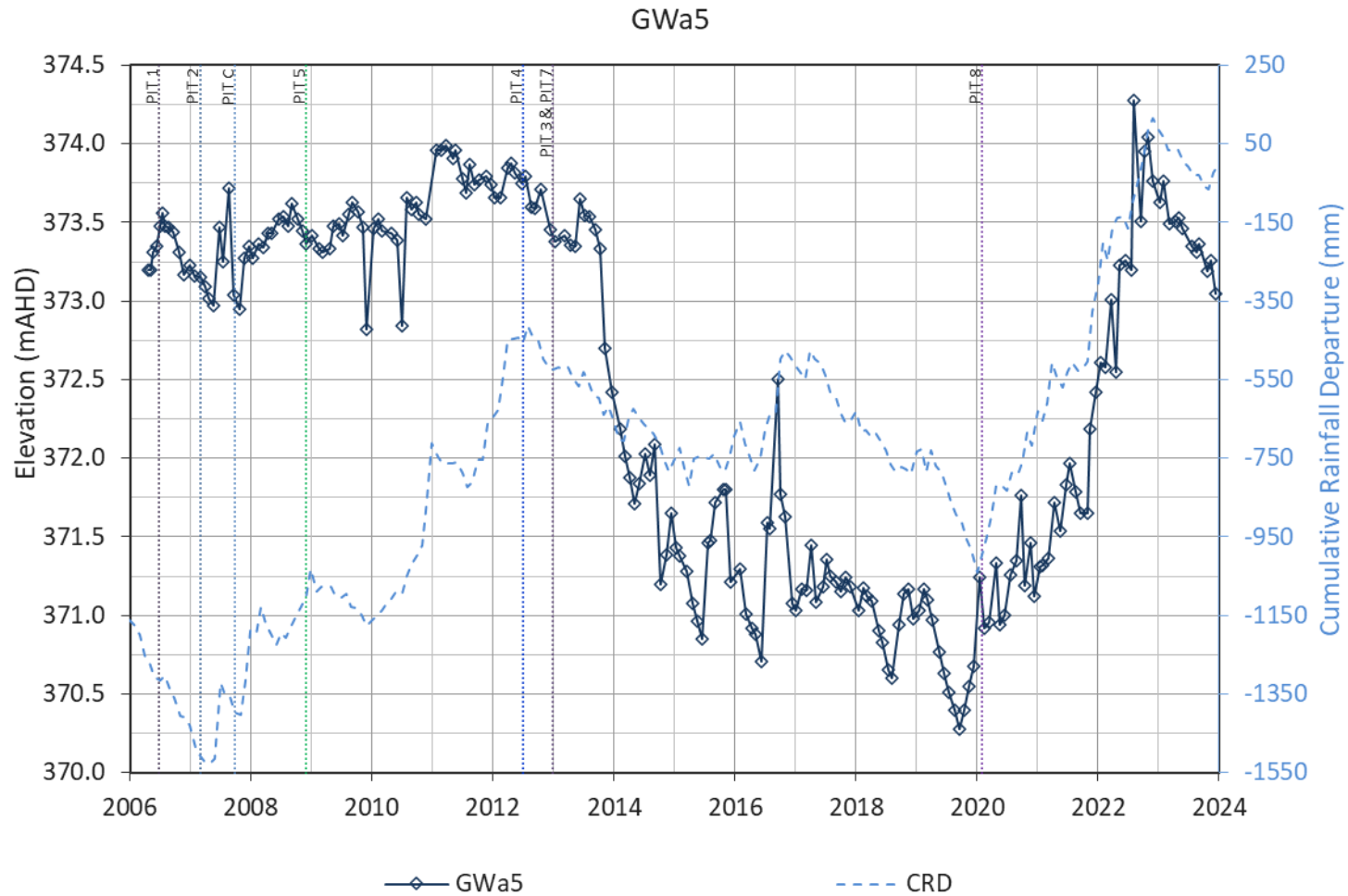


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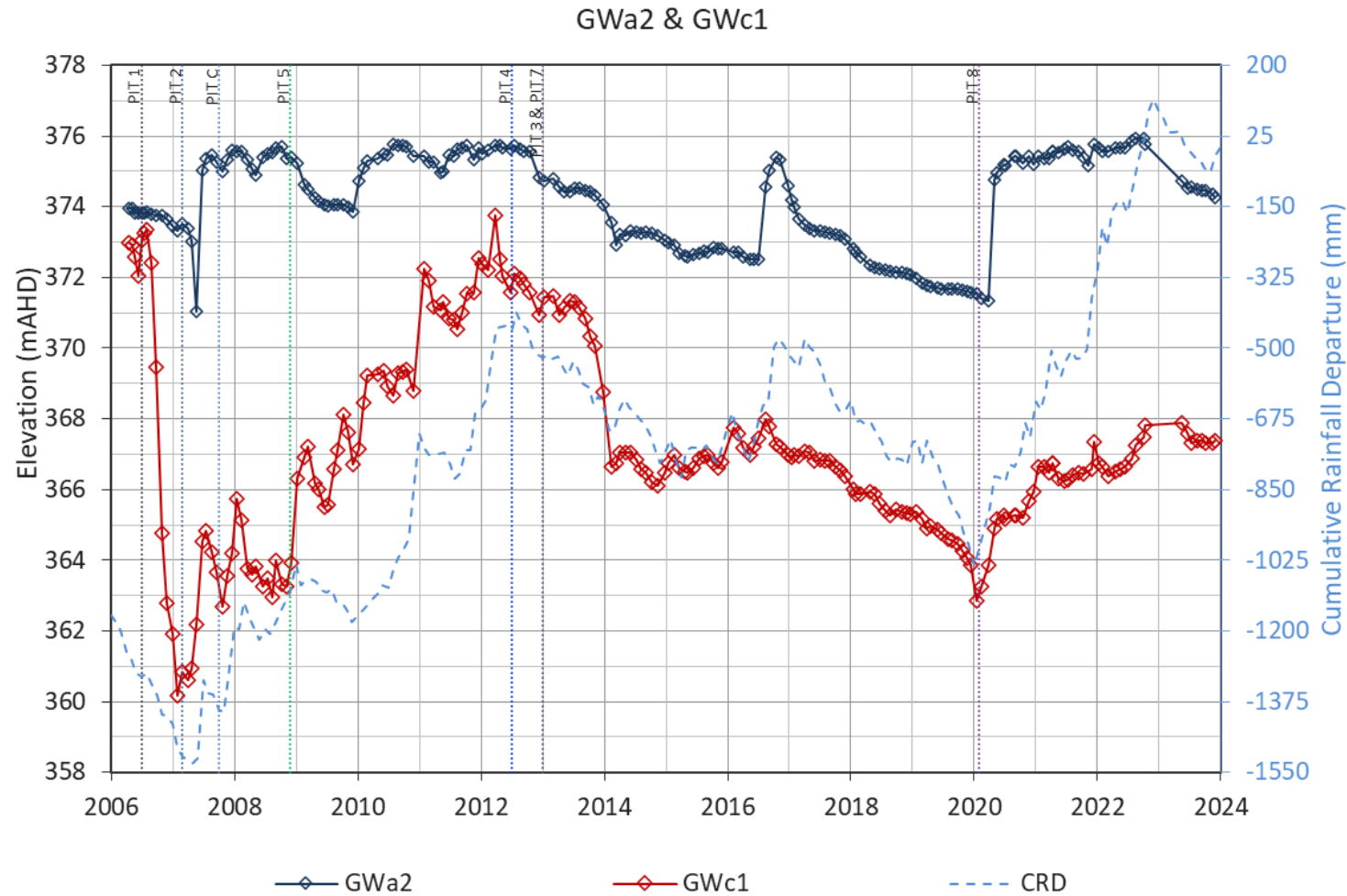


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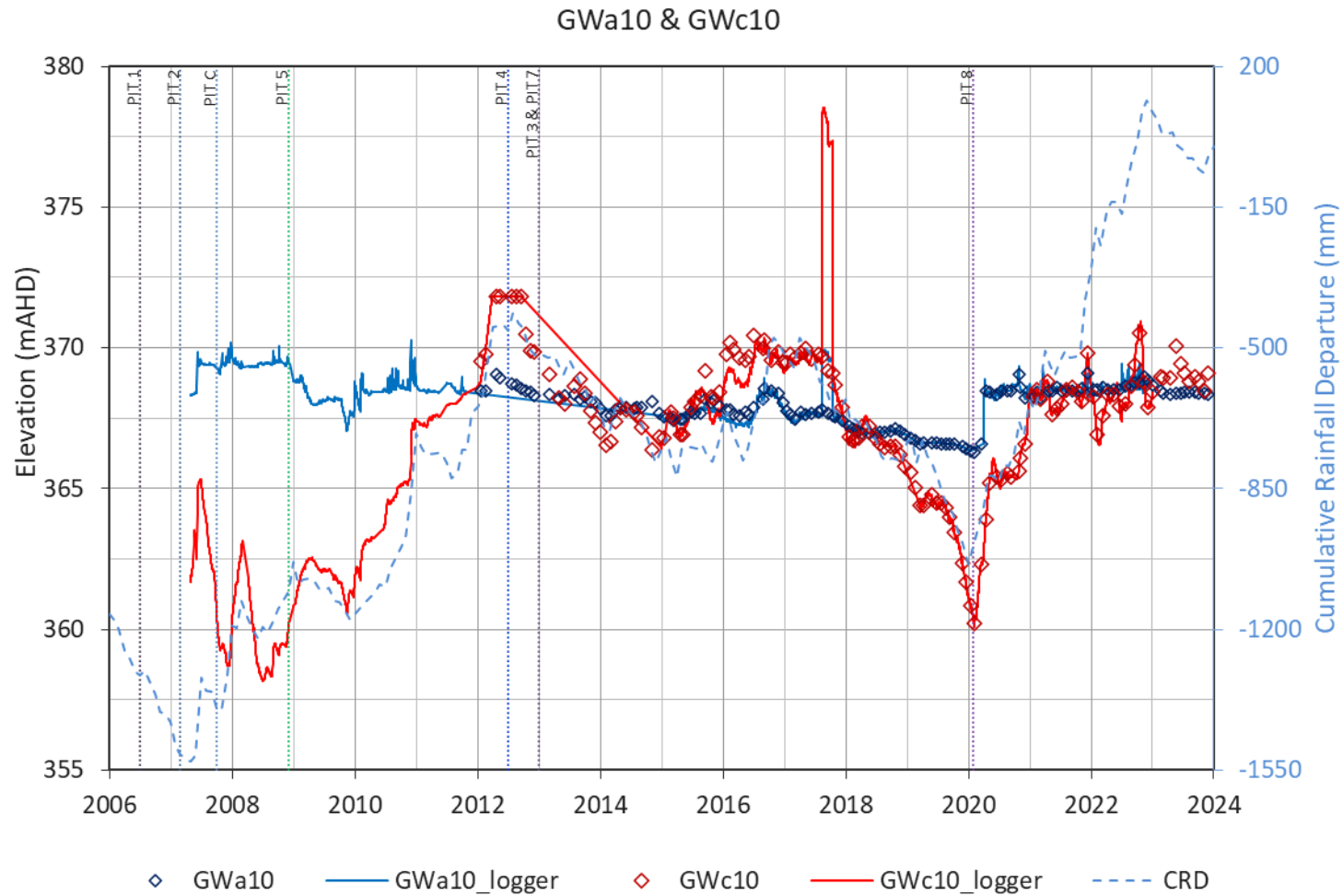


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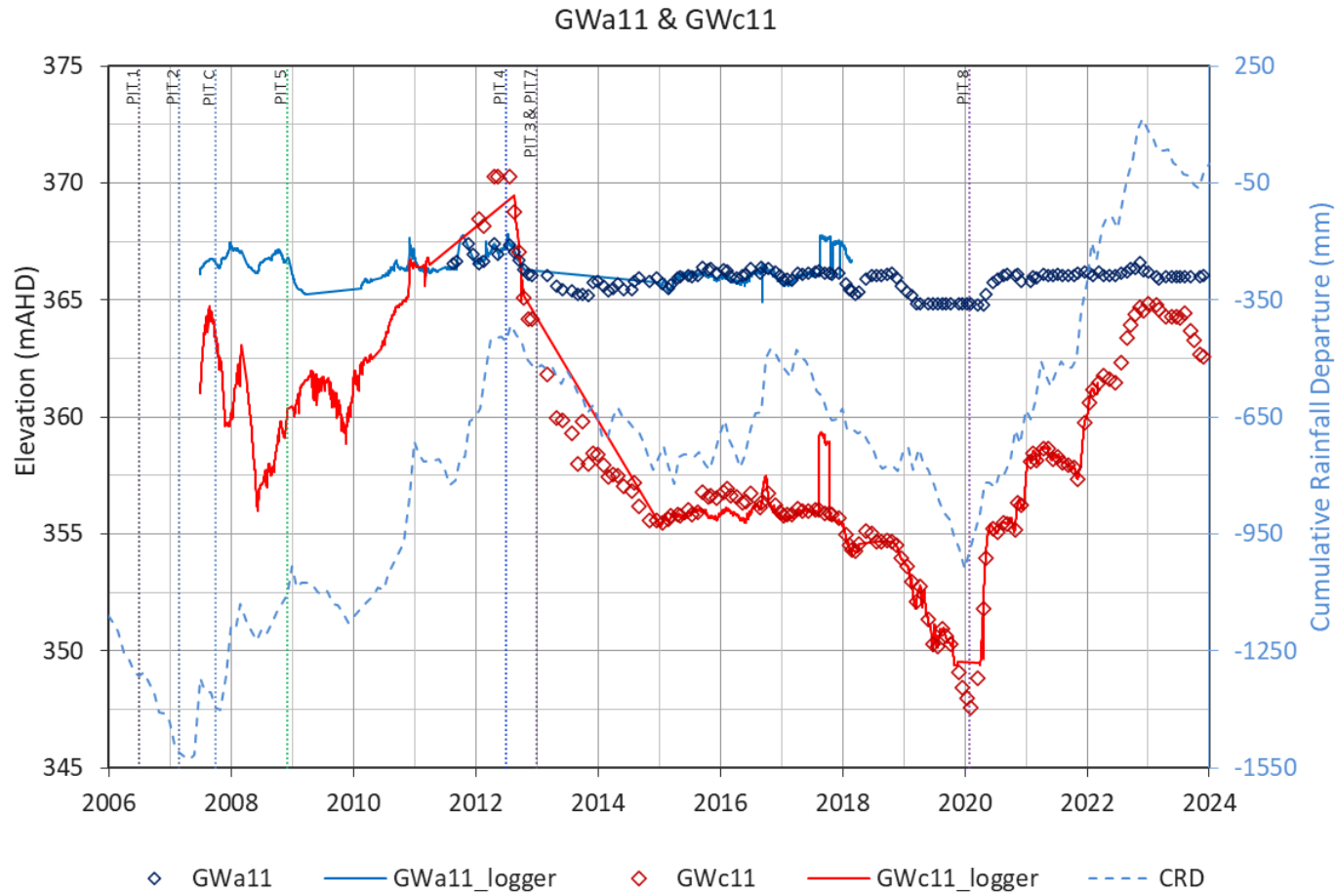


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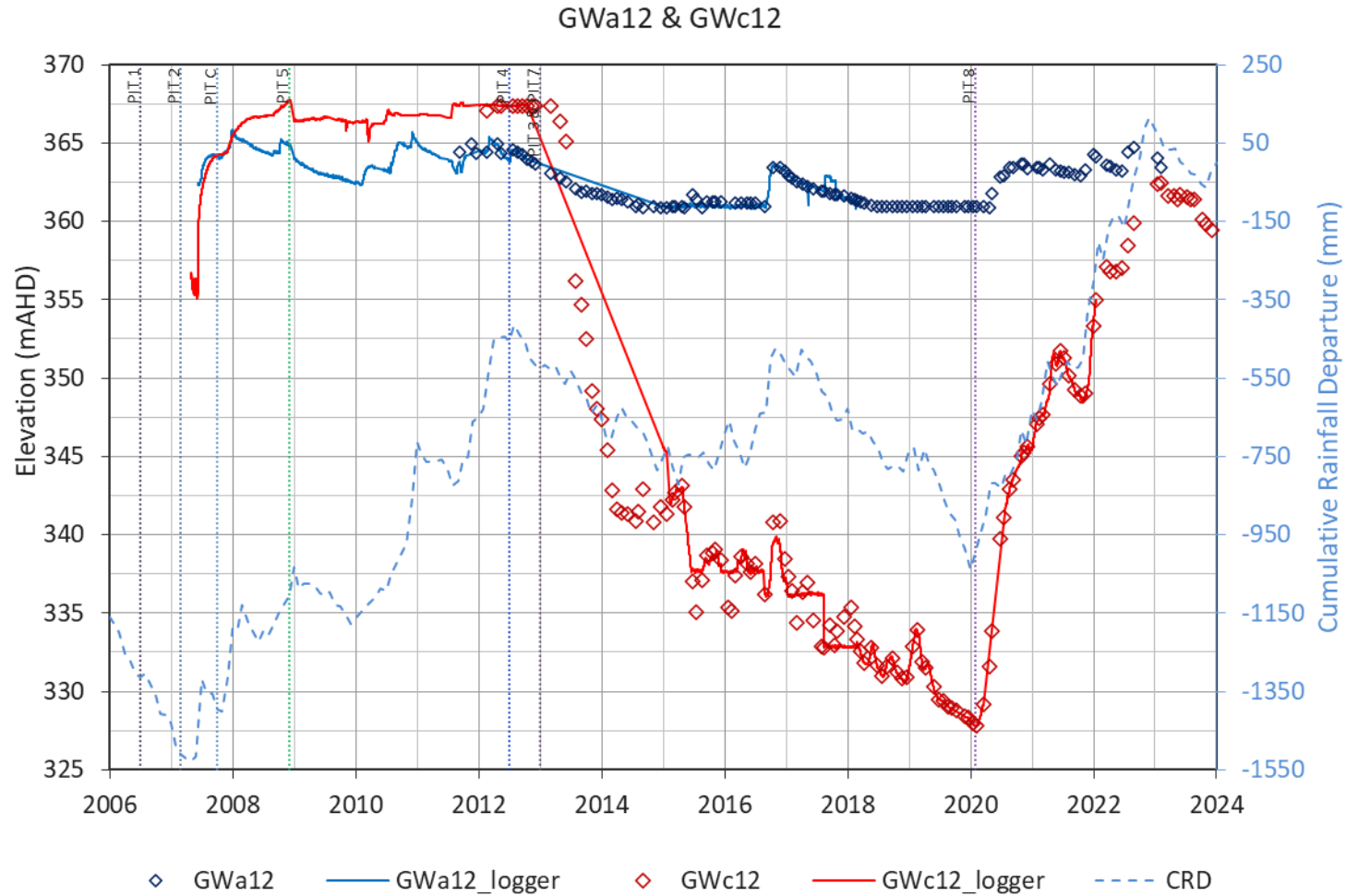


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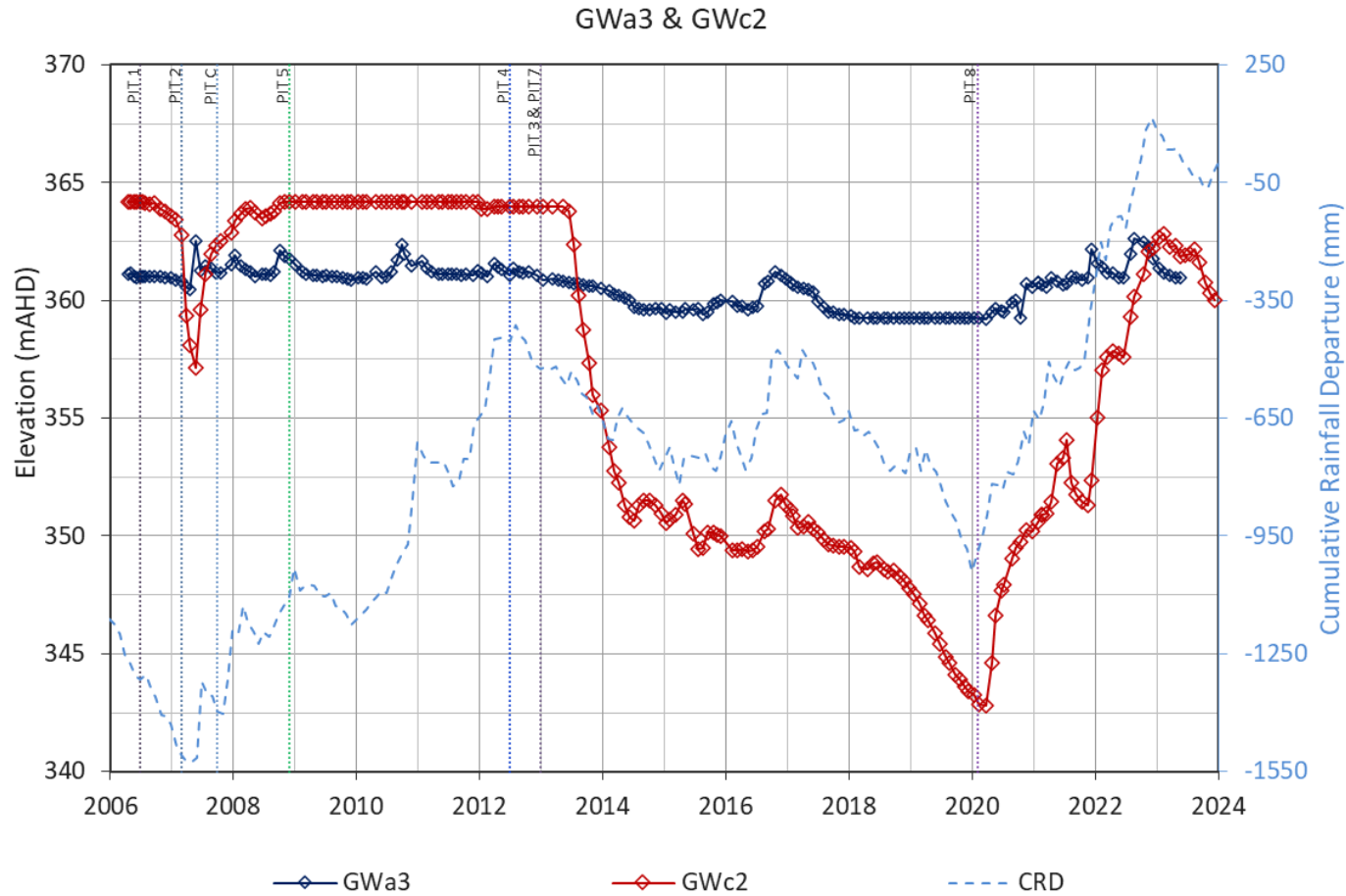


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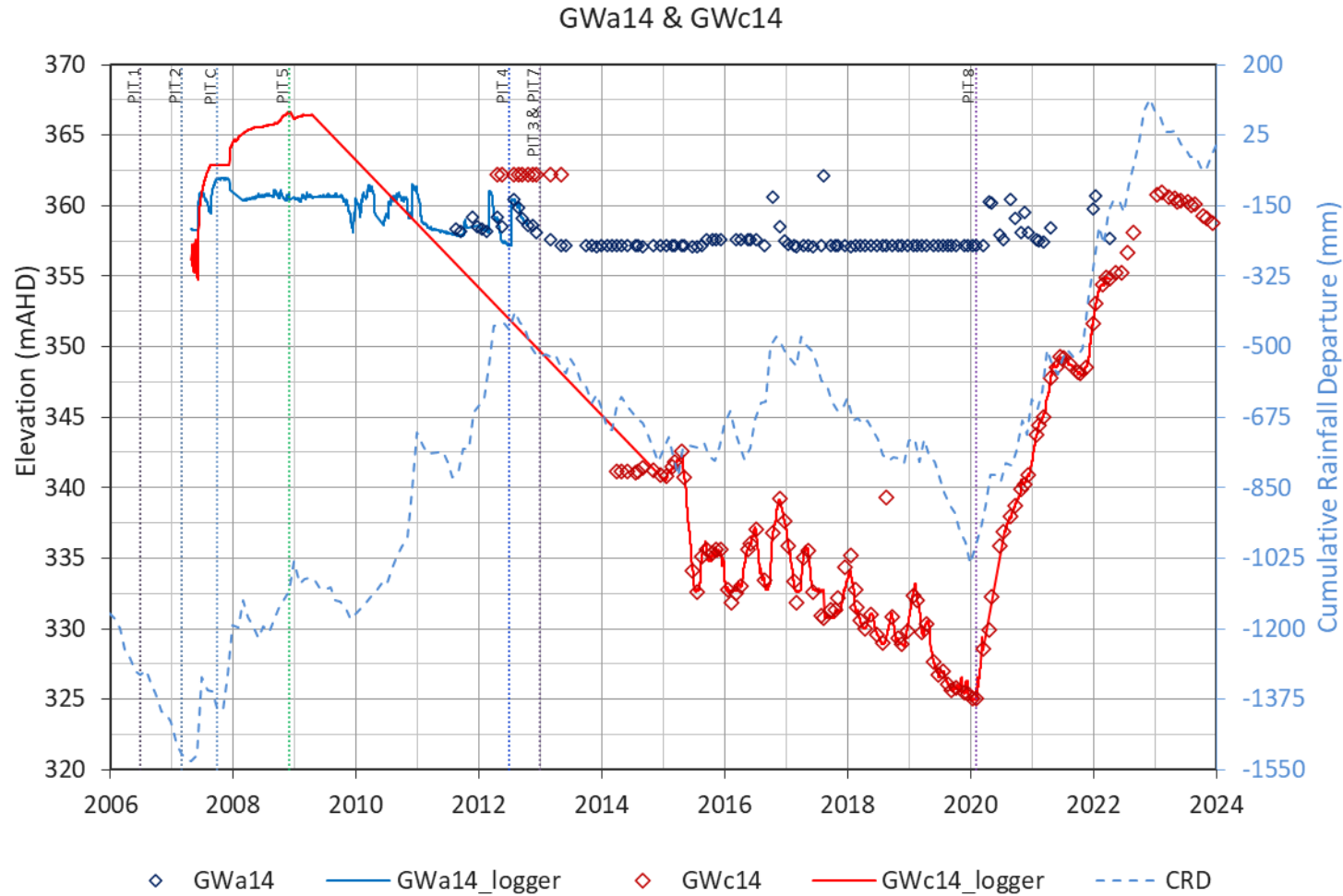


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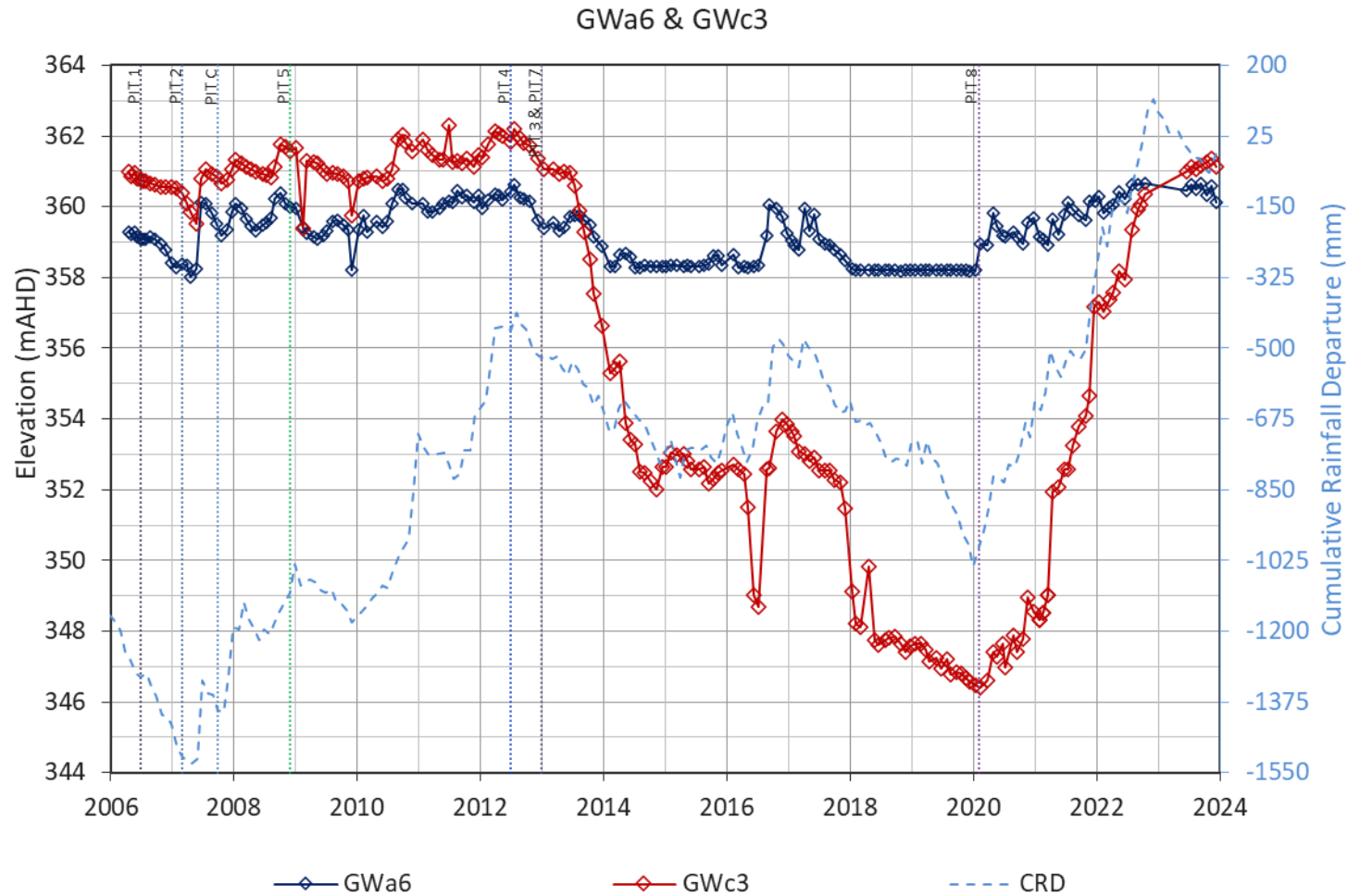


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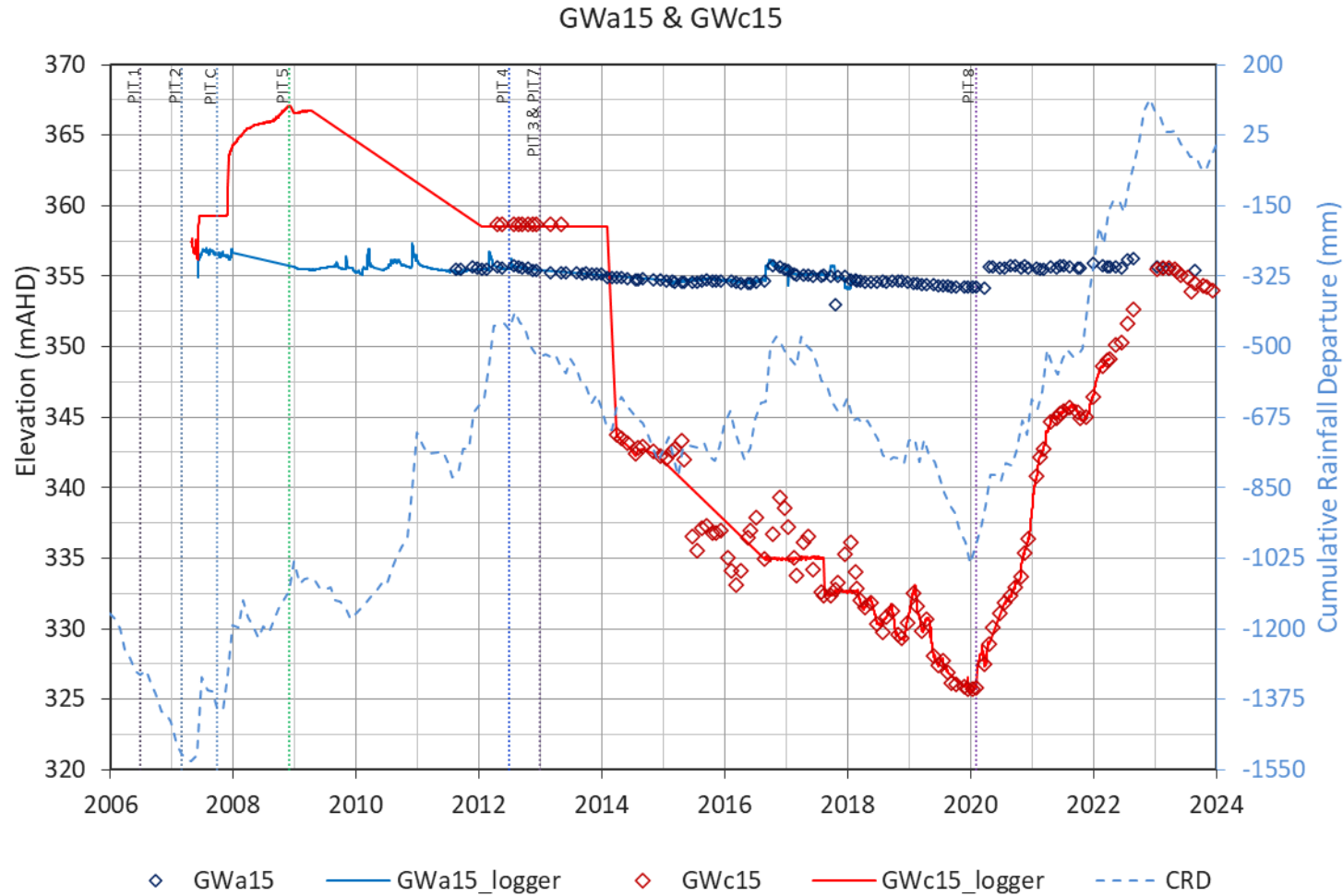


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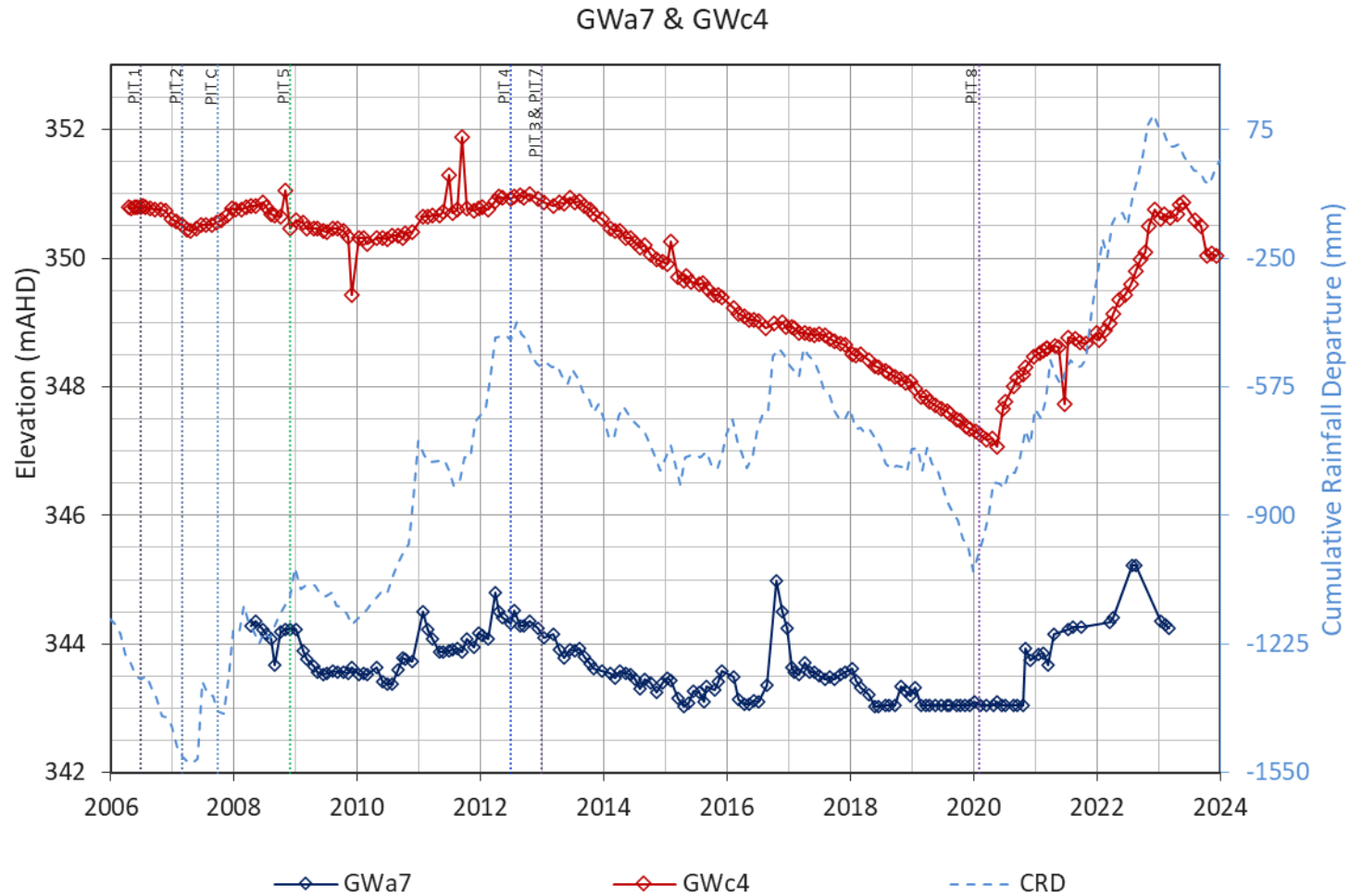


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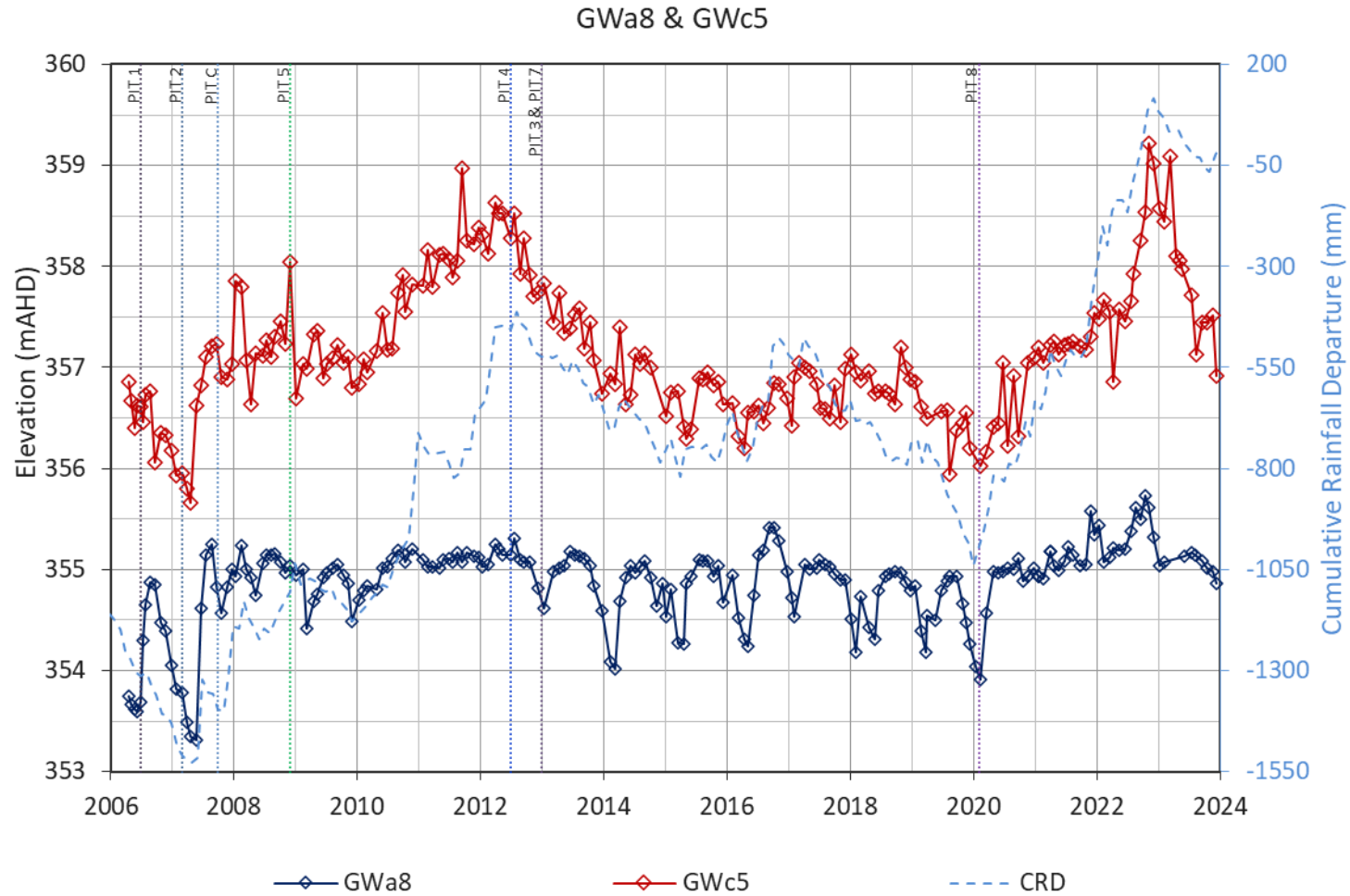


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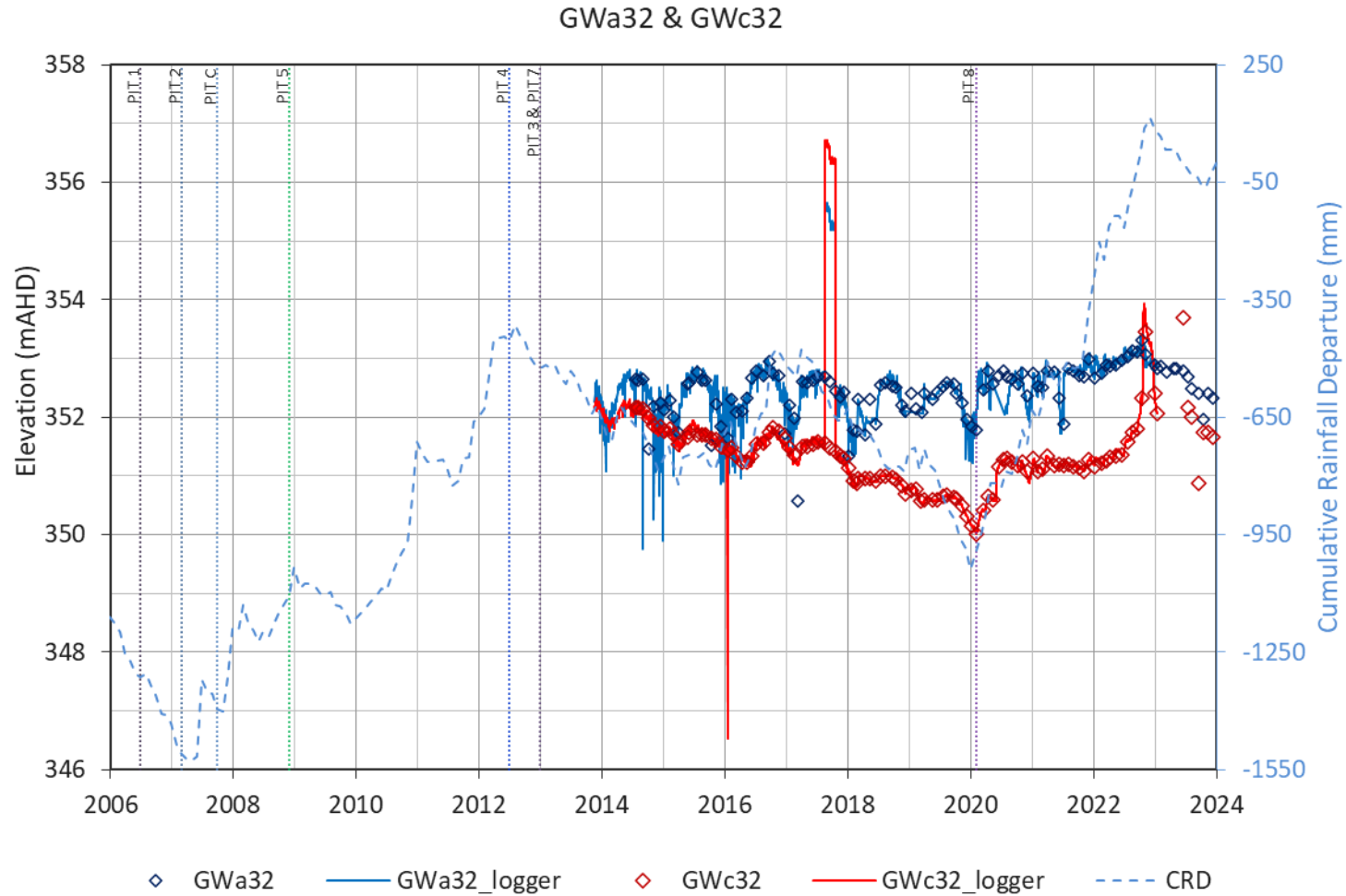


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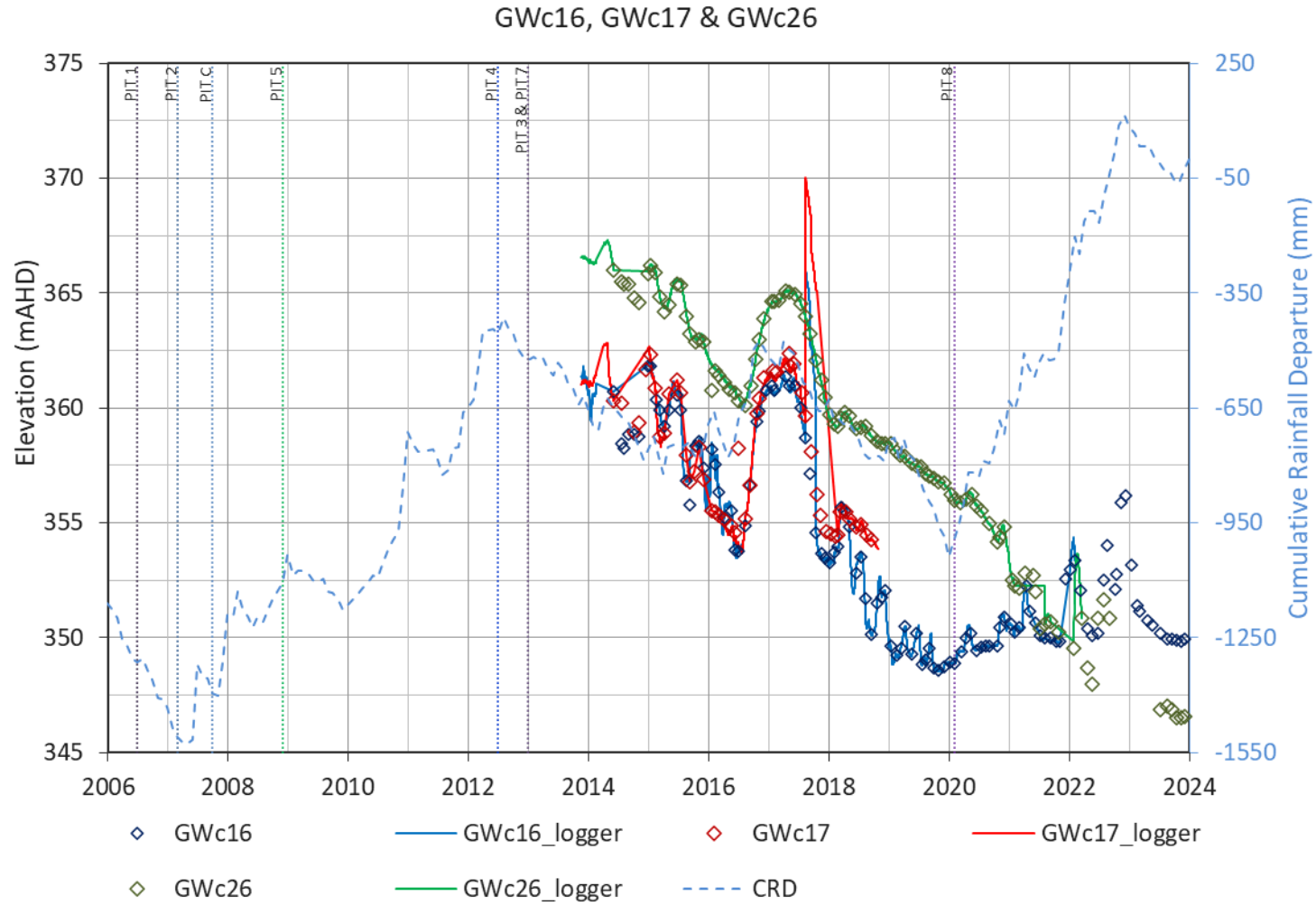


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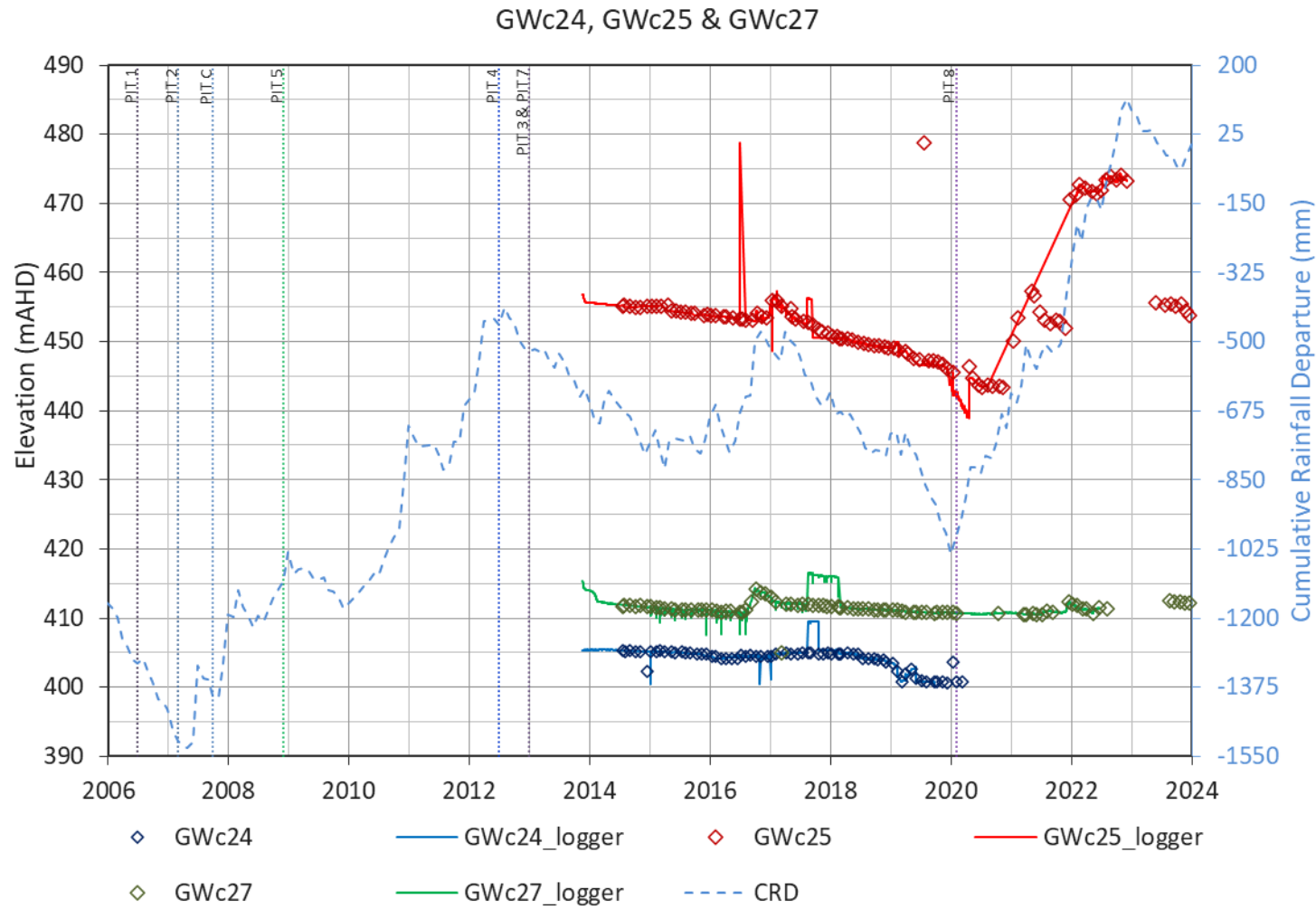


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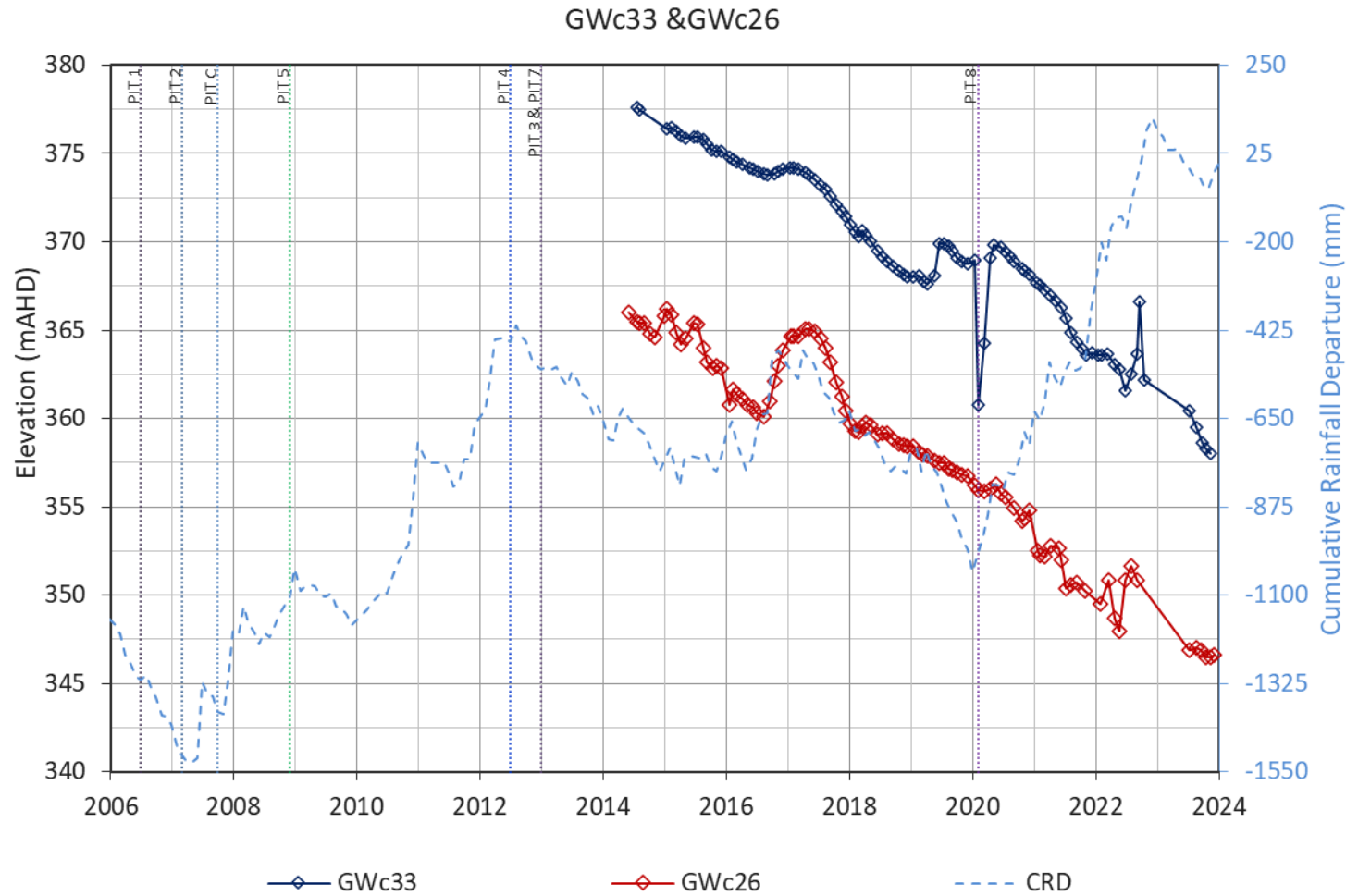


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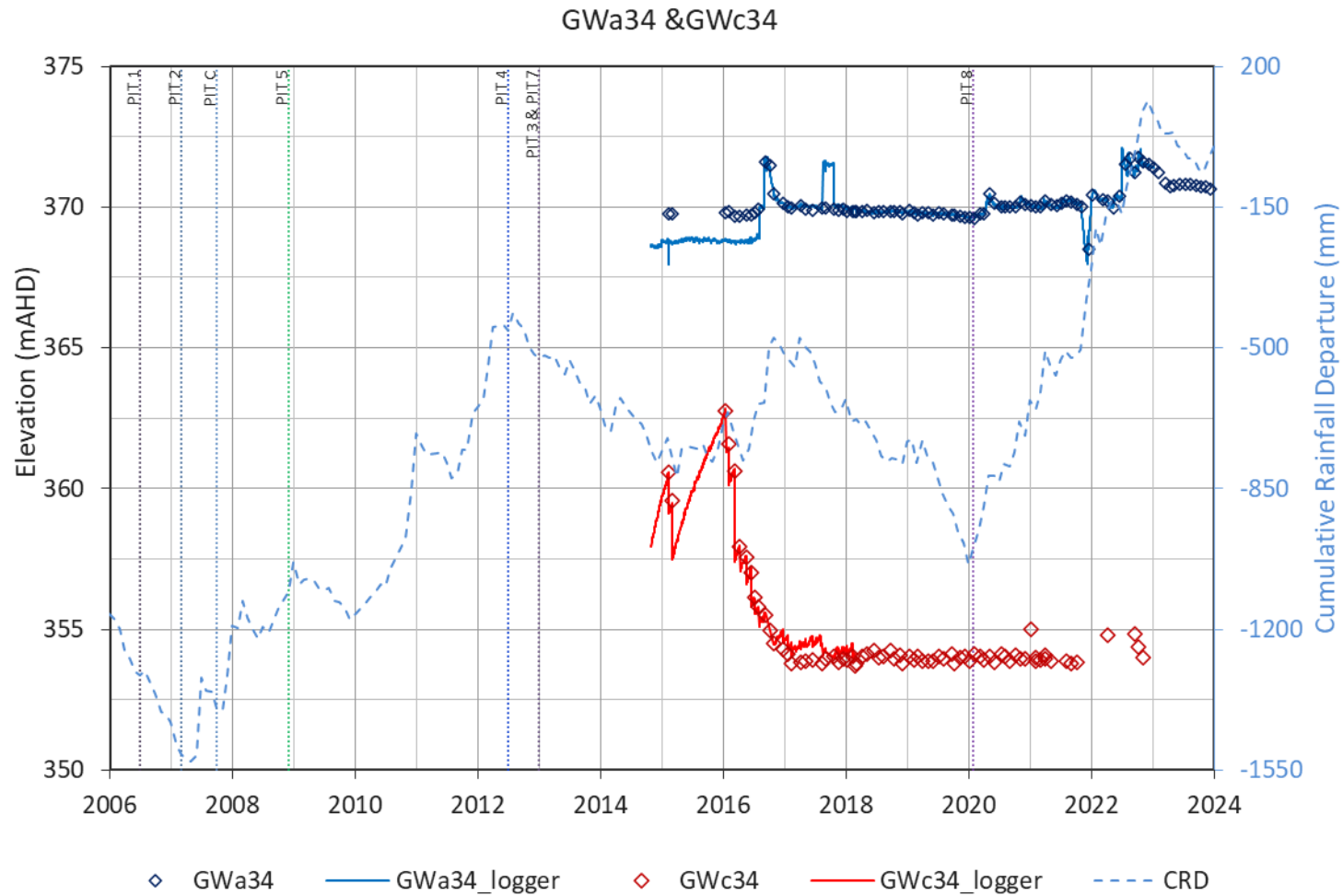
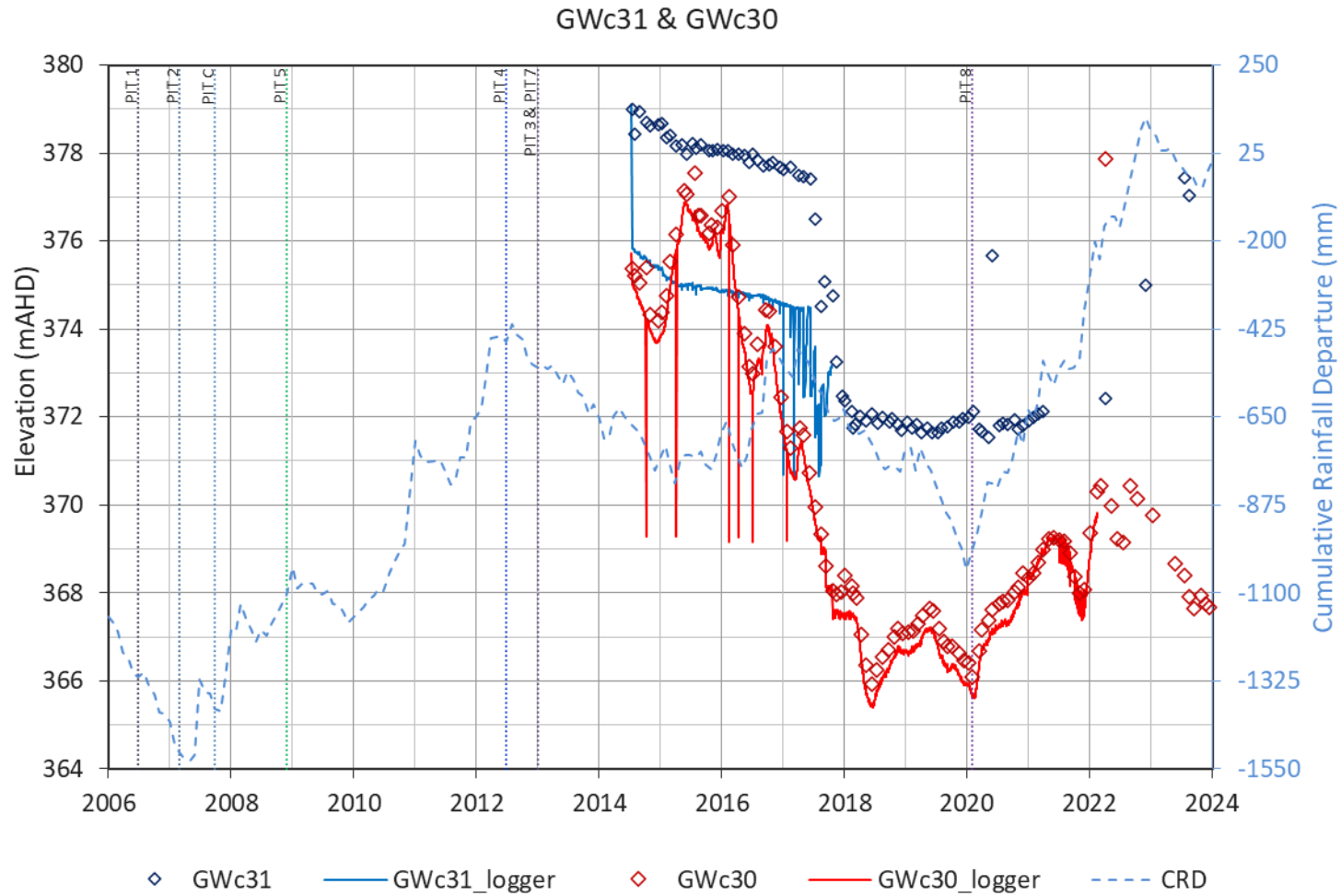


Figure A 17:





Appendix B Trigger Assessment Charts

Annual Review – Wilpinjong Coal Mine

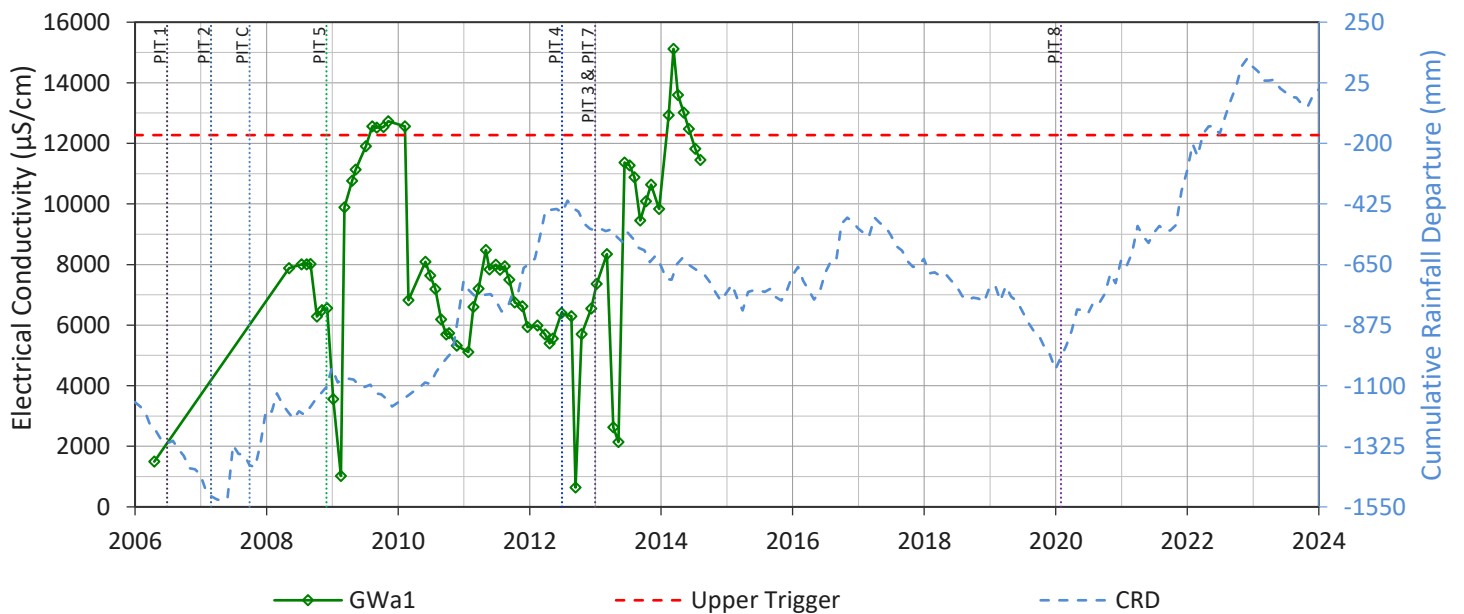
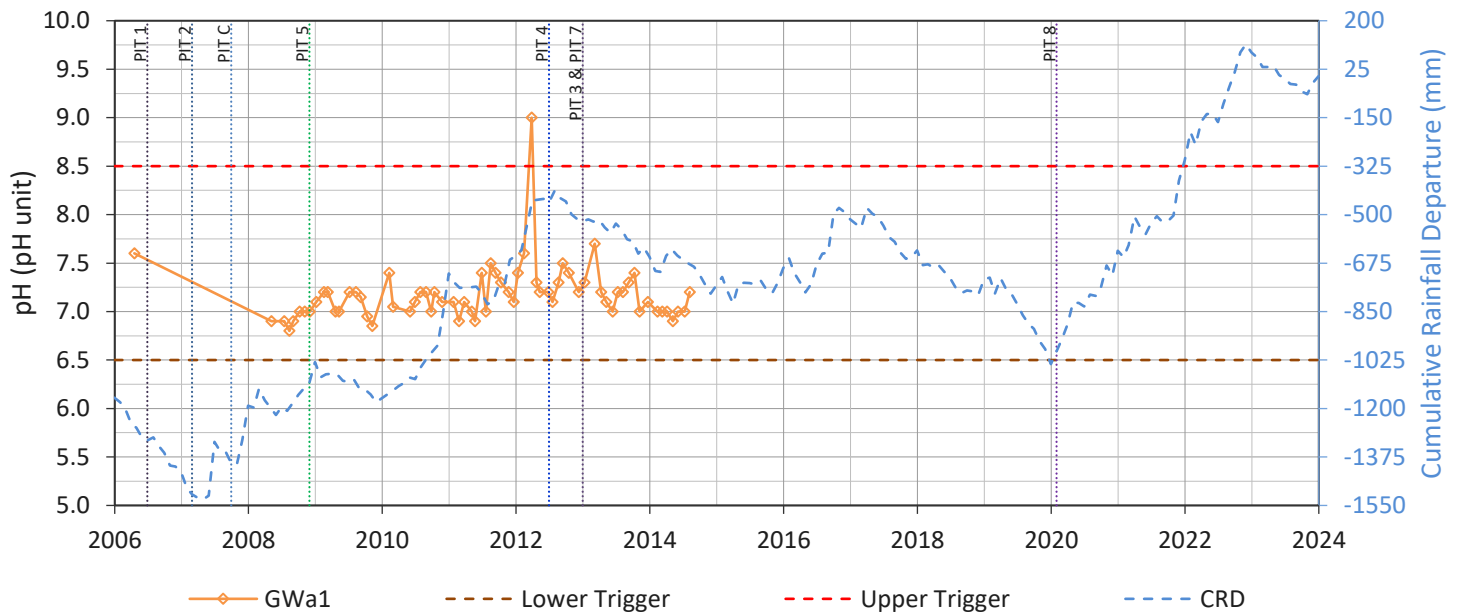
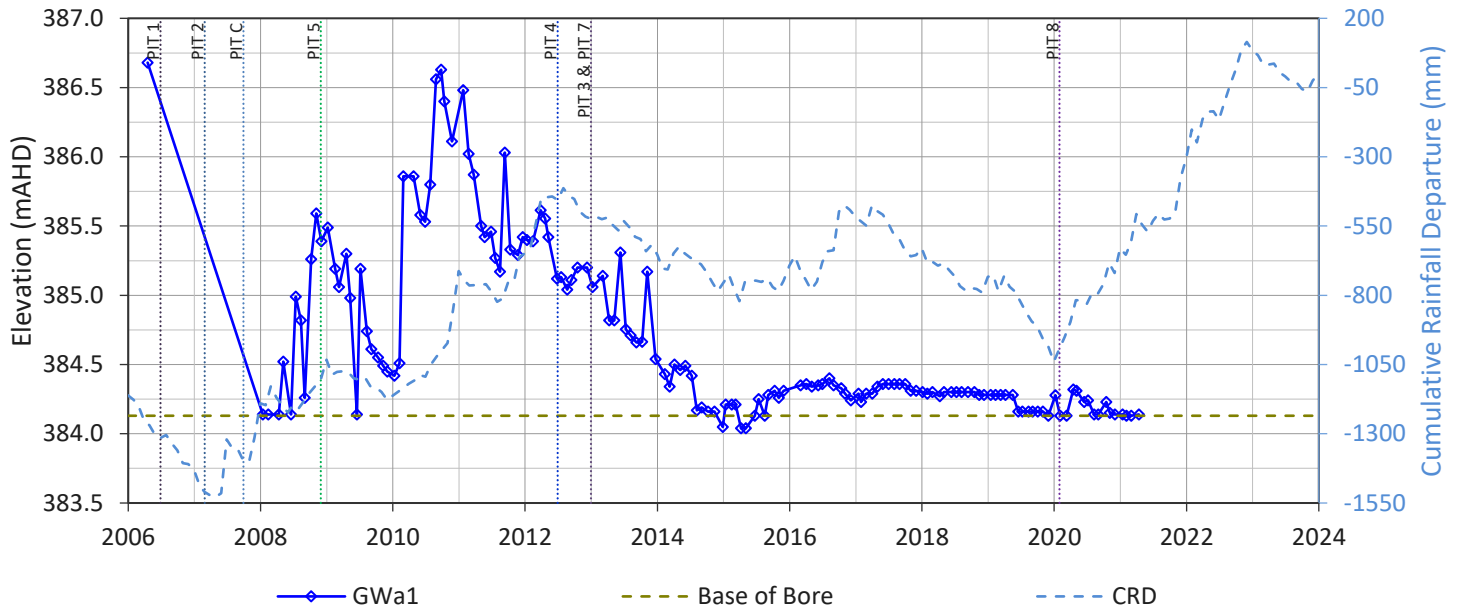
2023 Groundwater Compliance

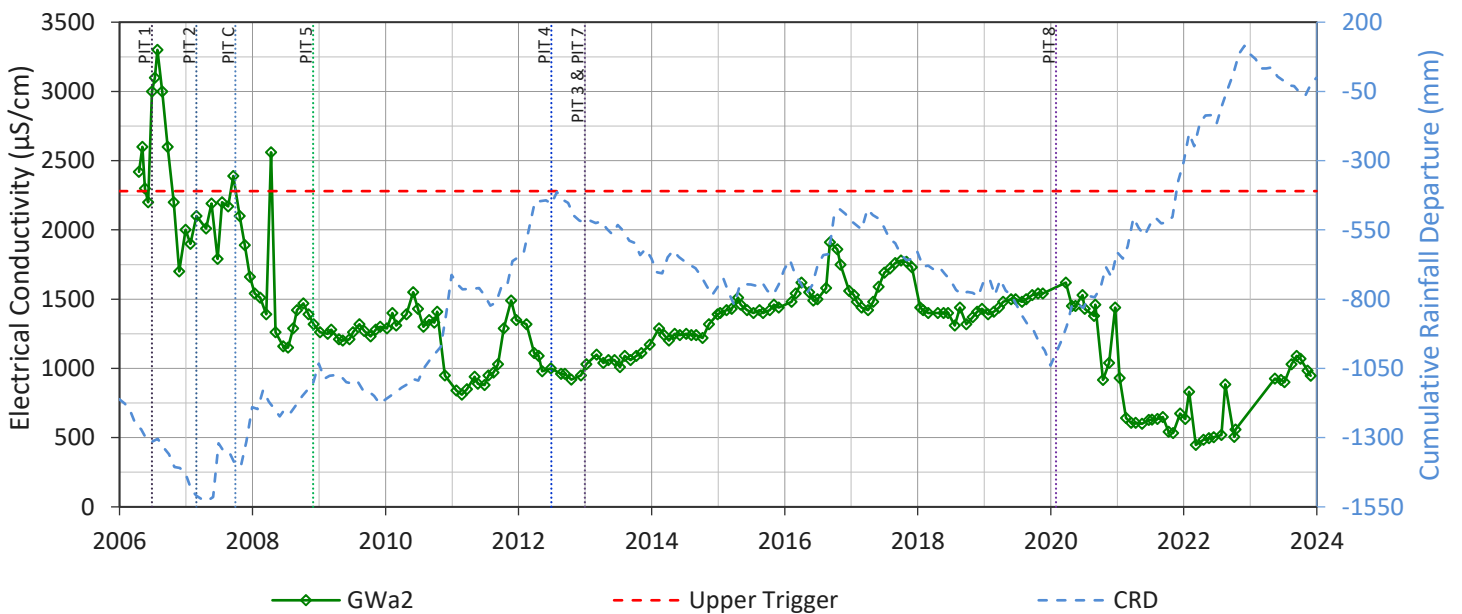
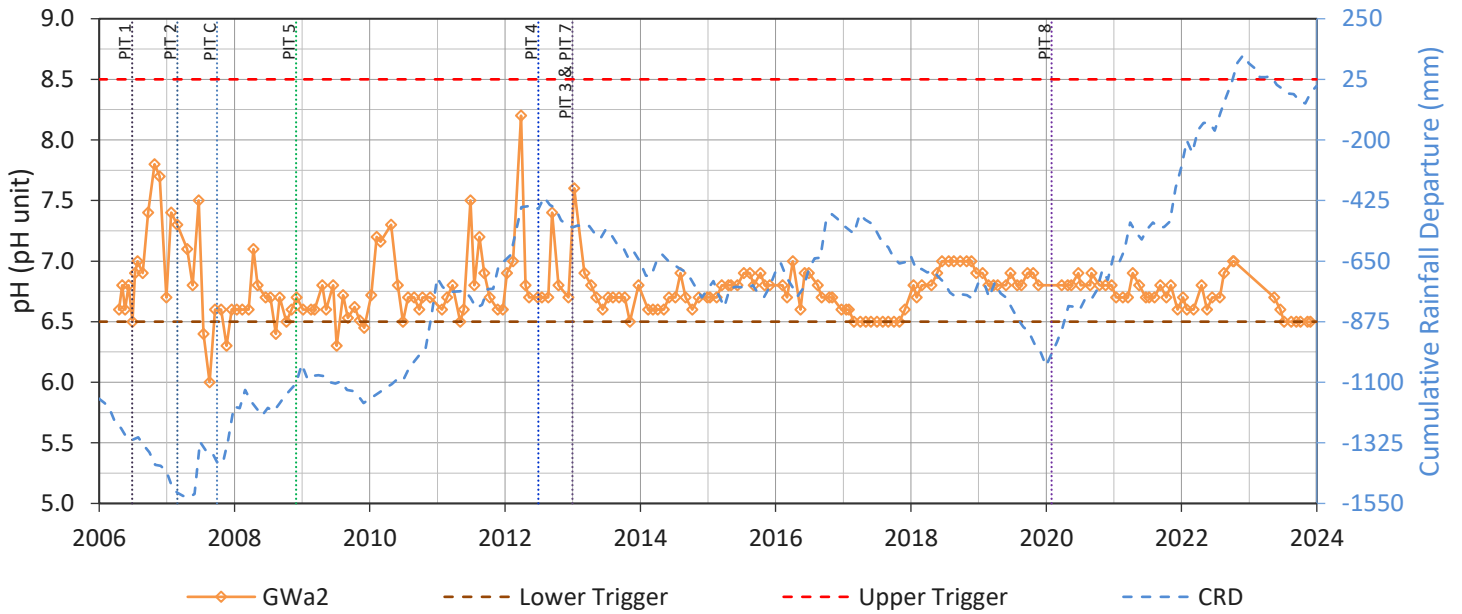
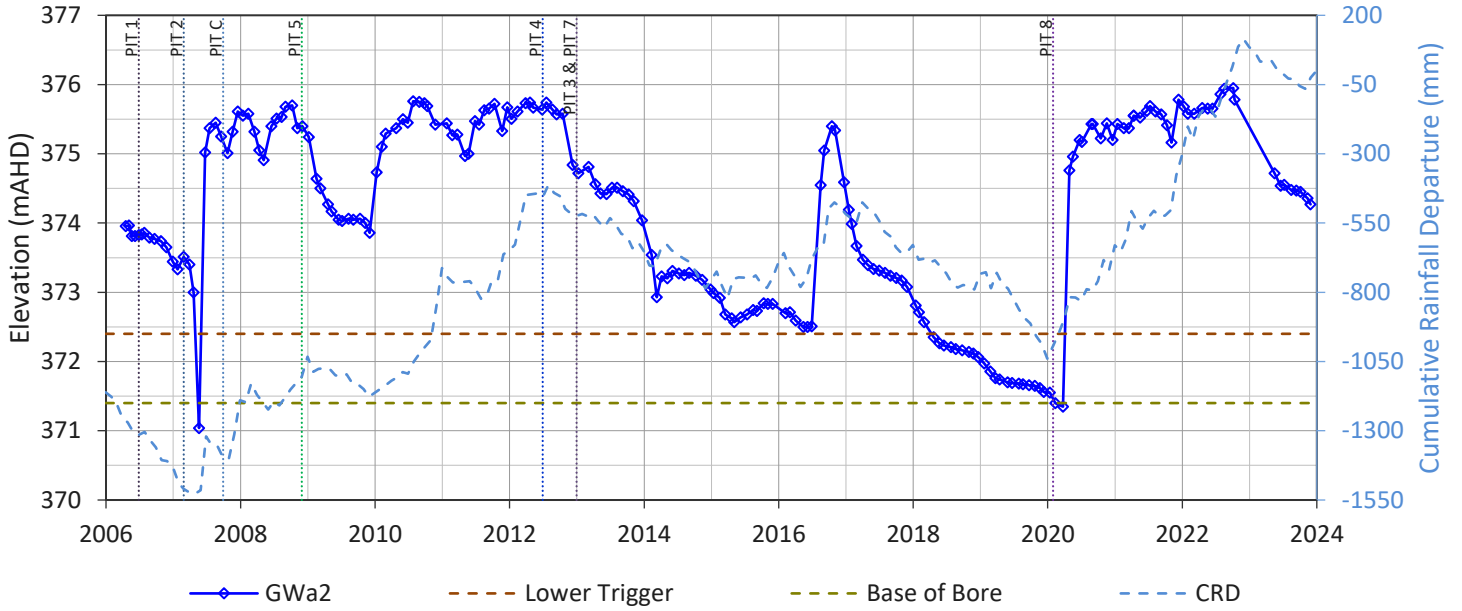
Wilpinjong Coal Mine

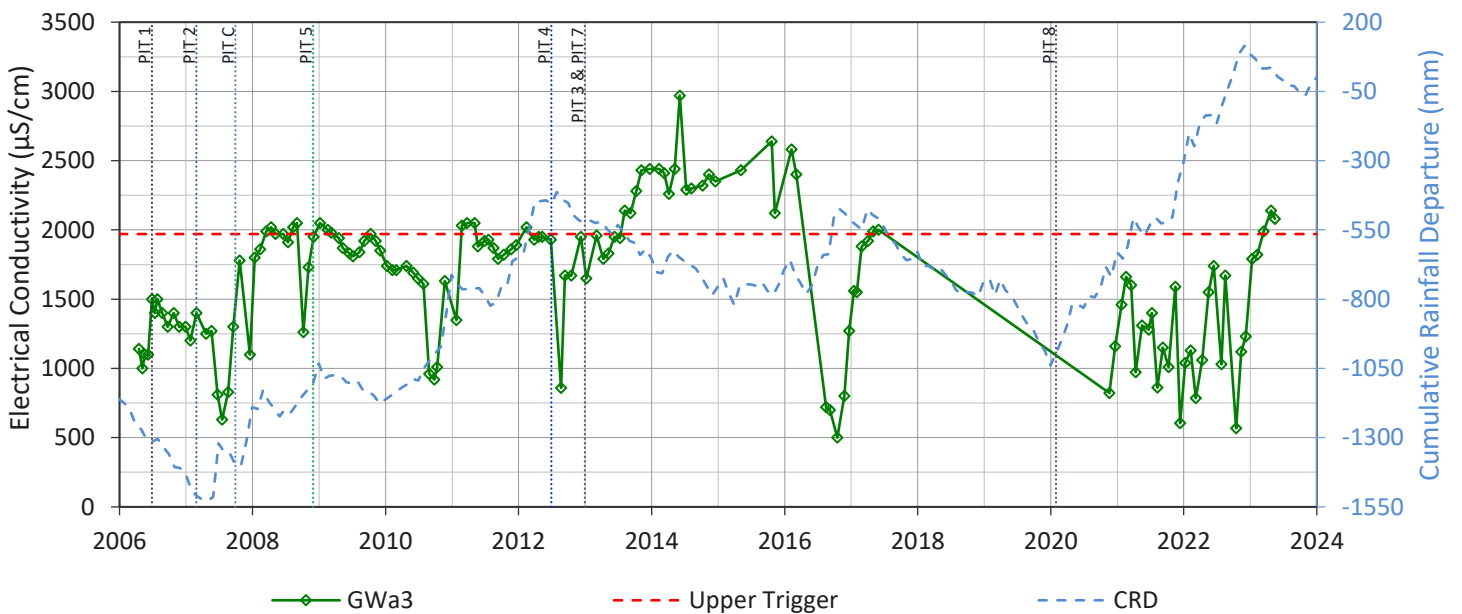
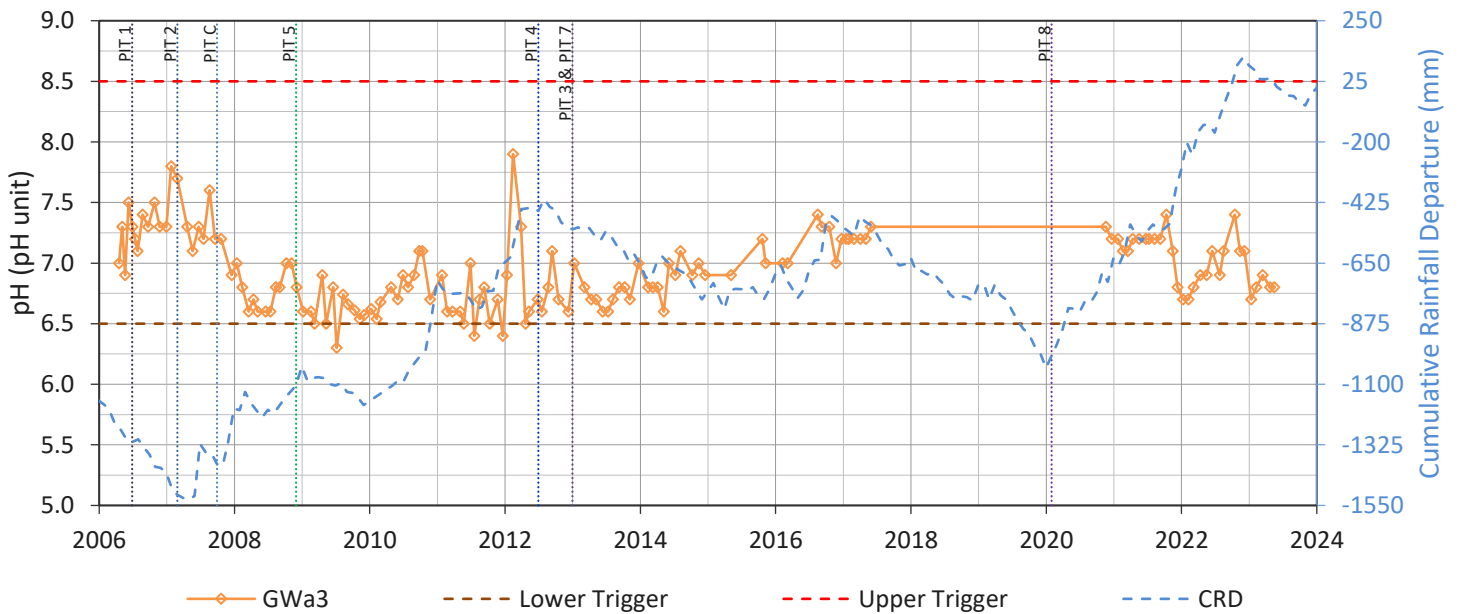
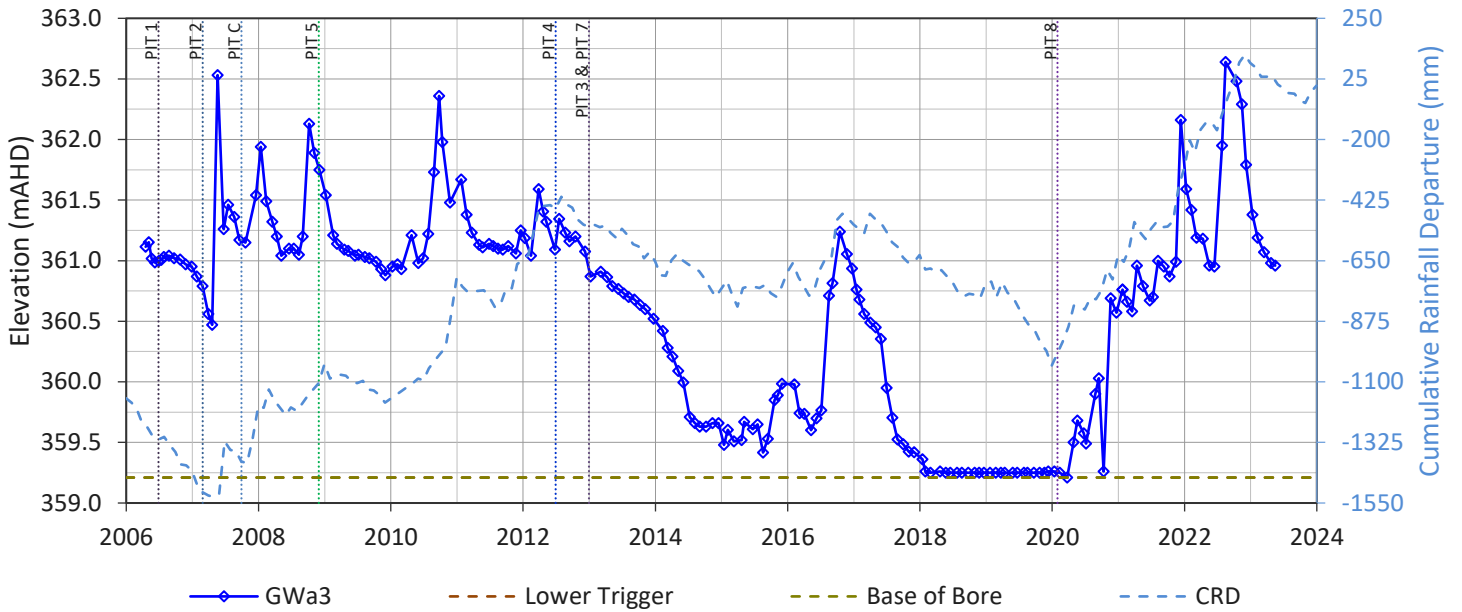
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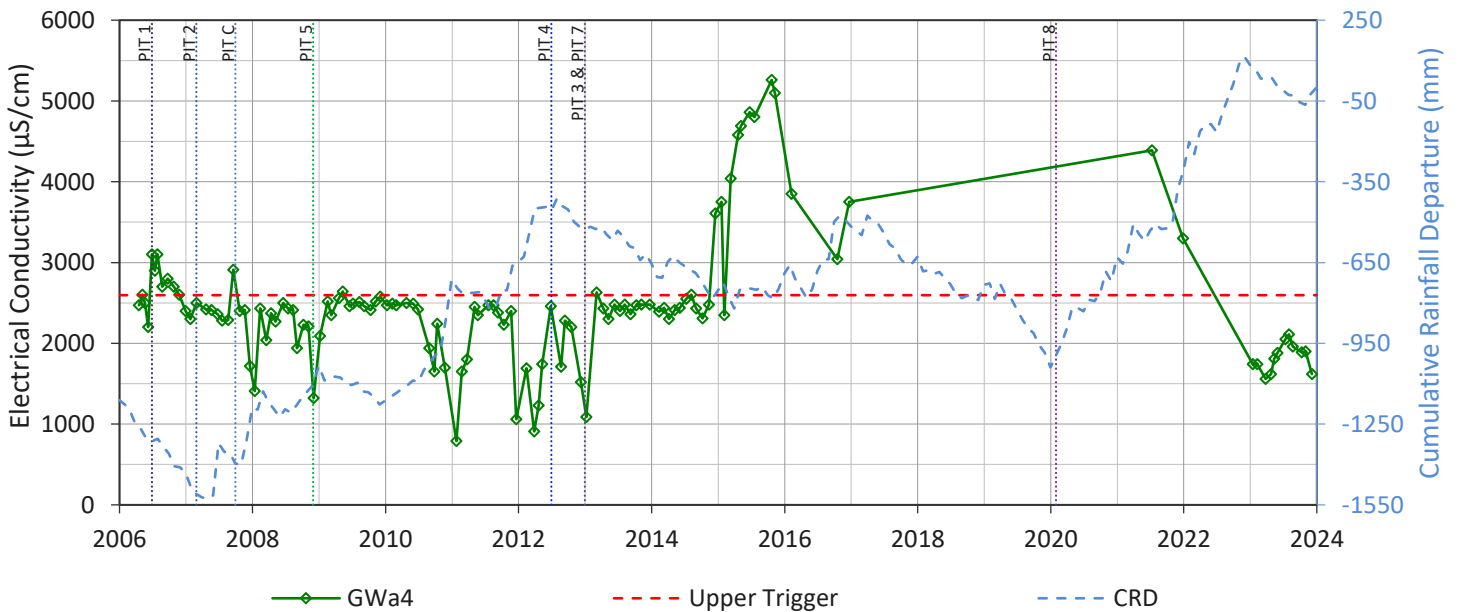
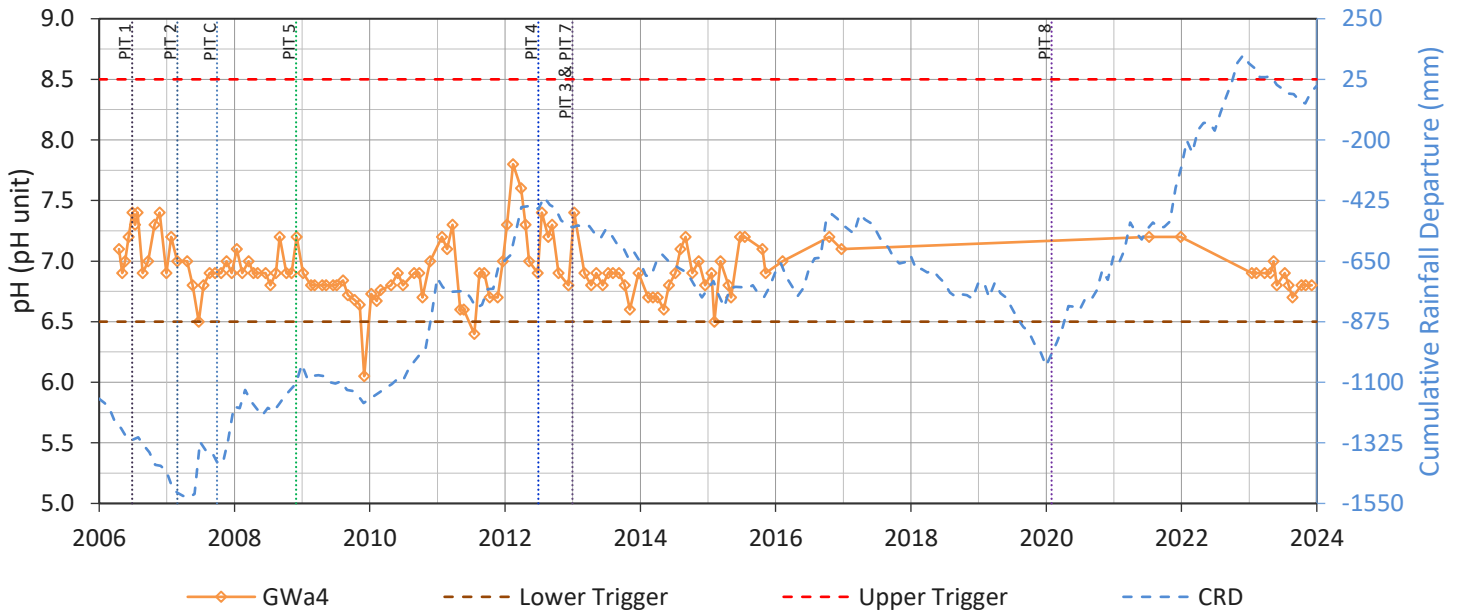
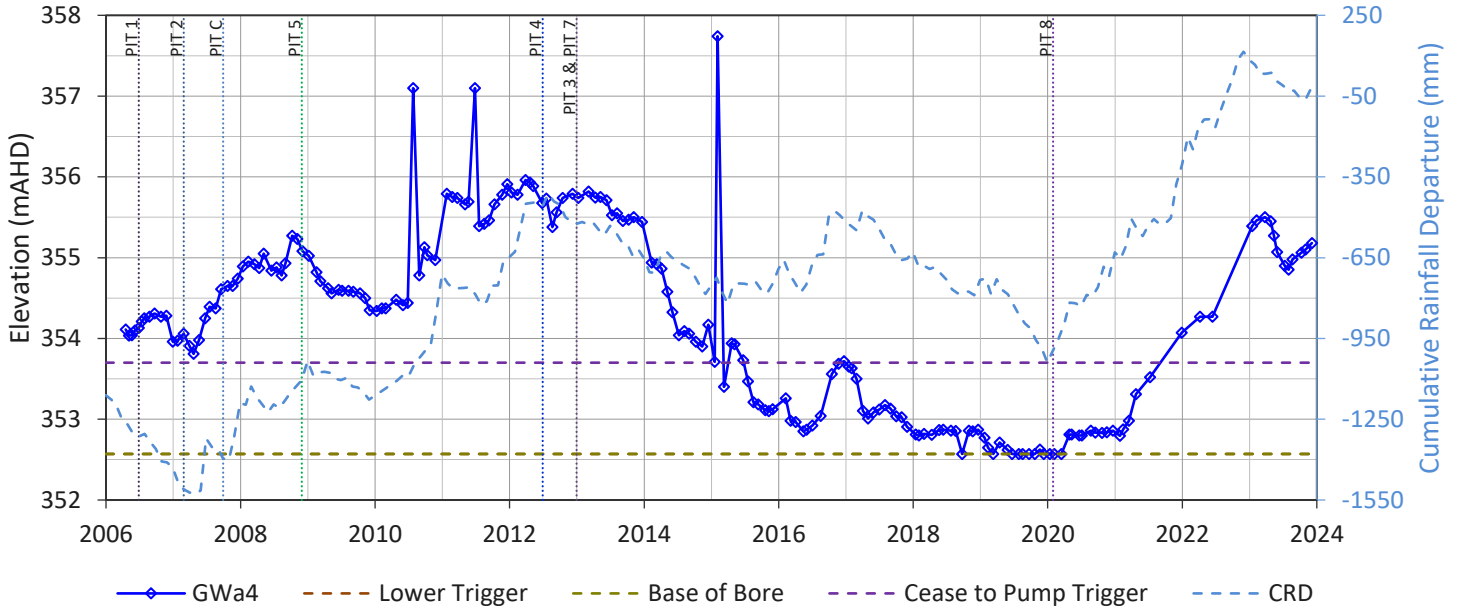
28 March 2024

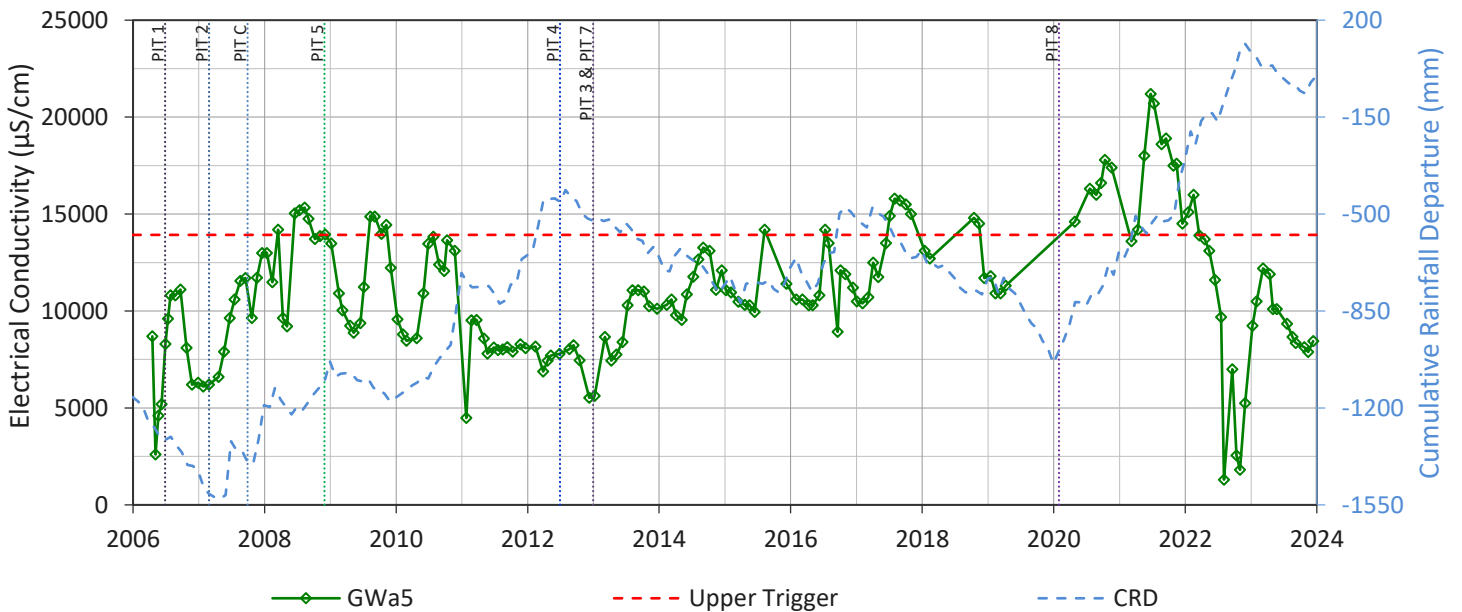
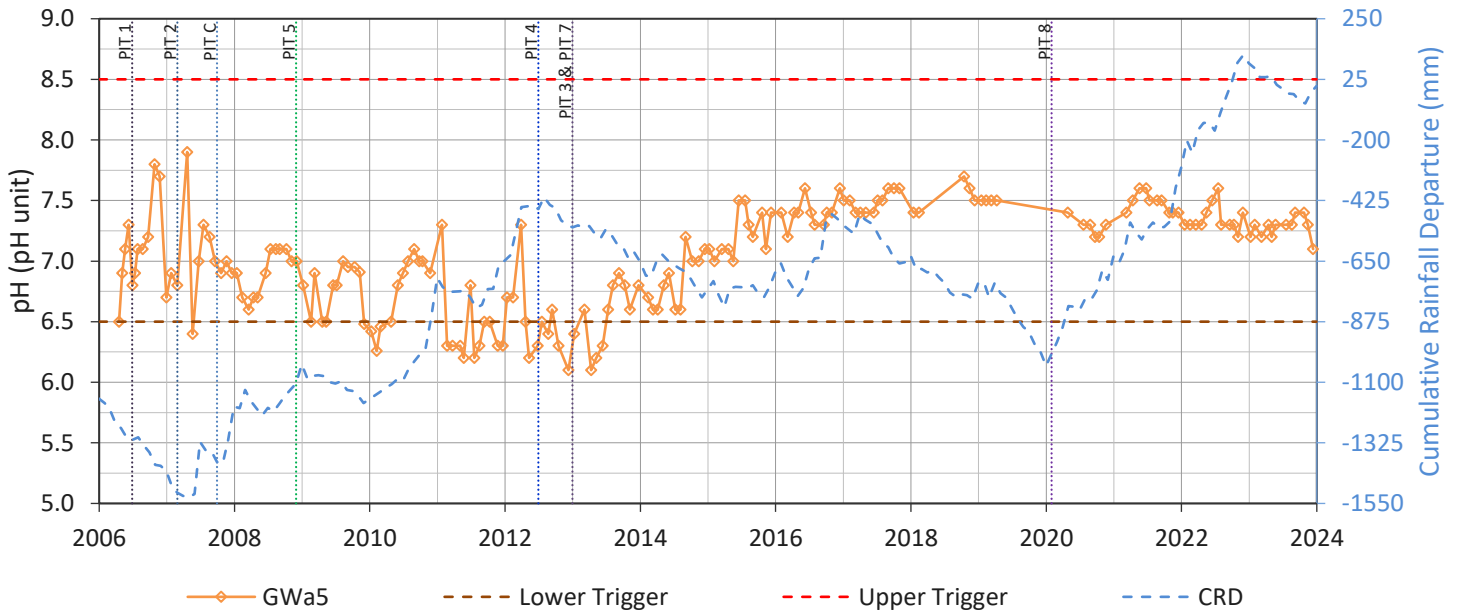
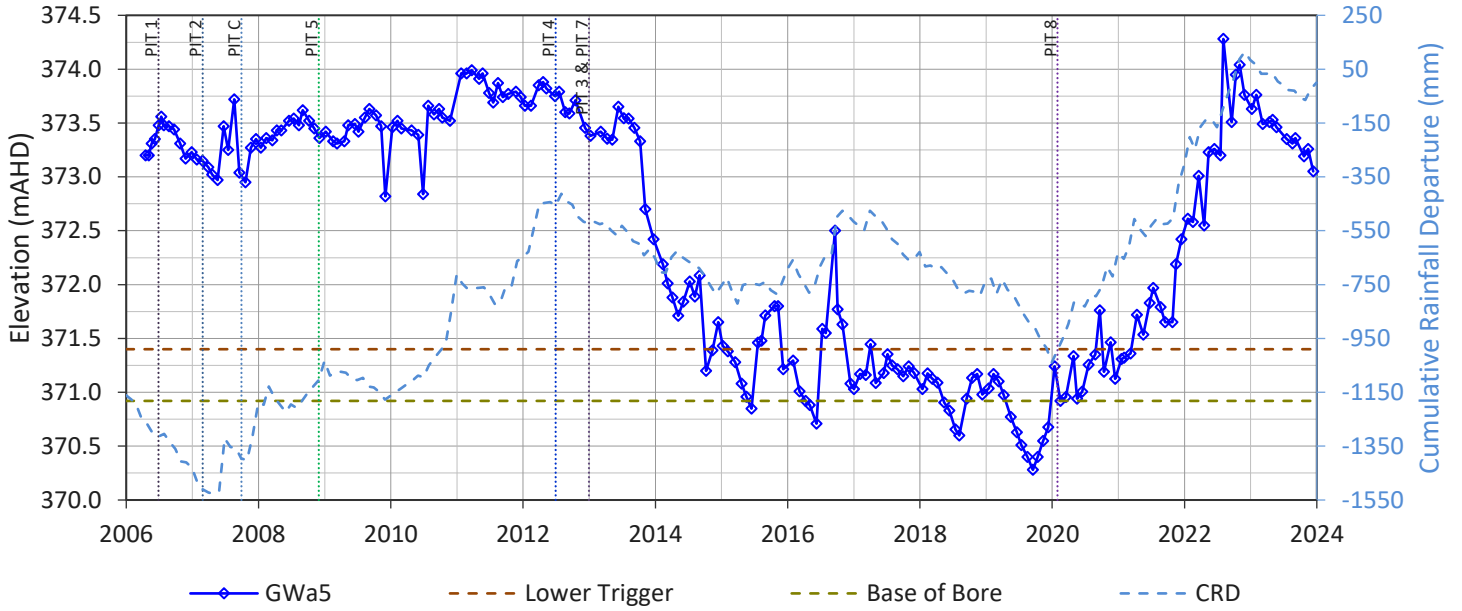


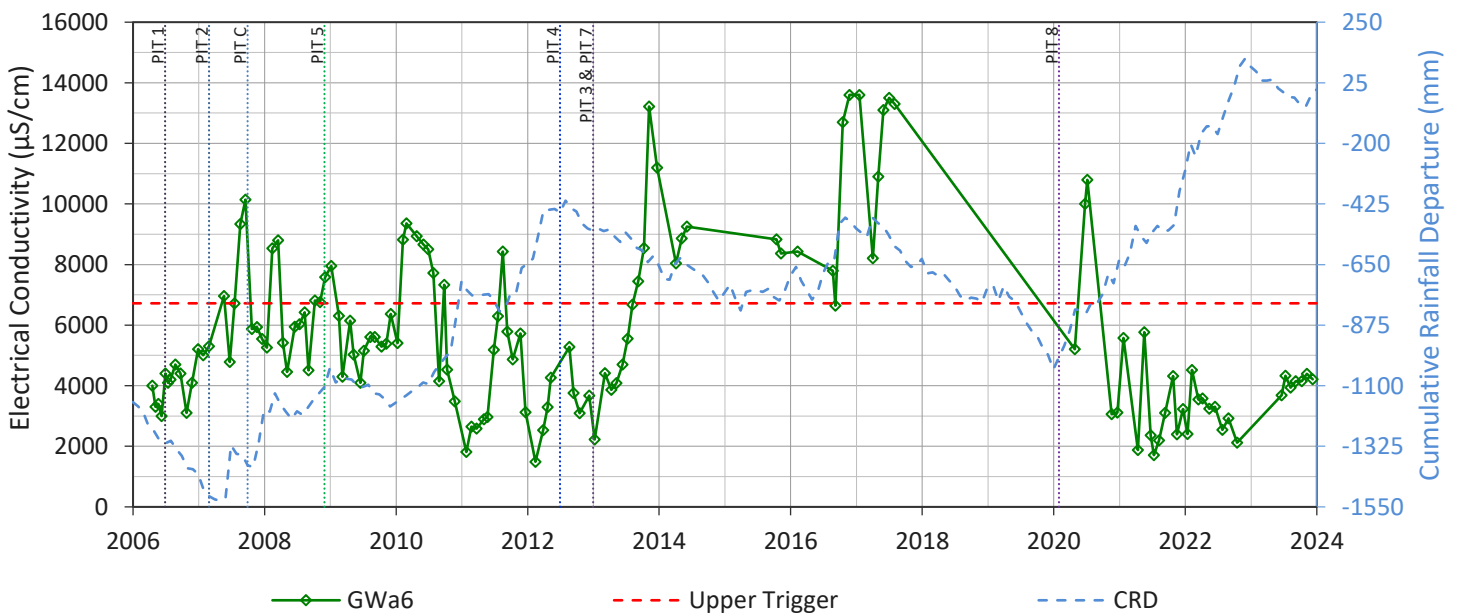
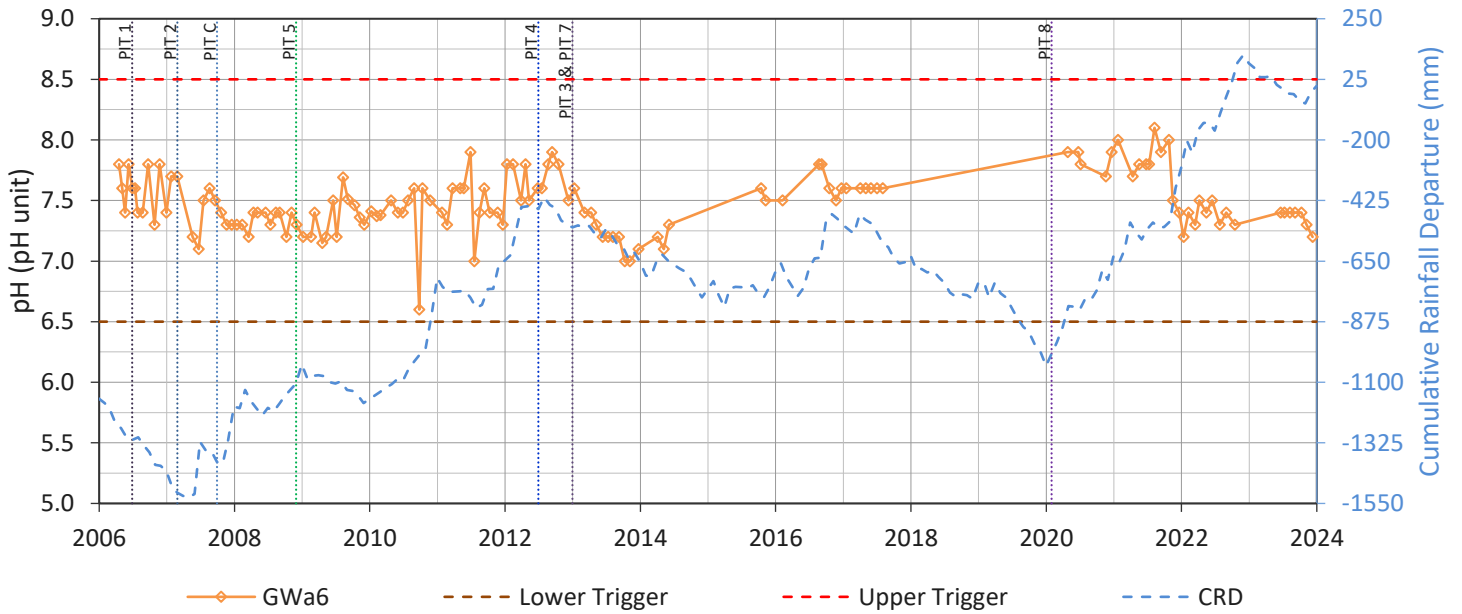
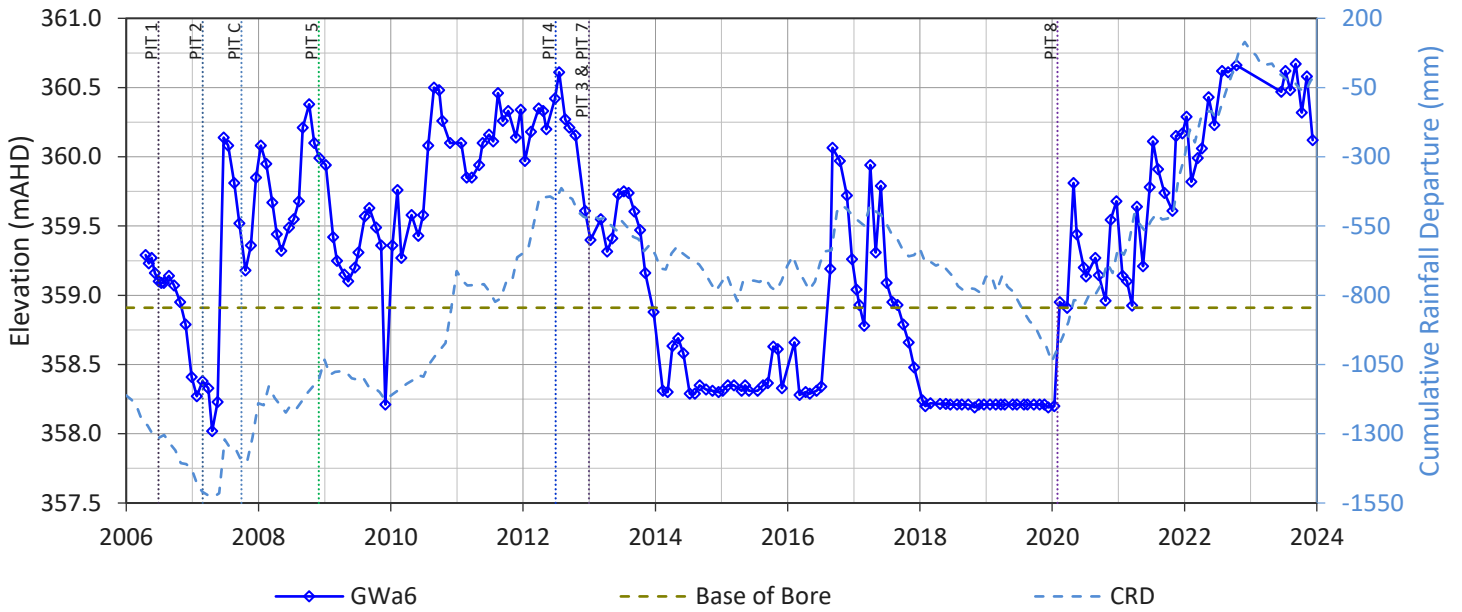


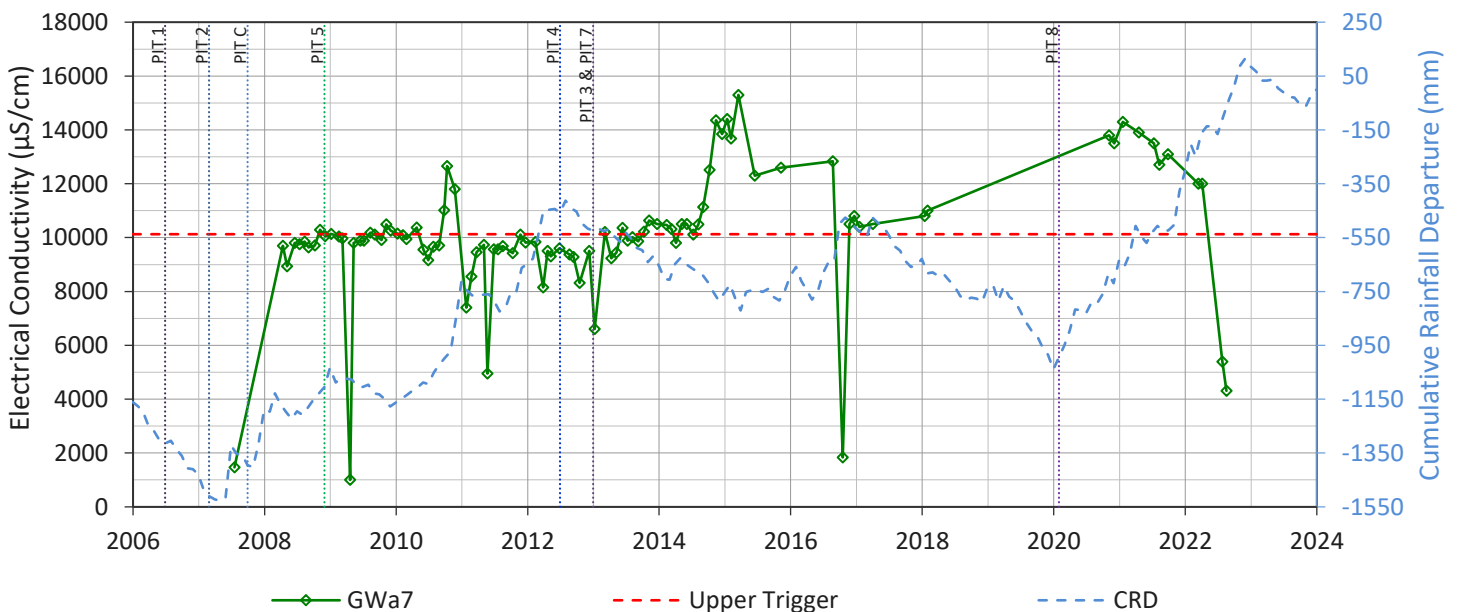
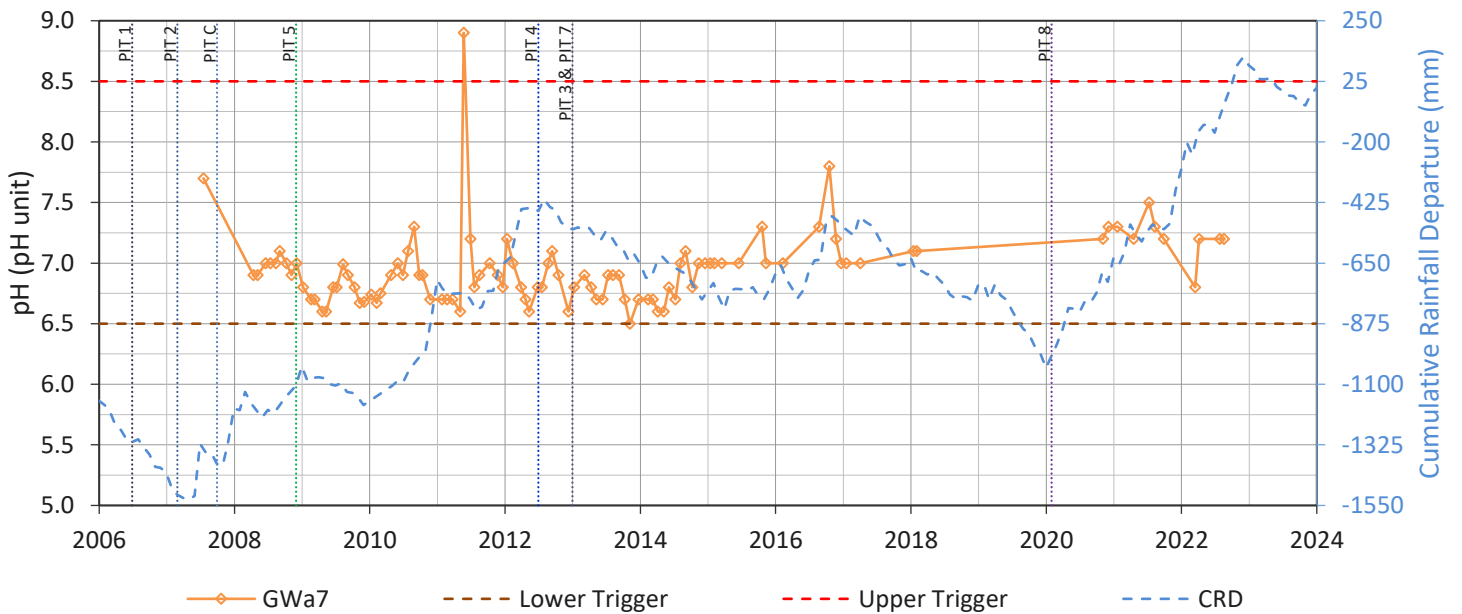
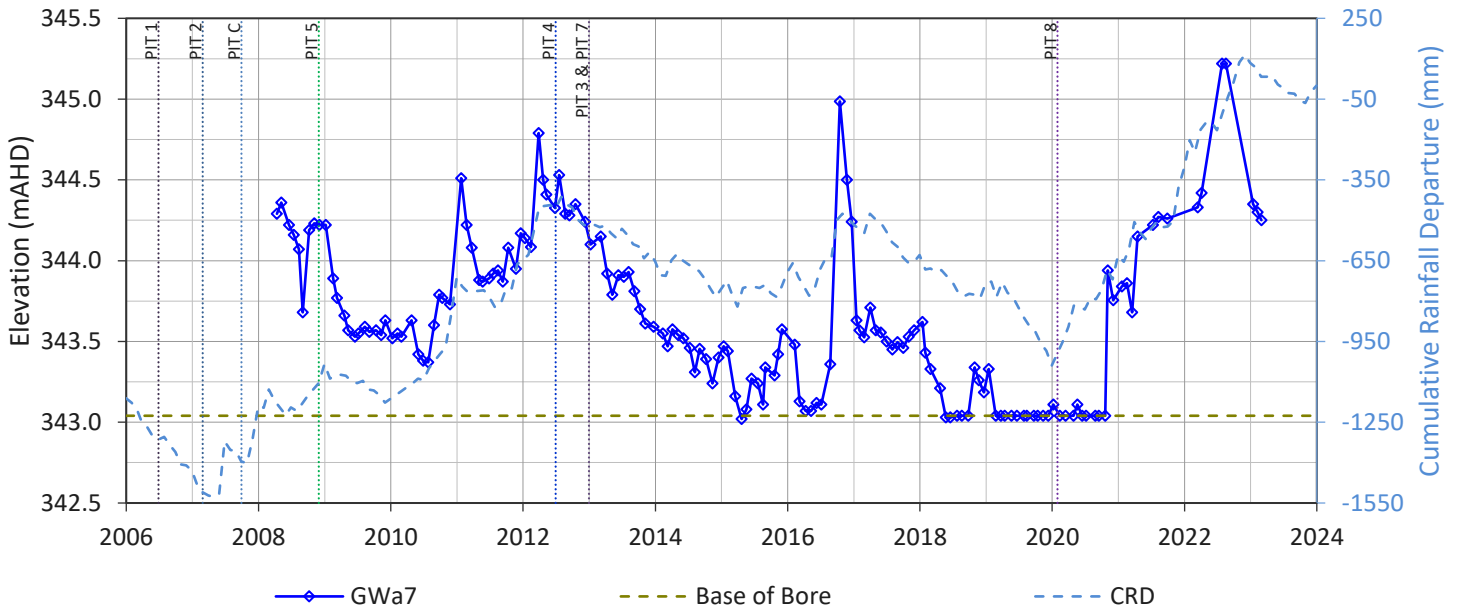


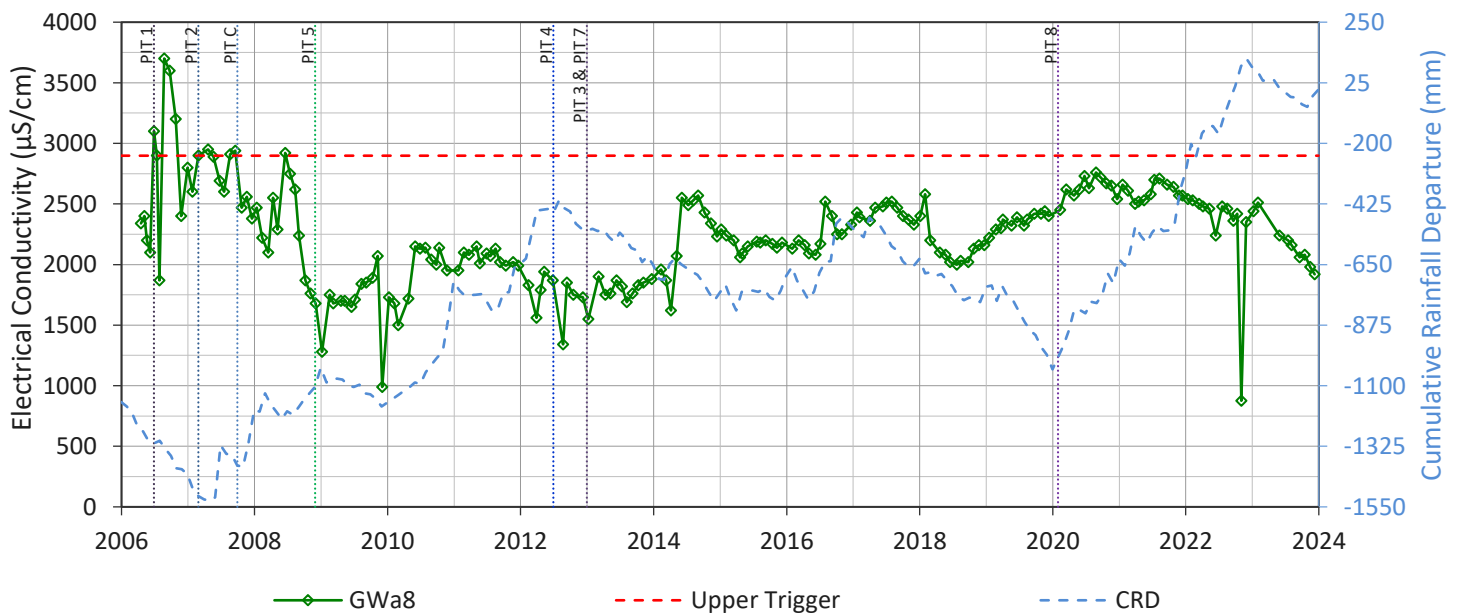
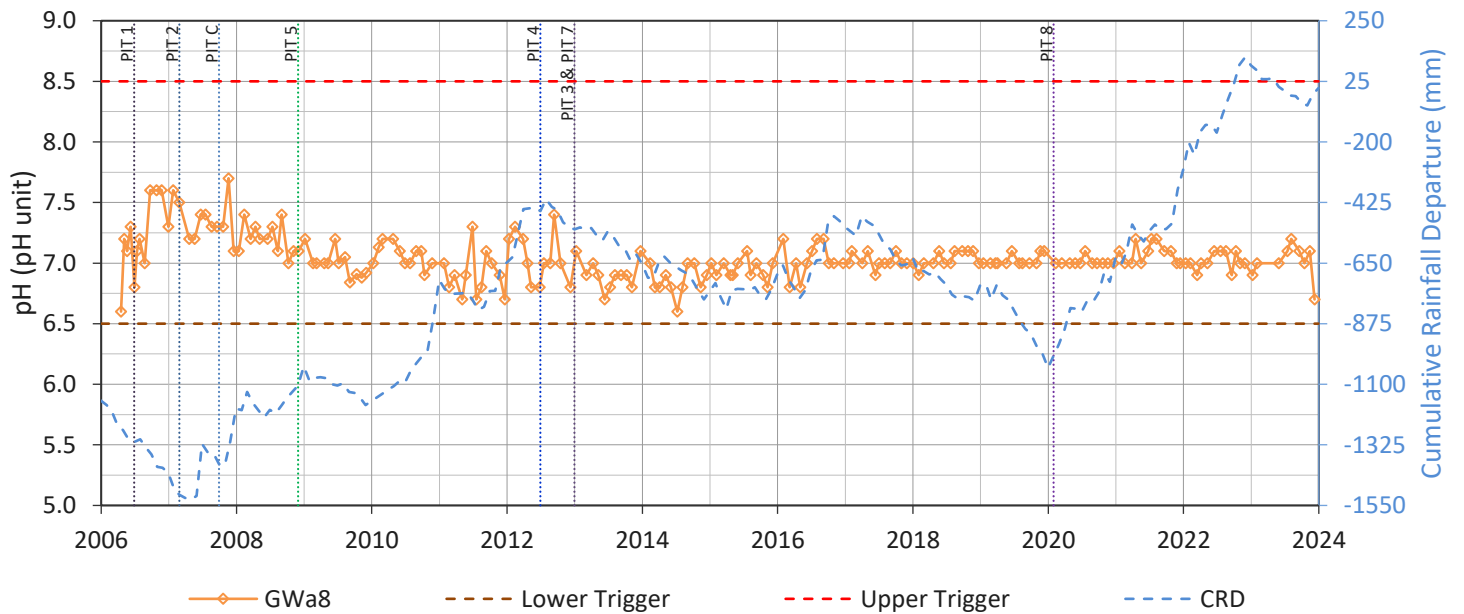
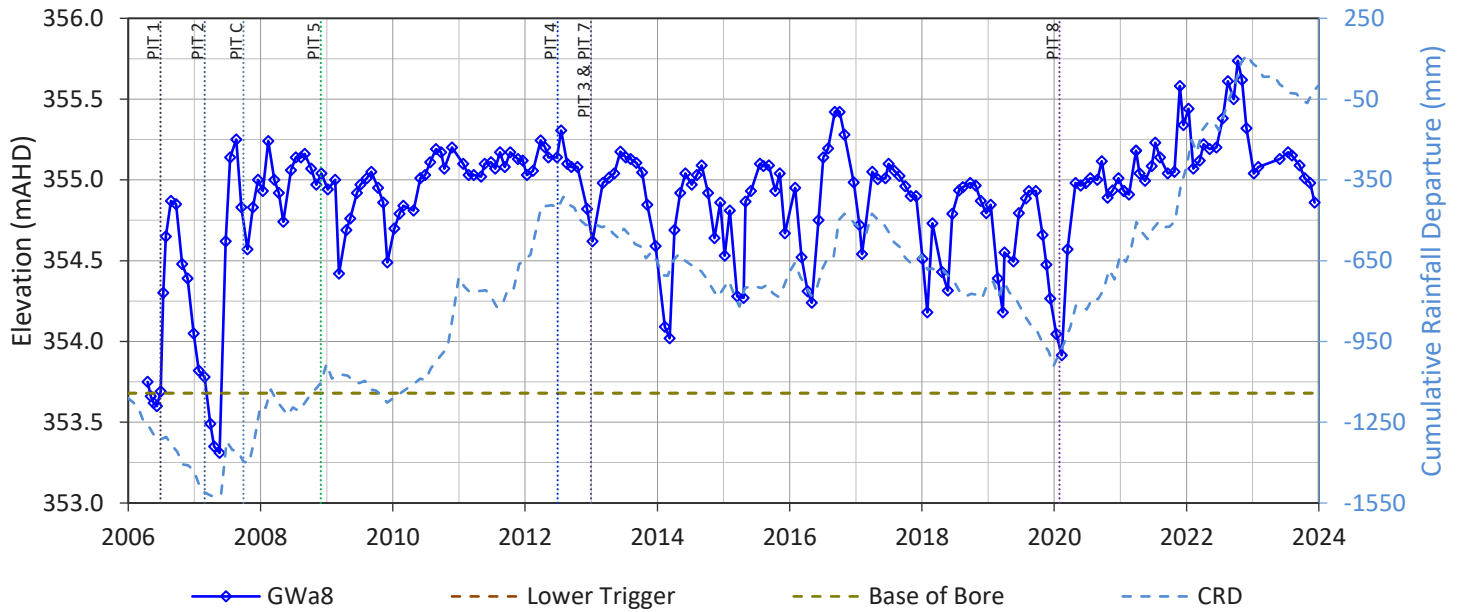


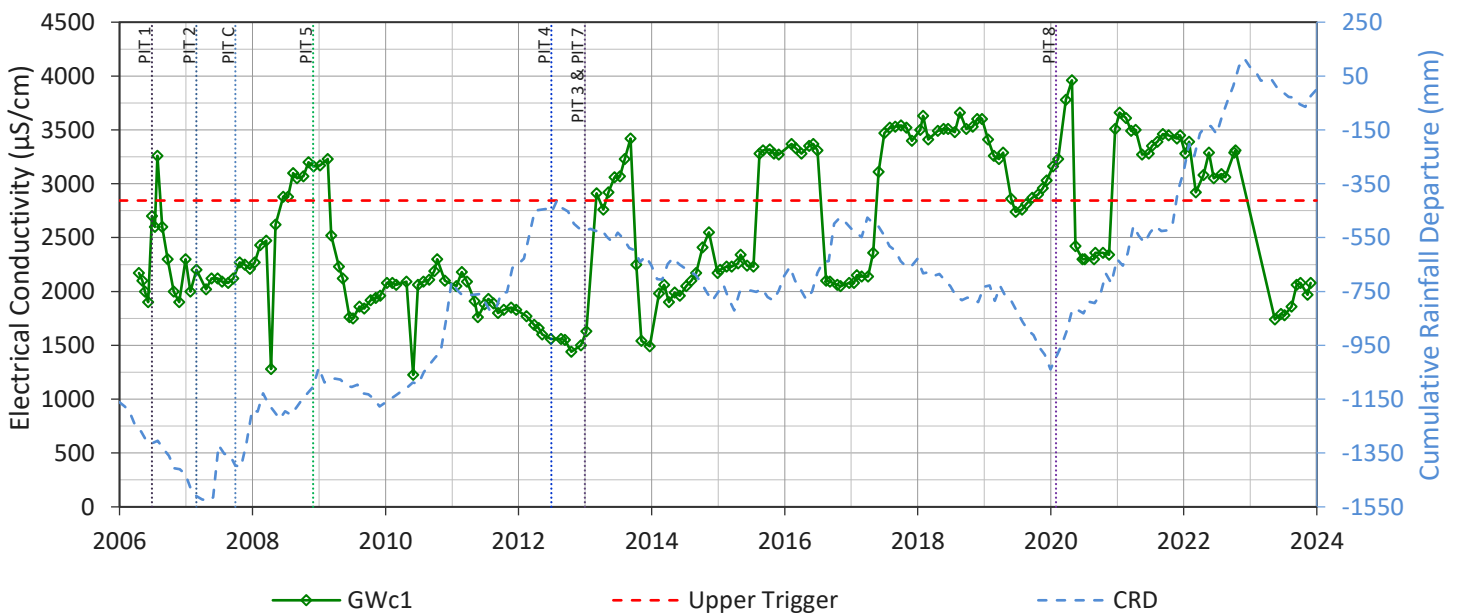
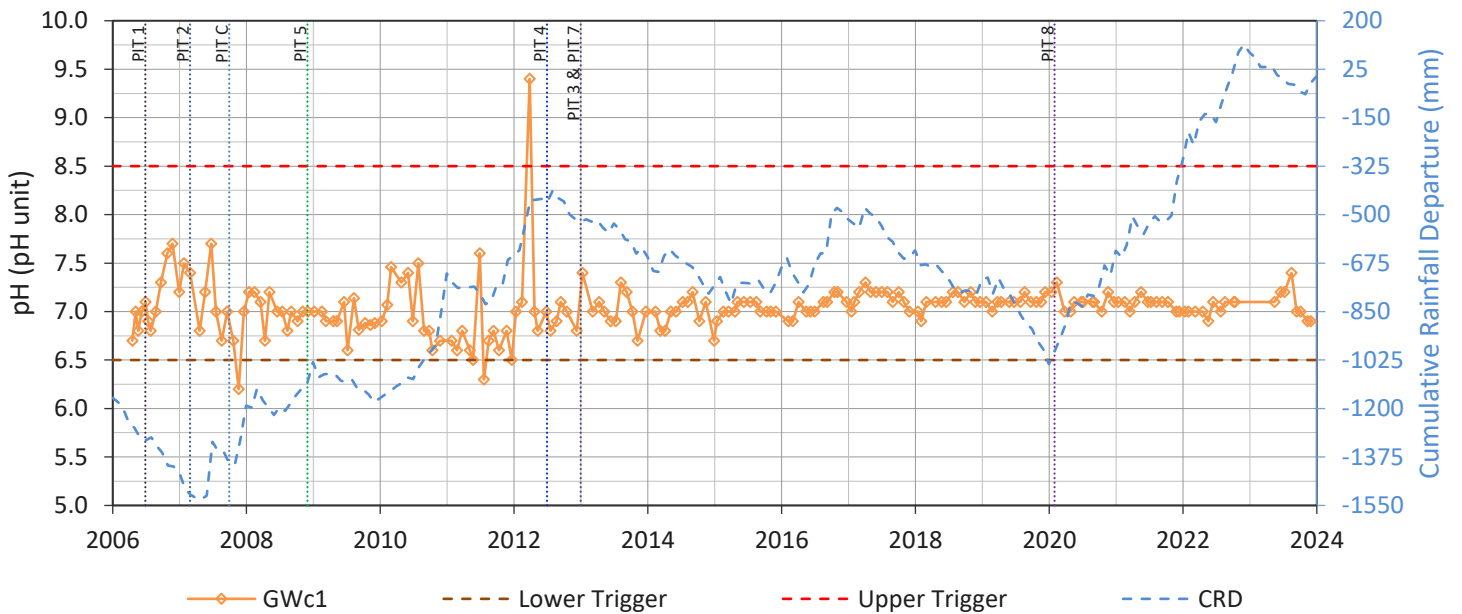
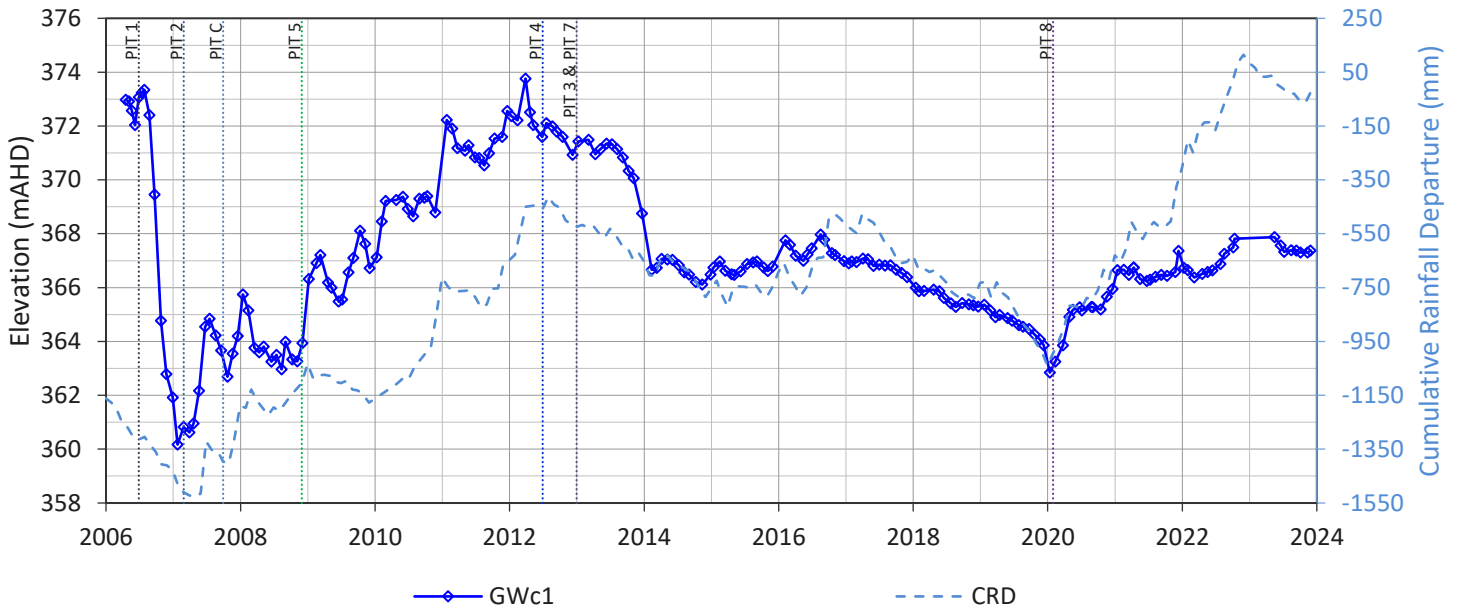


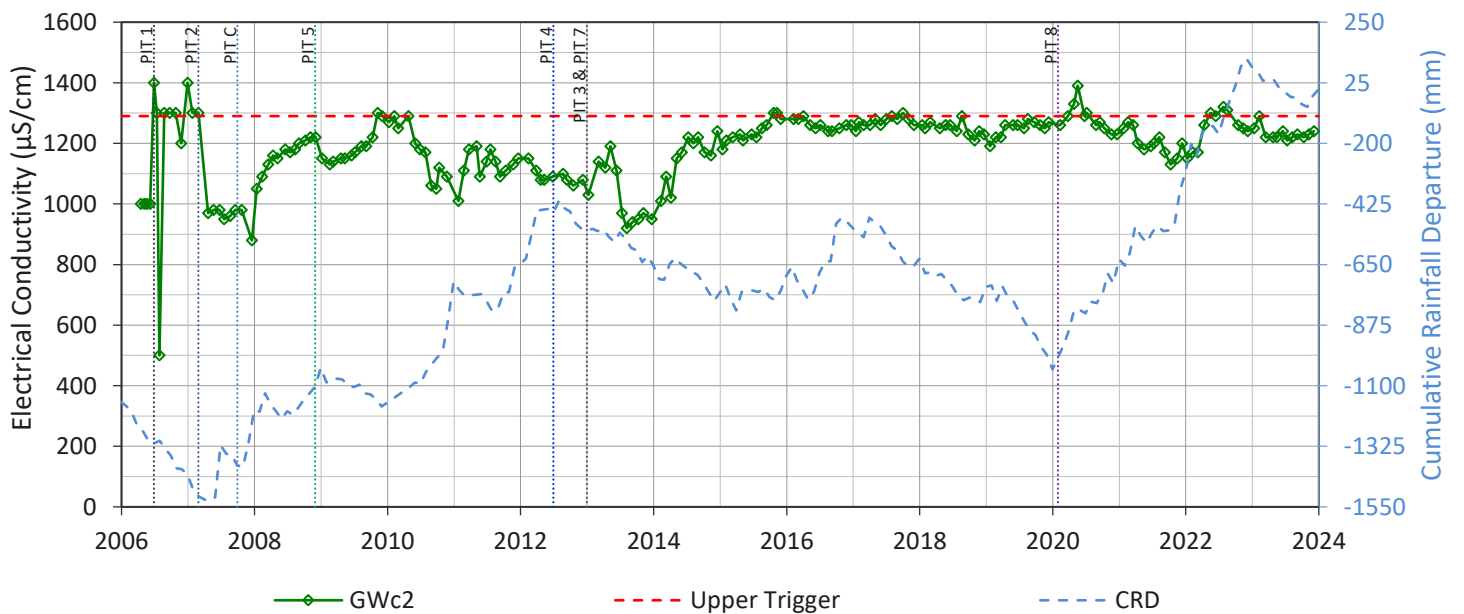
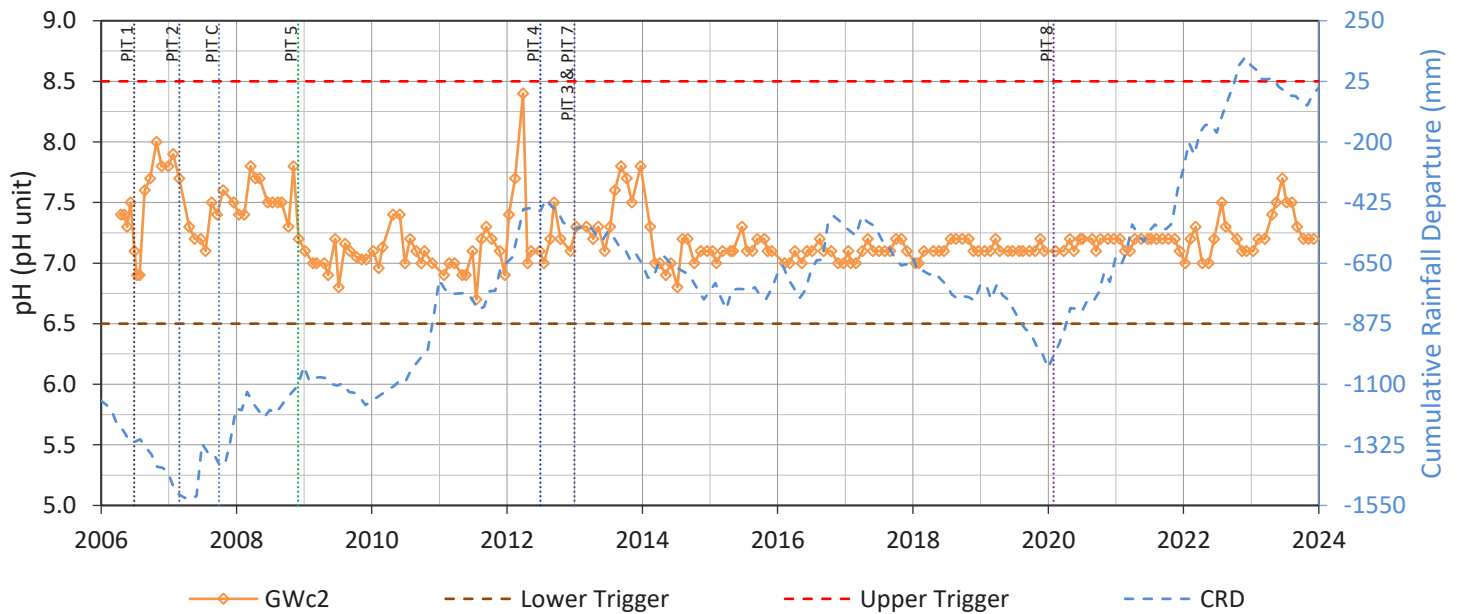
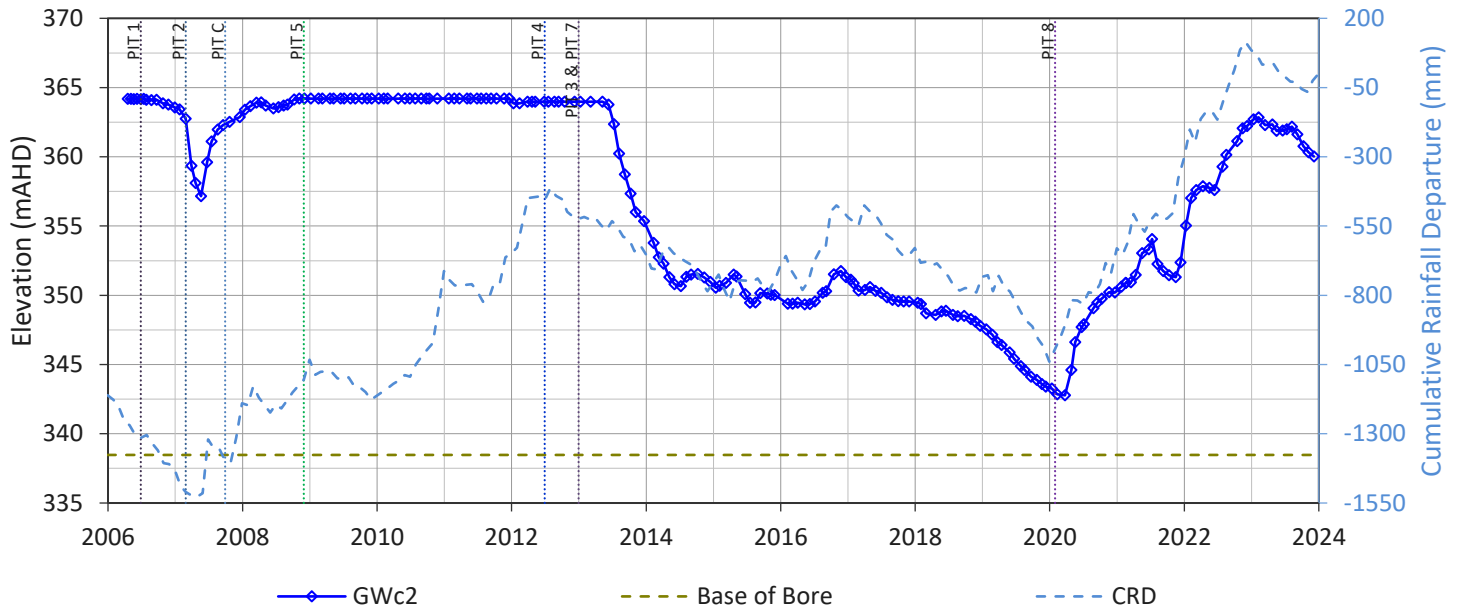


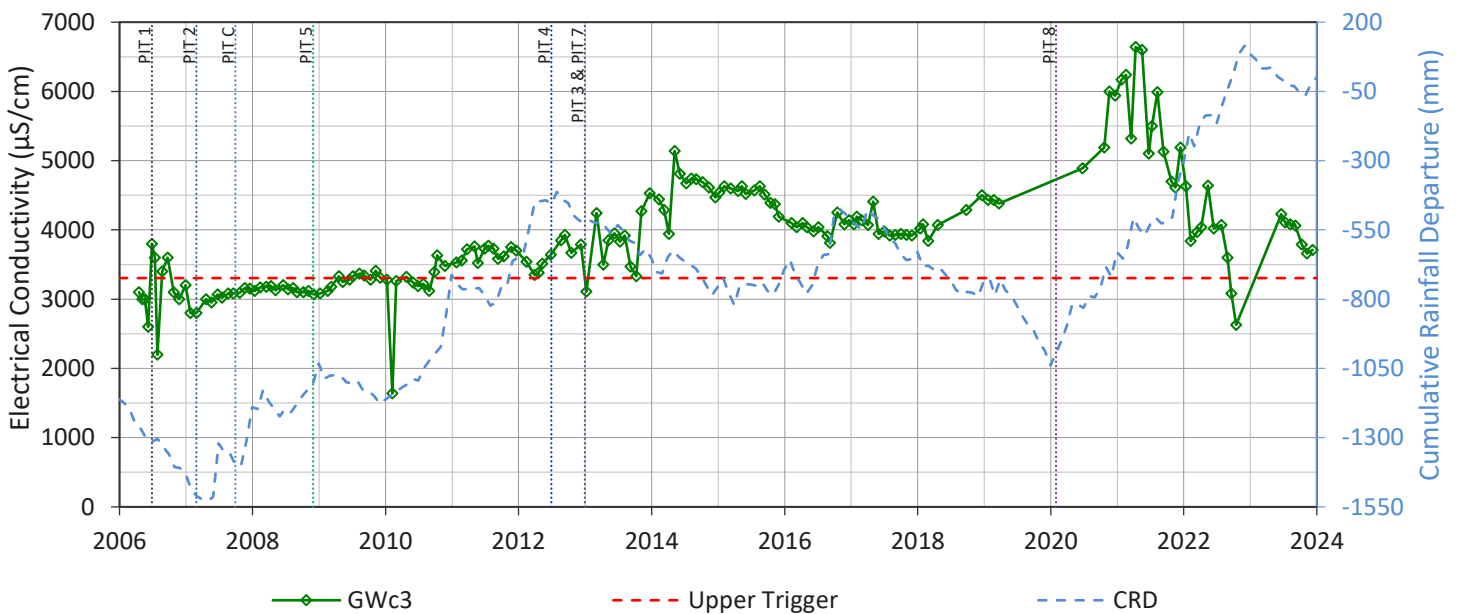
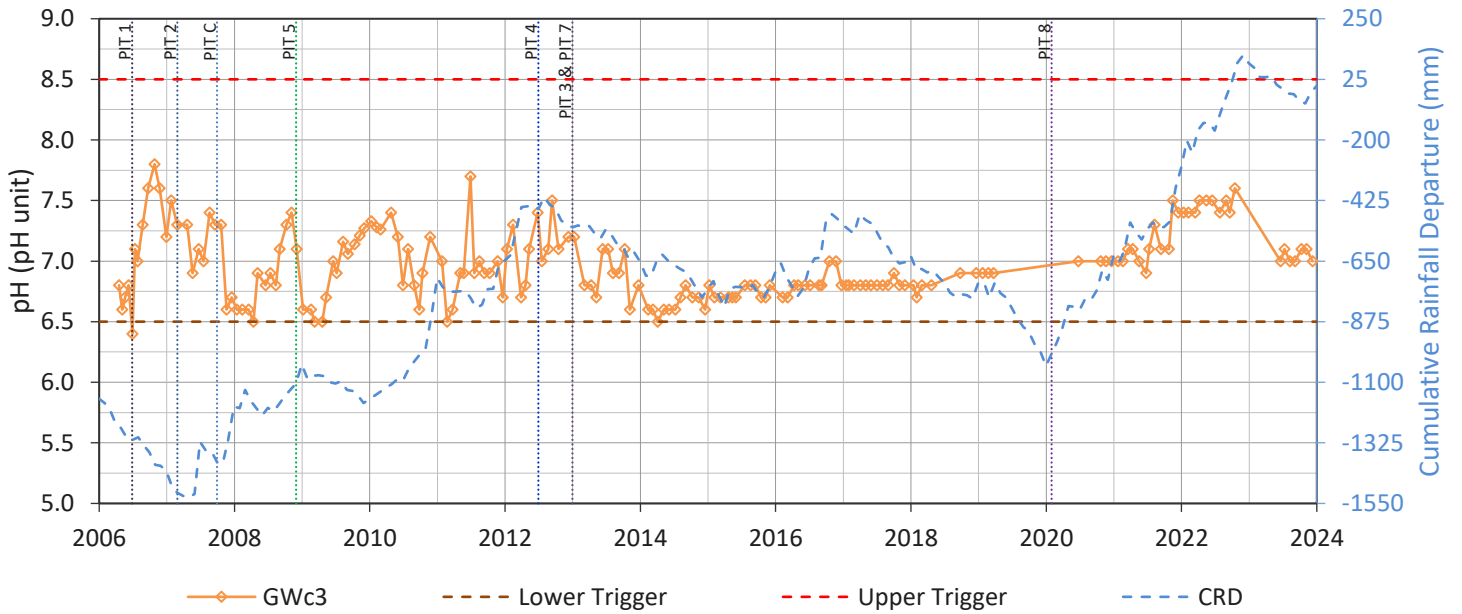
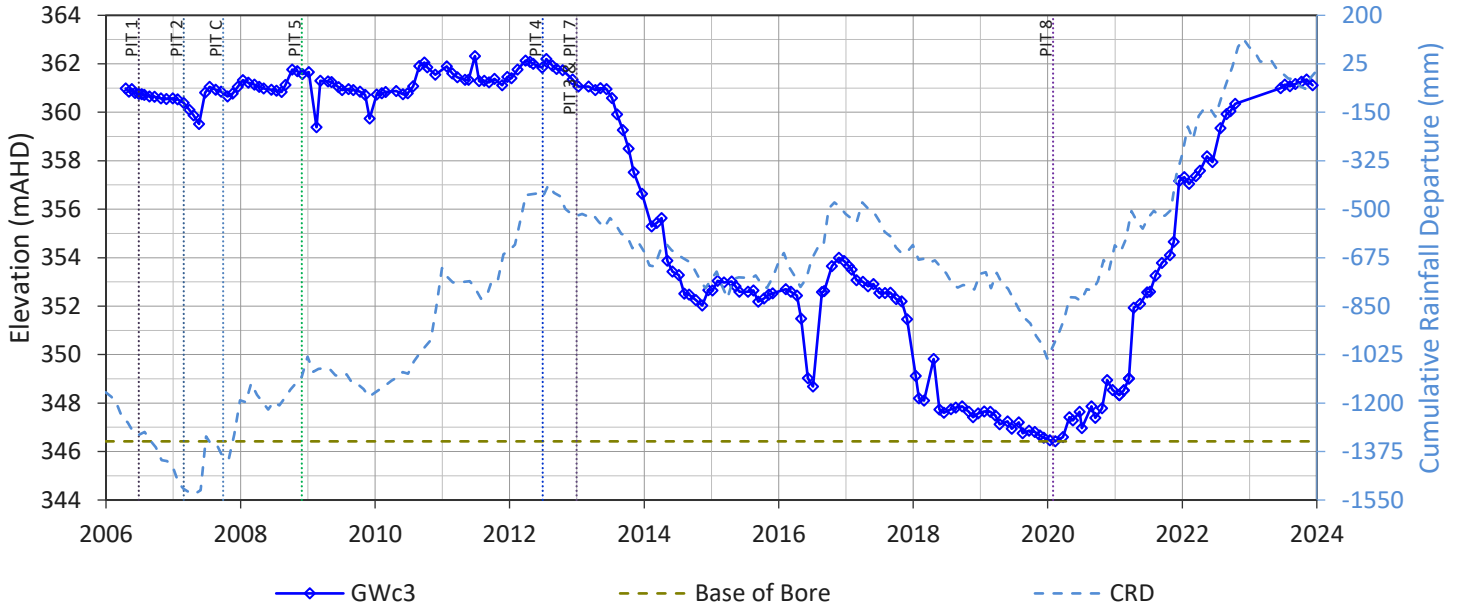


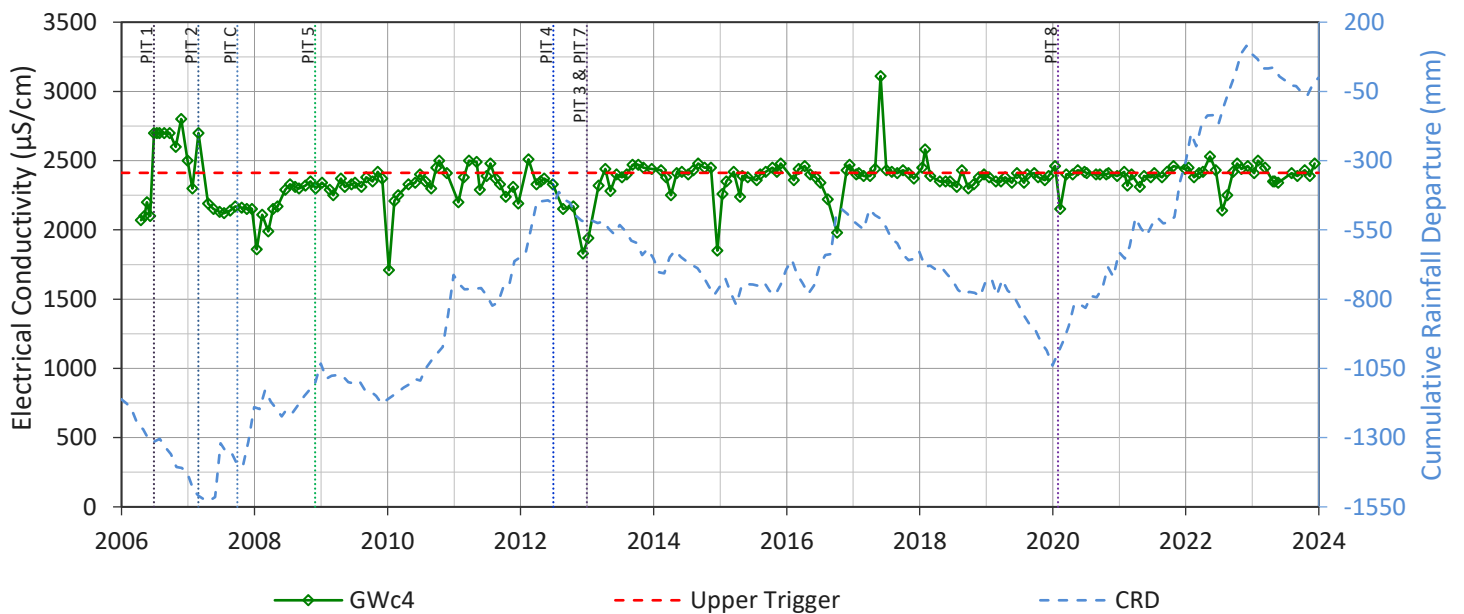
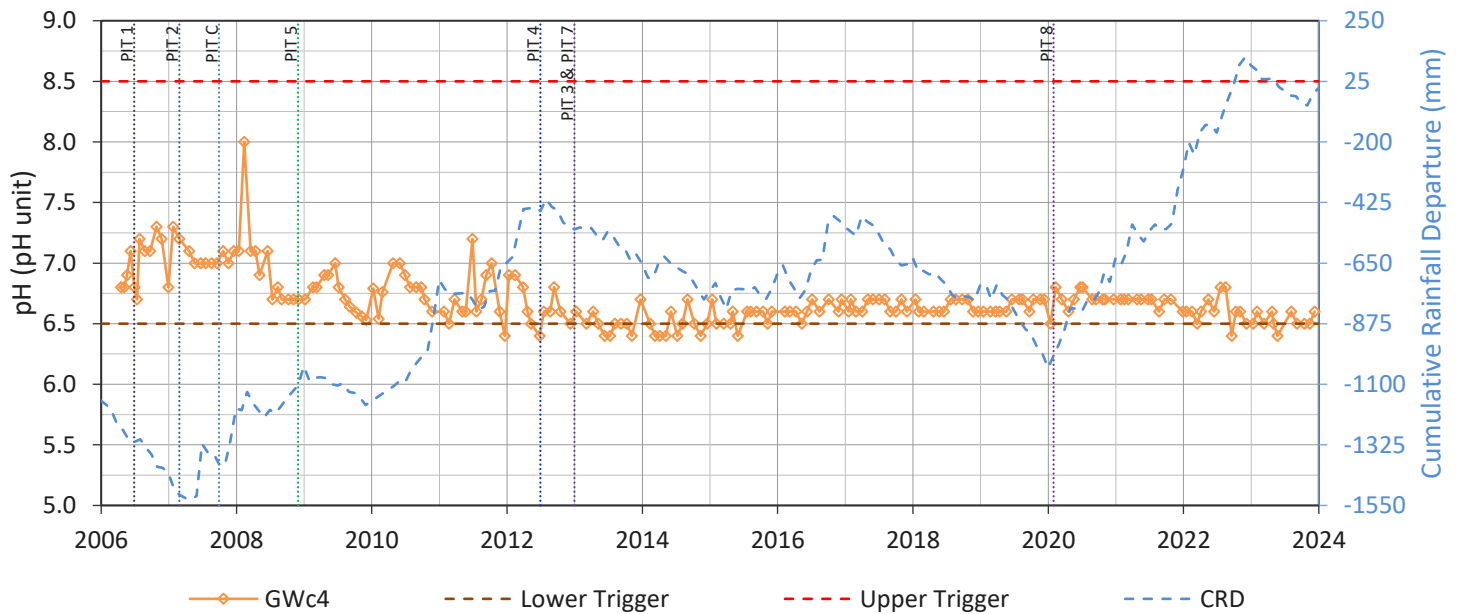
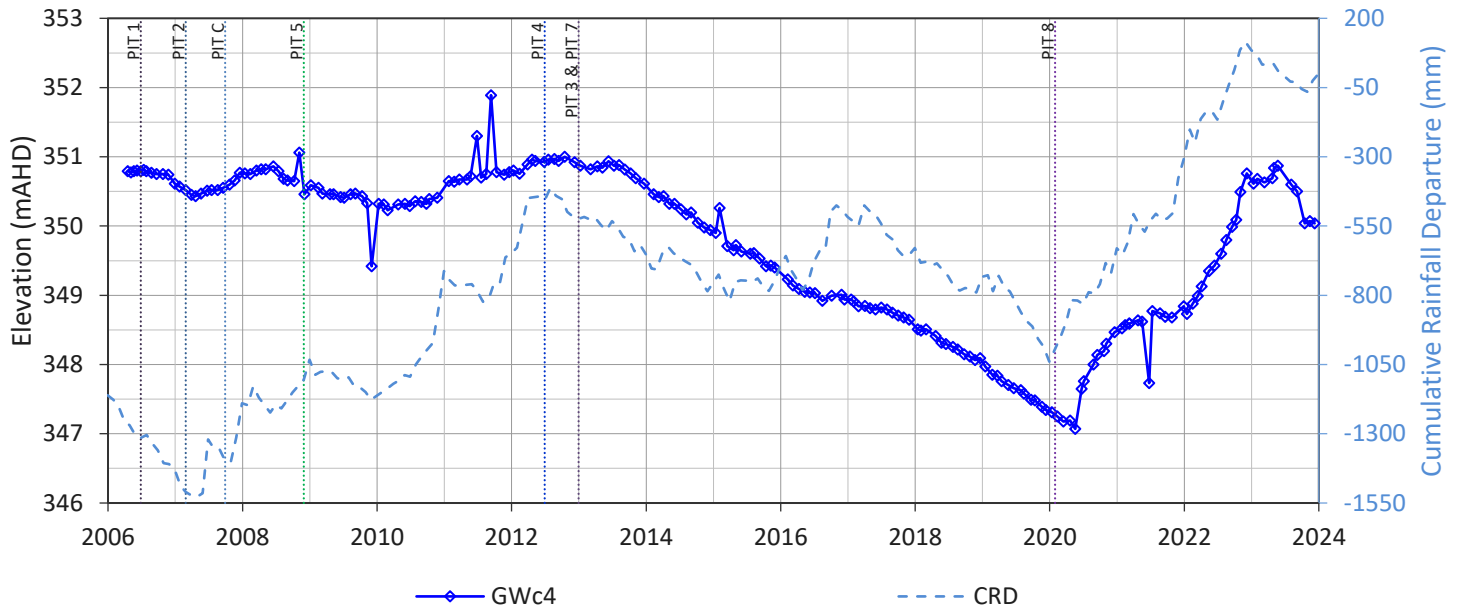


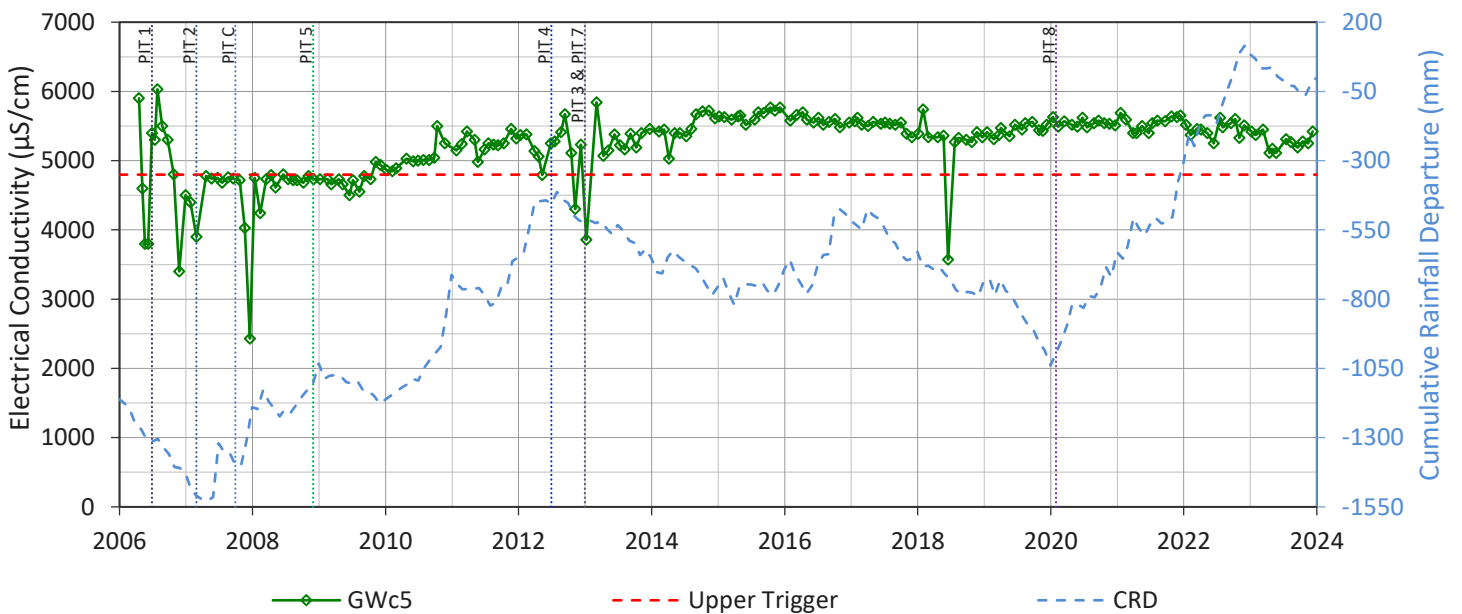
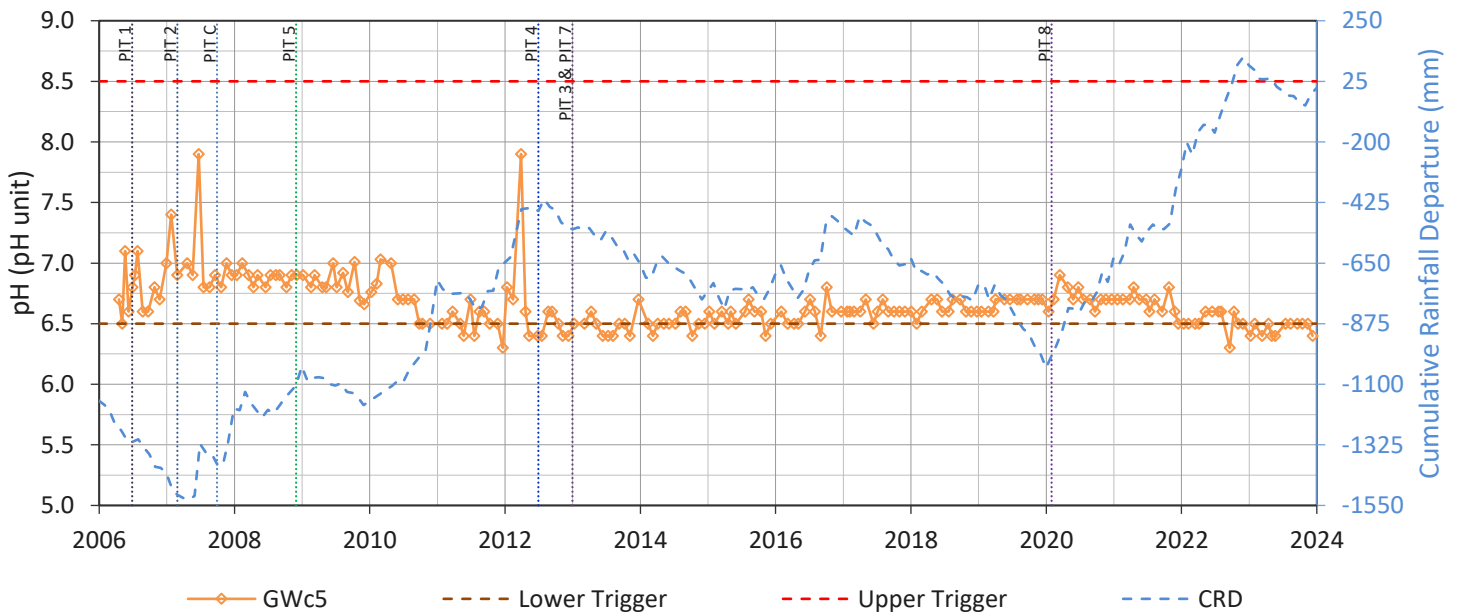
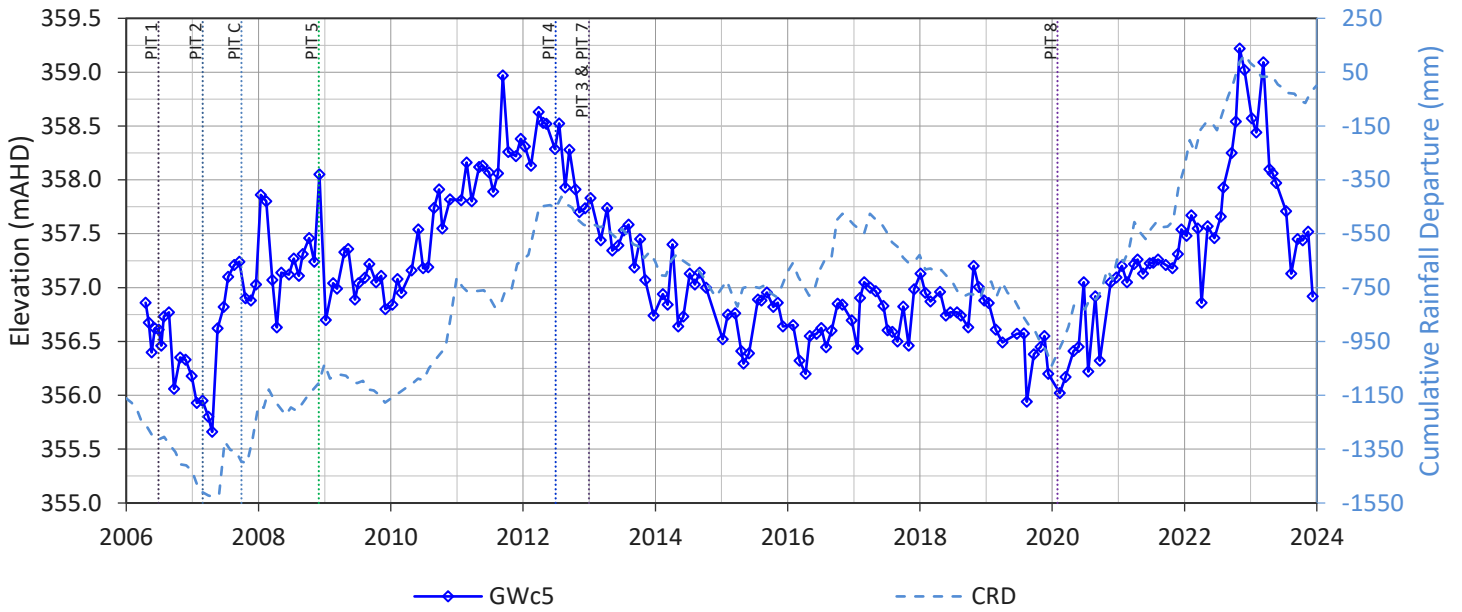


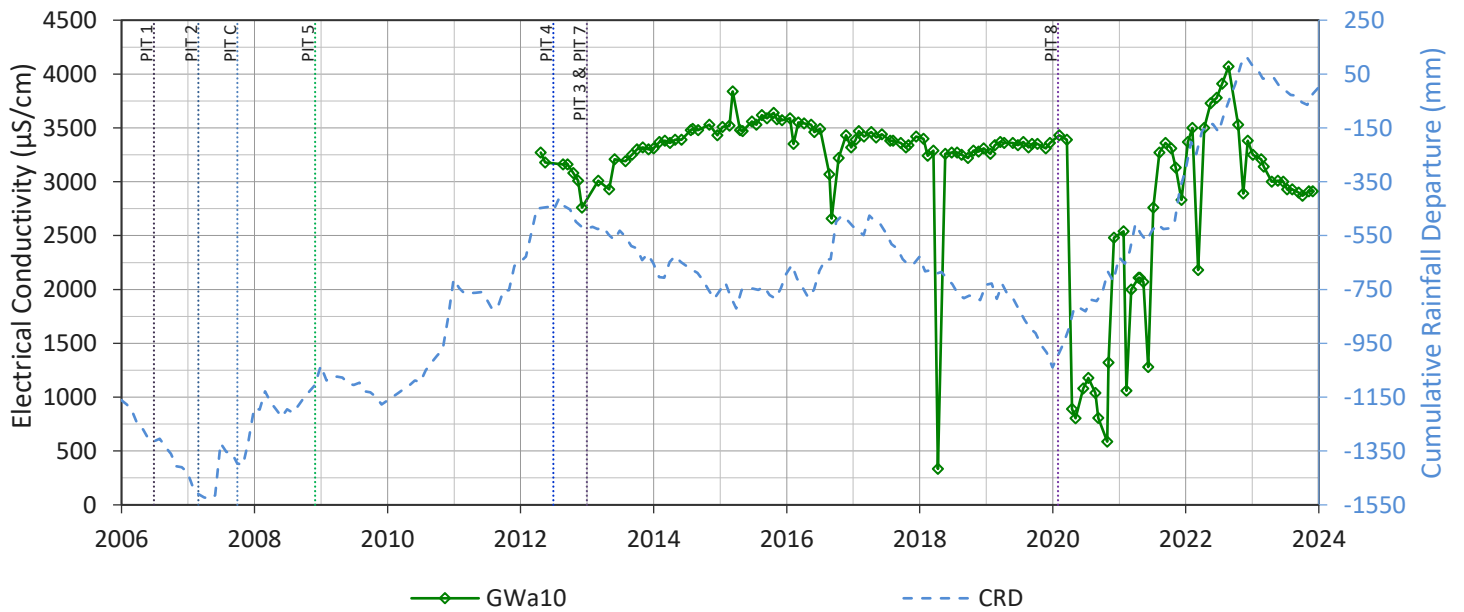
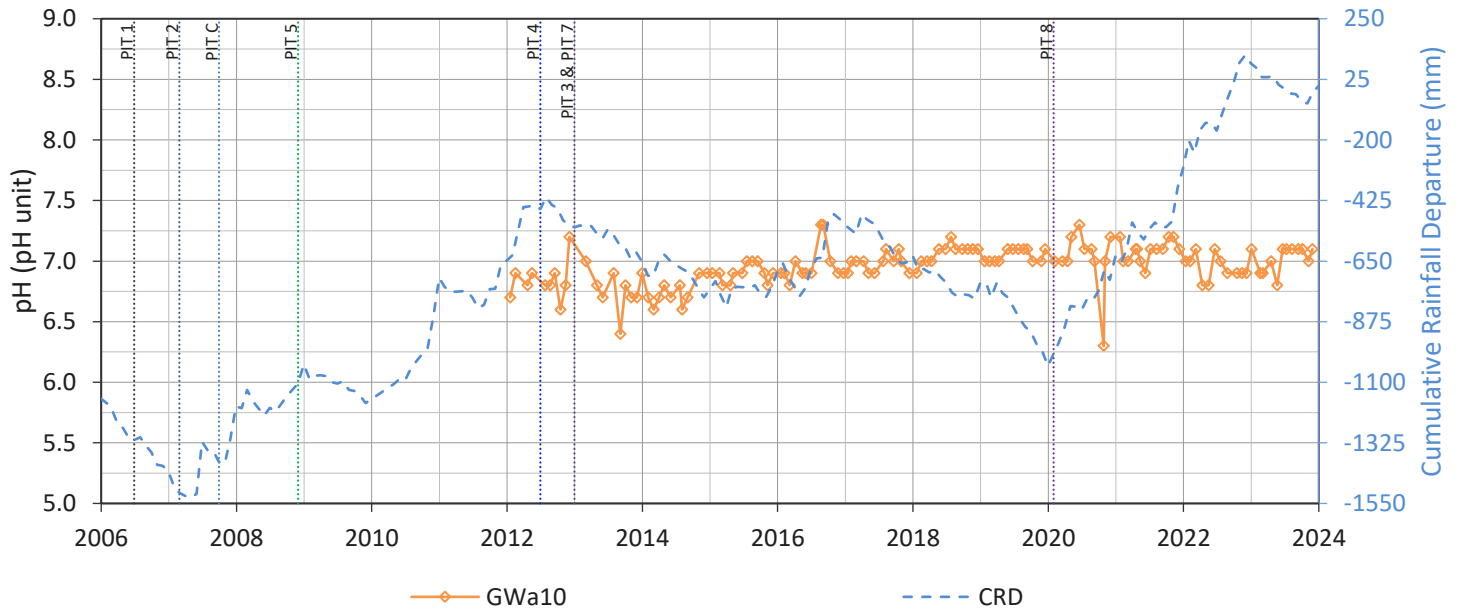
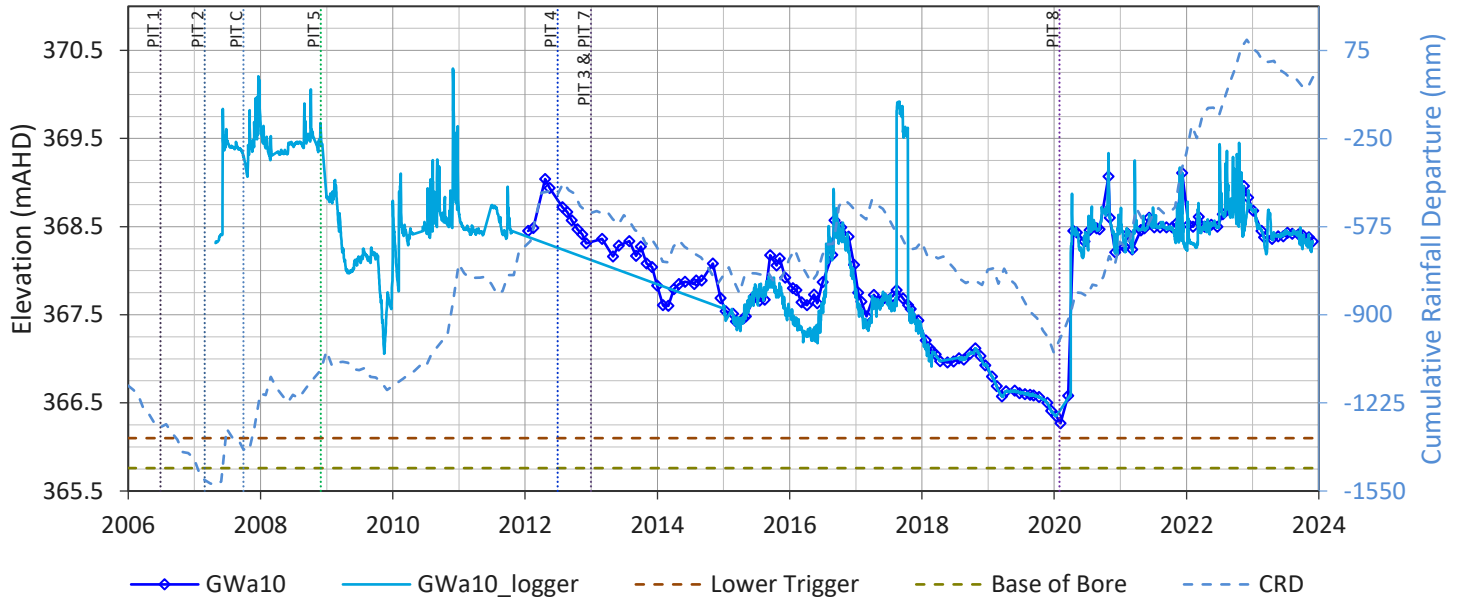


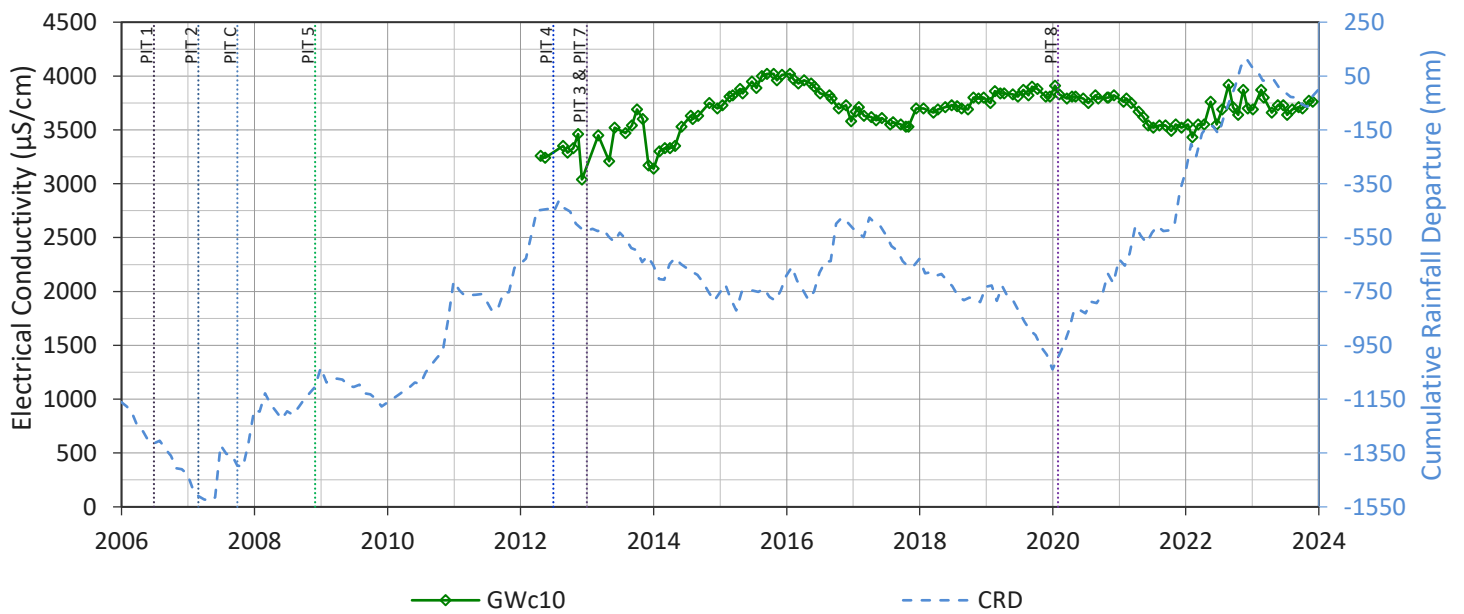
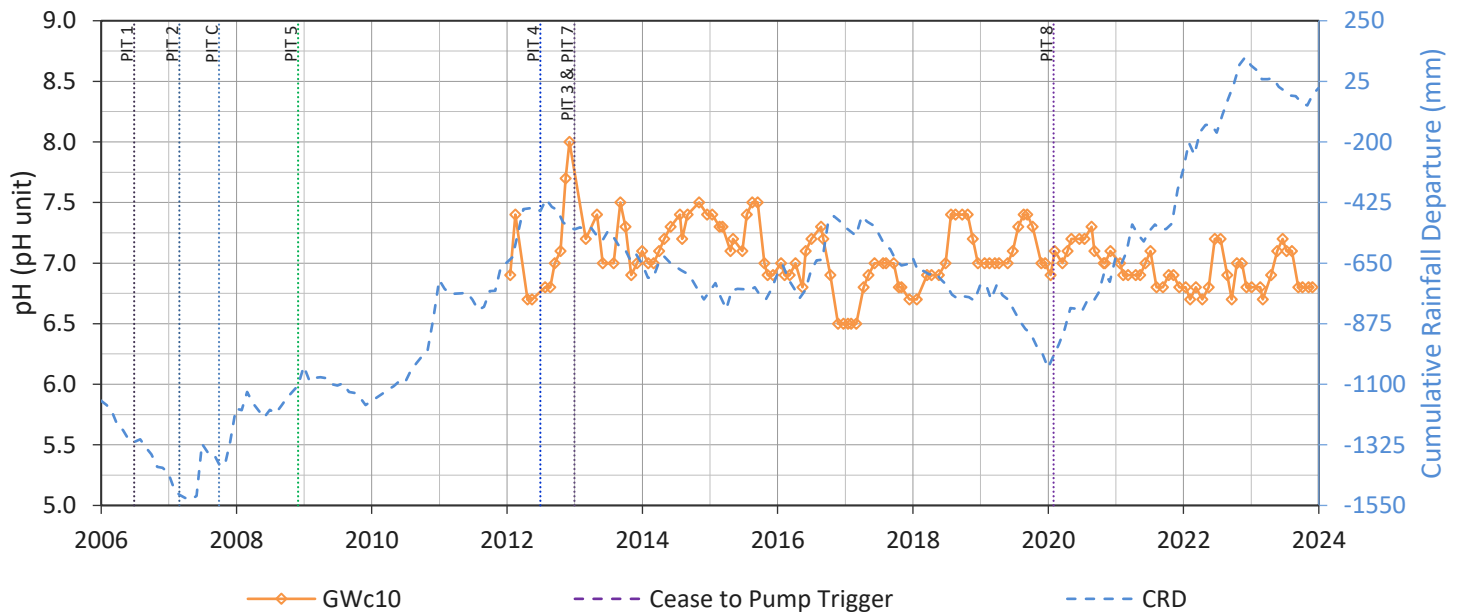
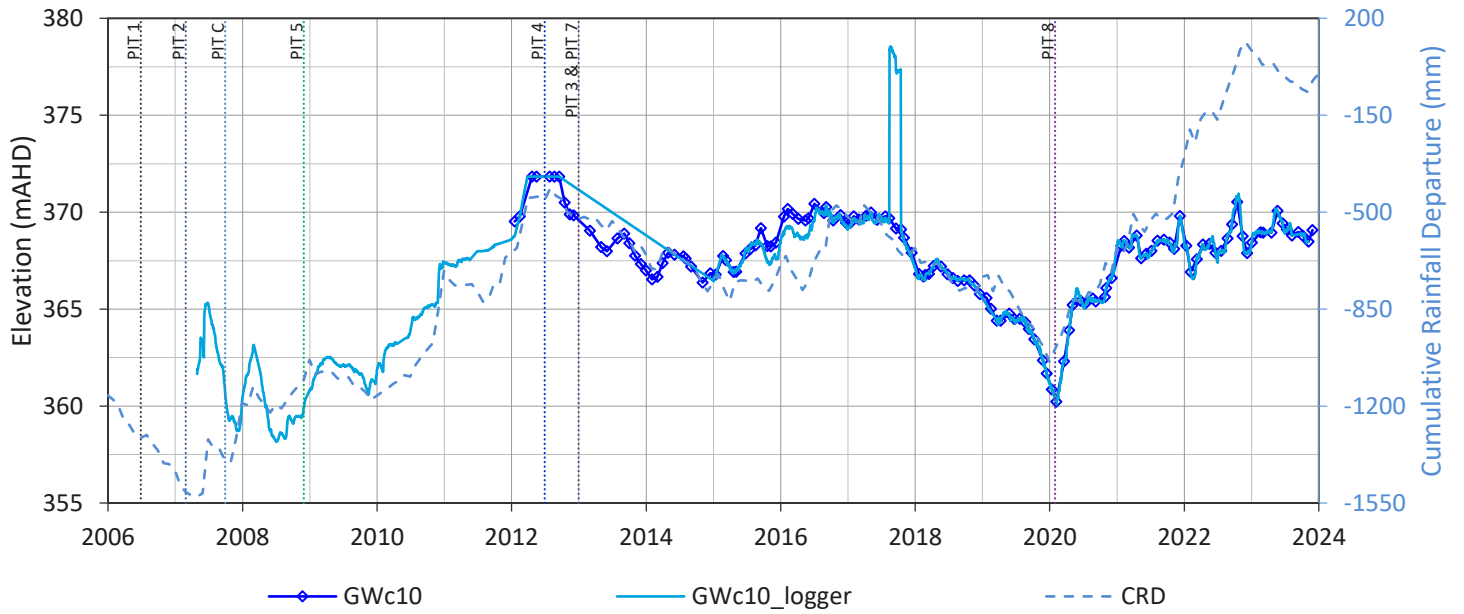


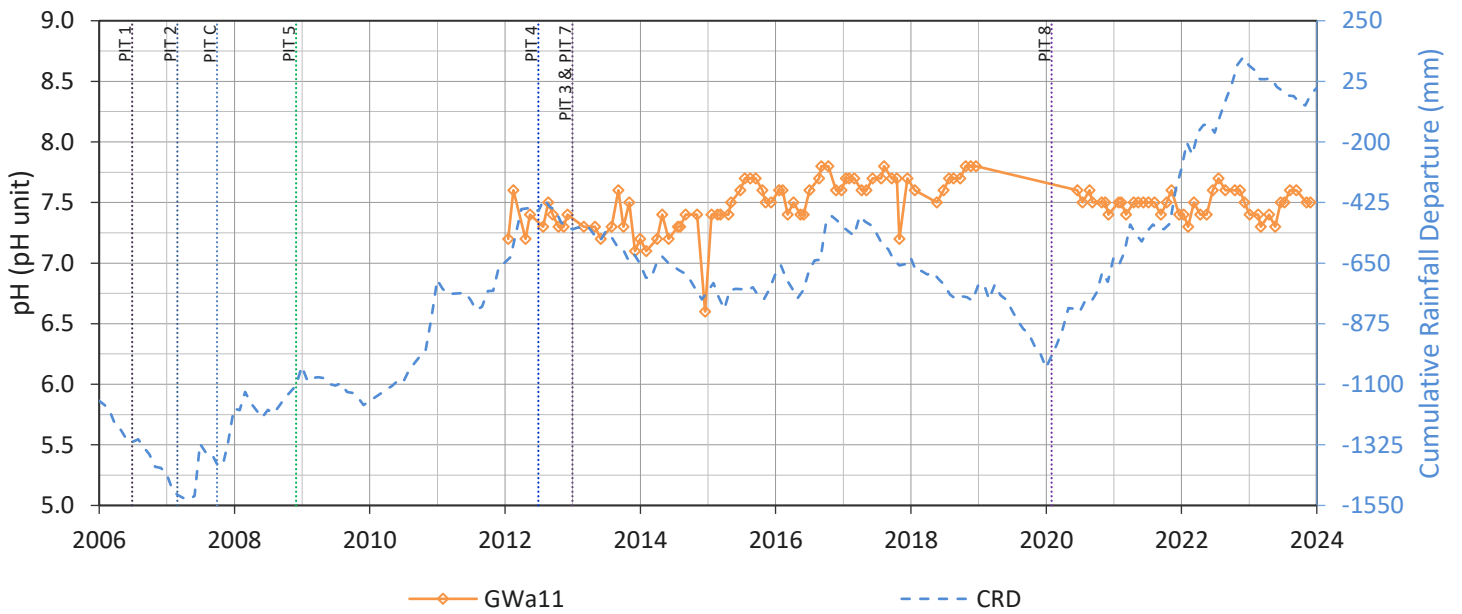
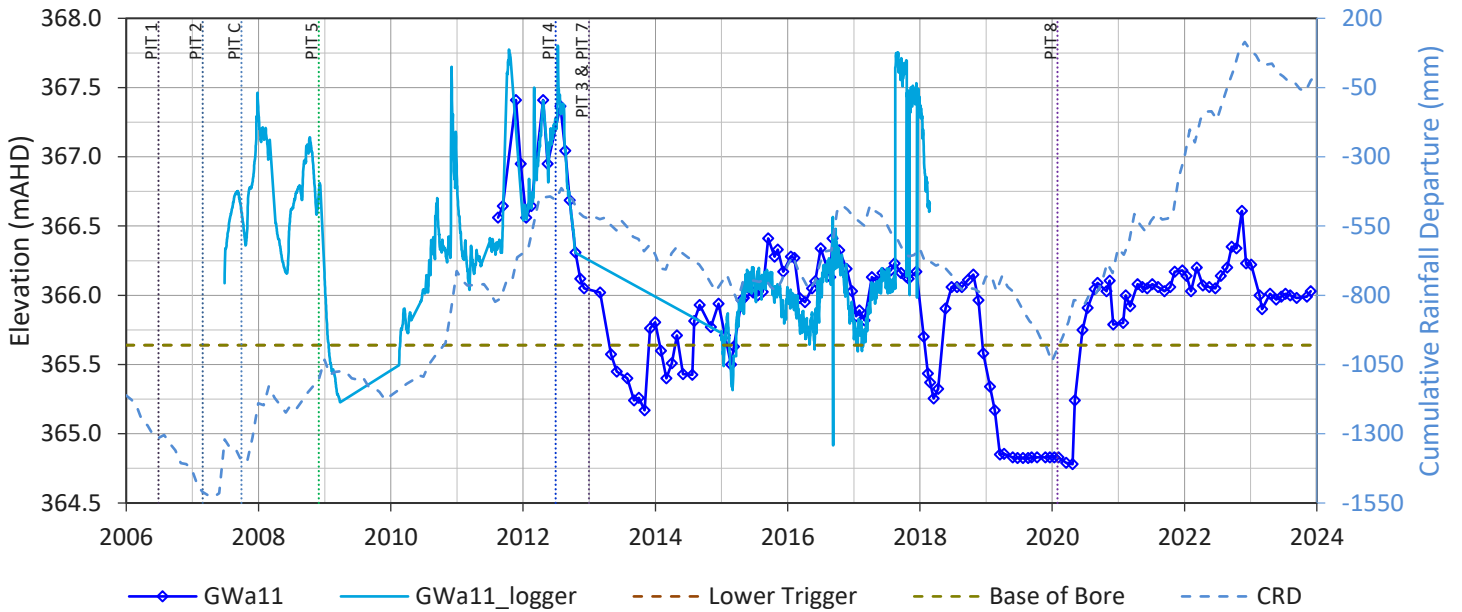


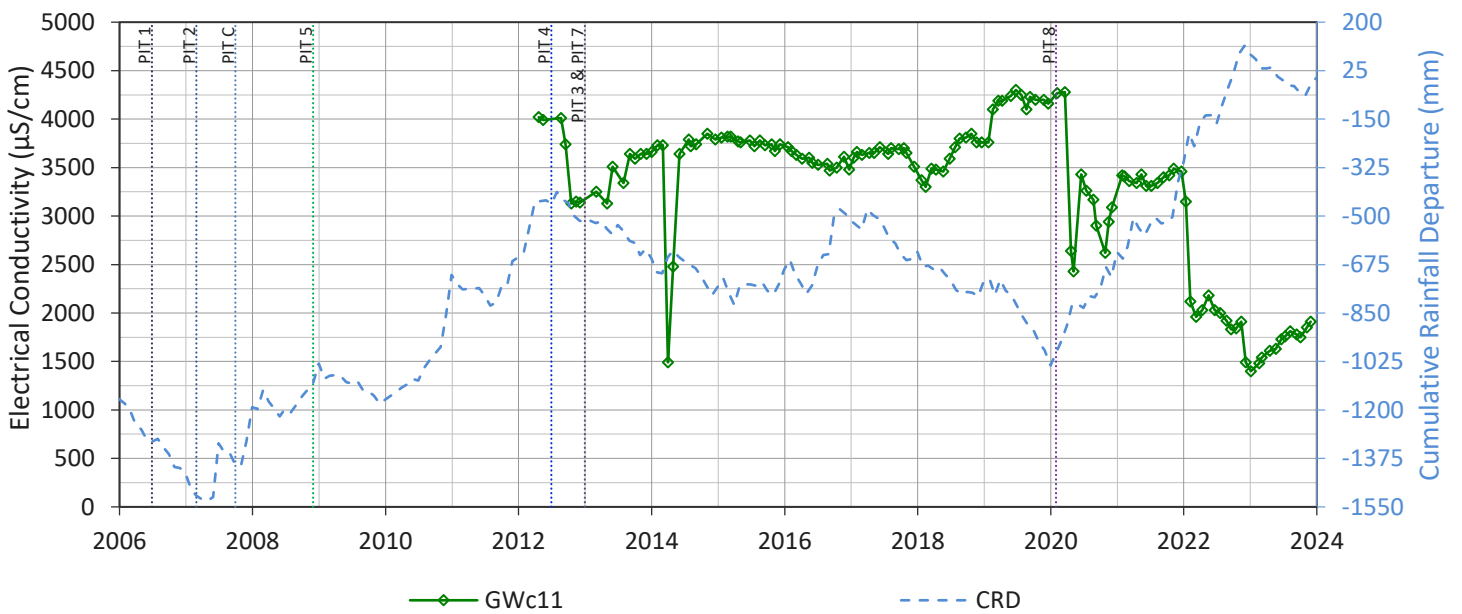
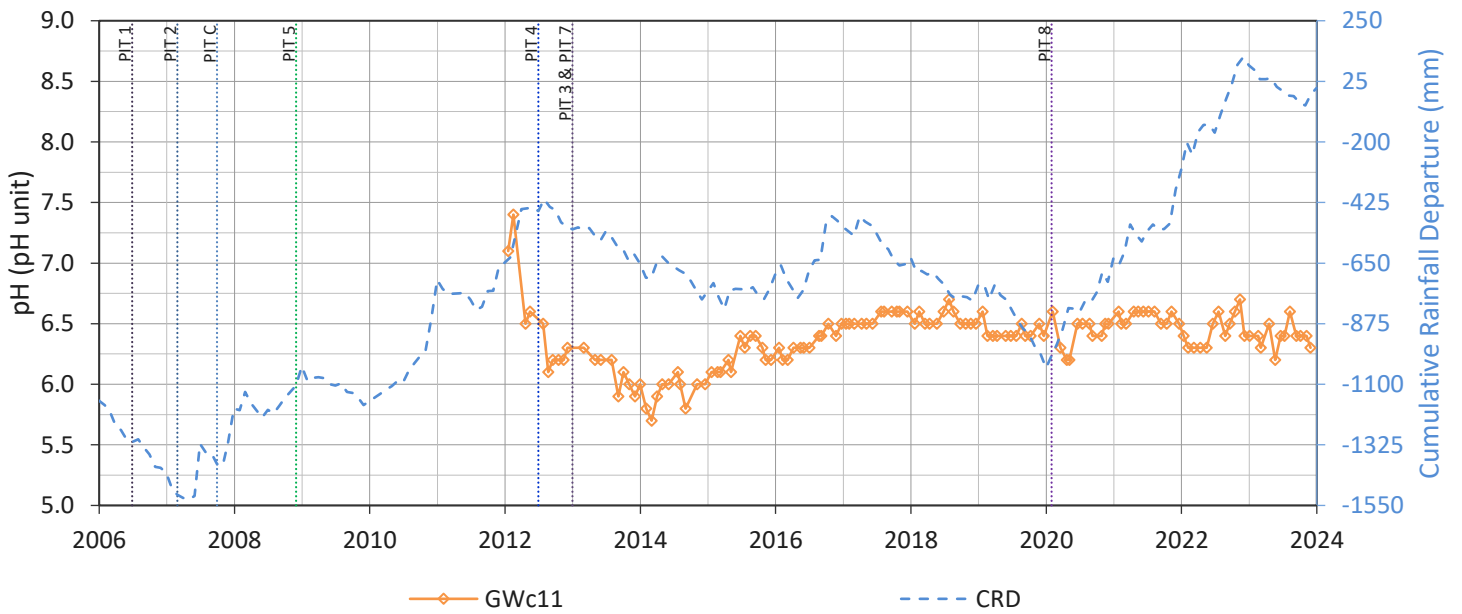
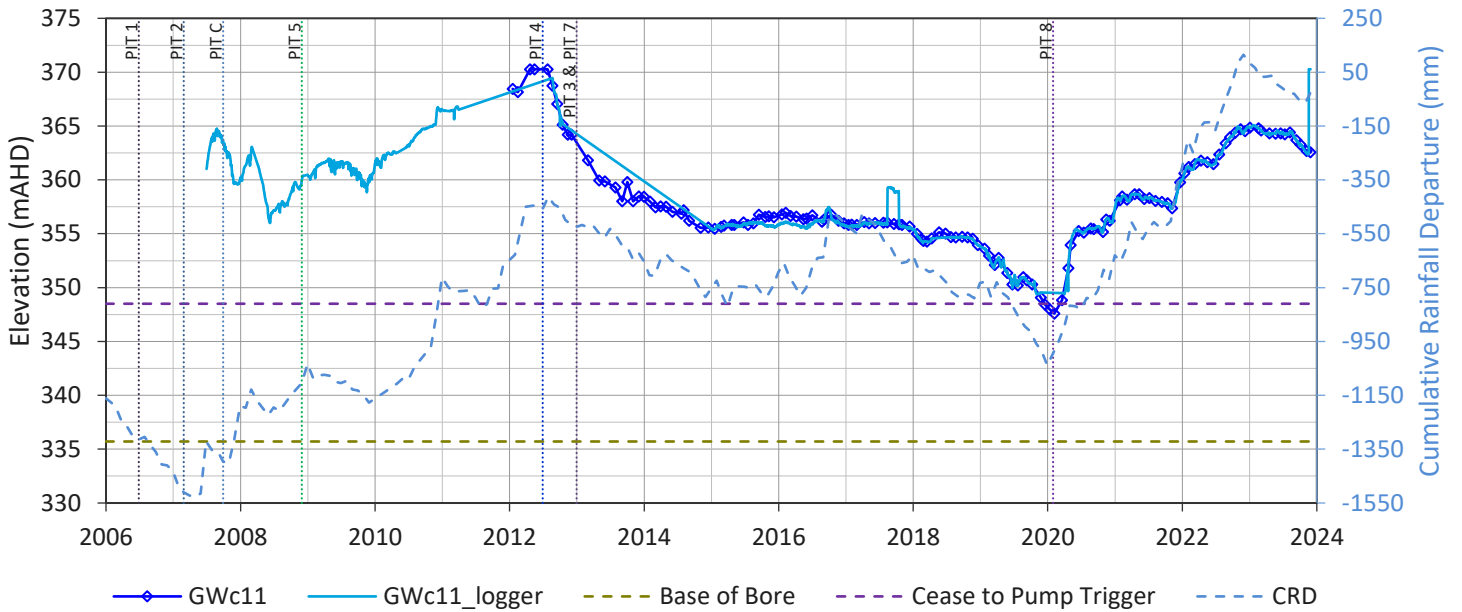


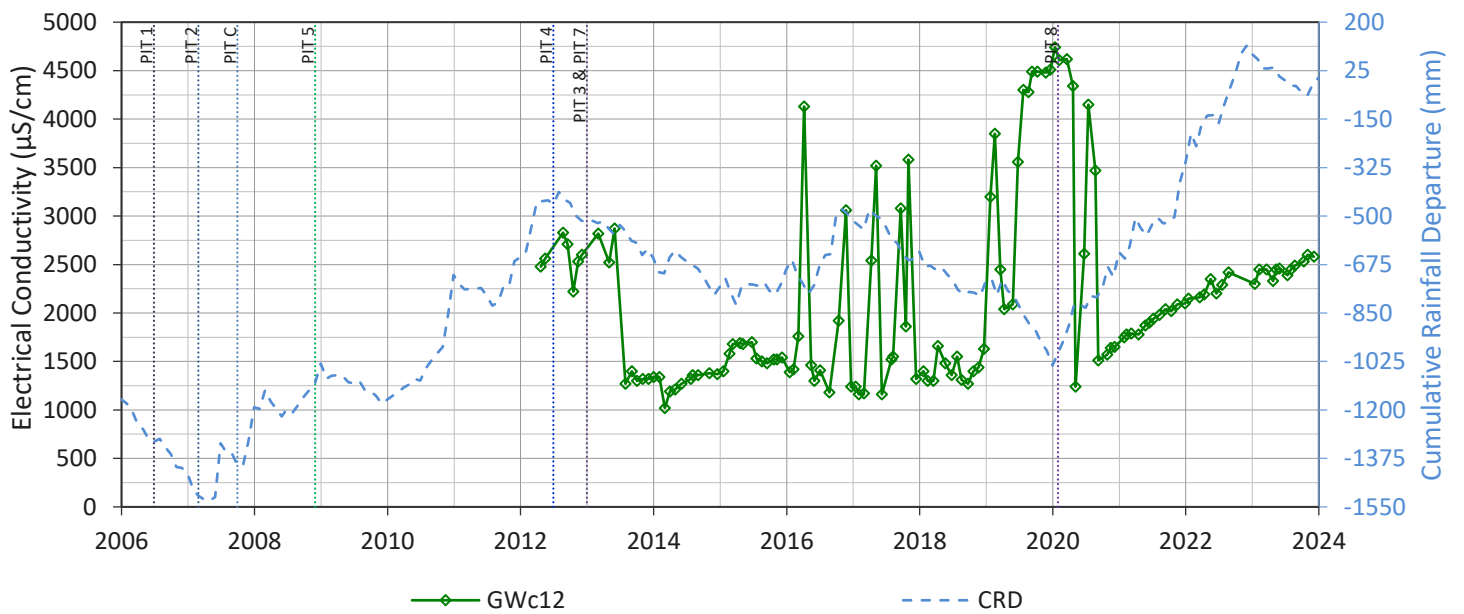
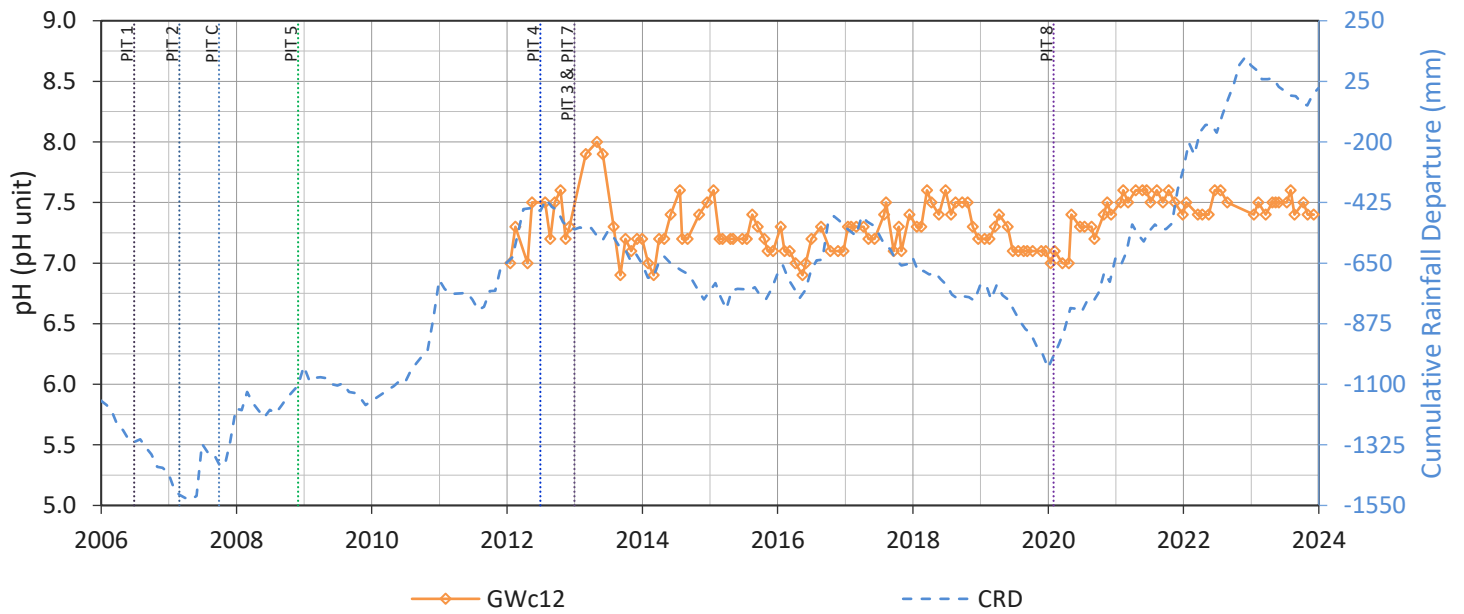
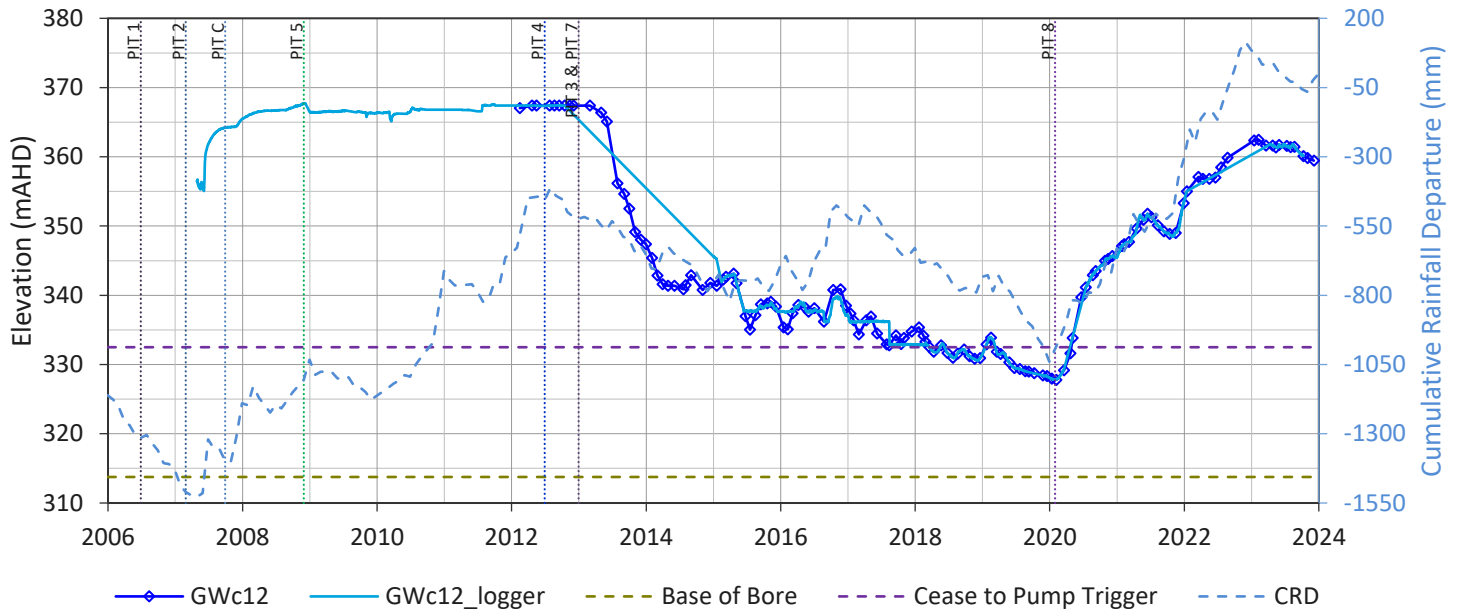


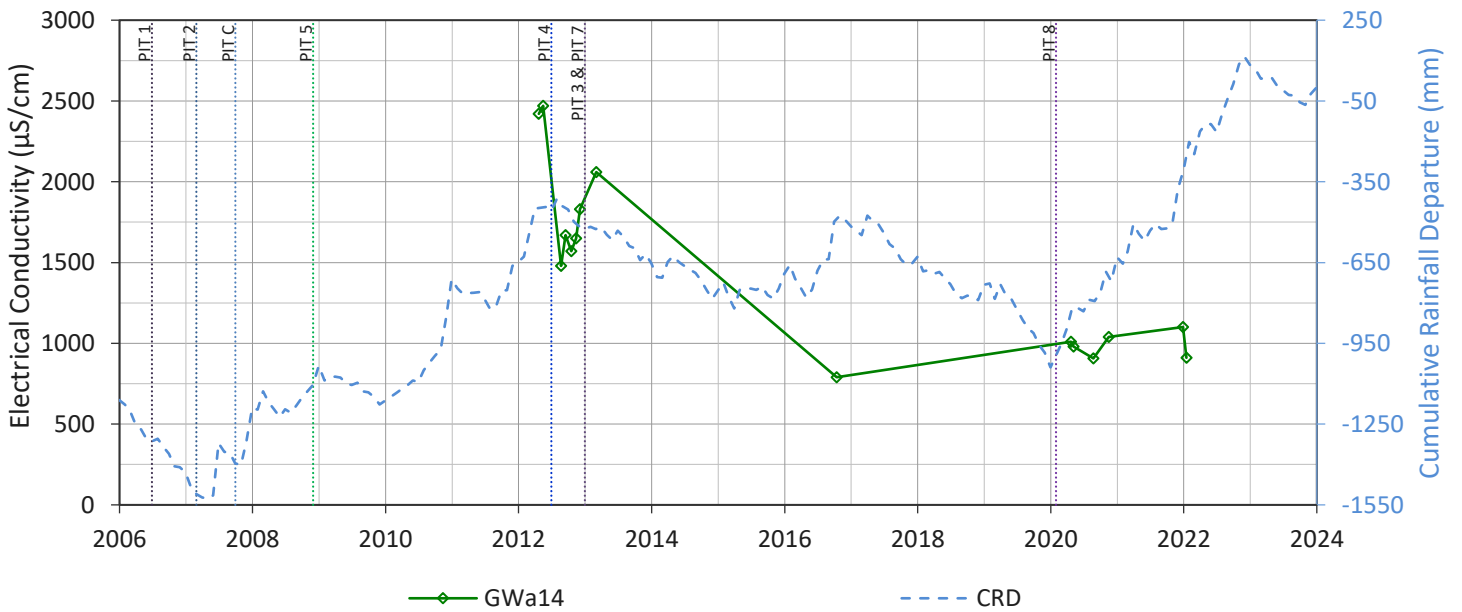
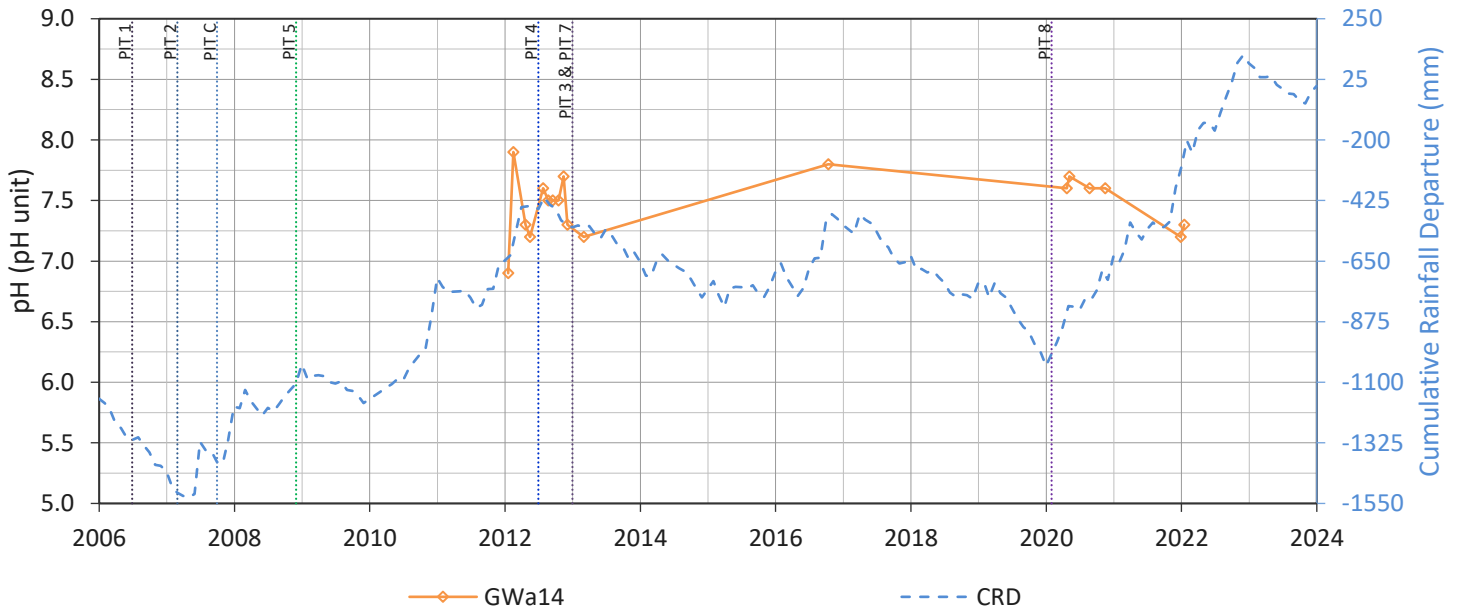
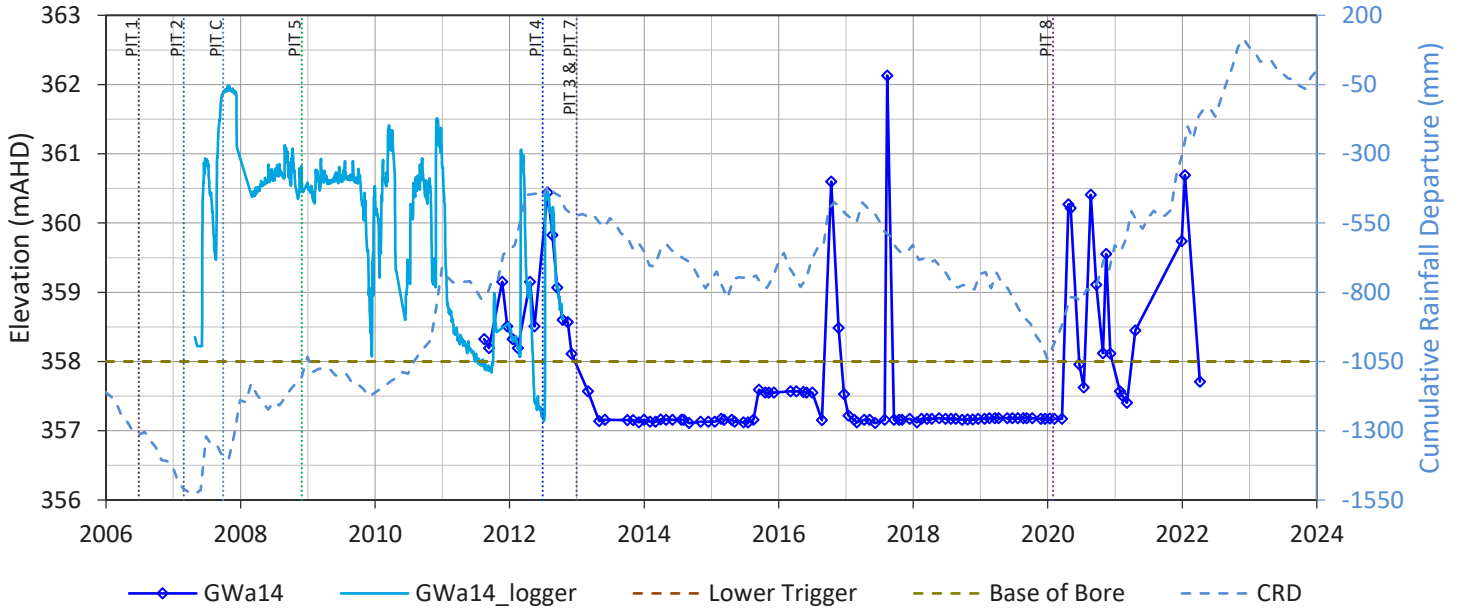


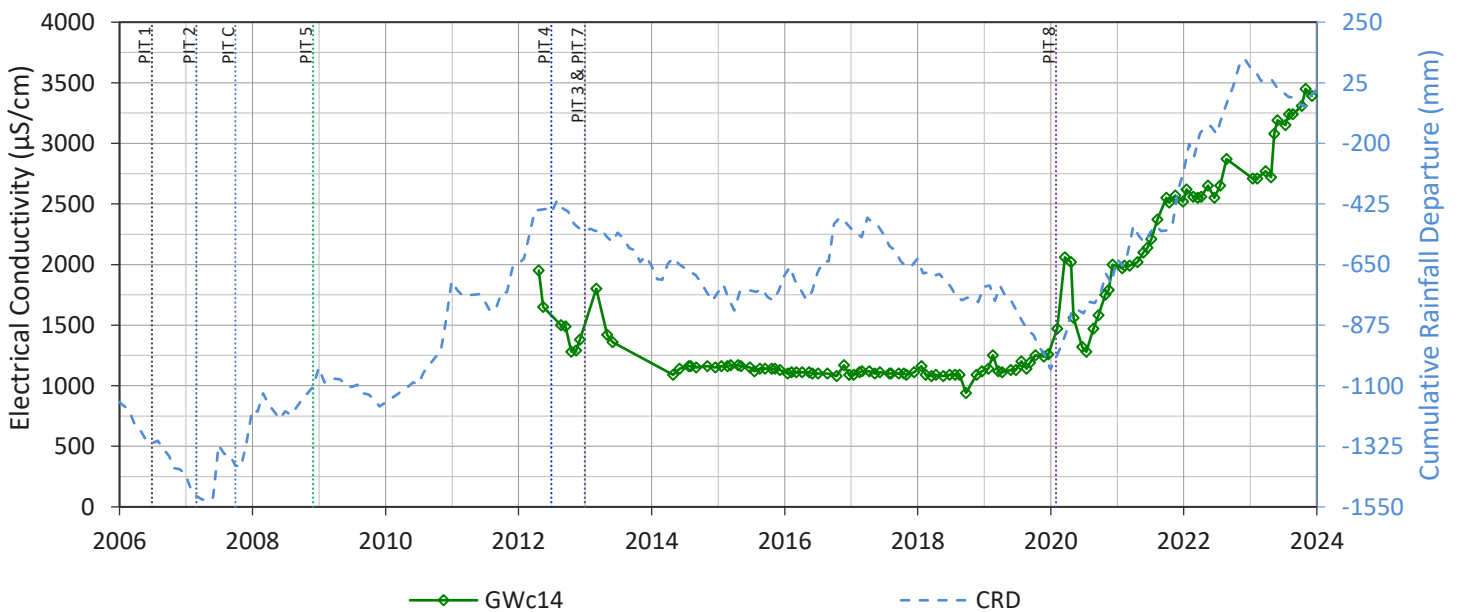
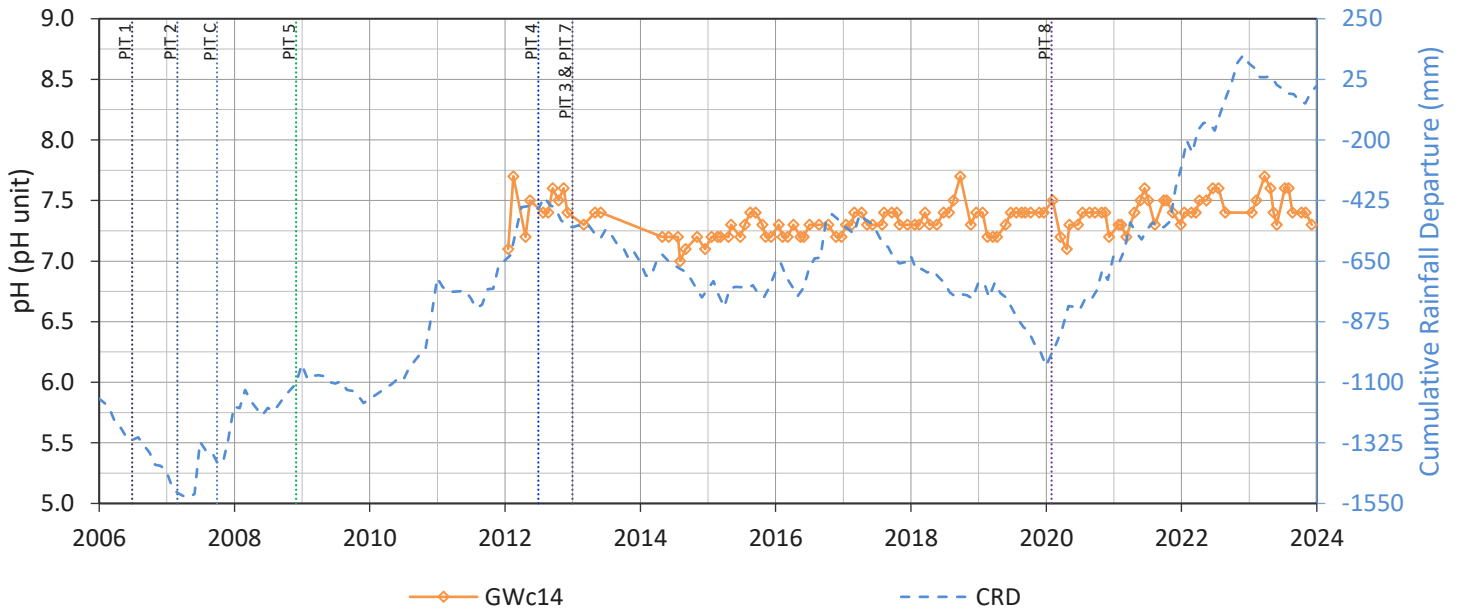
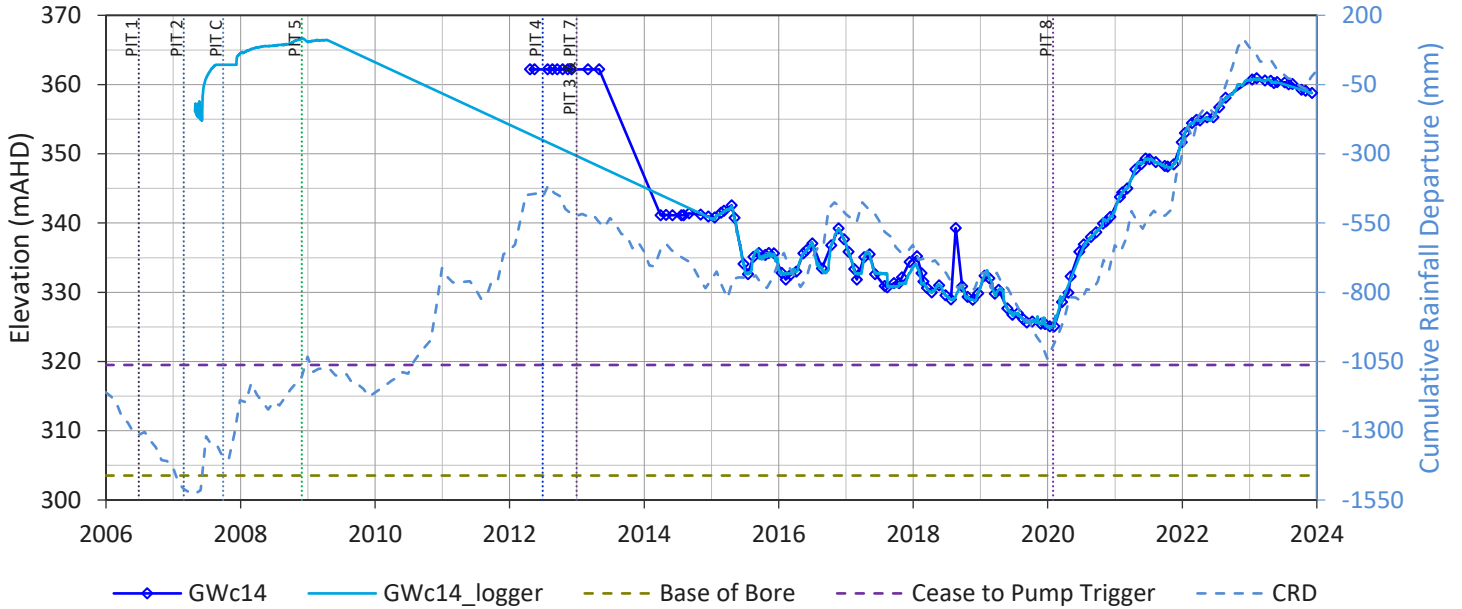


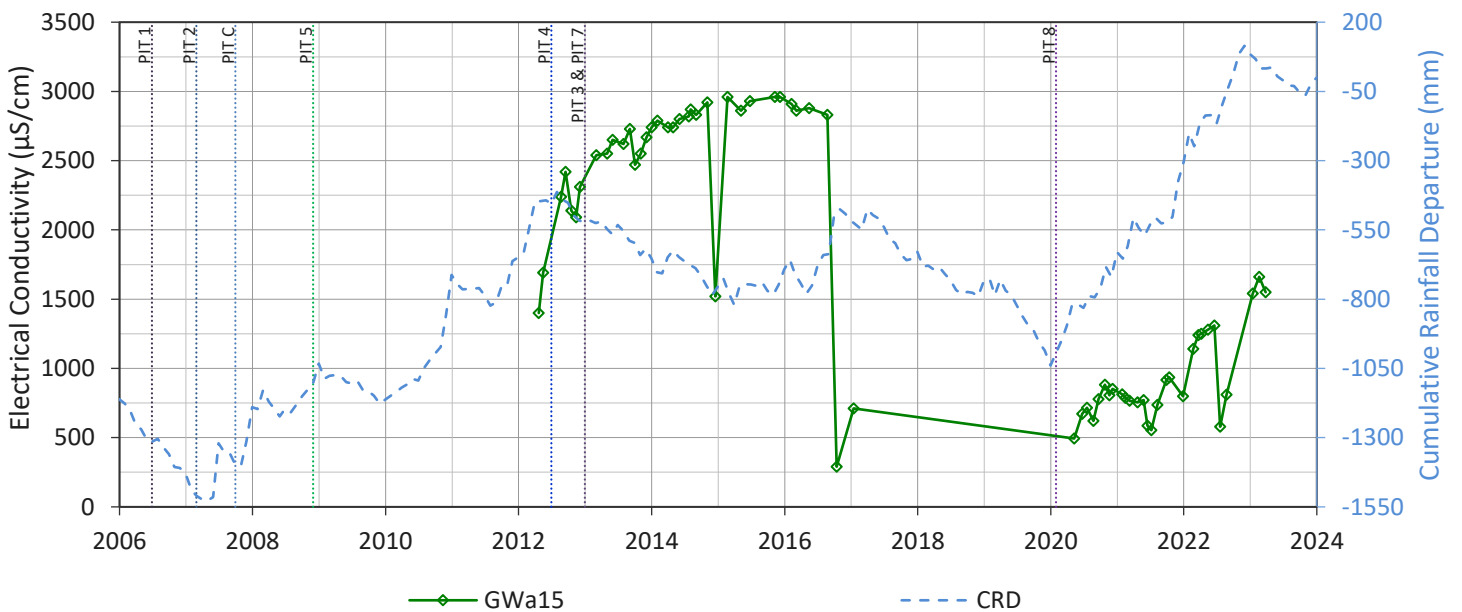
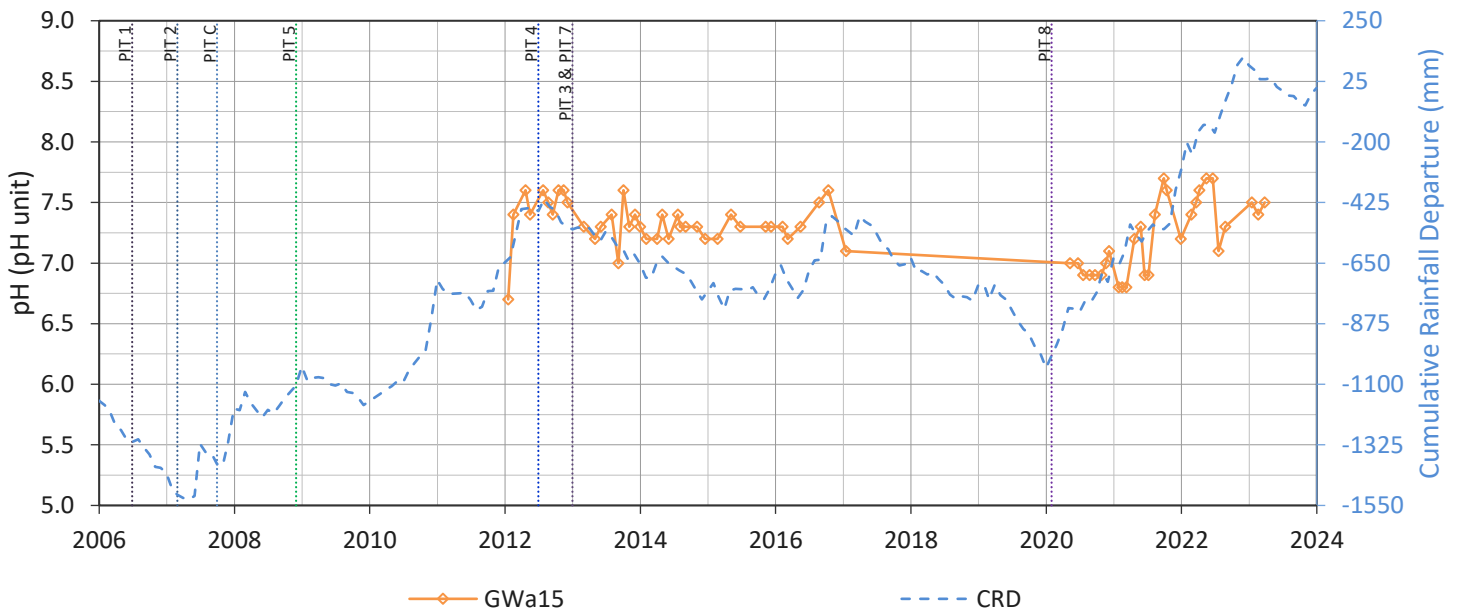
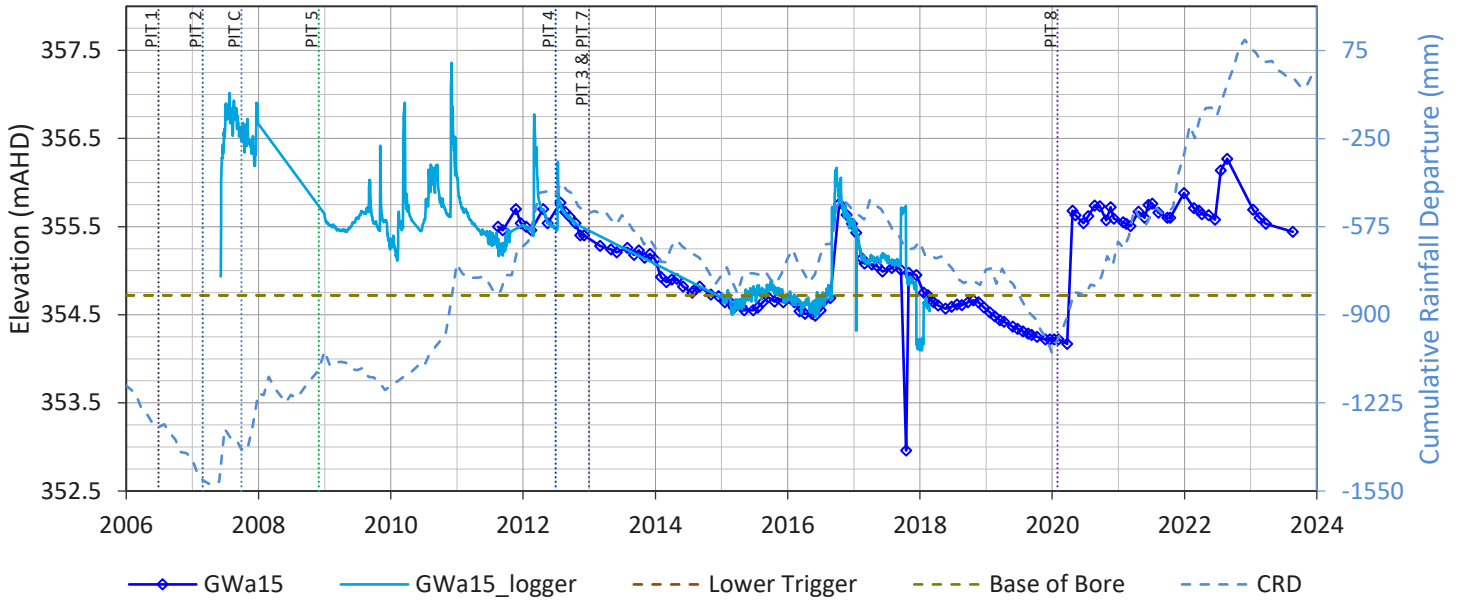


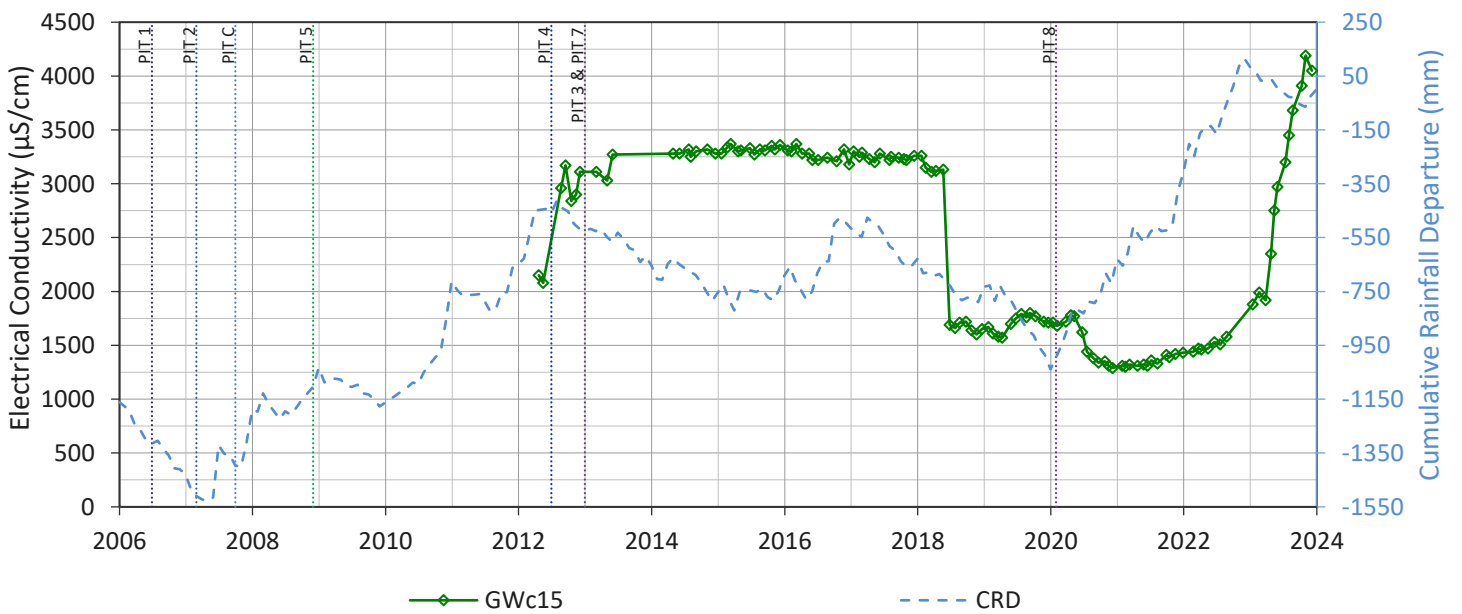
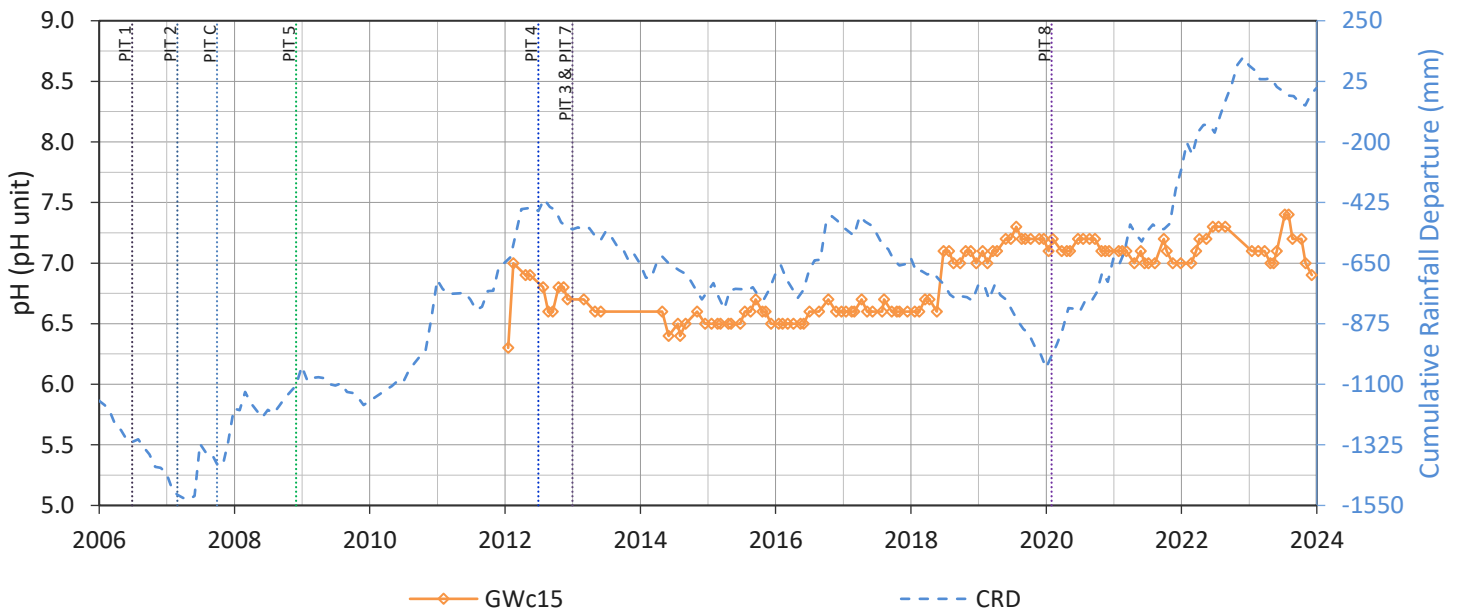
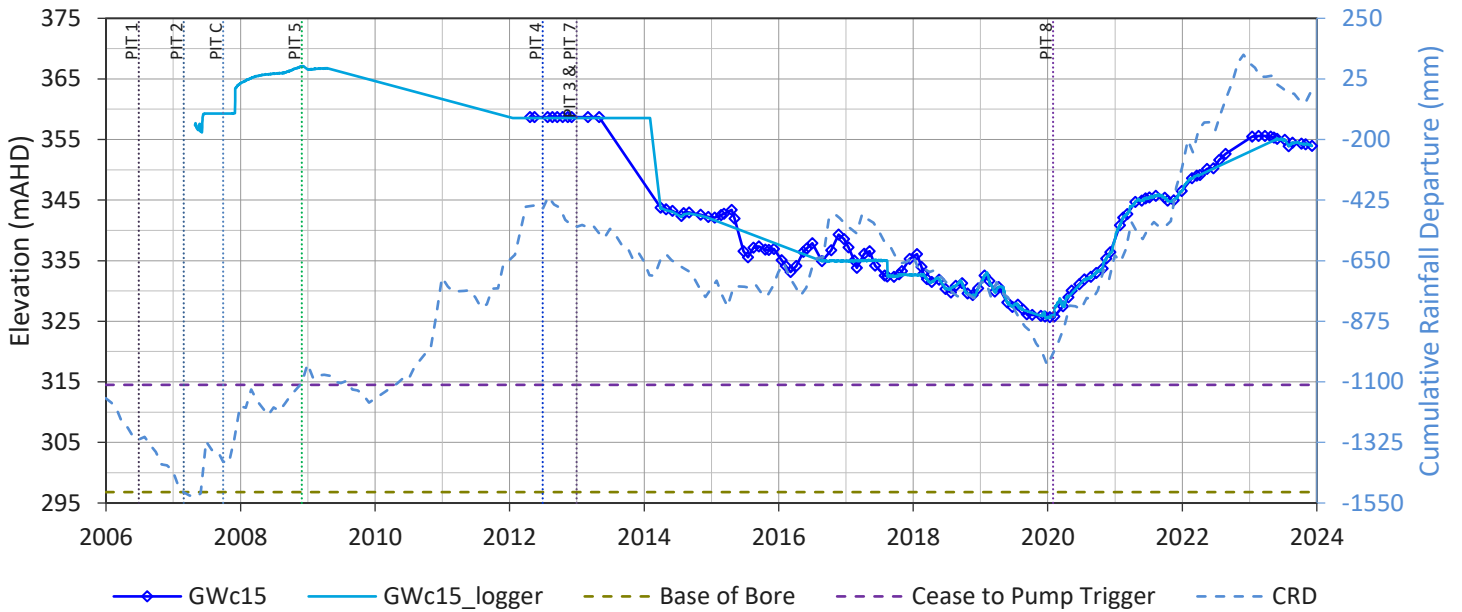


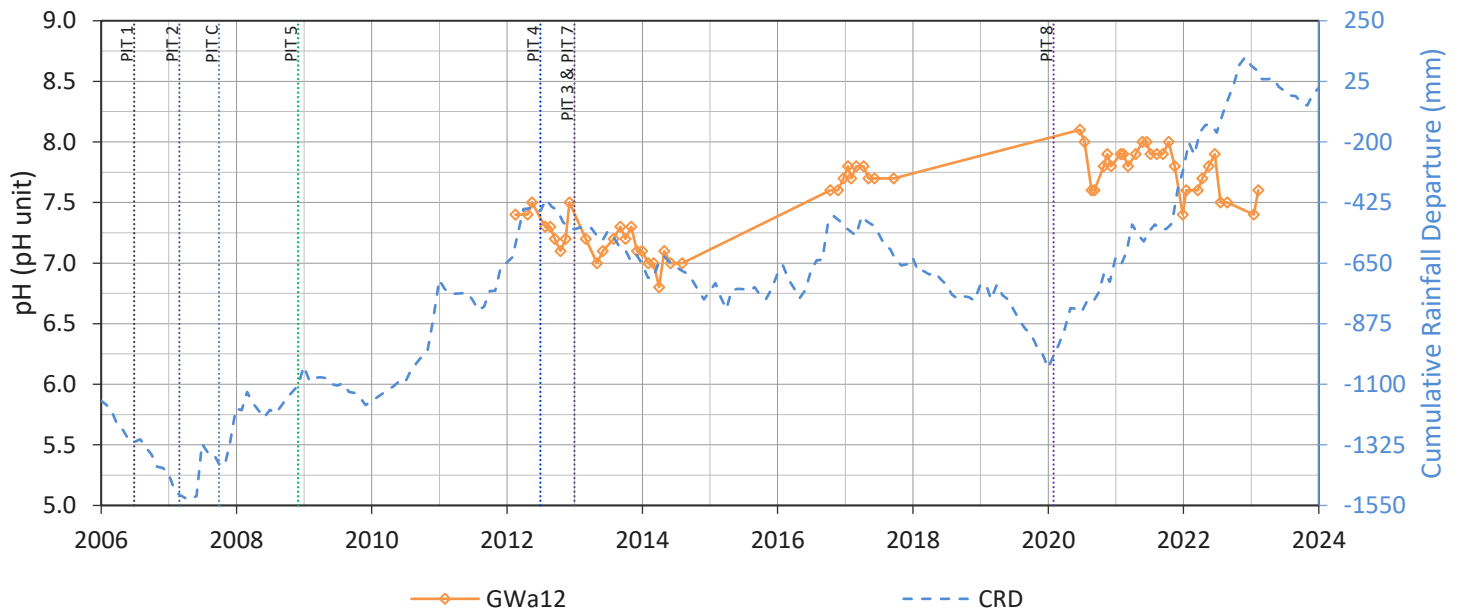
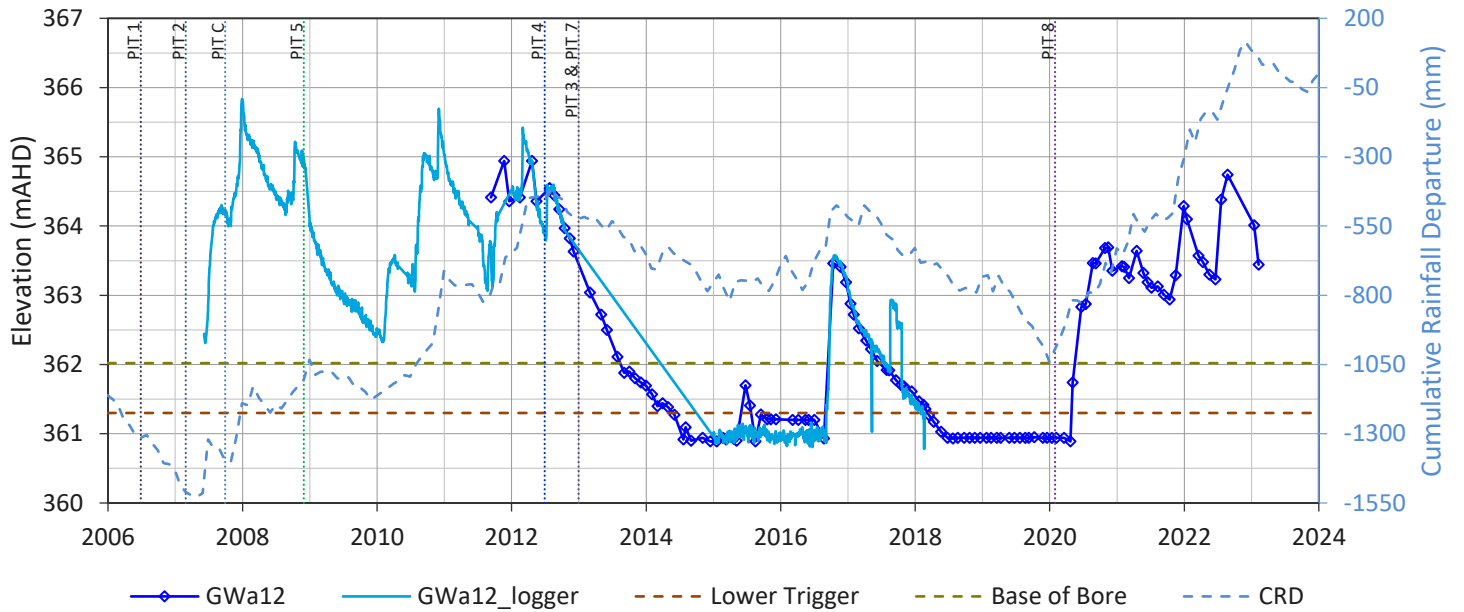


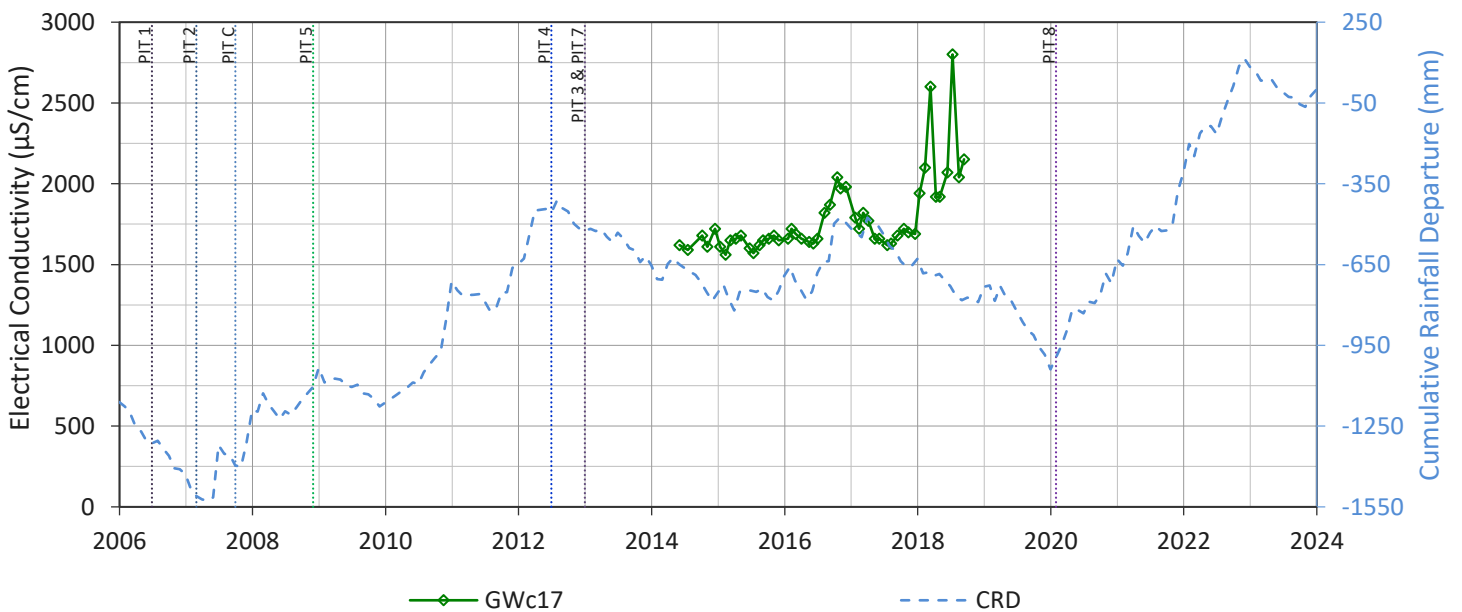
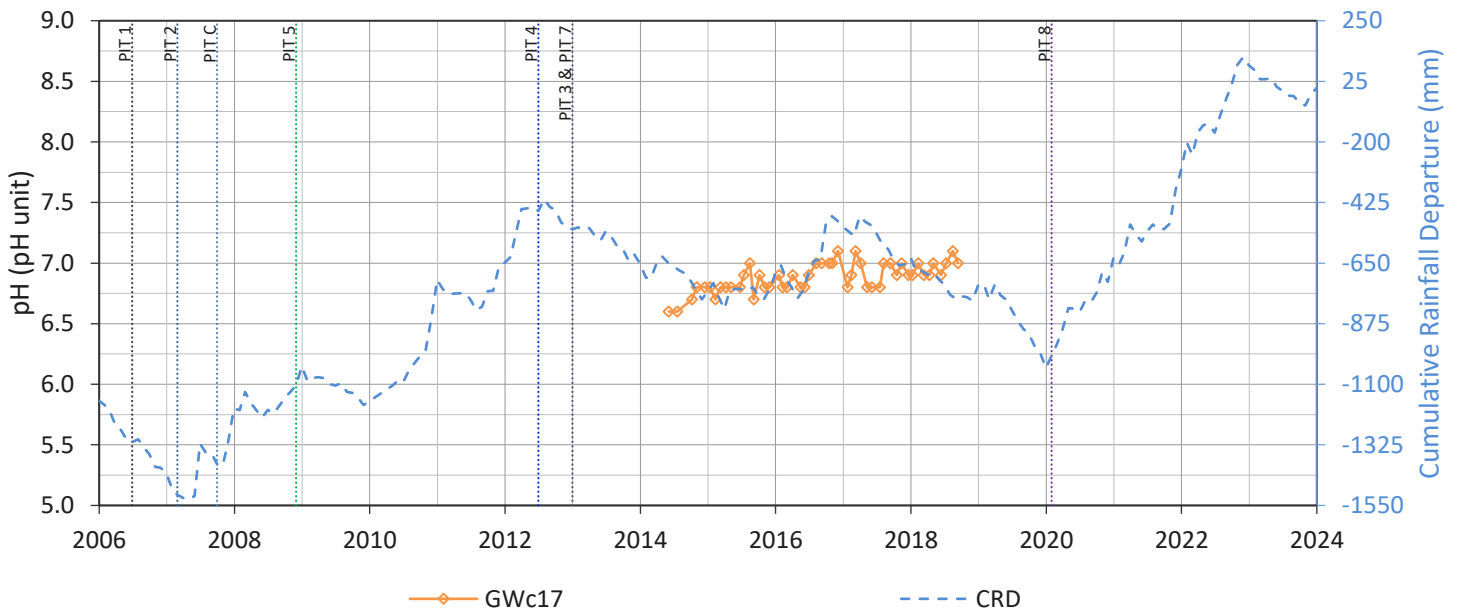
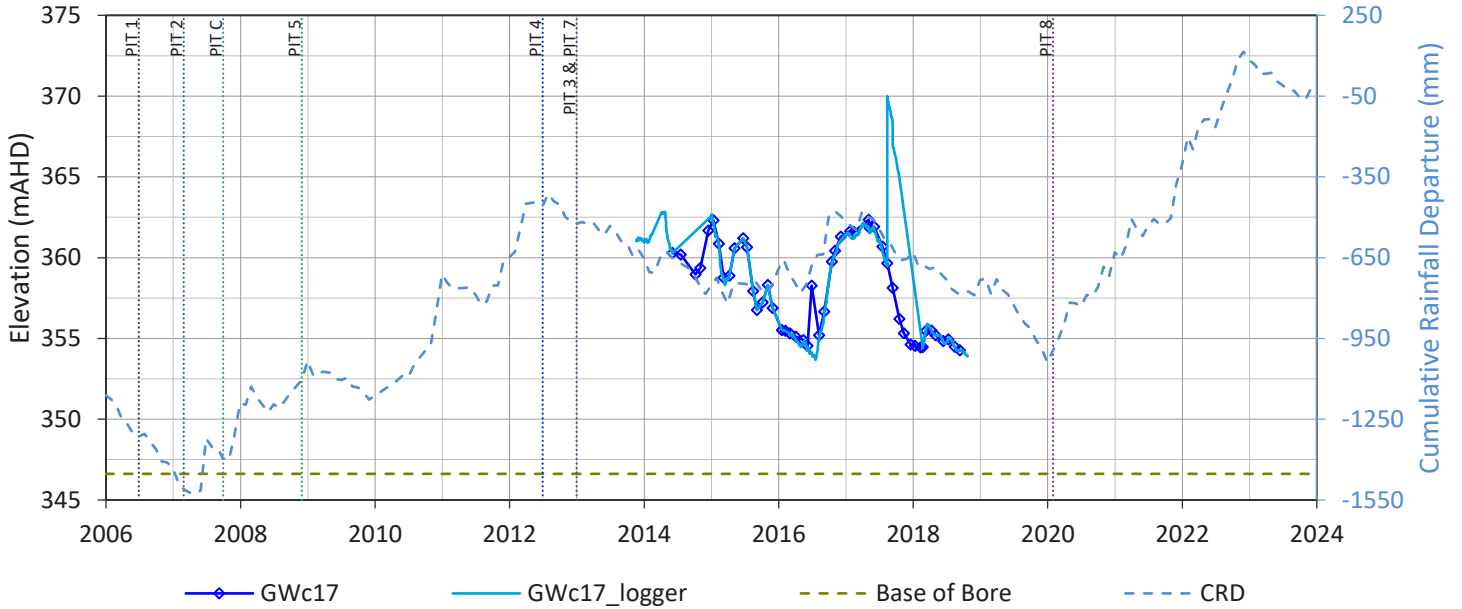


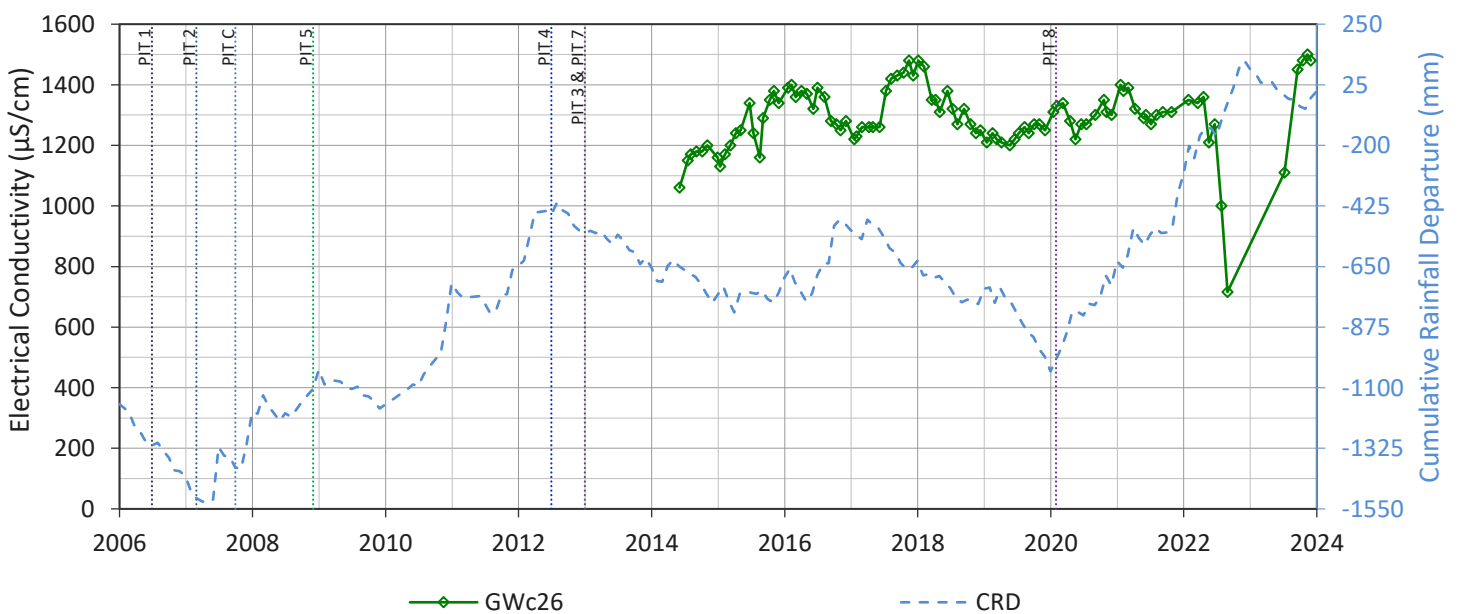
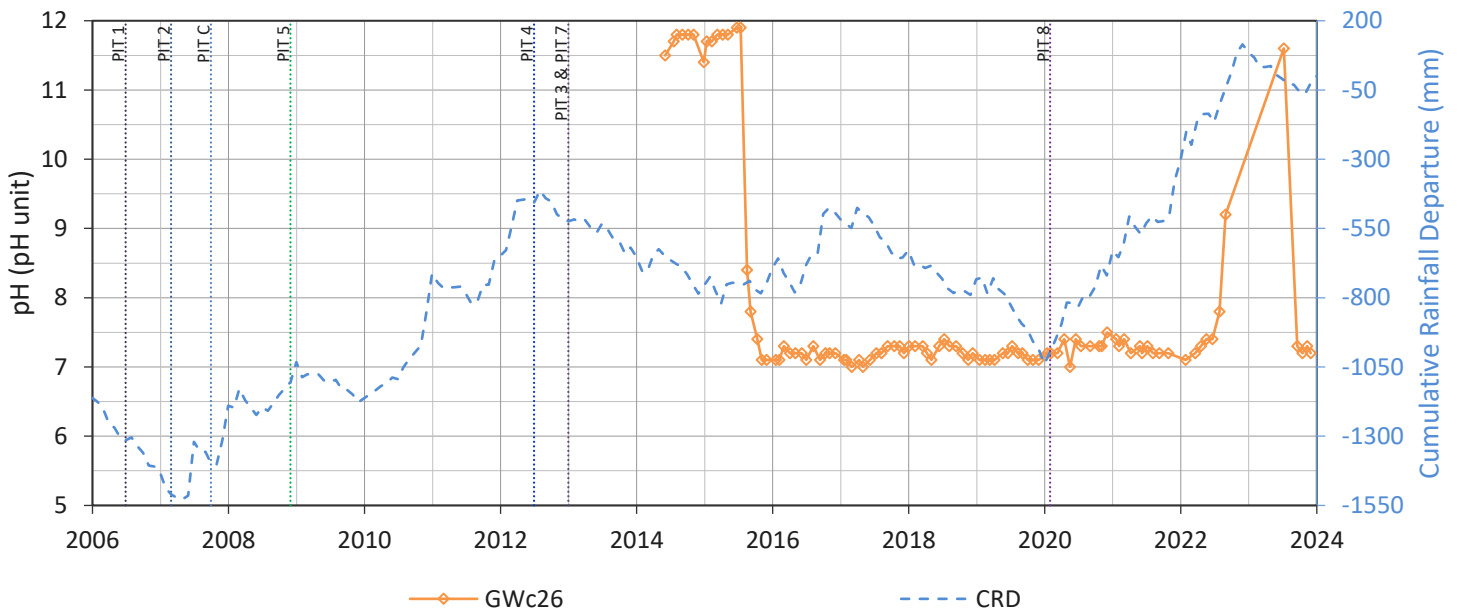
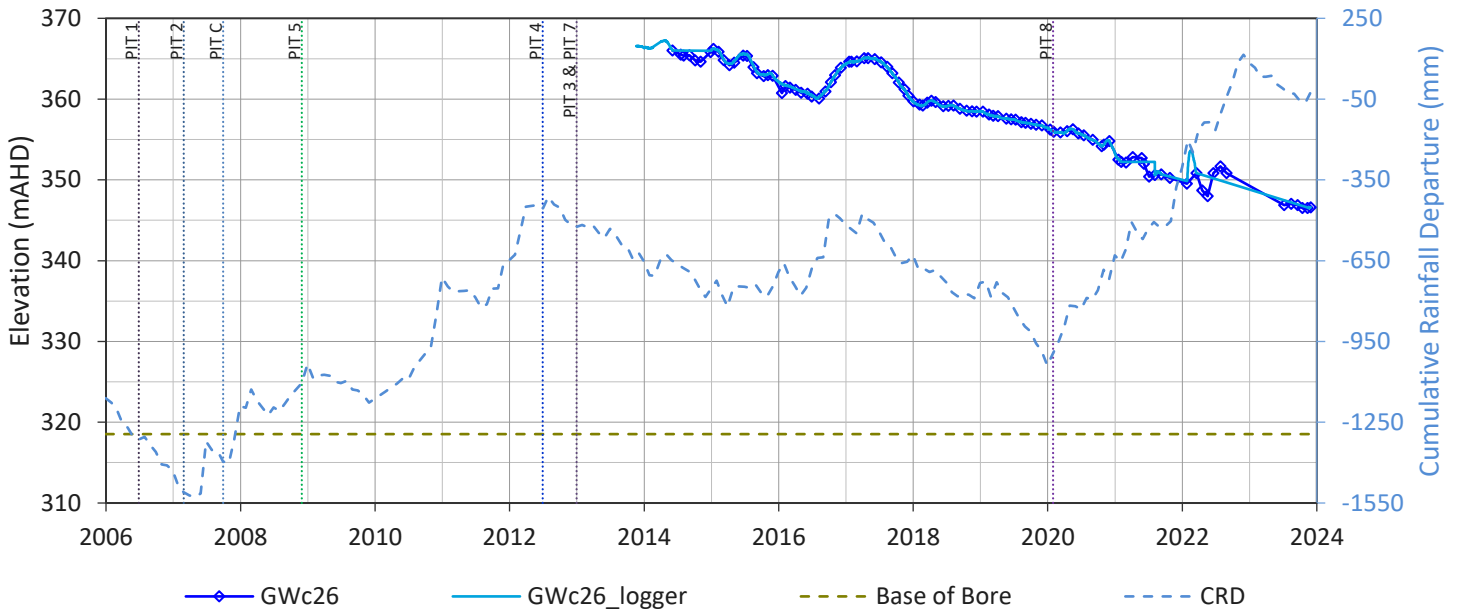


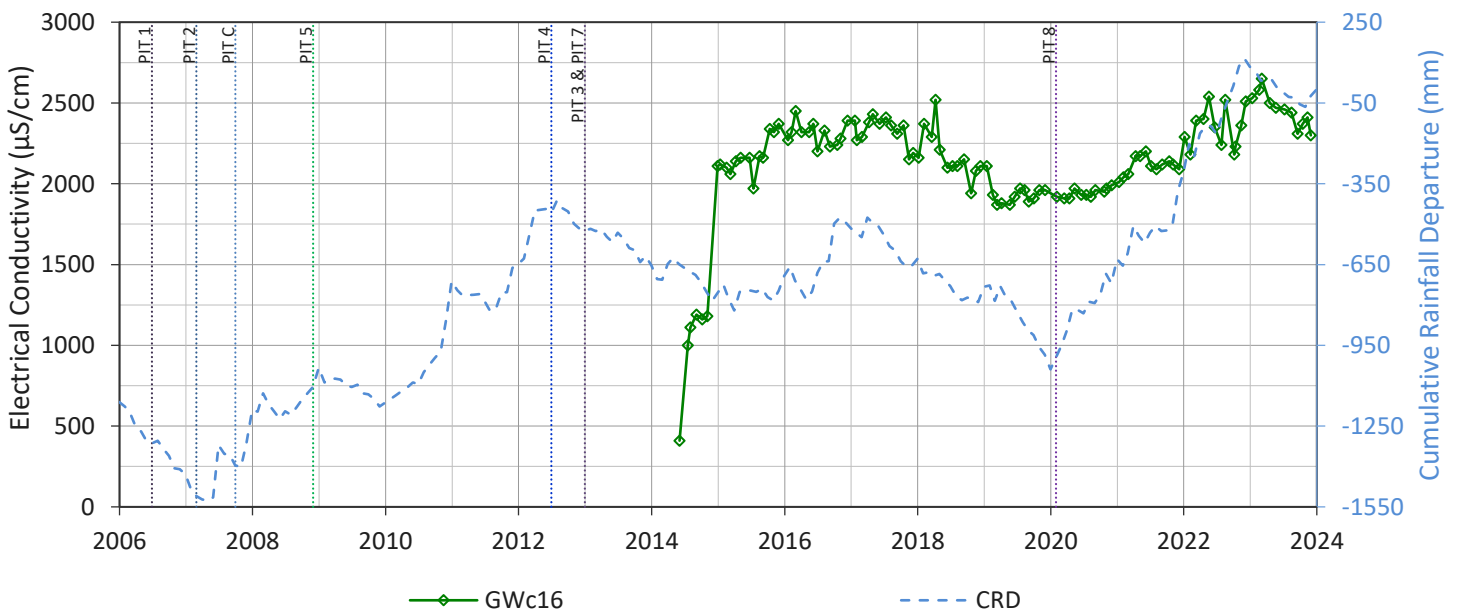
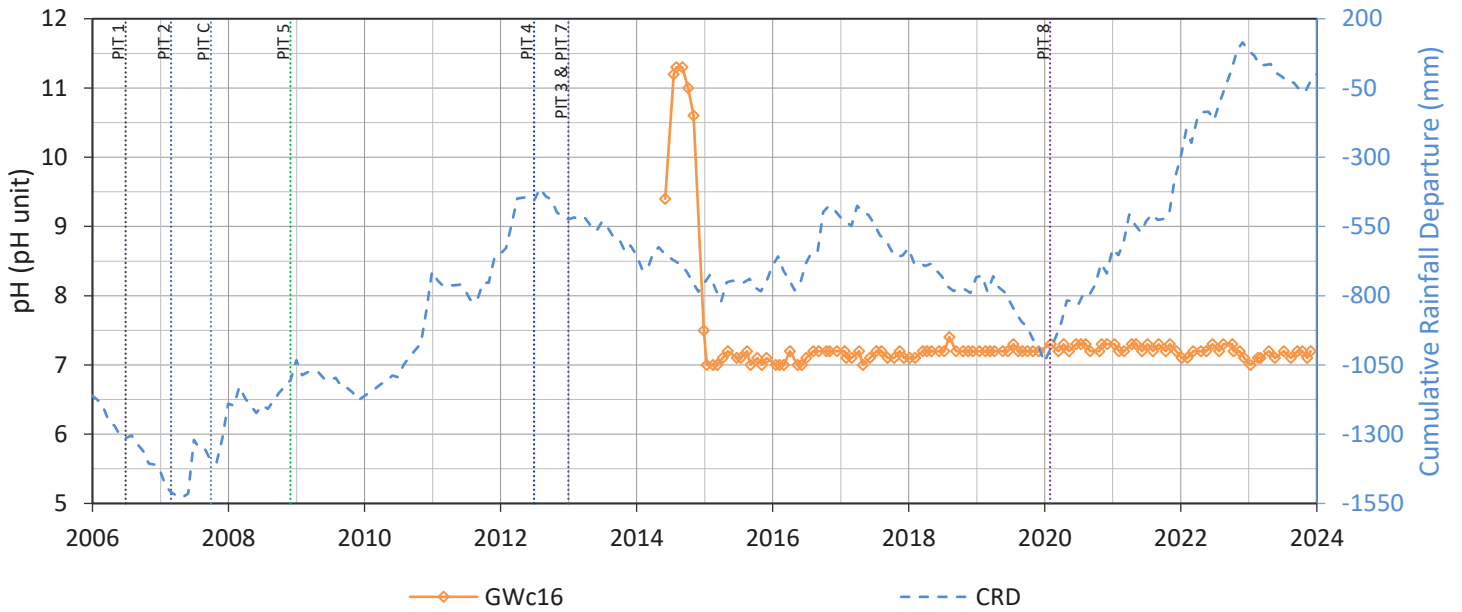
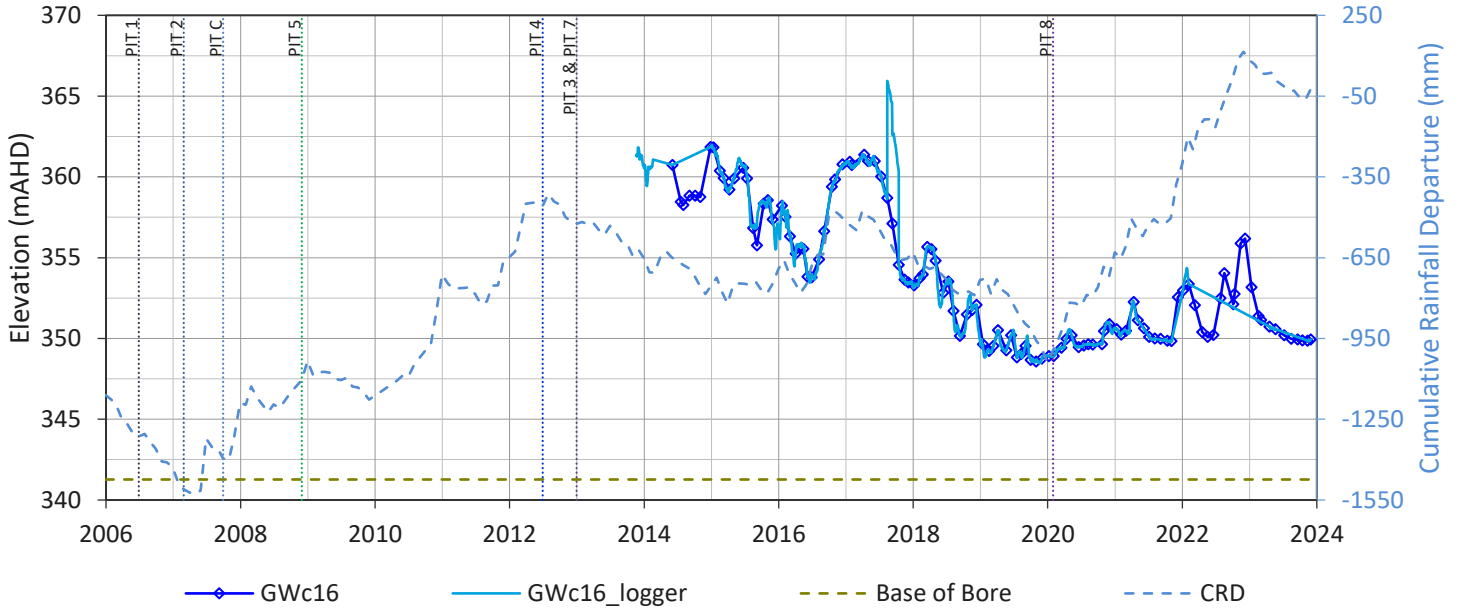


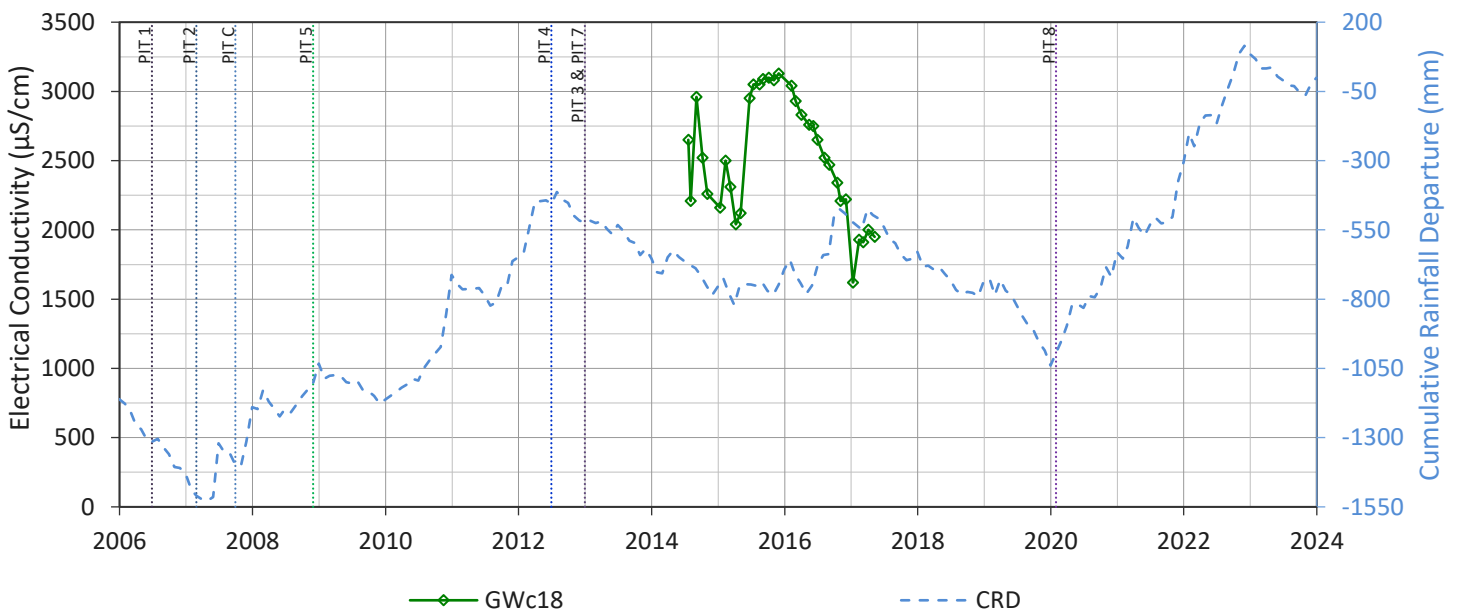
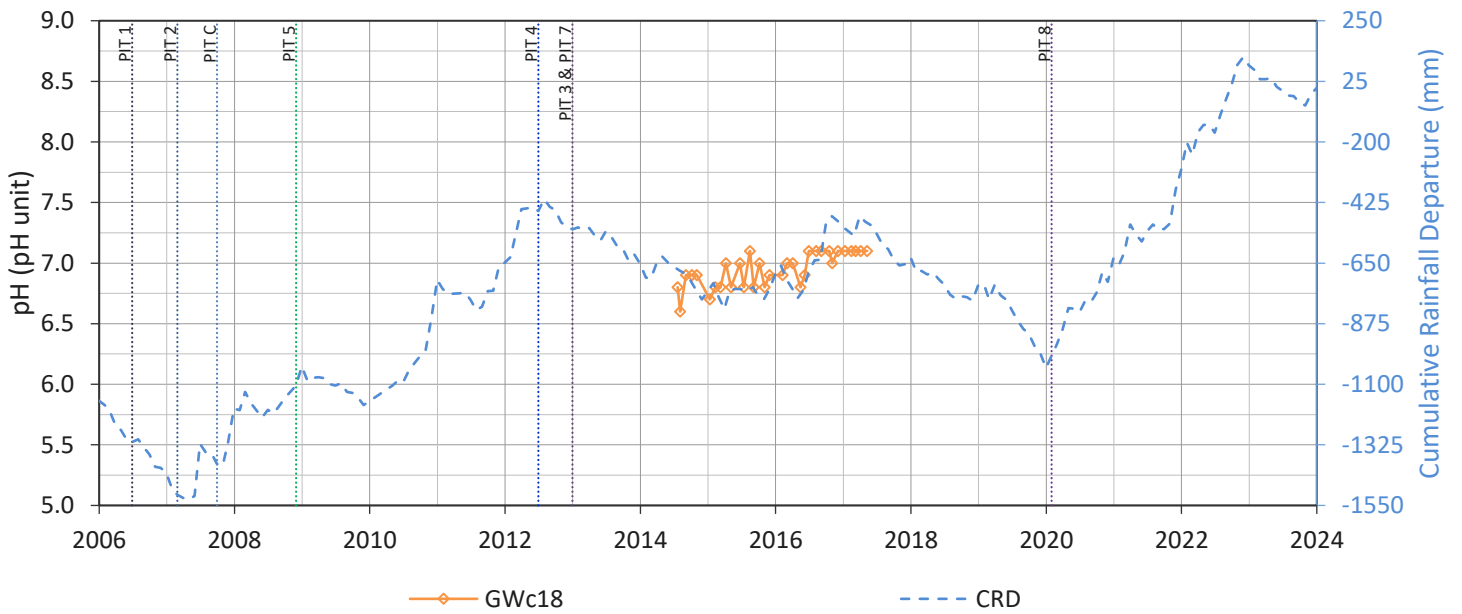
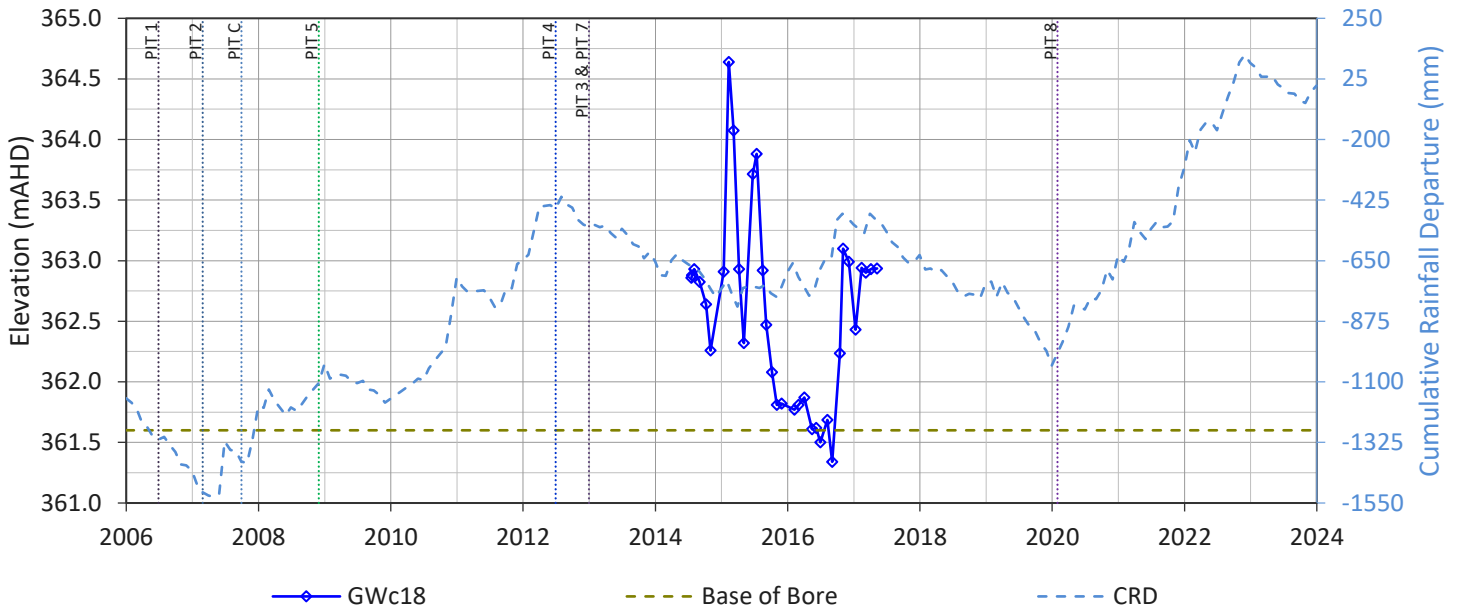


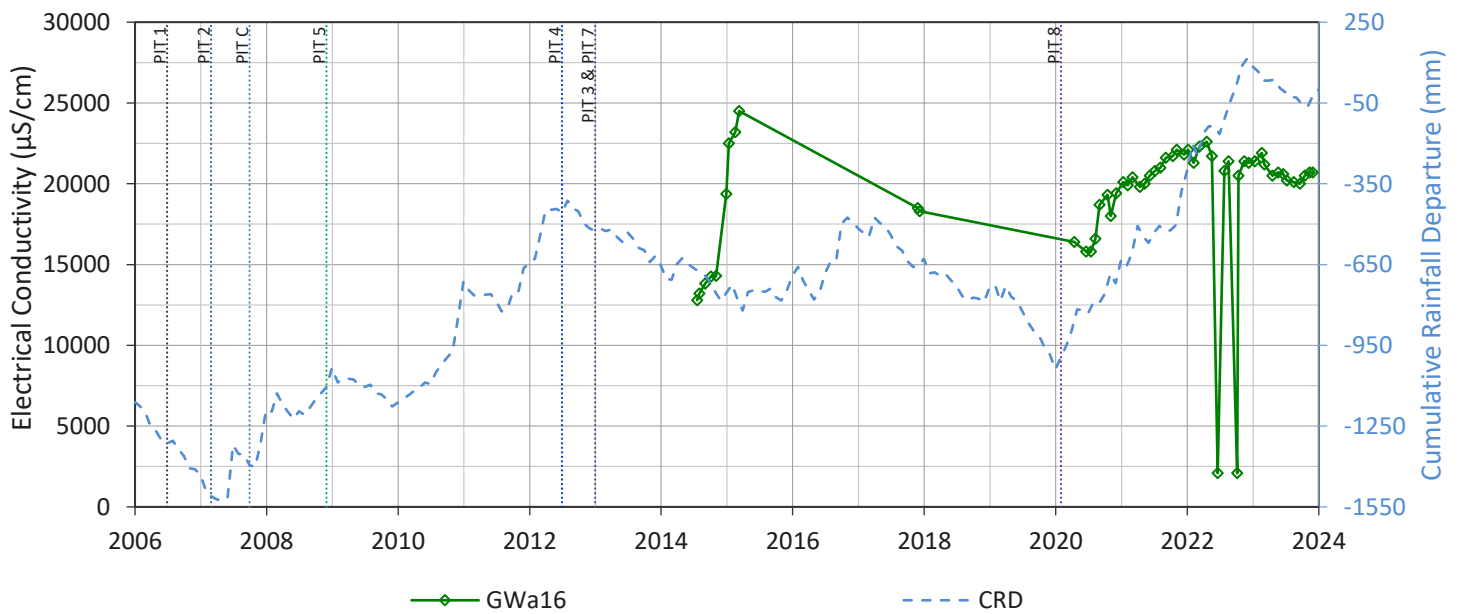
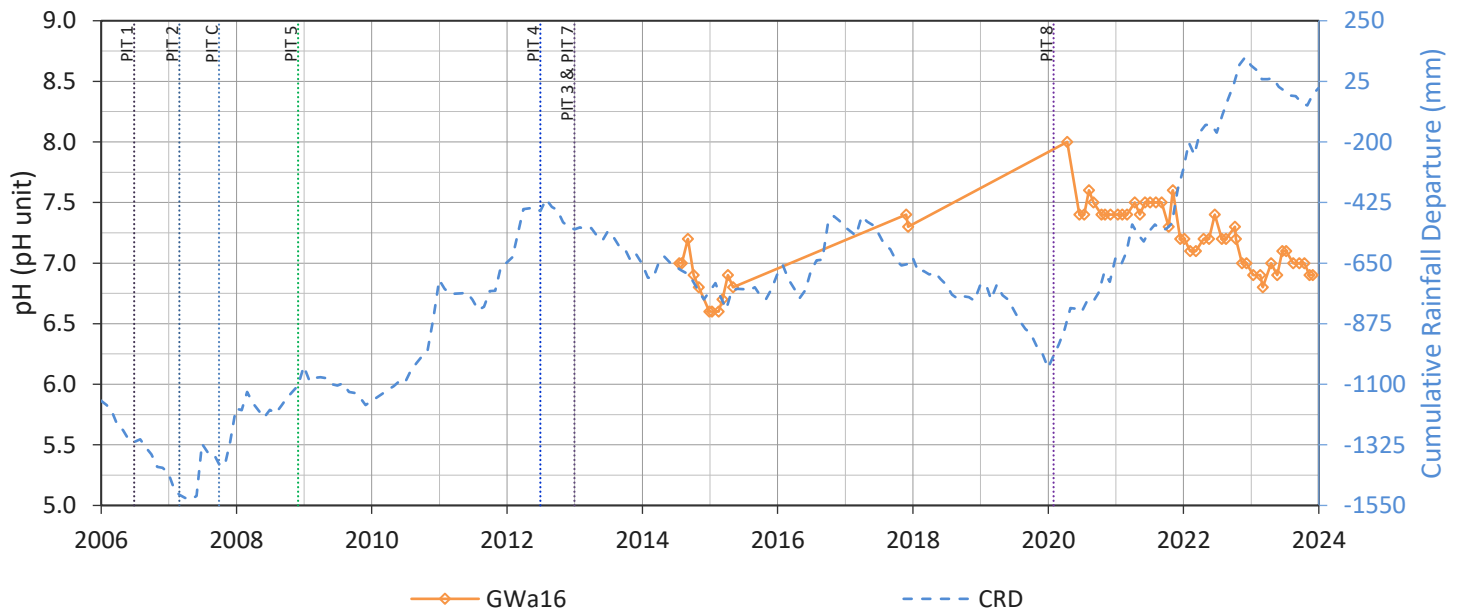
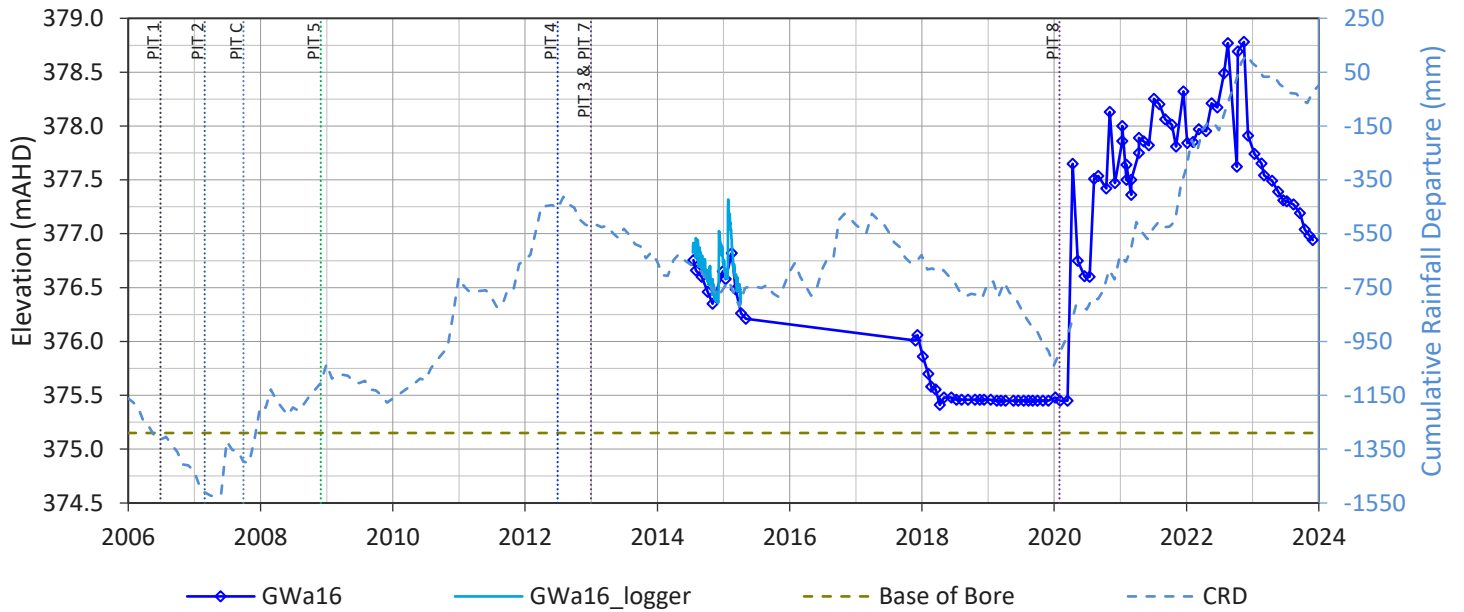


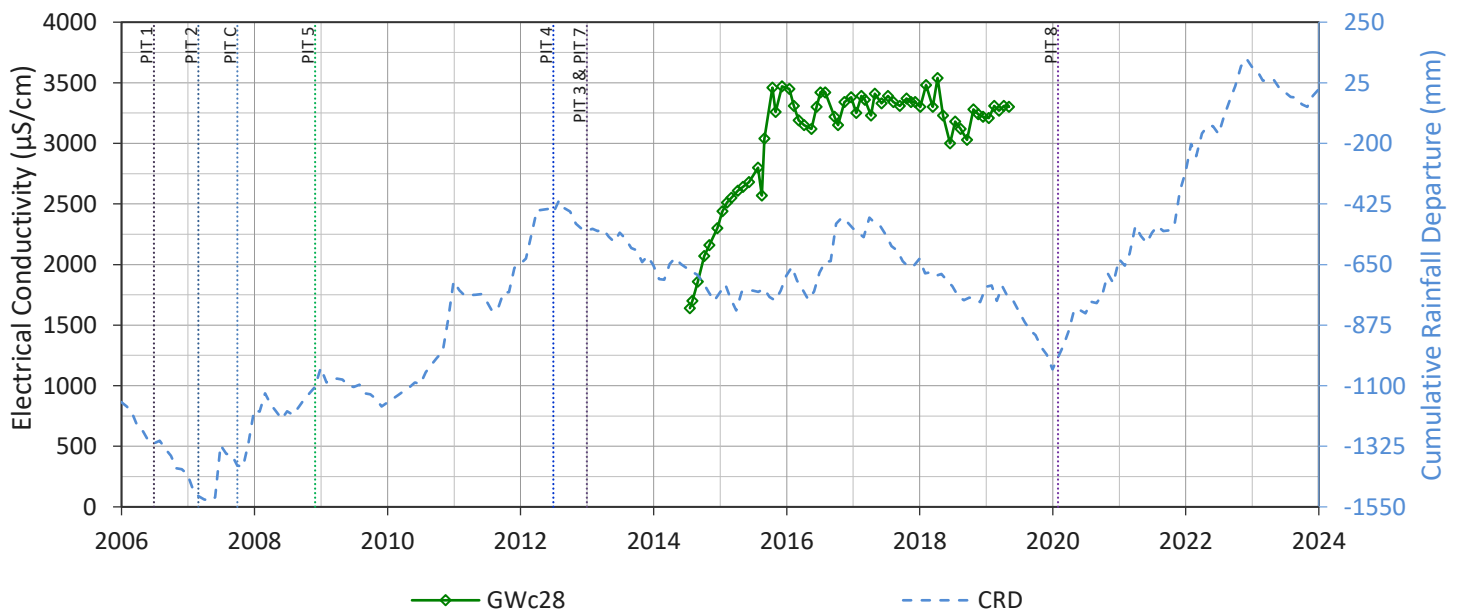
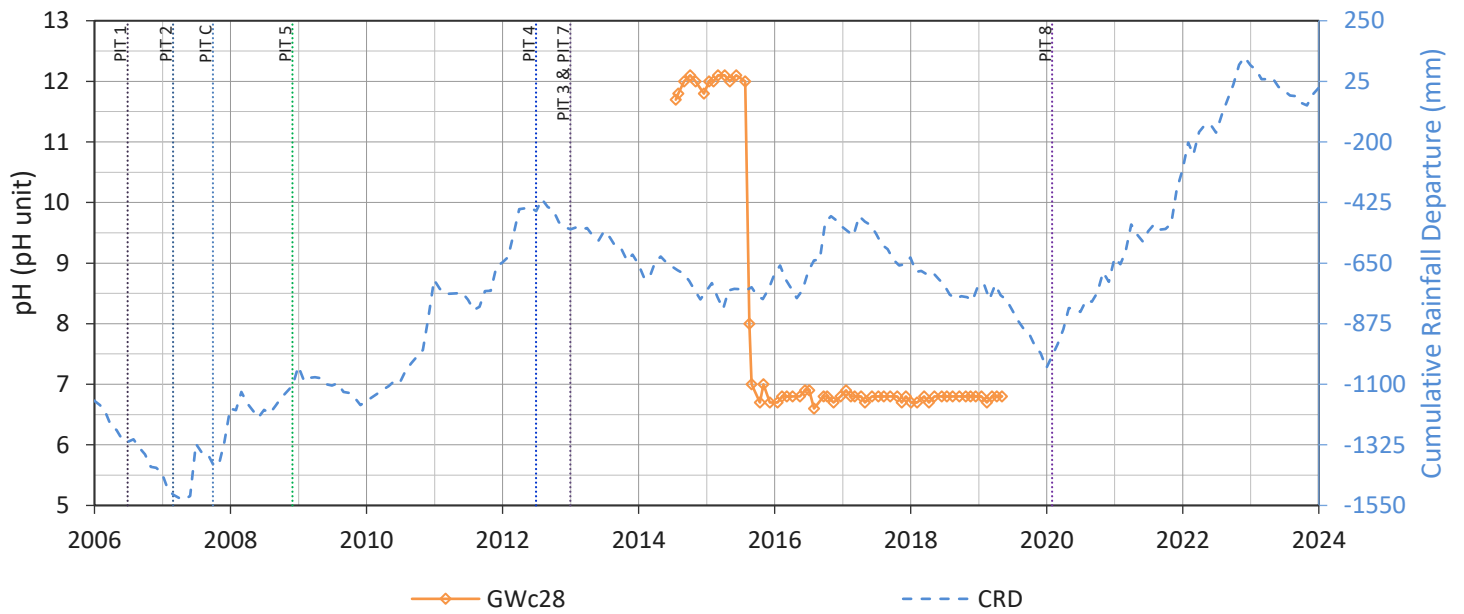
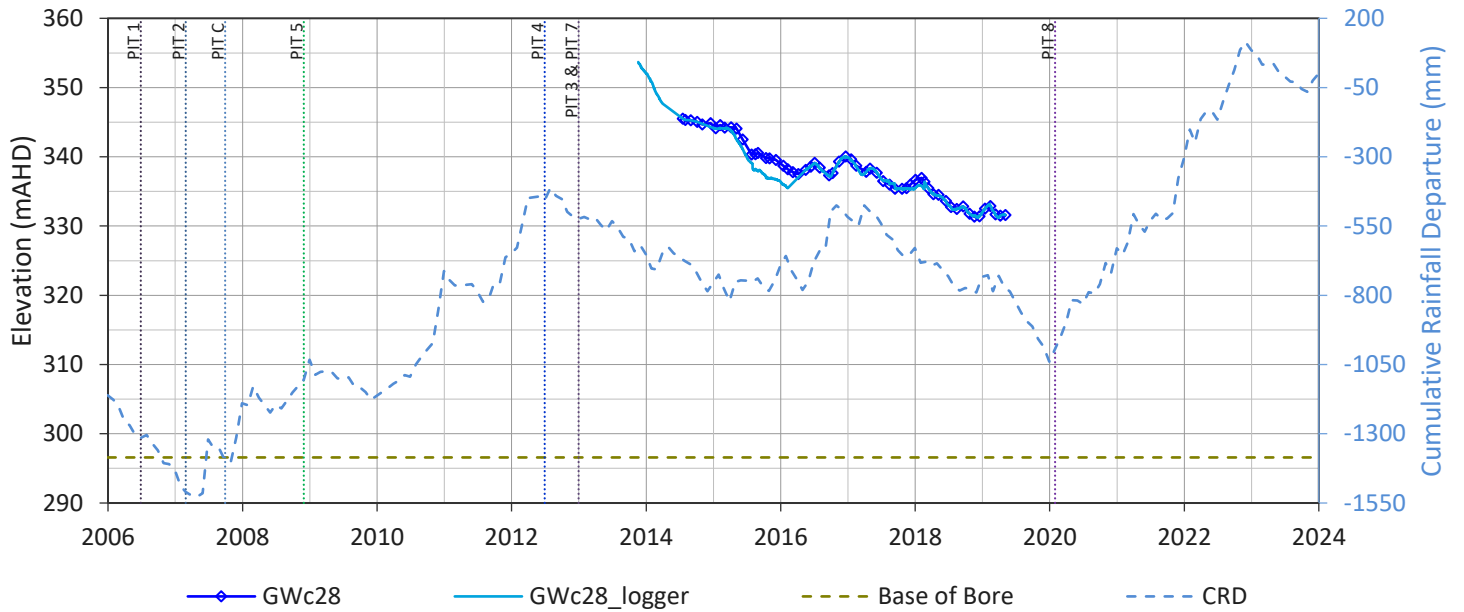


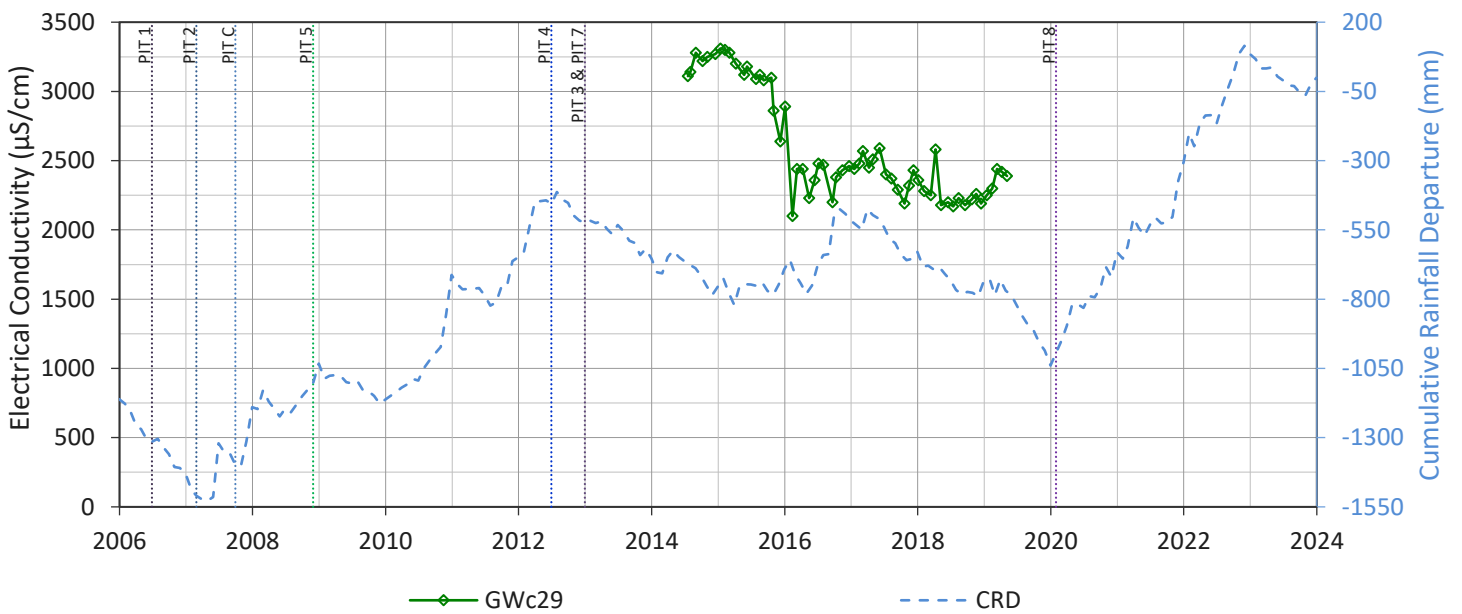
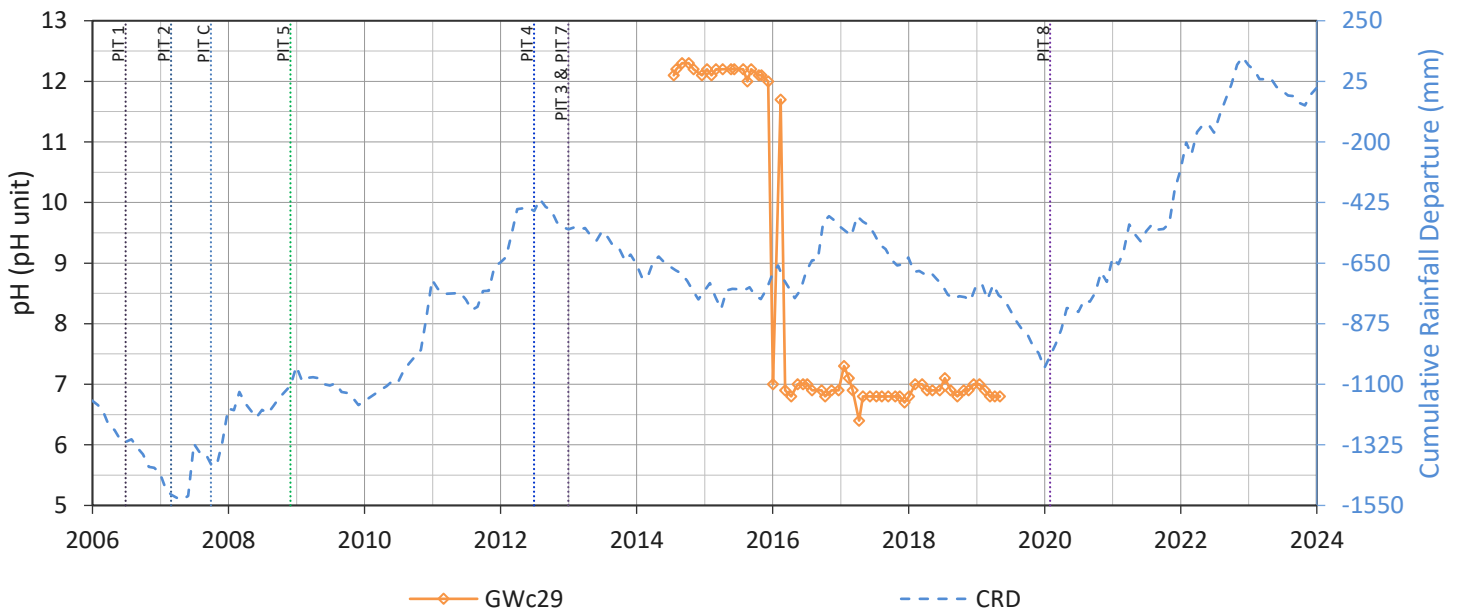
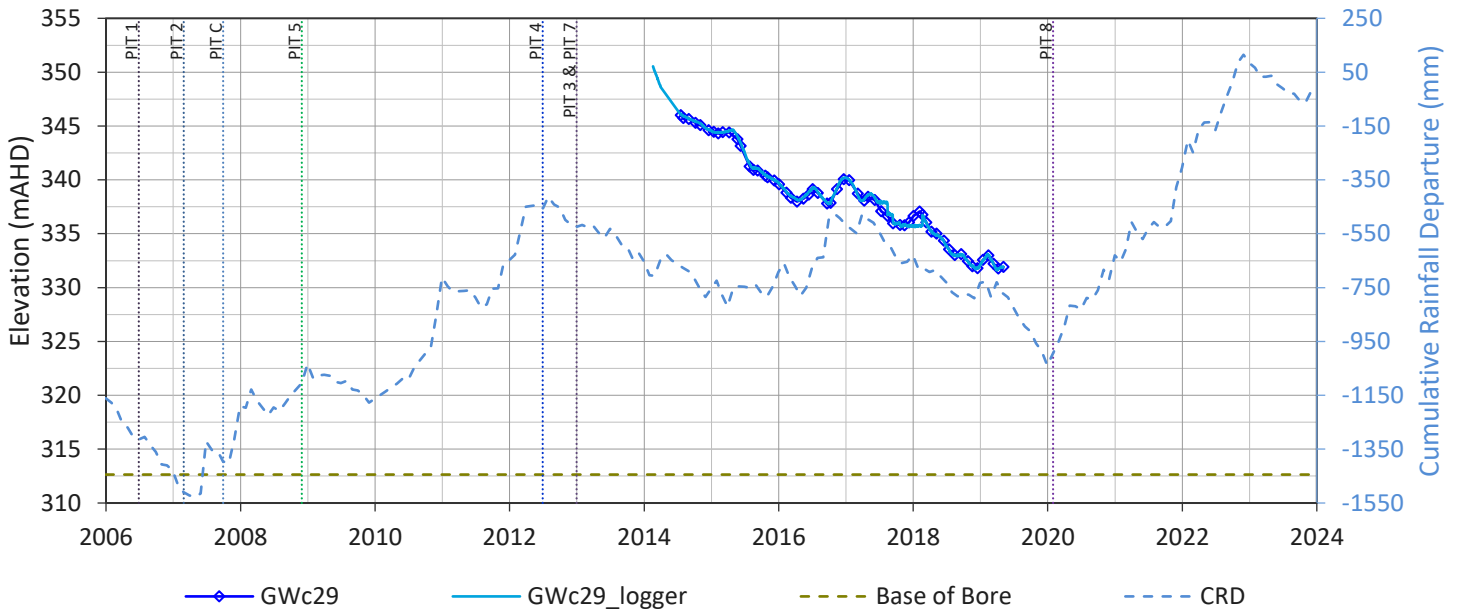


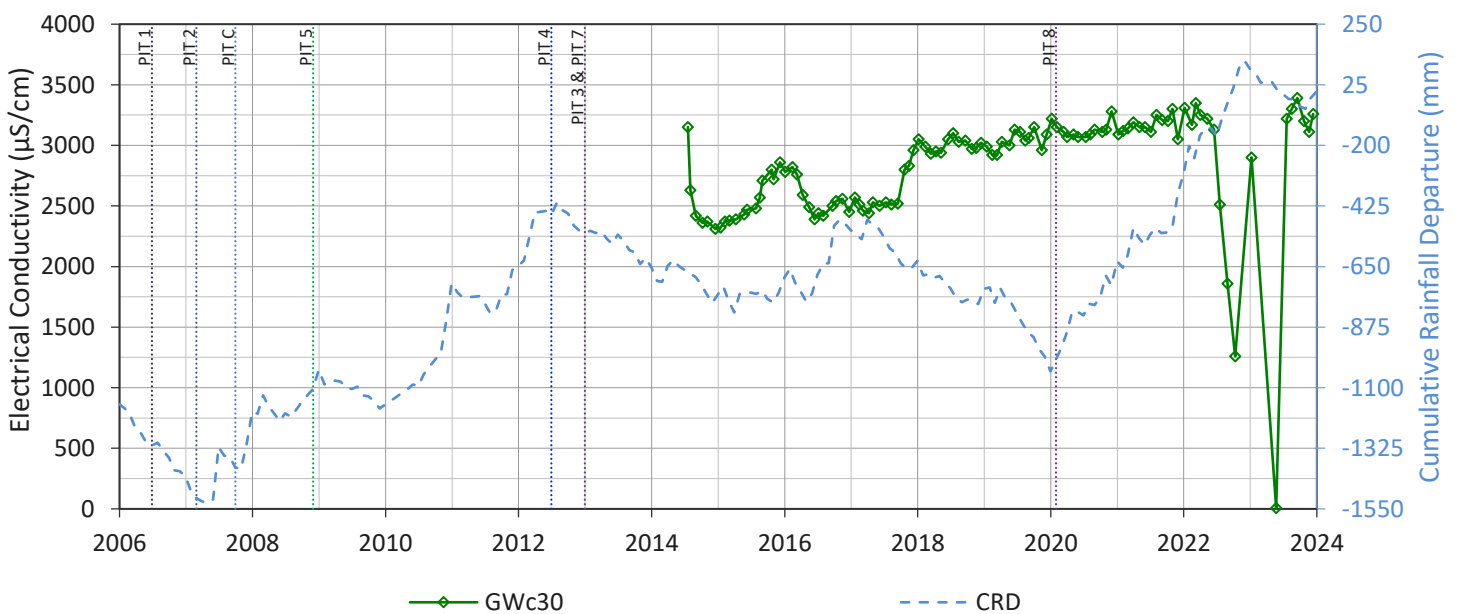
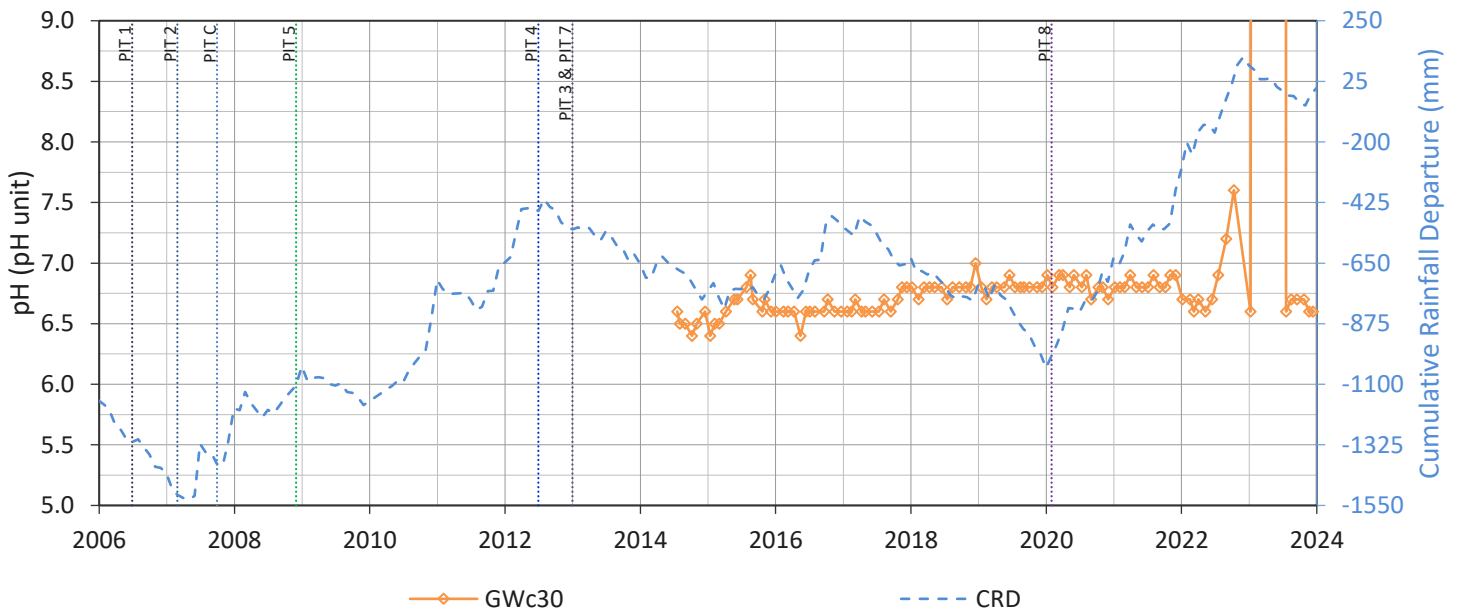
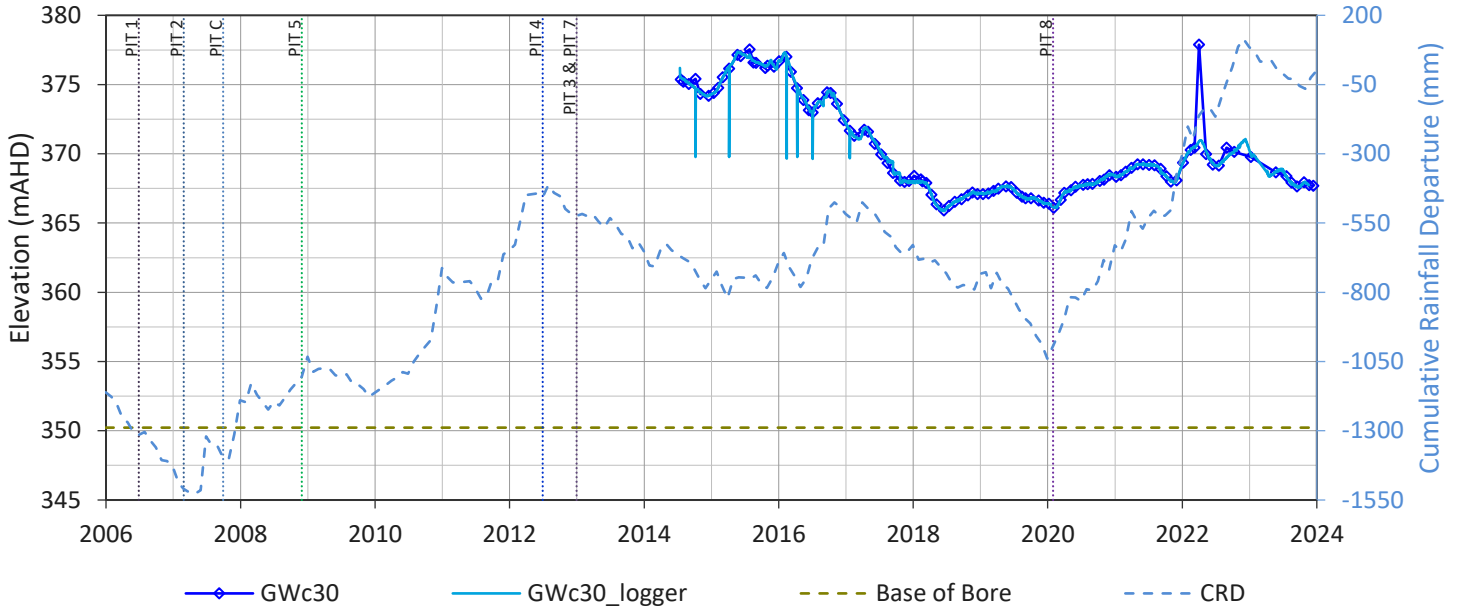


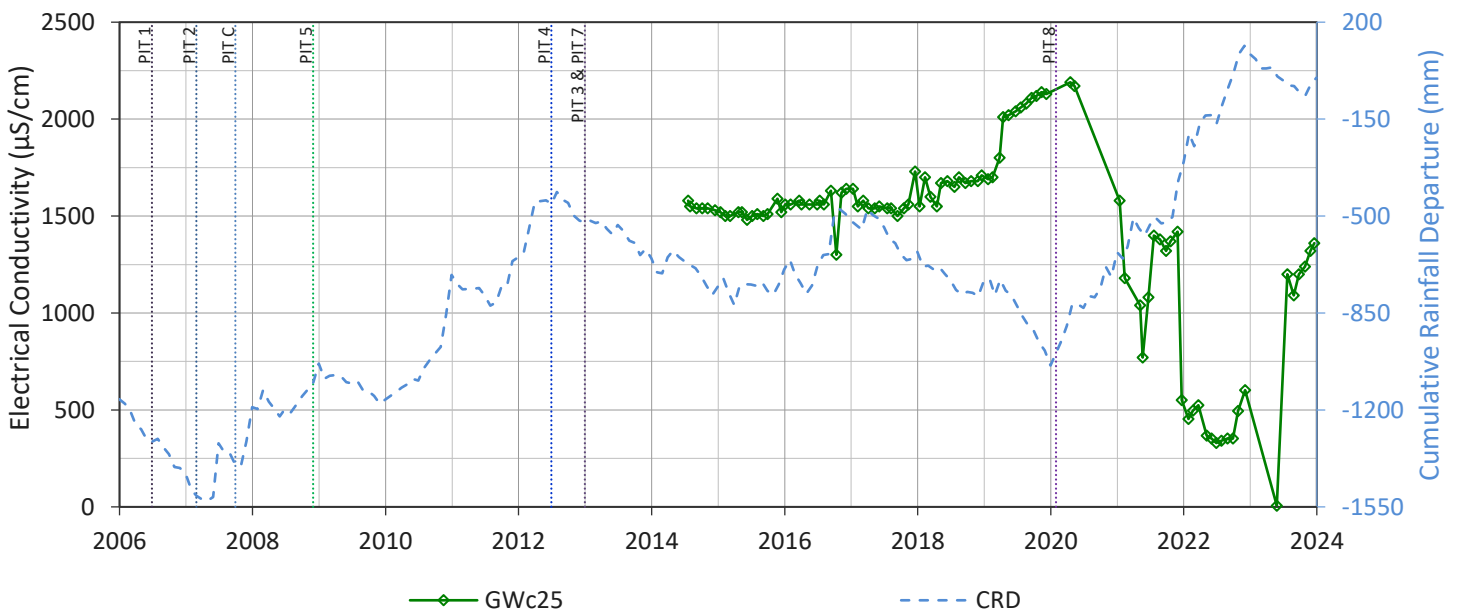
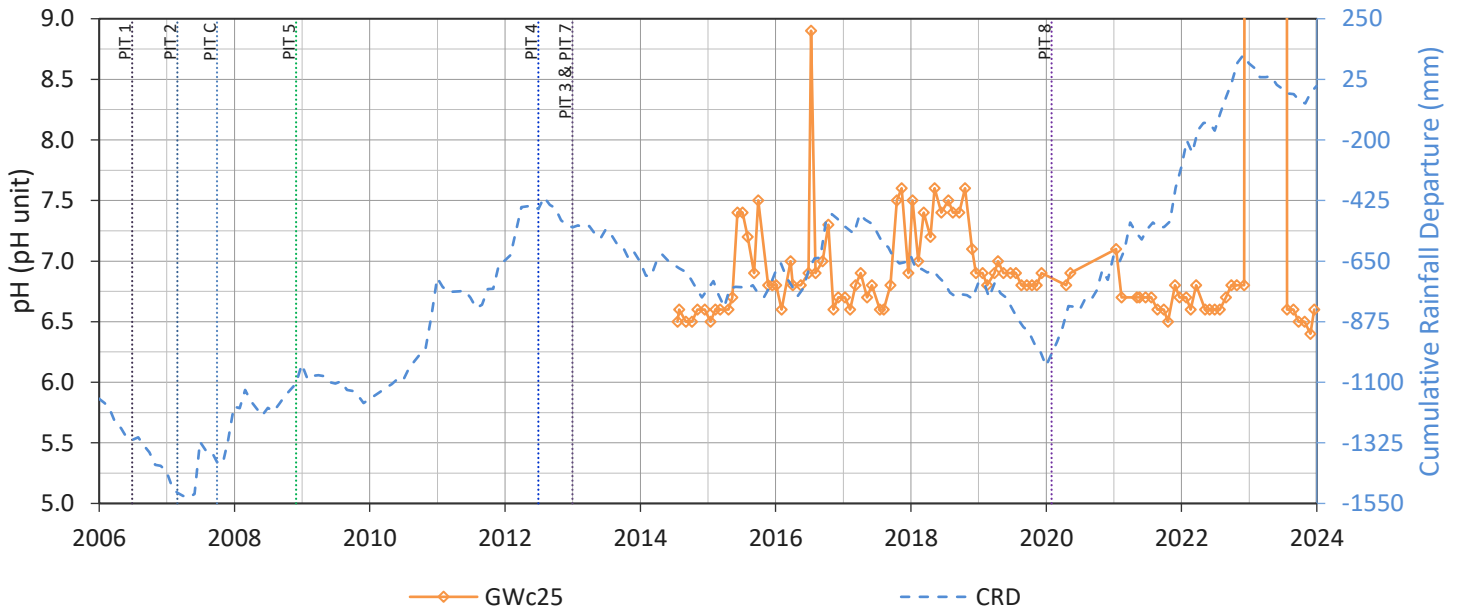
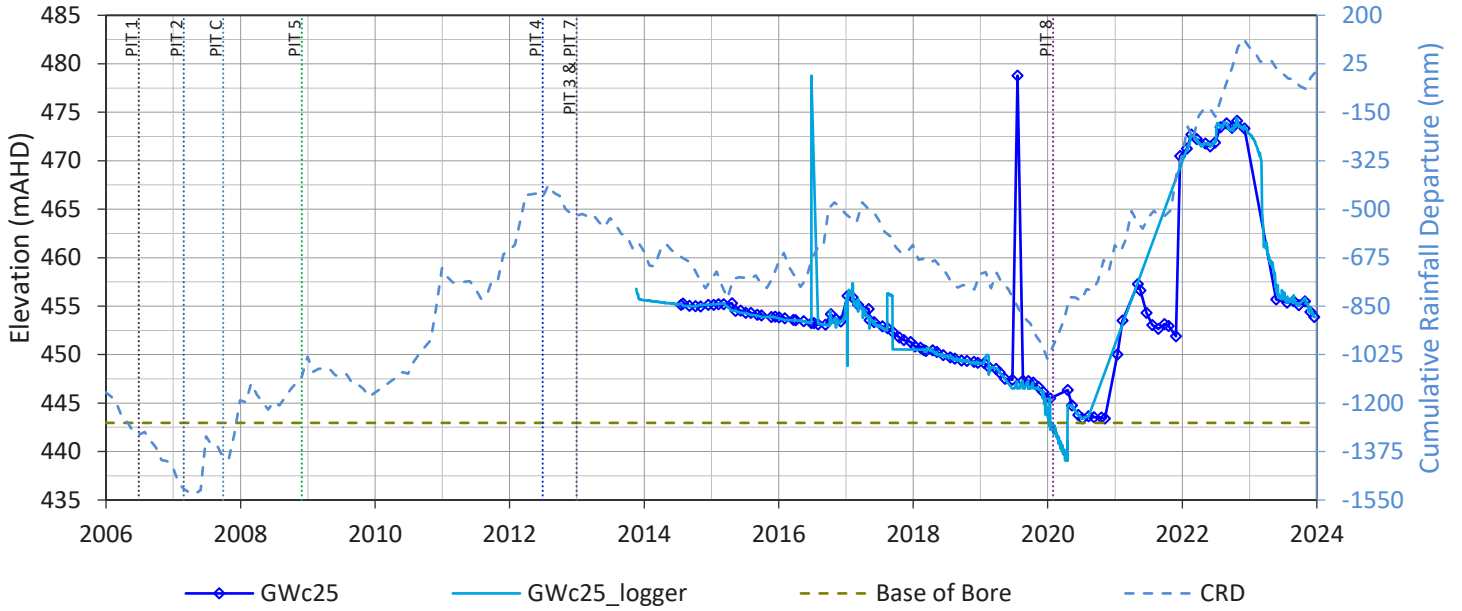


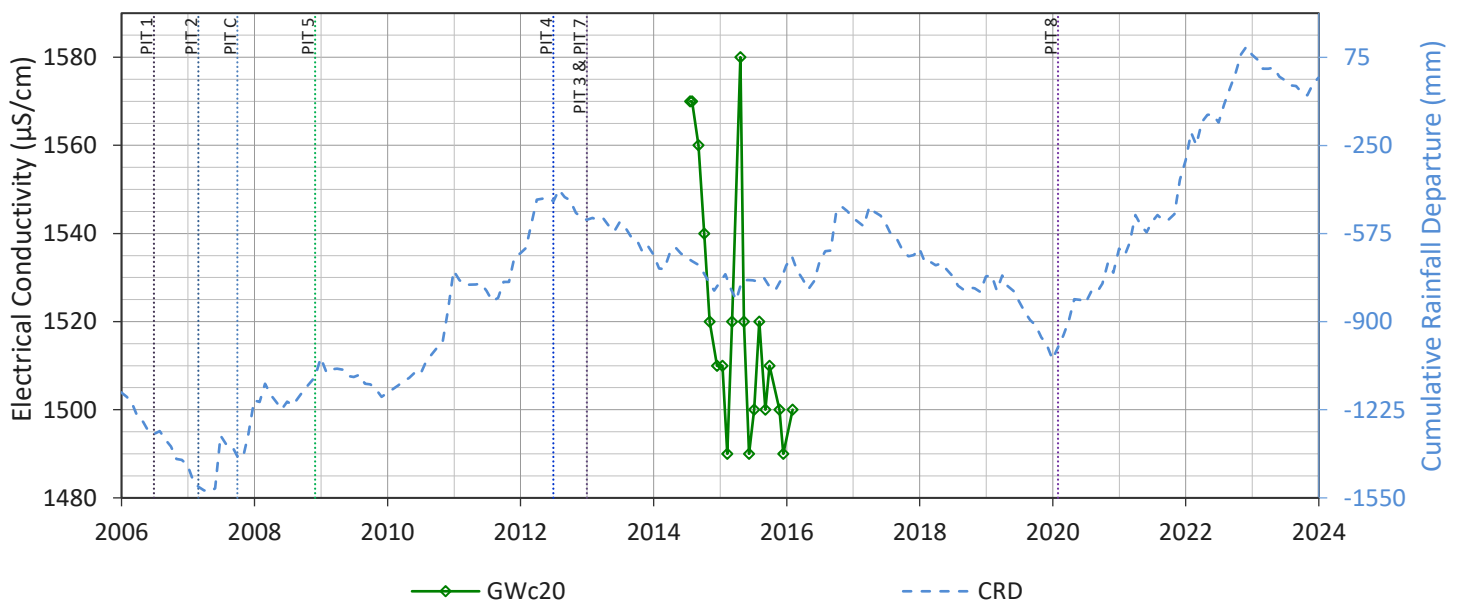
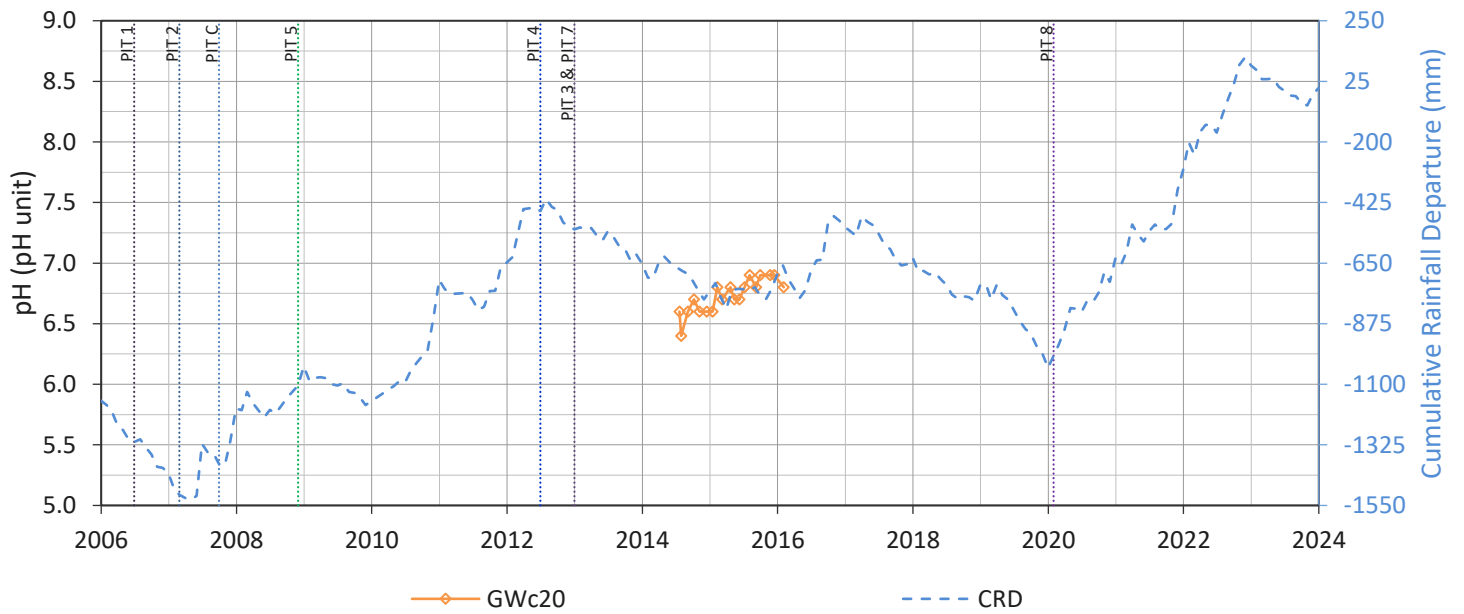
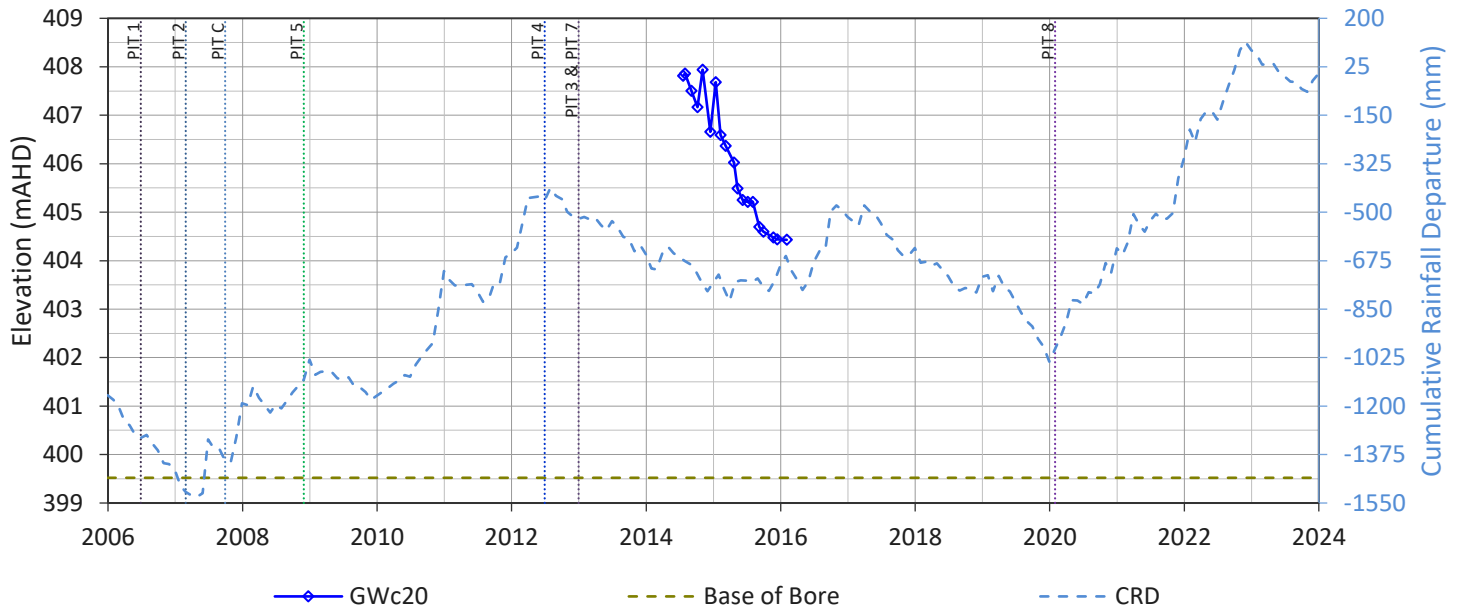


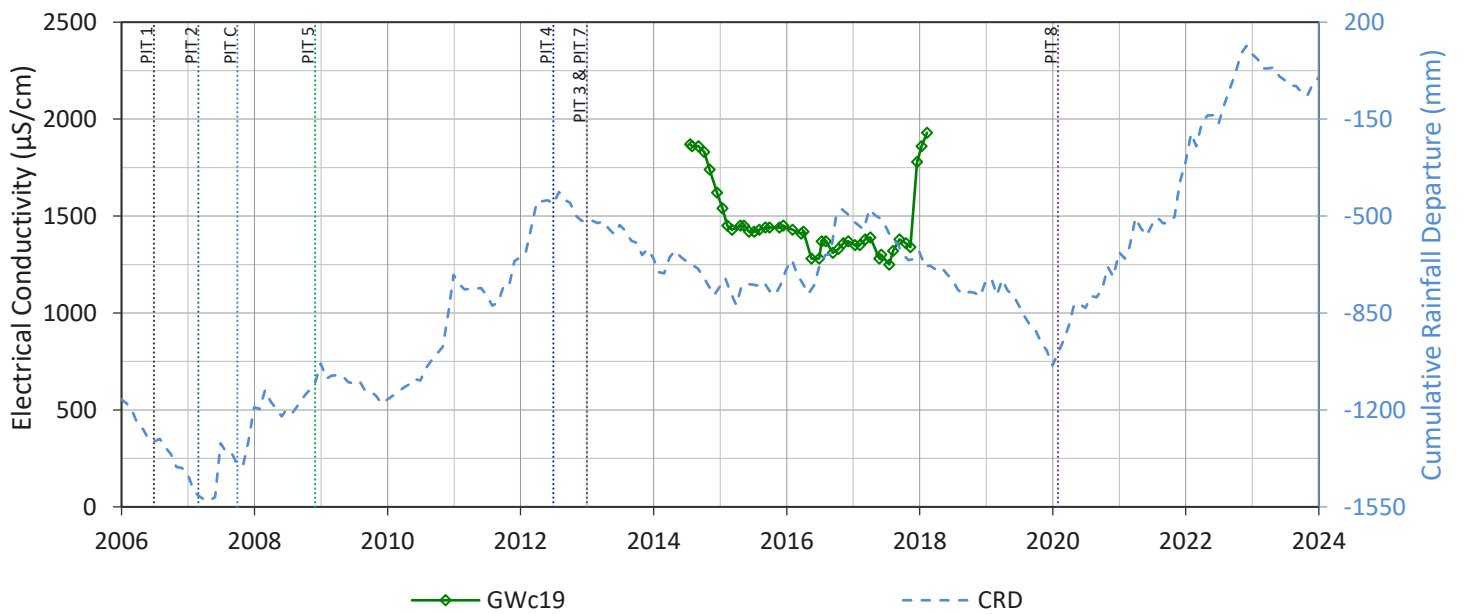
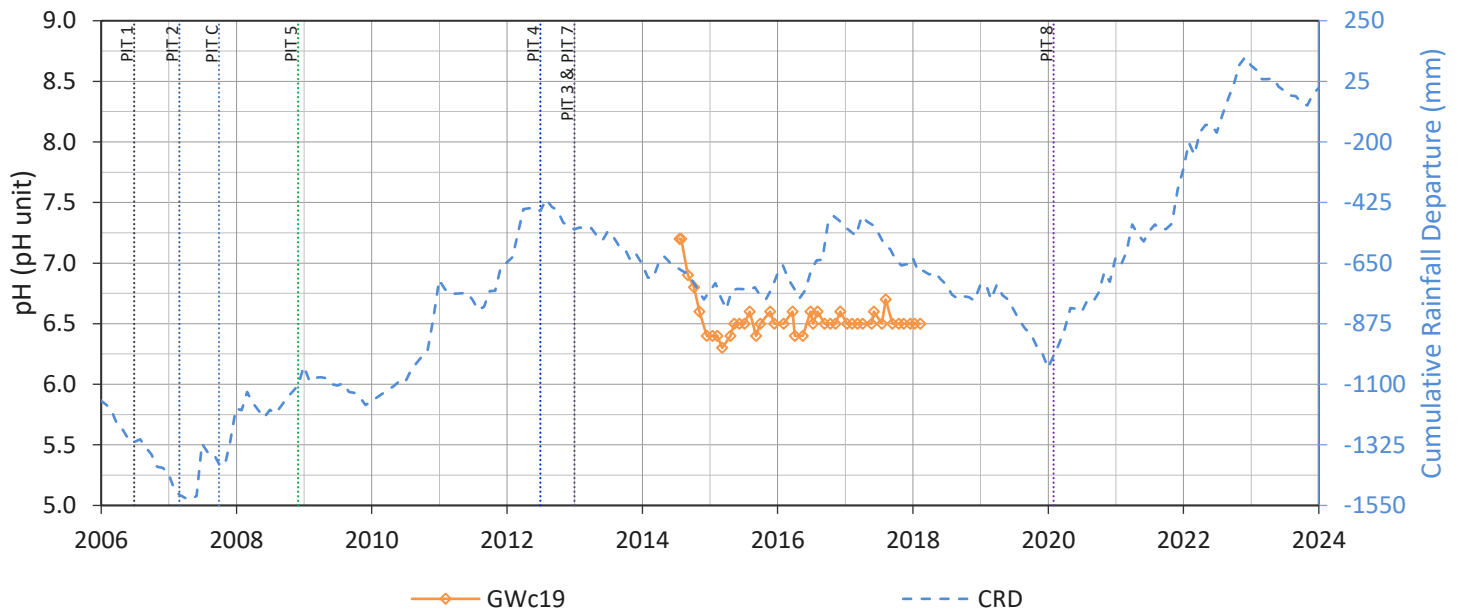
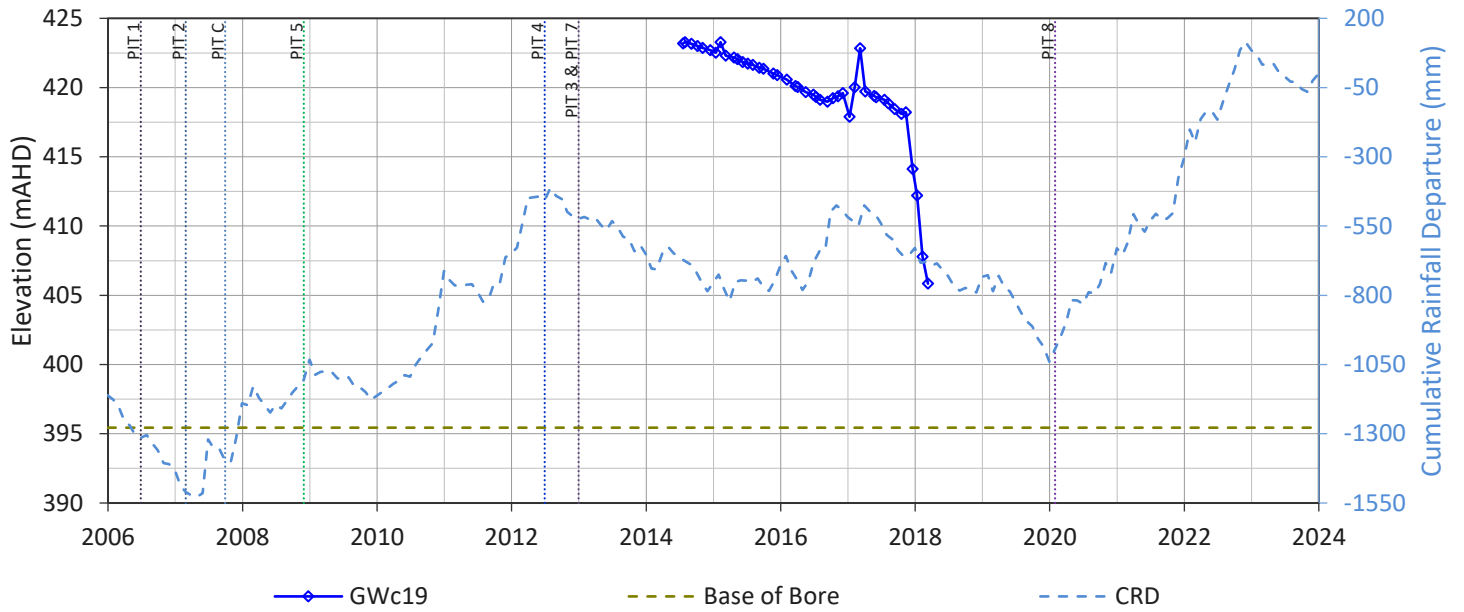


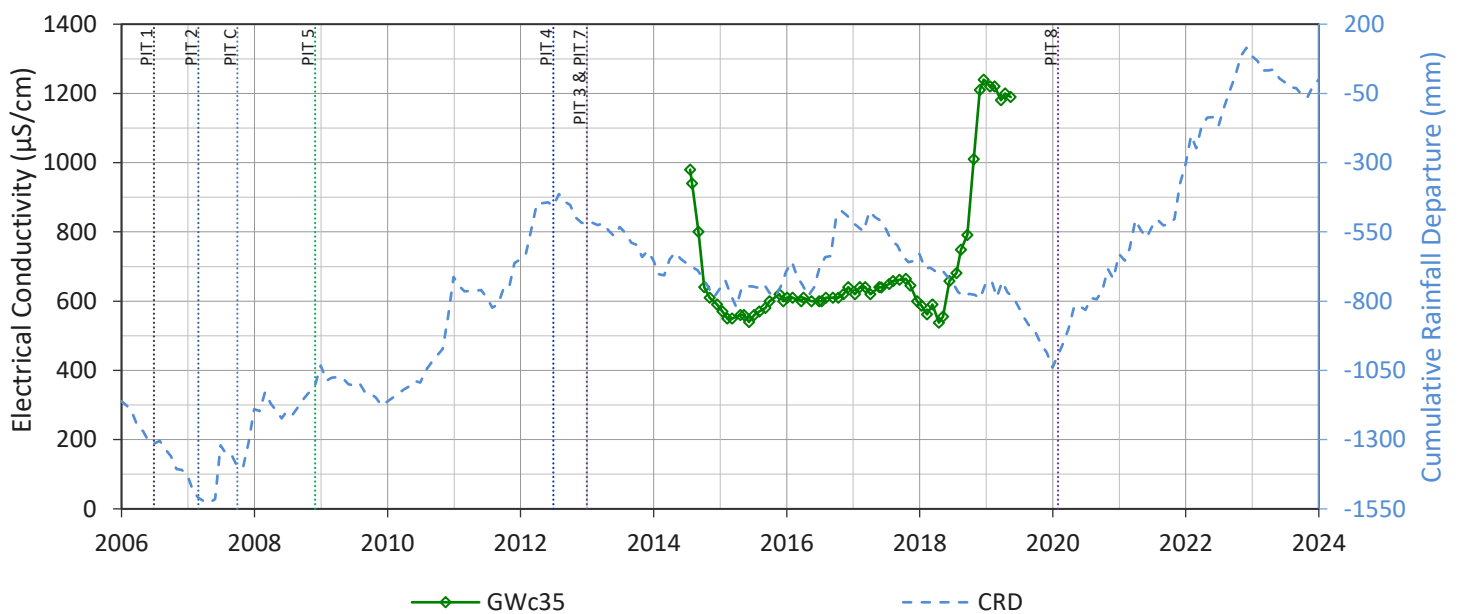
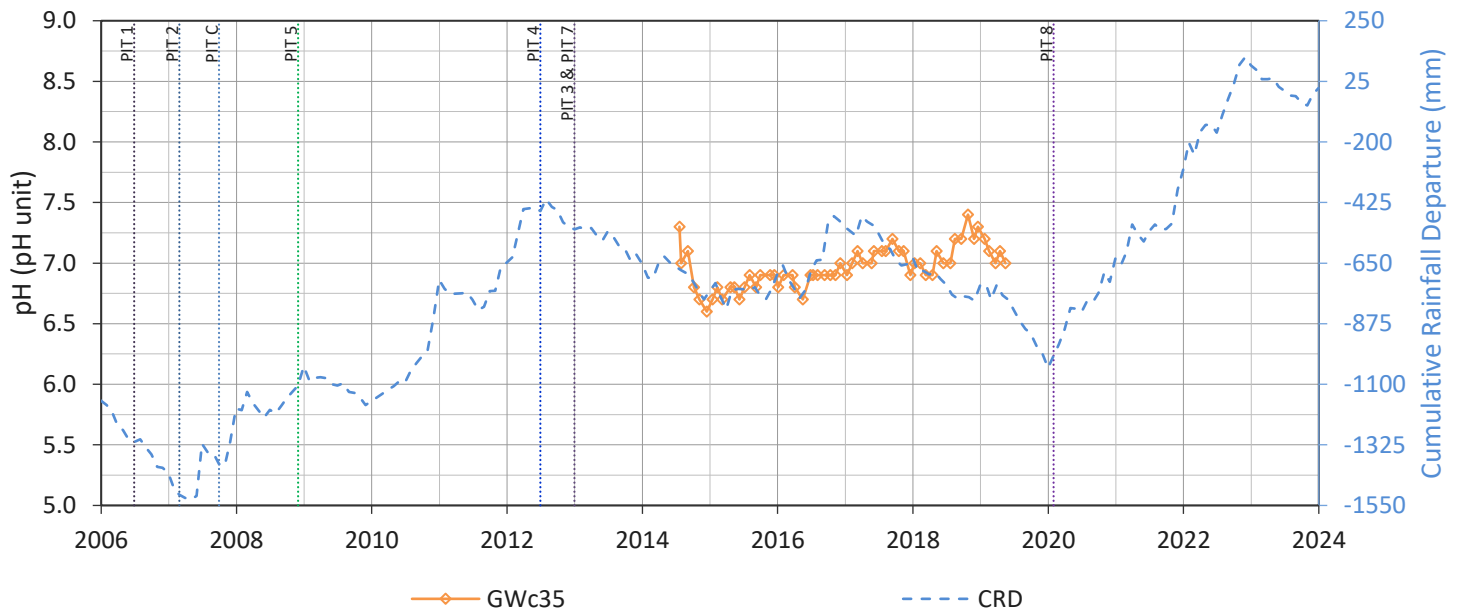
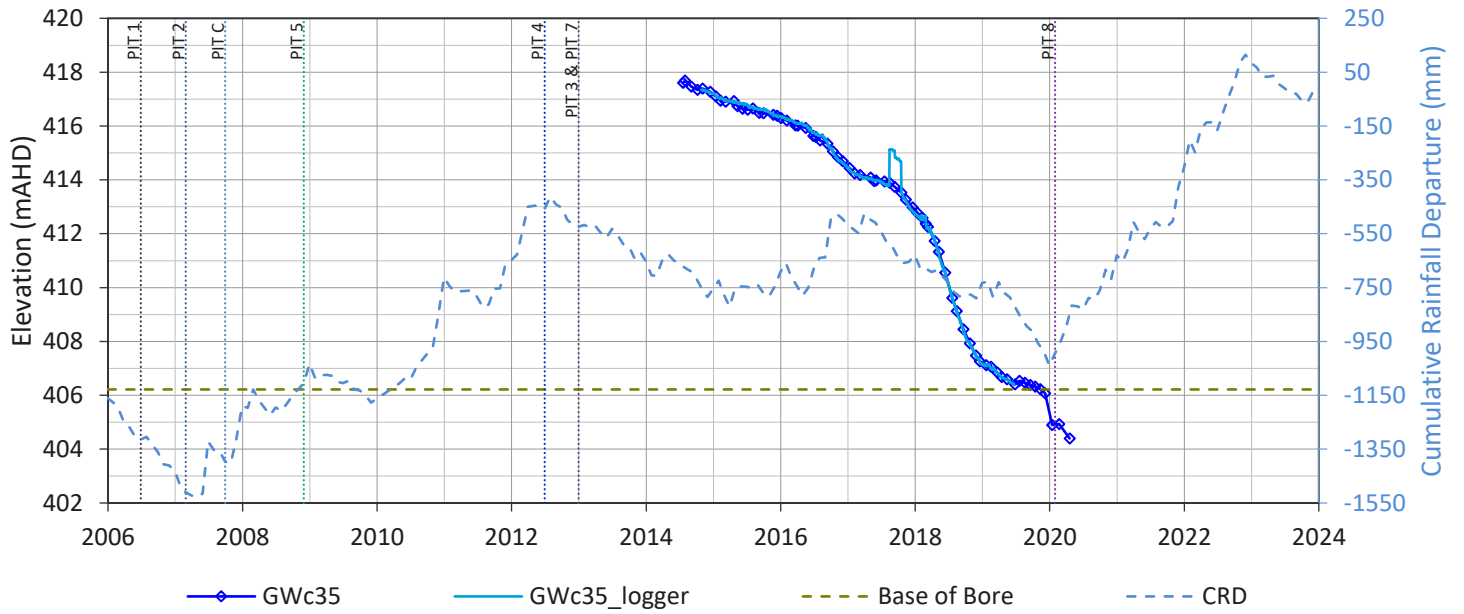


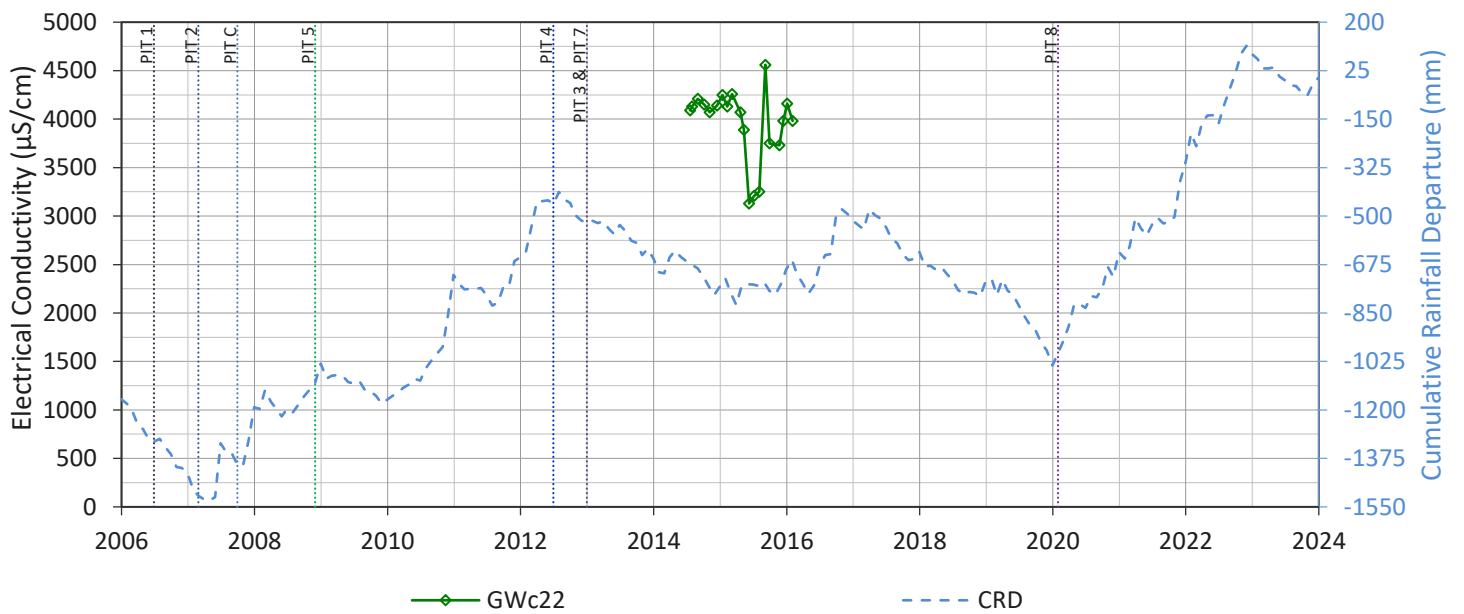
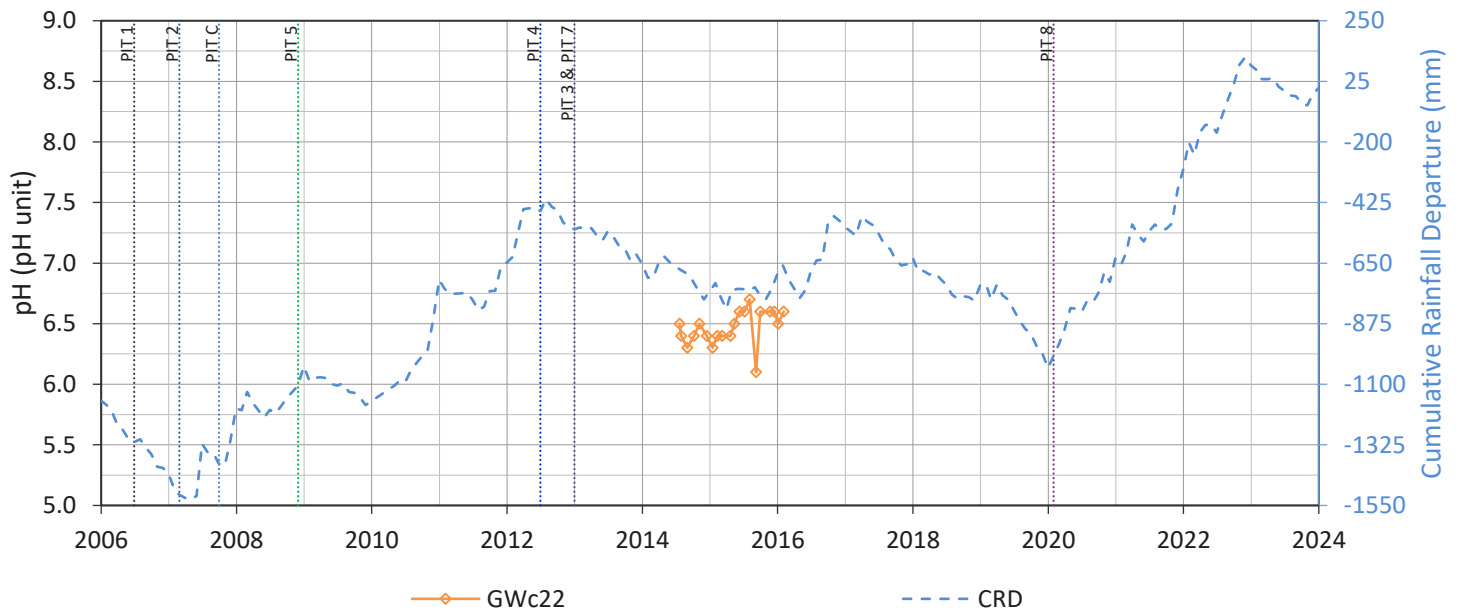
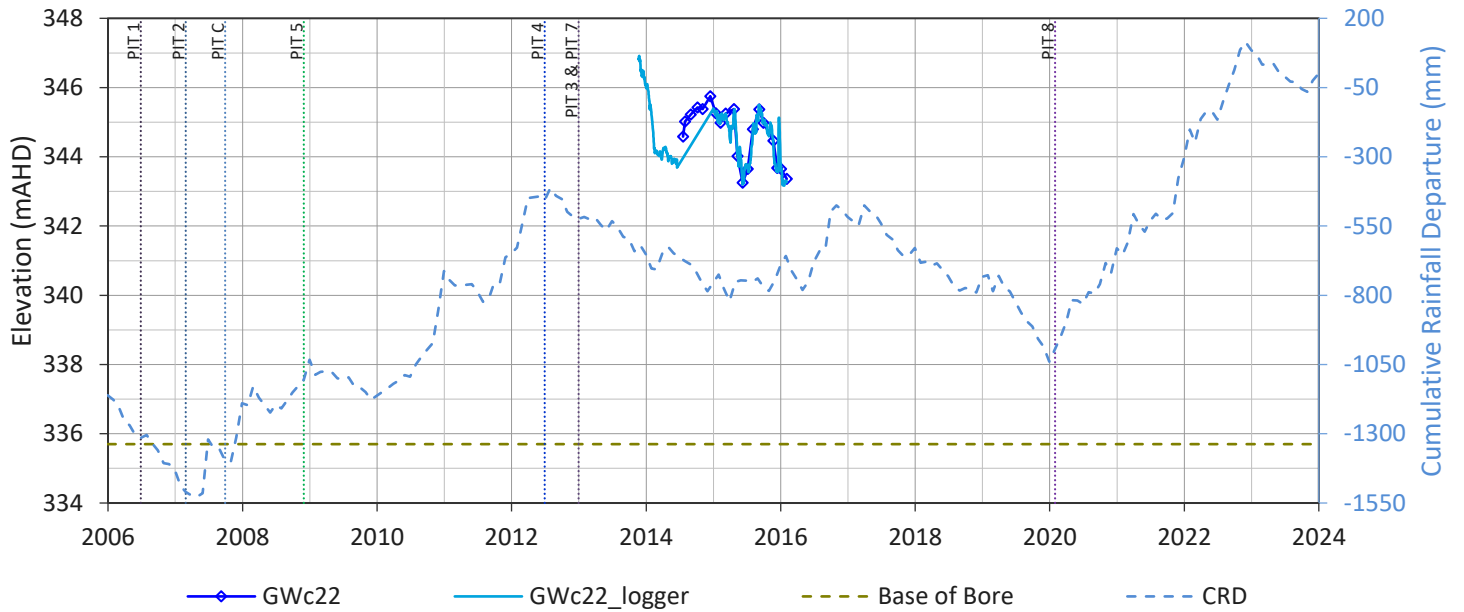


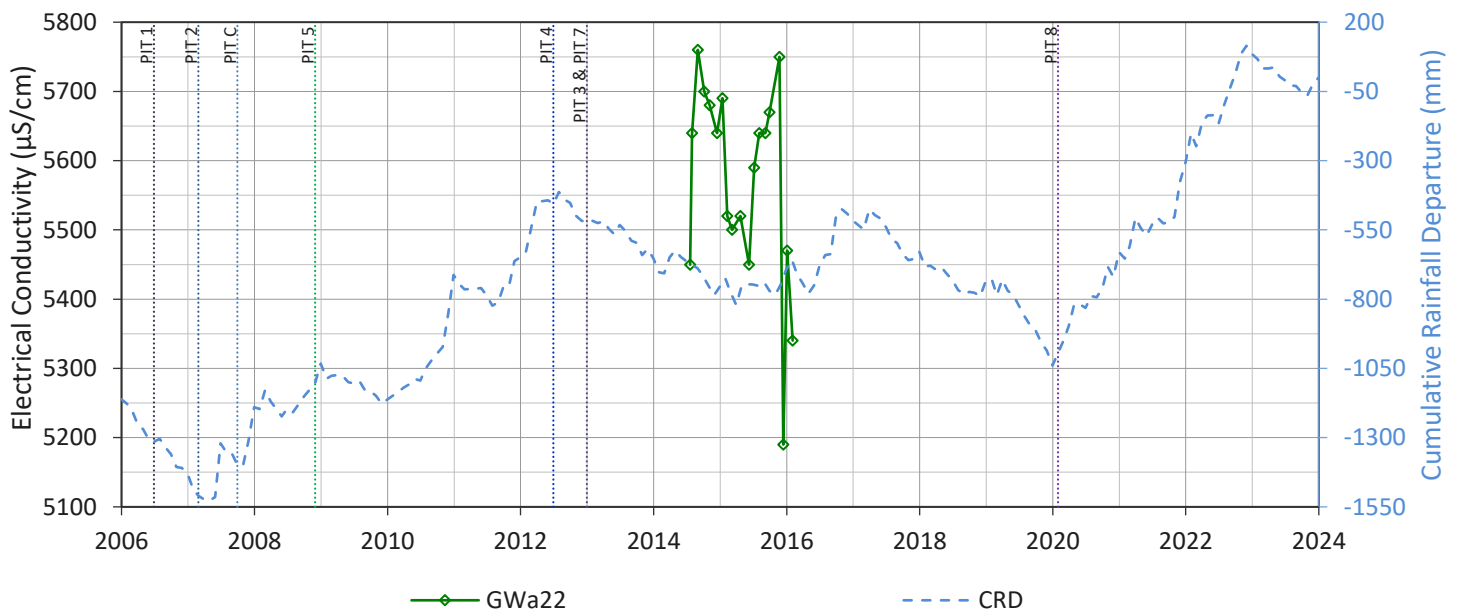
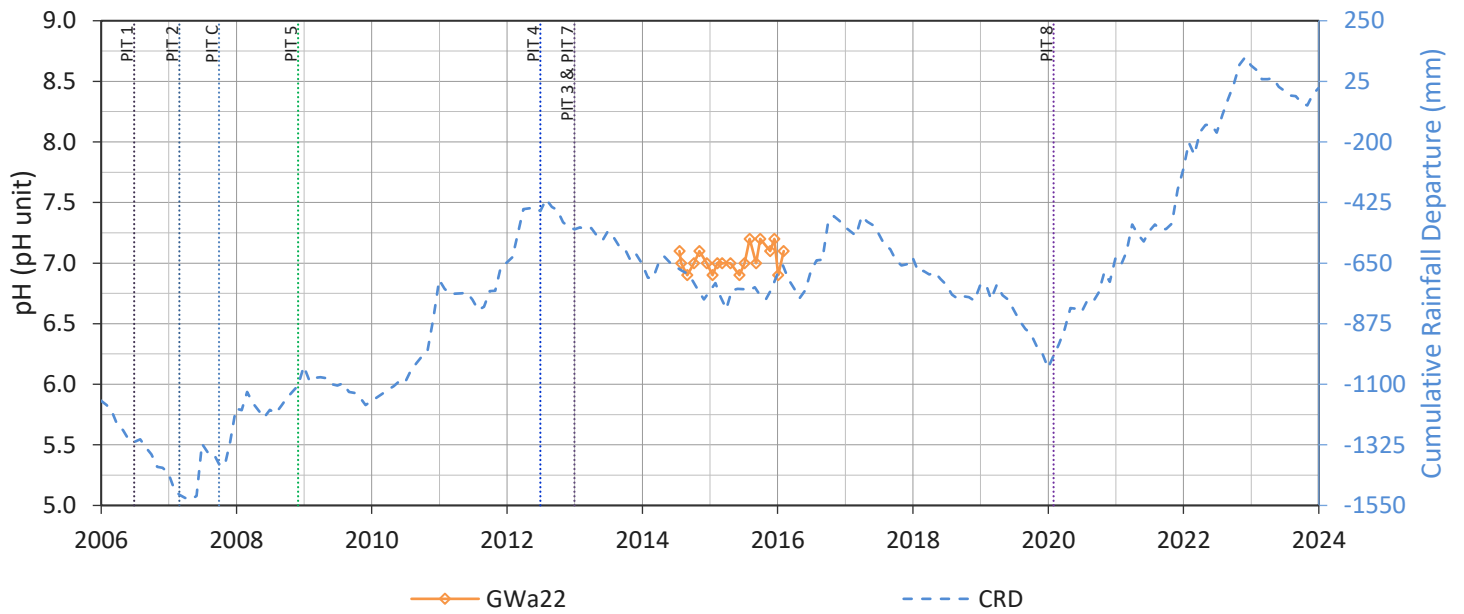
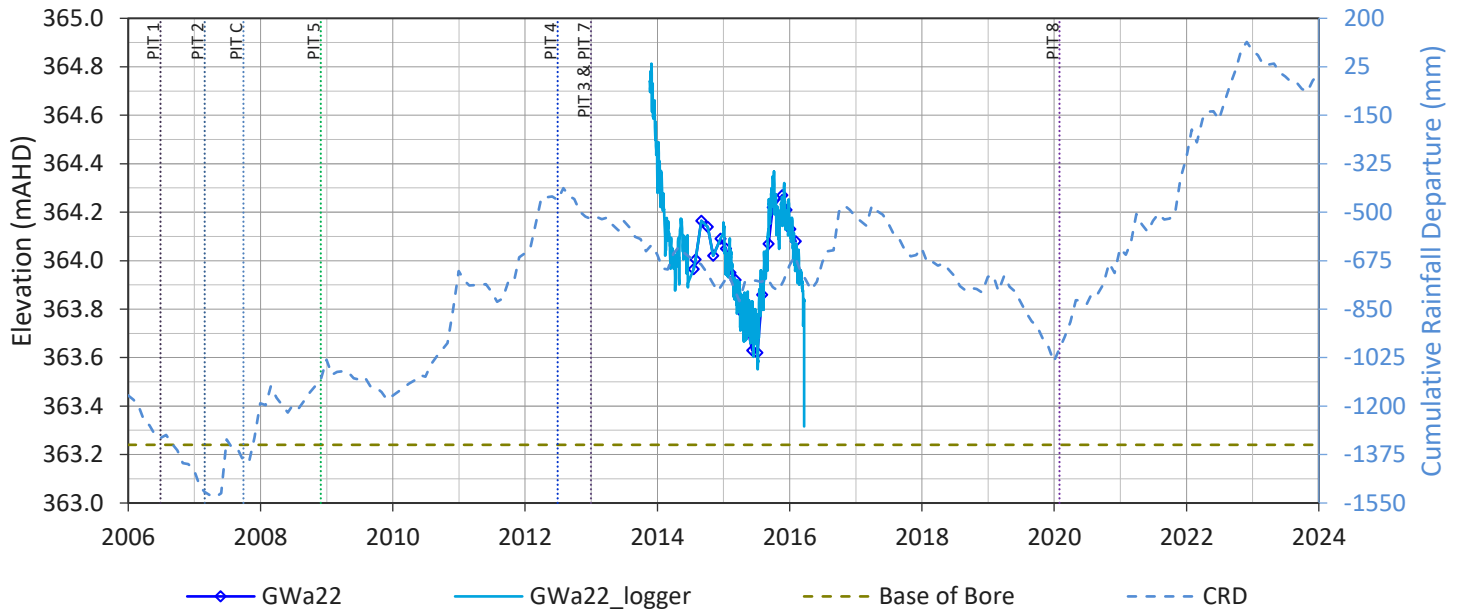


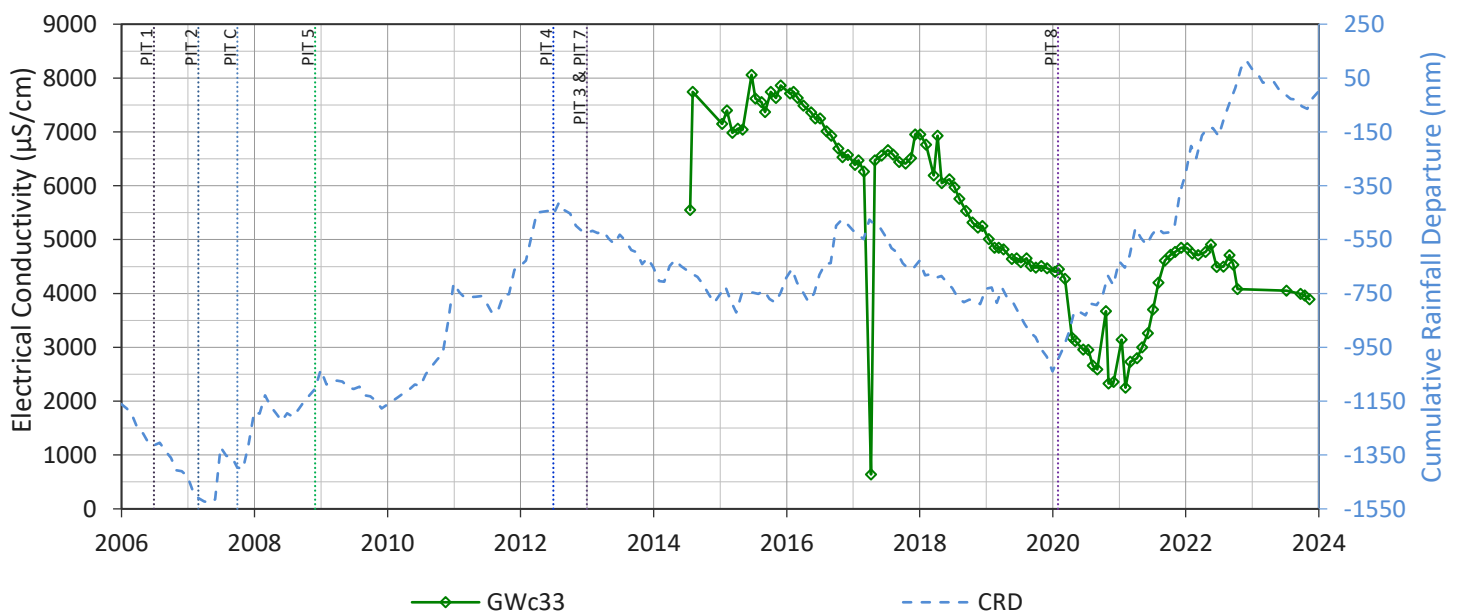
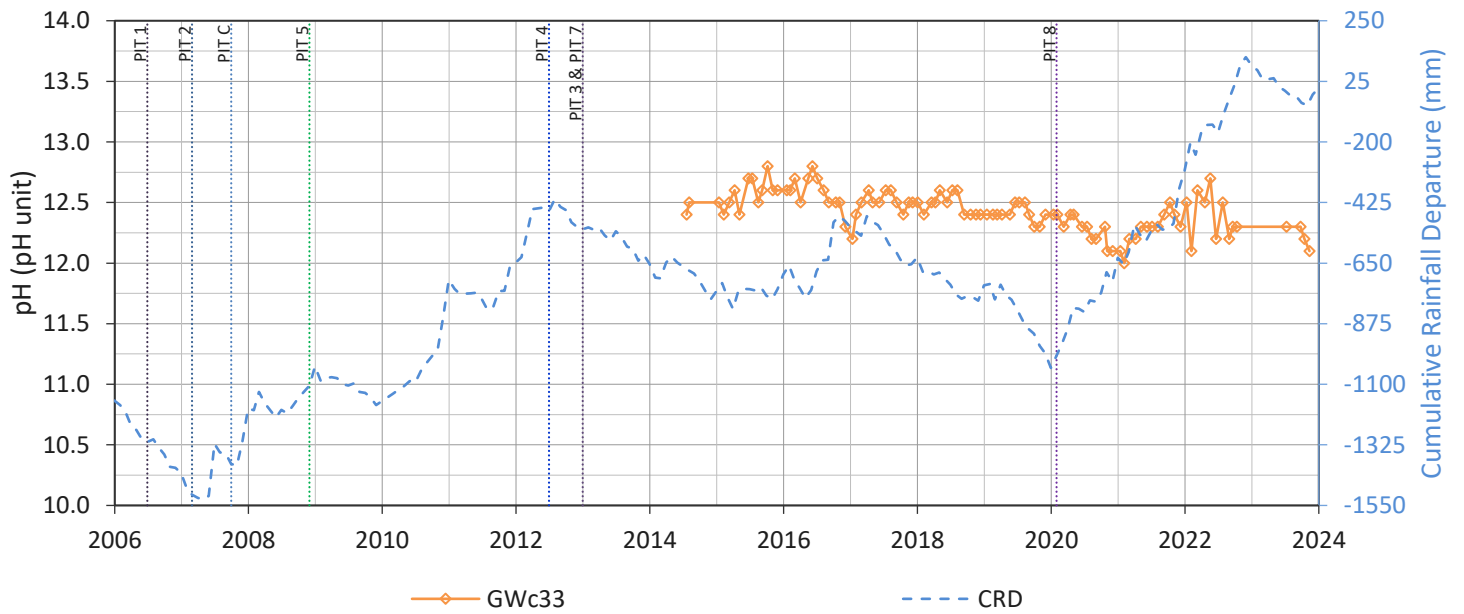
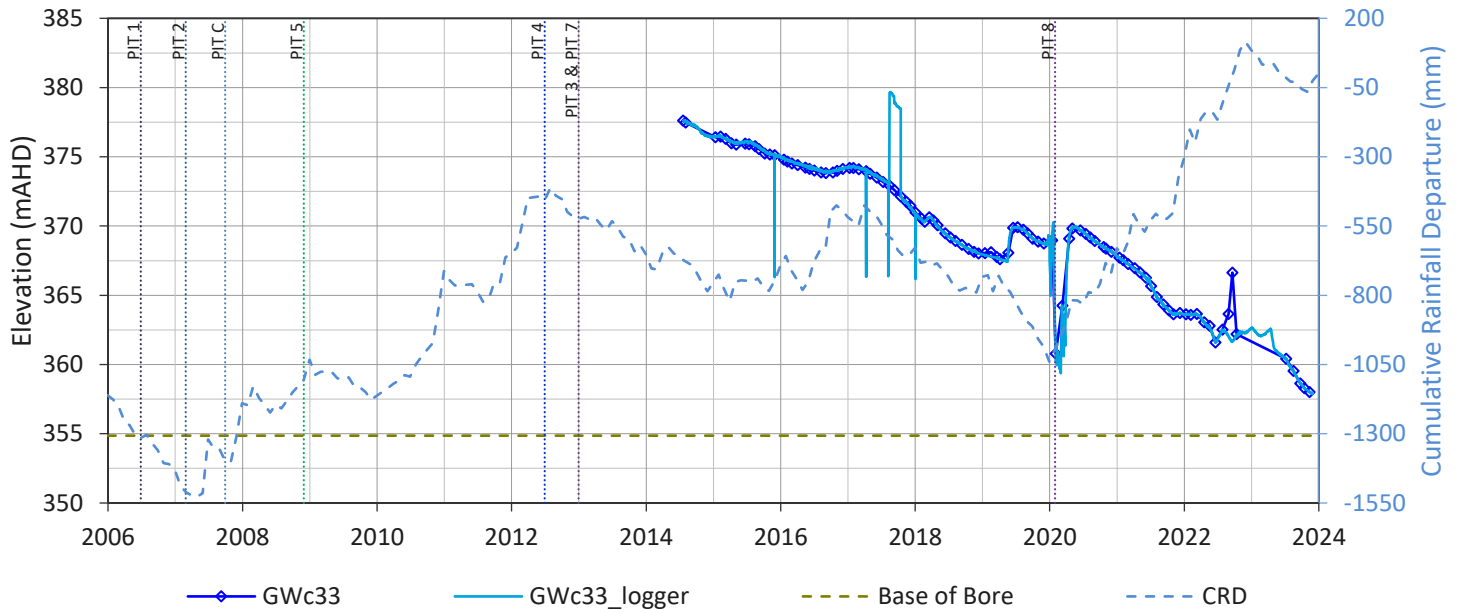


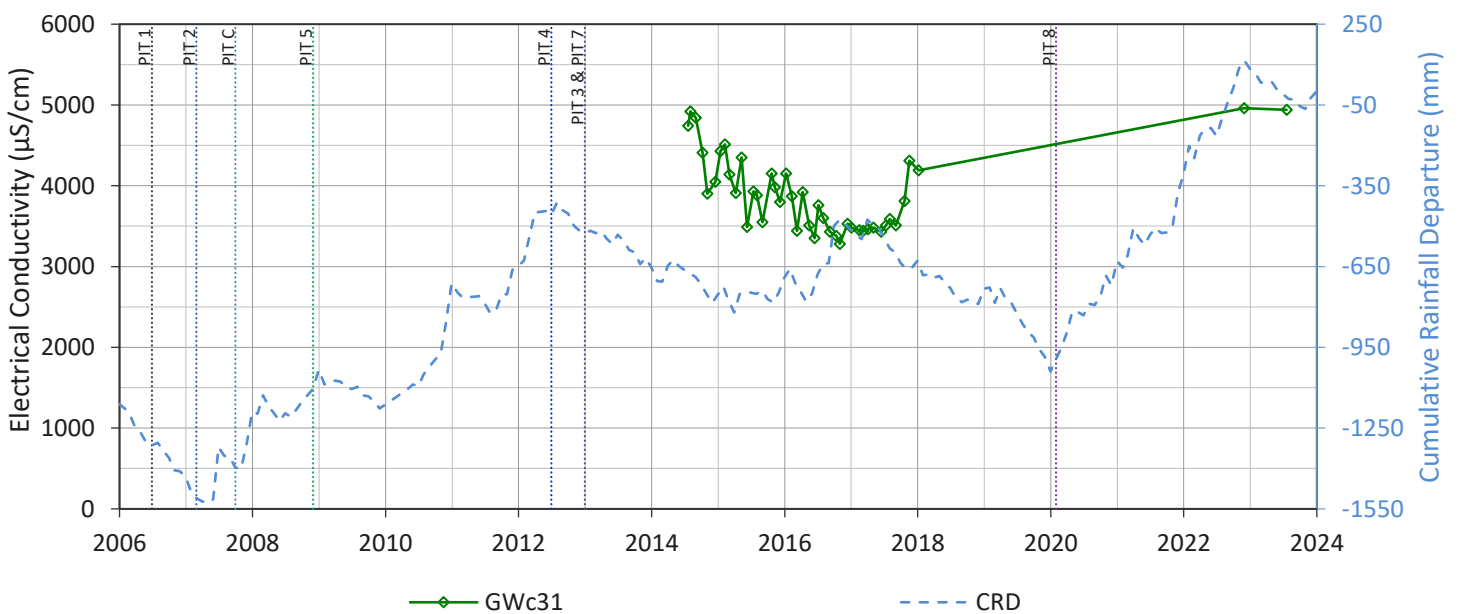
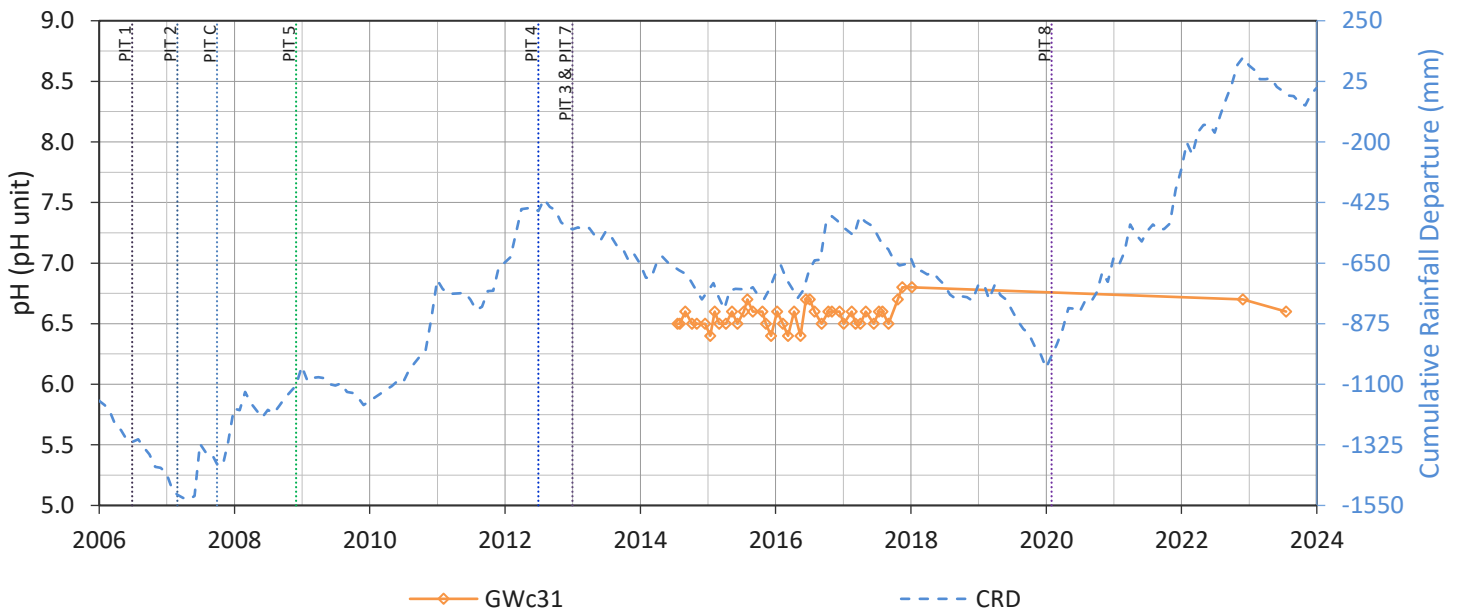
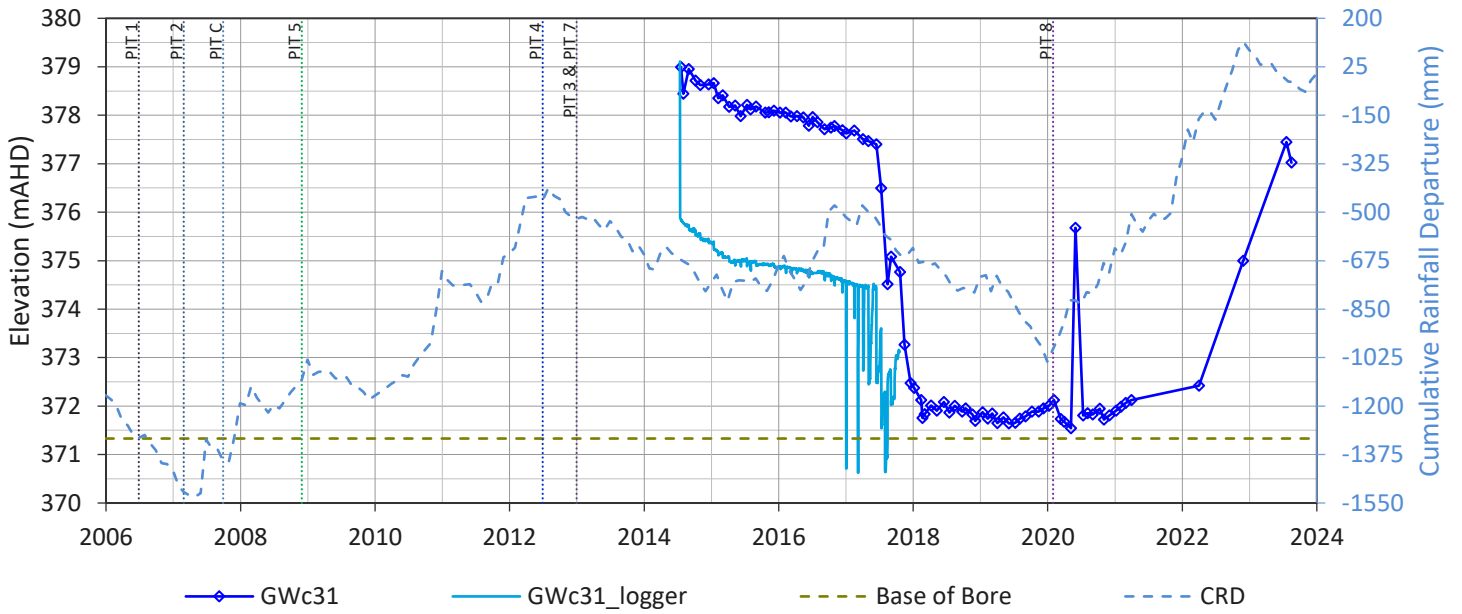


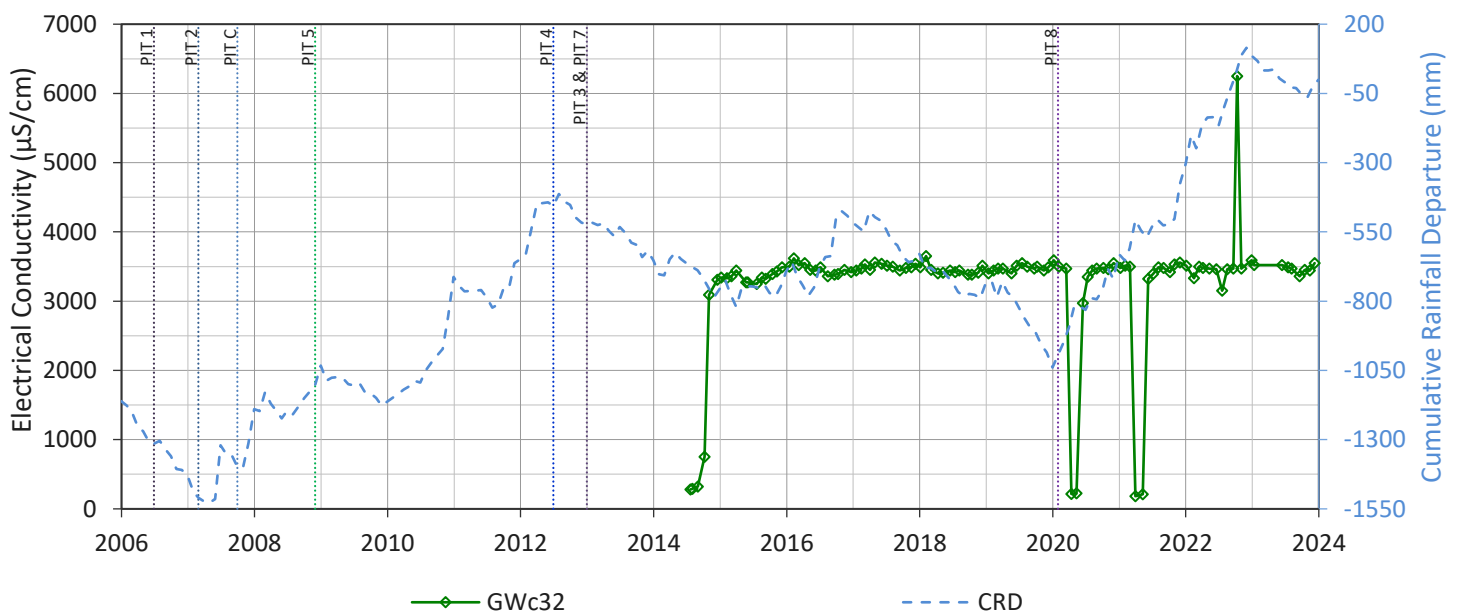
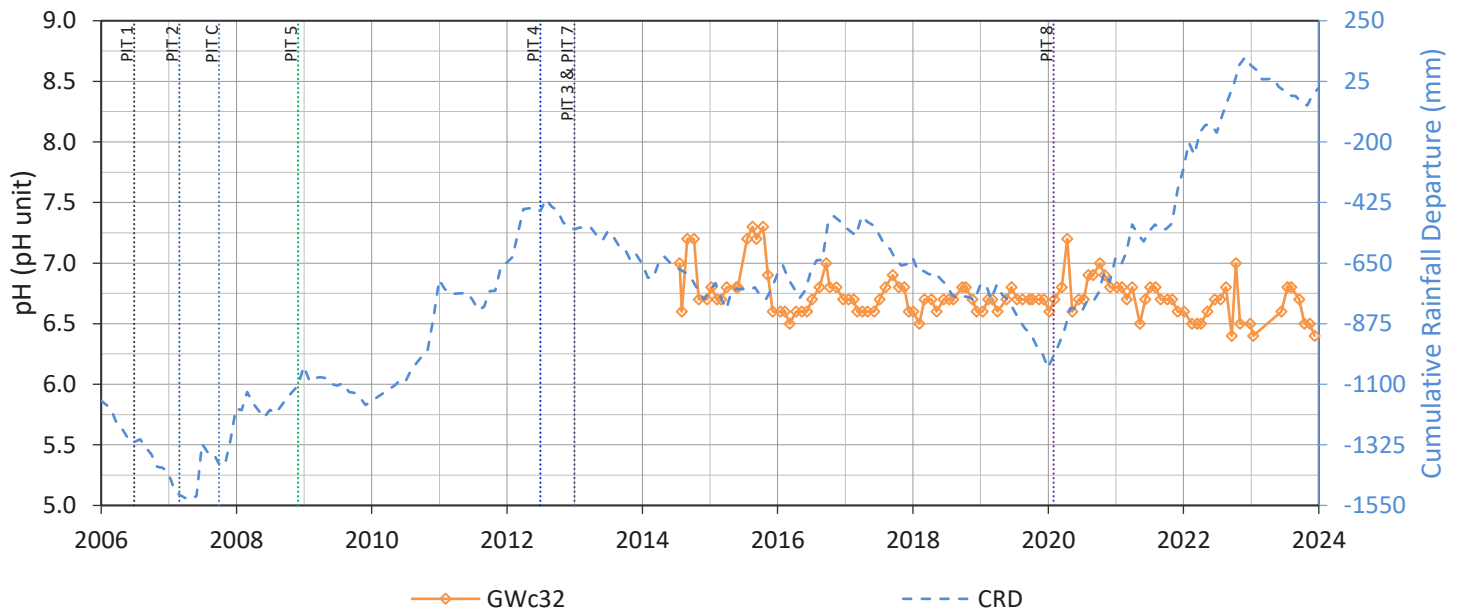
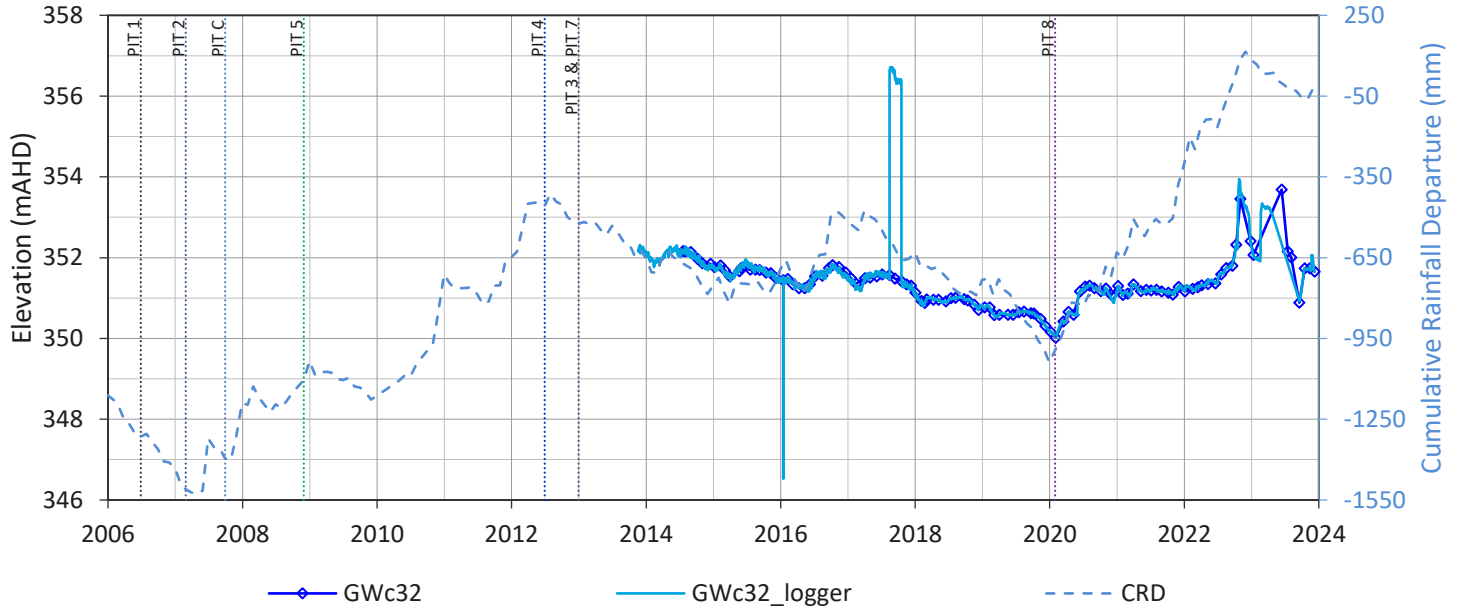


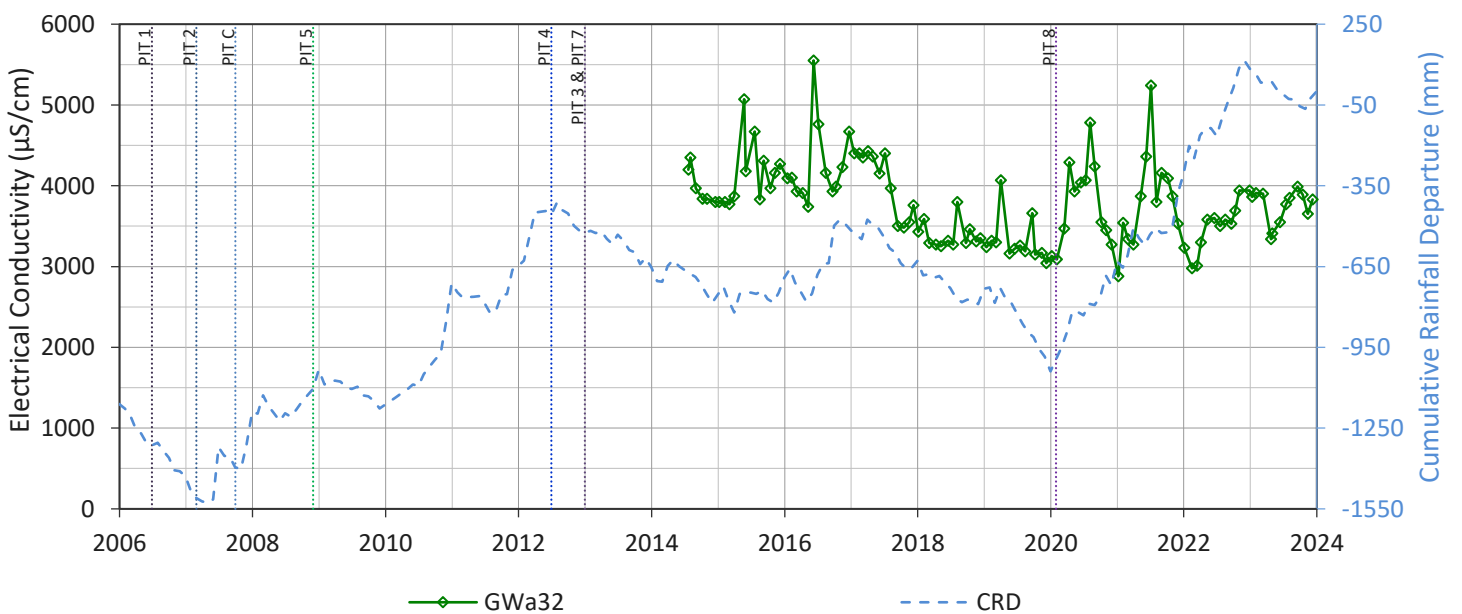
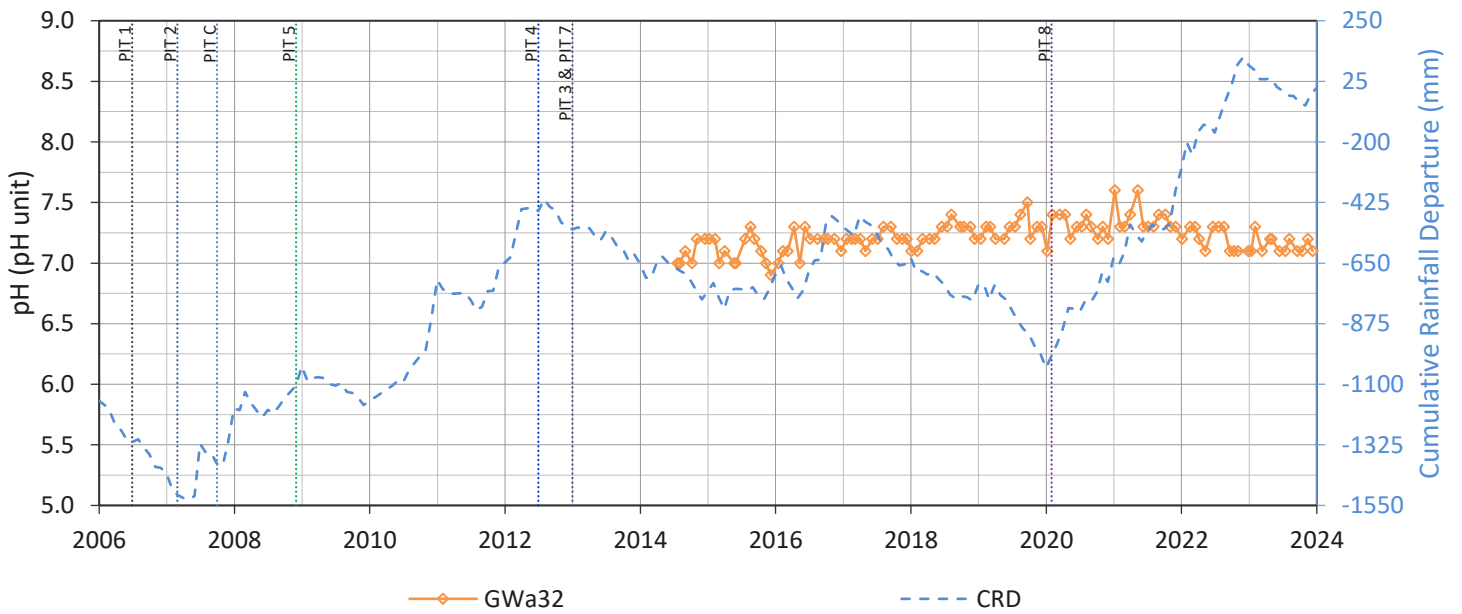
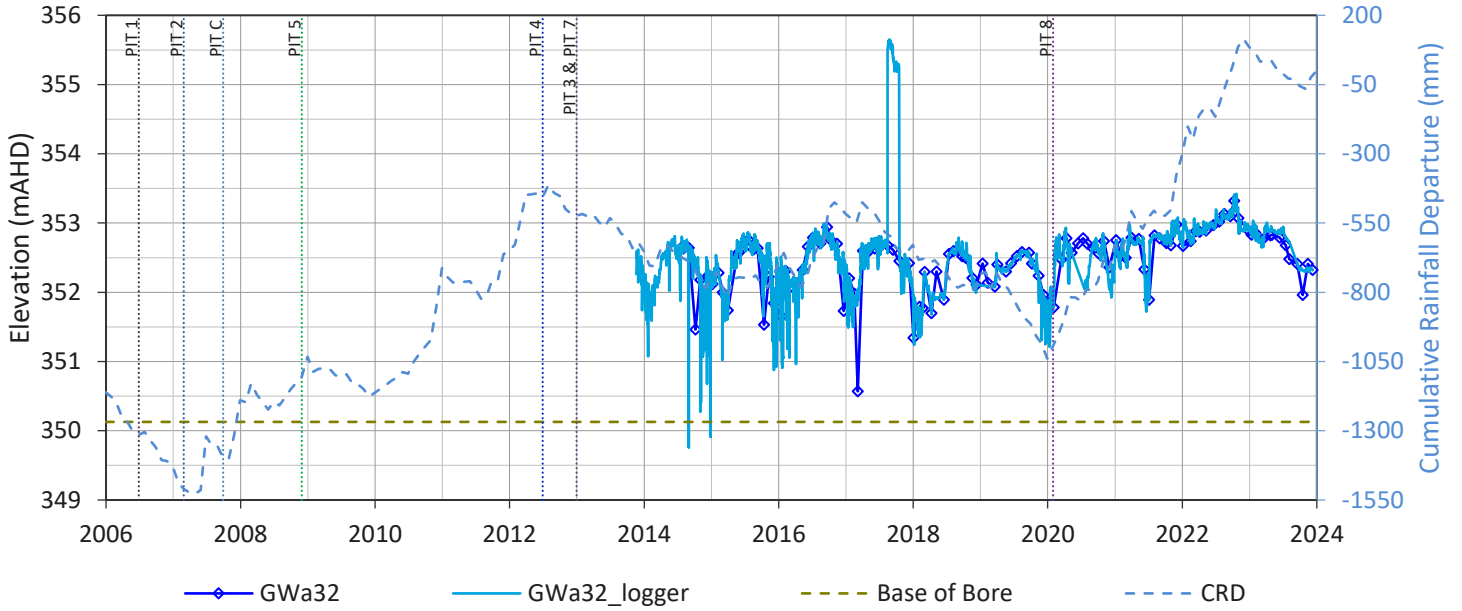


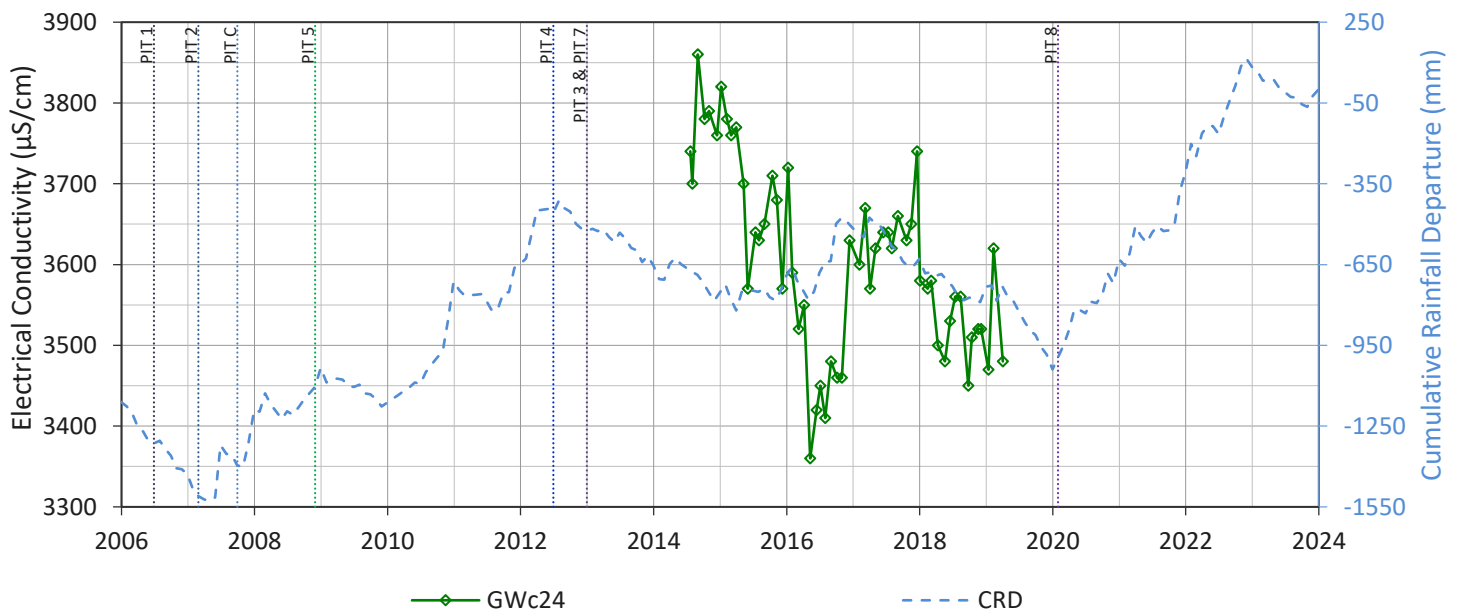
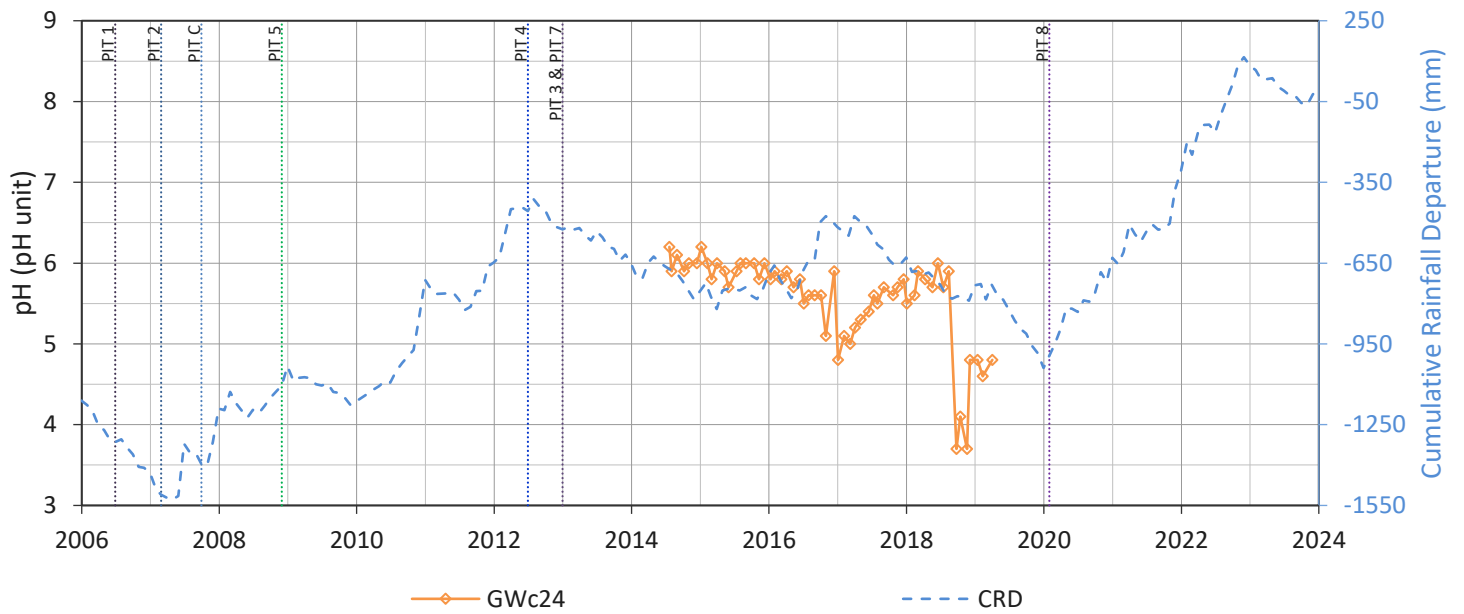
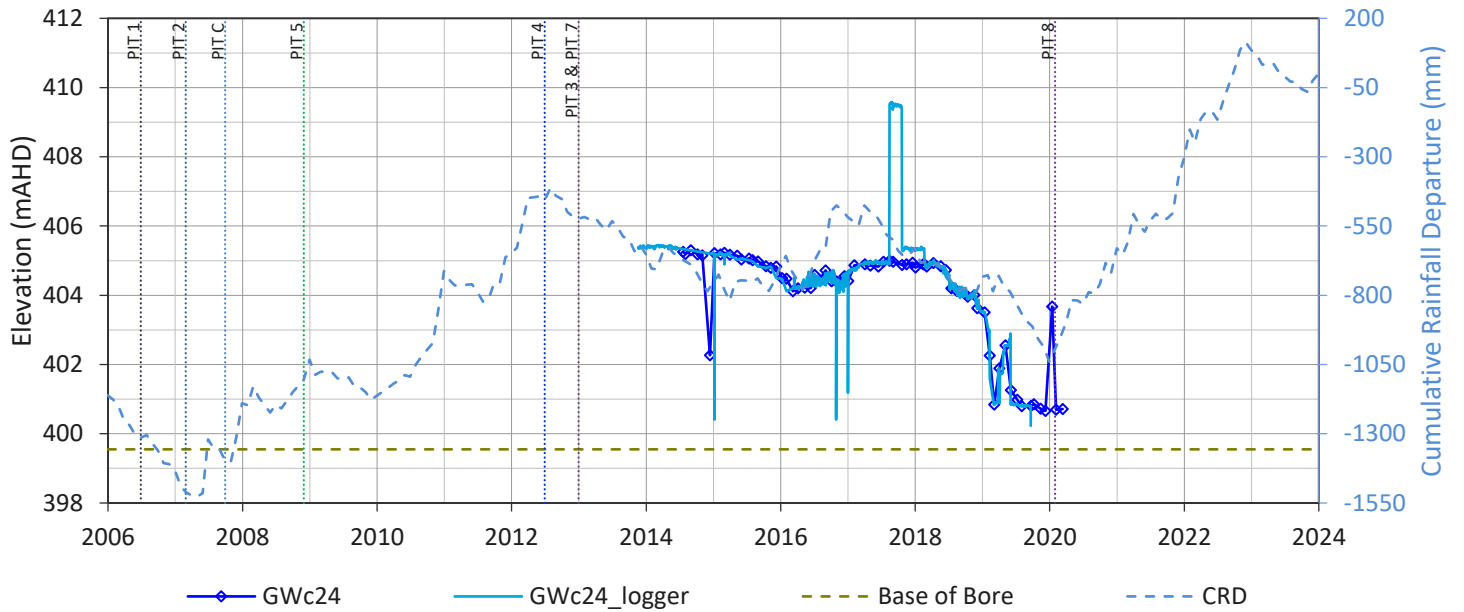


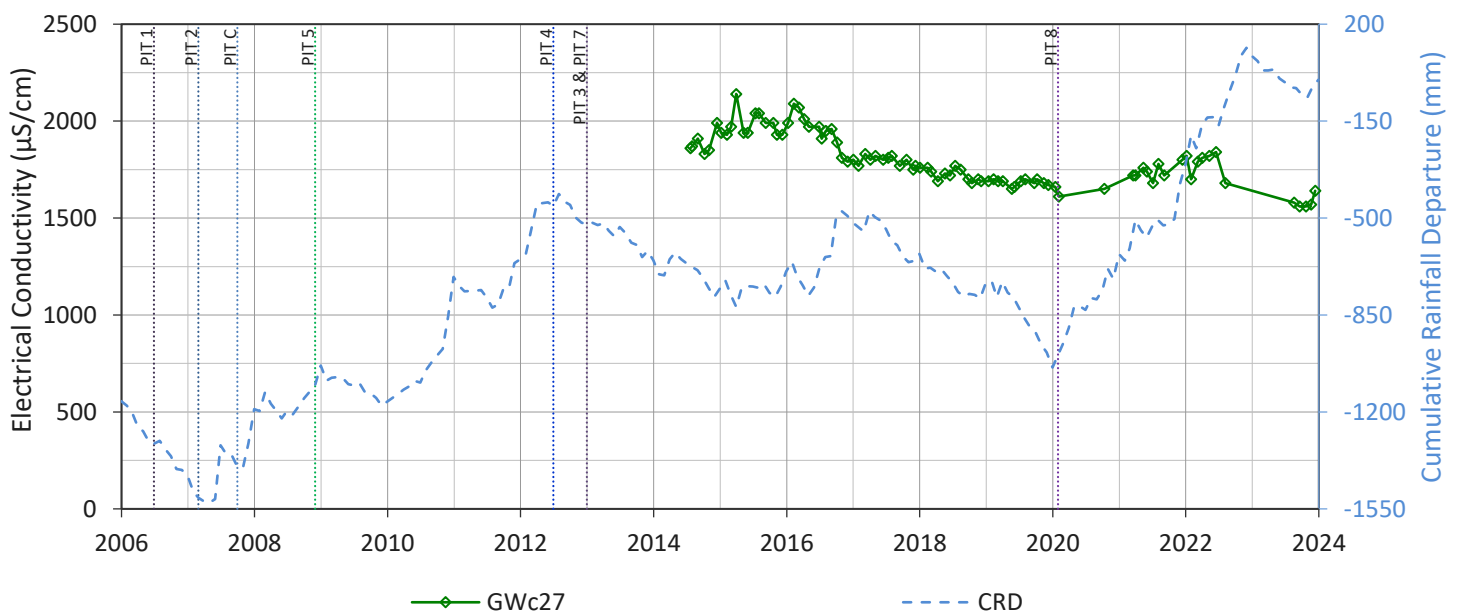
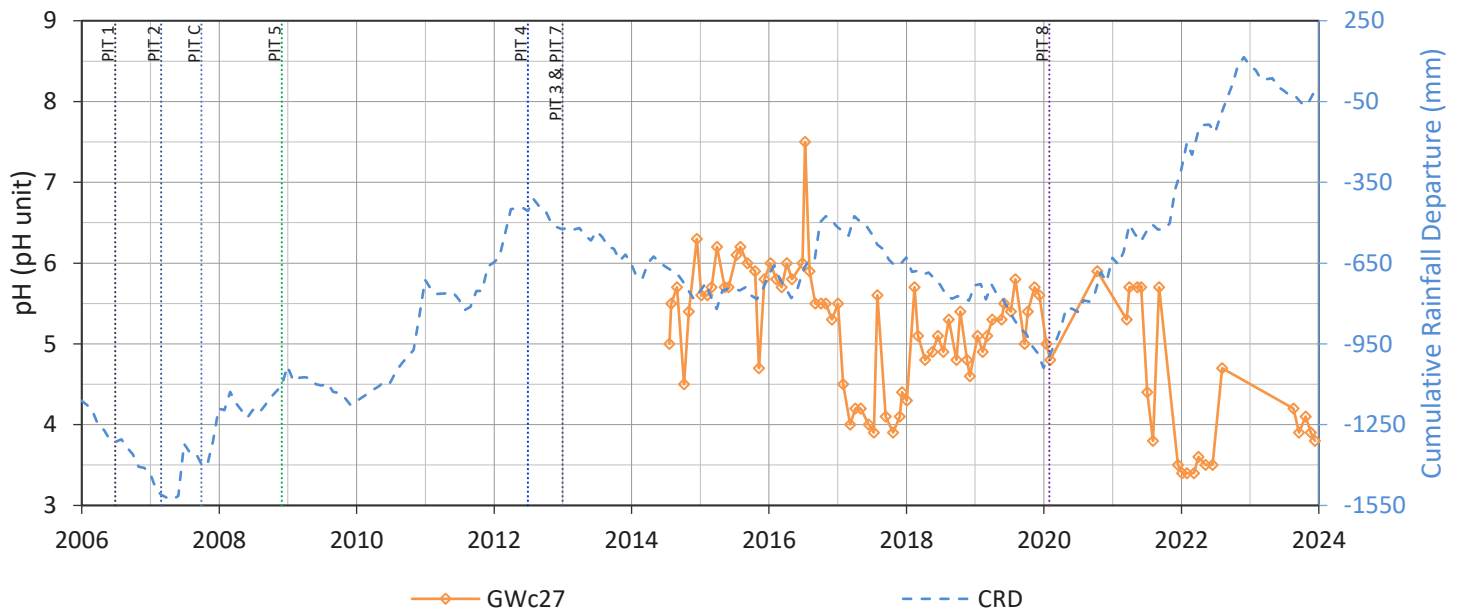
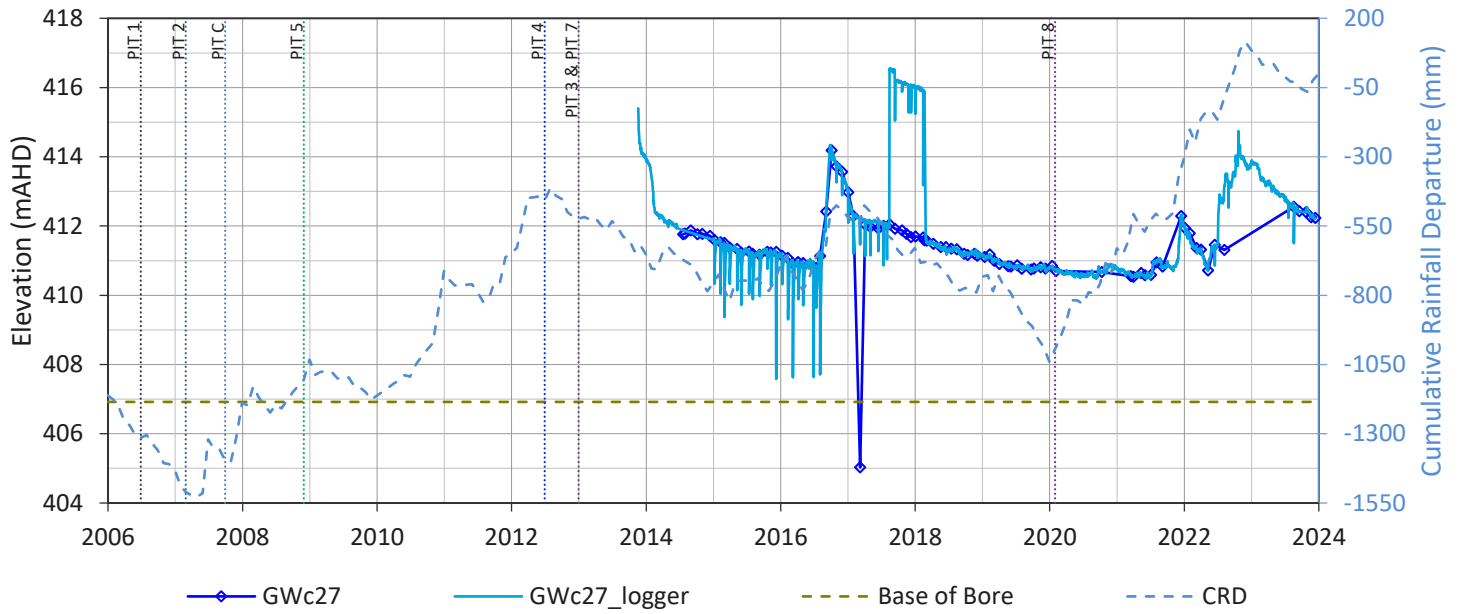


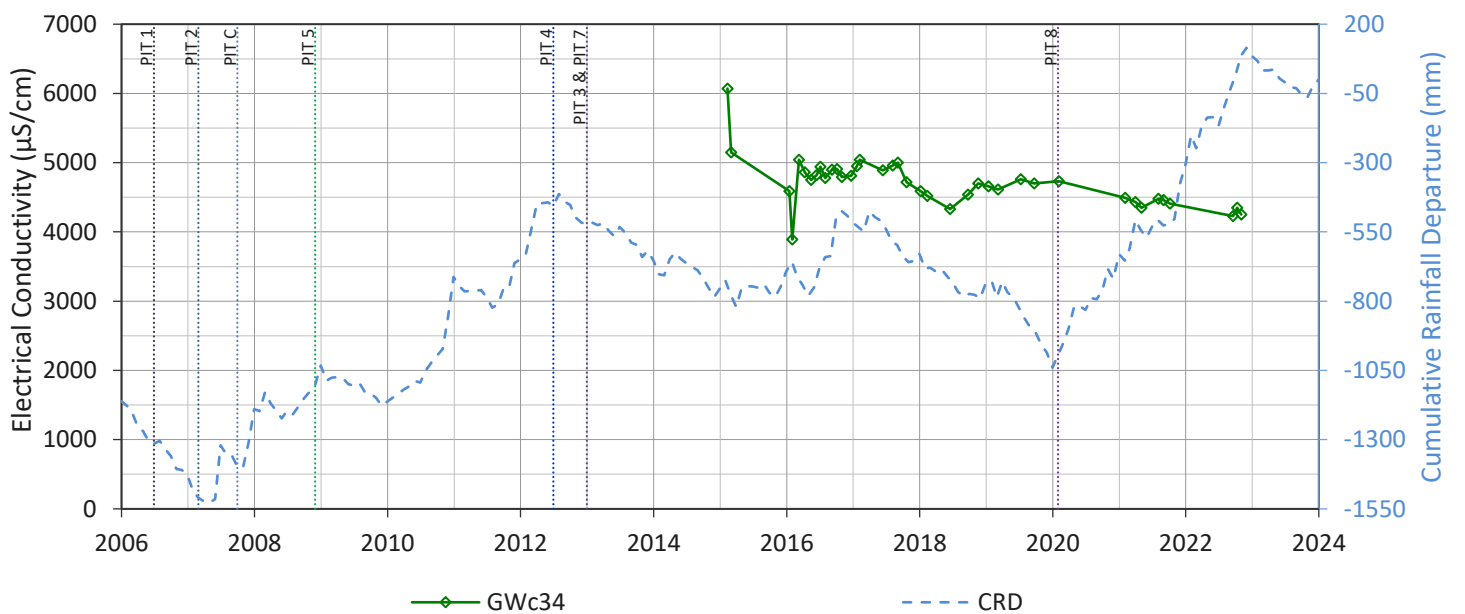
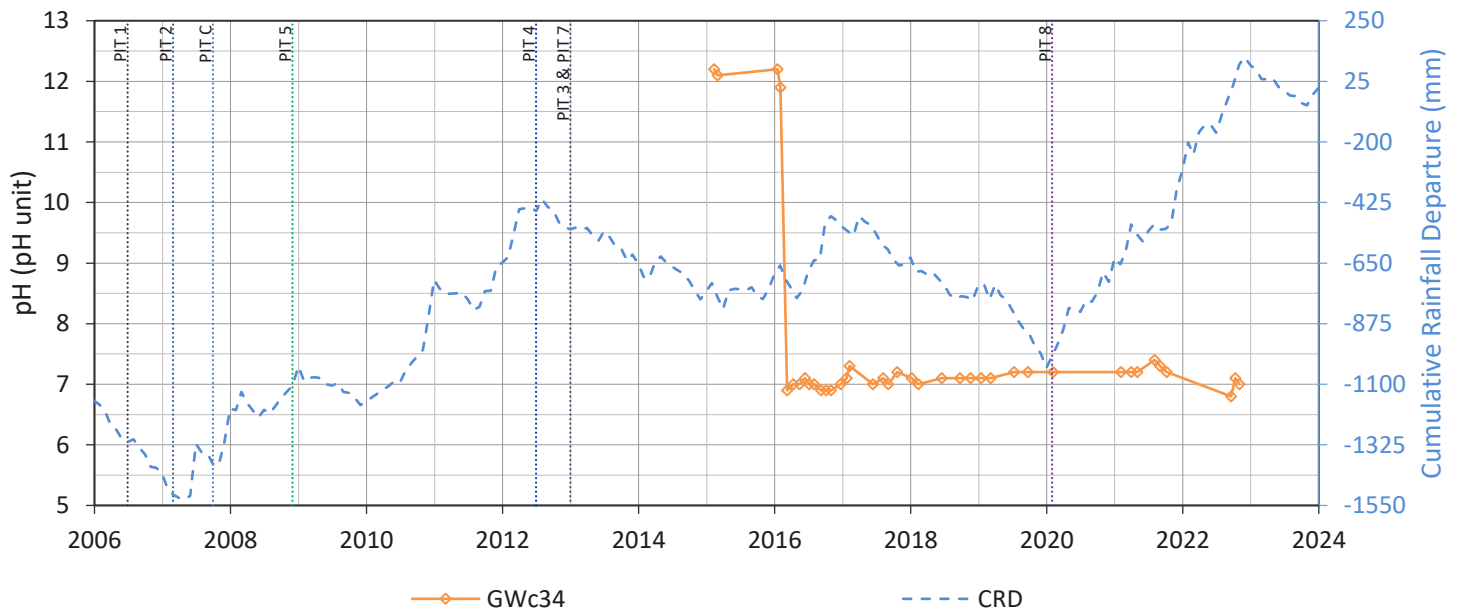
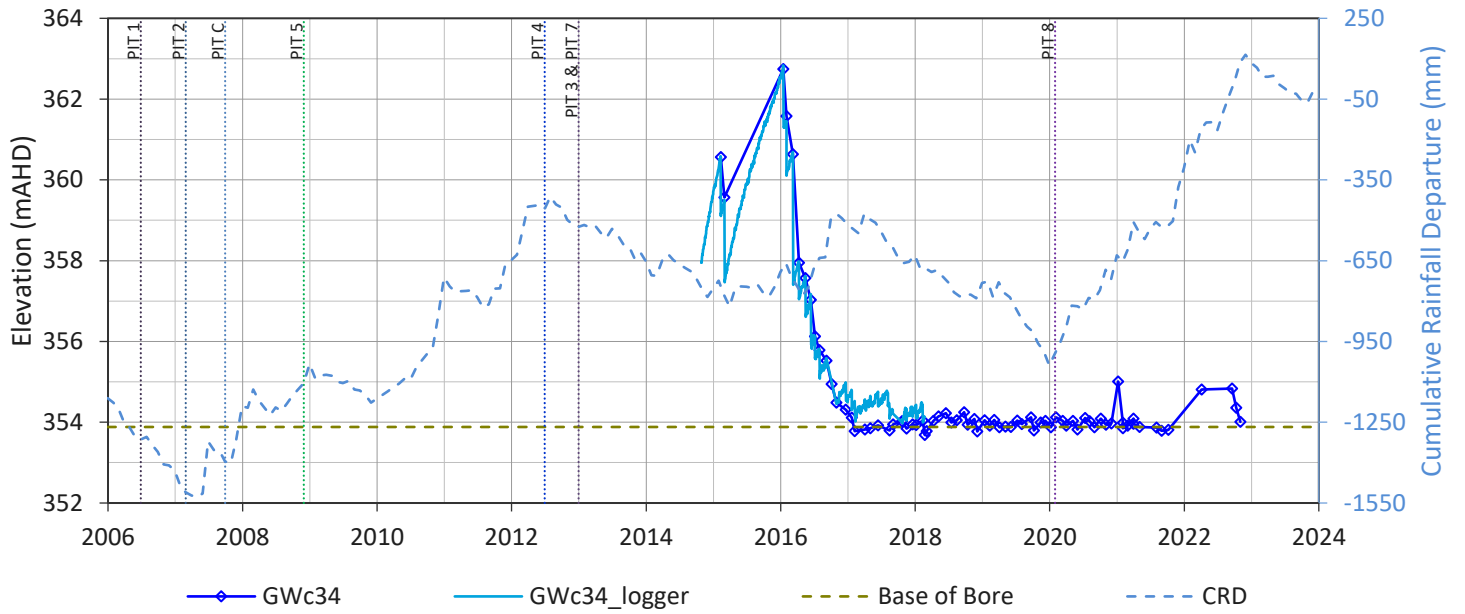


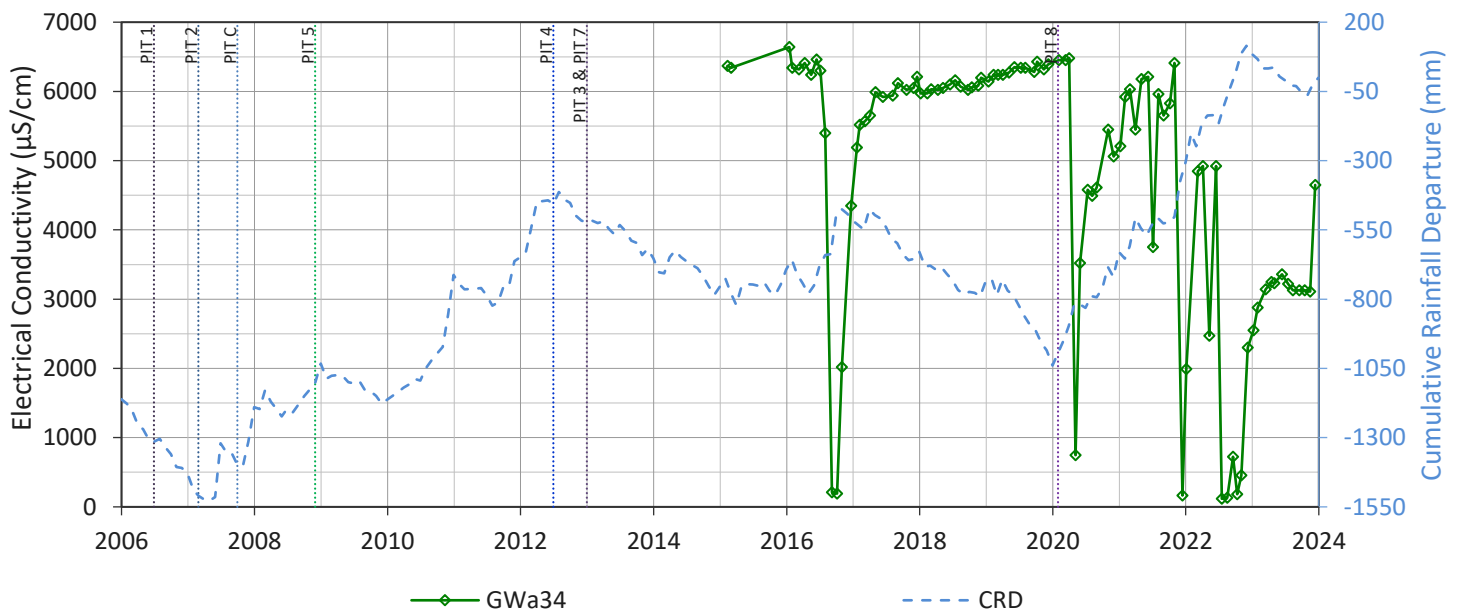
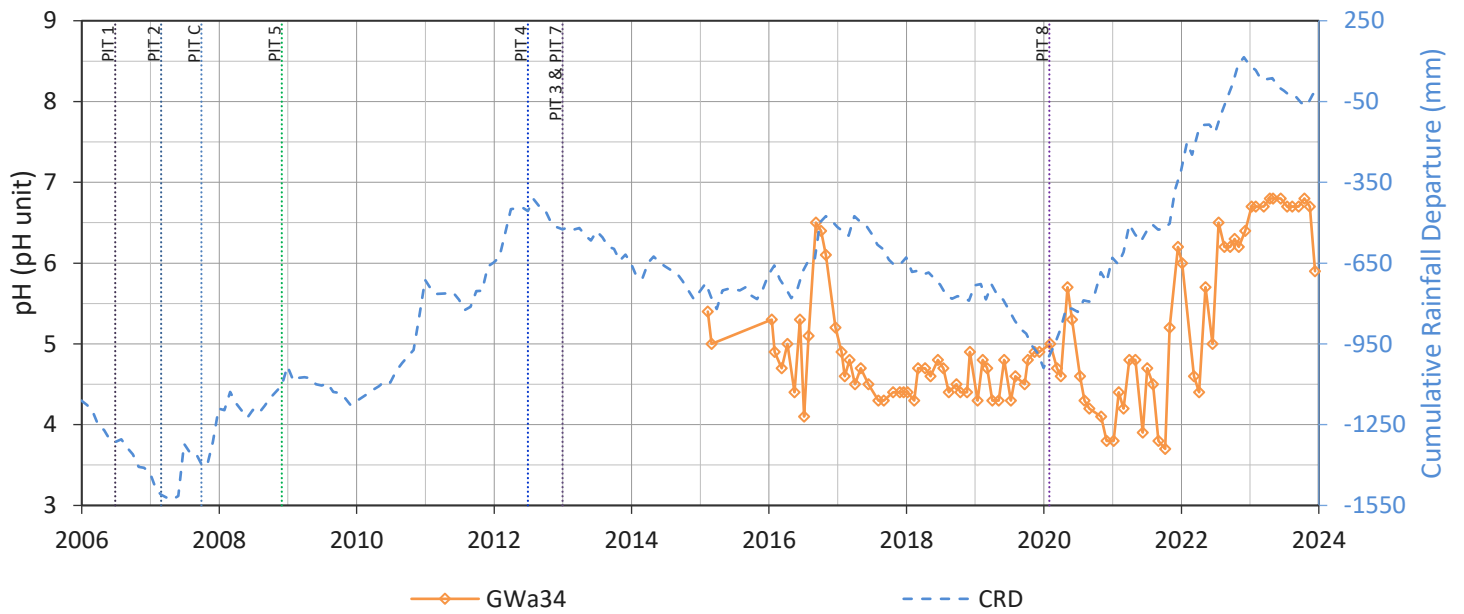
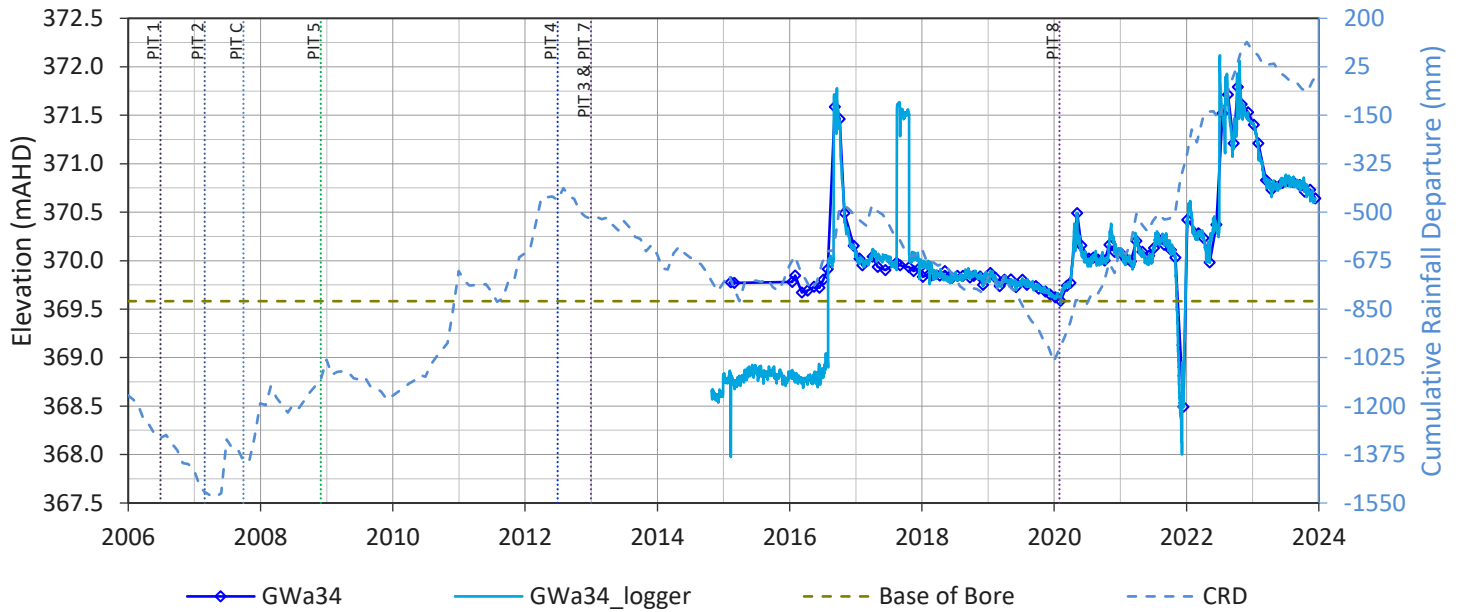


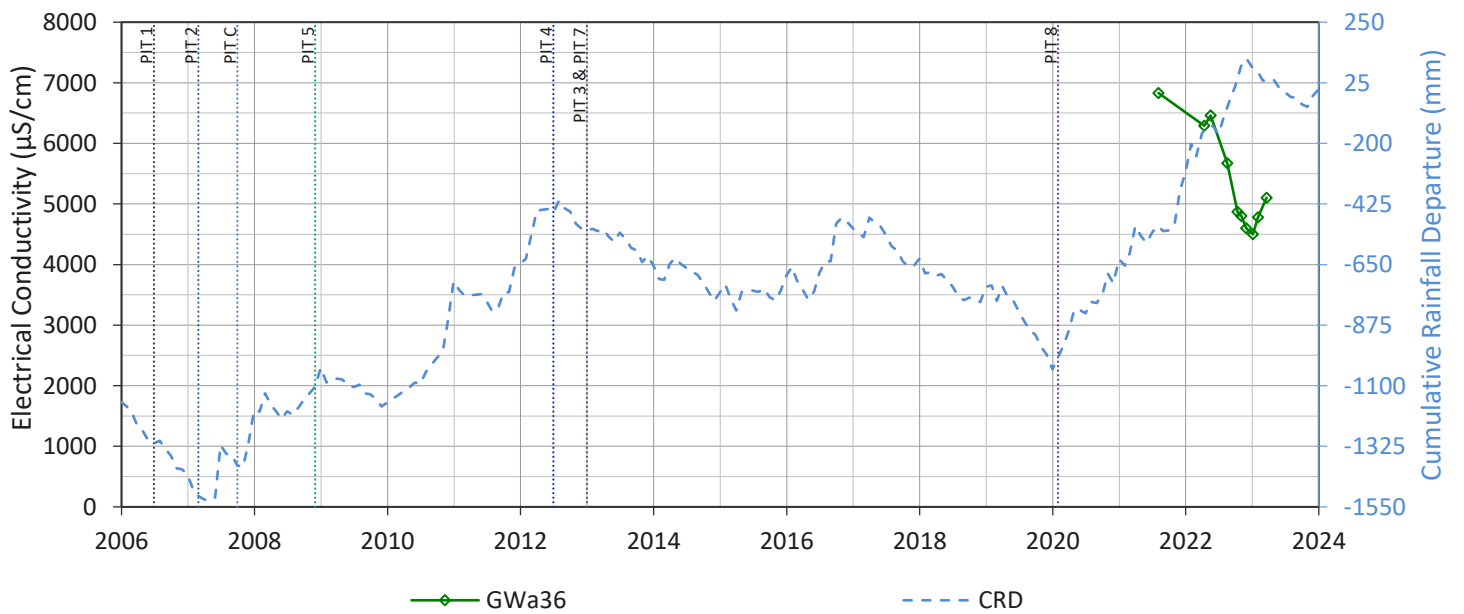
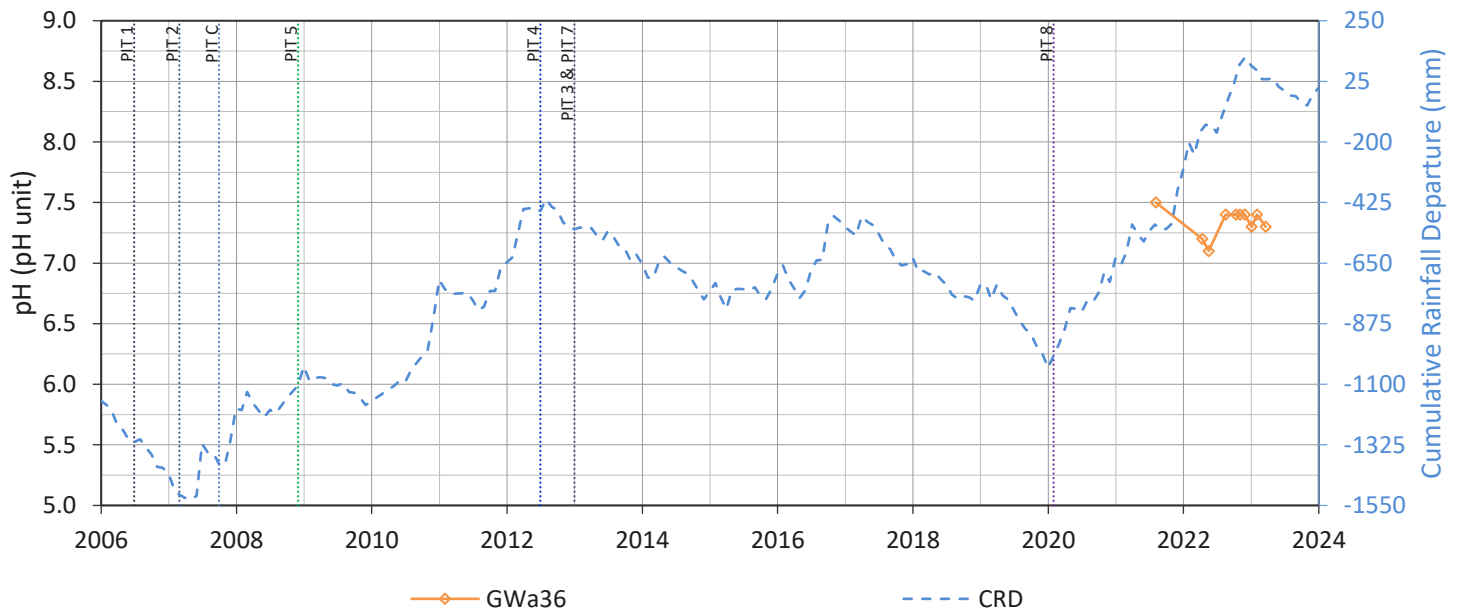
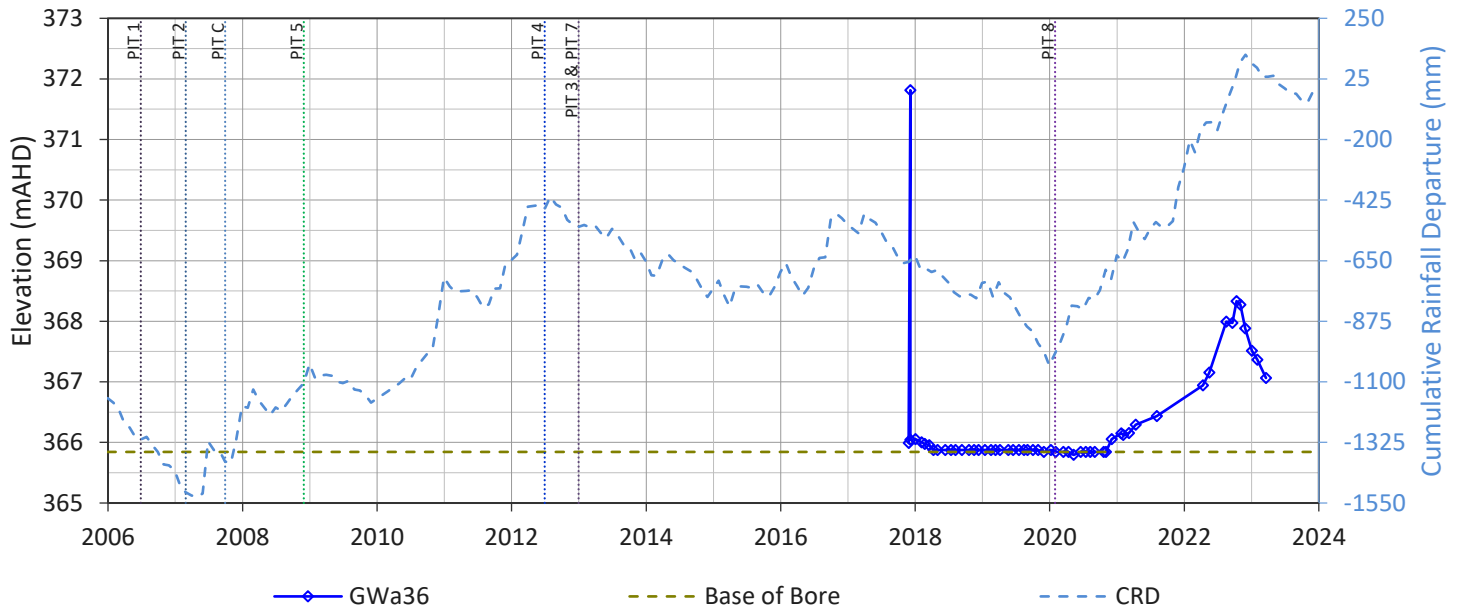


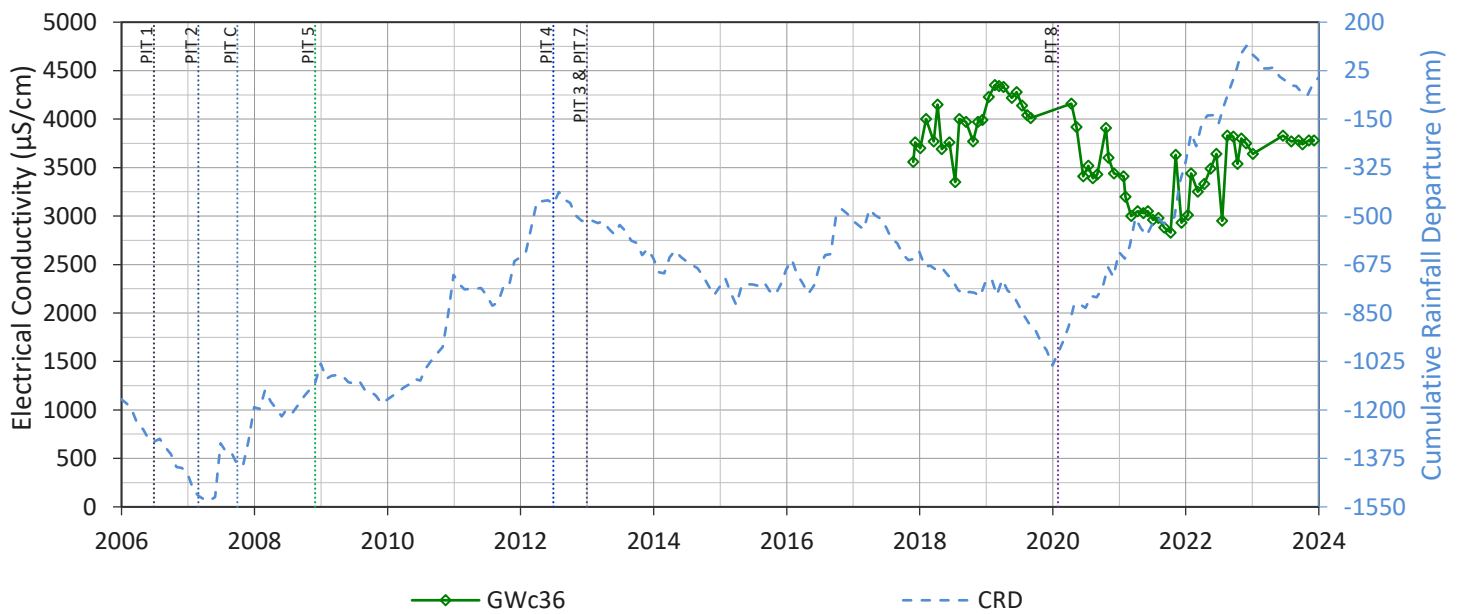
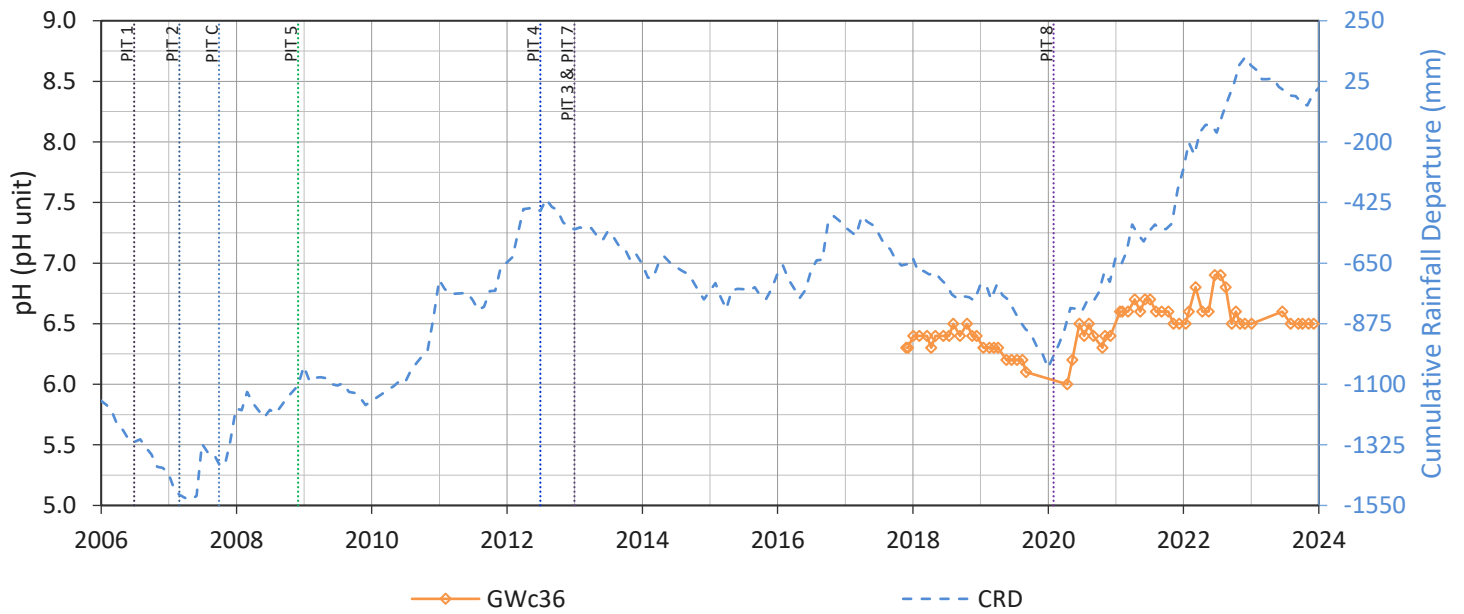
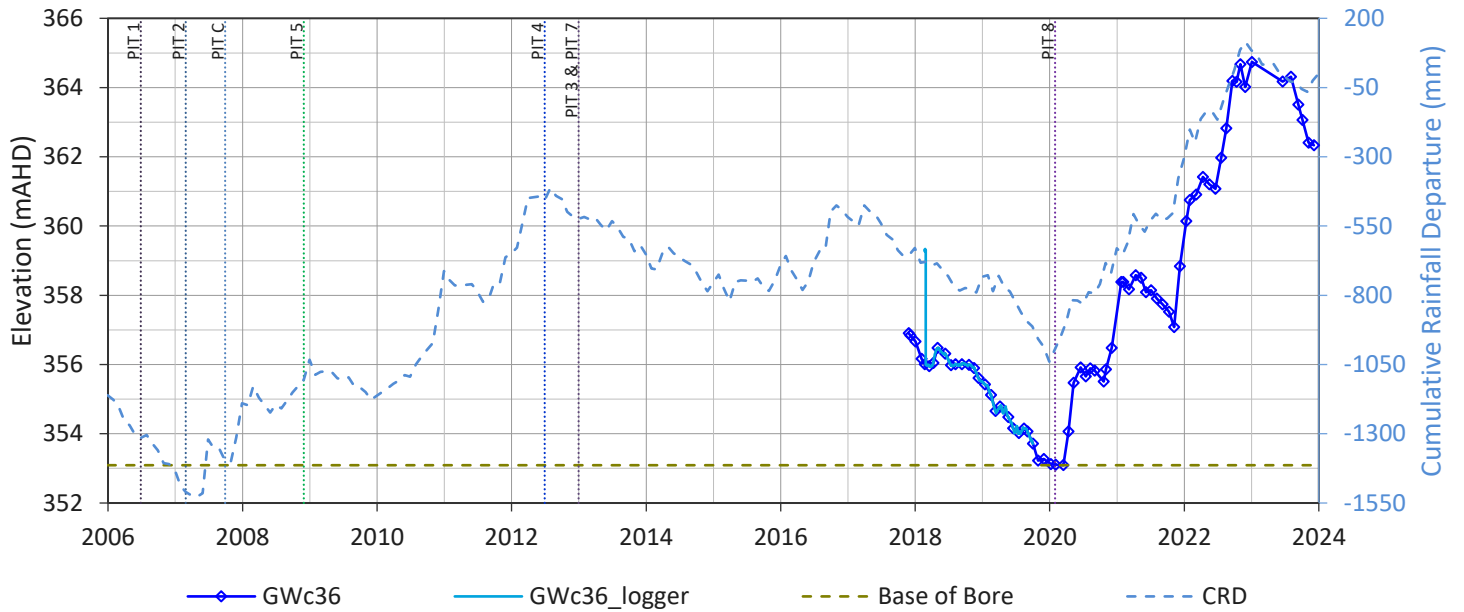


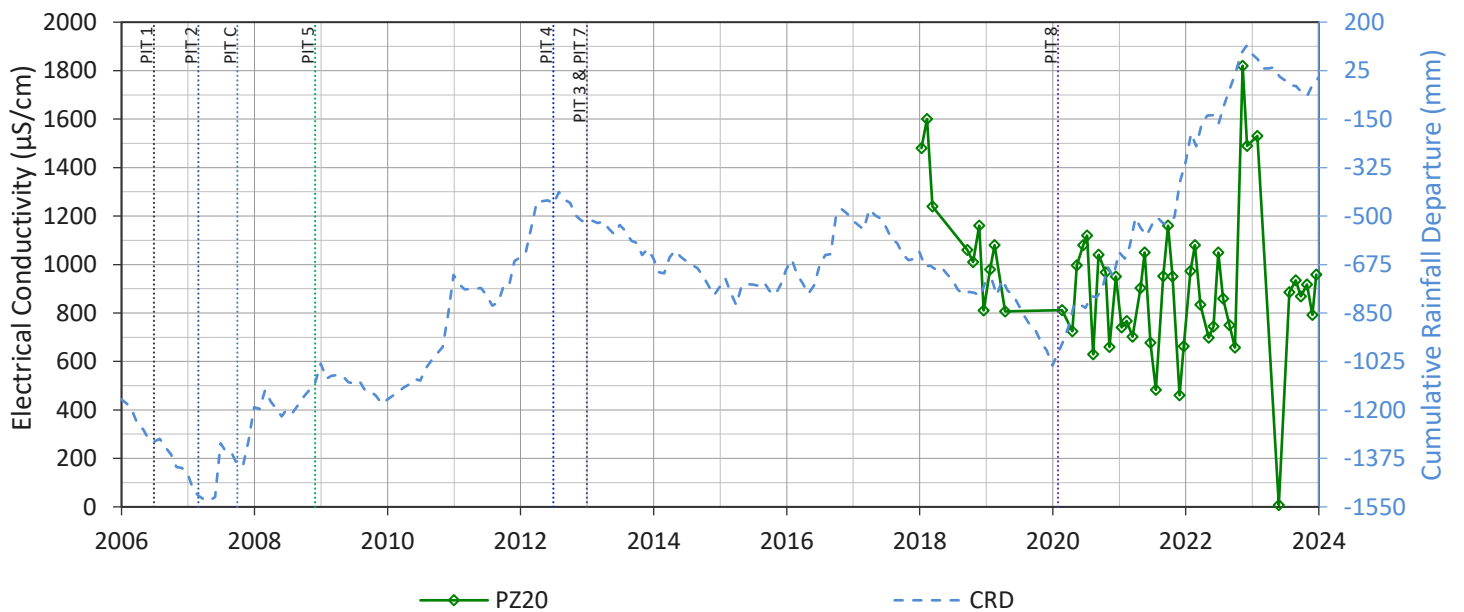
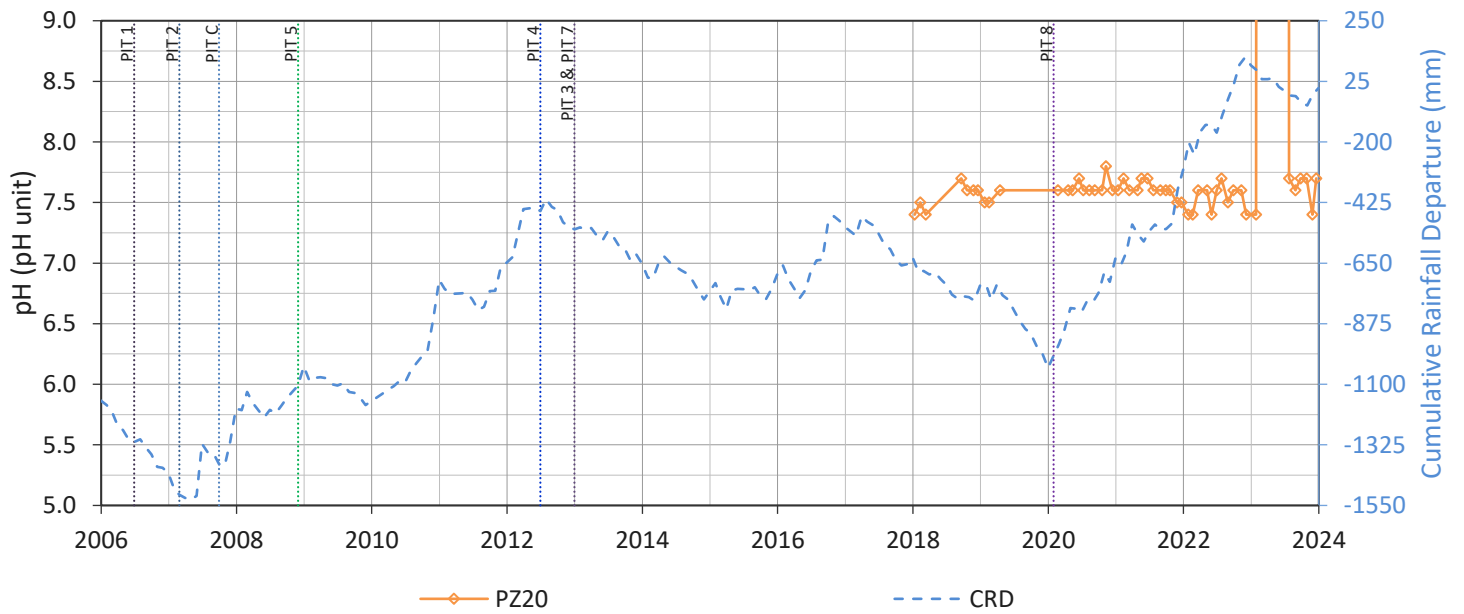
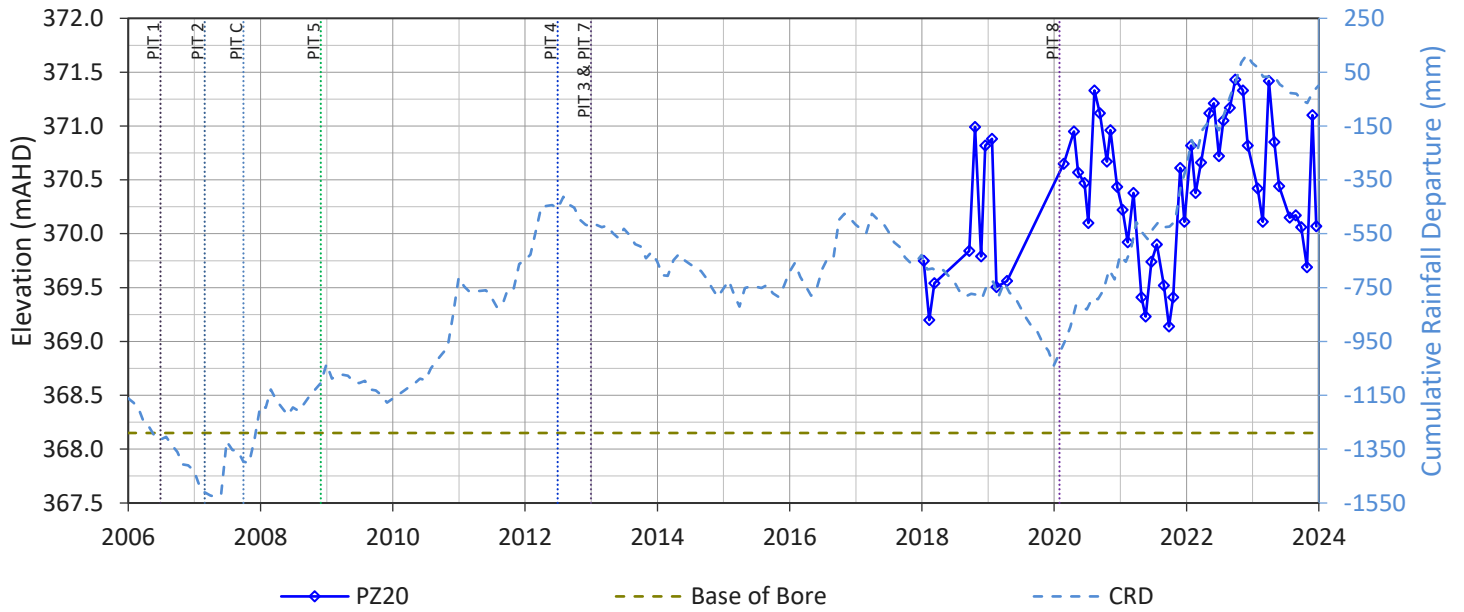


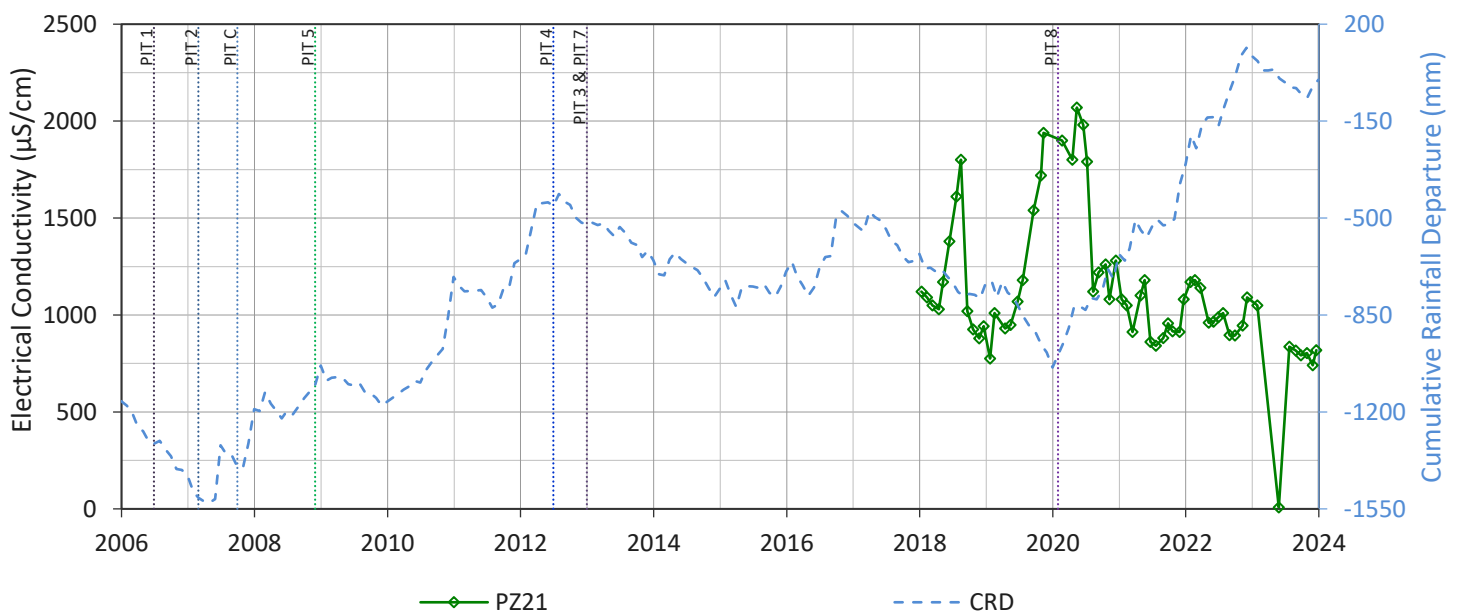
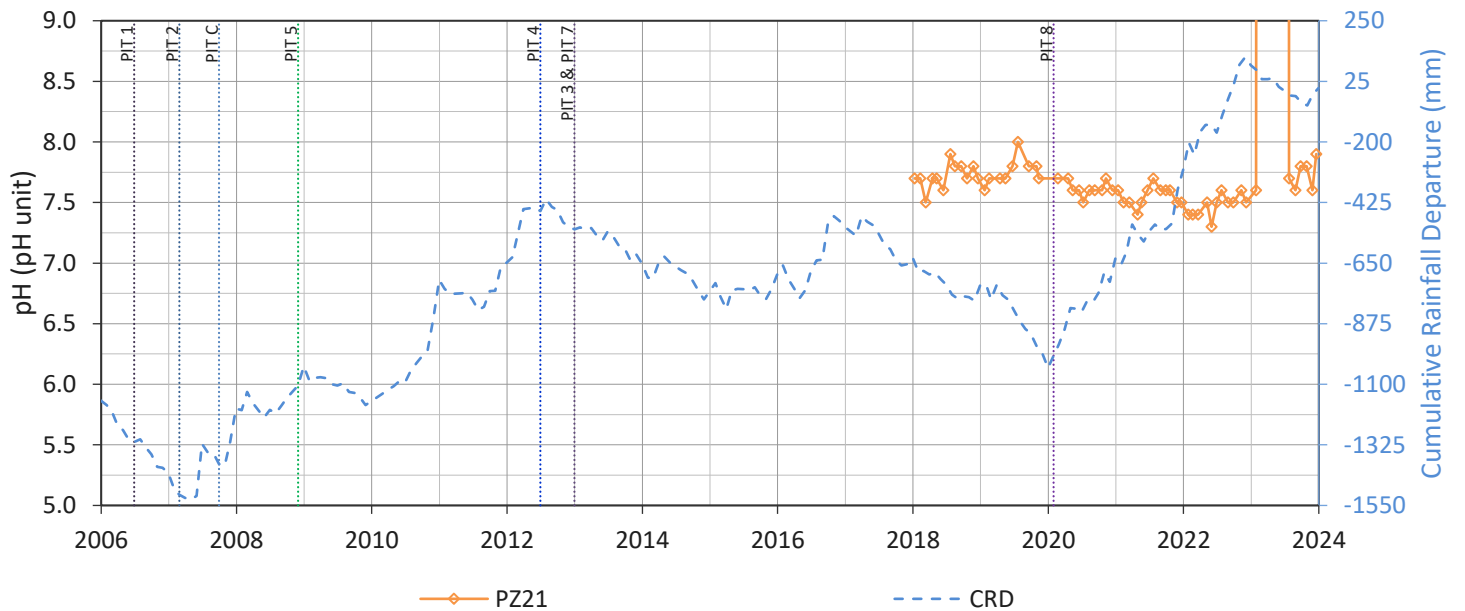
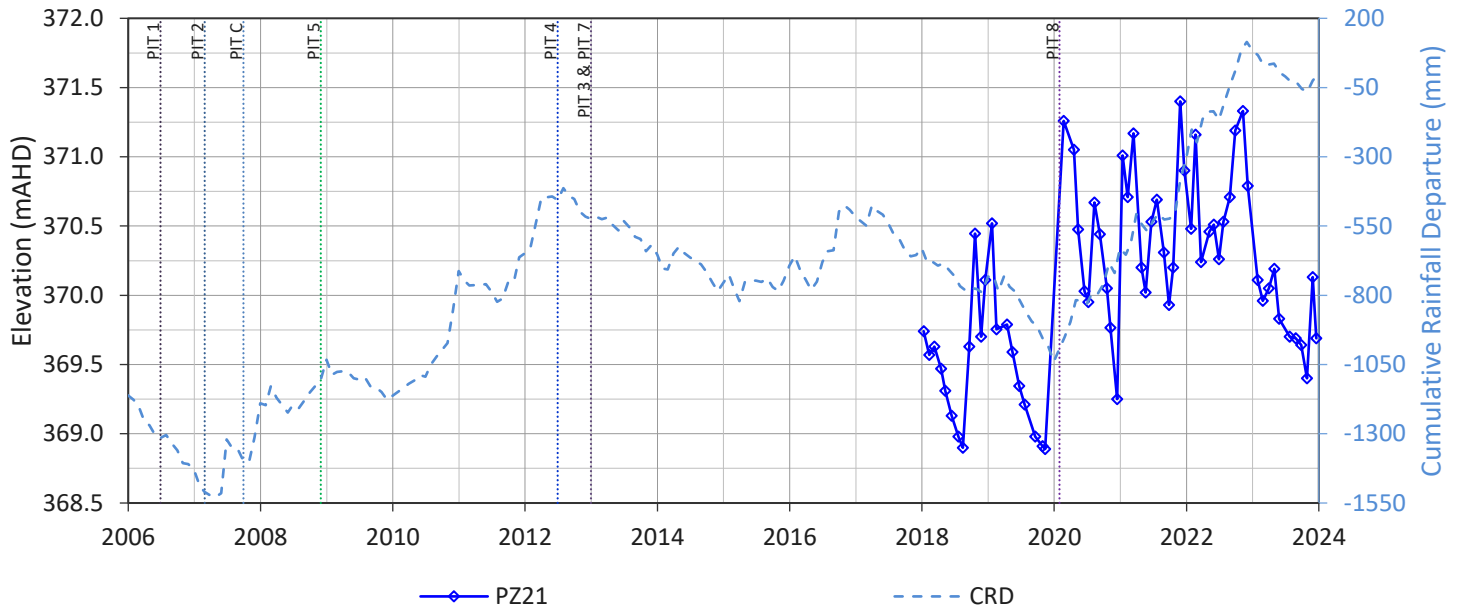


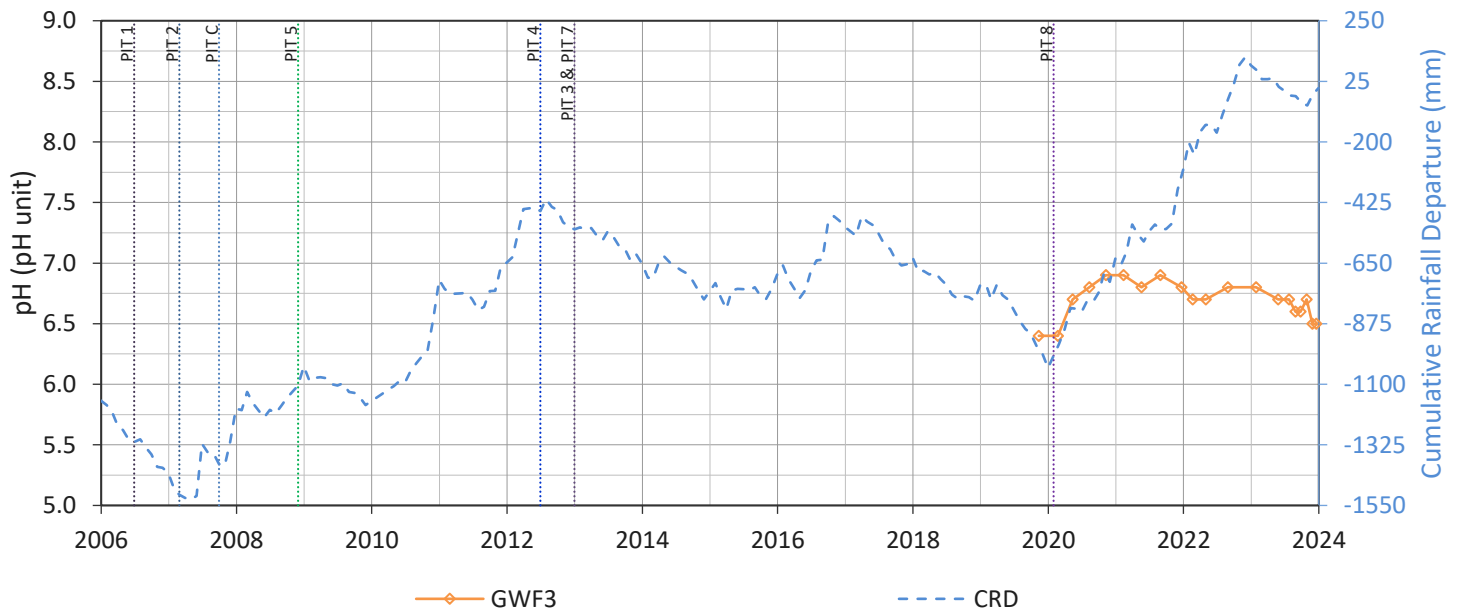
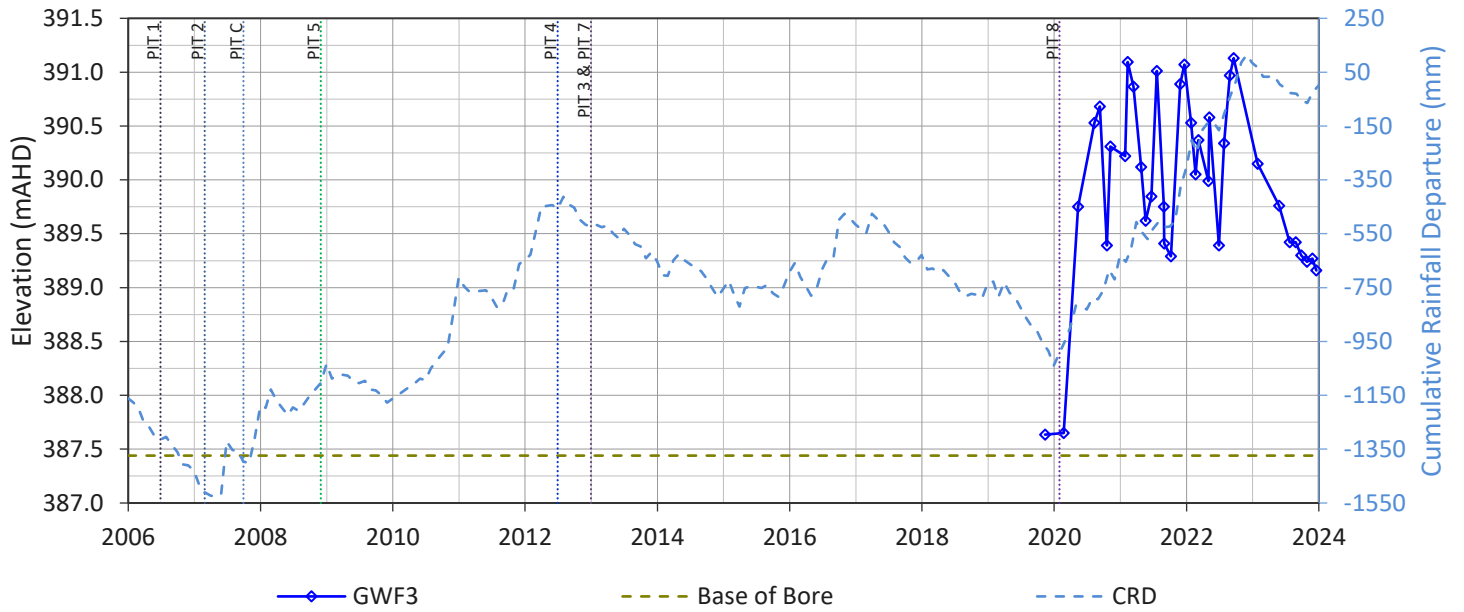


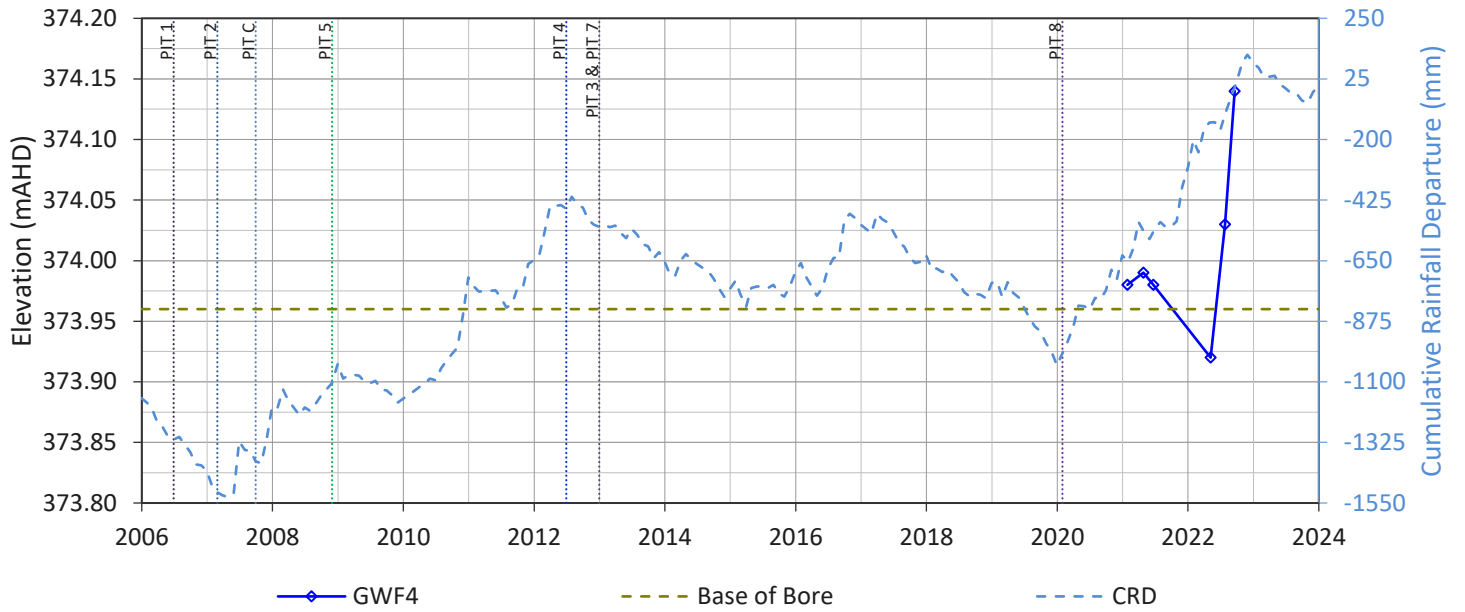










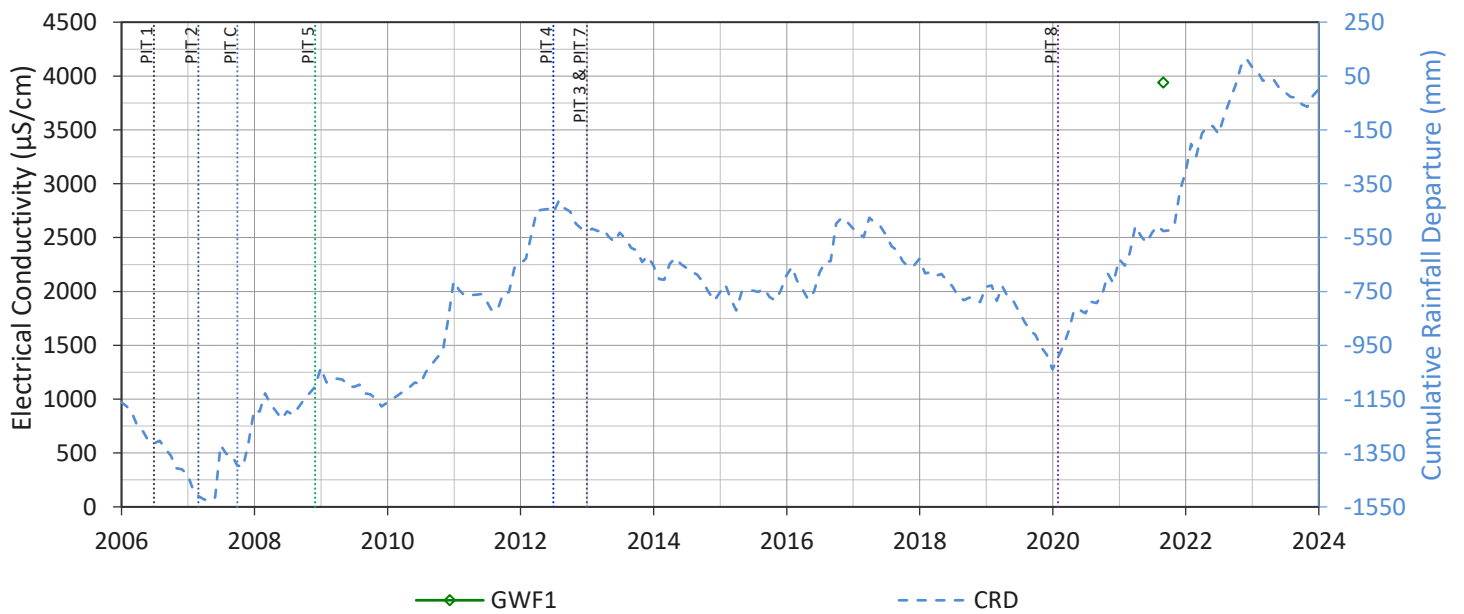
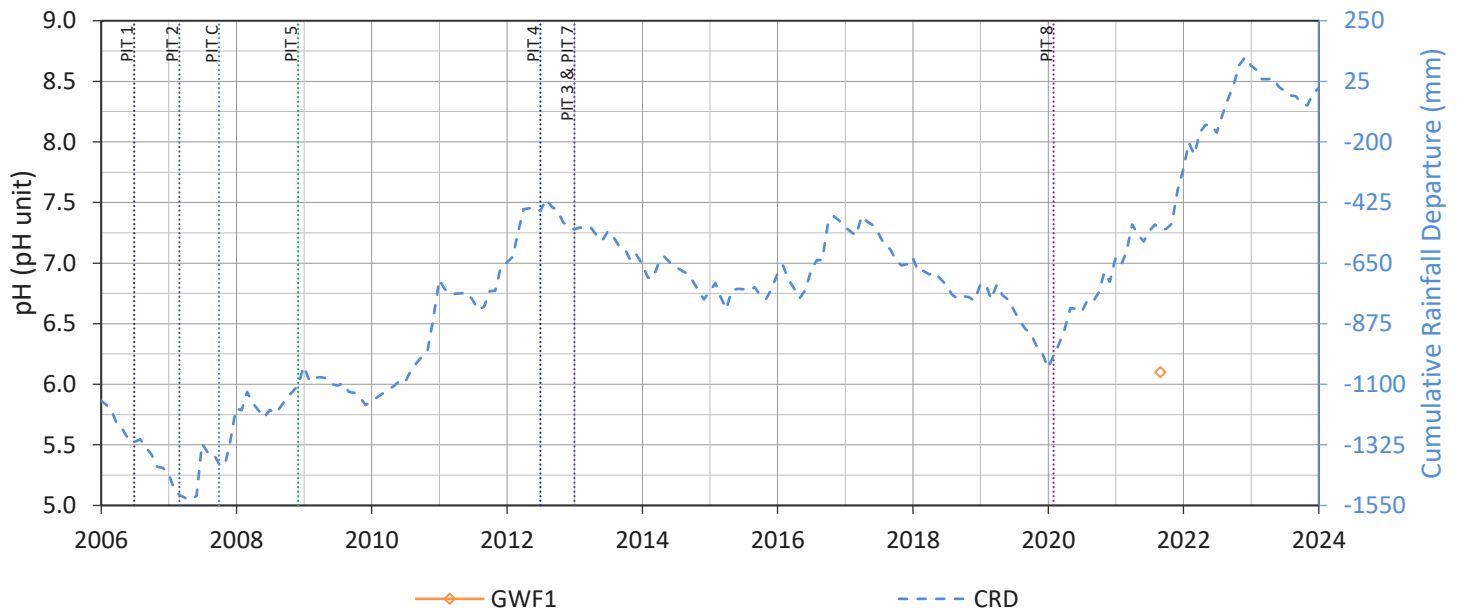
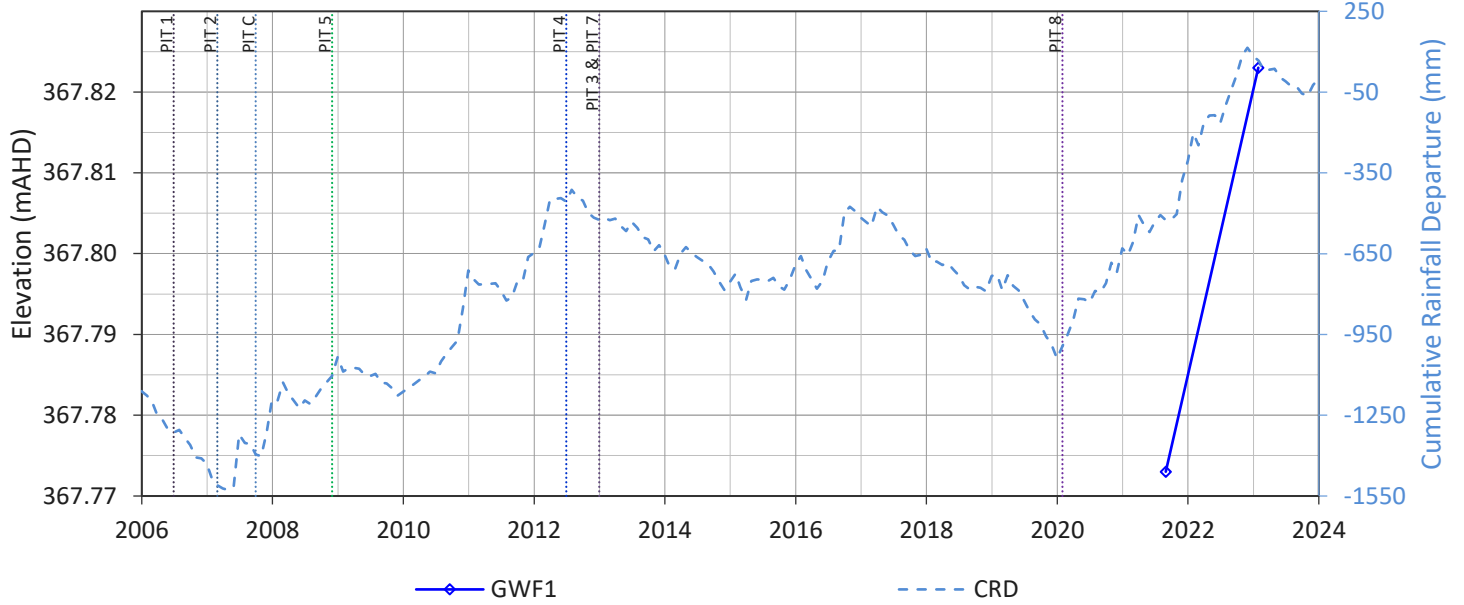


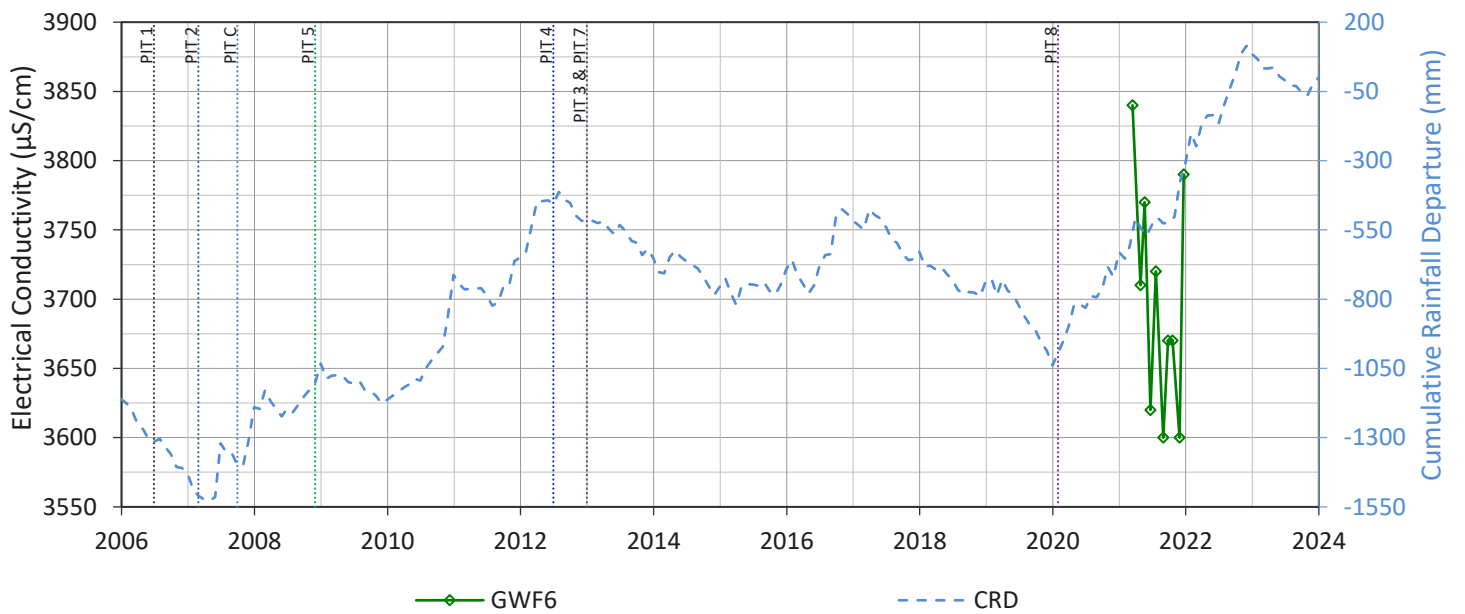
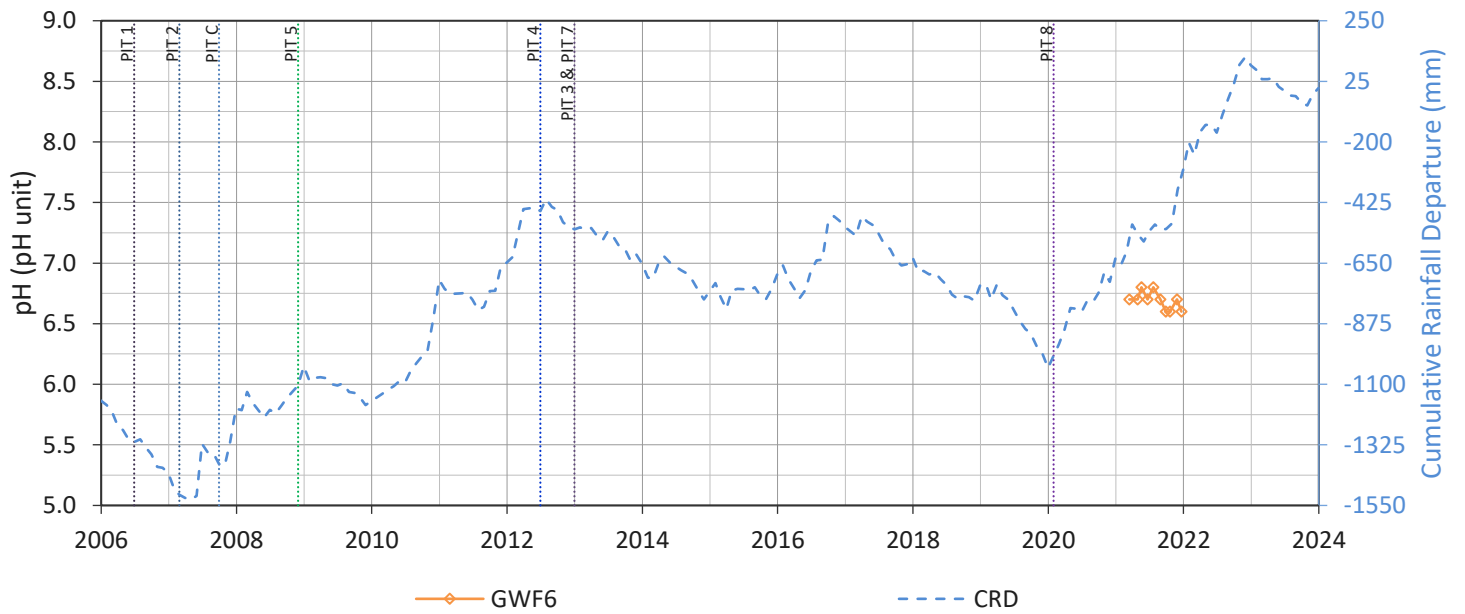
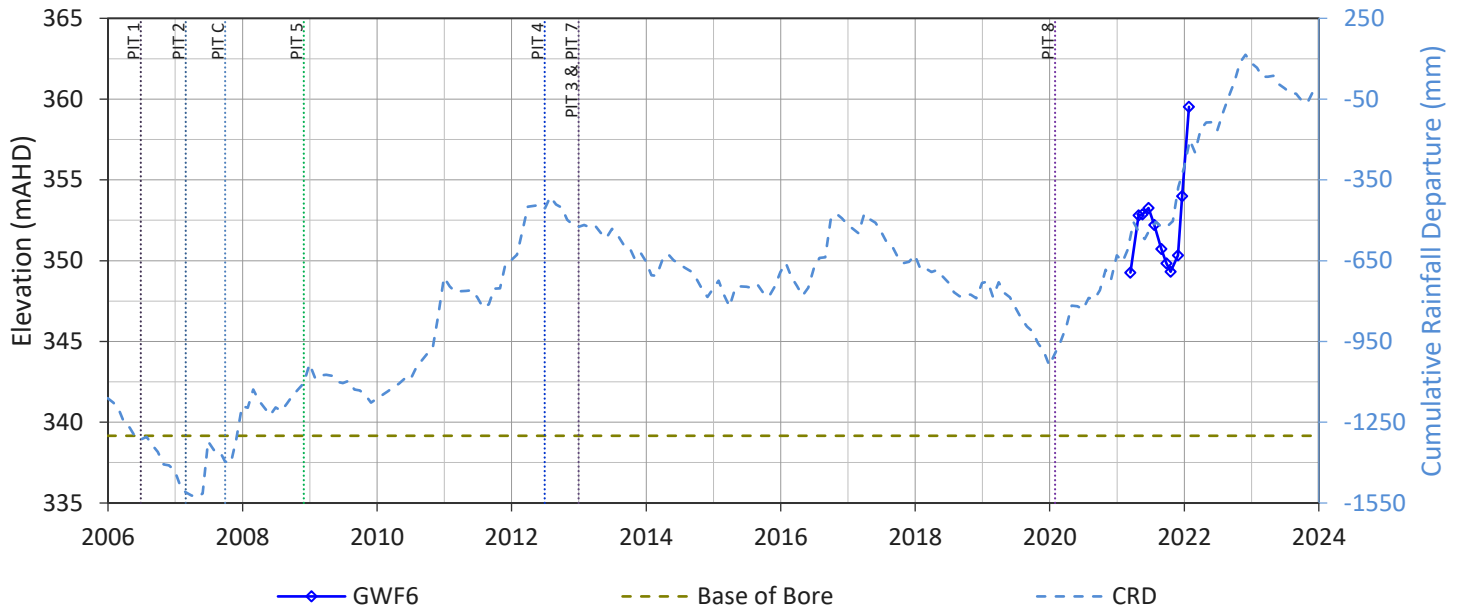
GWF4

No Data Available for pH (pH unit)

GWF4

No Data Available for Electrical Conductivity ($\mu\text{S}/\text{cm}$)







Appendix C Metal Species and Major Ion Charts

Annual Review – Wilpinjong Coal Mine

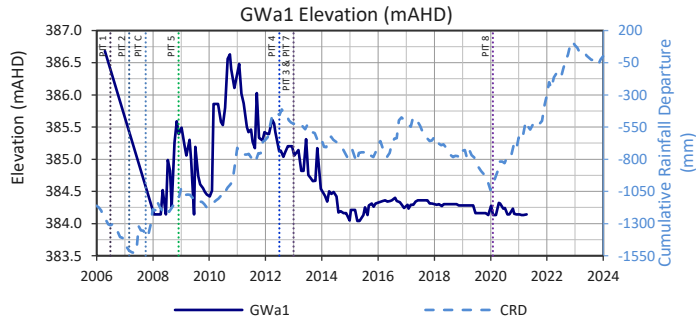
2023 Groundwater Compliance

Wilpinjong Coal Mine

SLR Project No.: 665.v10014.02411

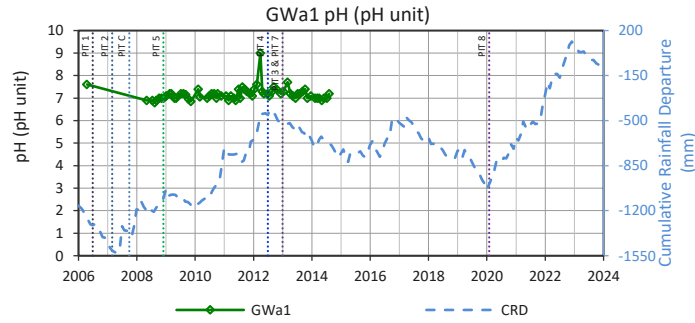
28 March 2024





GWa1

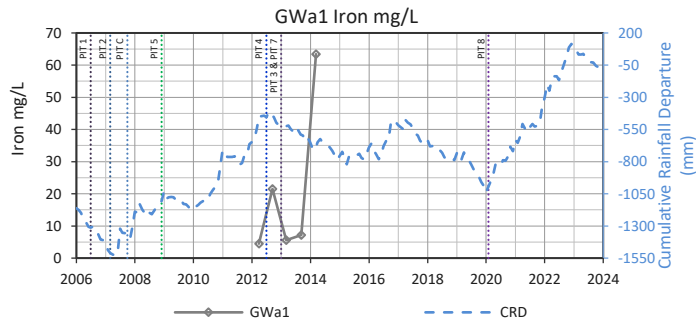
No Data Available for Arsenic mg/L



GWa1

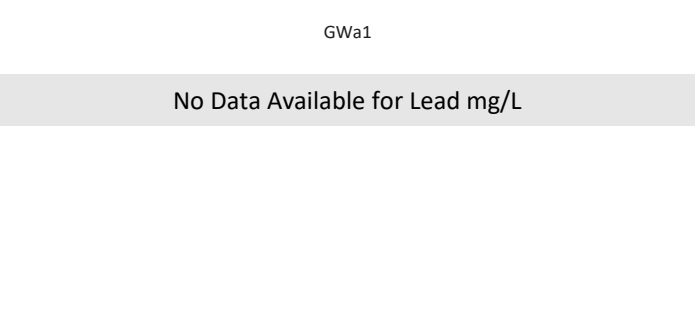
No Data Available for Barium mg/L

GWa1
No Data Available for Aluminium mg/L



GWa1

No Data Available for Nickel mg/L

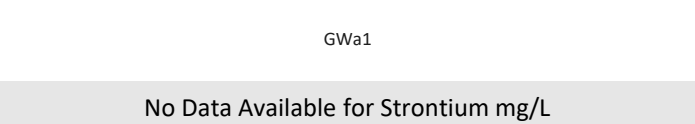


GWa1

No Data Available for Lead mg/L

GWa1
No Data Available for Manganese mg/L

No Data Available for Manganese mg/L

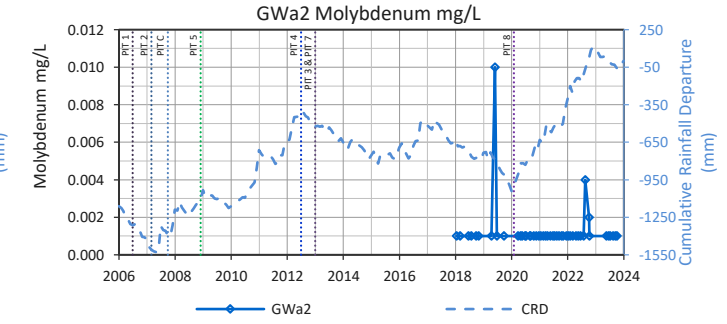
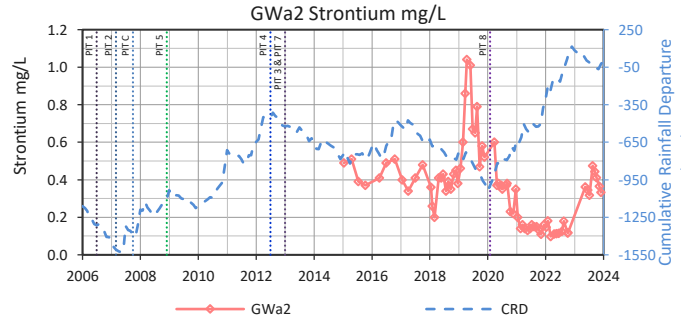
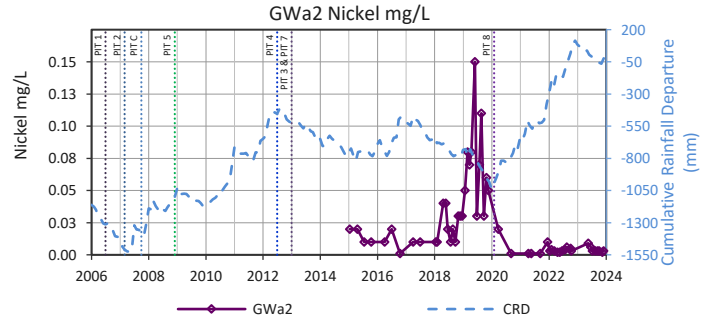
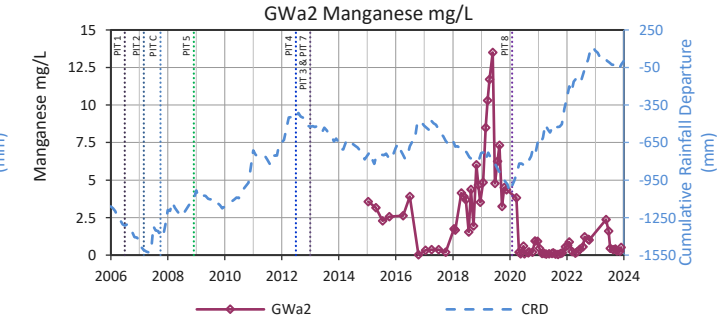
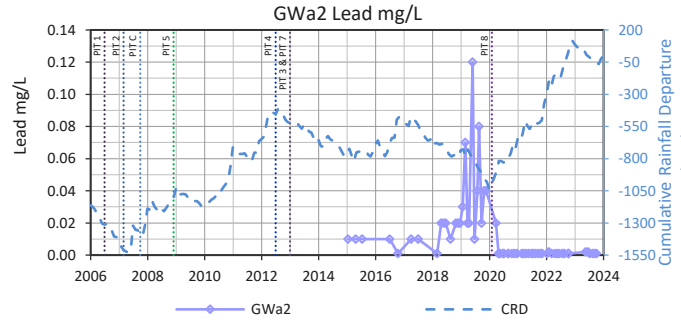
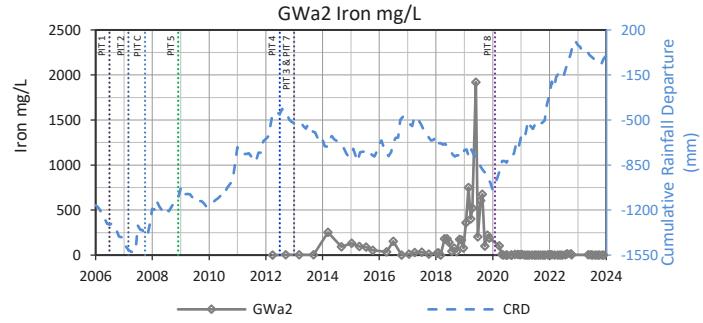
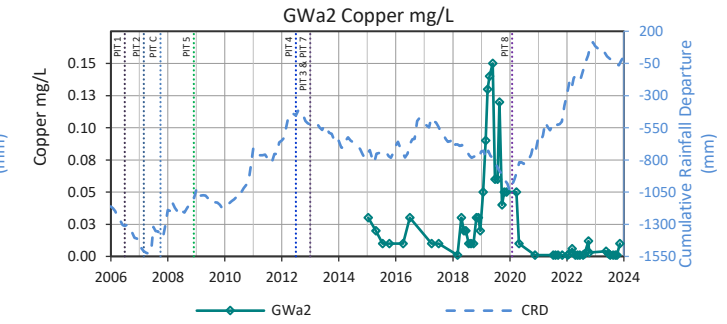
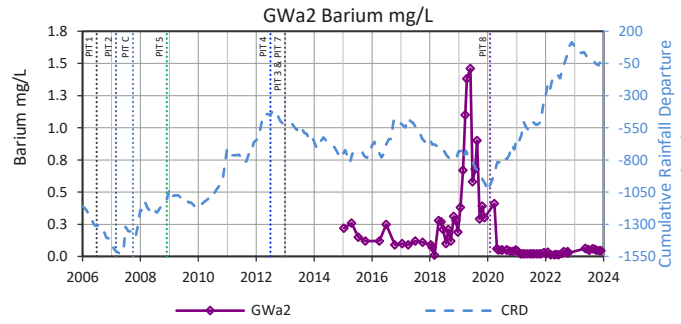
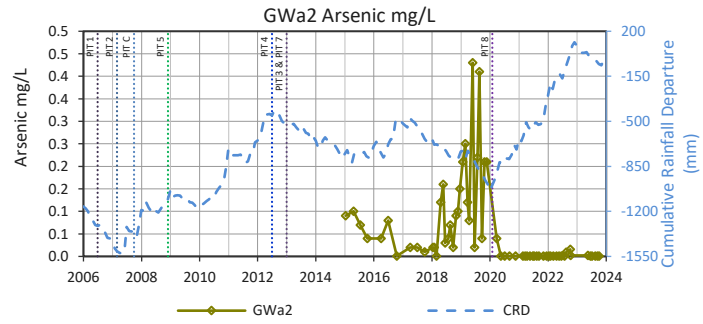
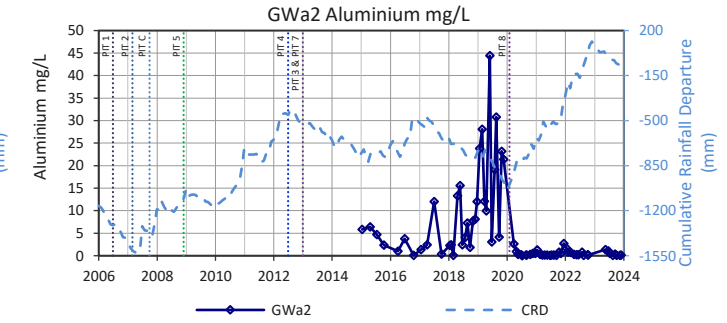
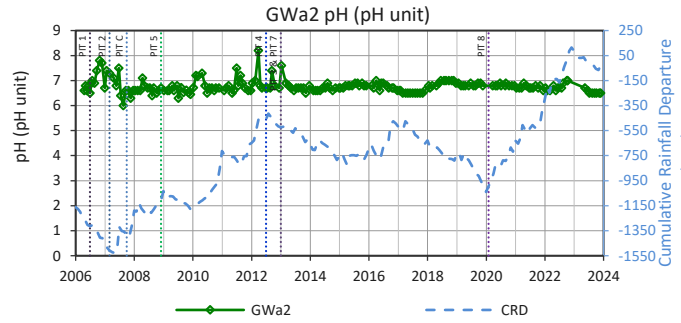
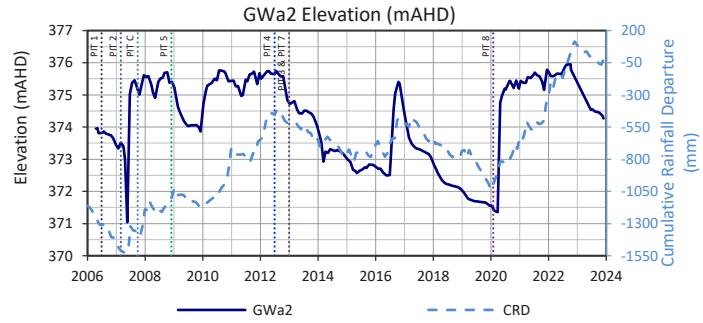


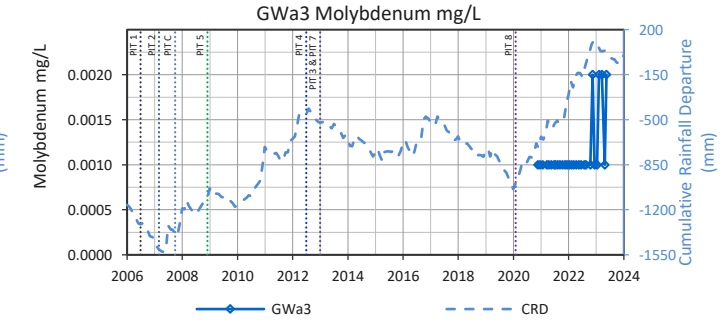
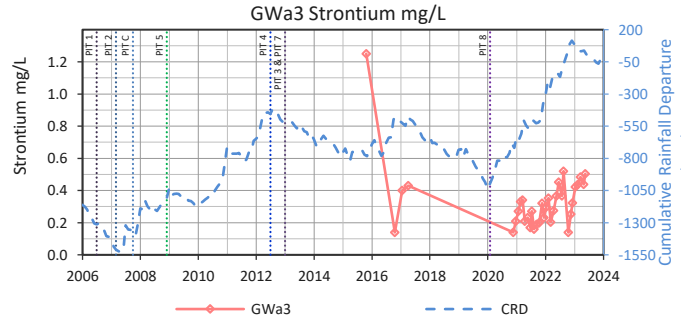
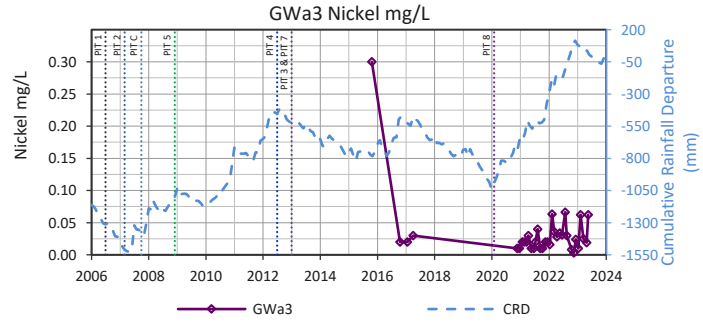
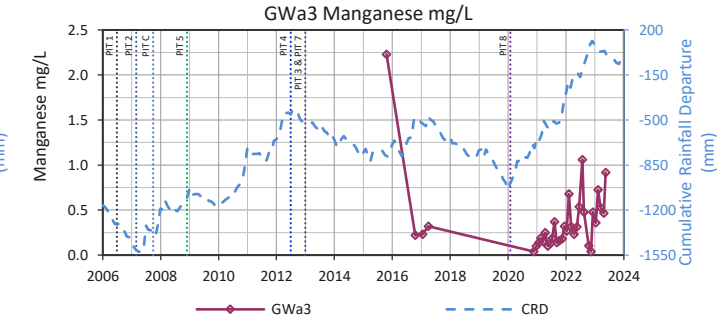
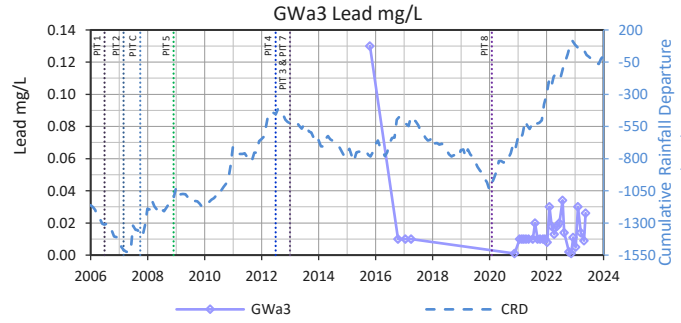
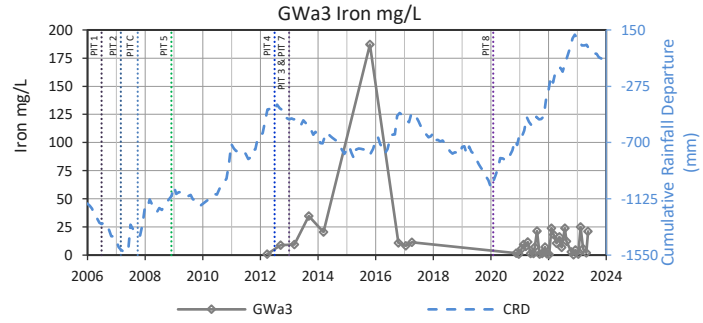
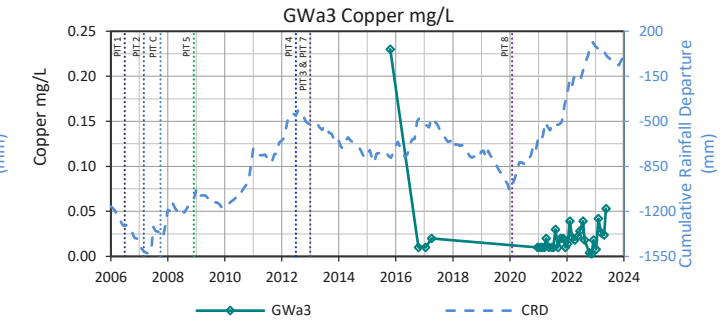
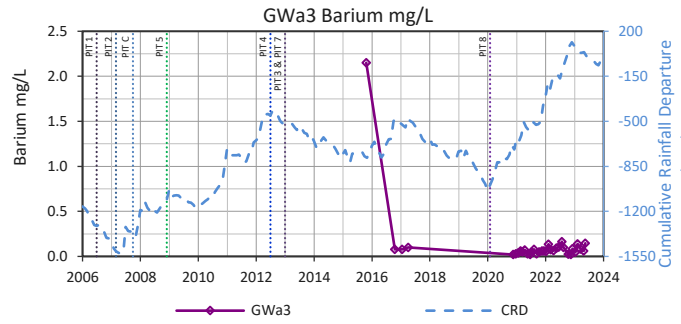
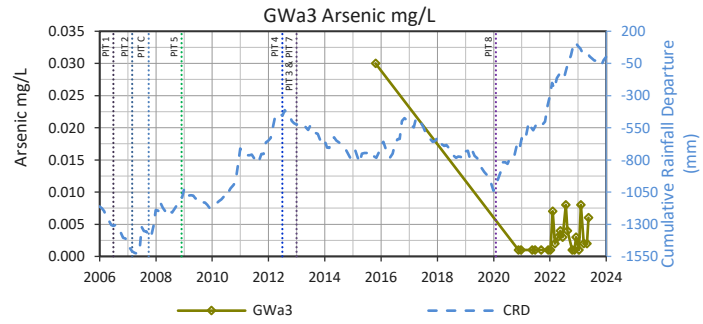
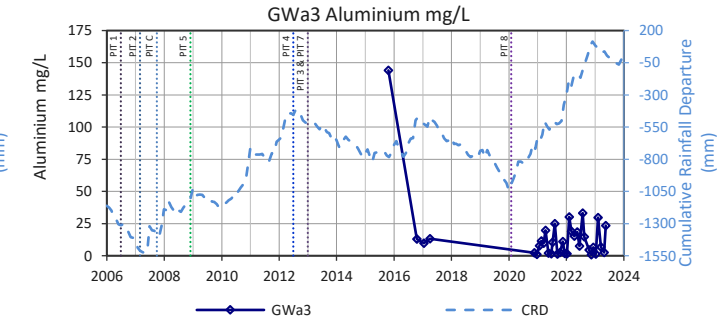
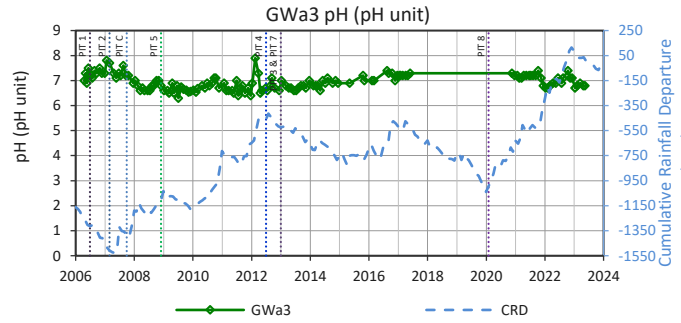
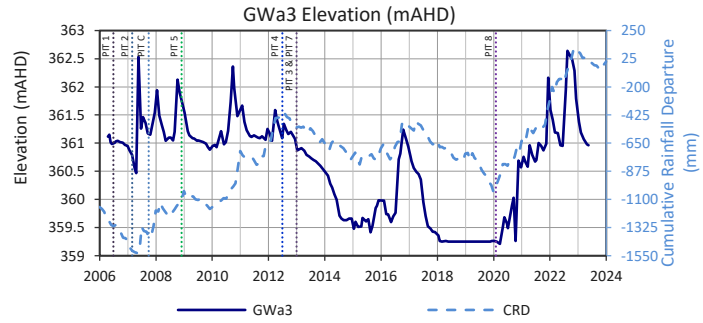
GWa1

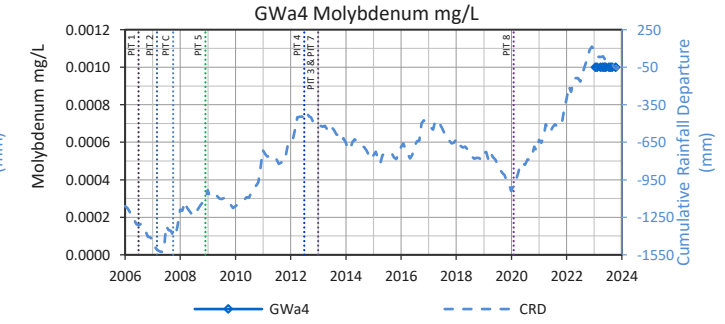
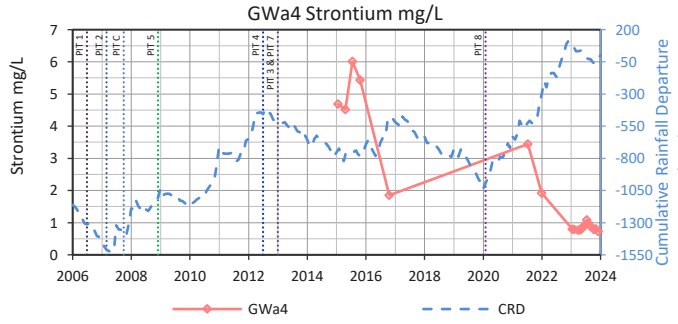
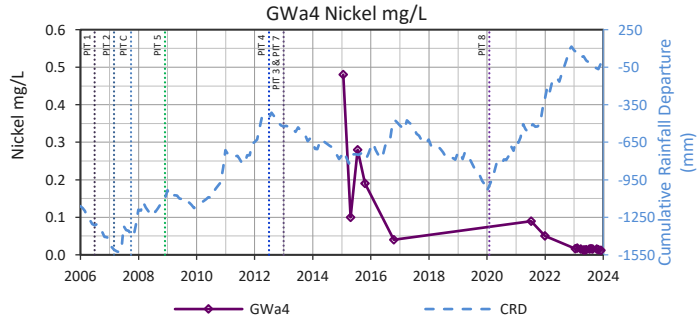
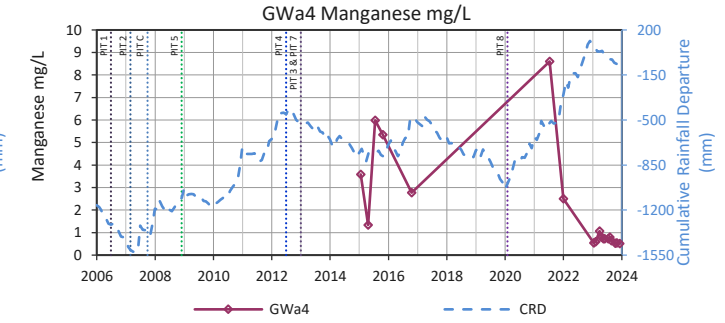
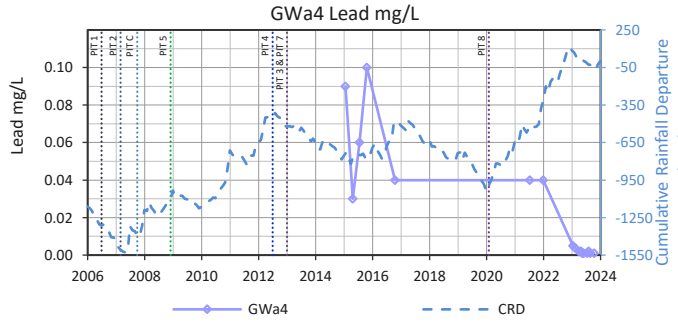
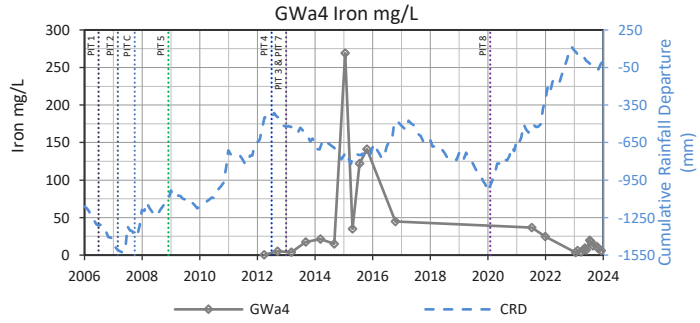
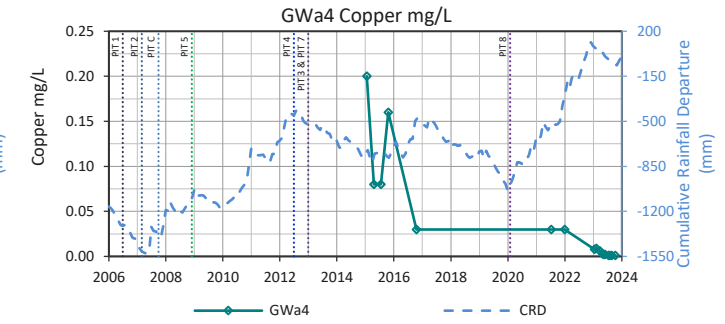
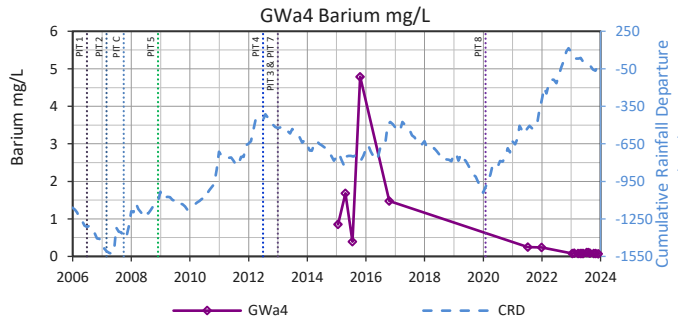
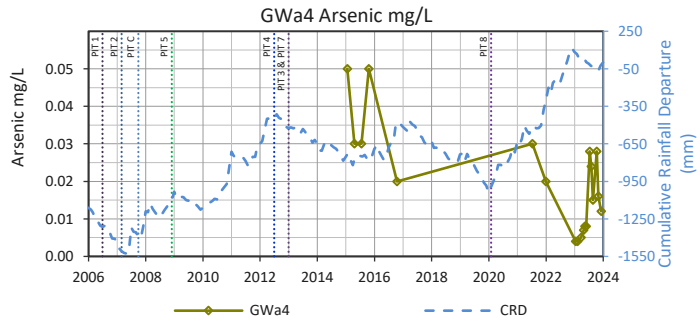
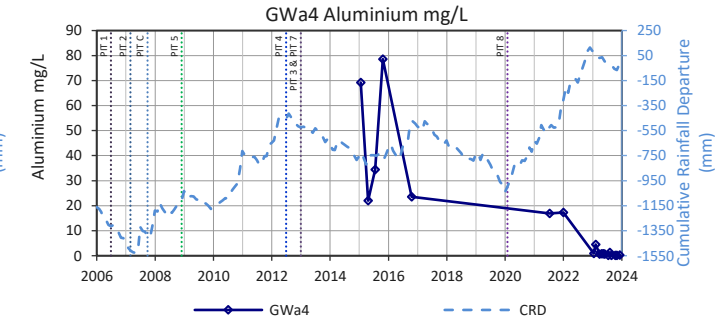
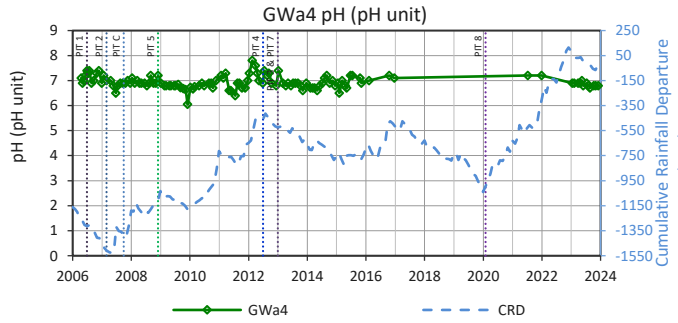
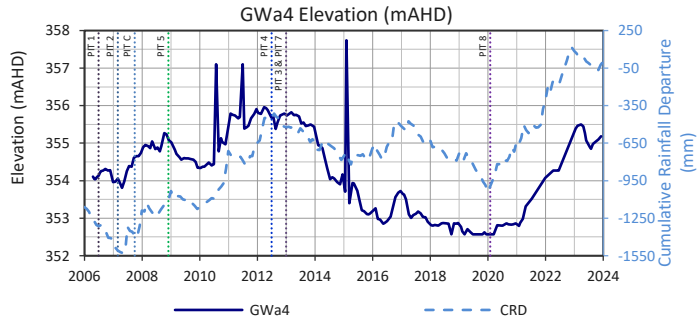
No Data Available for Strontium mg/L

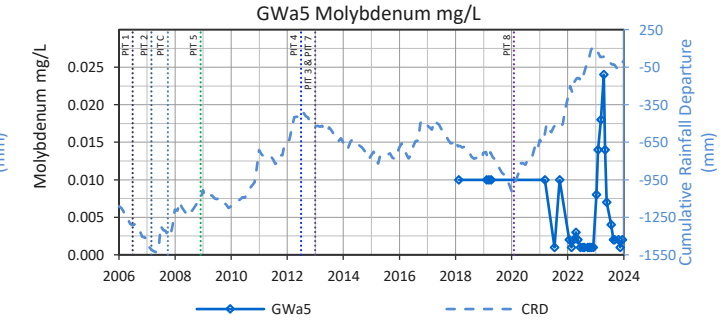
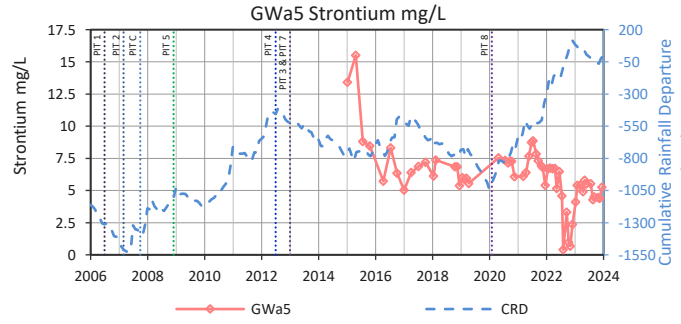
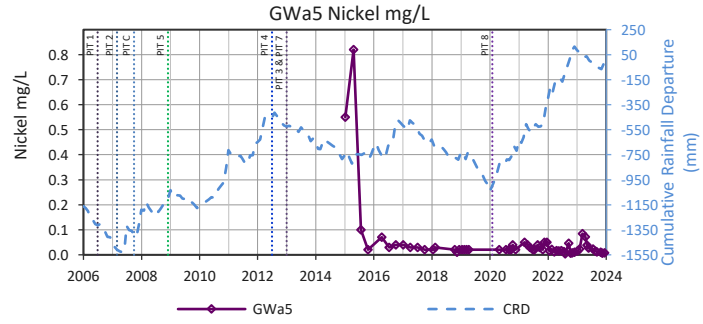
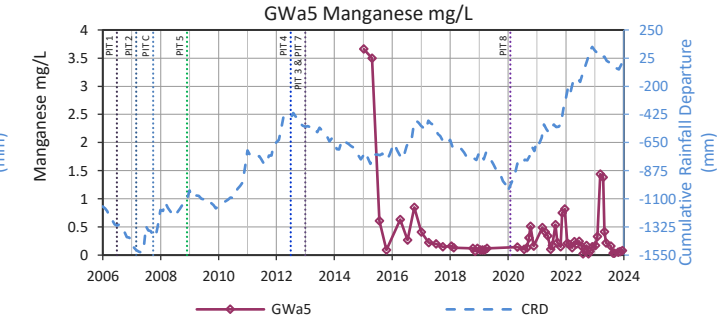
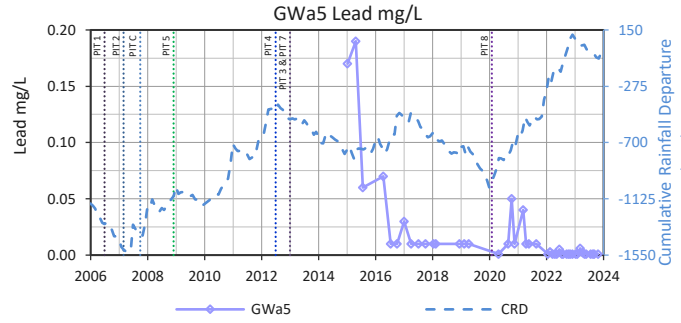
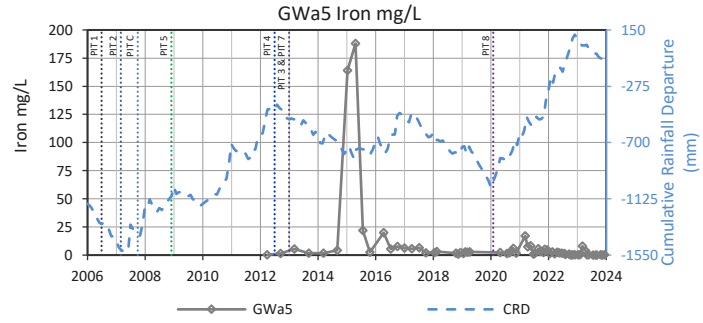
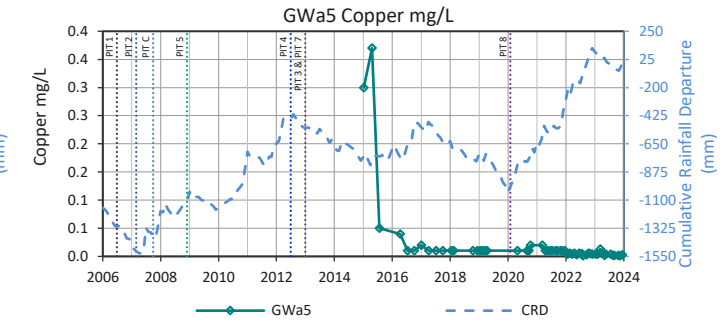
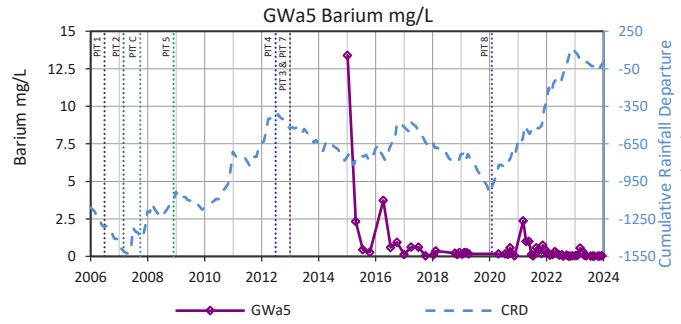
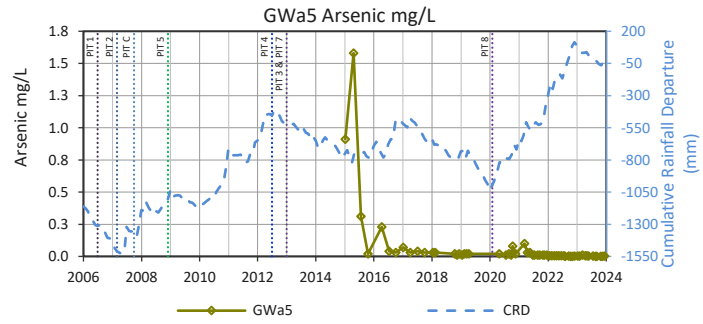
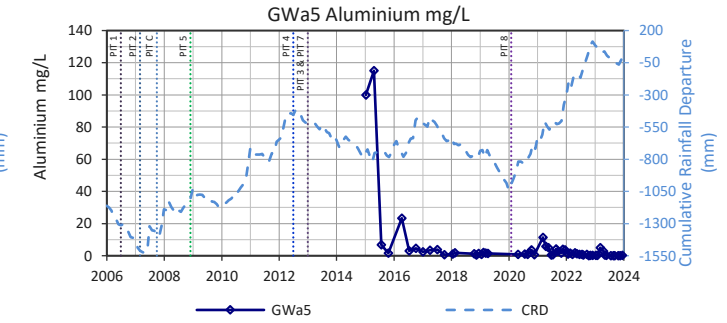
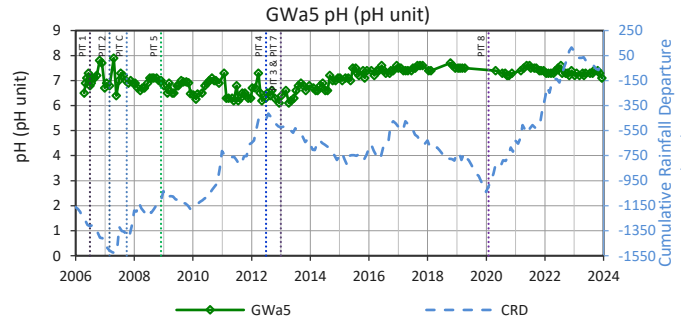
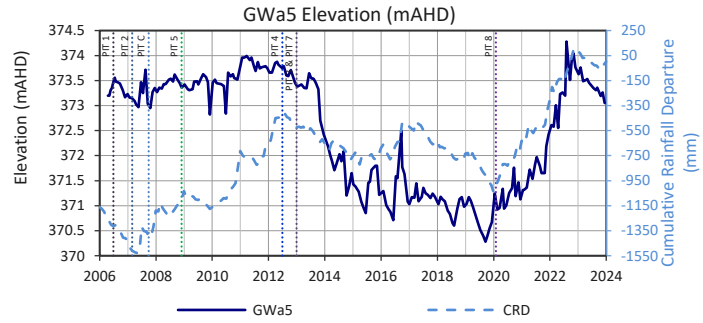
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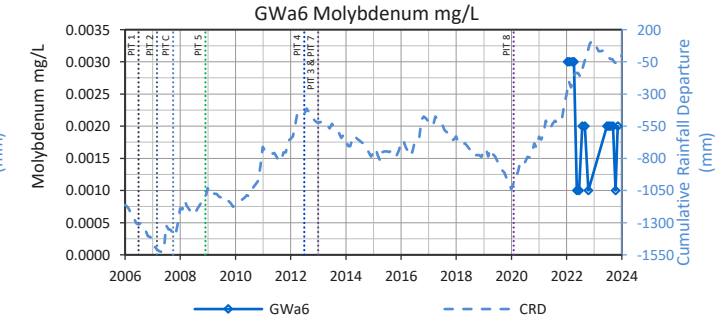
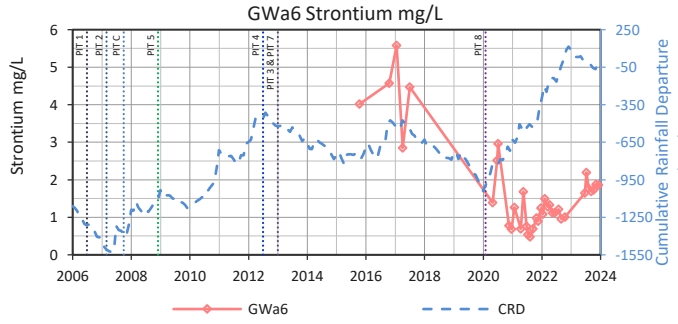
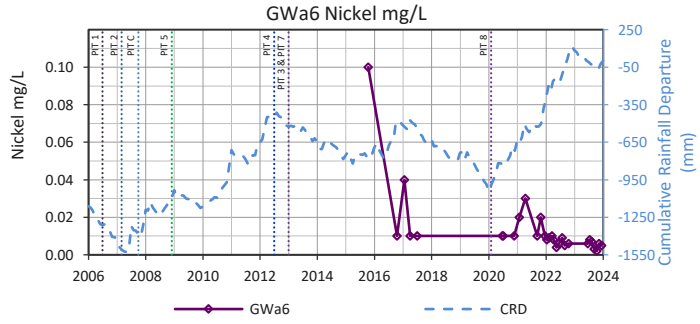
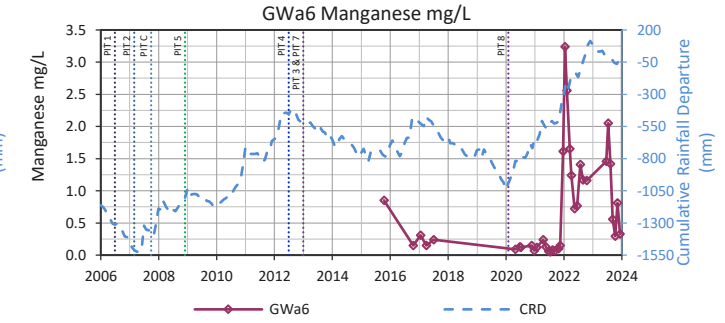
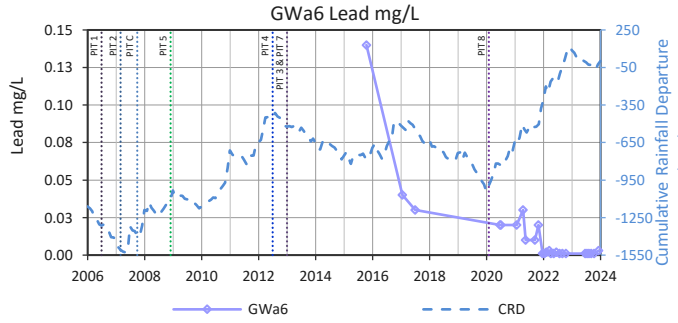
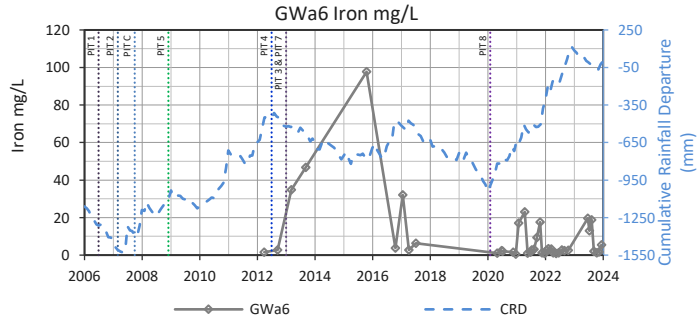
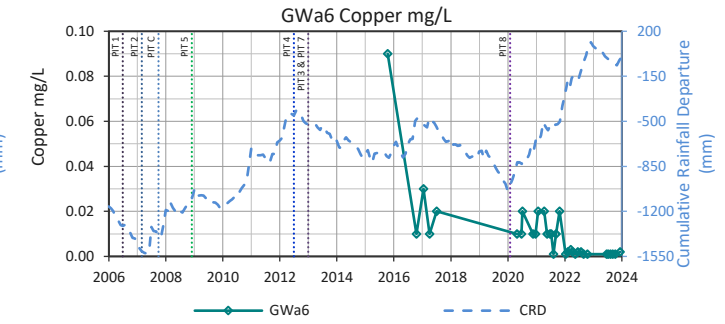
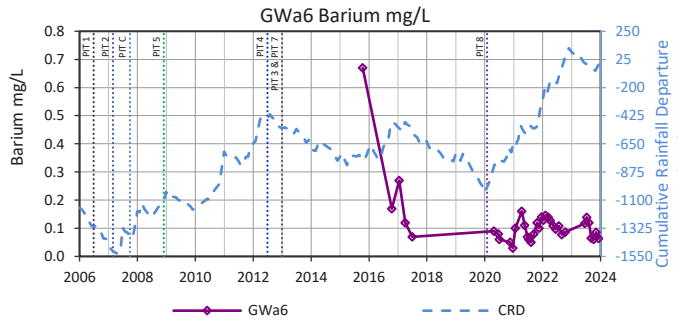
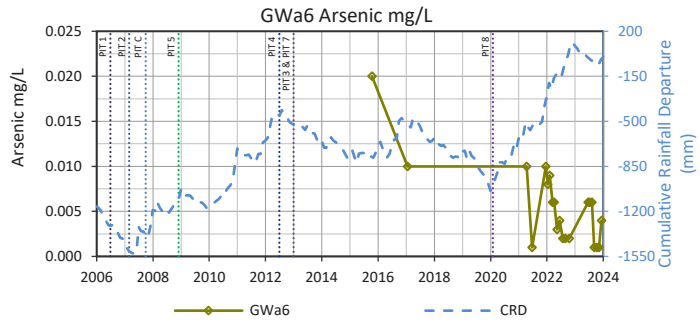
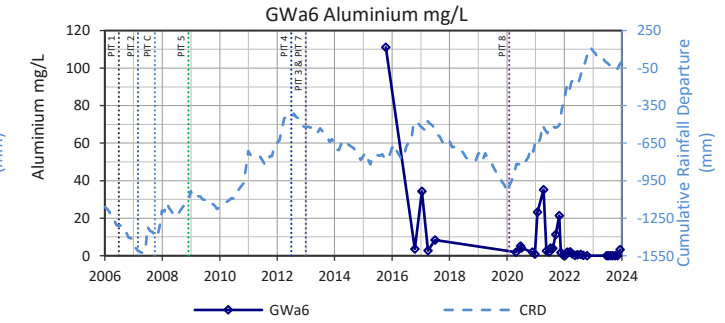
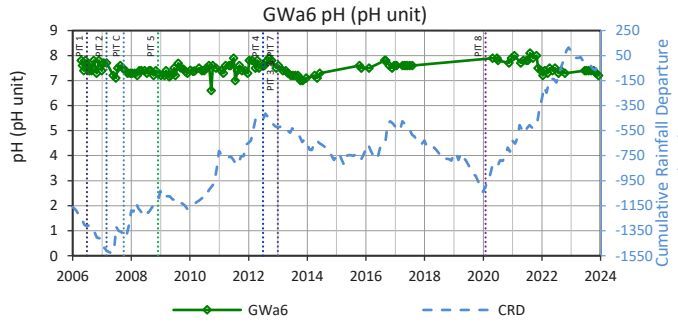
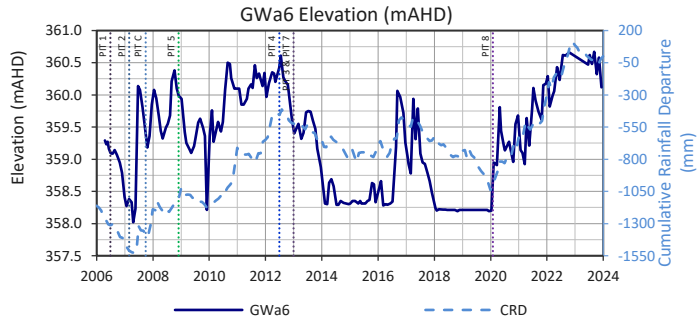
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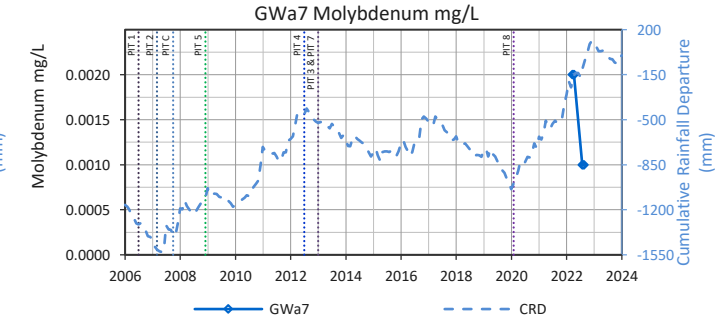
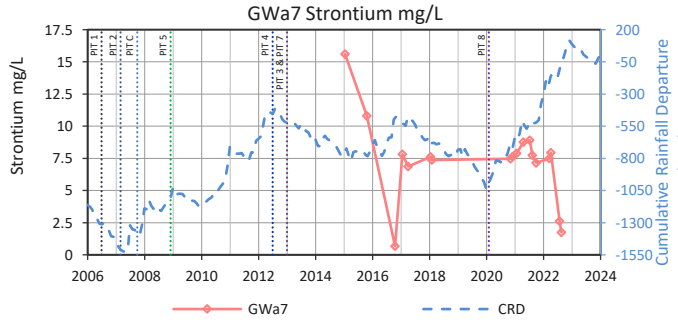
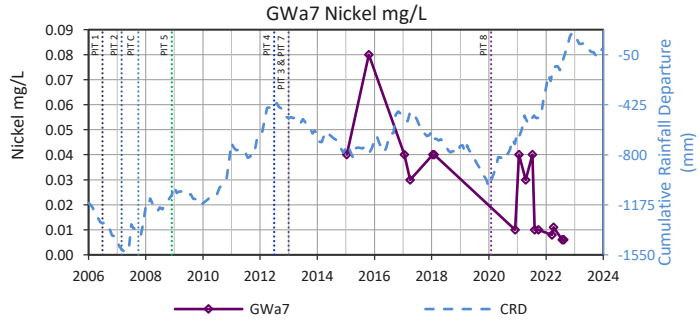
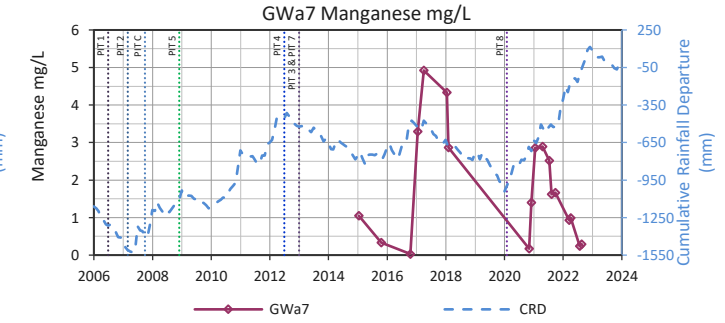
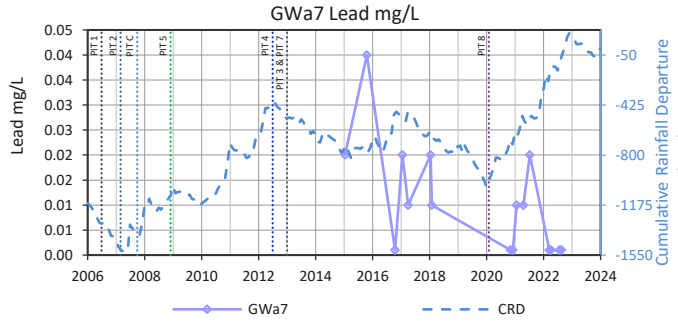
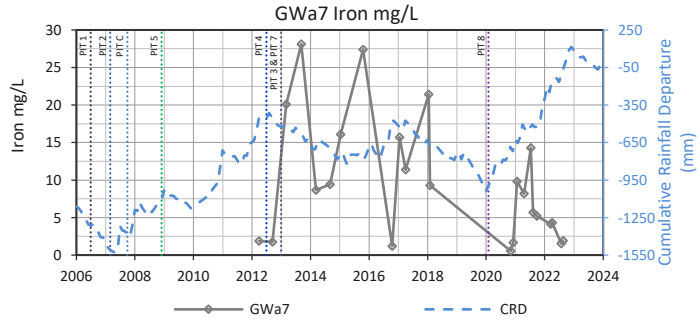
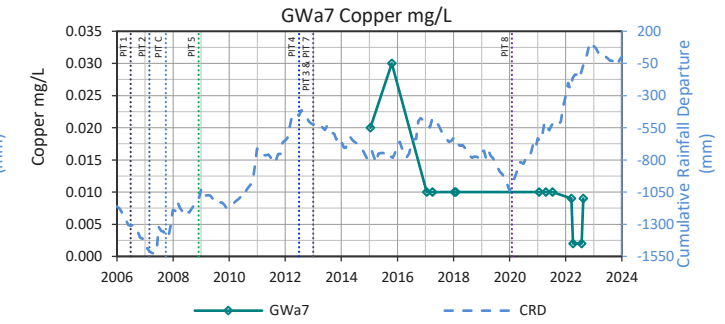
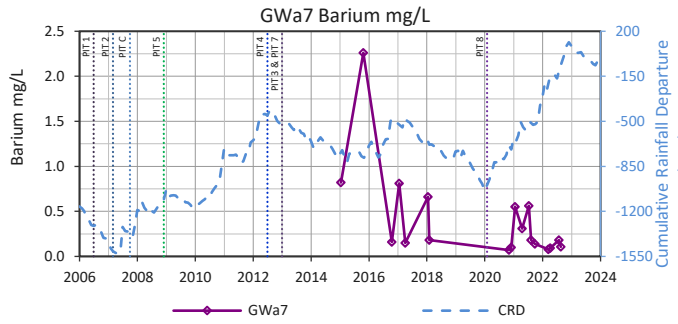
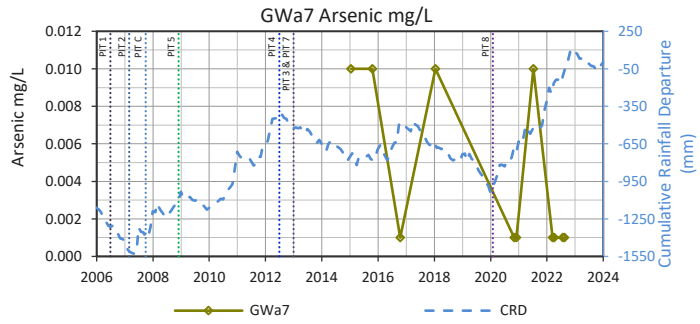
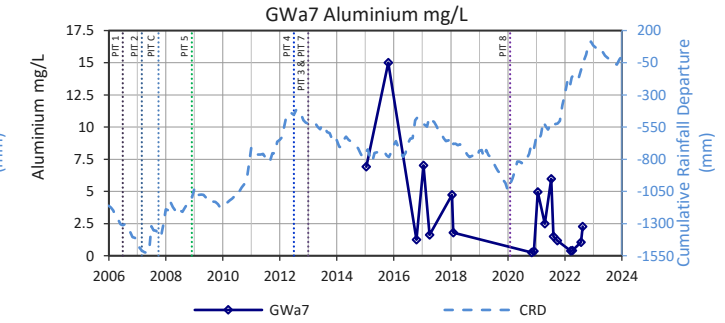
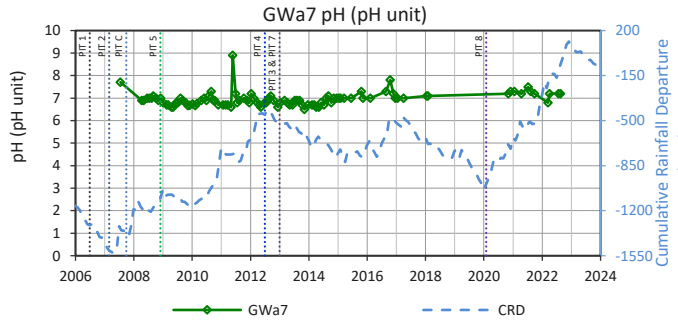
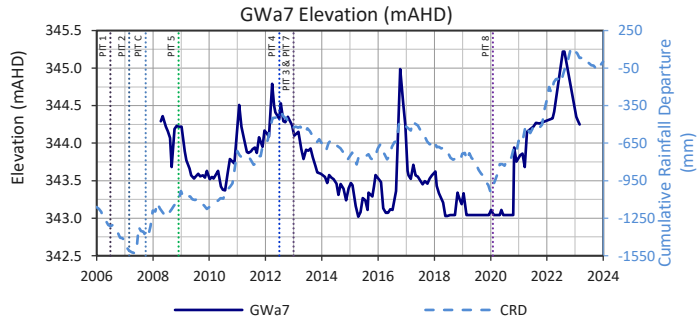


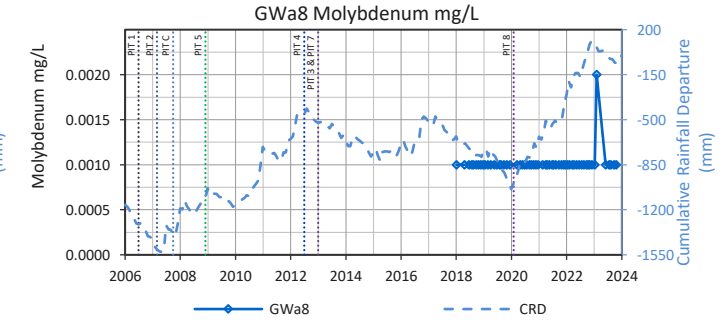
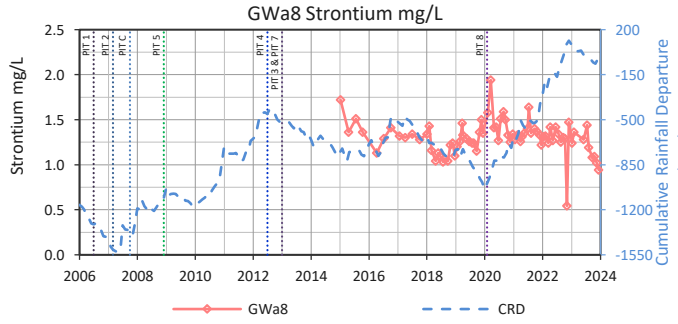
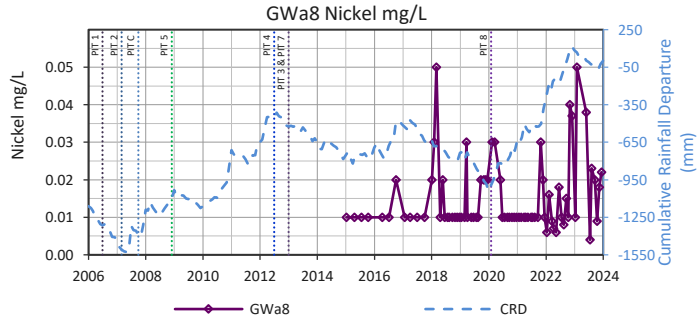
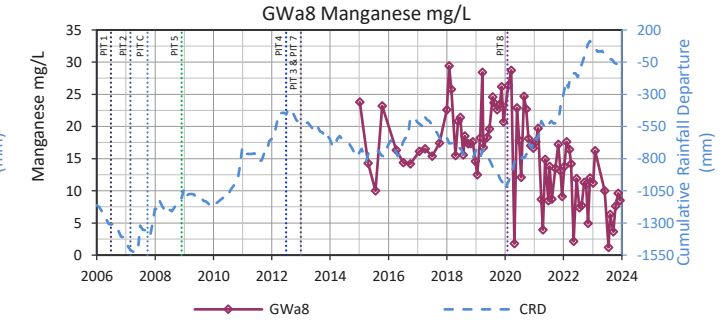
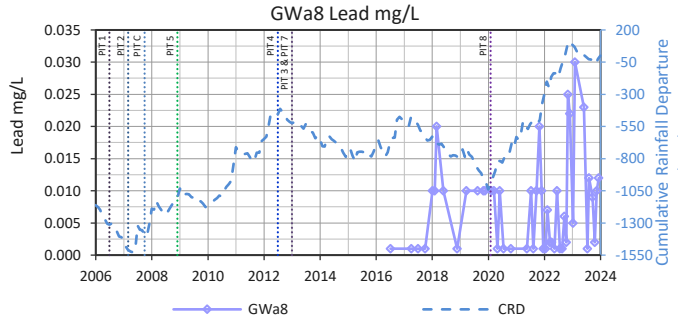
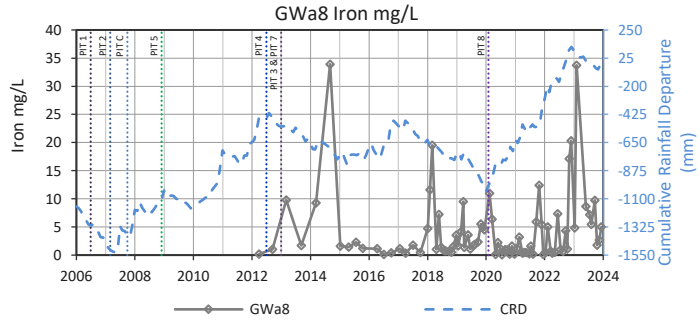
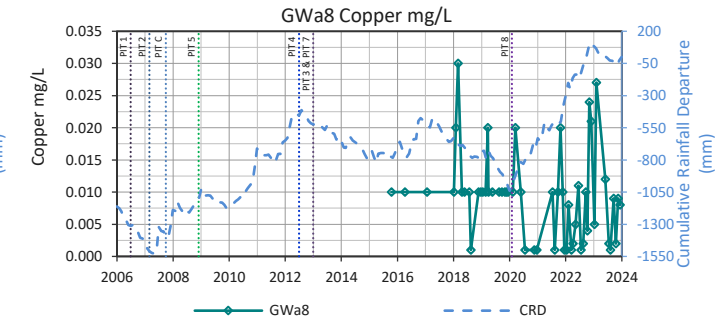
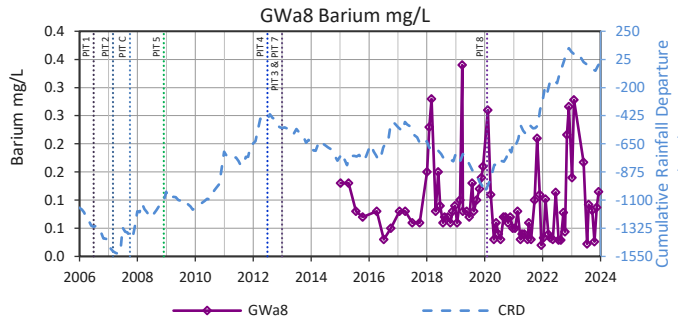
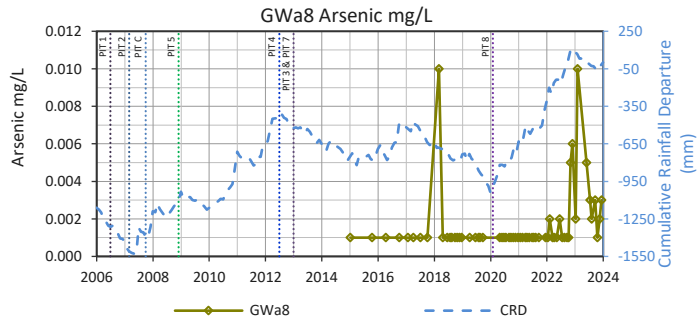
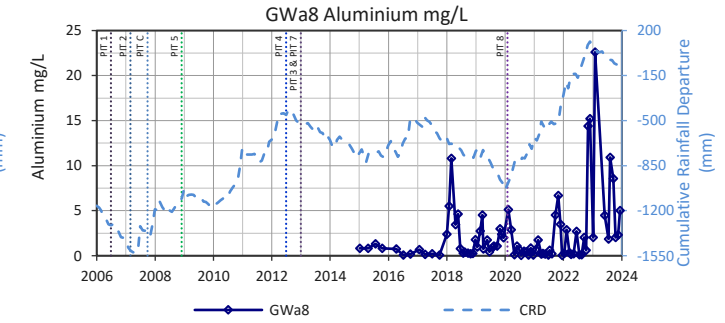
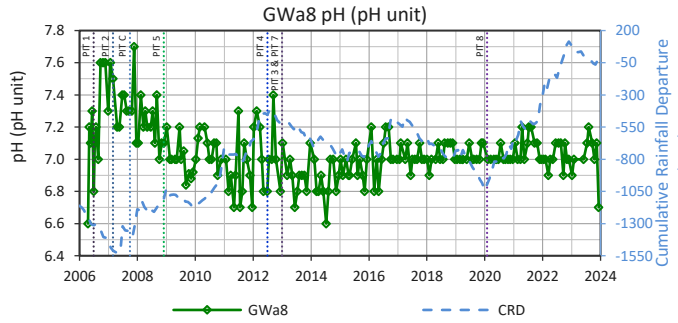
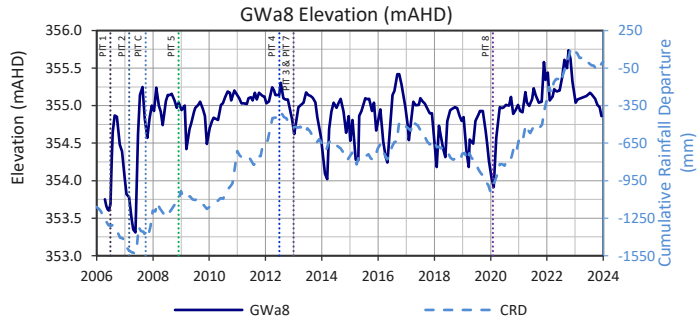


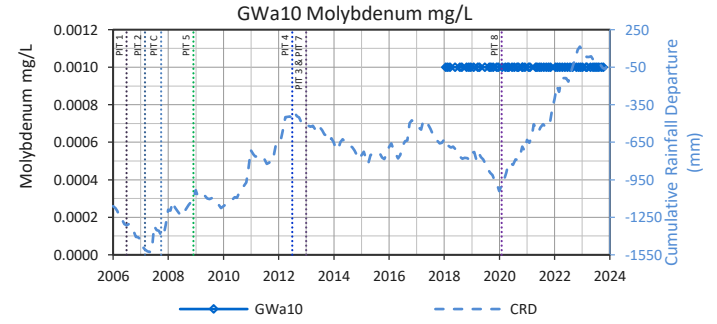
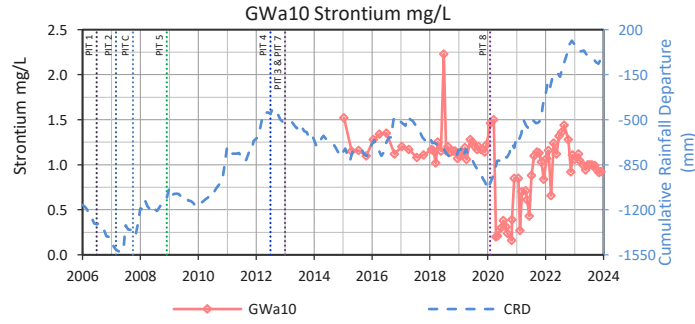
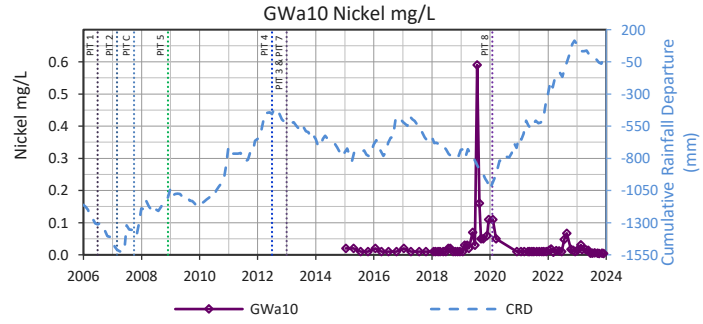
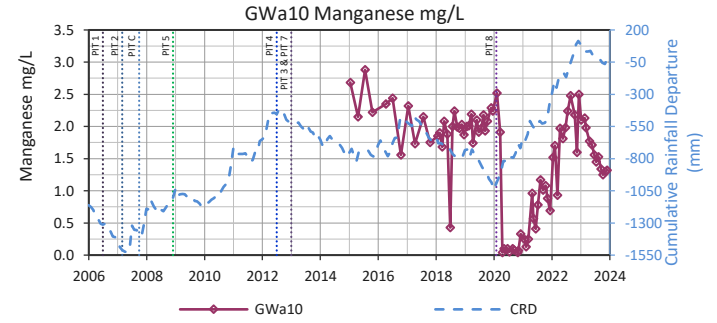
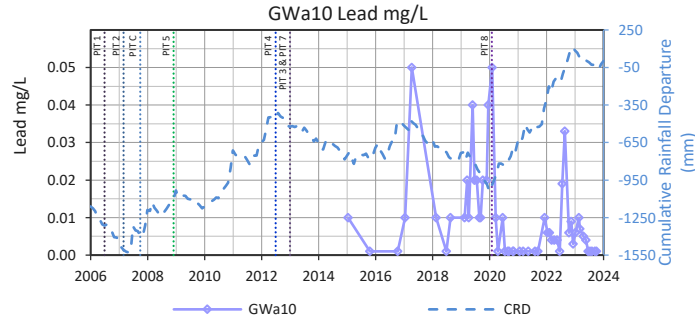
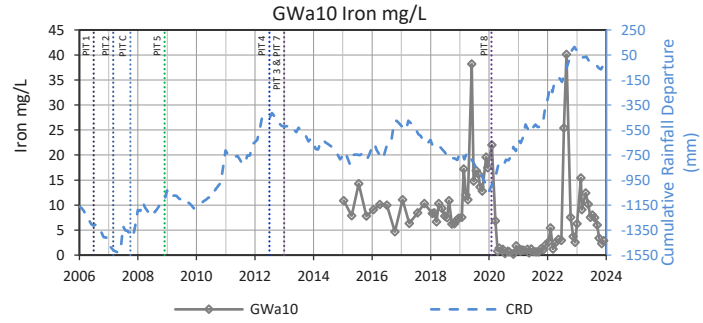
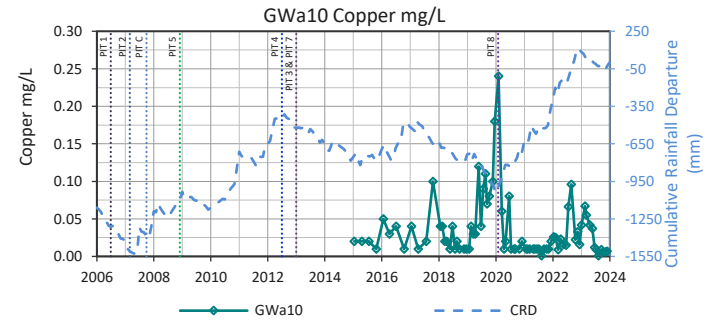
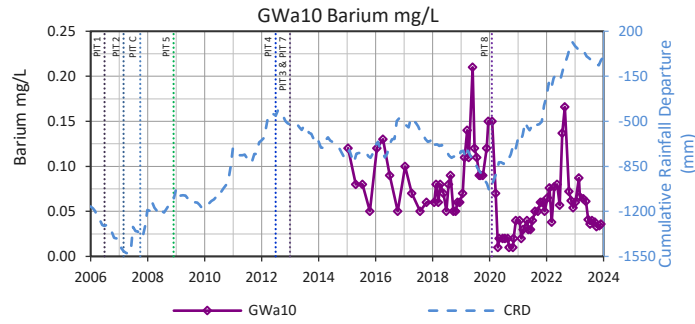
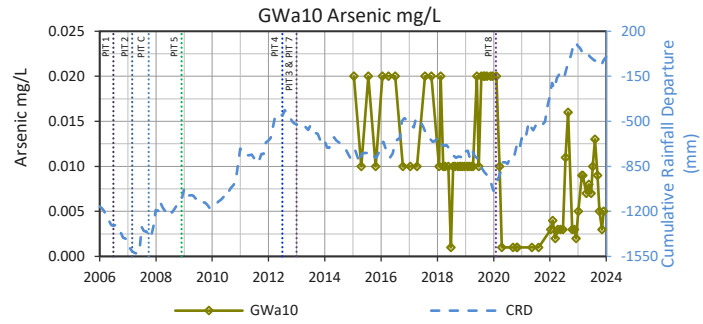
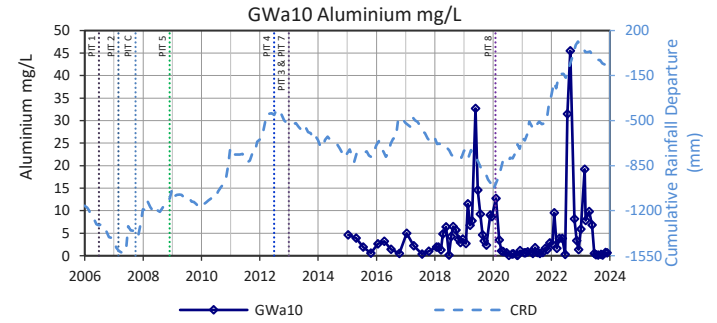
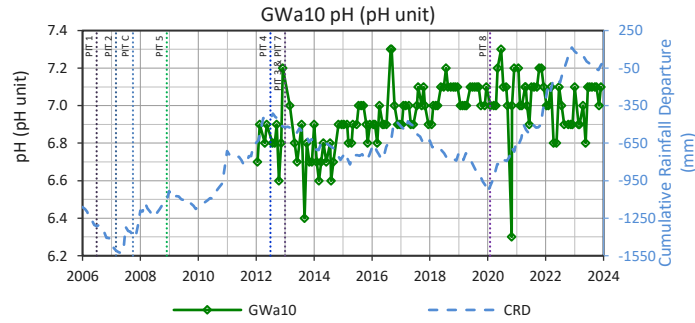
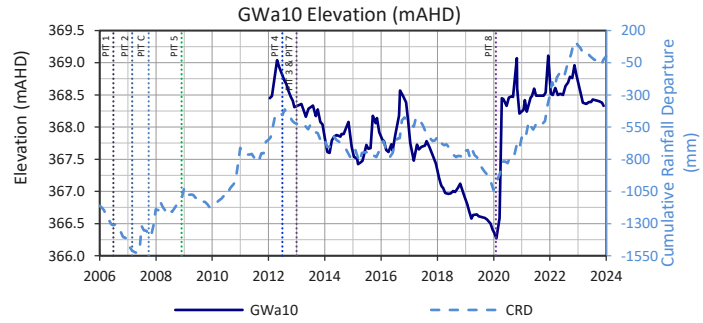


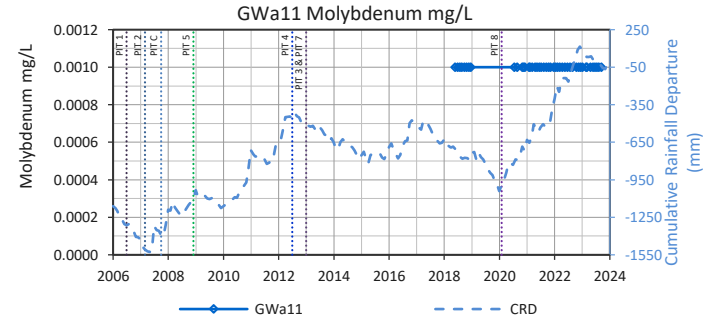
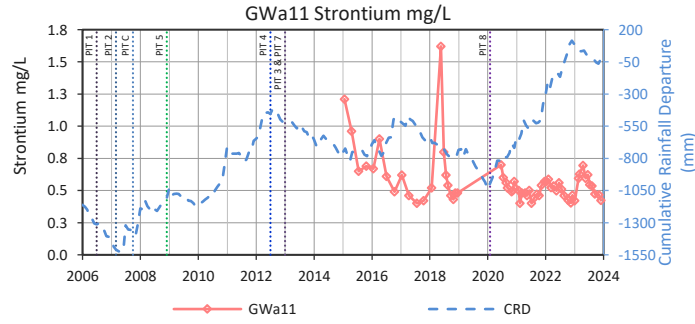
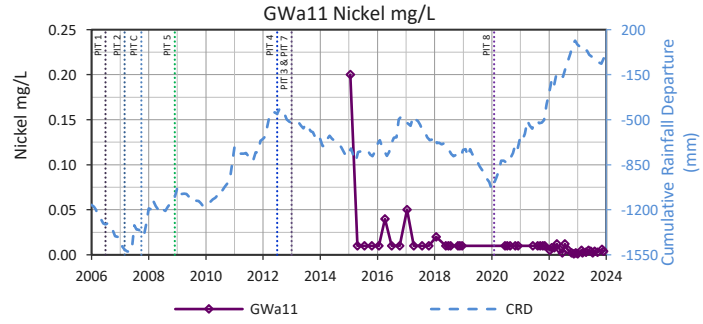
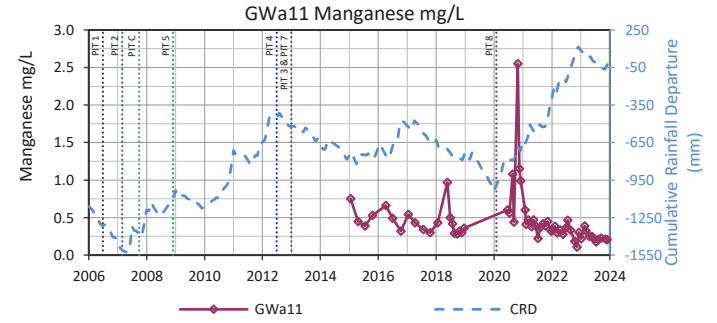
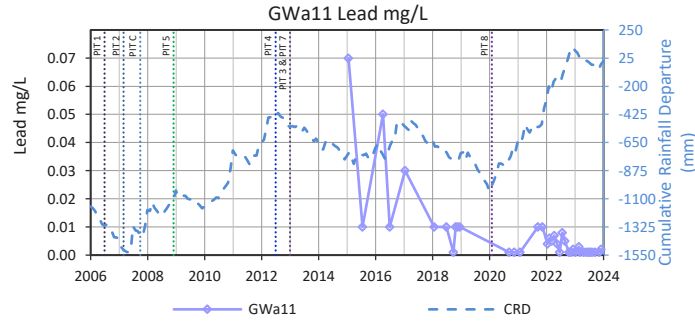
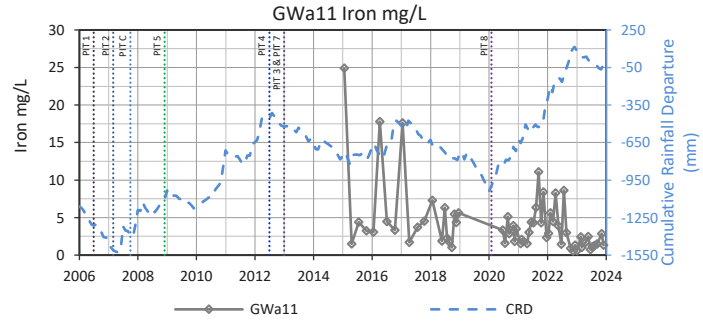
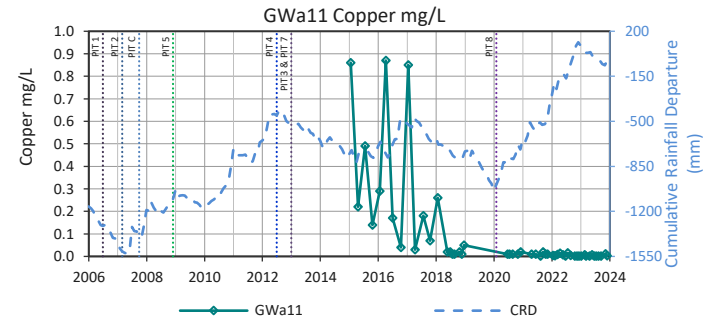
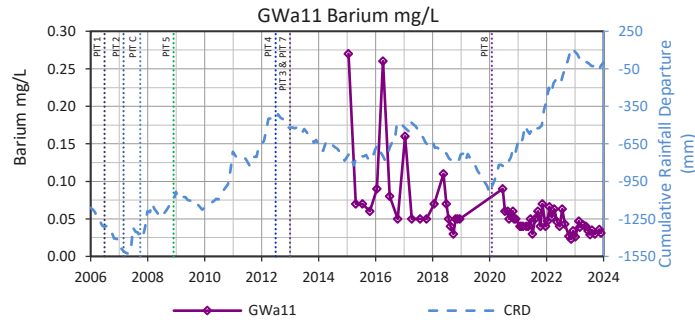
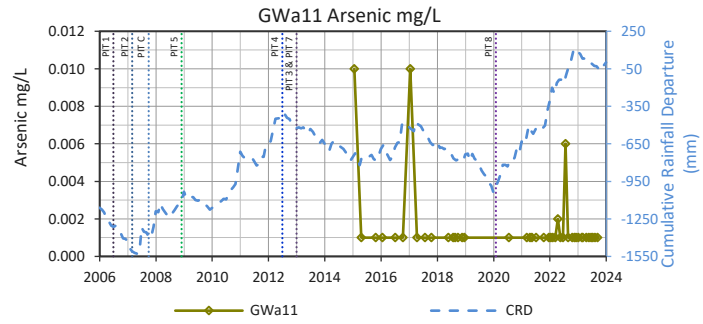
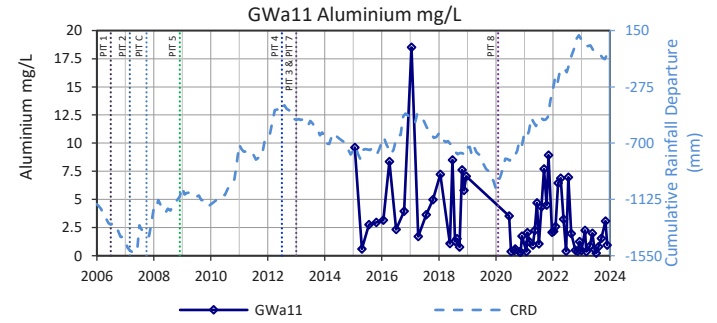
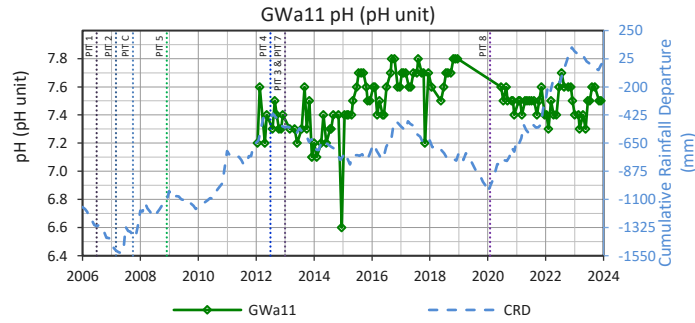
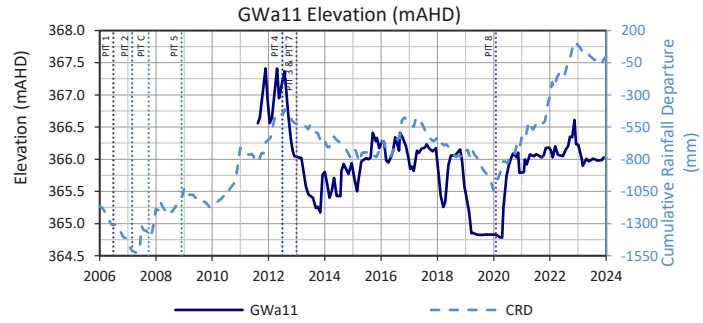


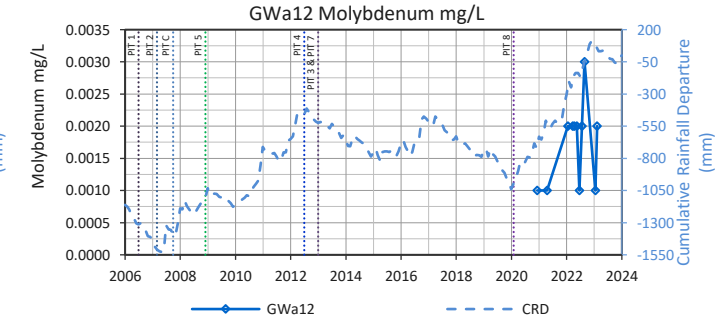
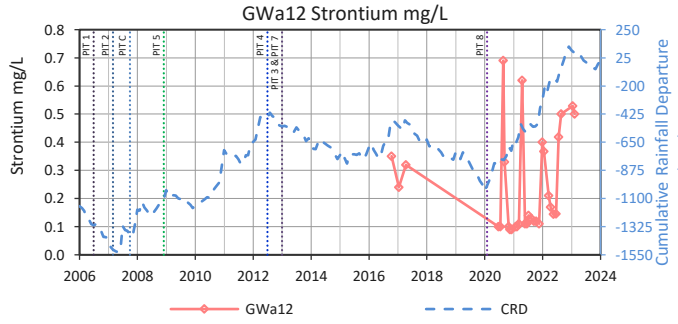
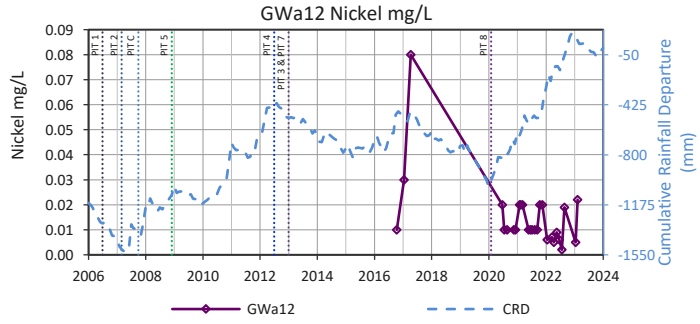
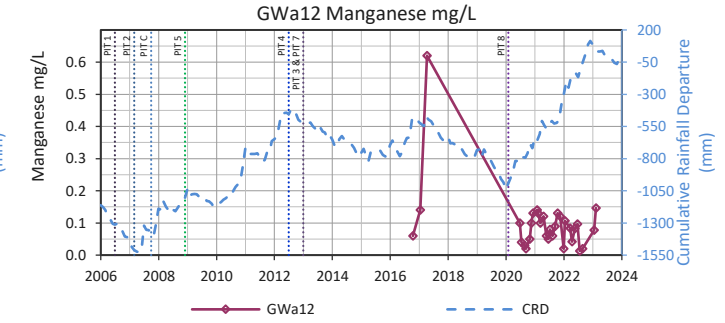
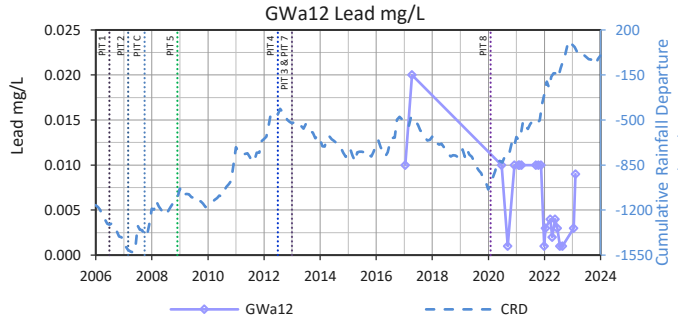
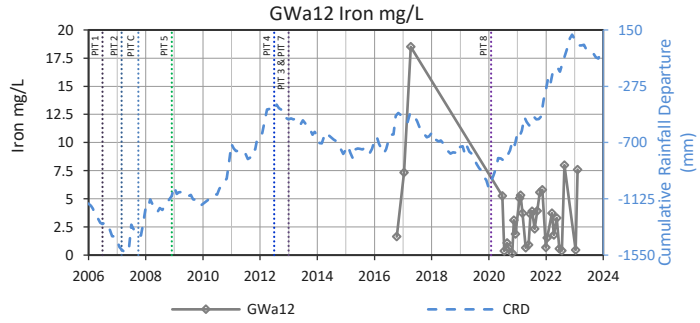
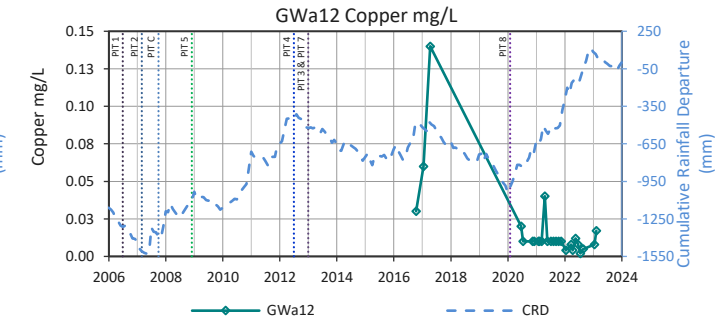
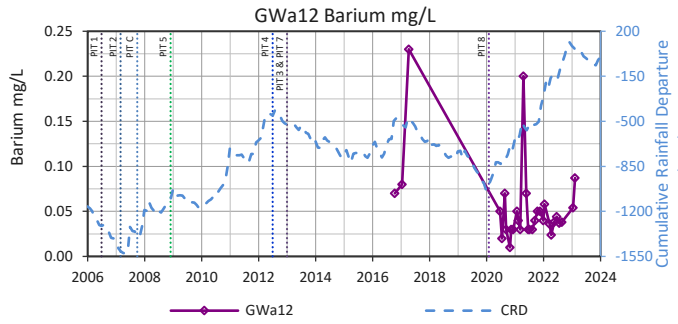
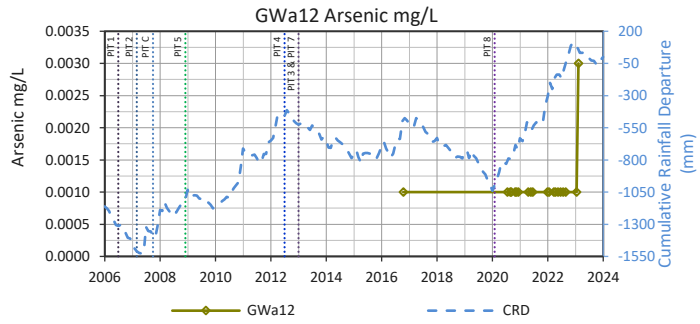
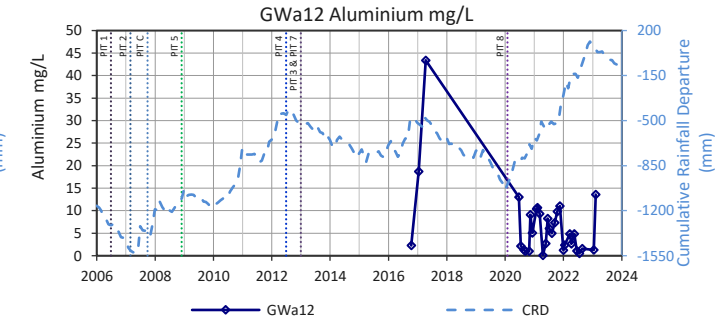
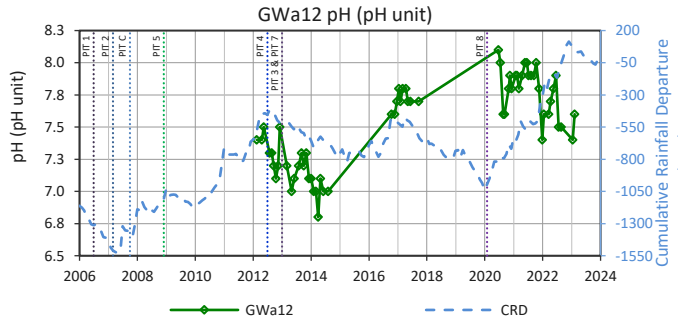
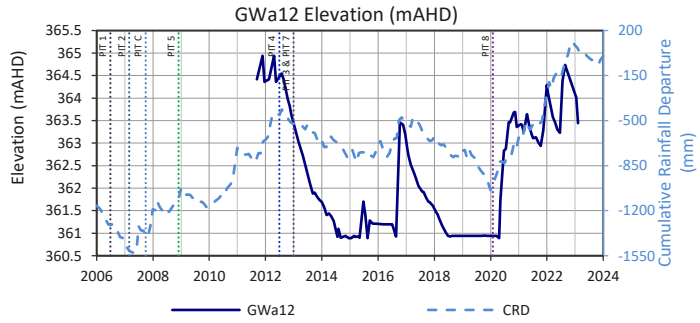


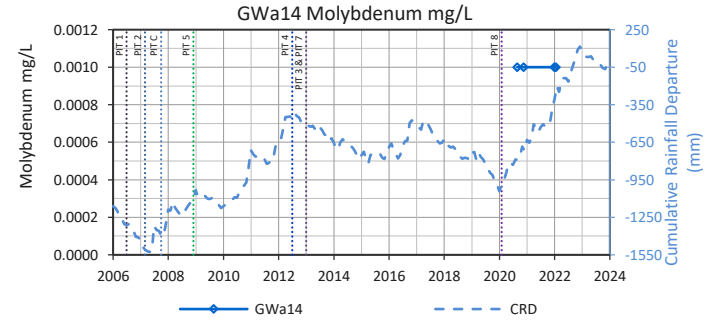
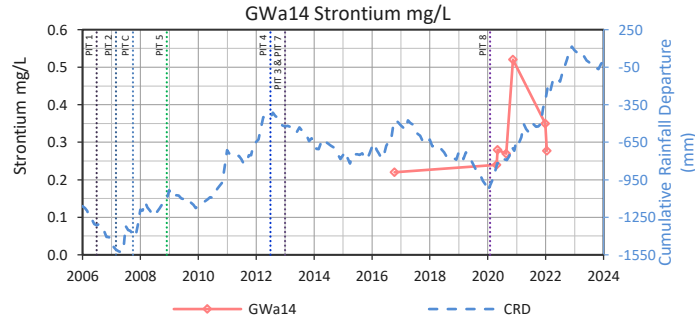
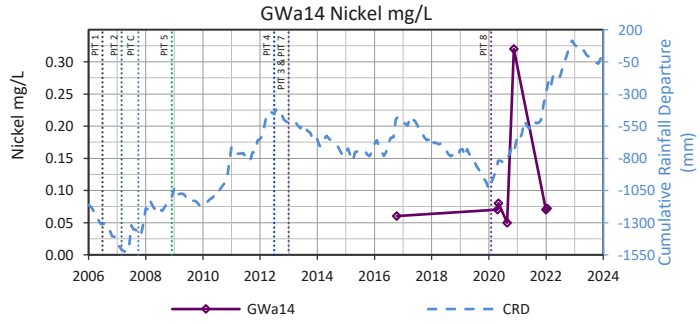
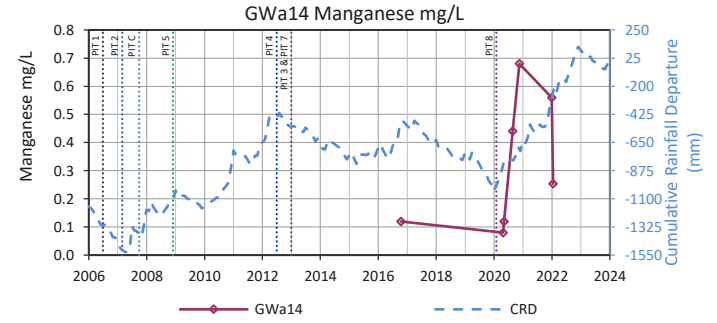
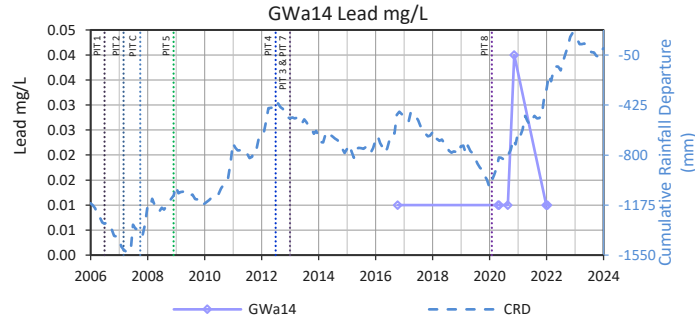
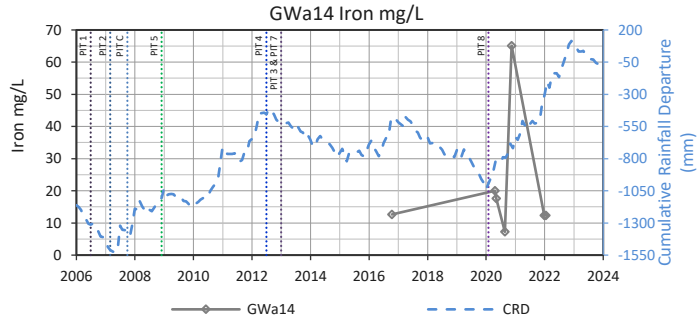
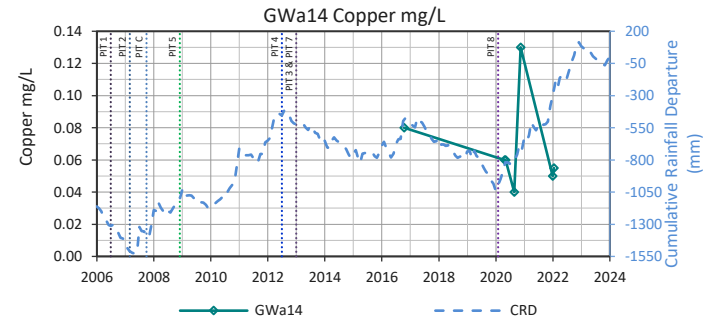
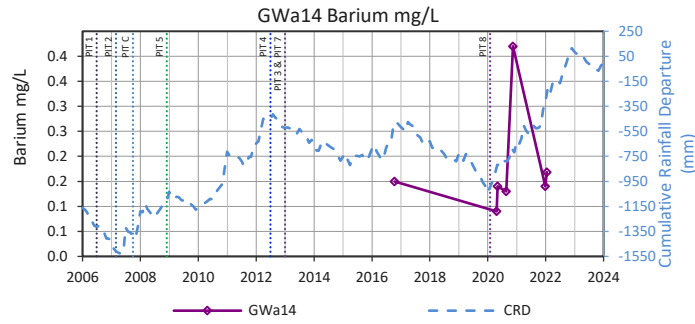
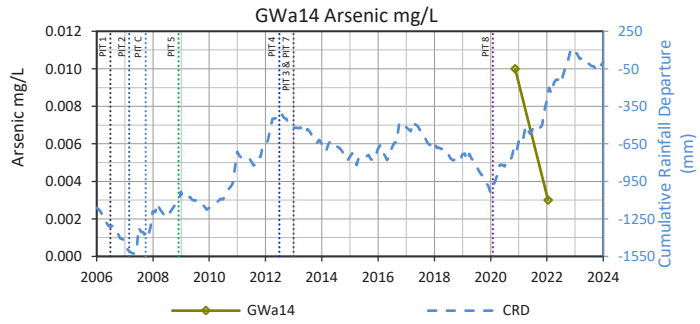
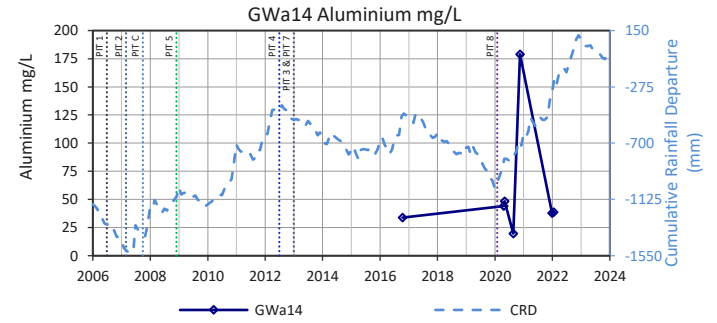
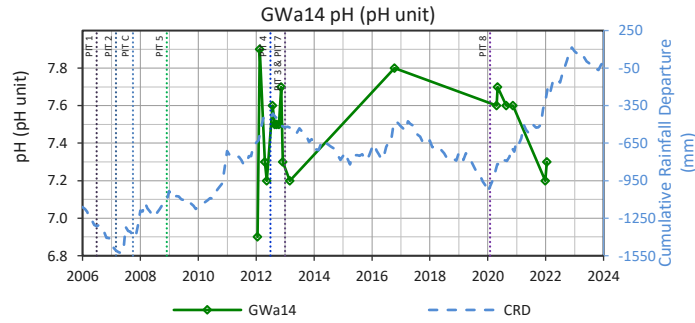
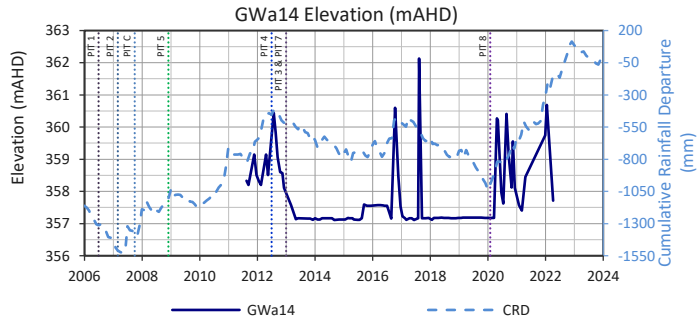


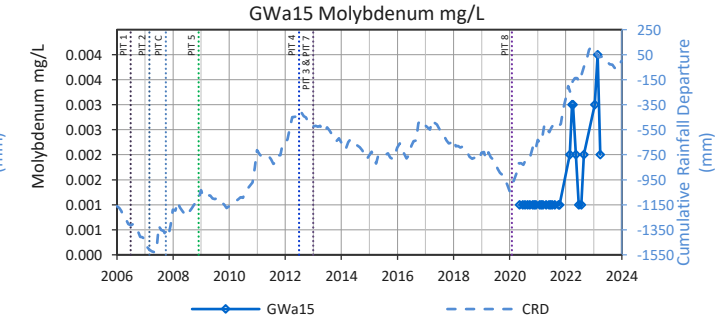
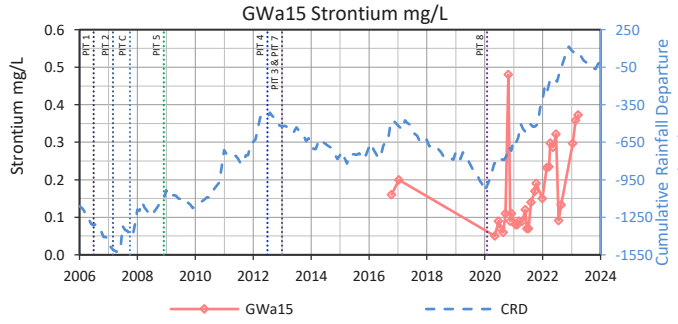
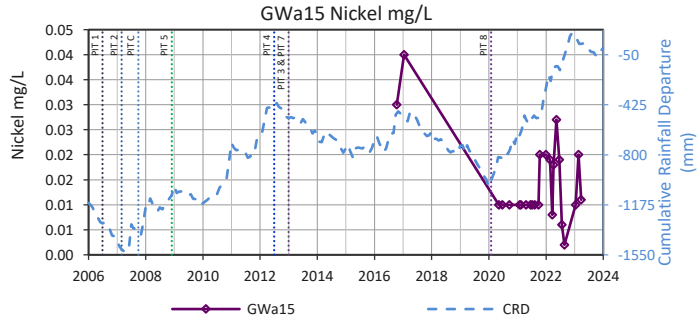
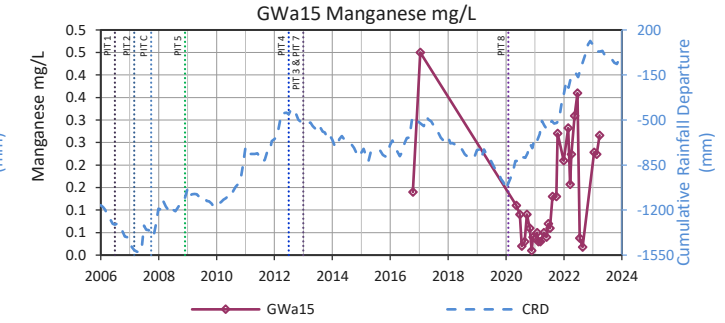
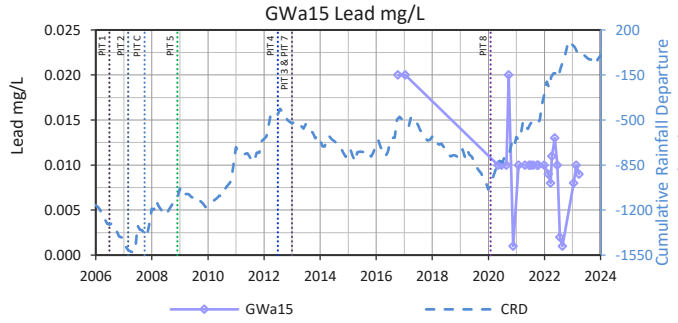
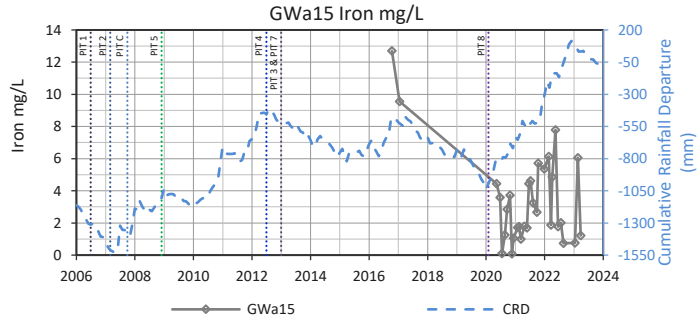
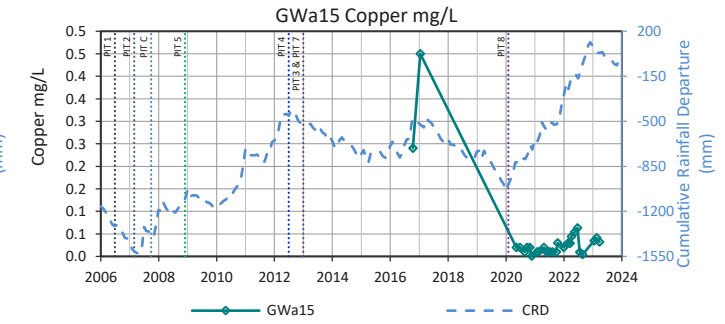
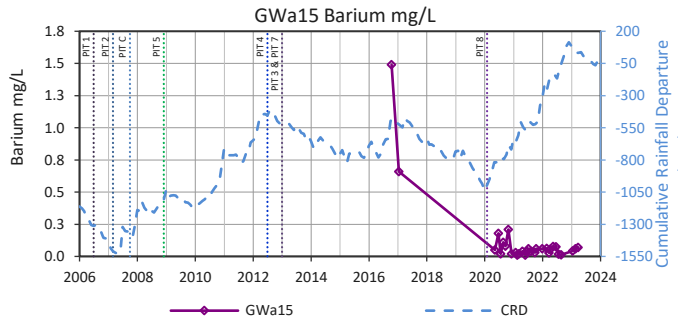
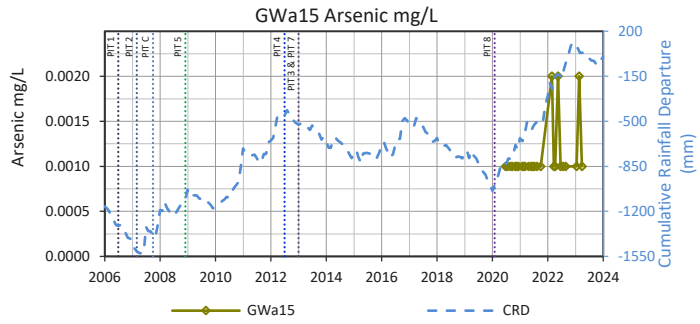
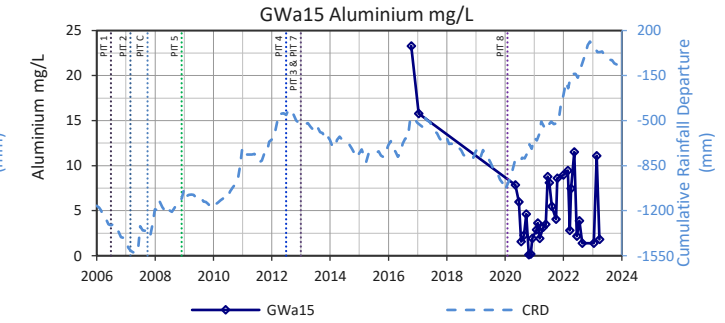
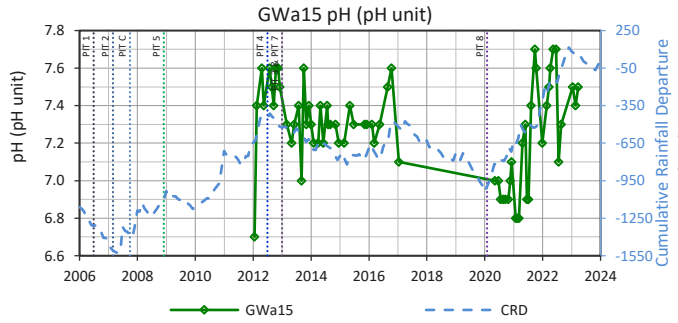
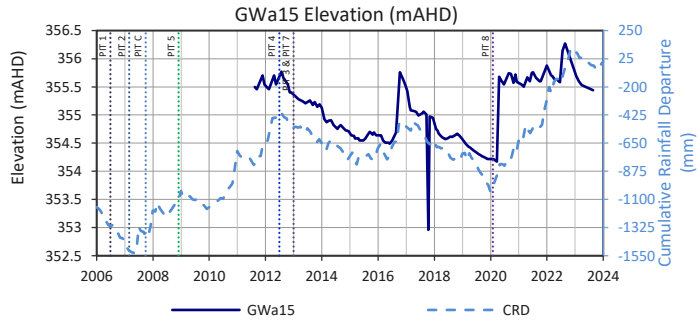


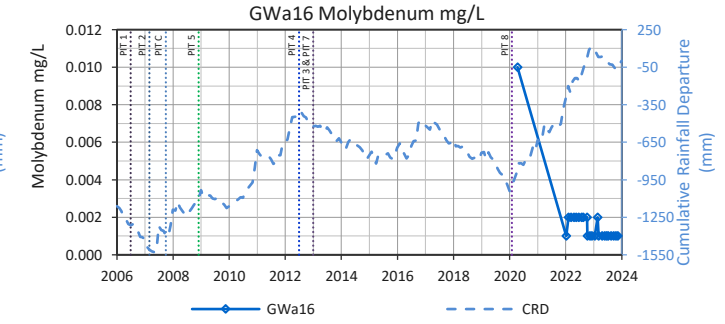
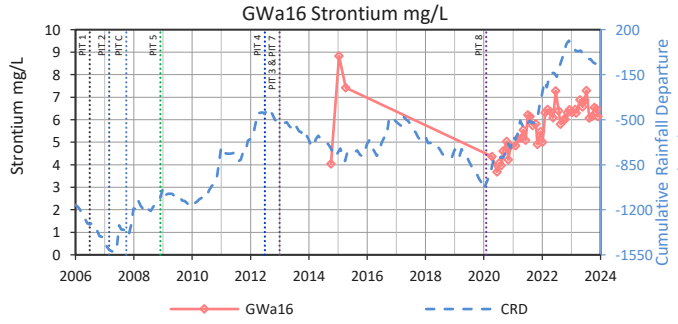
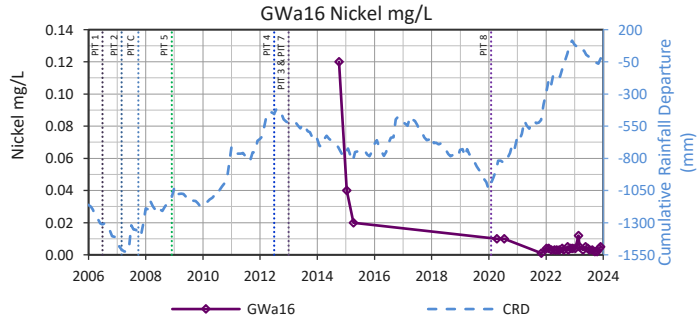
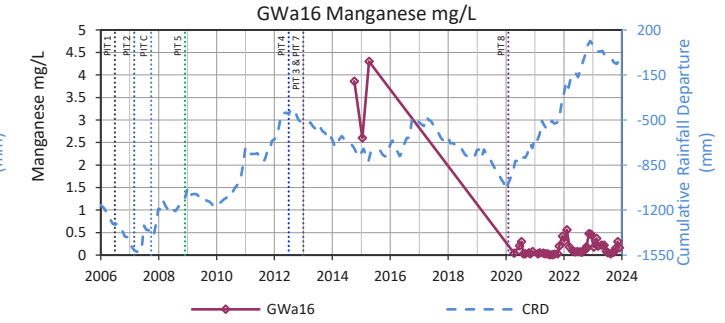
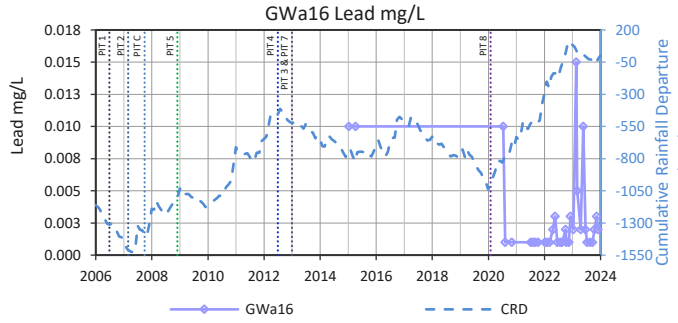
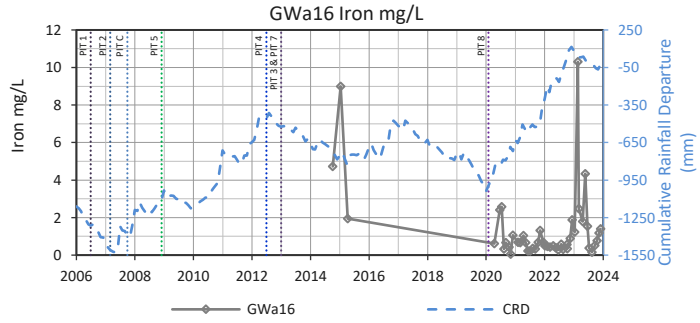
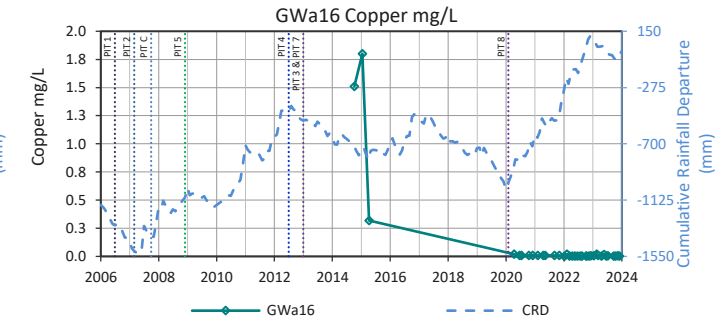
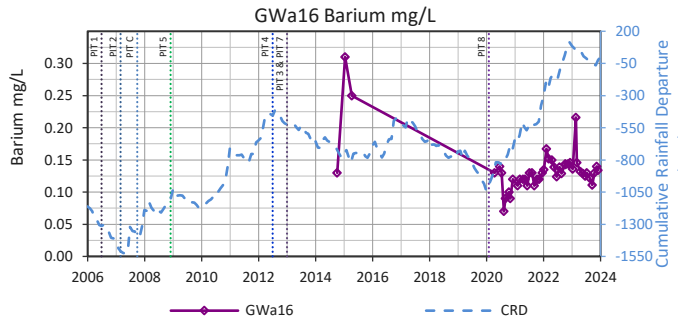
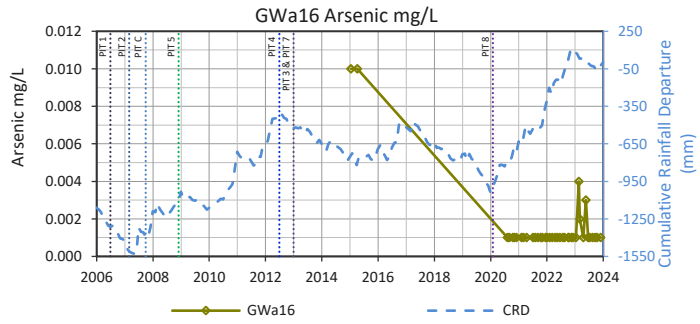
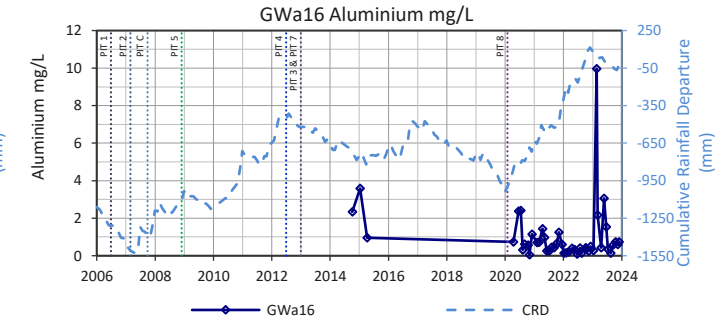
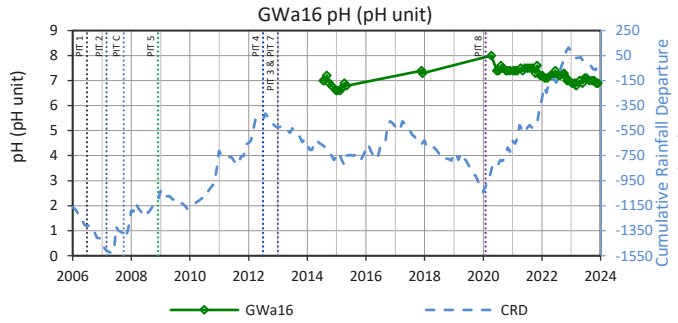
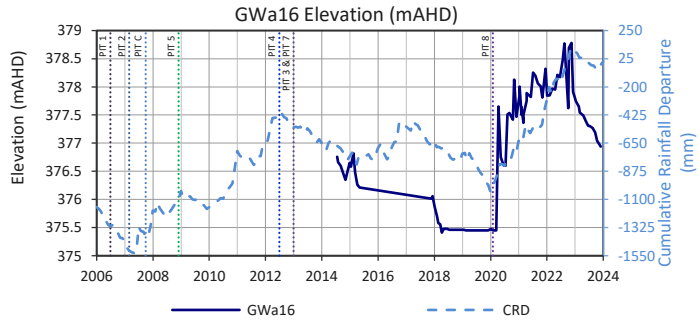


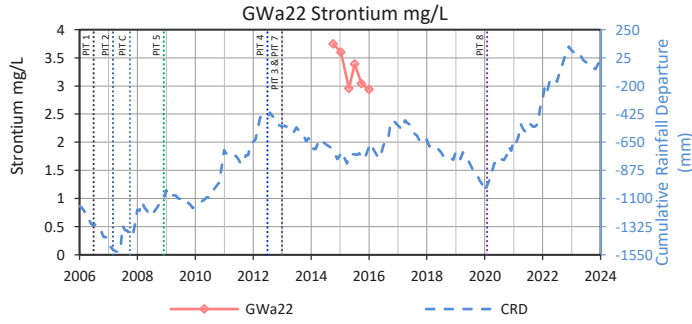
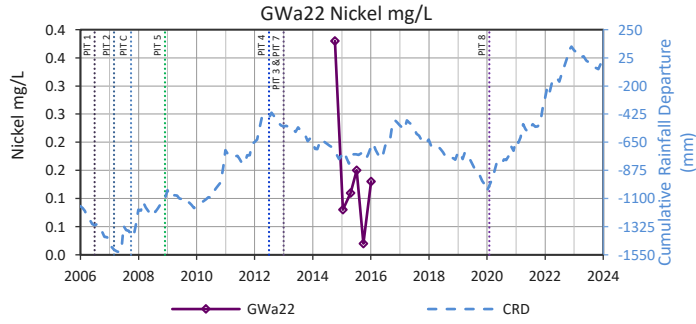
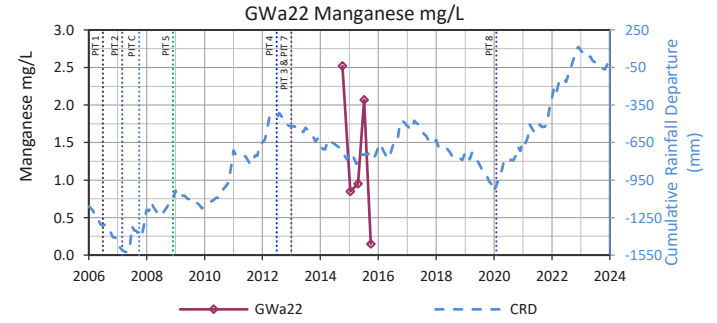
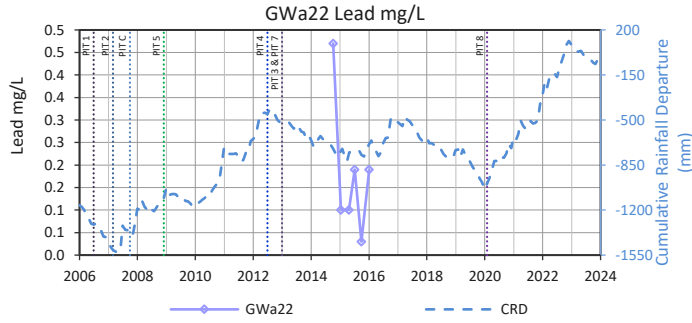
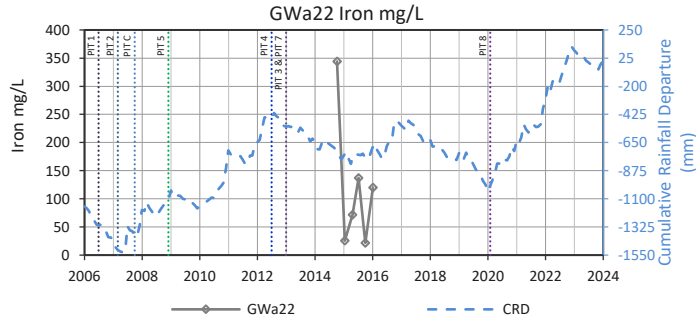
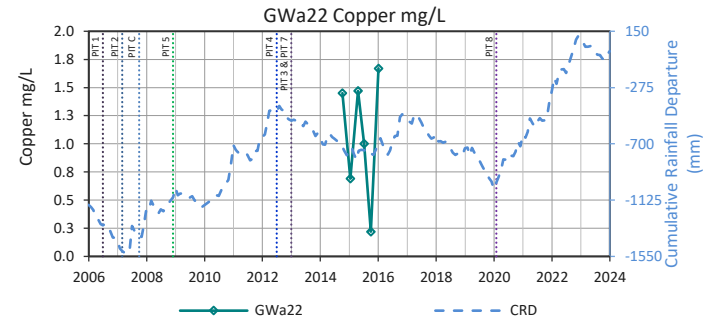
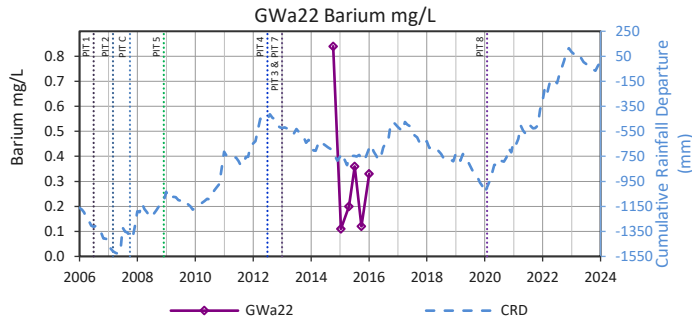
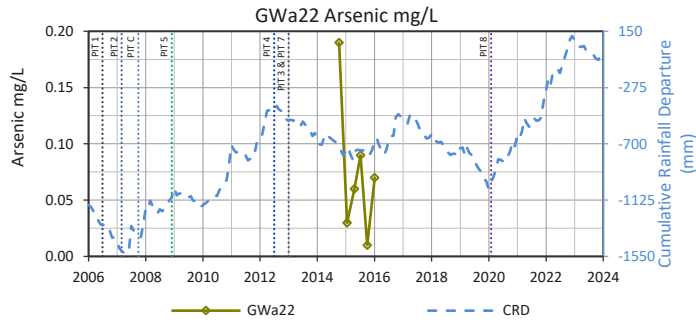
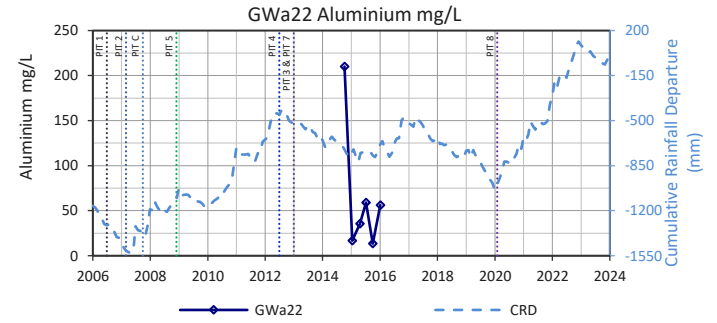
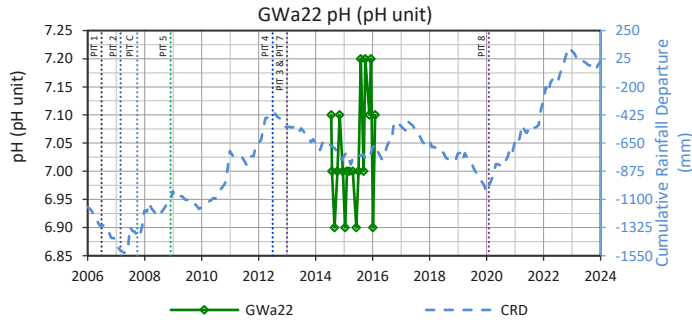
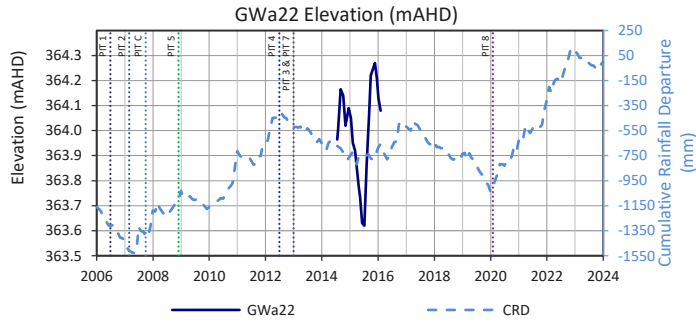




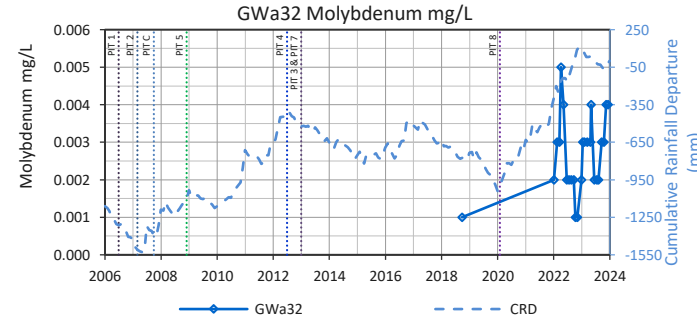
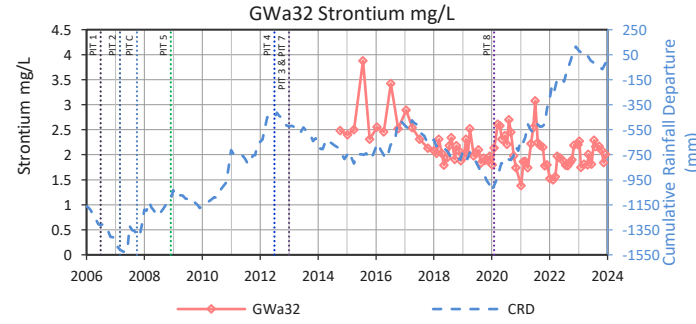
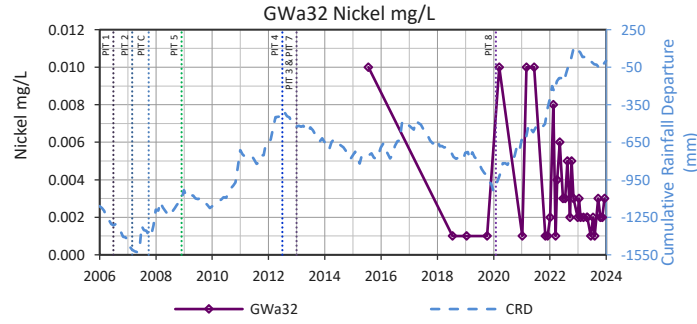
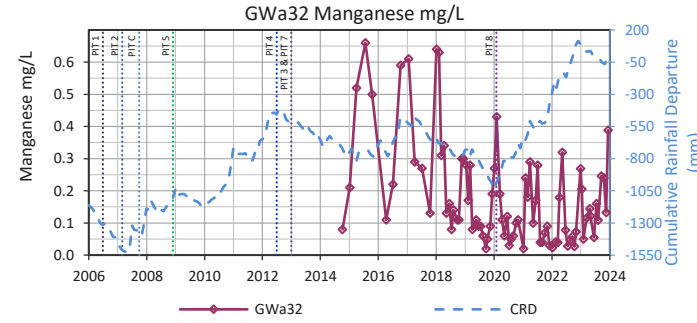
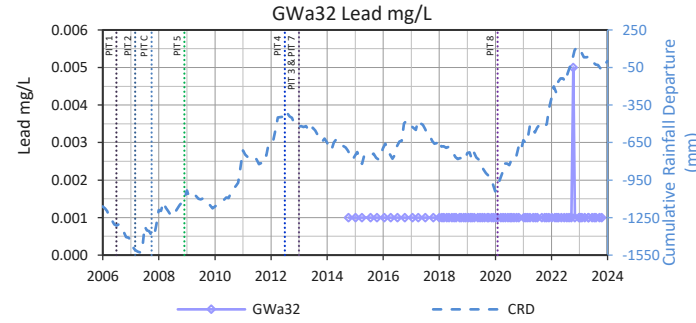
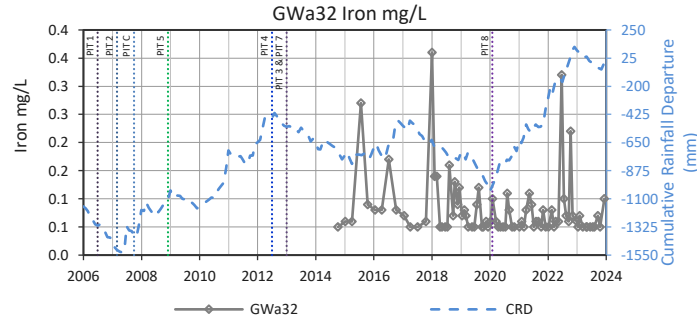
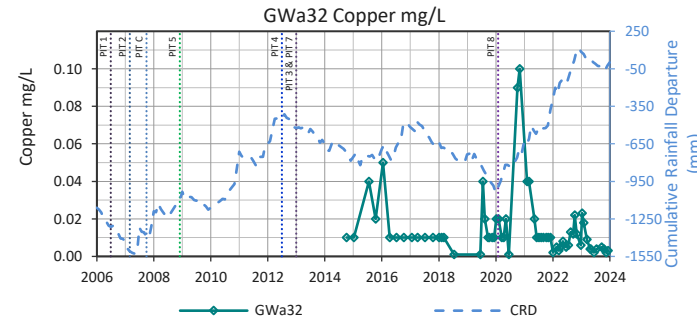
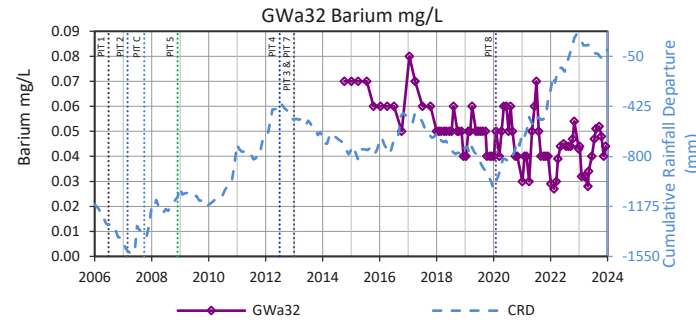
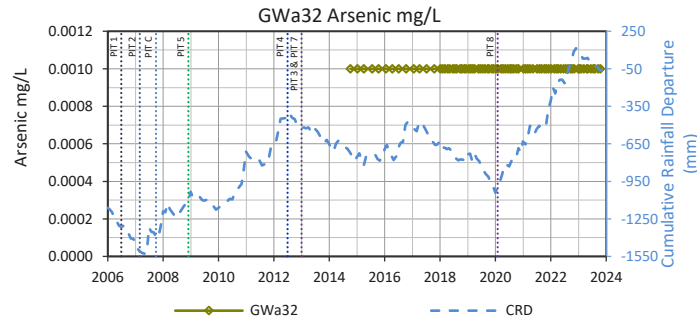
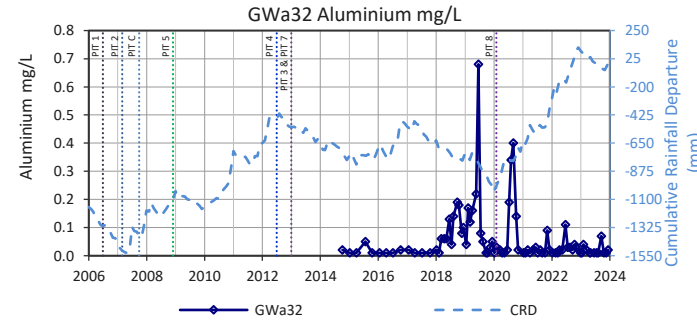
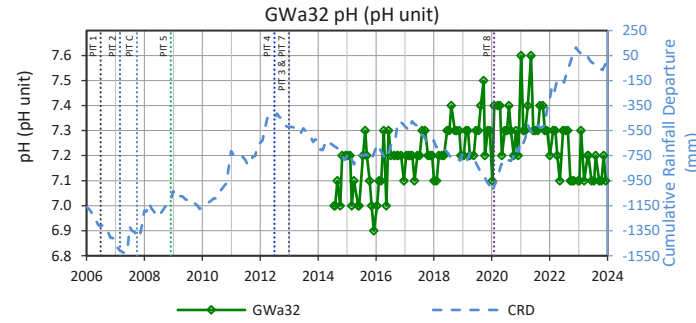
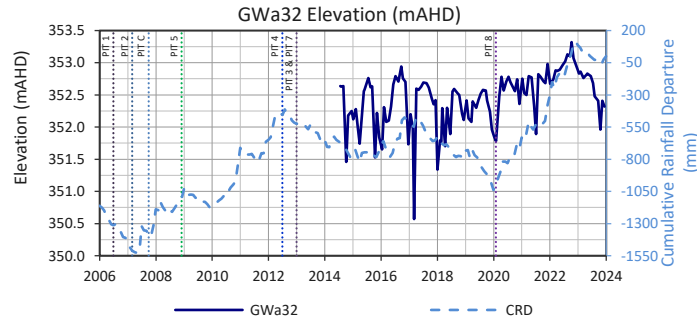


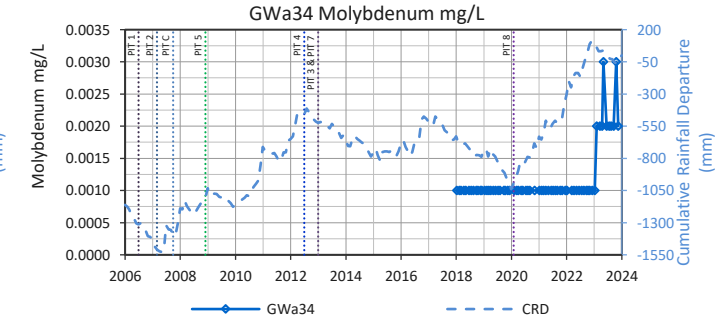
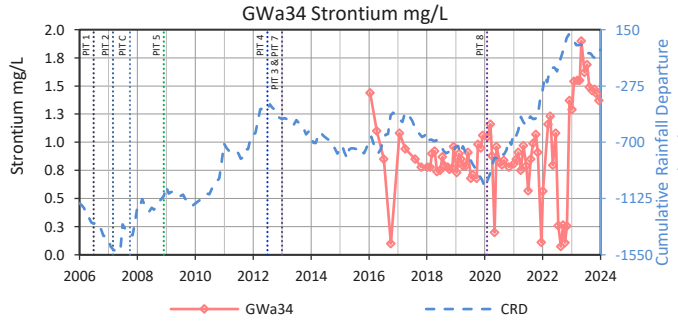
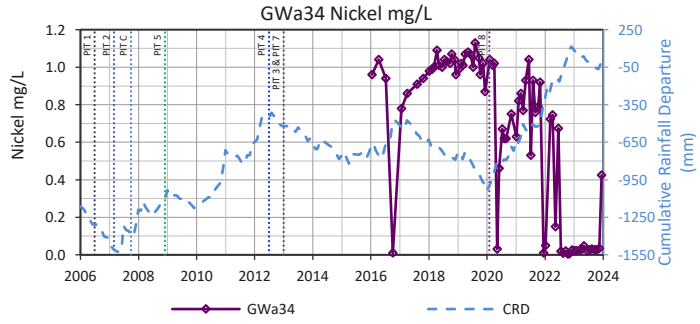
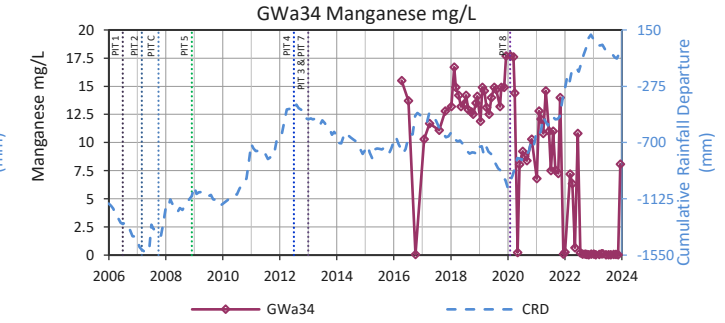
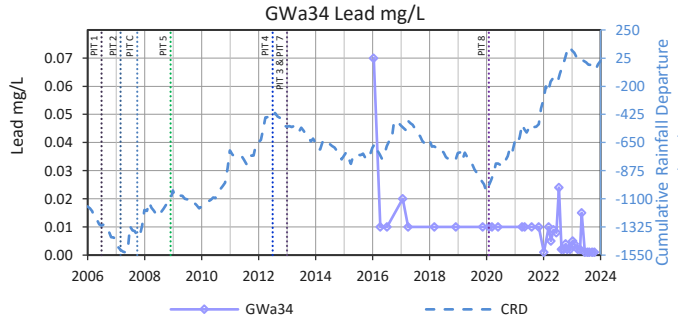
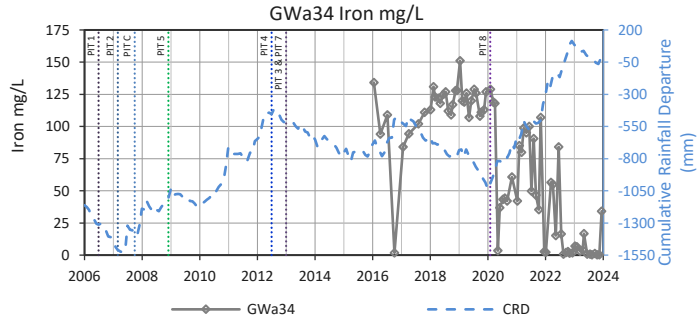
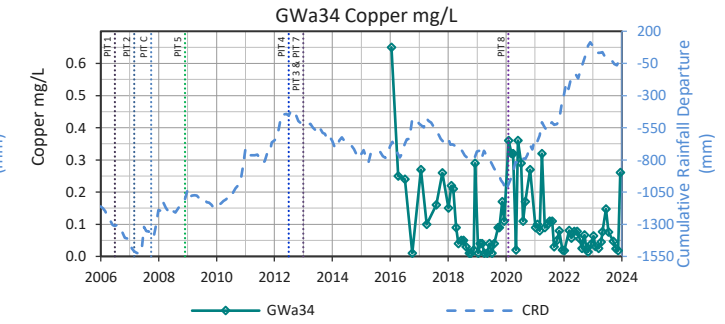
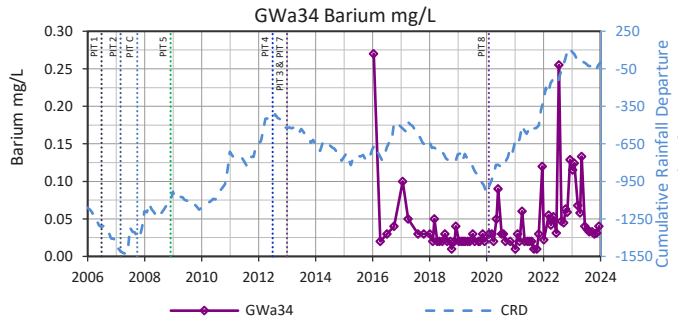
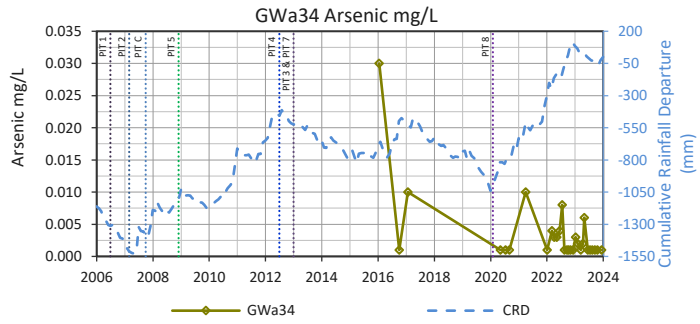
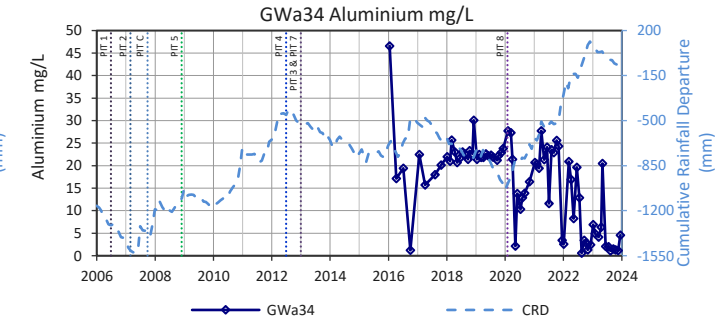
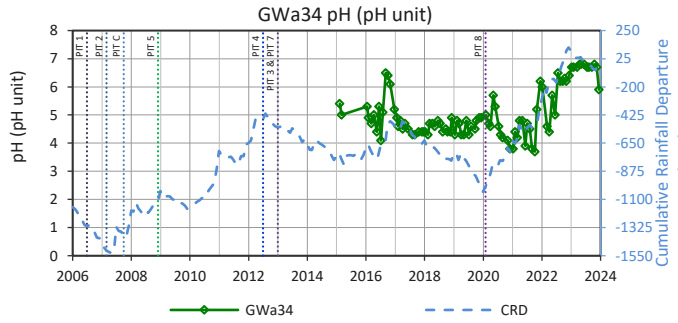
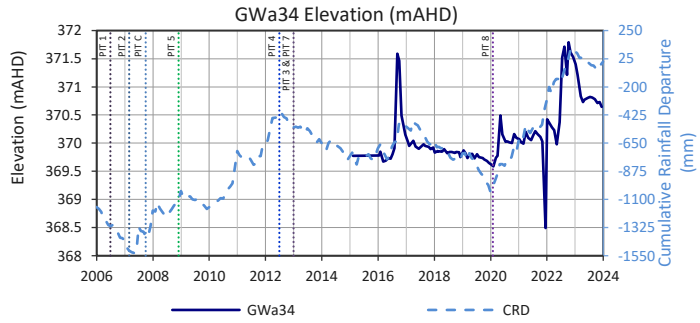


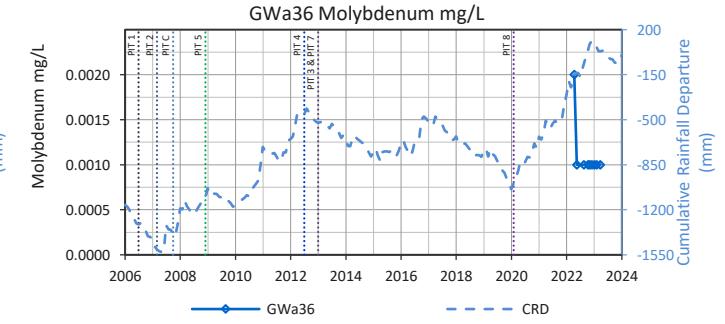
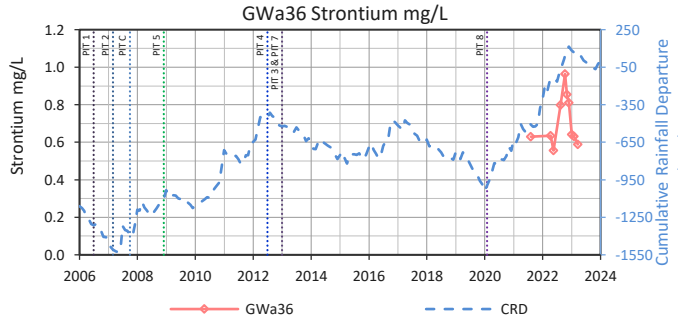
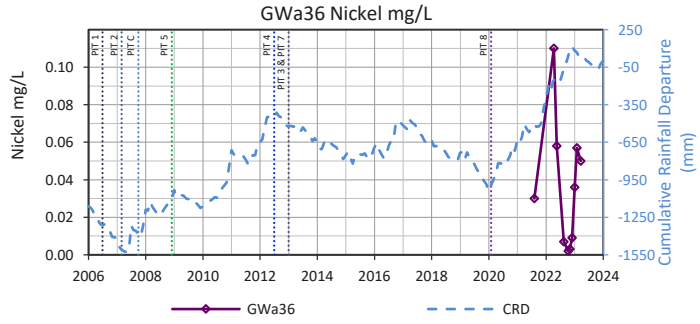
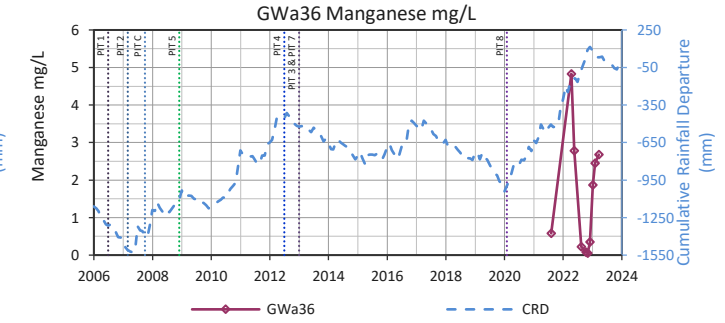
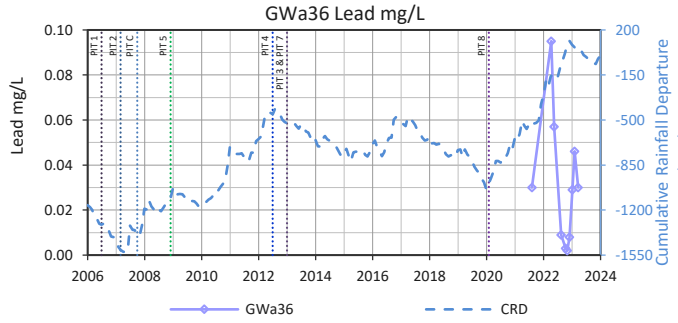
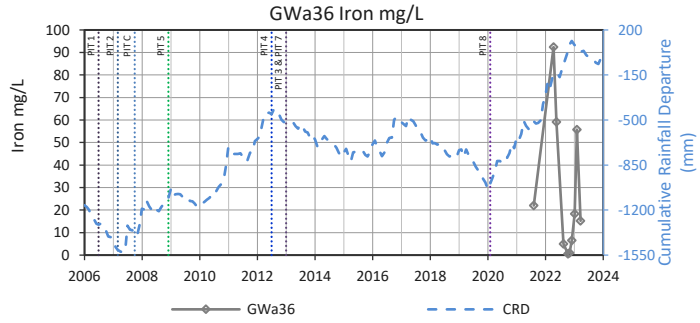
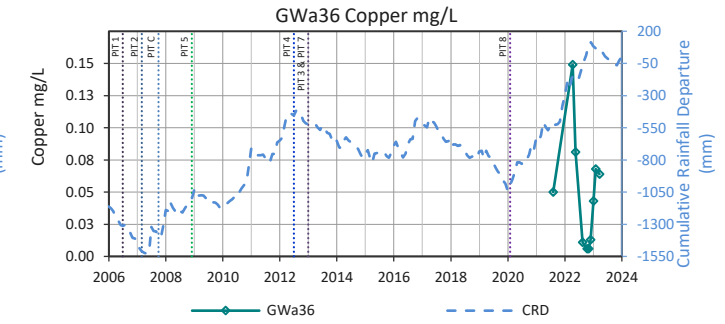
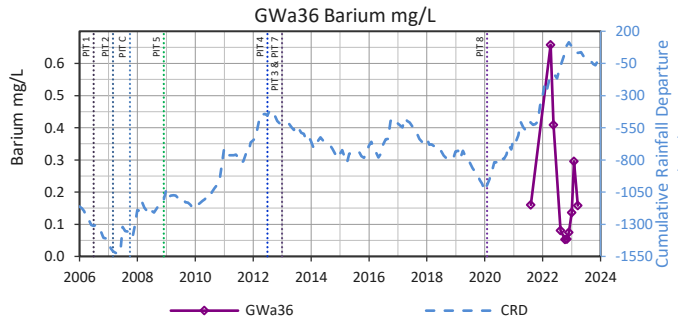
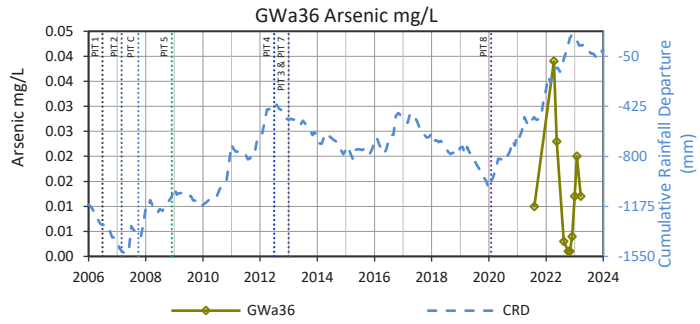
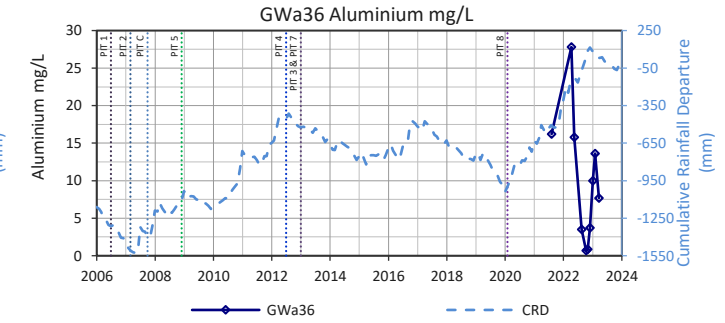
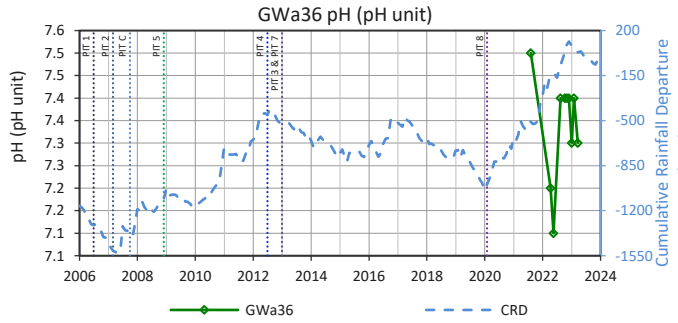
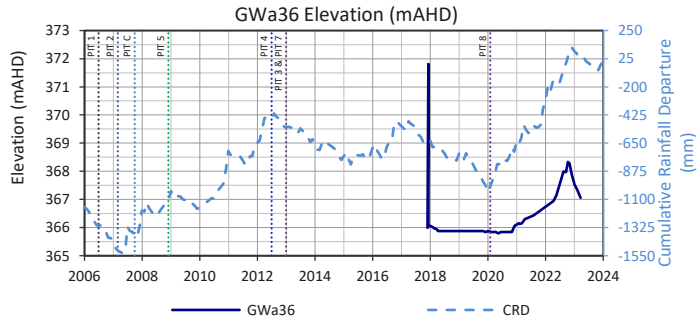




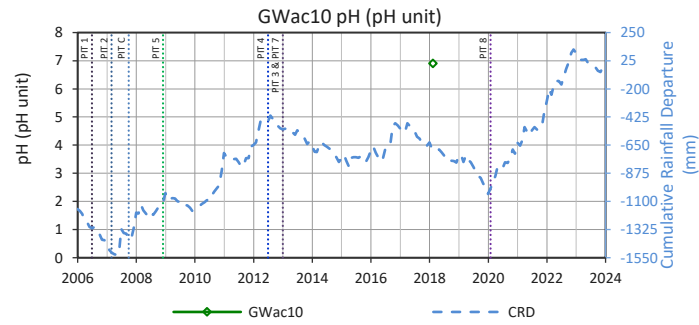
GWa22
No Data Available for Molybdenum mg/L







No Data Available for Elevation (mAHD)



No Data Available for Aluminium mg/L

No Data Available for Arsenic mg/L

No Data Available for Barium mg/L

No Data Available for Copper mg/L

No Data Available for Iron mg/L

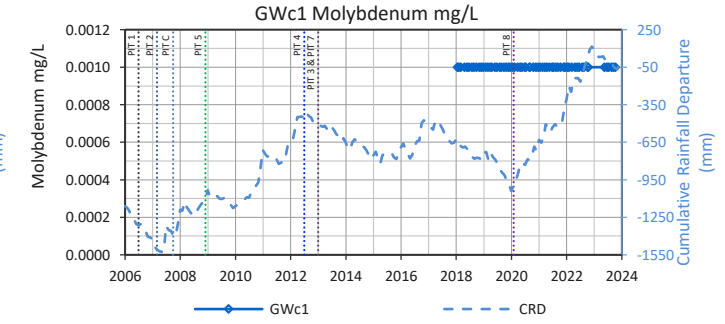
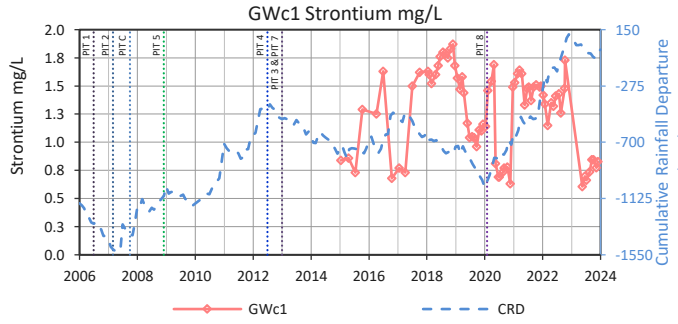
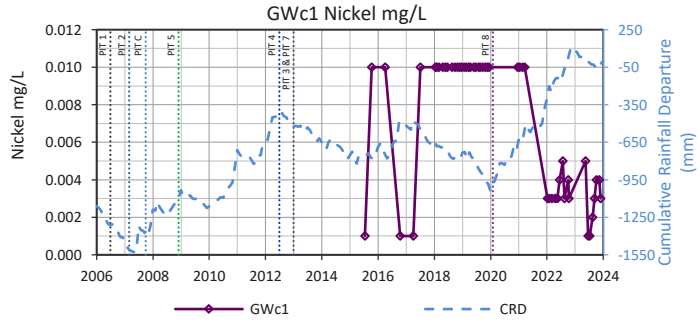
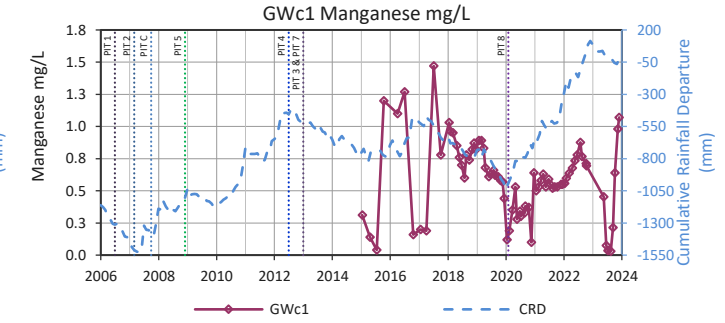
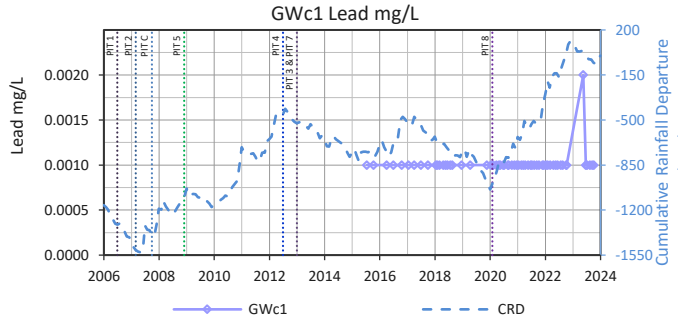
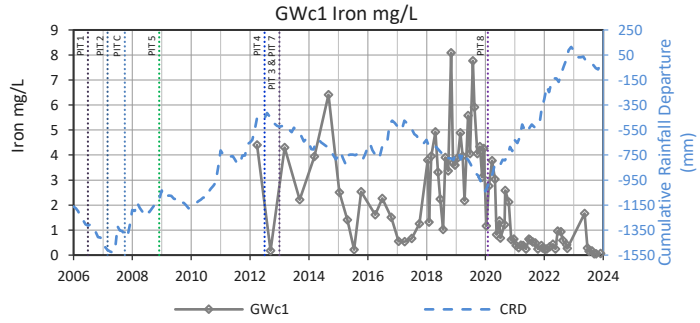
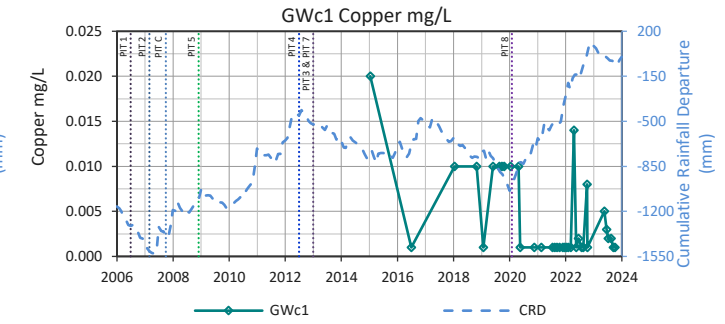
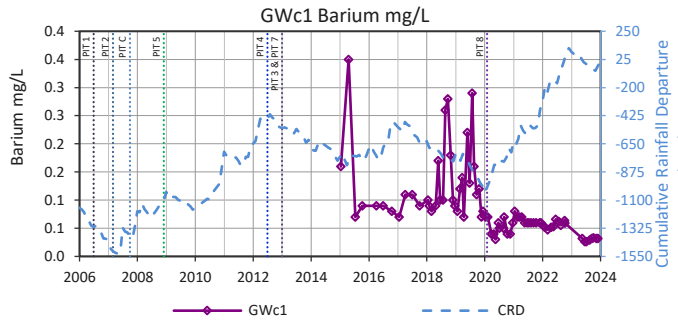
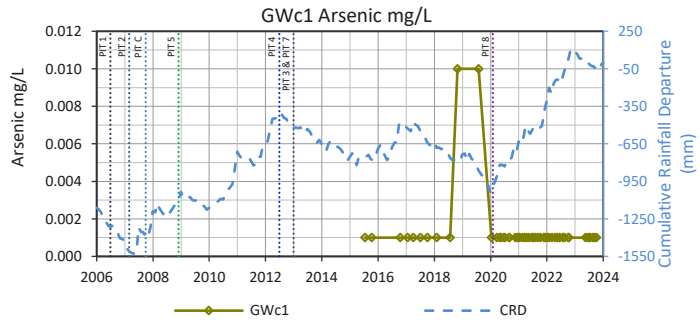
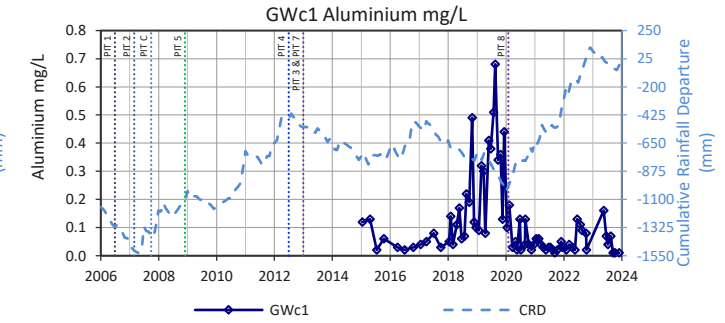
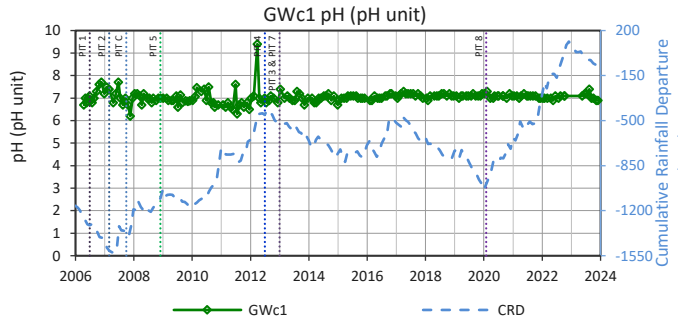
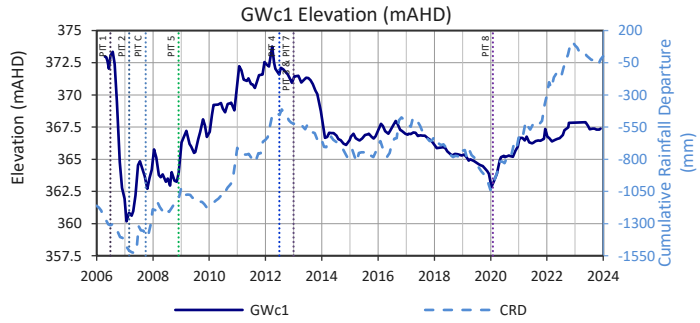
No Data Available for Lead mg/L

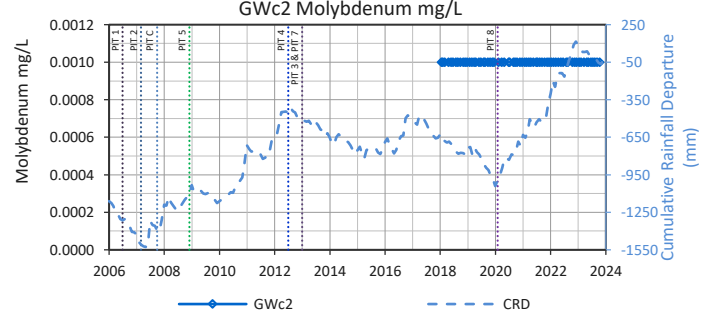
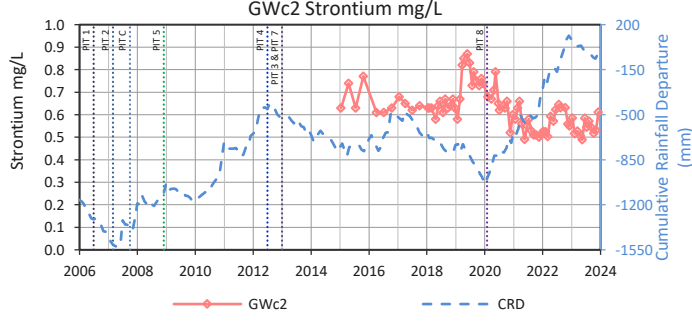
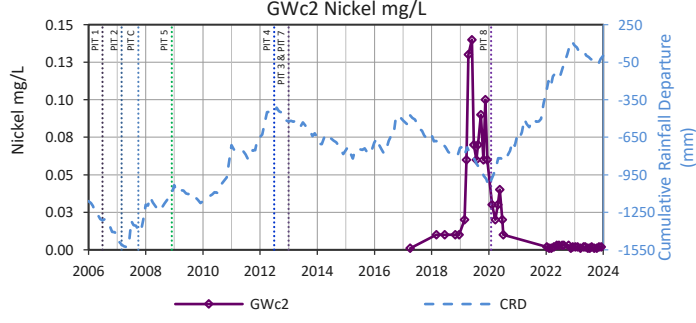
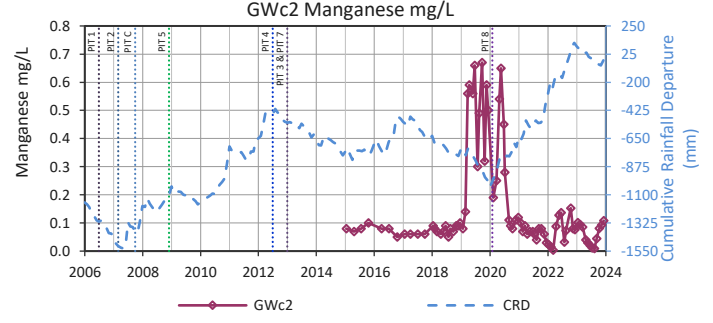
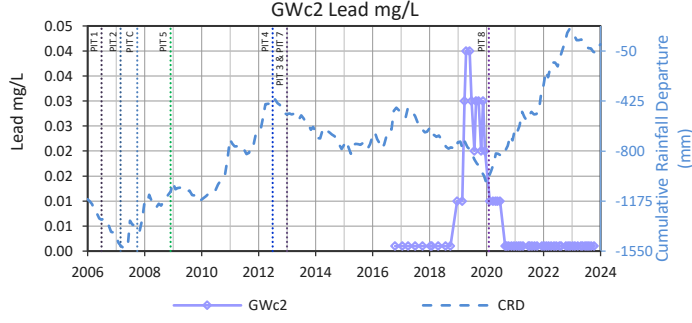
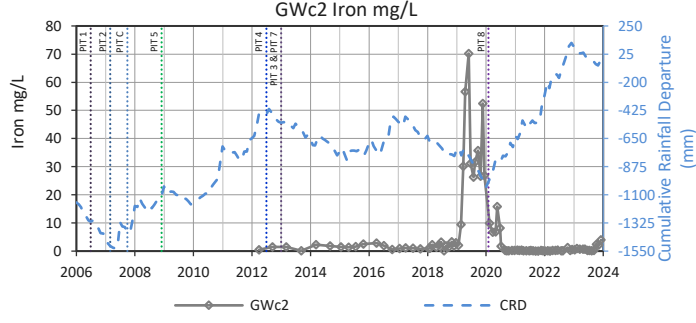
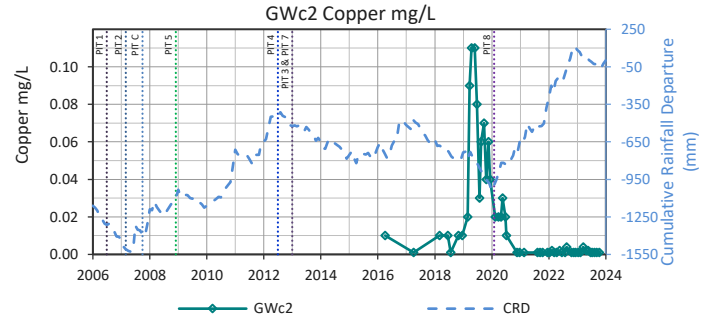
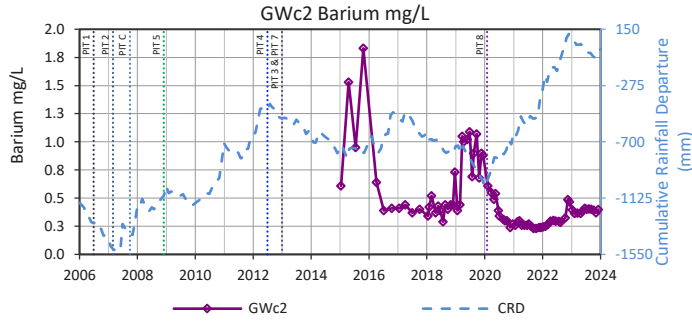
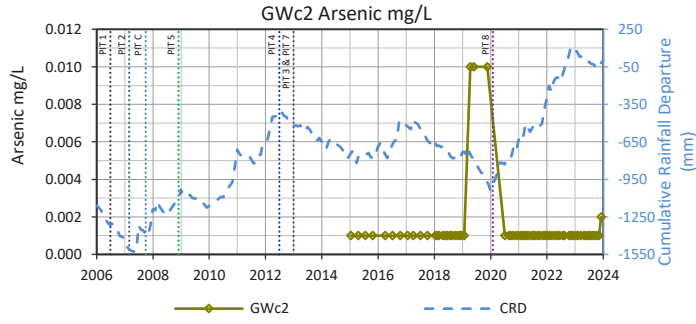
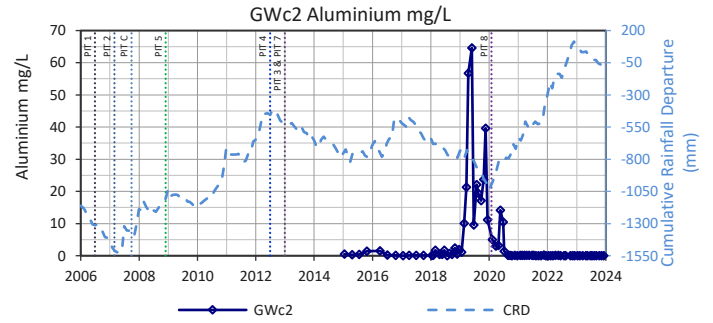
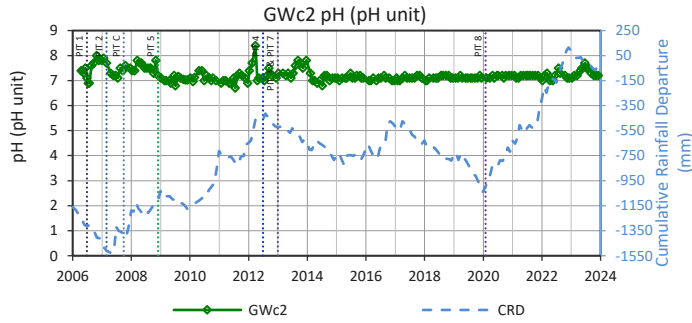
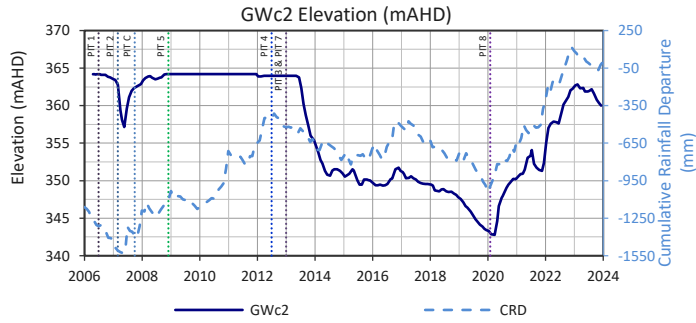
No Data Available for Manganese mg/L

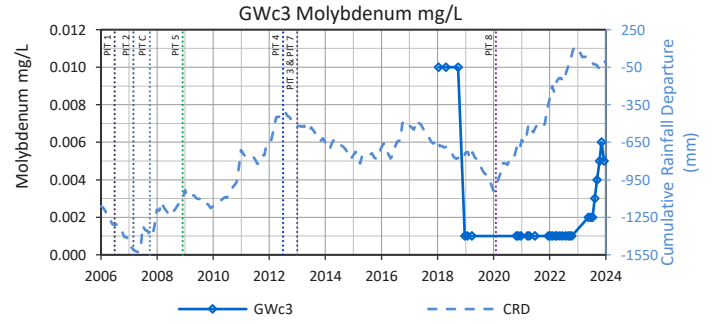
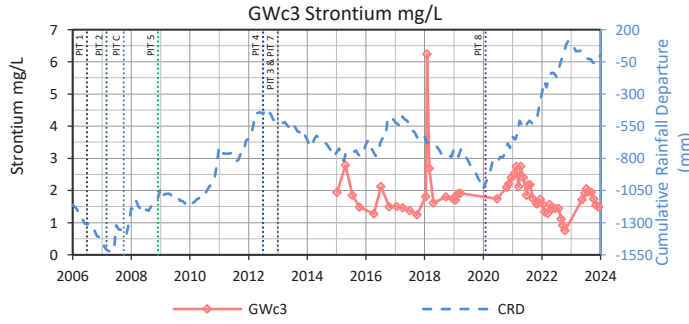
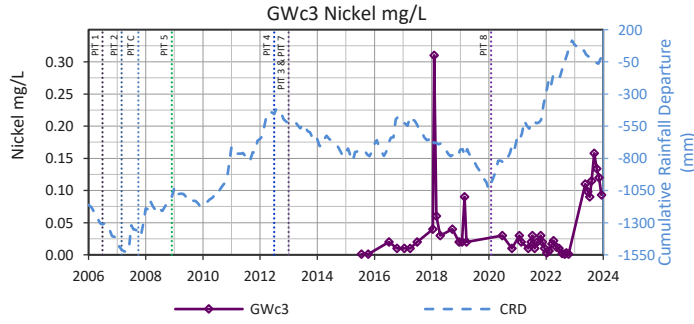
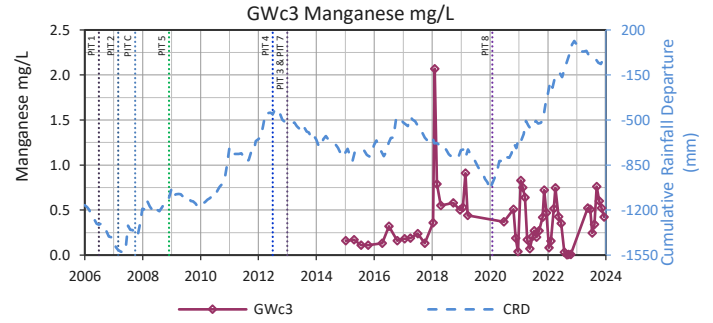
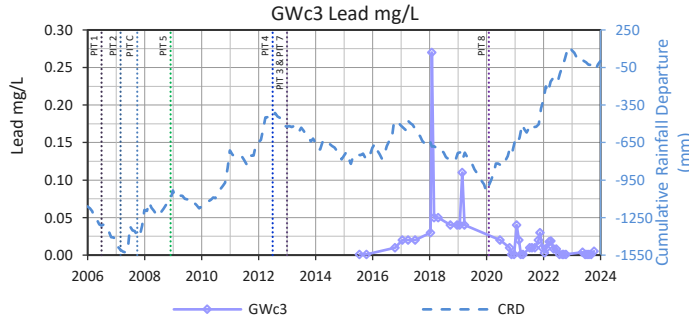
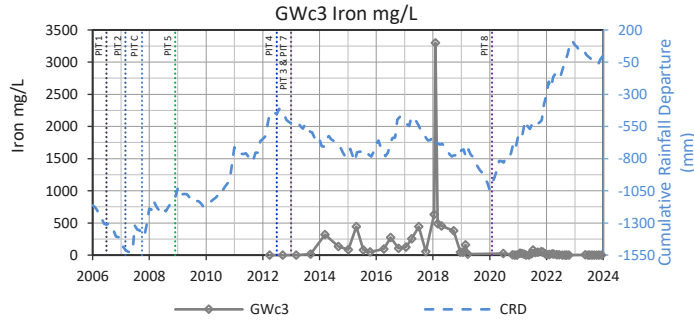
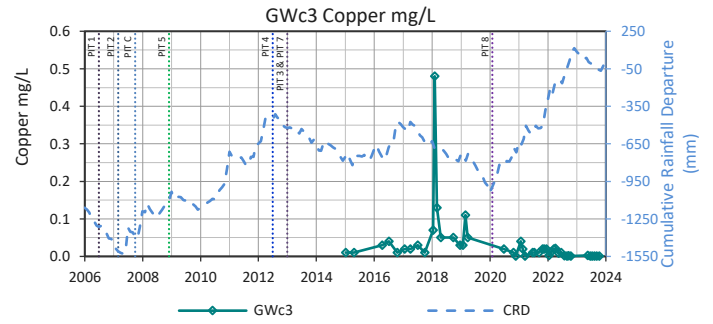
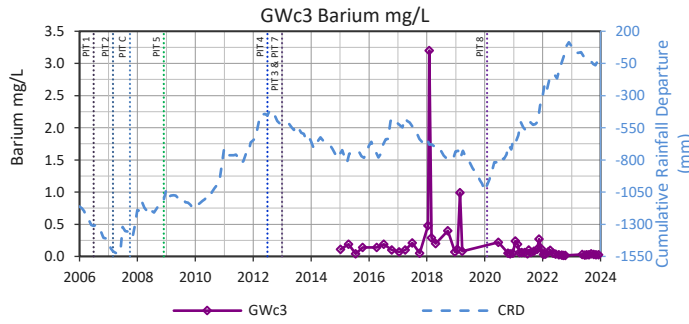
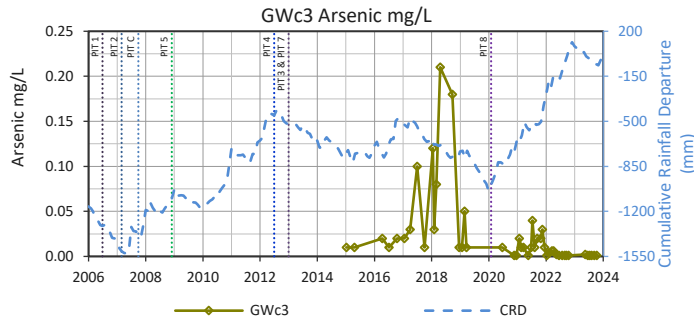
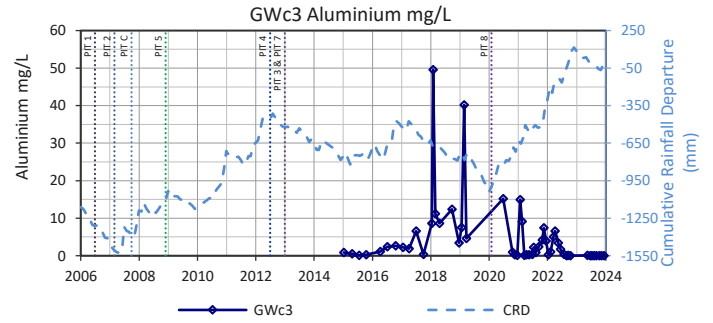
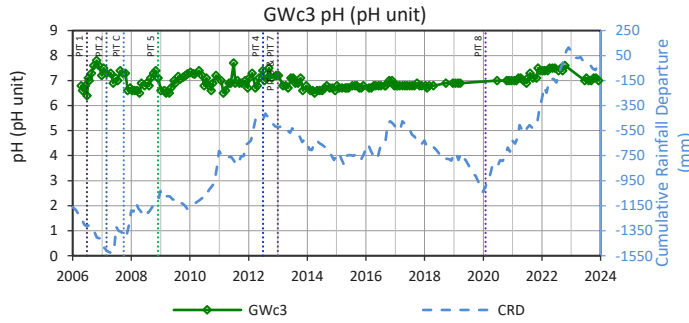
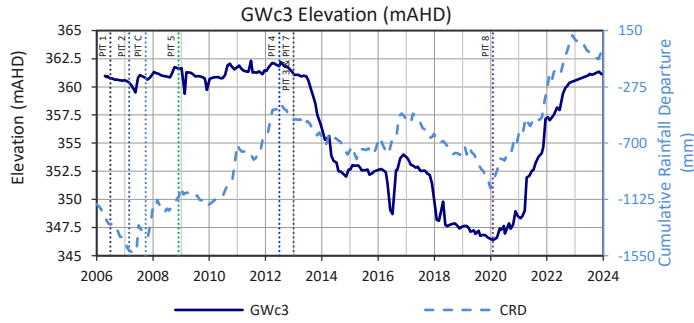
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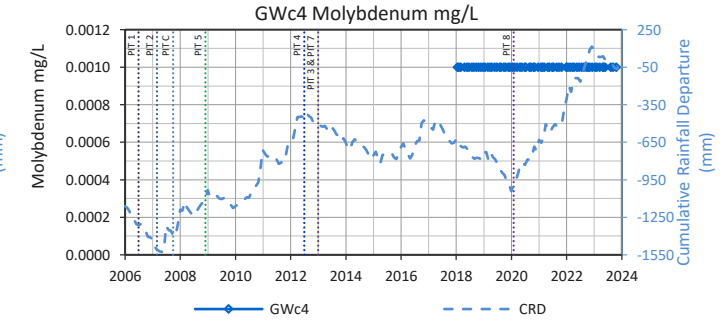
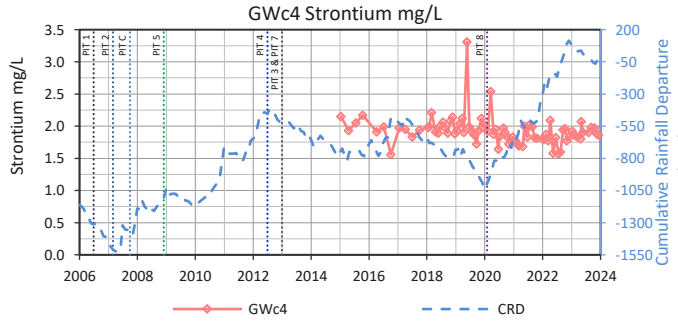
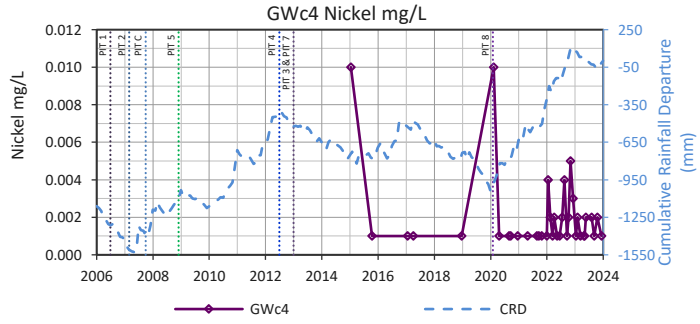
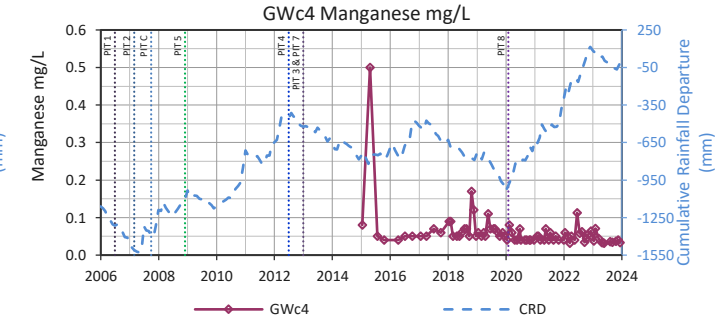
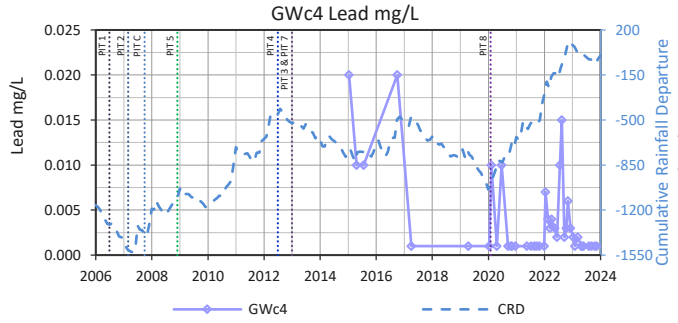
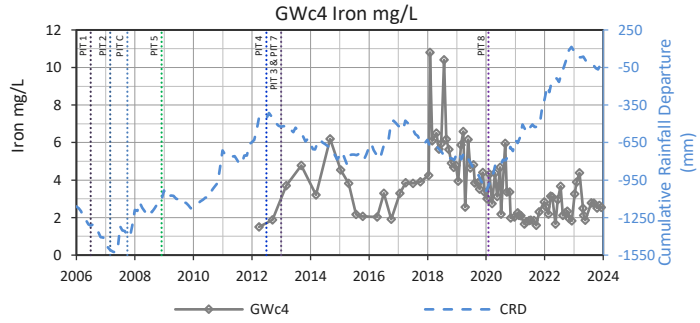
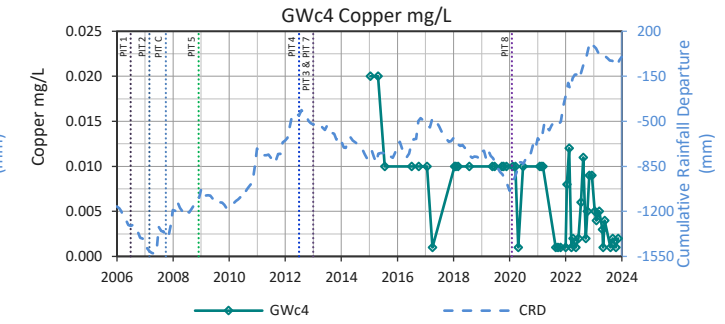
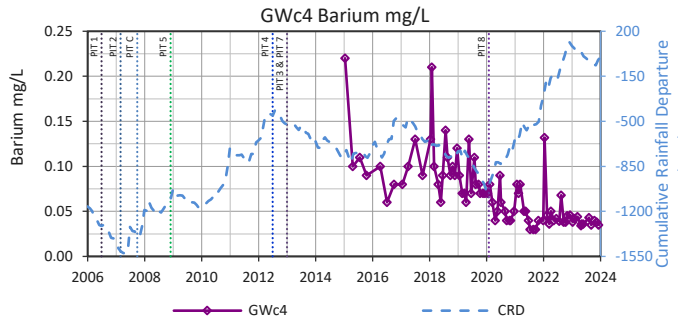
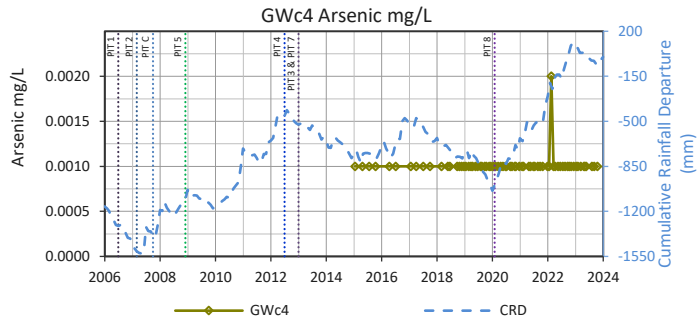
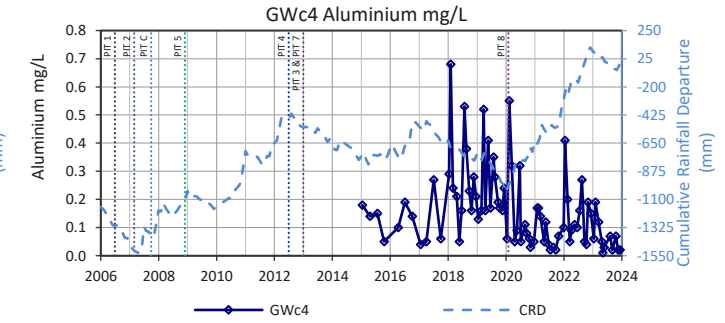
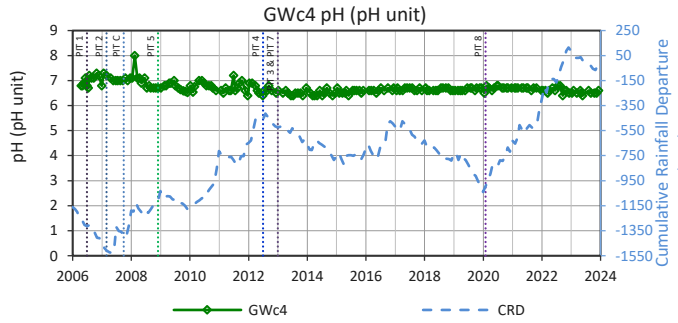
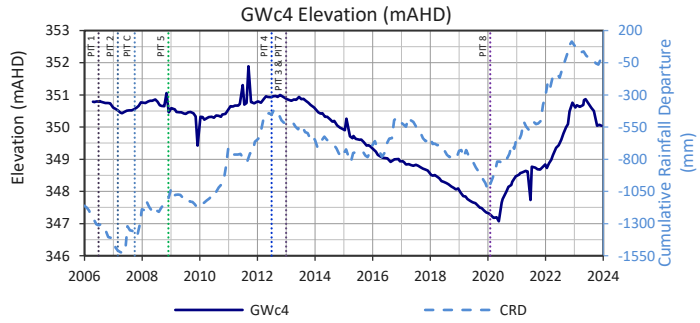
No Data Available for Strontium mg/L

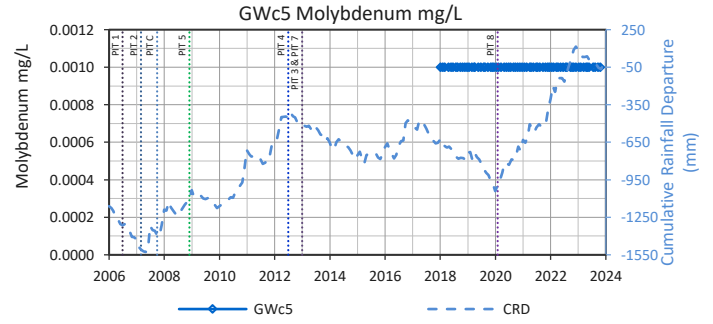
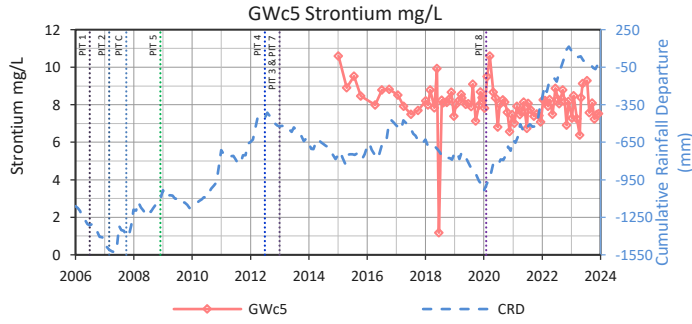
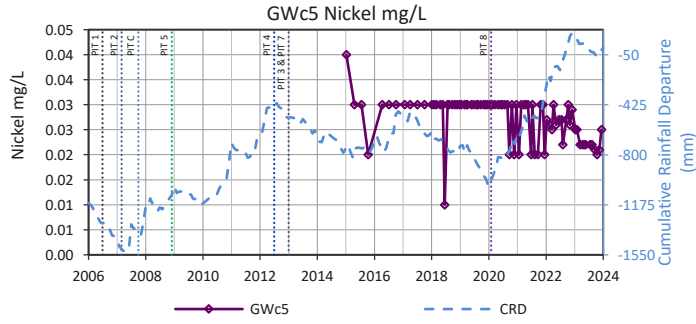
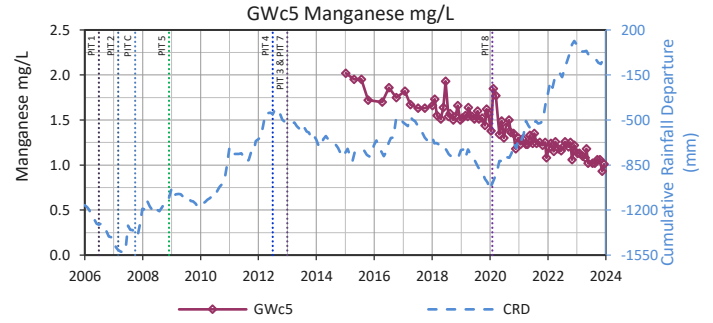
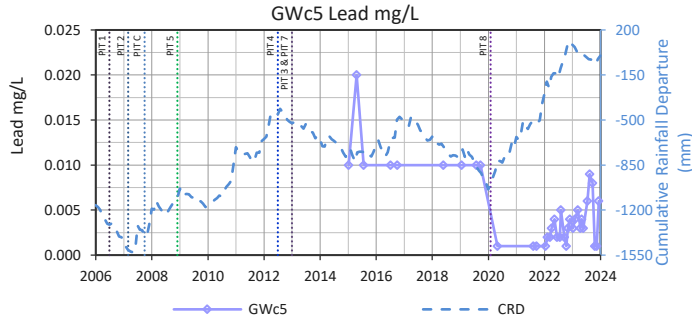
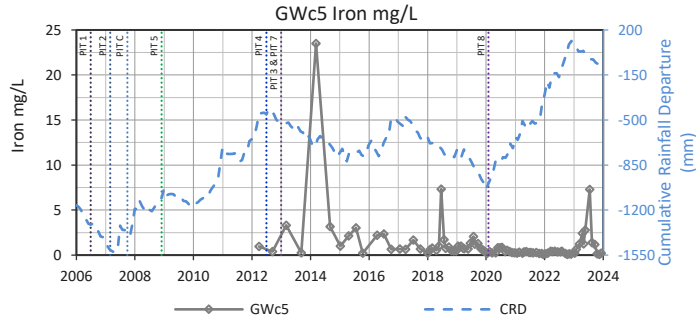
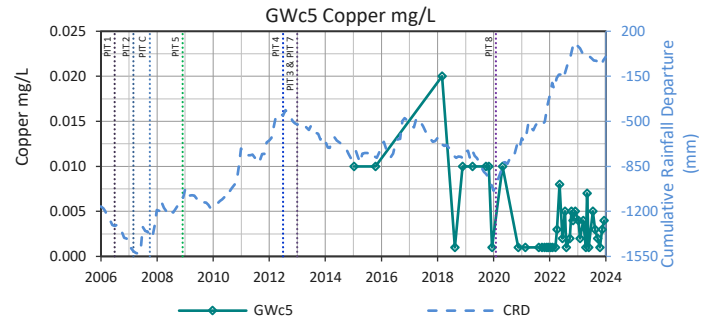
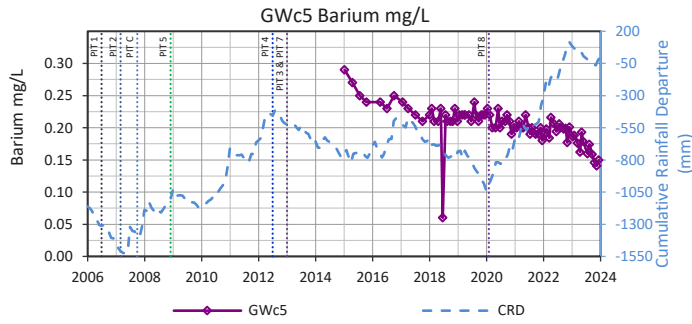
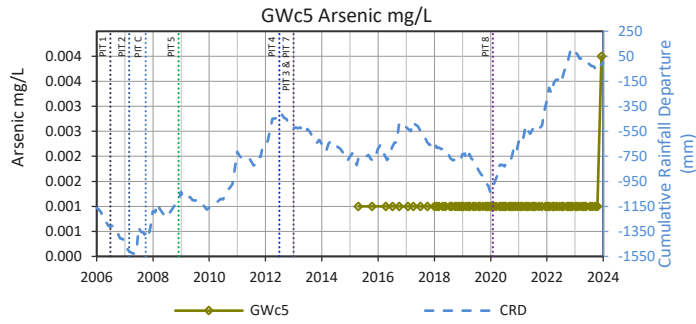
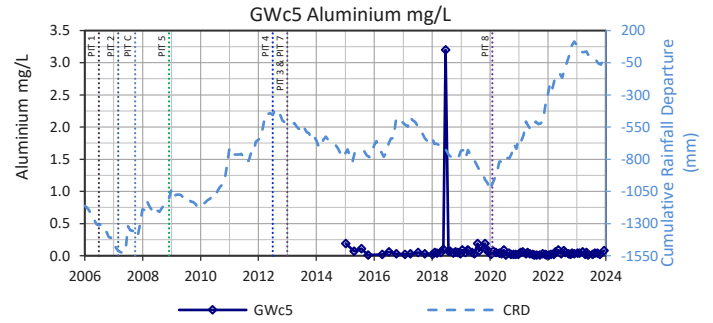
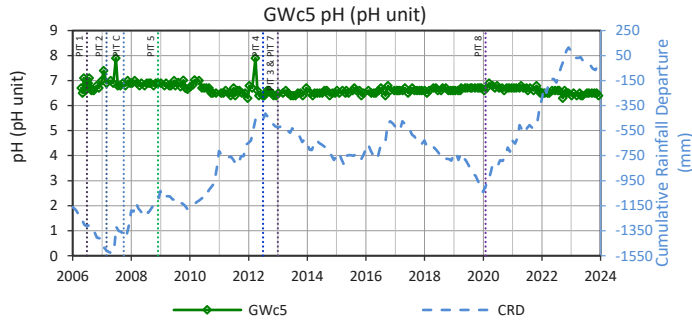
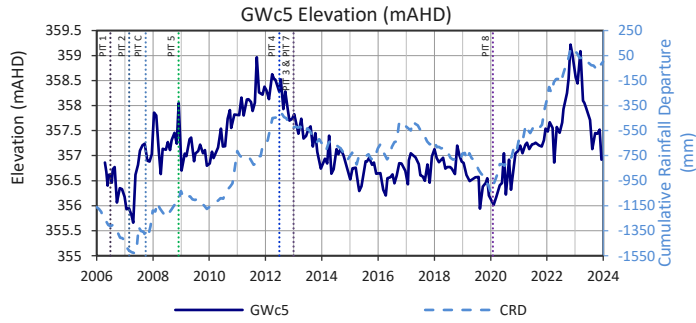
No Data Available for Molybdenum mg/L

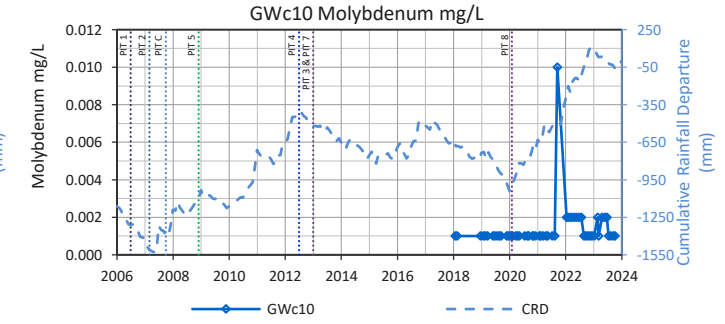
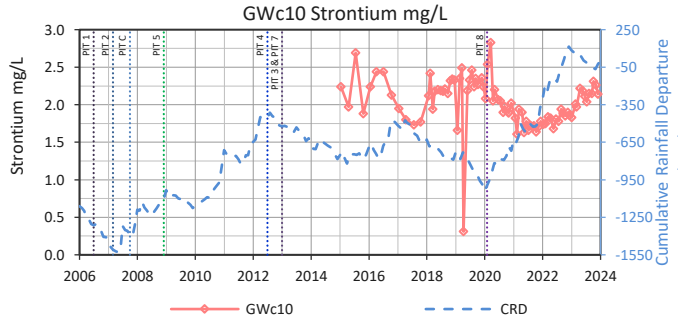
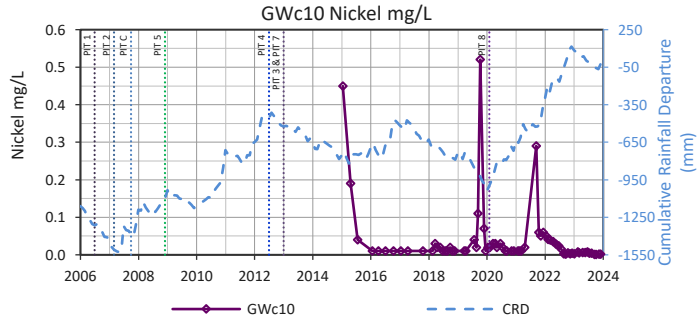
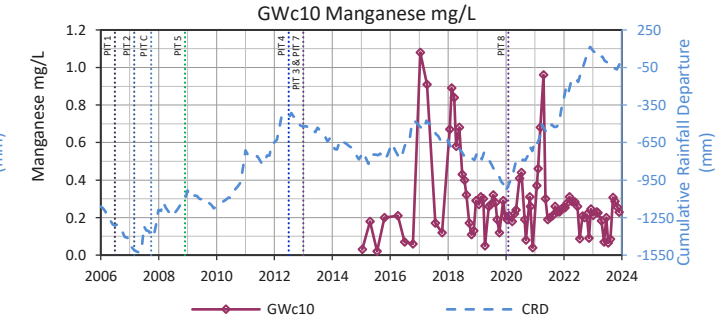
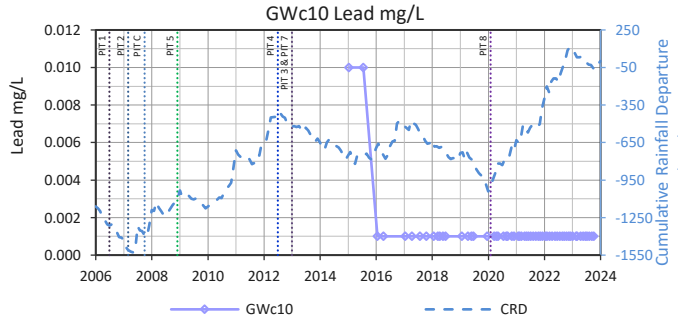
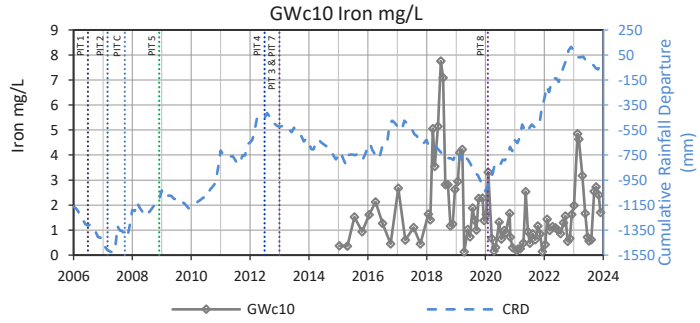
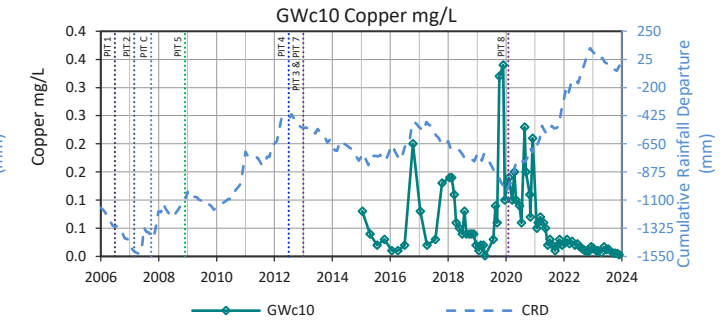
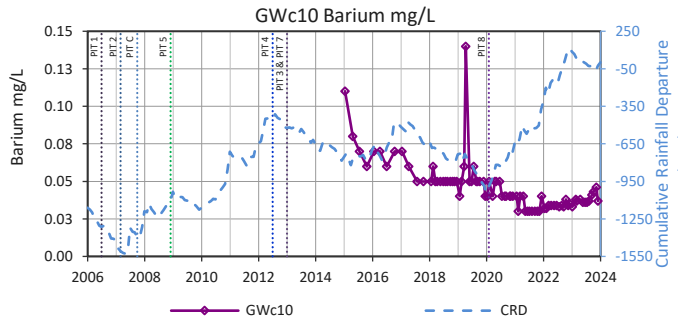
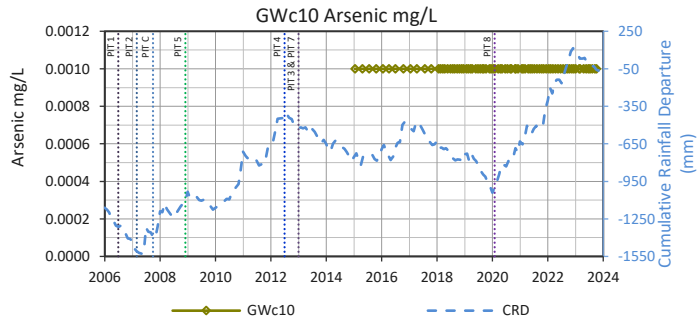
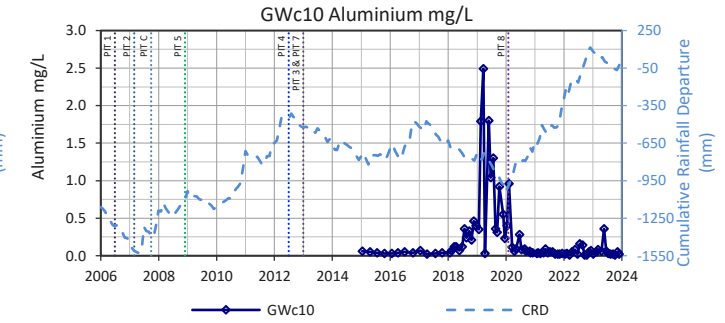
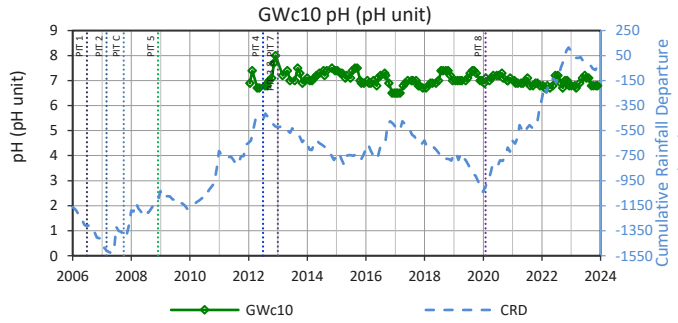
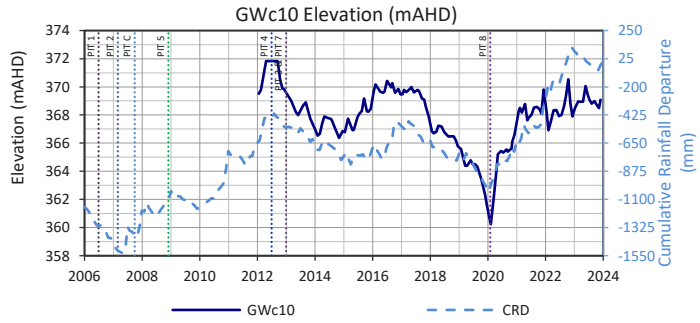


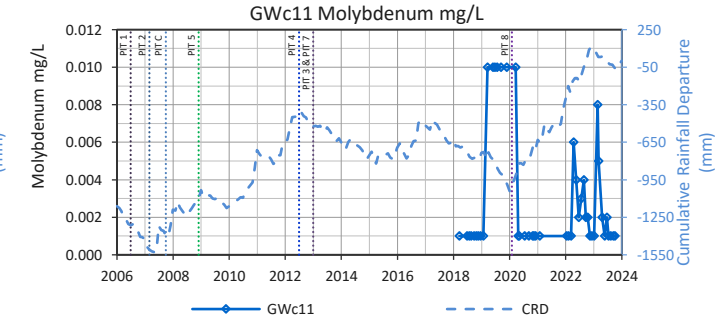
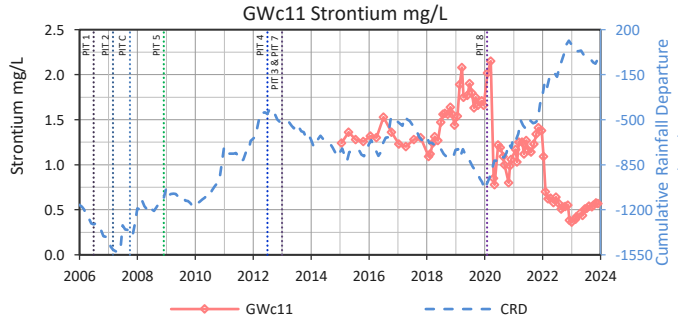
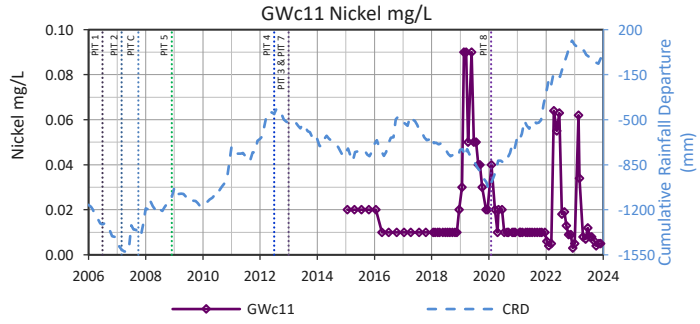
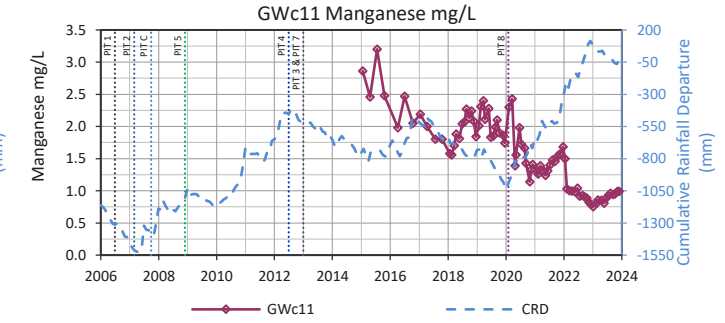
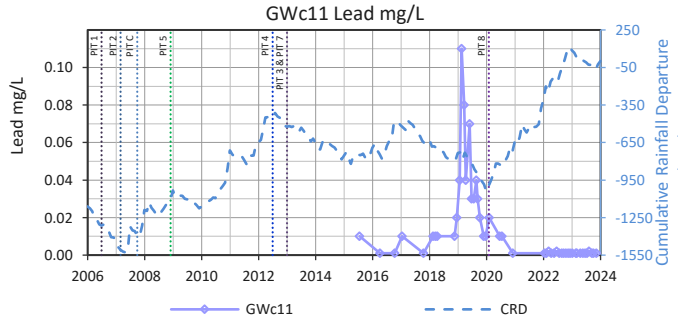
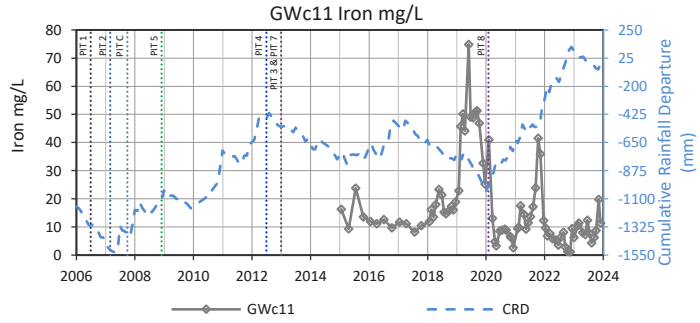
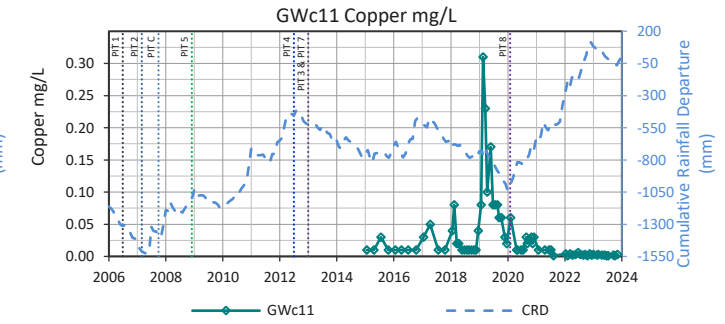
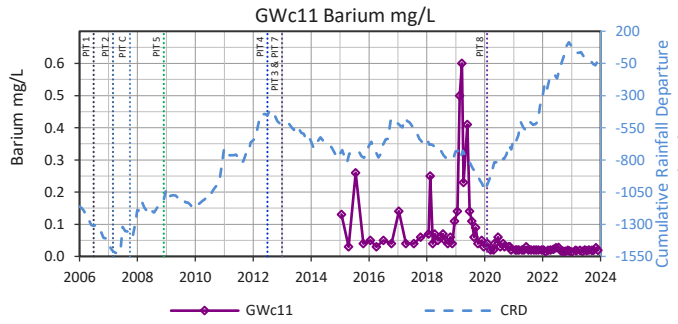
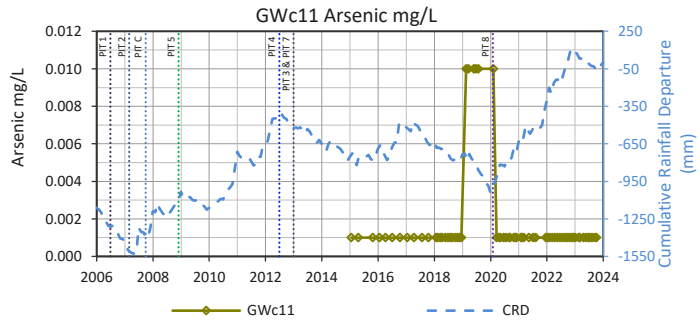
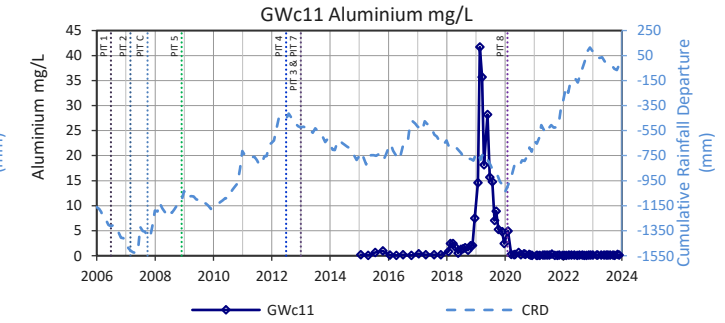
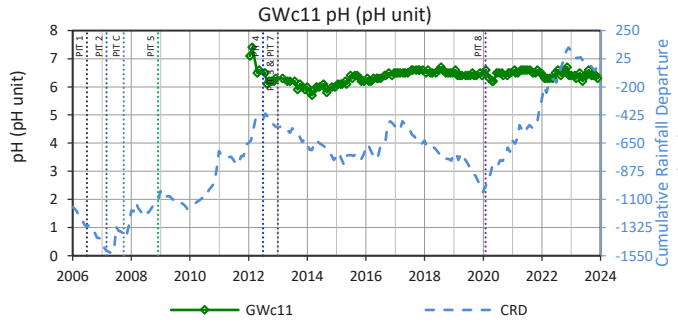
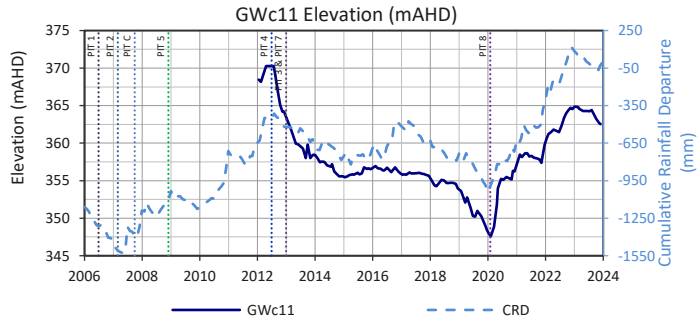


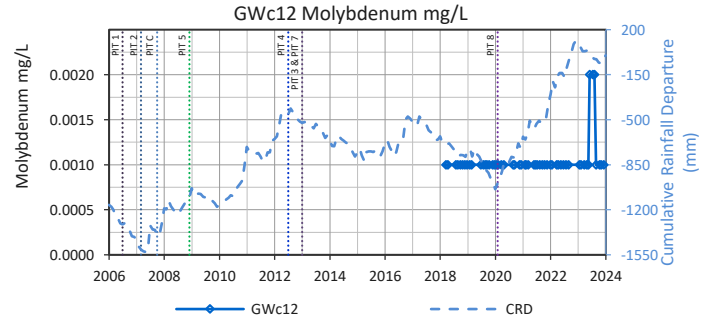
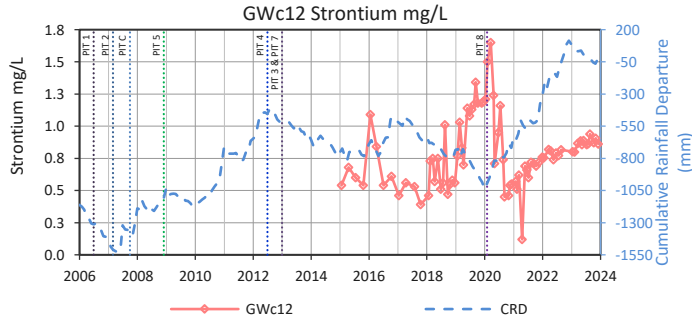
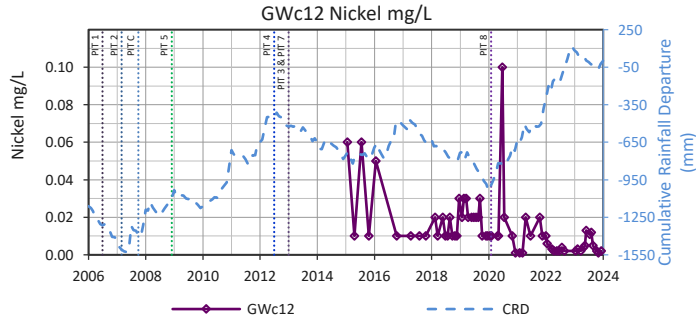
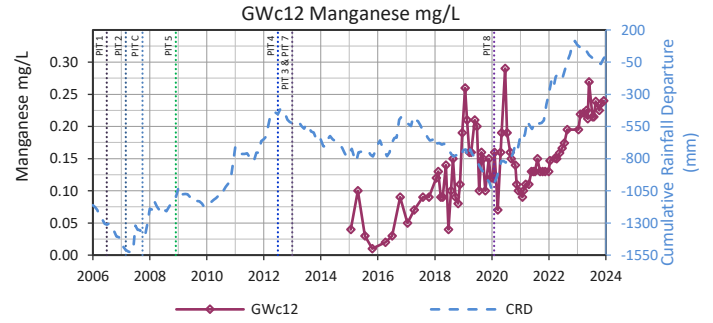
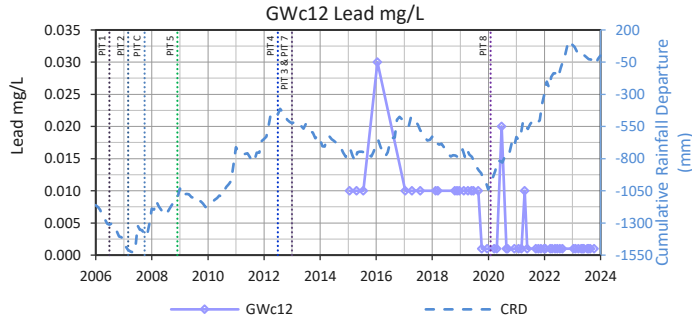
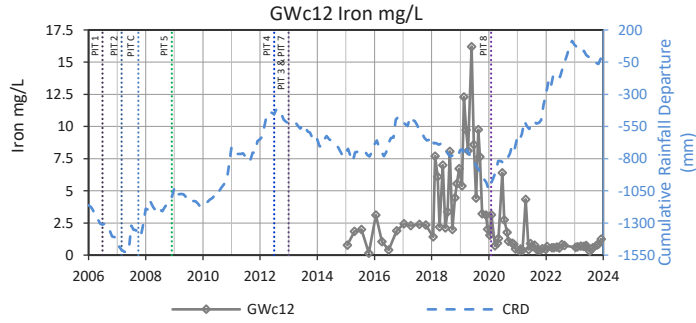
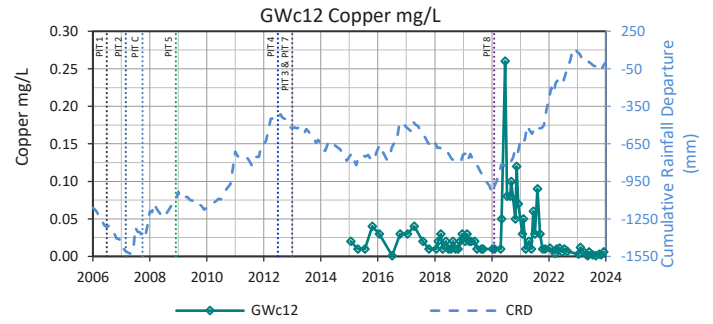
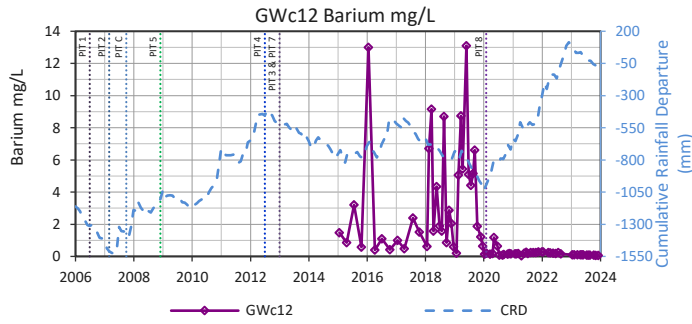
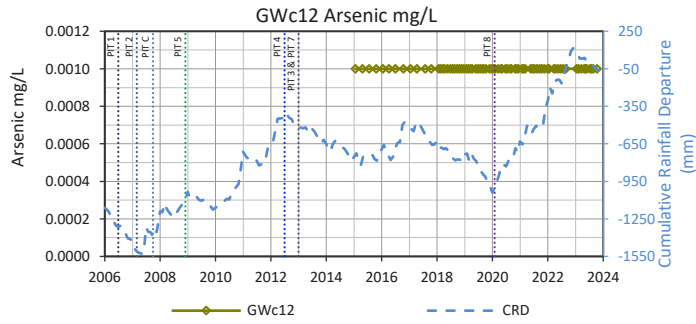
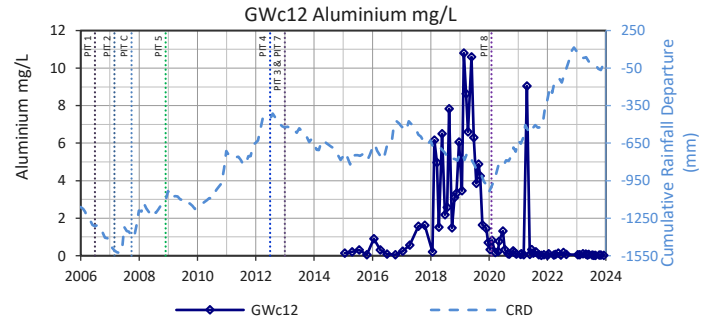
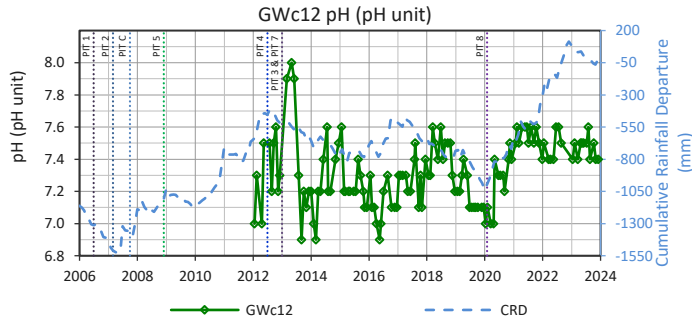
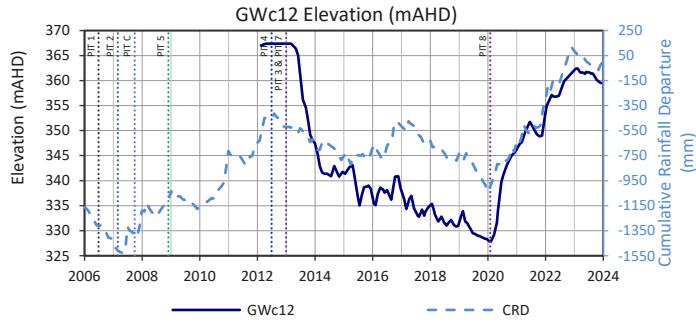


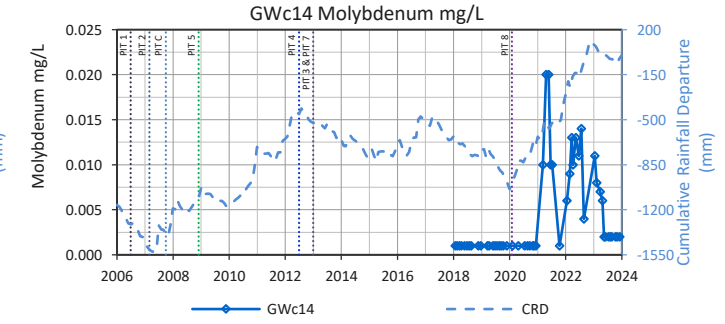
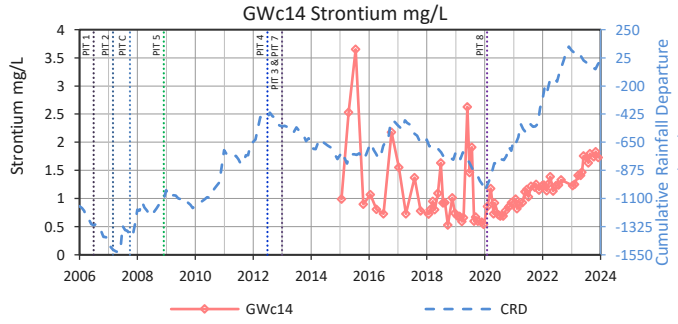
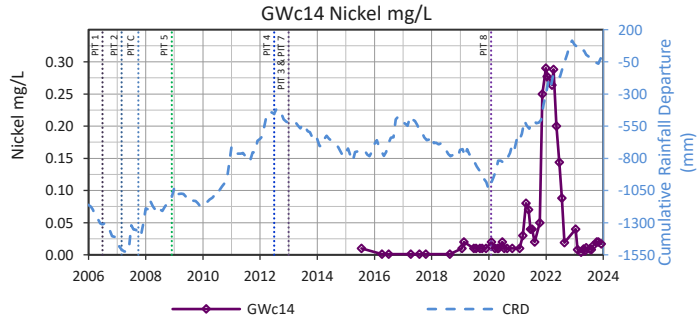
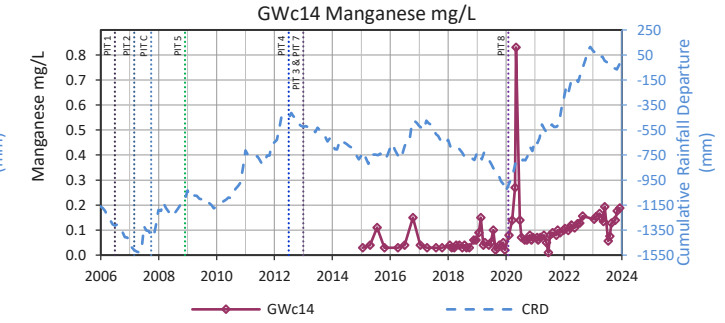
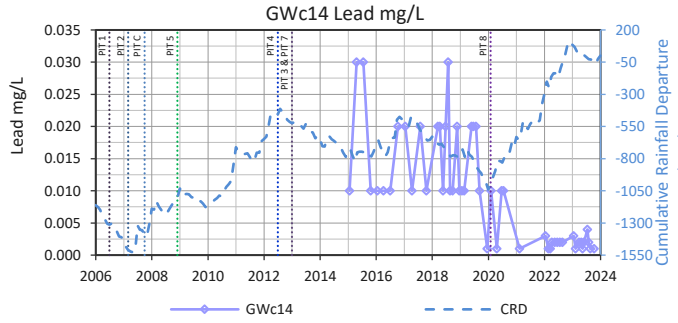
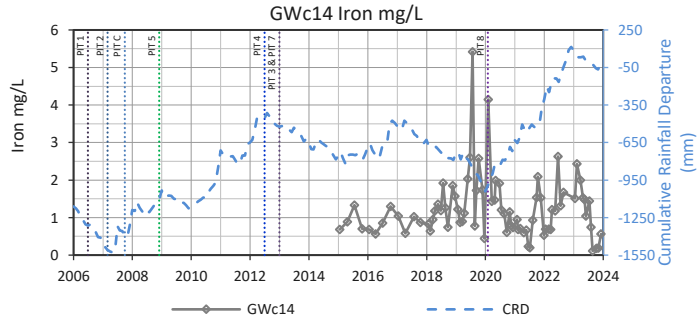
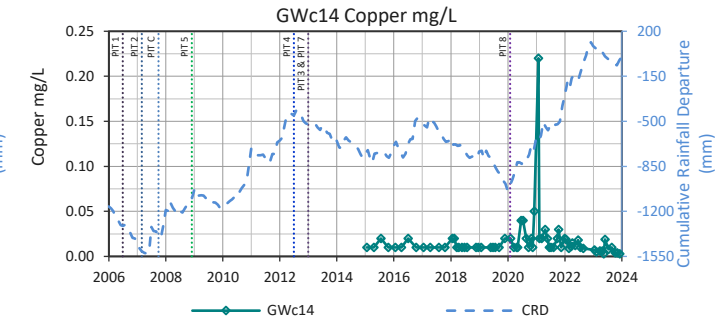
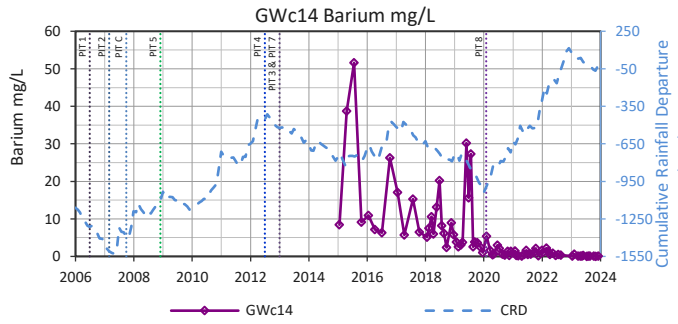
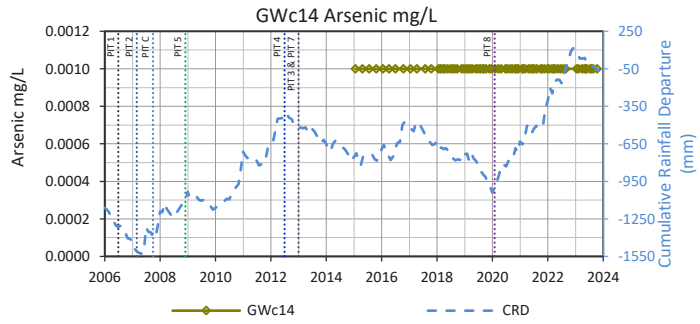
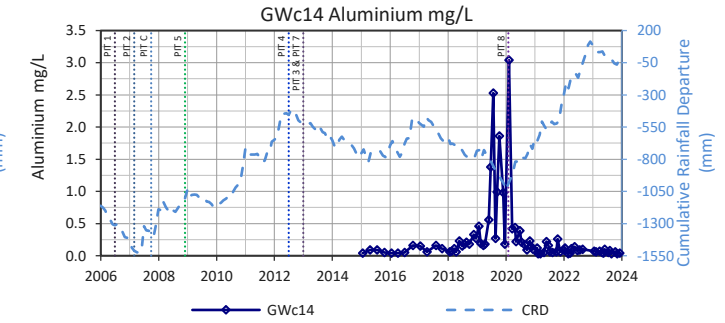
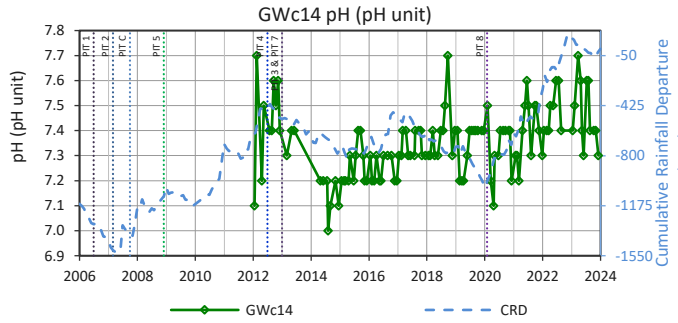
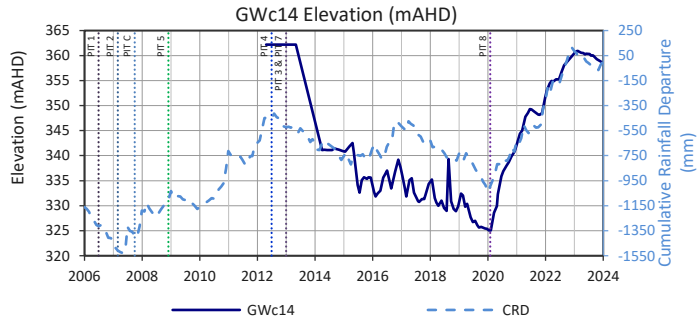


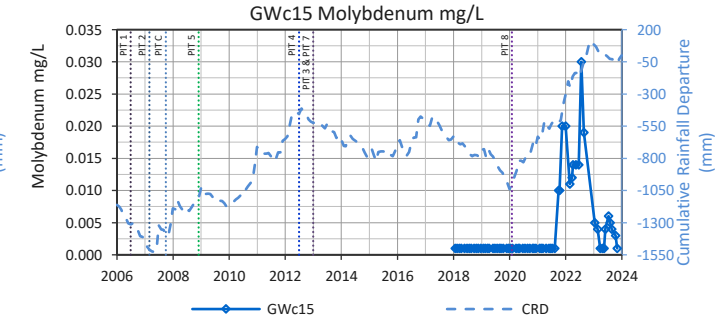
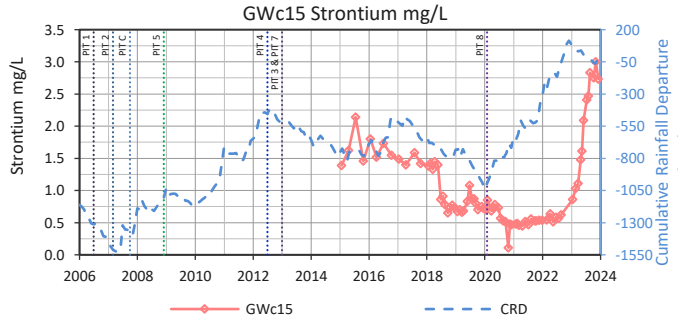
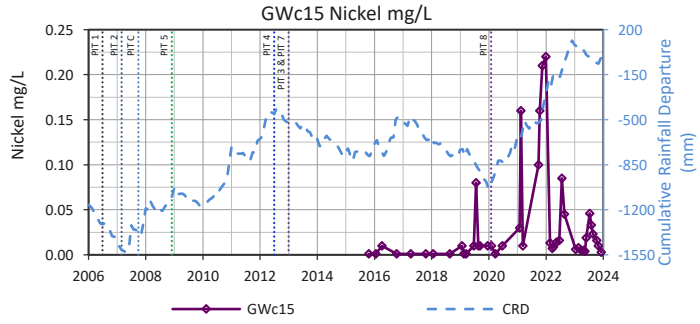
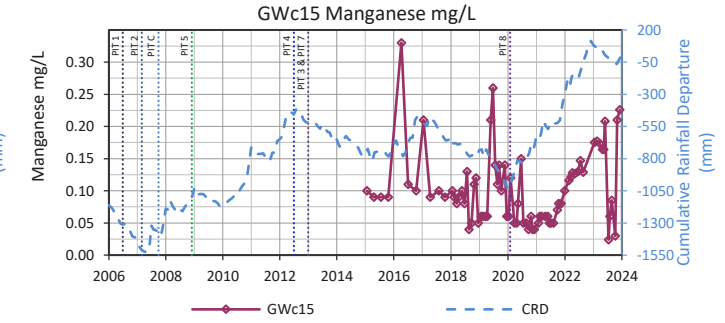
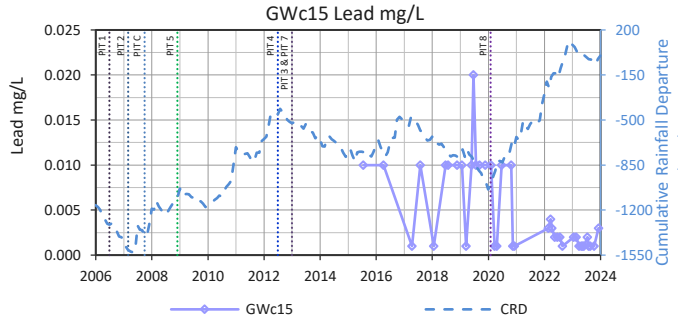
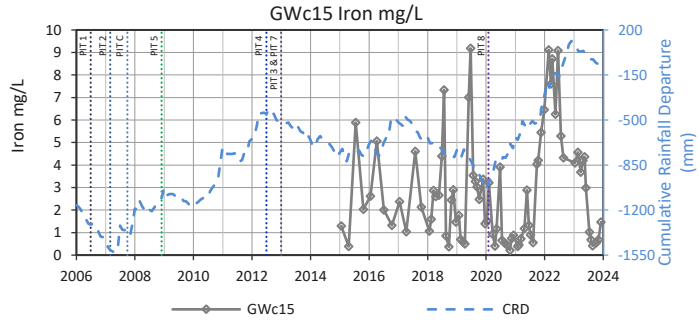
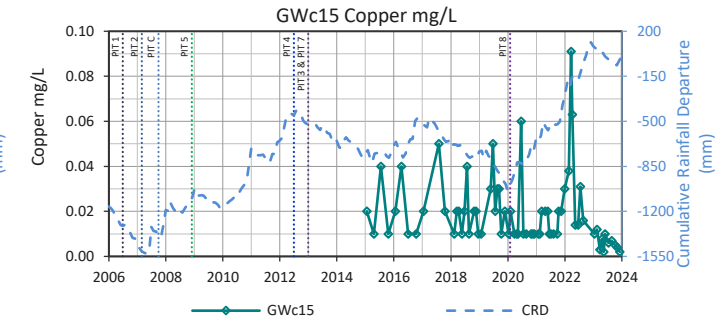
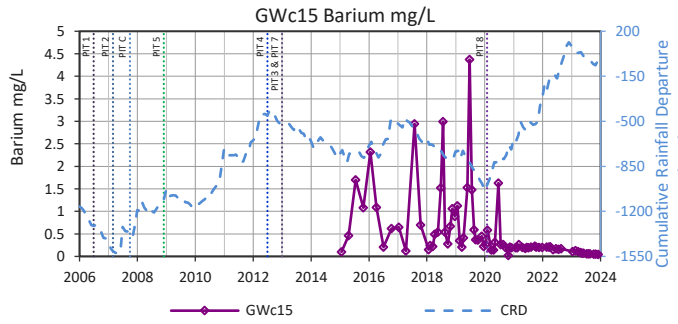
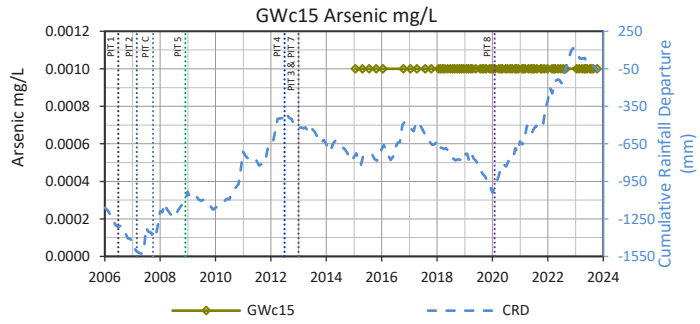
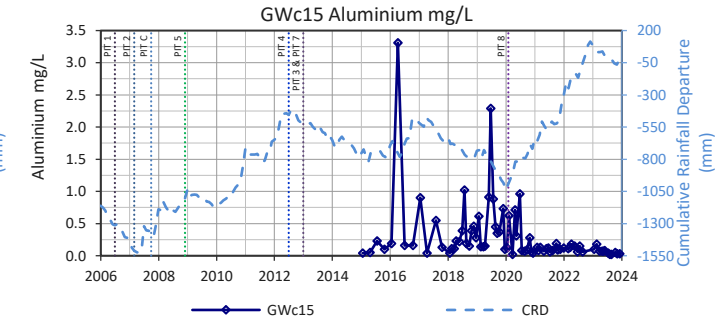
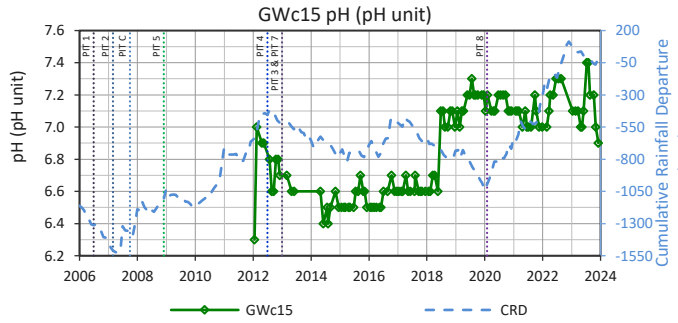
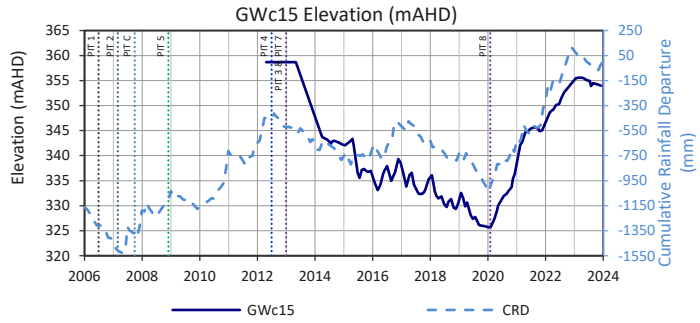


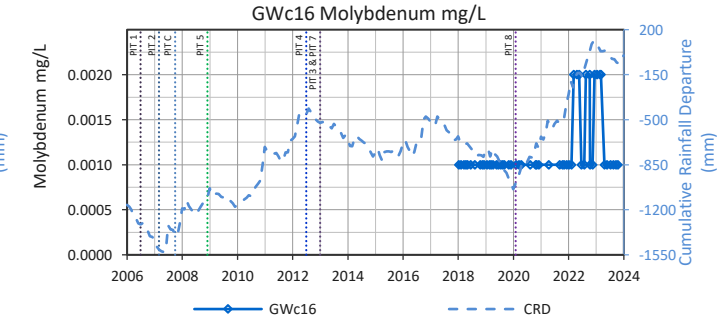
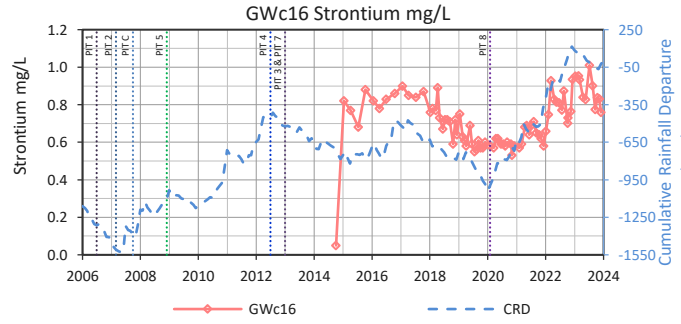
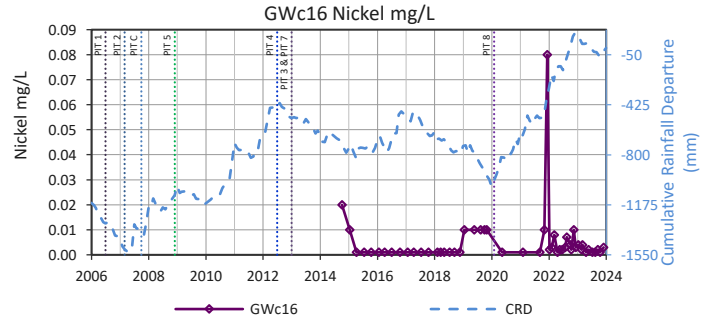
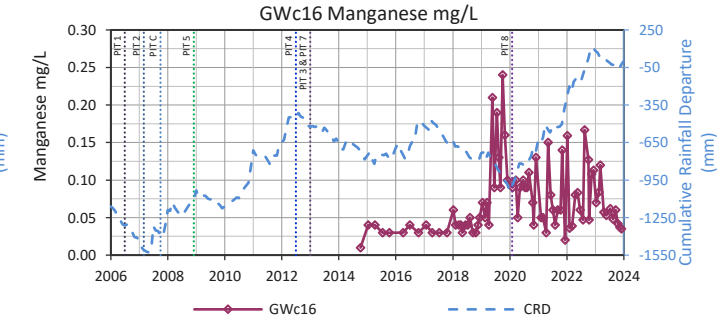
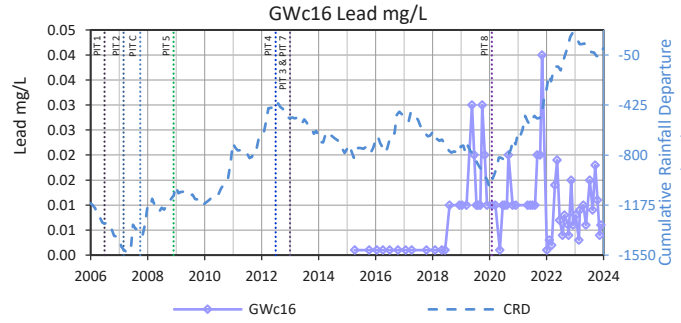
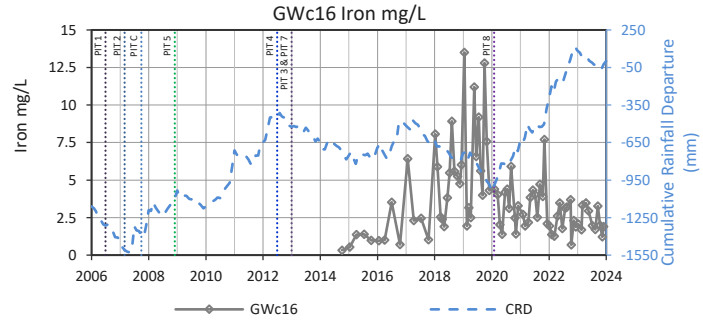
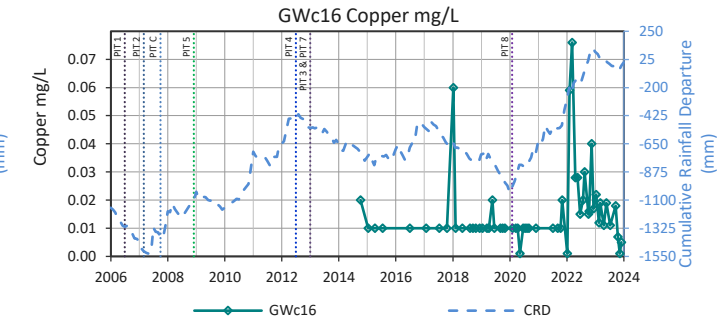
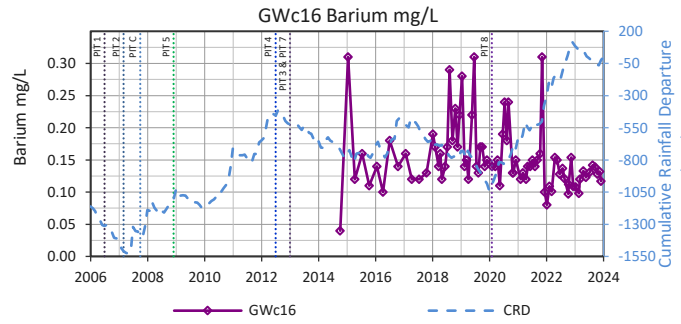
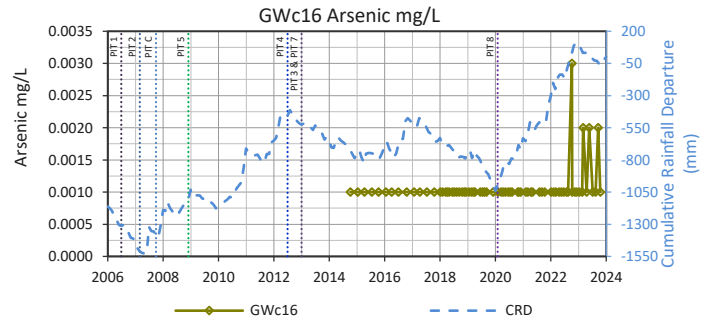
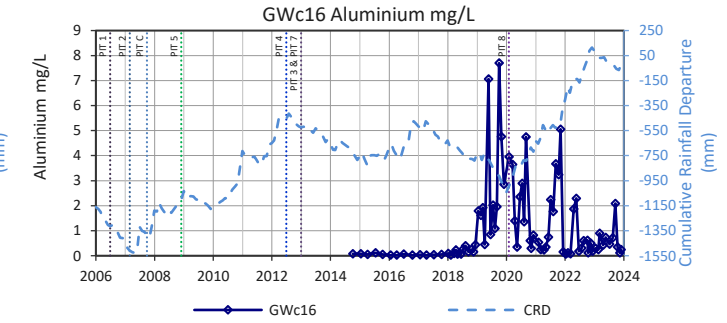
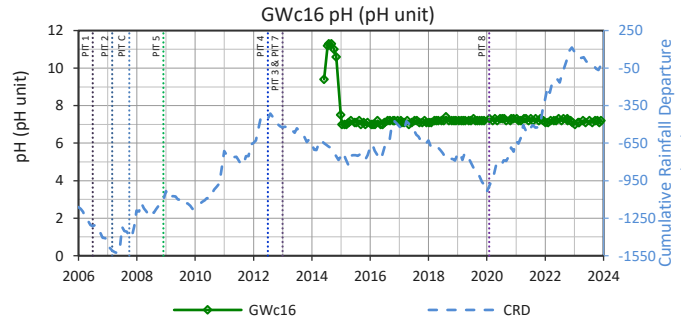
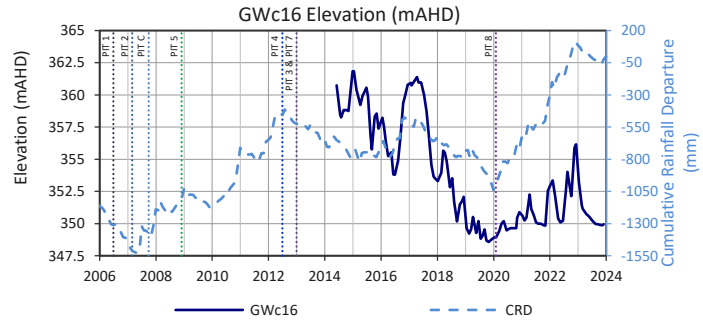


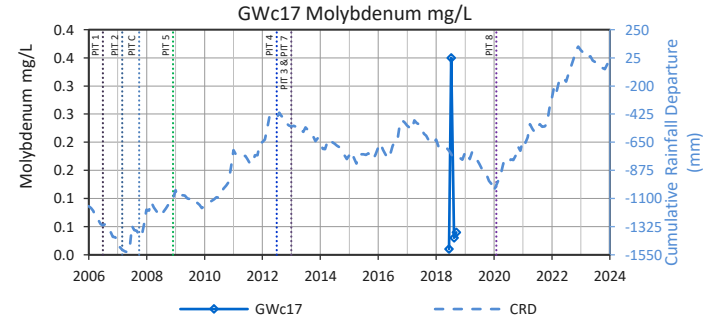
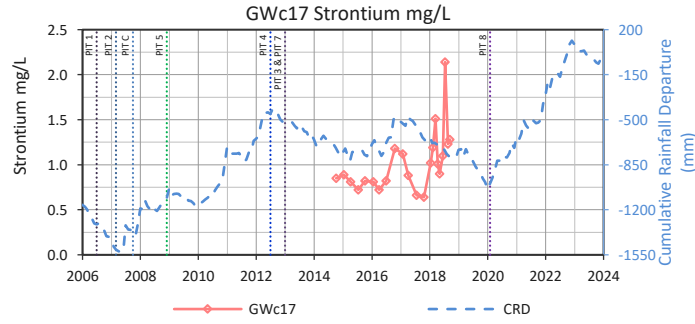
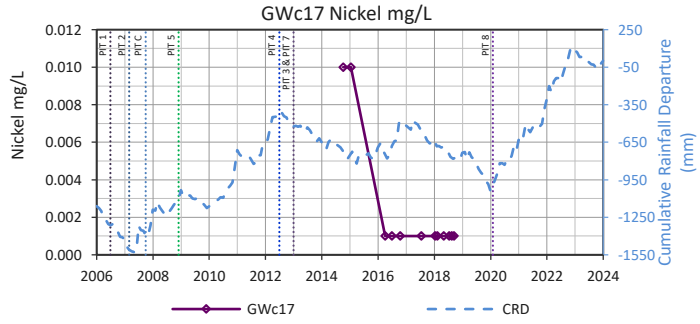
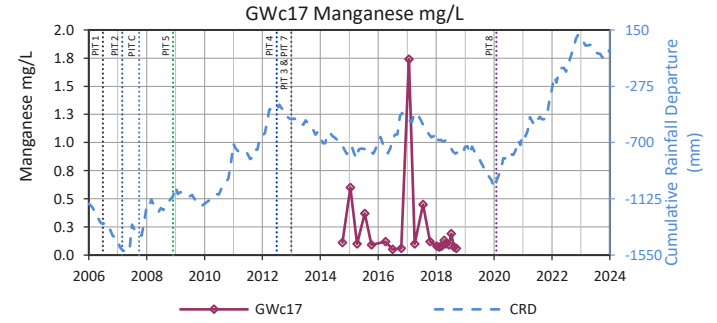
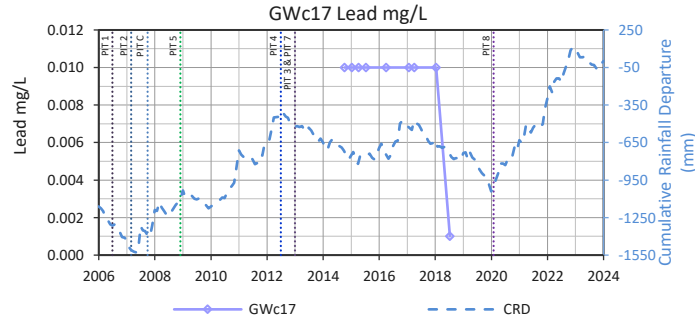
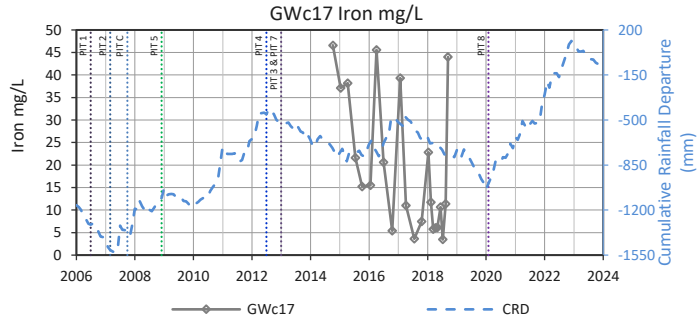
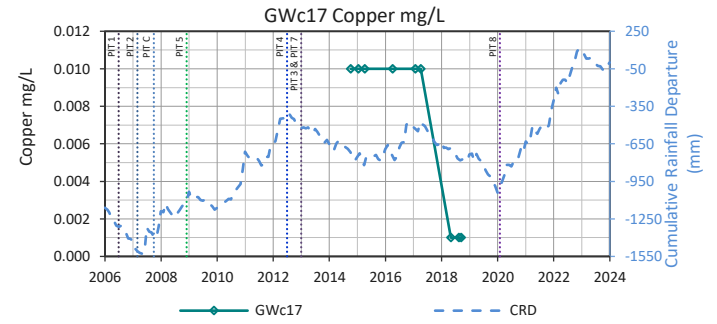
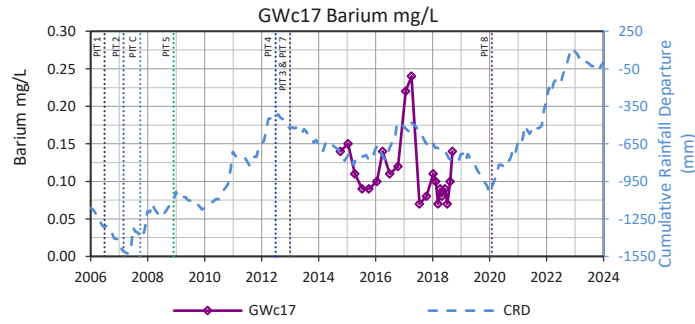
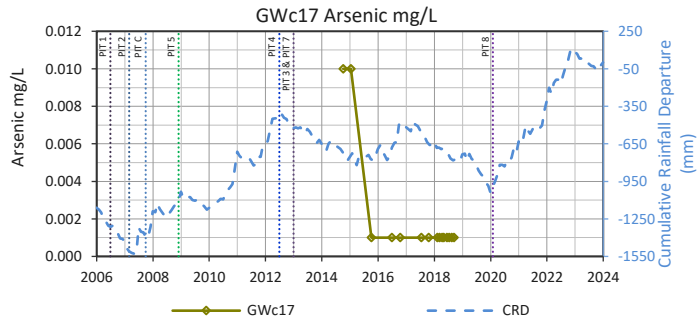
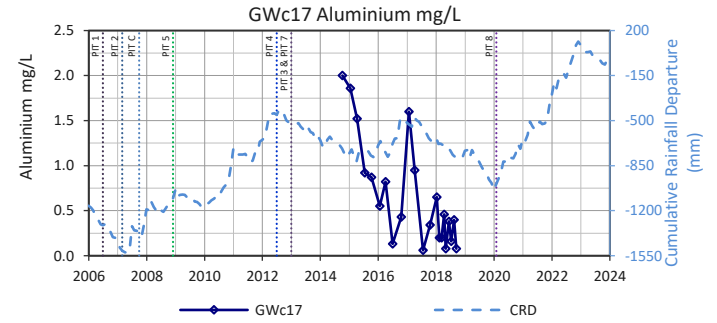
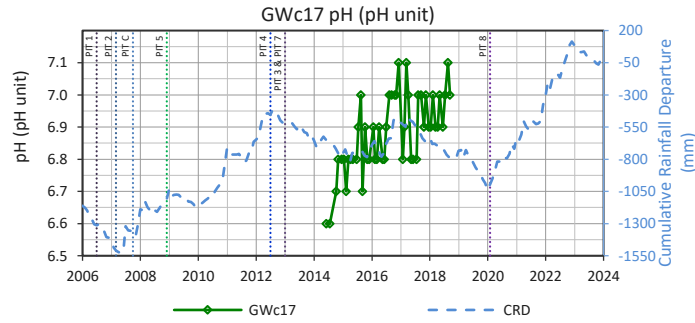
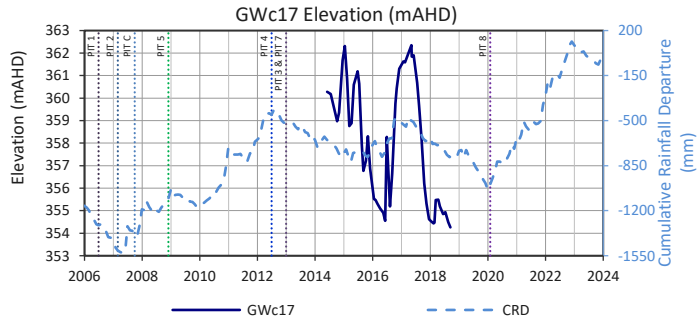


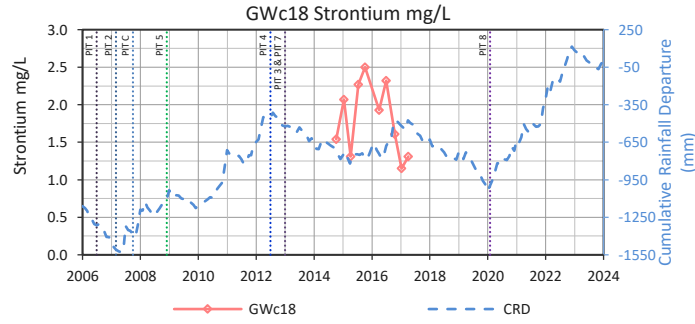
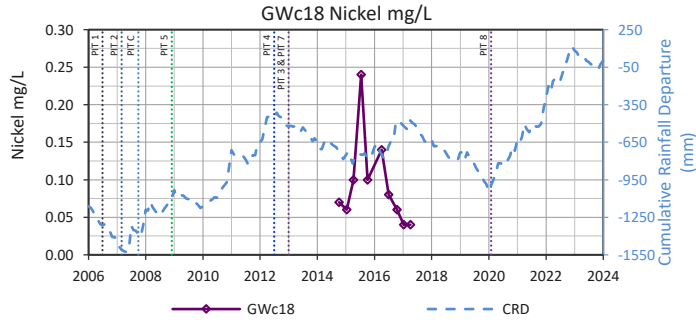
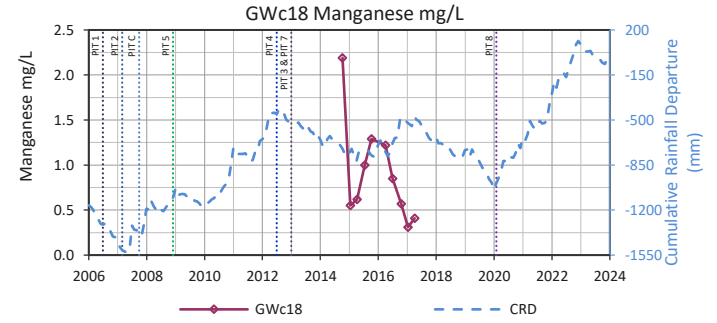
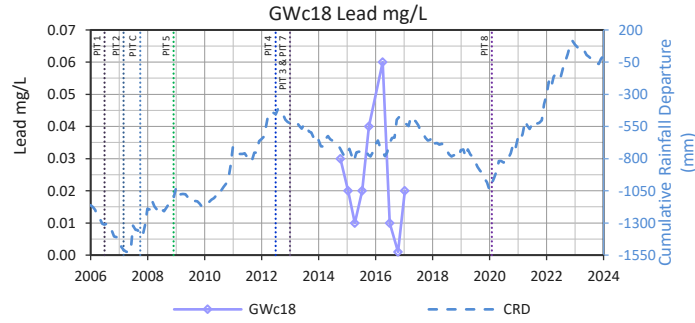
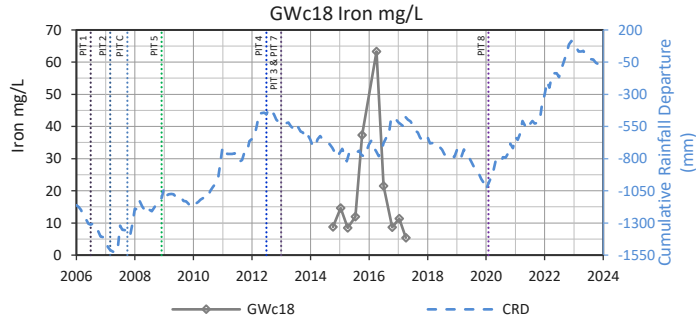
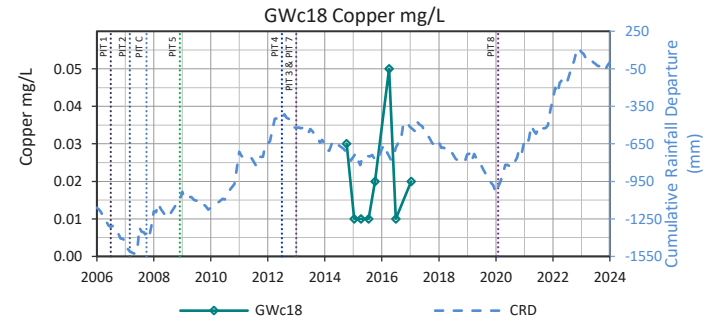
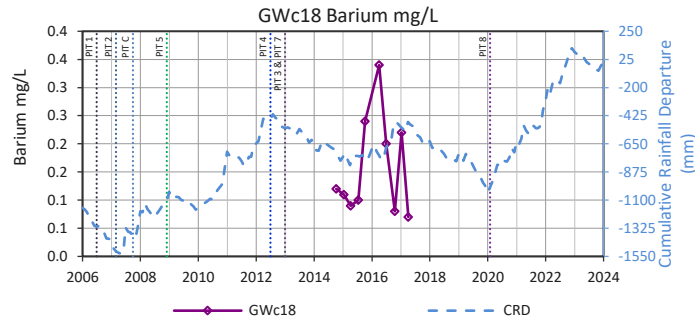
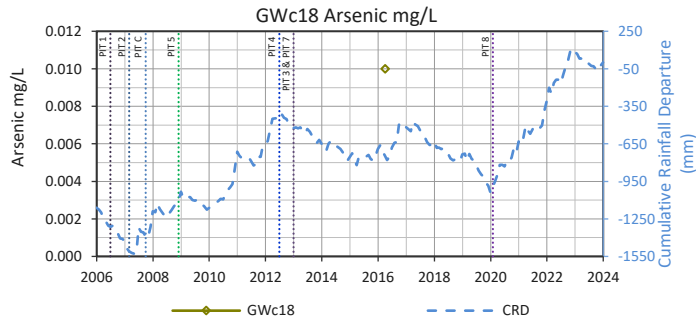
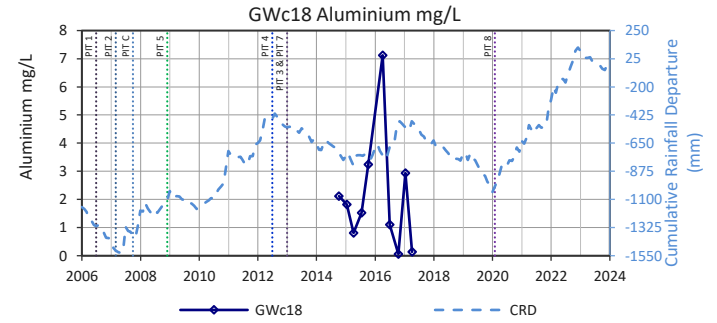
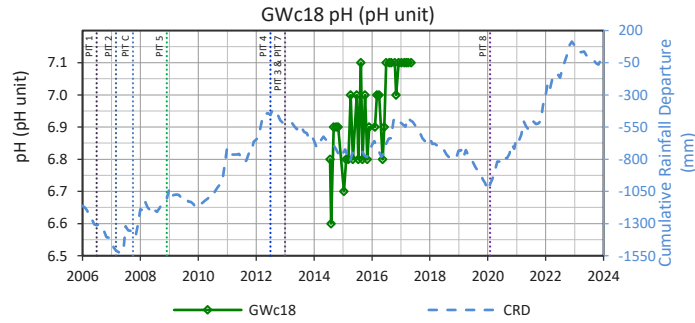
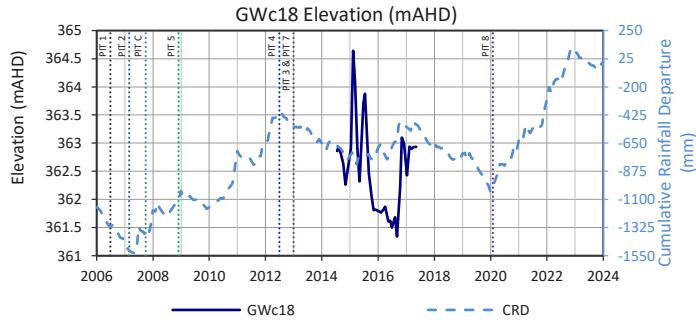






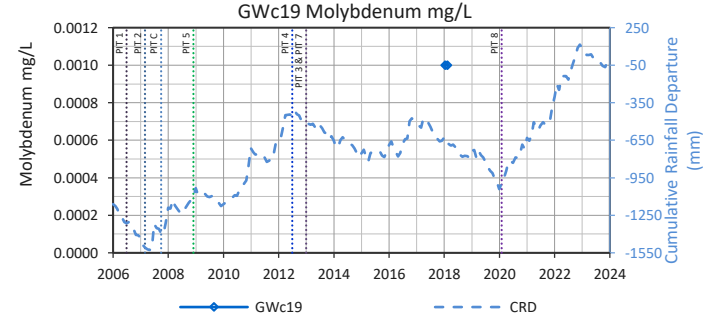
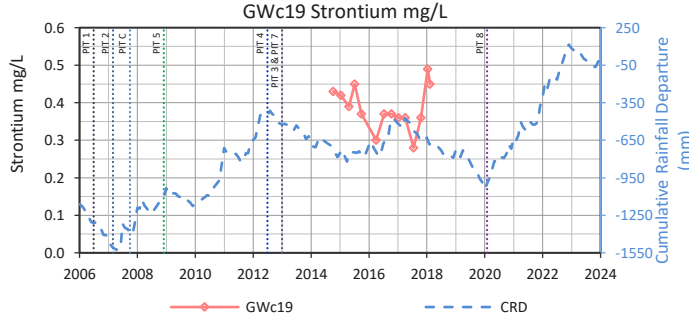
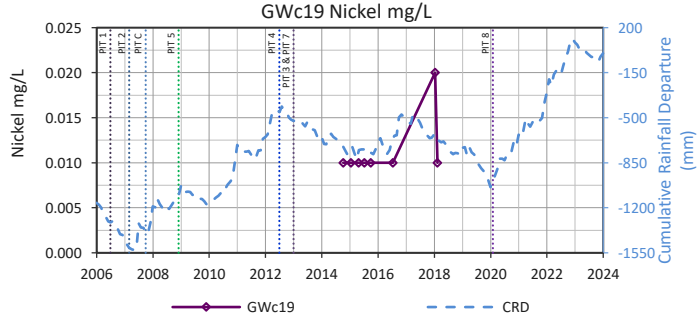
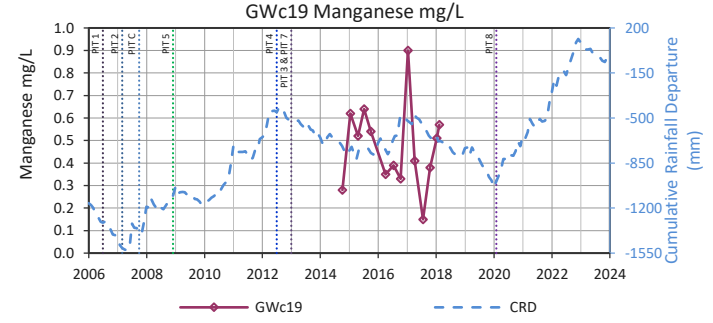
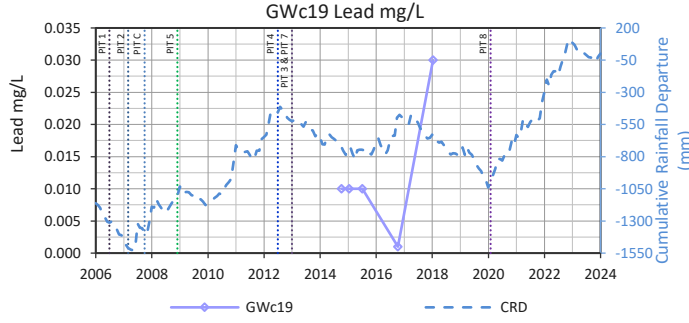
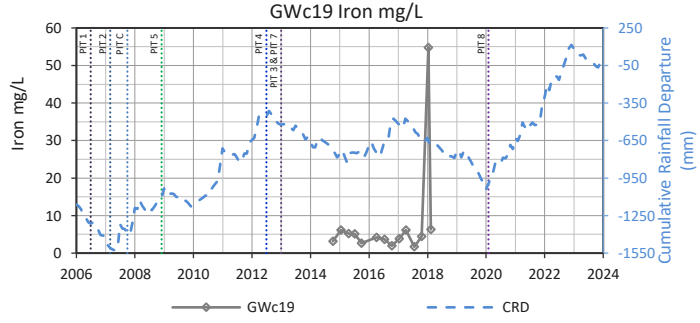
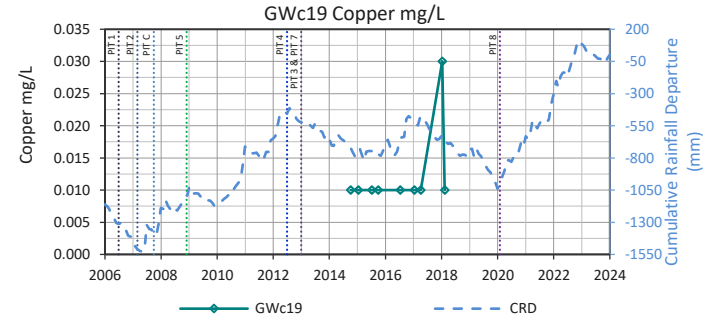
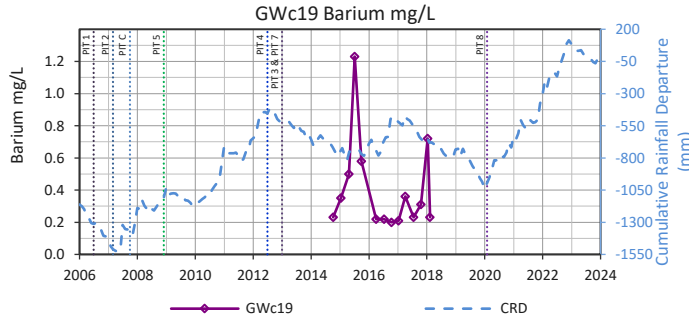
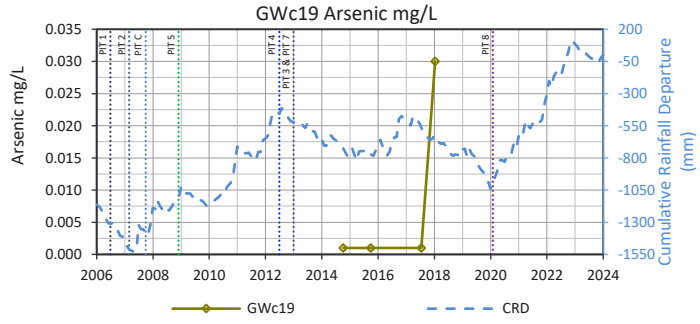
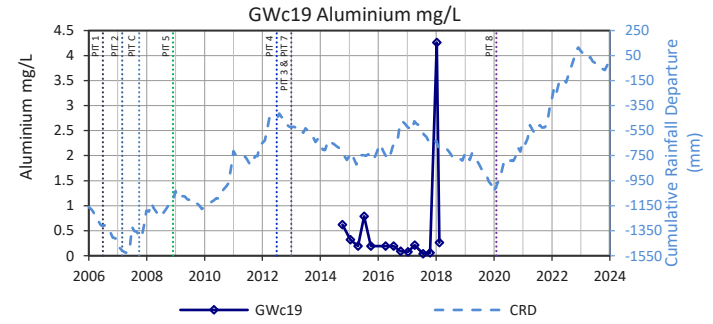
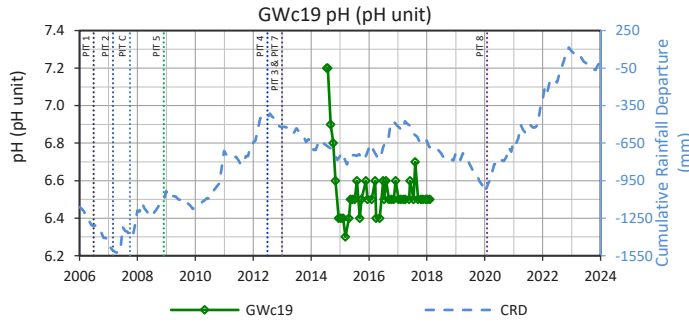
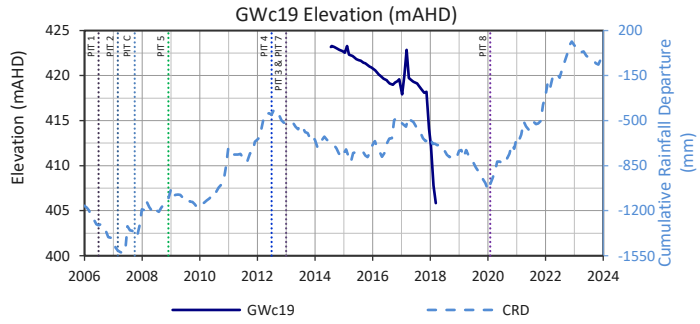


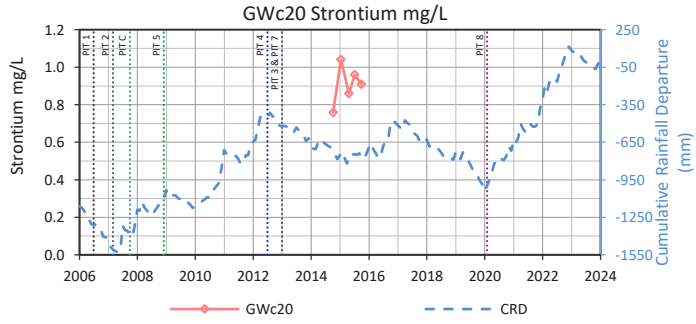
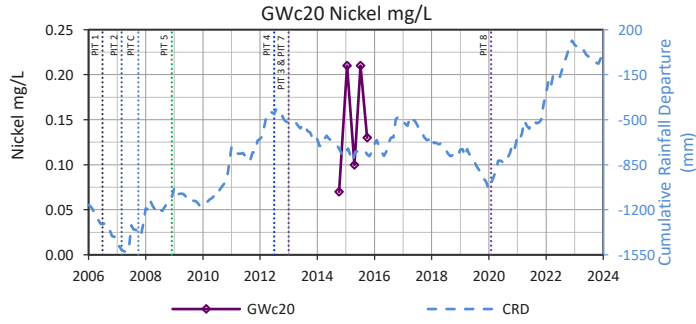
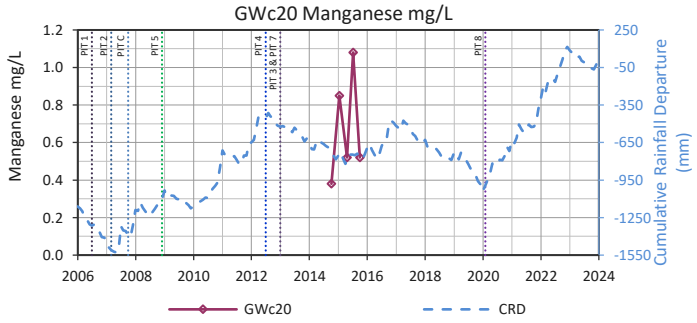
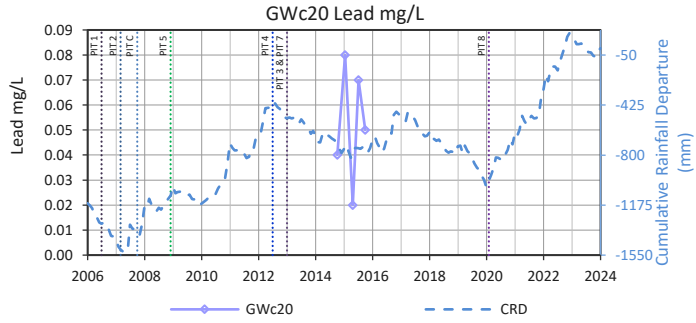
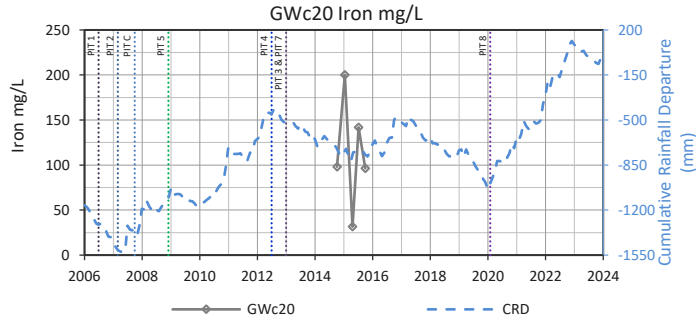
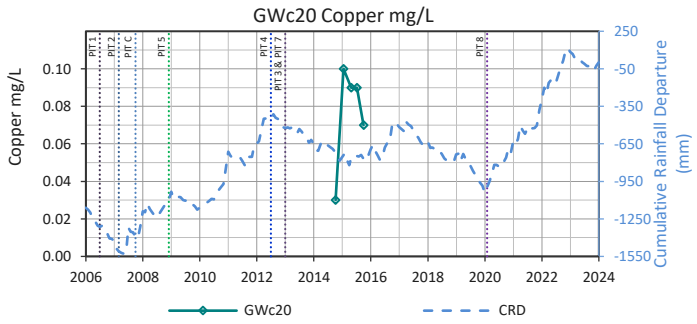
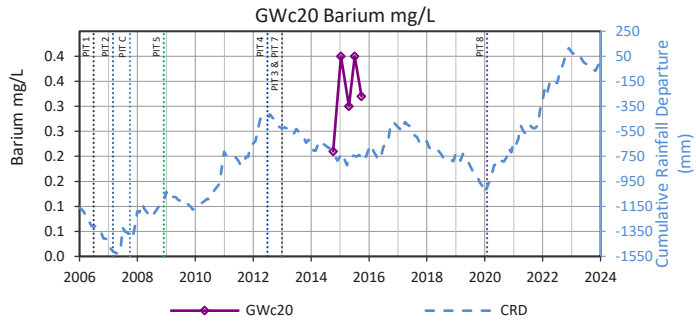
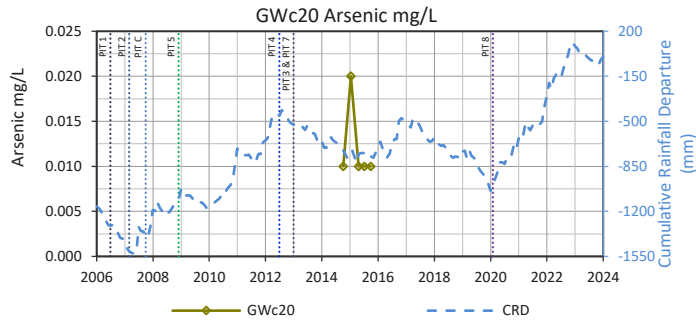
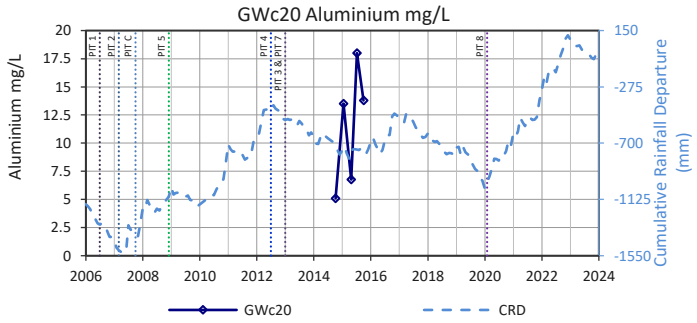
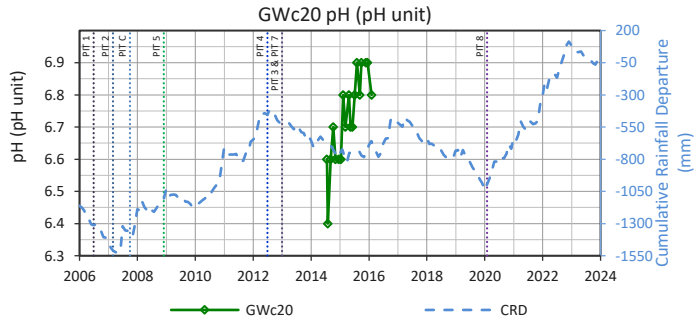
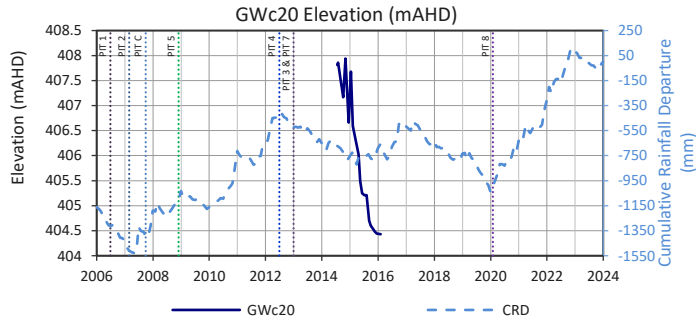




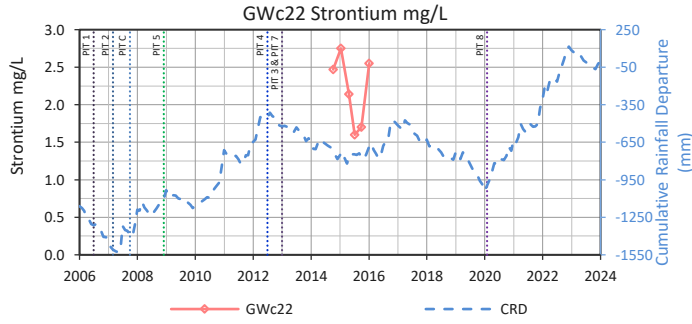
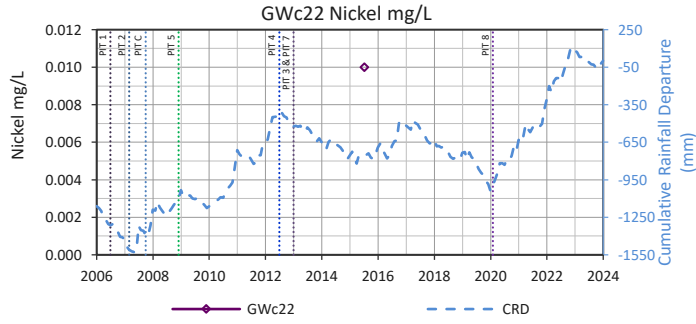
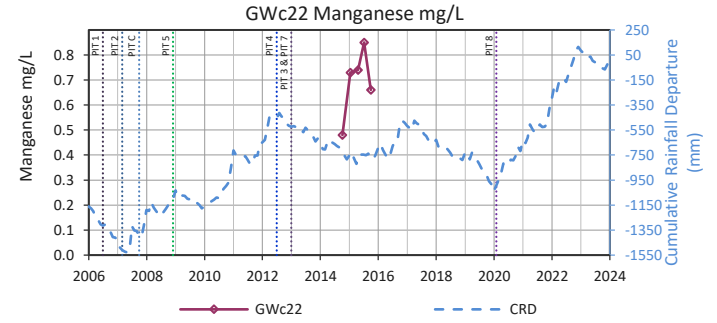
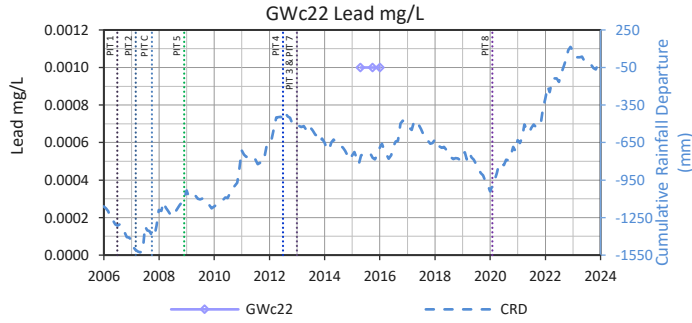
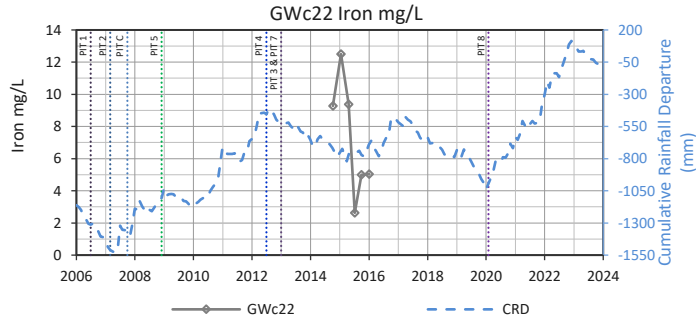
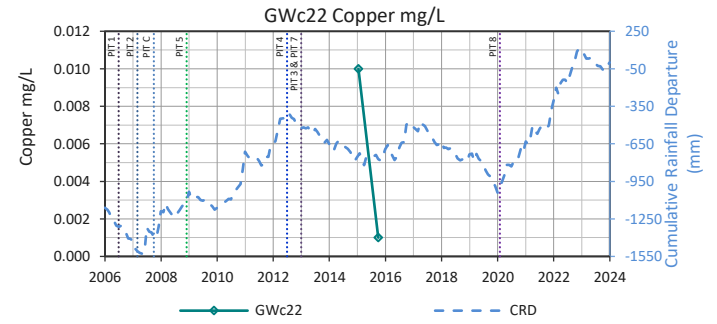
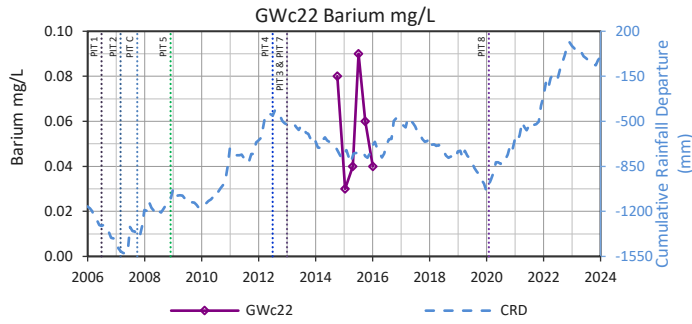
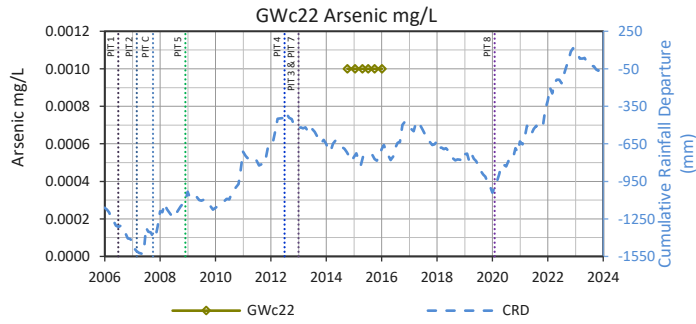
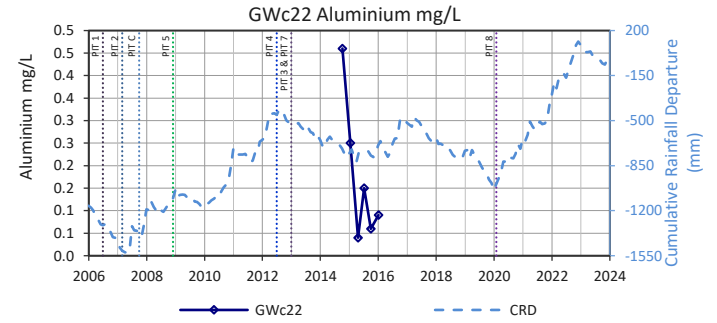
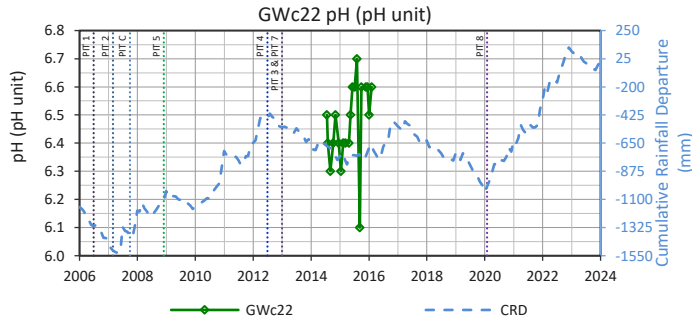
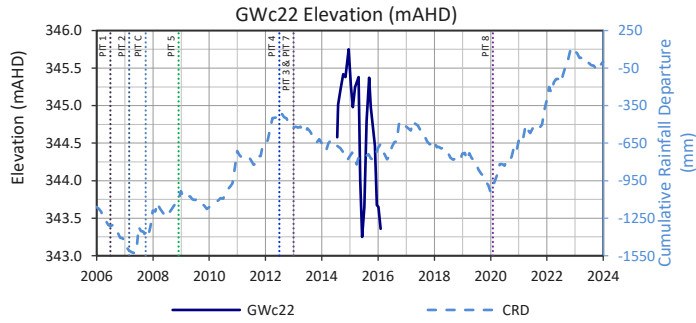
Gwc18

No Data Available for Molybdenum mg/L



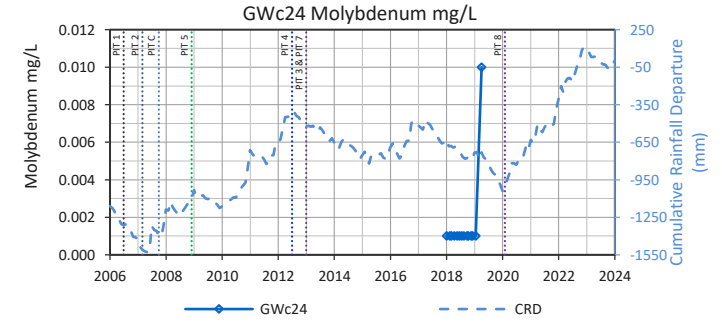
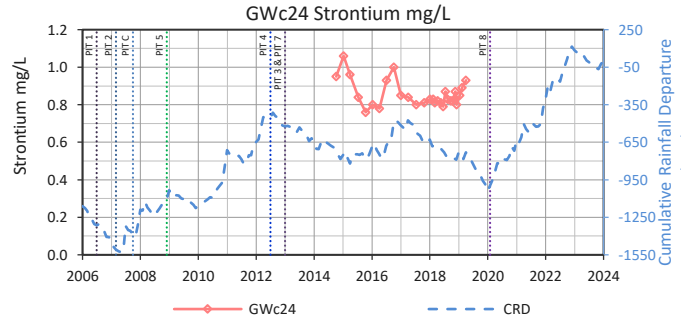
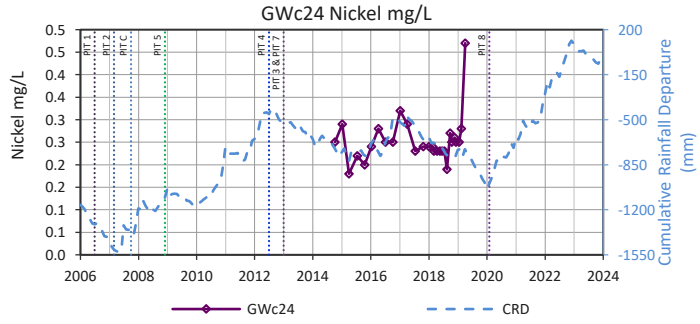
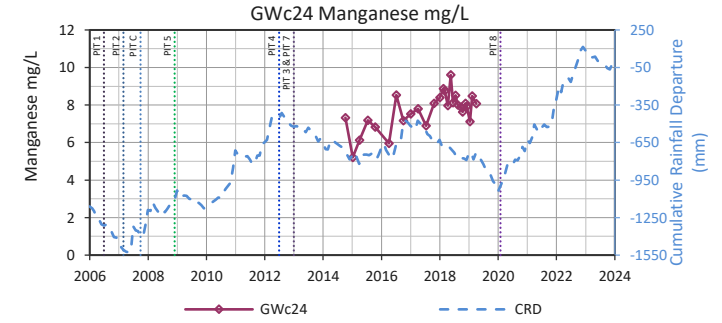
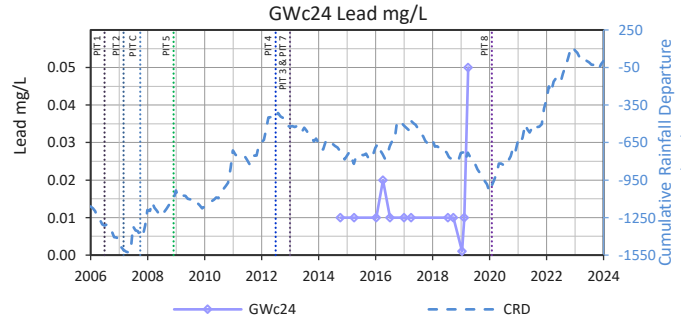
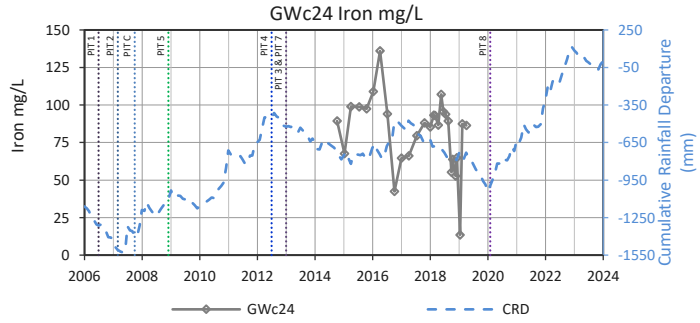
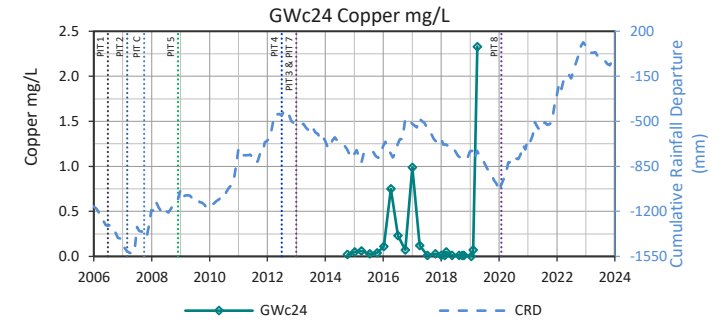
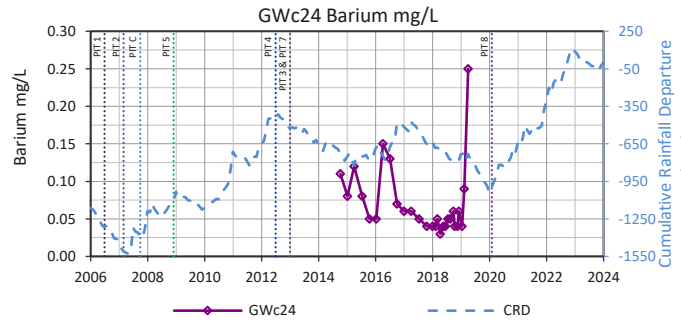
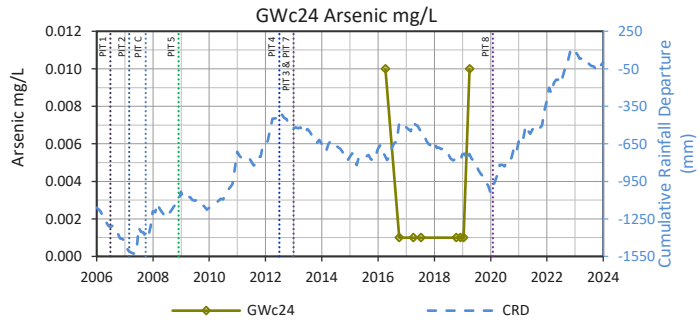
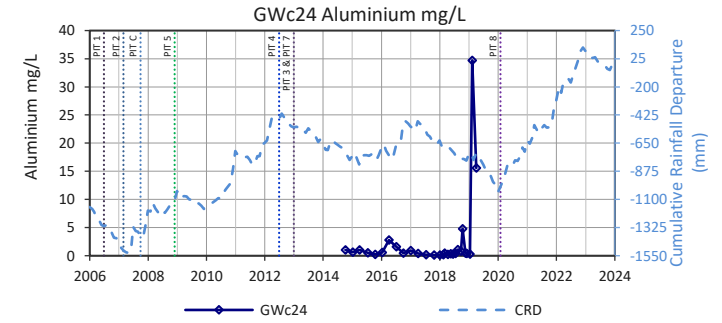
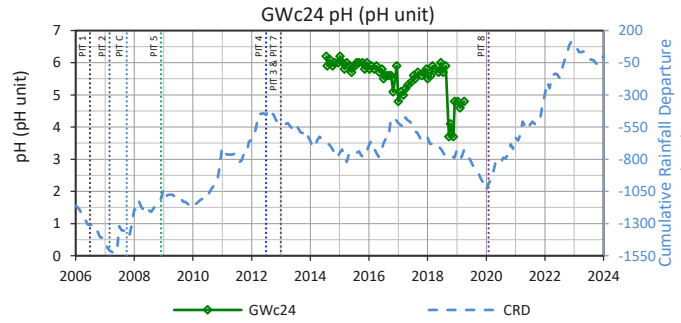
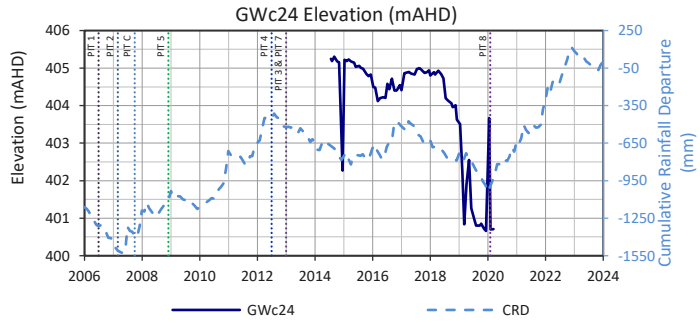


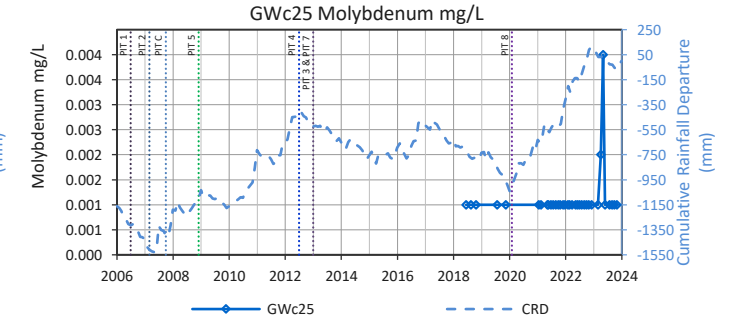
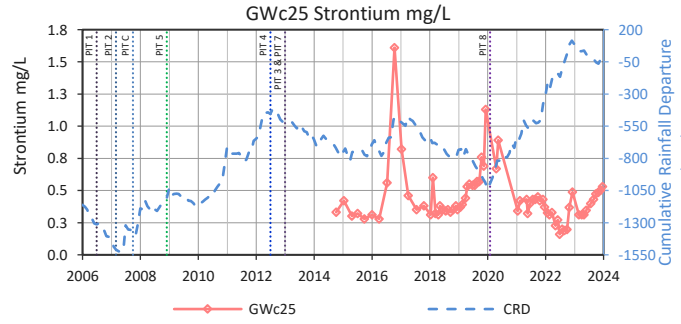
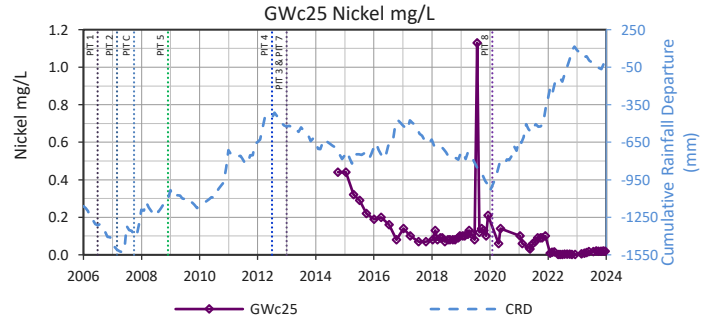
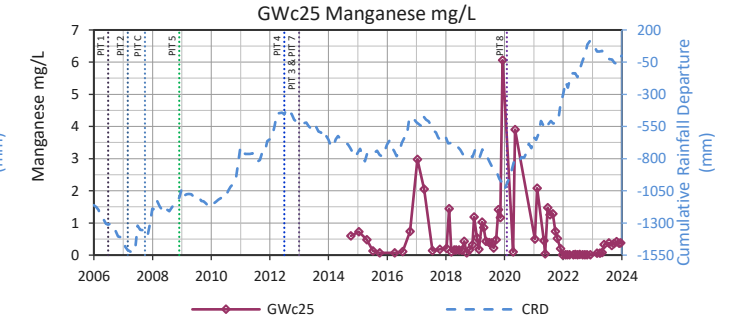
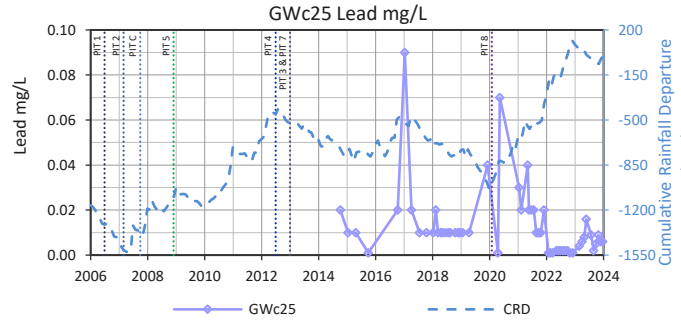
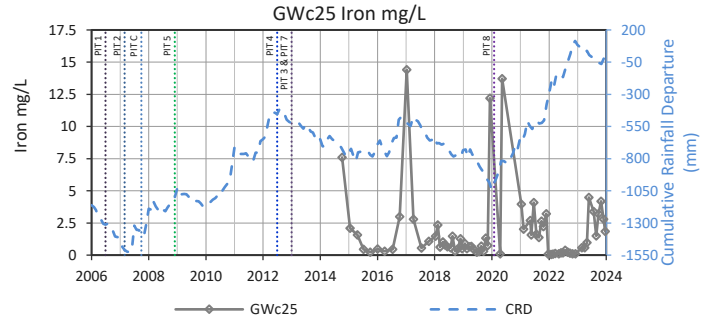
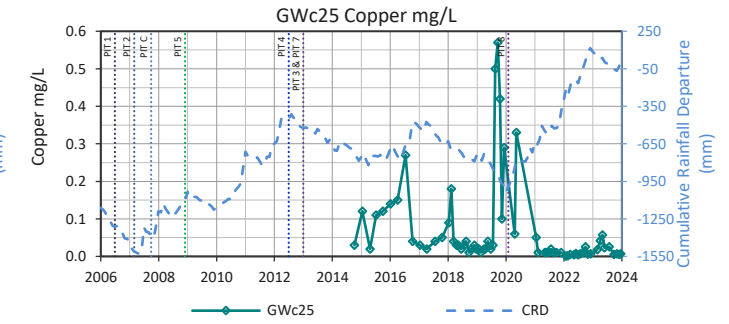
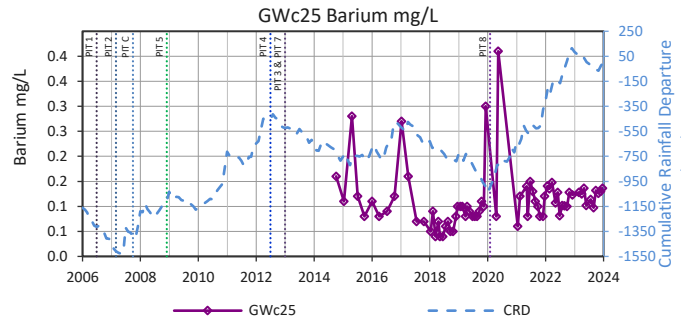
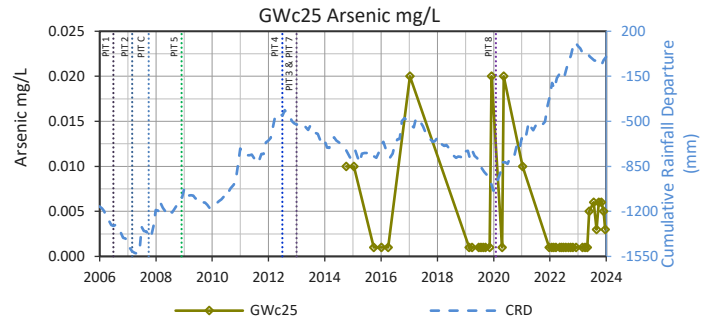
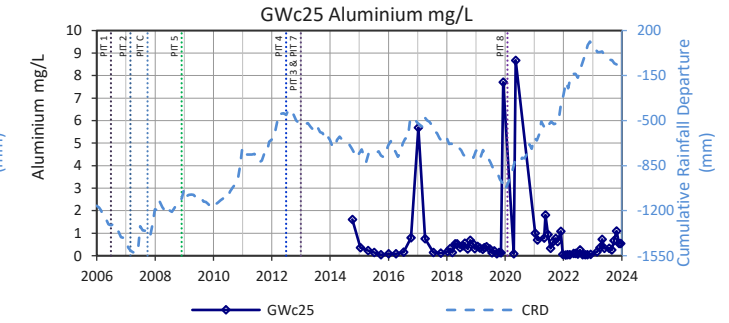
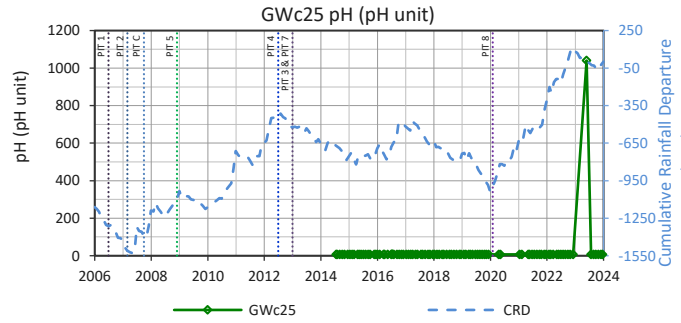
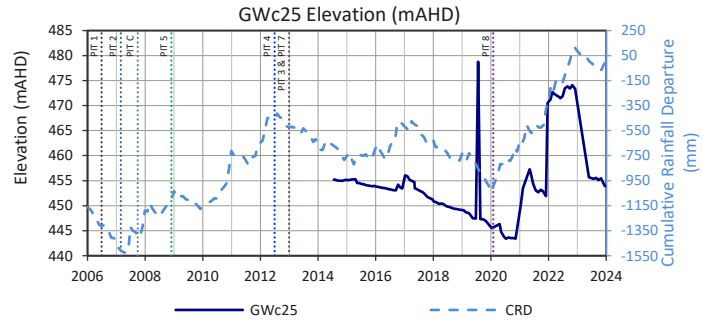
Gwc20
No Data Available for Molybdenum mg/L

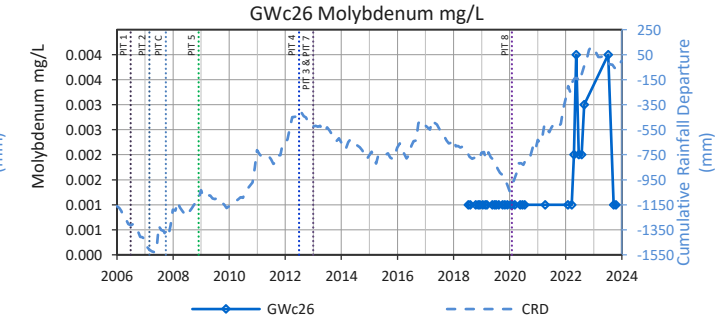
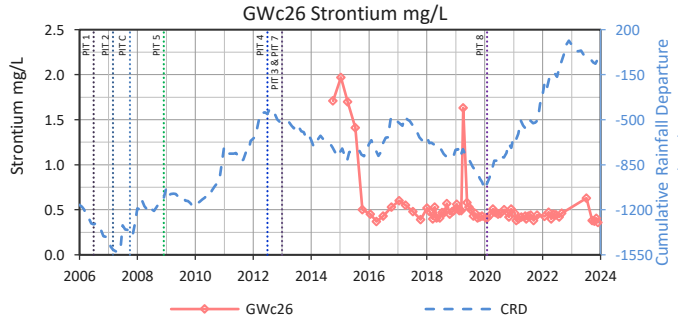
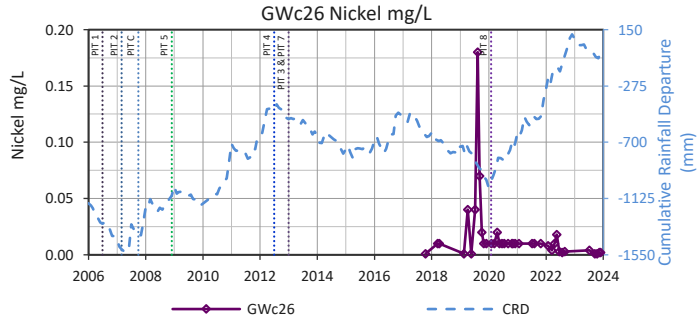
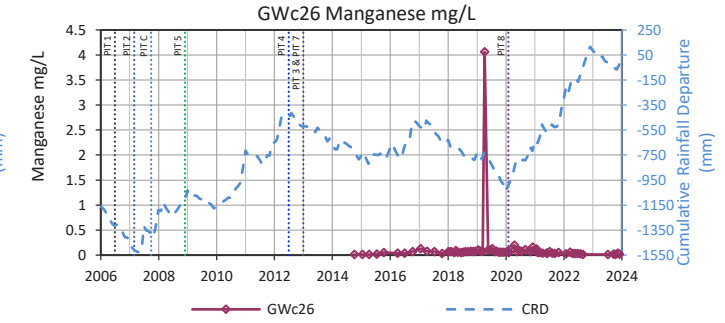
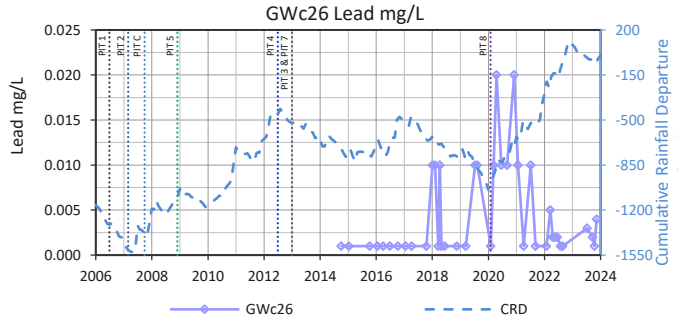
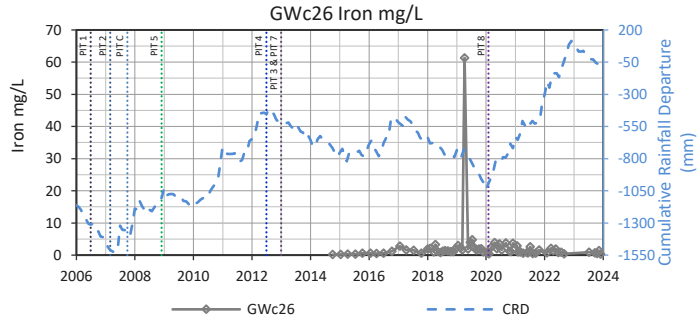
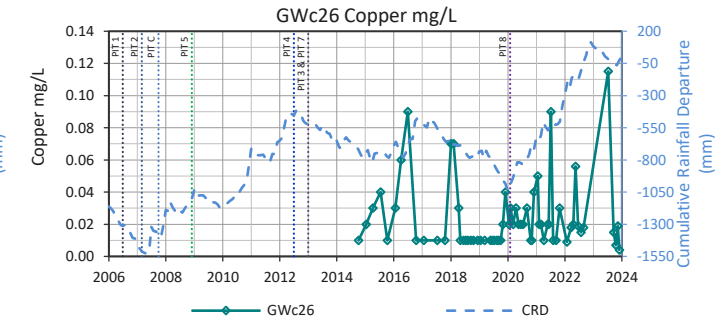
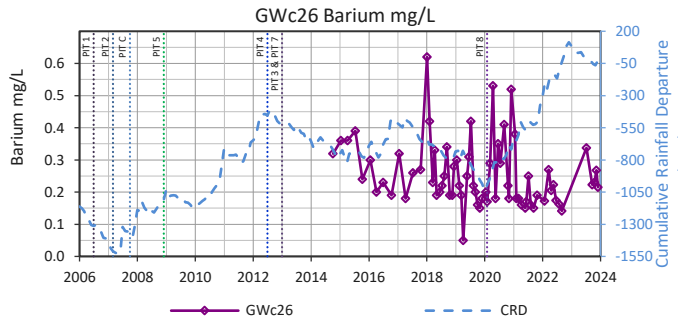
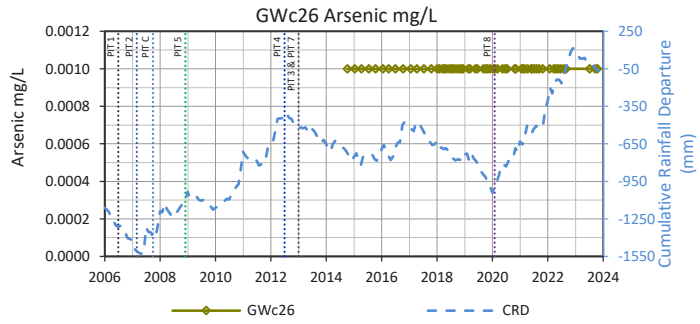
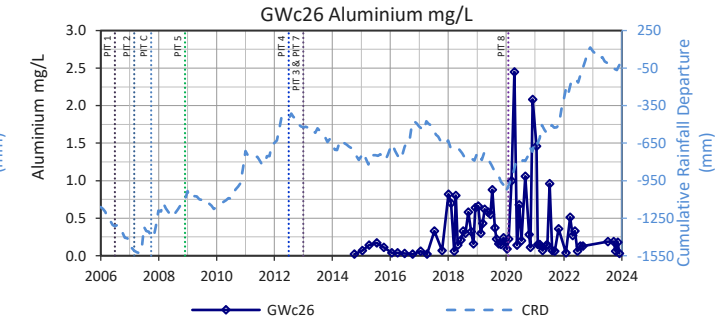
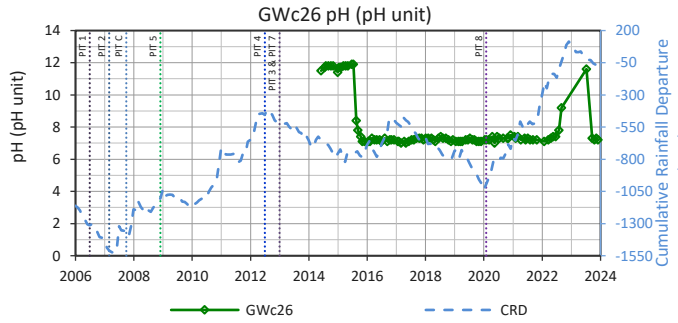
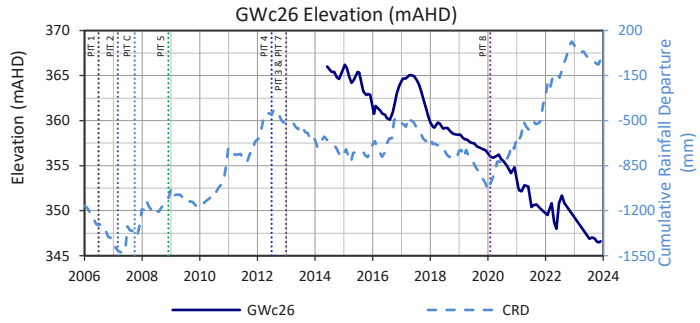


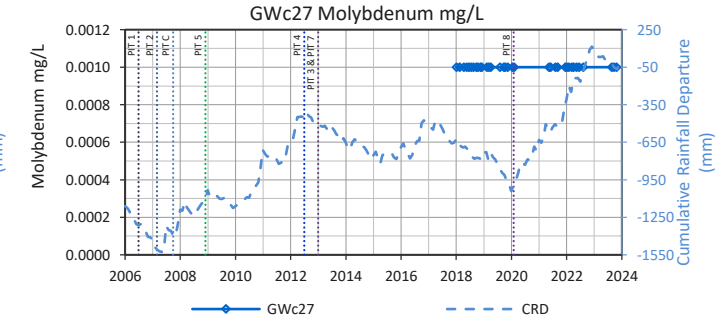
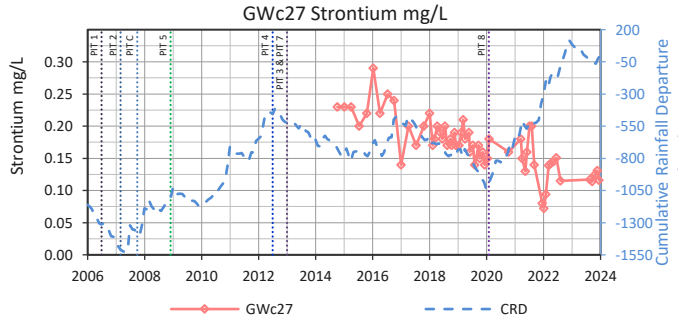
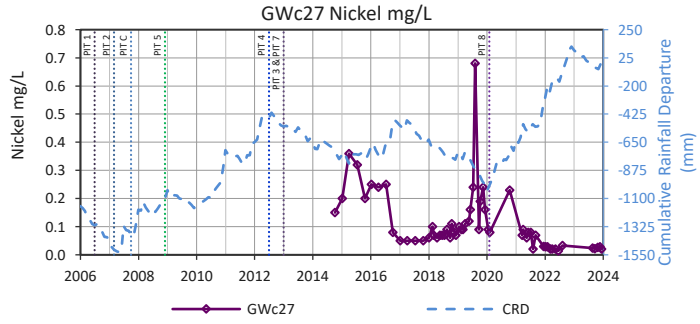
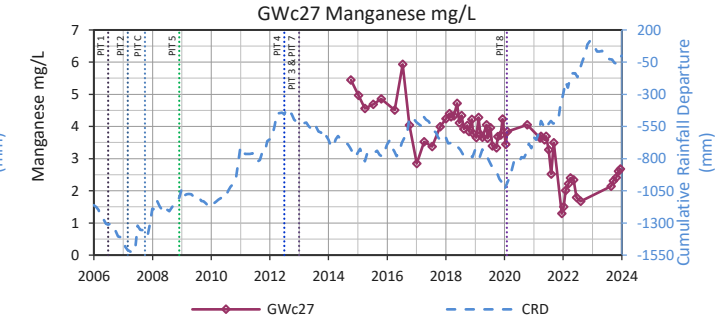
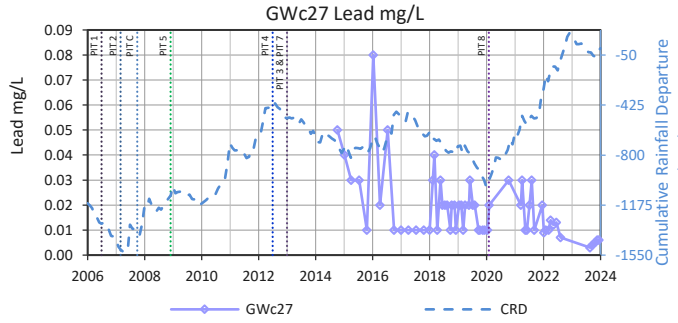
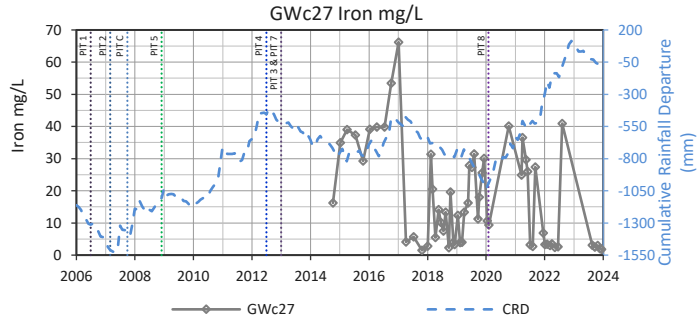
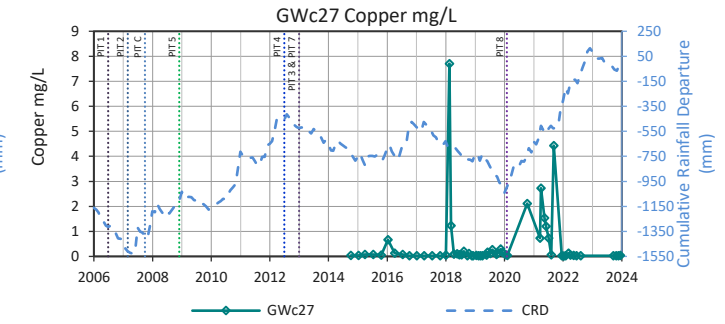
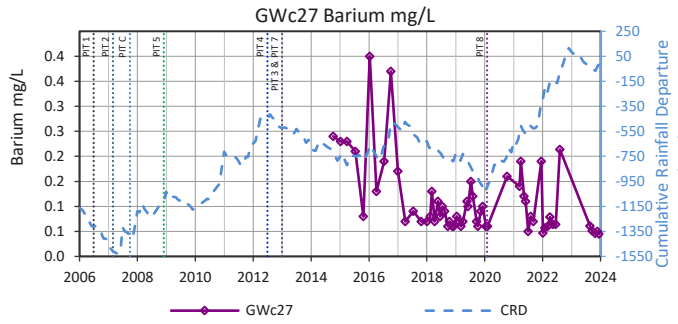
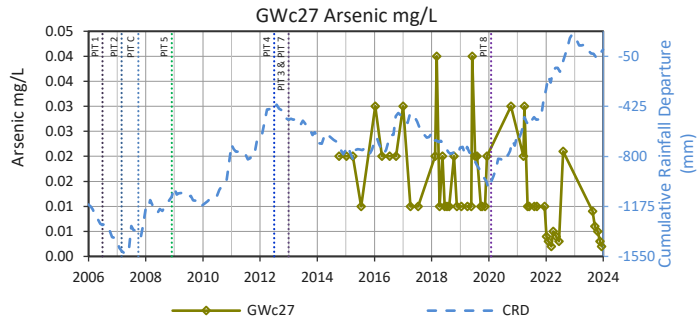
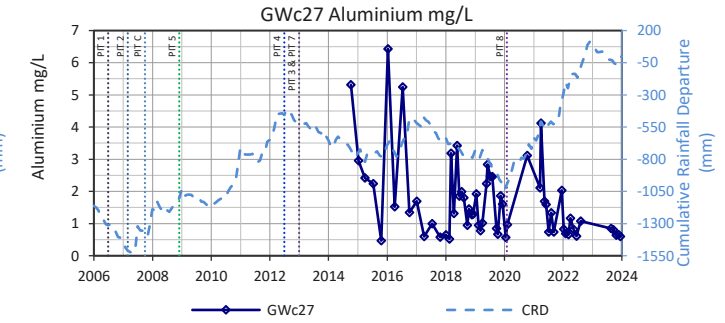
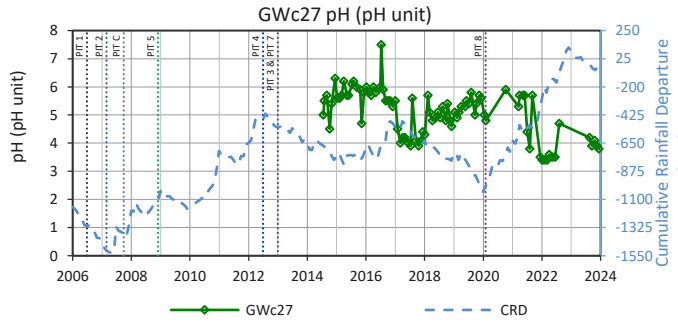
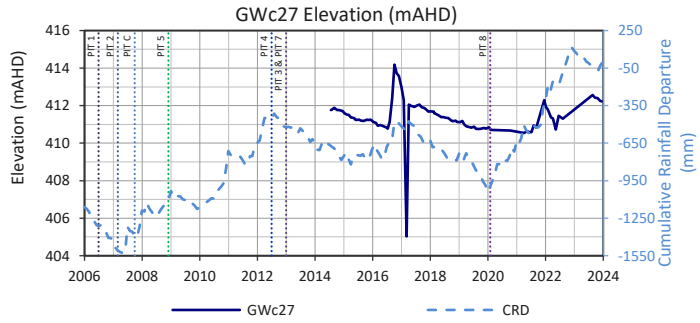
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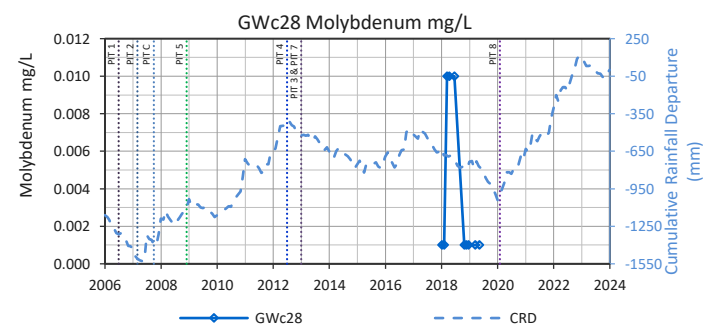
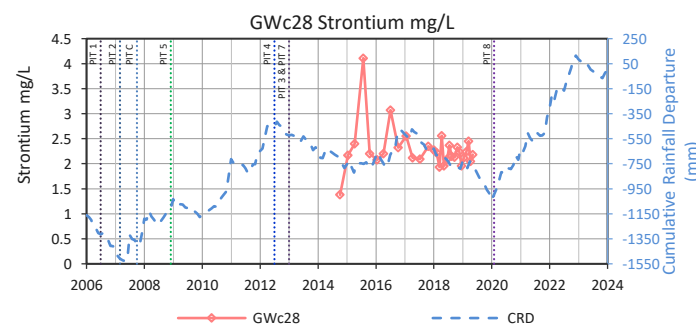
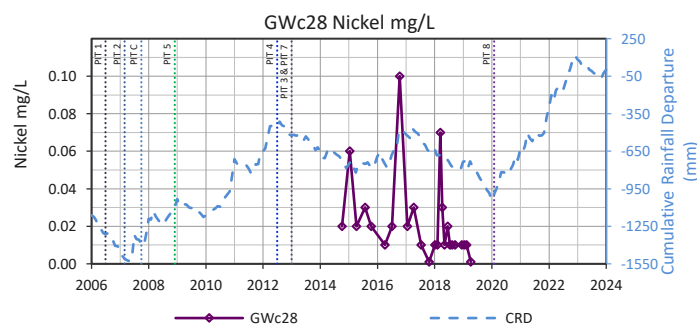
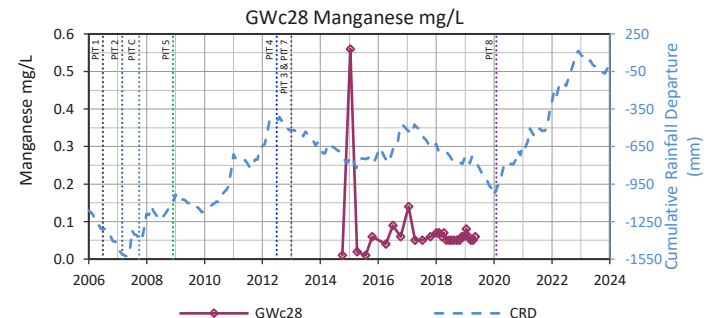
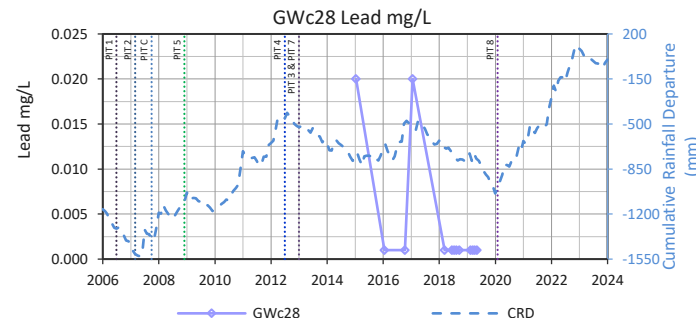
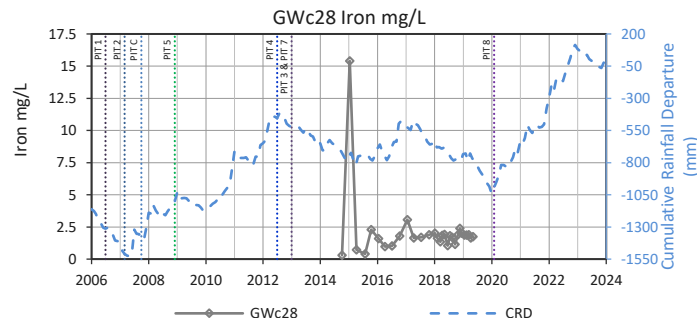
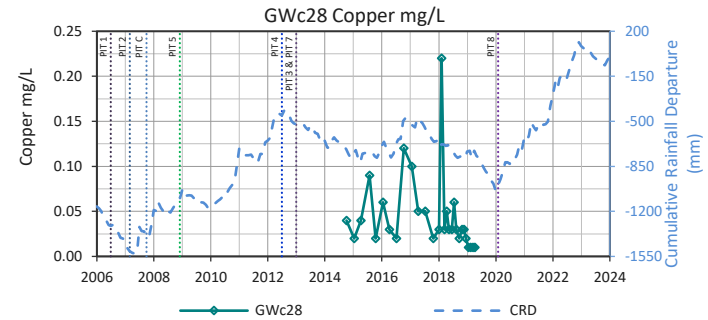
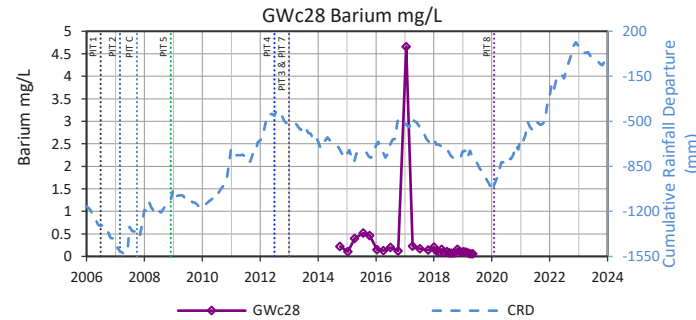
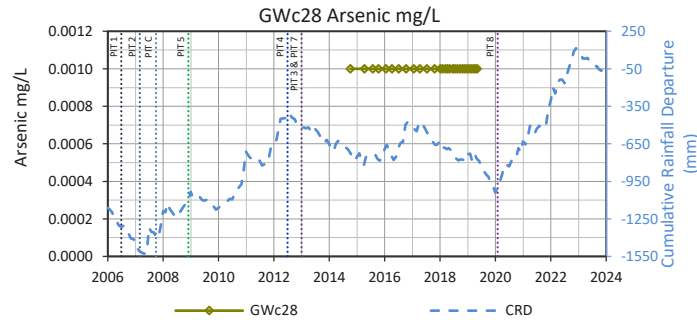
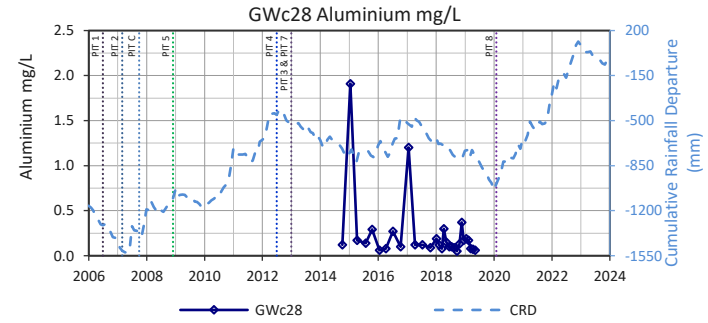
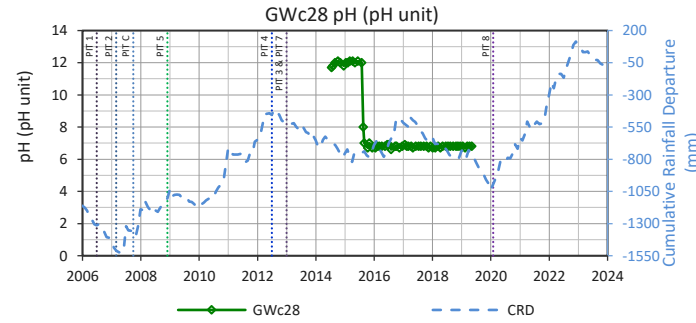
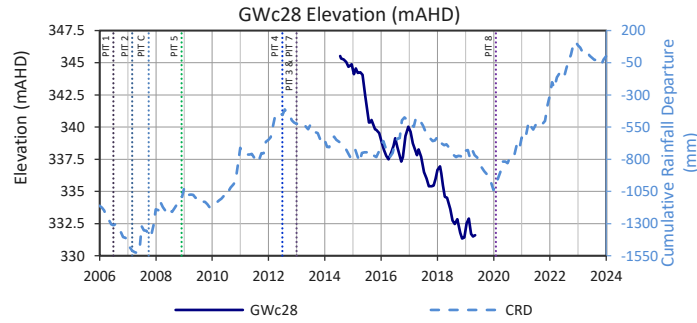
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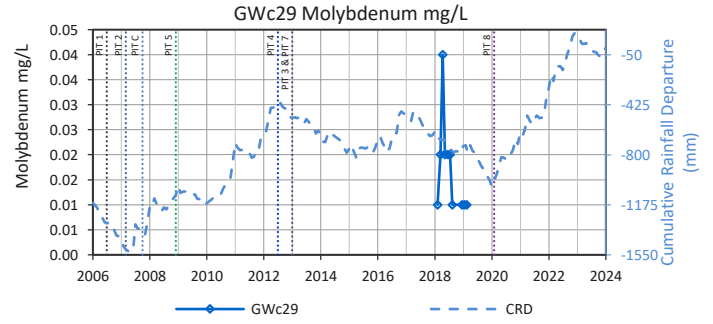
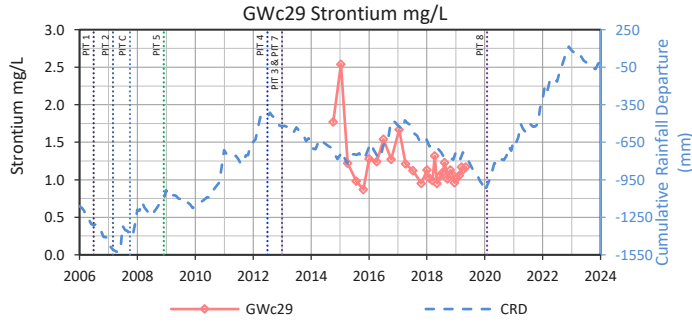
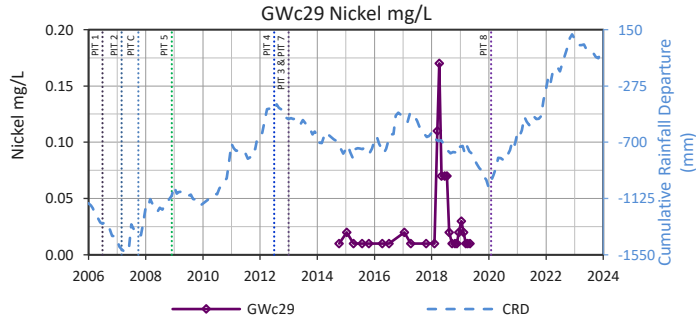
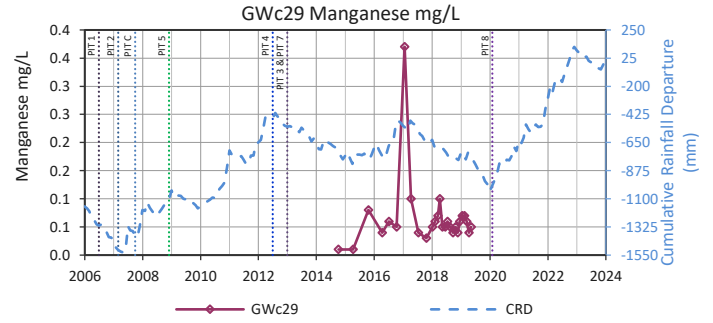
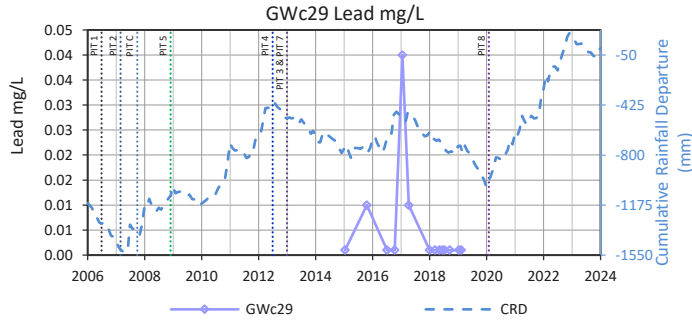
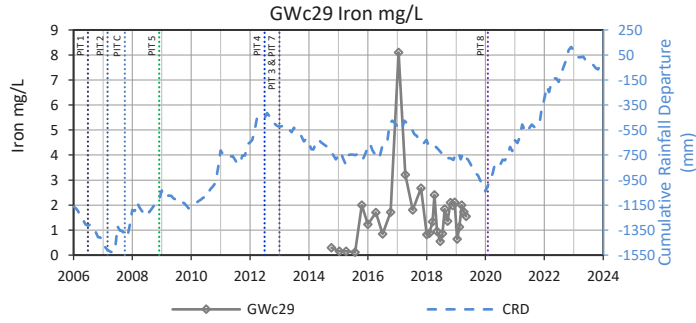
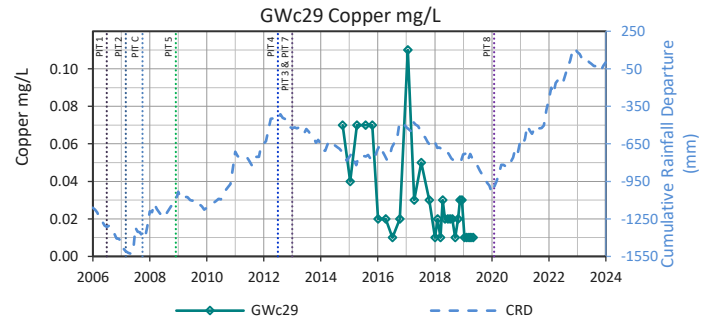
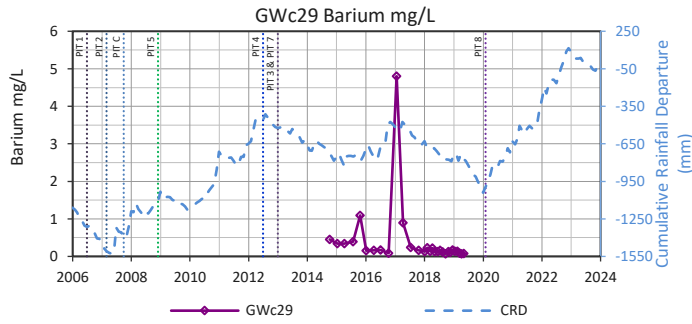
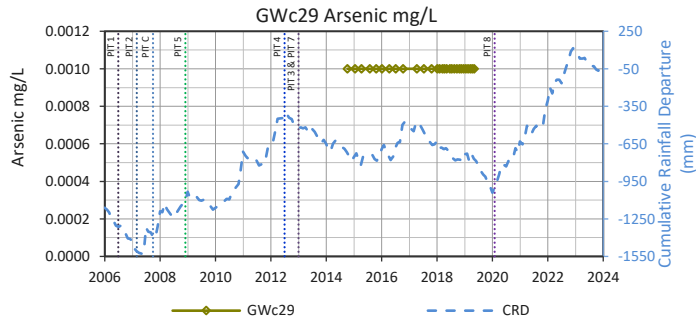
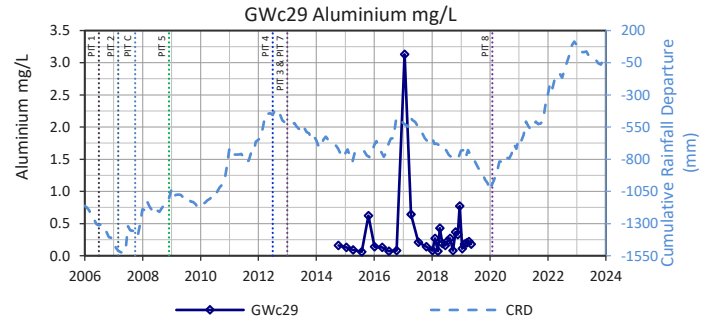
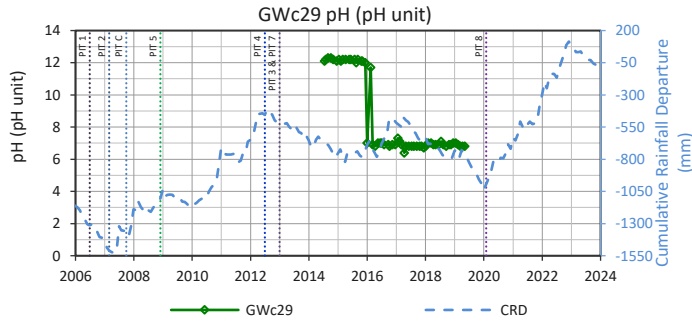
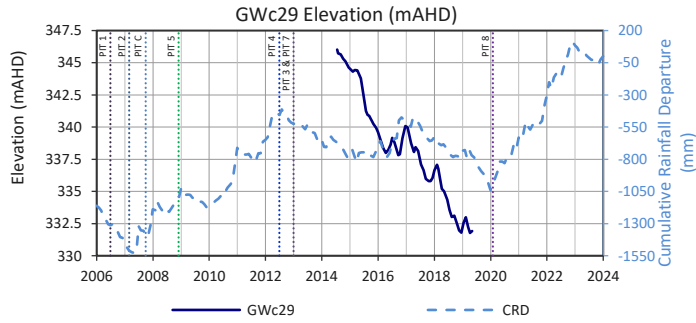


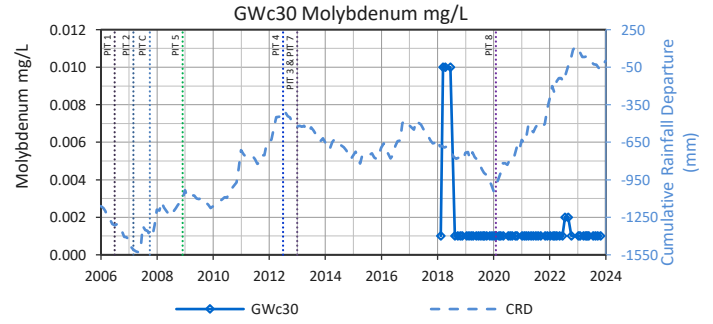
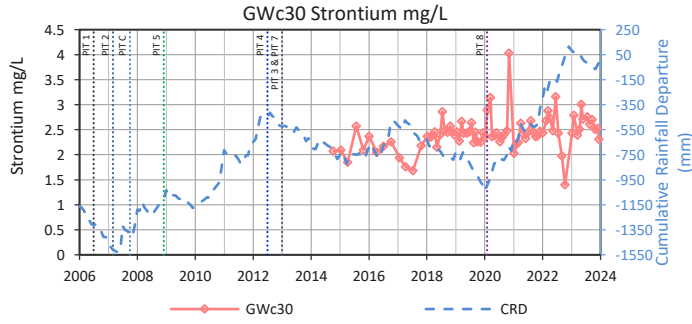
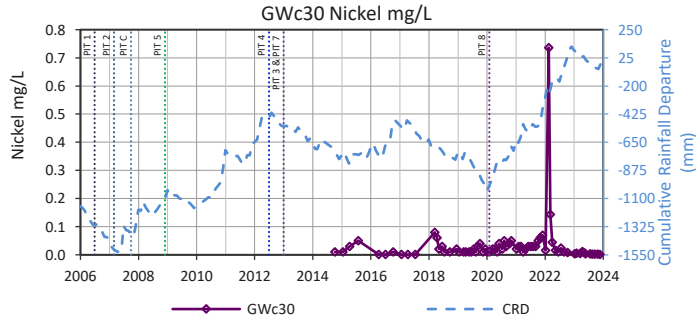
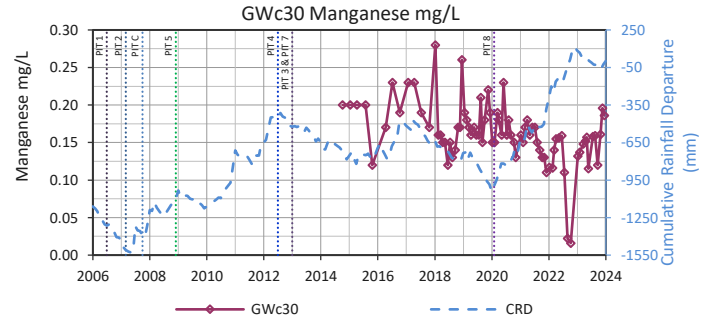
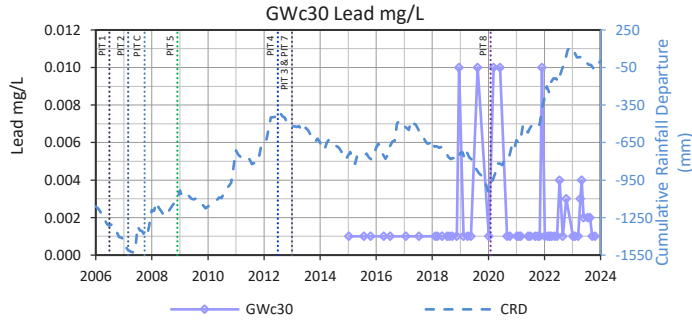
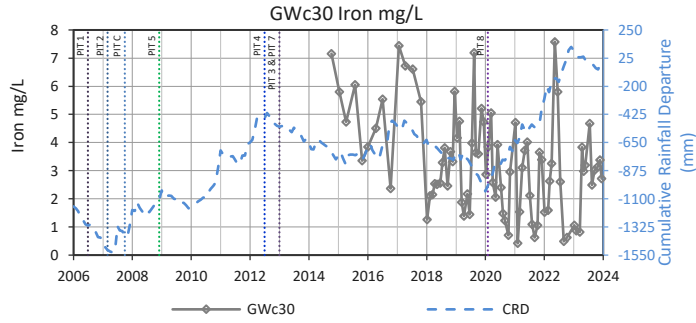
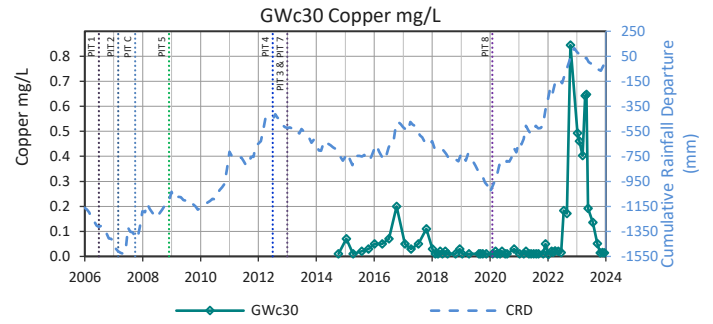
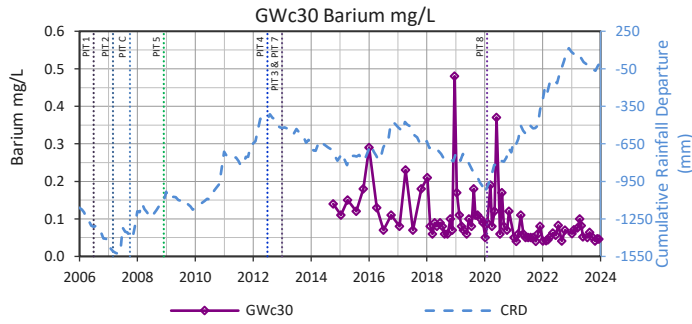
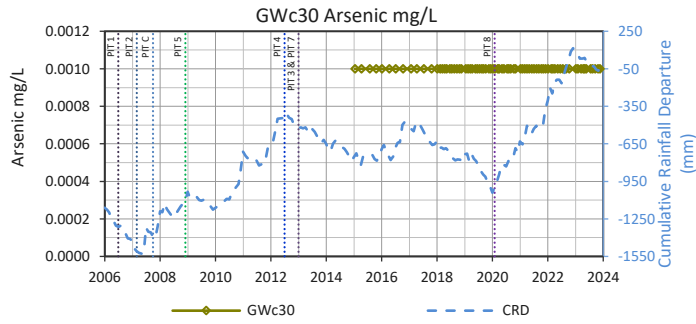
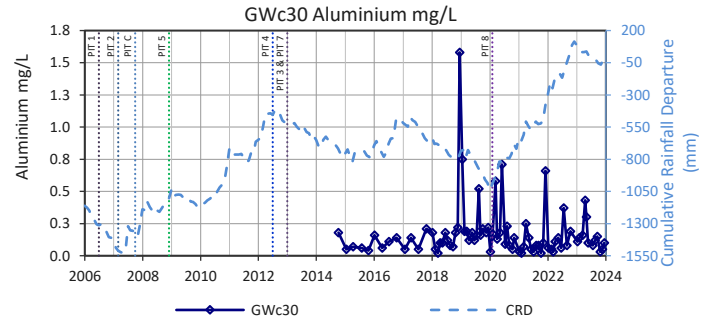
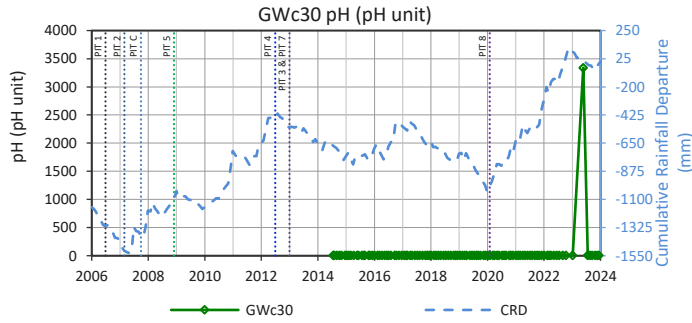
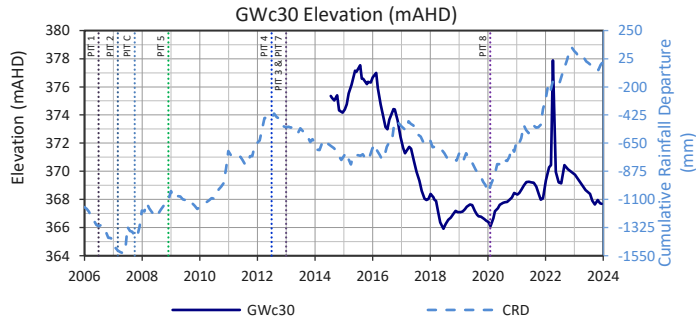


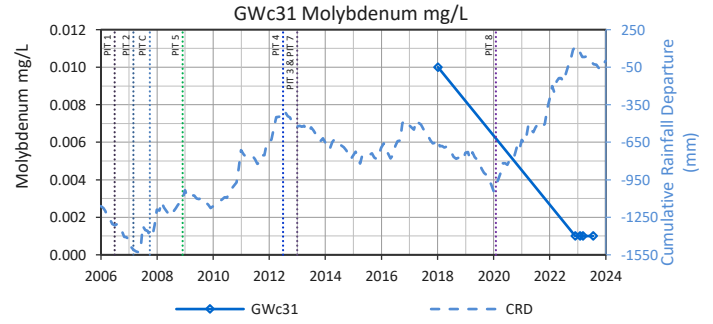
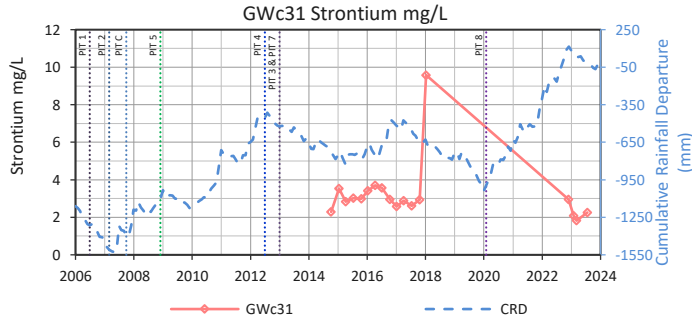
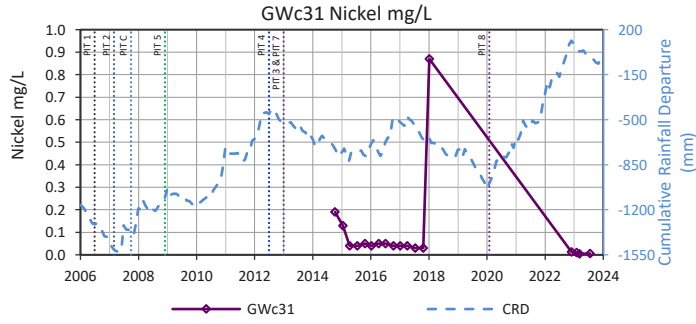
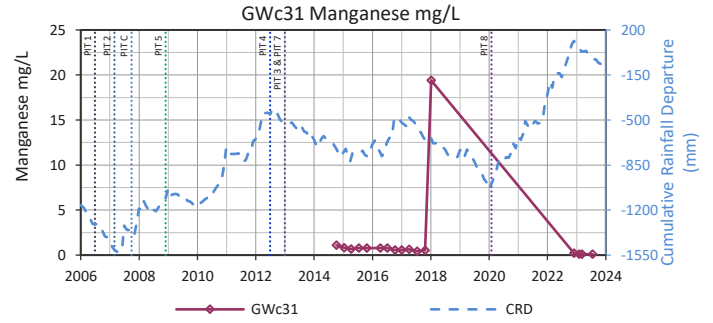
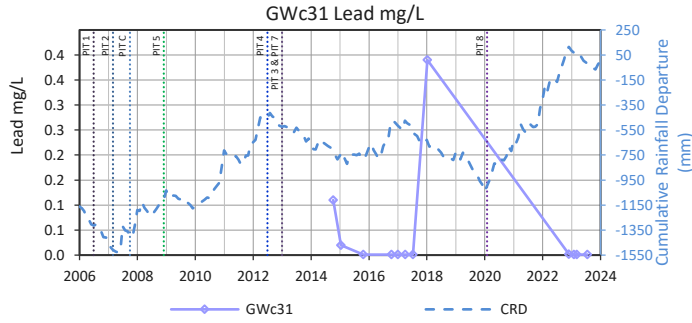
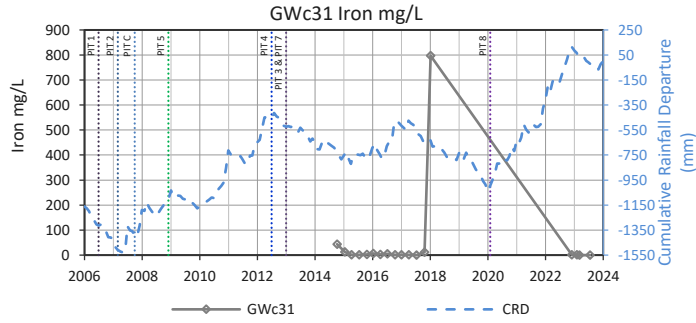
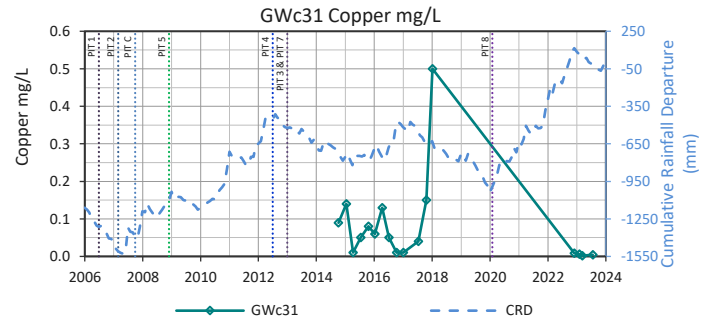
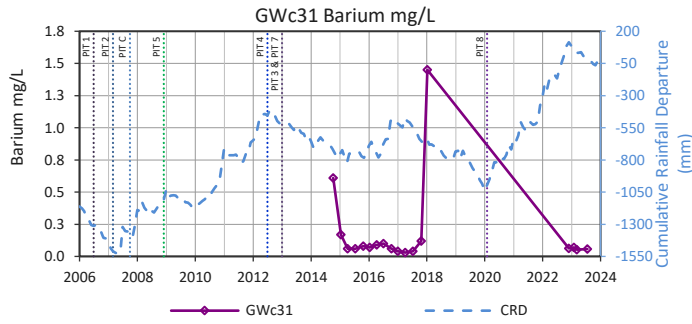
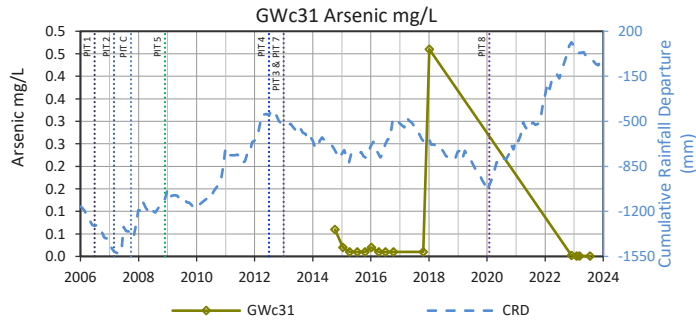
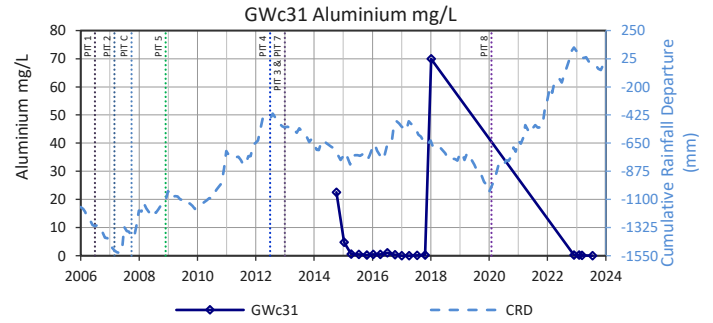
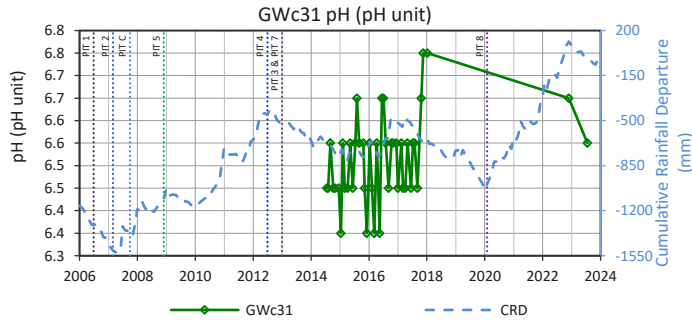
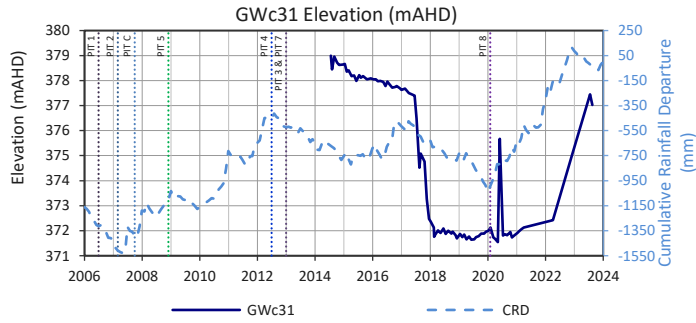


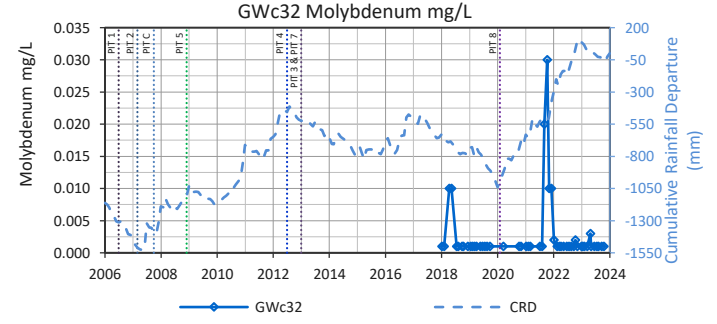
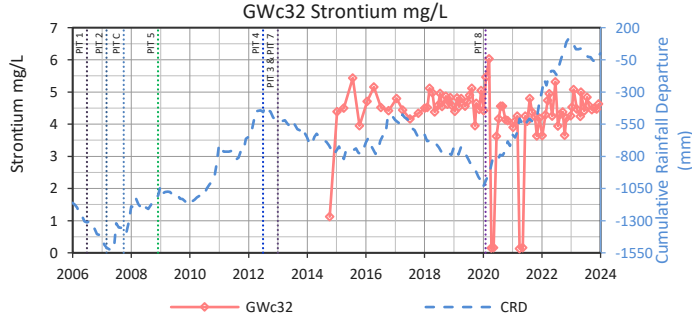
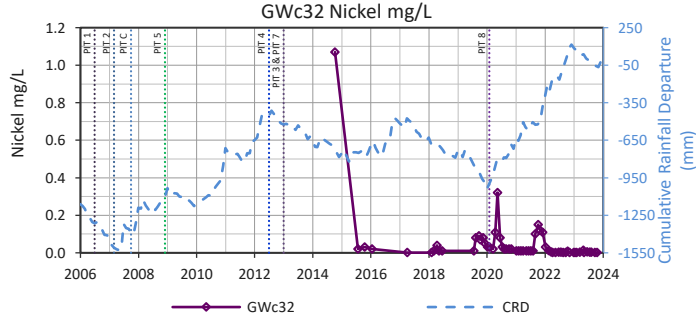
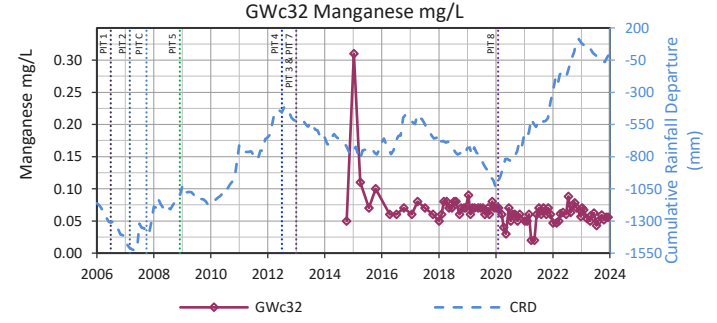
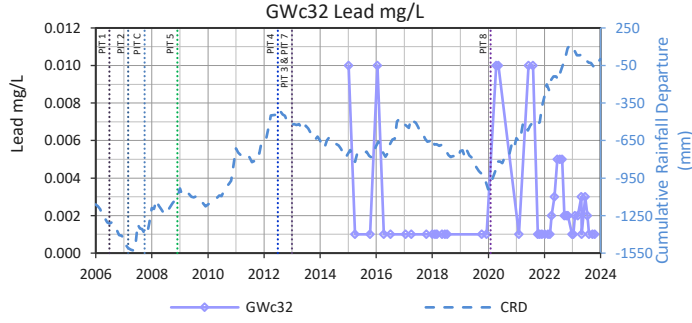
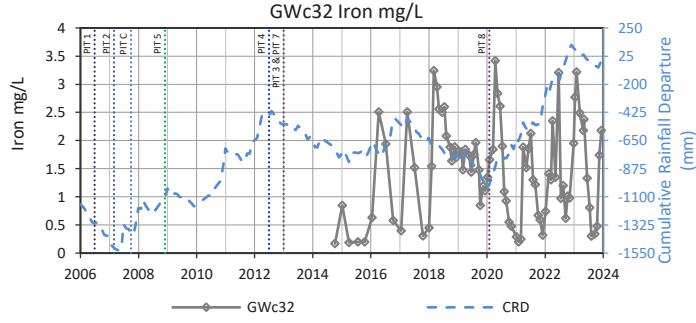
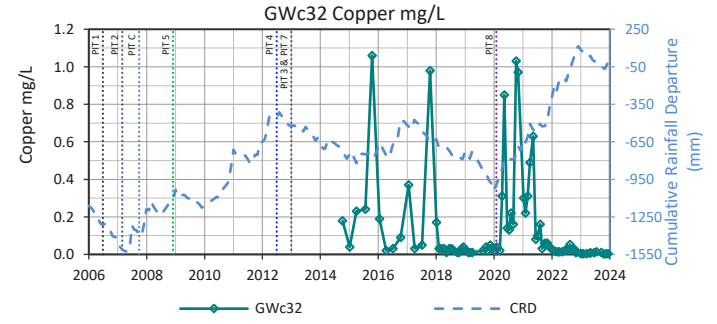
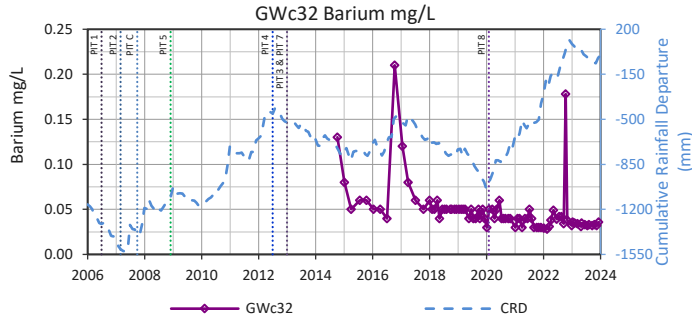
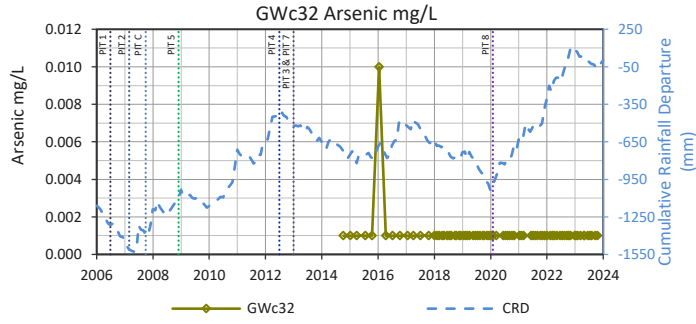
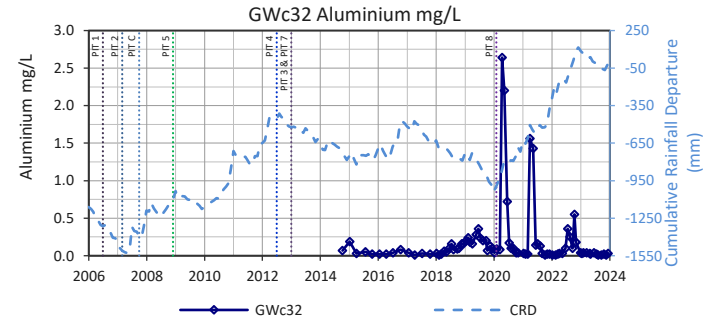
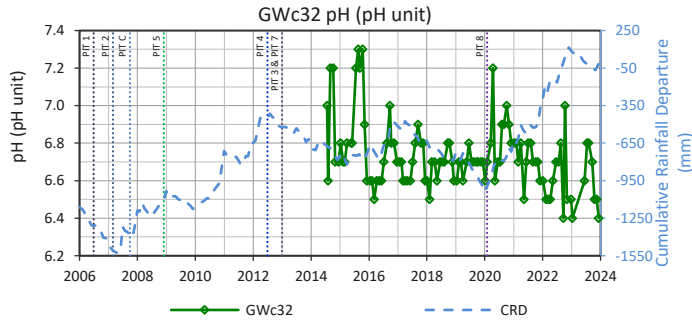
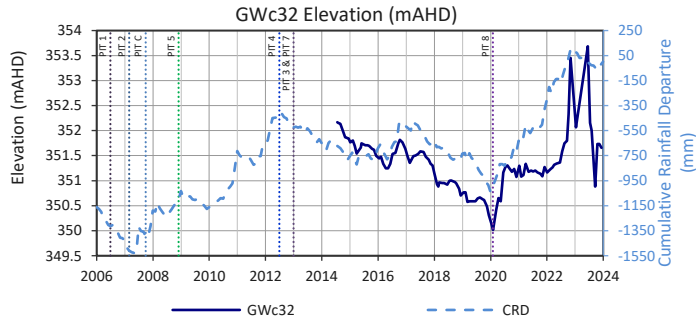


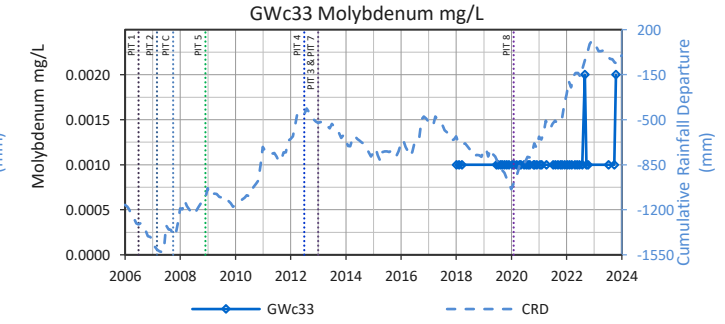
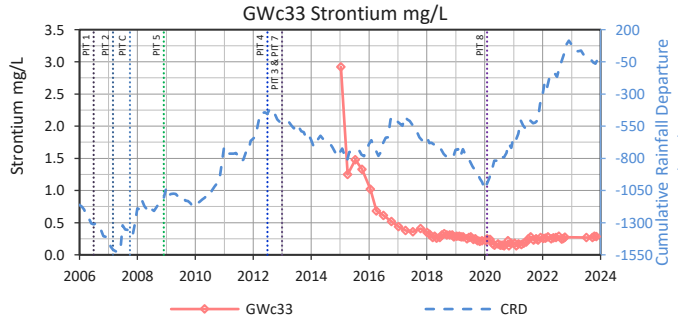
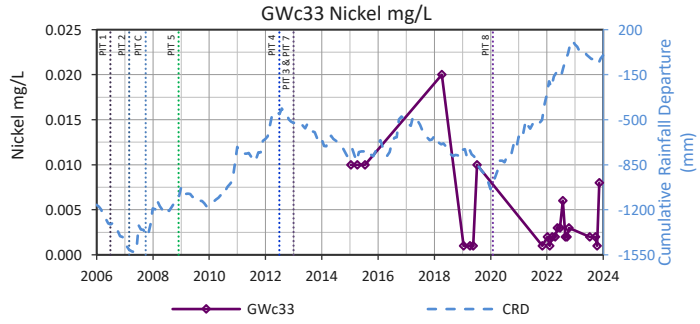
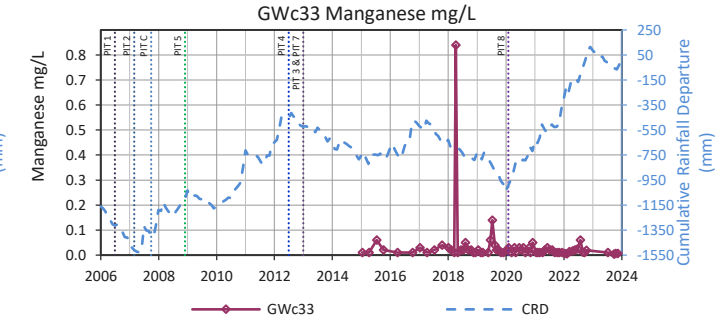
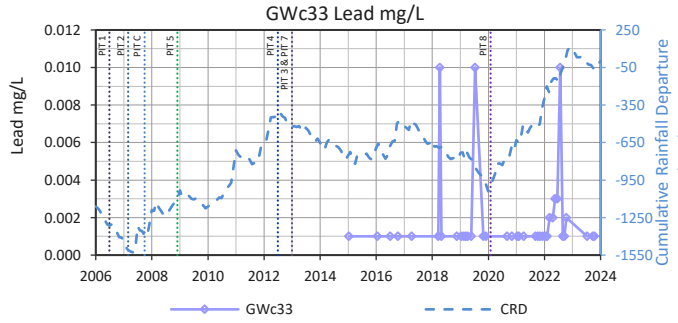
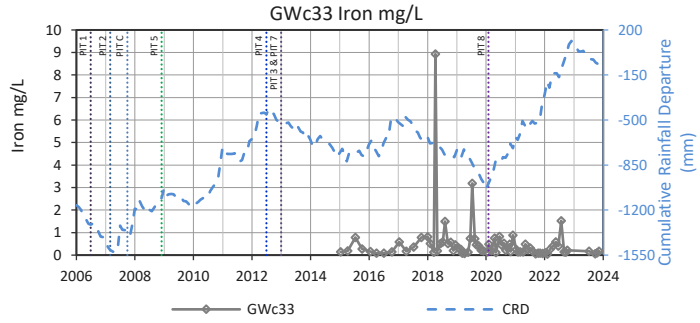
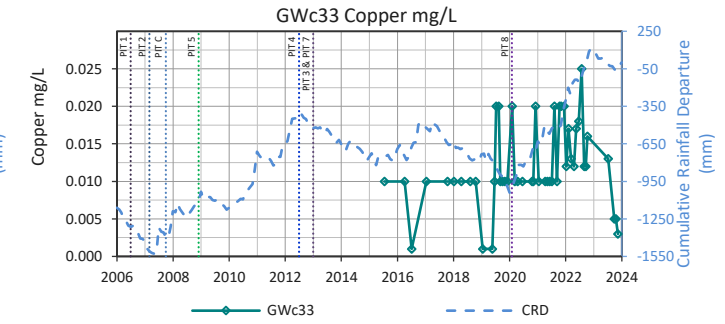
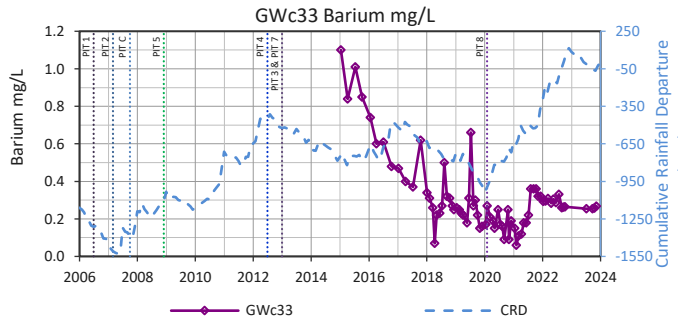
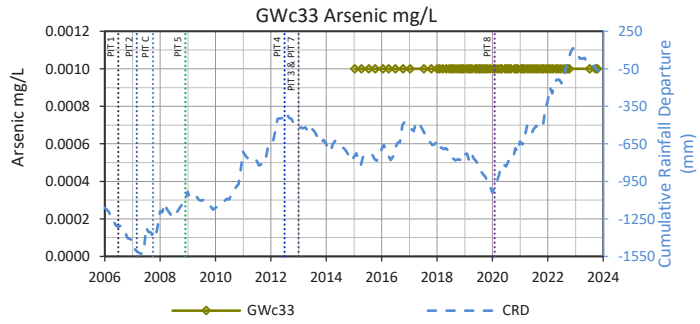
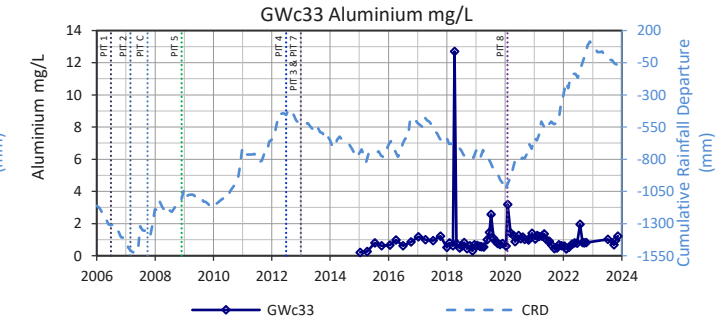
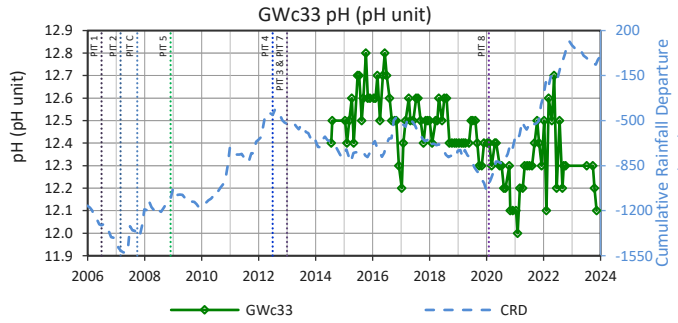
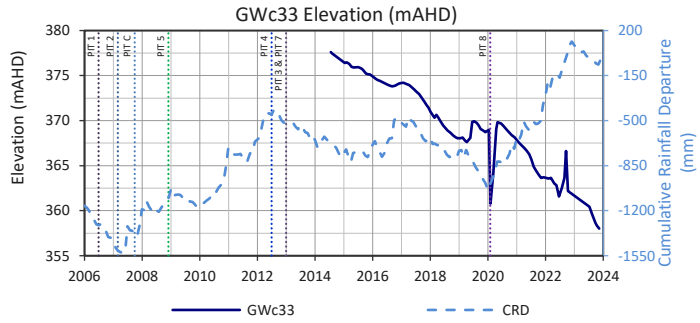


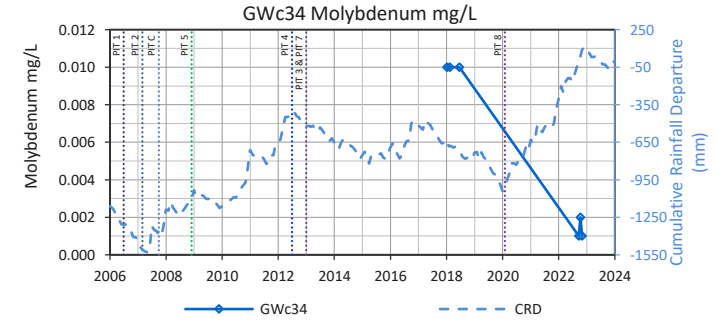
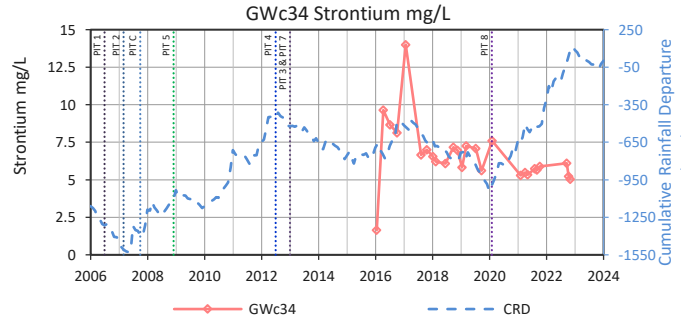
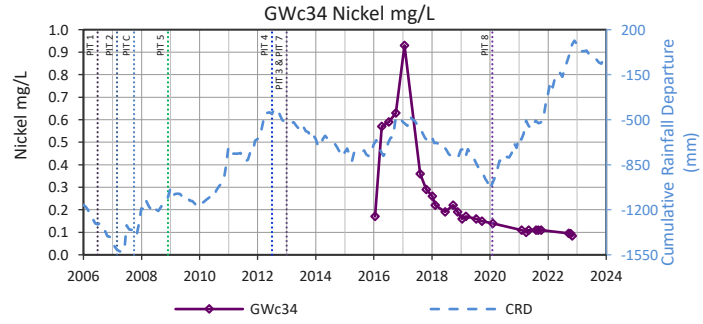
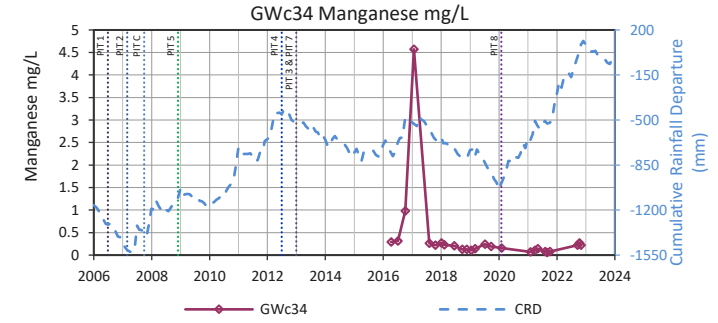
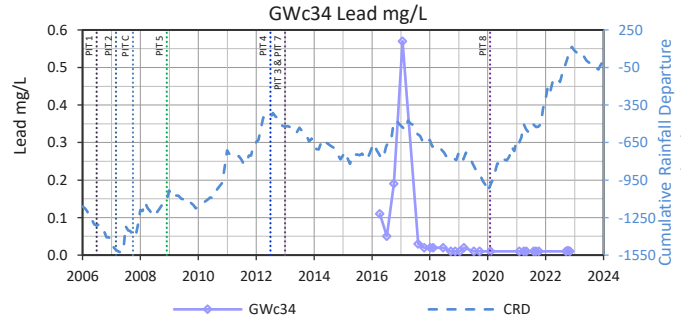
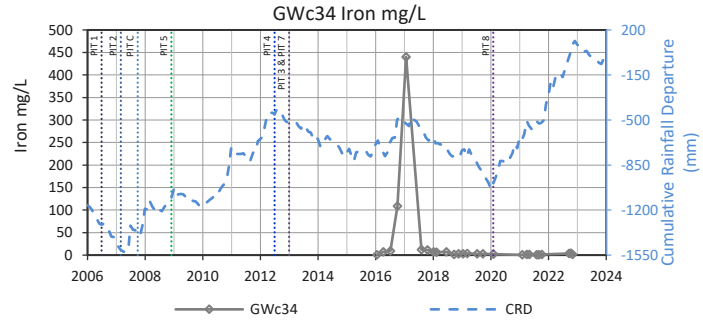
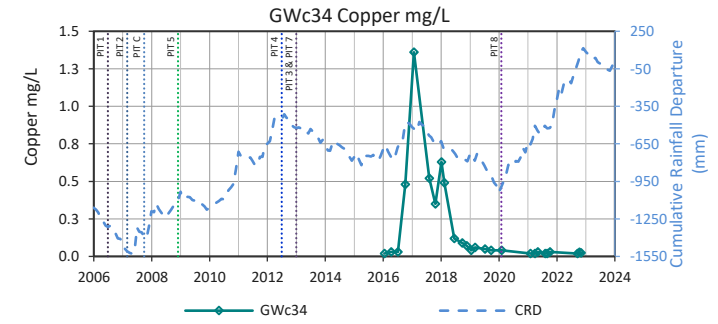
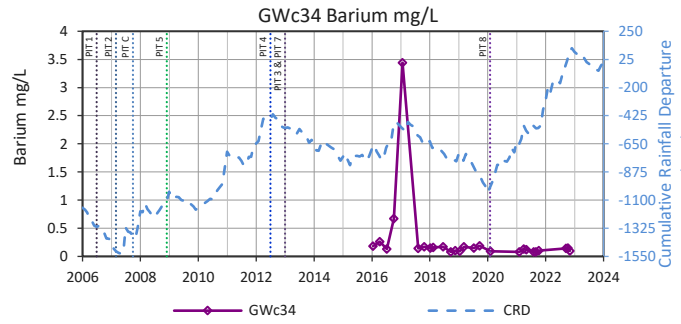
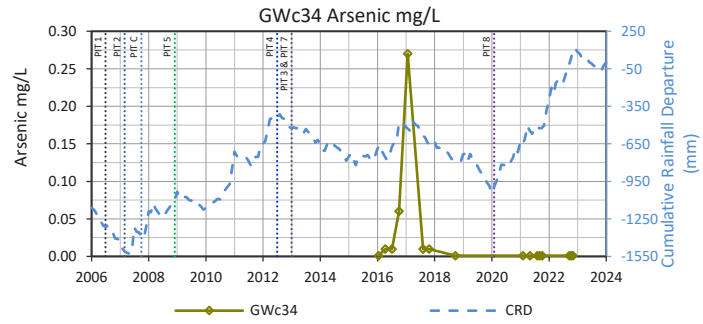
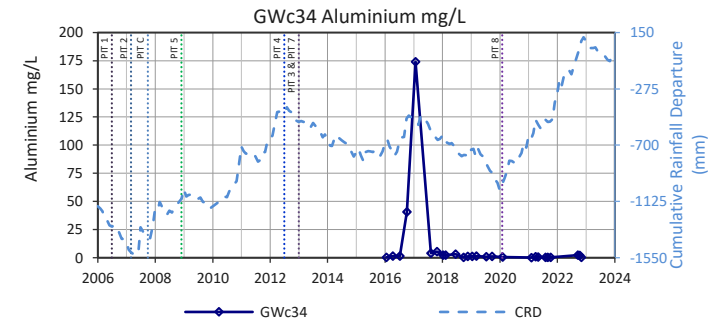
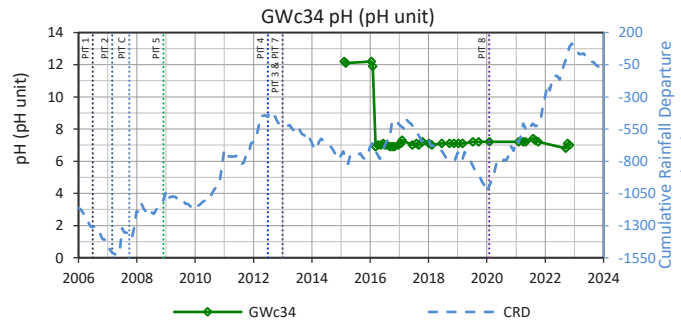
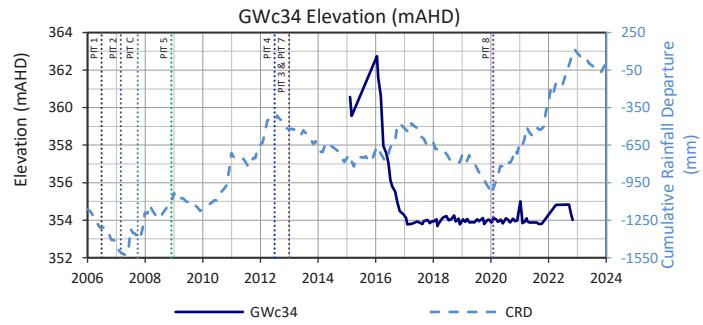


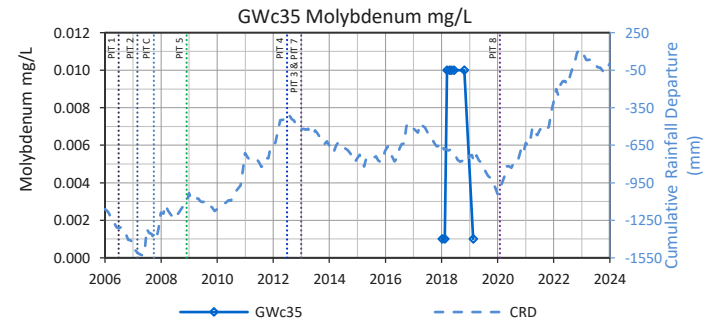
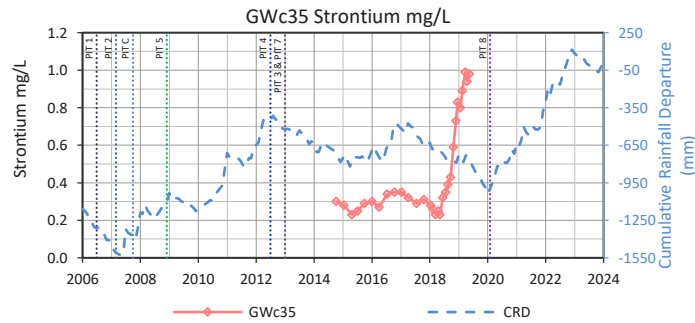
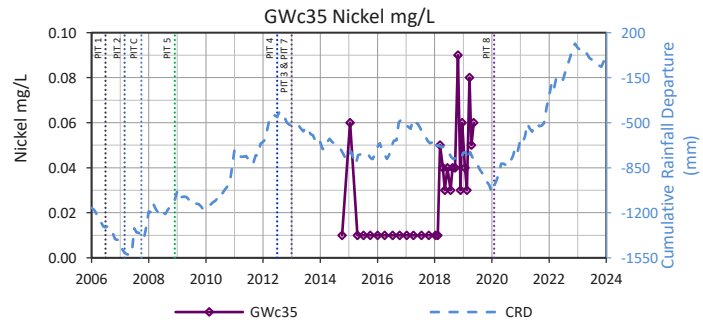
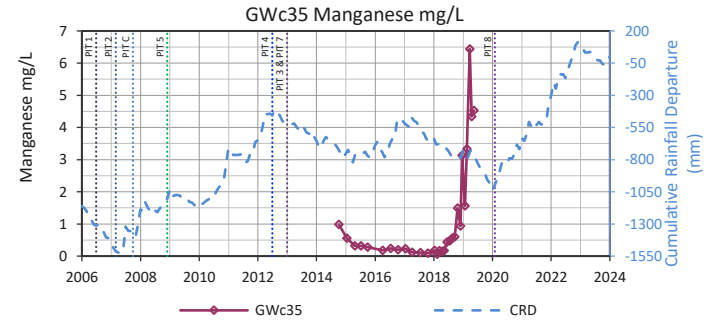
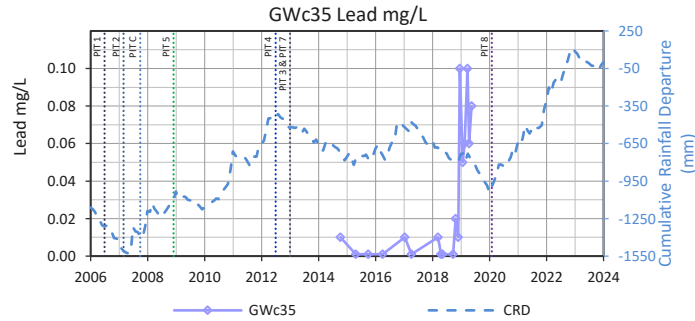
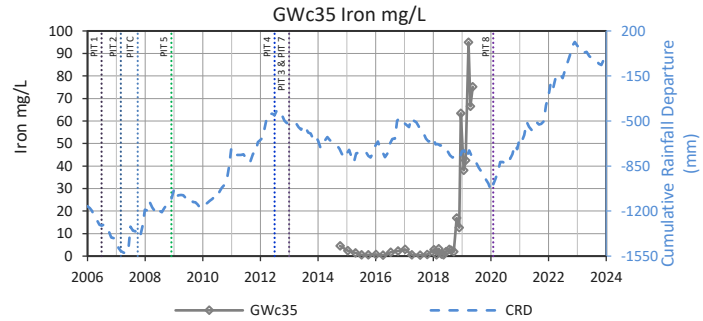
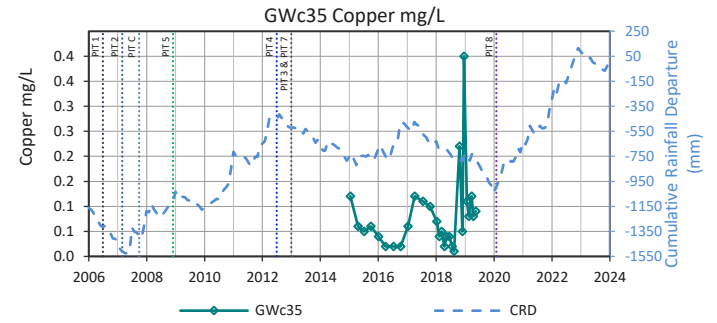
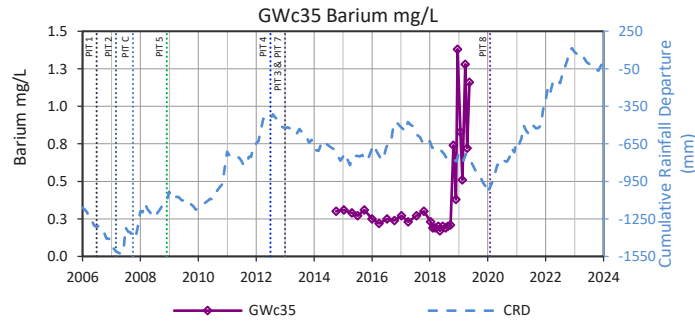
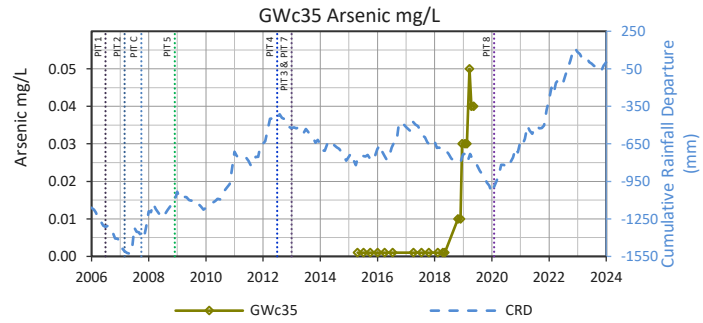
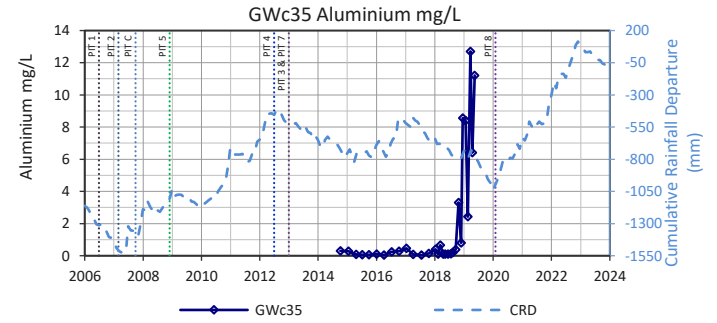
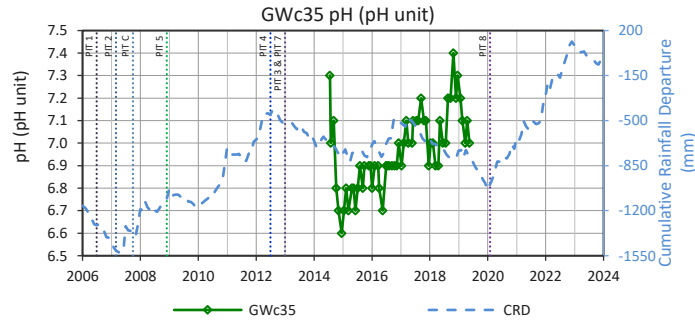
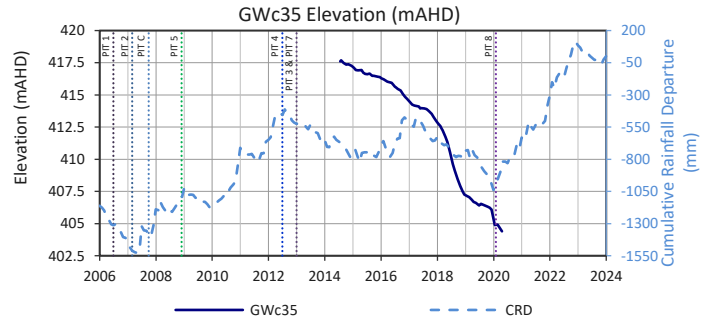




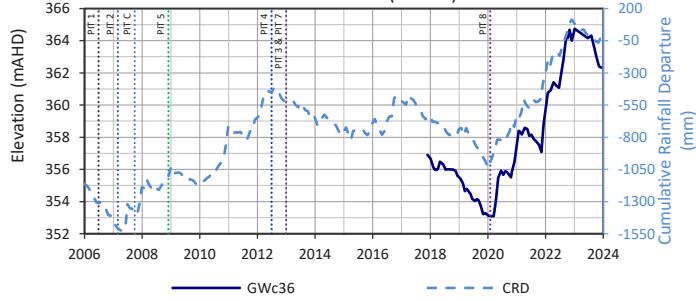




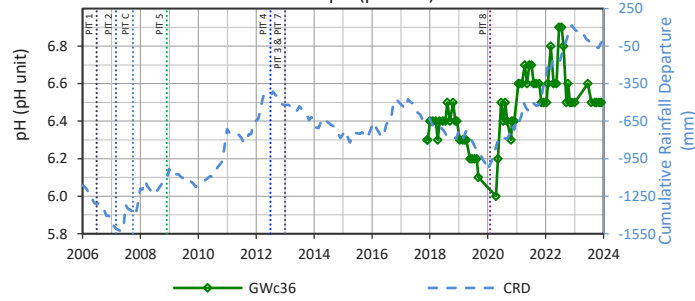




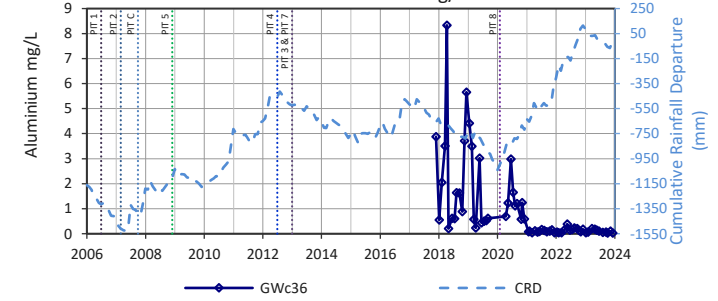
GWc36 Elevation (mAHD)



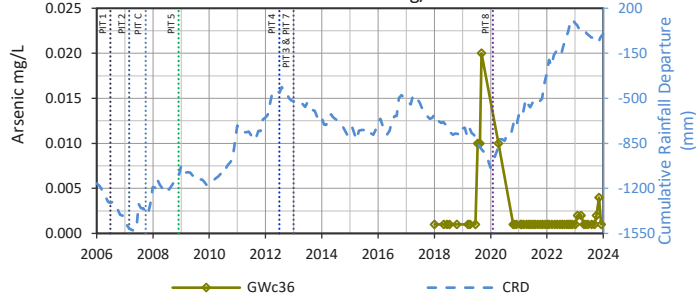
GWc36 pH (pH unit)



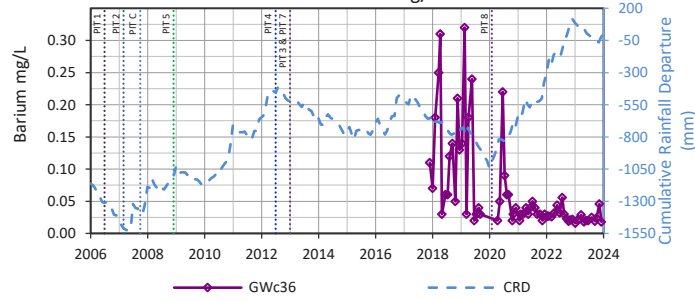
GWc36 Aluminium mg/L



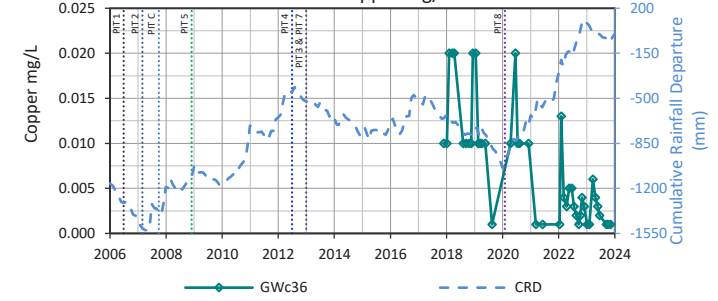
GWc36 Arsenic mg/L



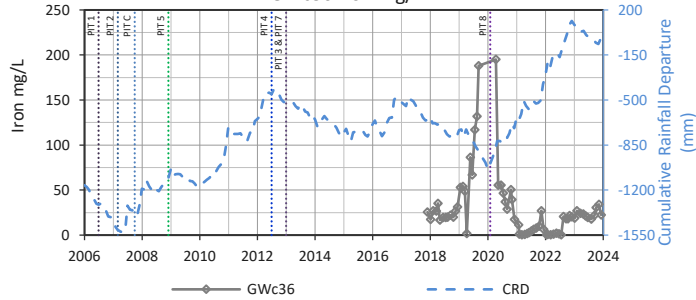
GWc36 Barium mg/L



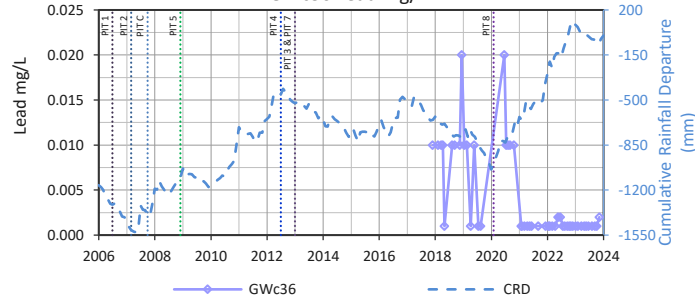
GWc36 Copper mg/L



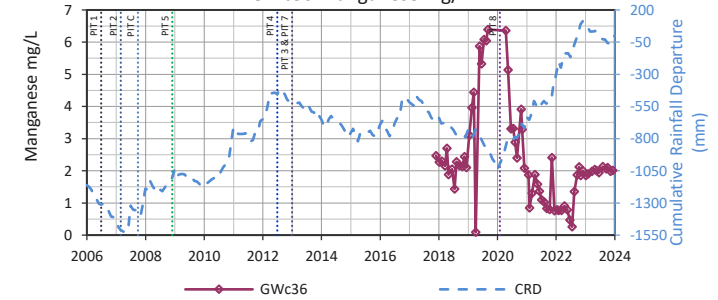
GWc36 Iron mg/L



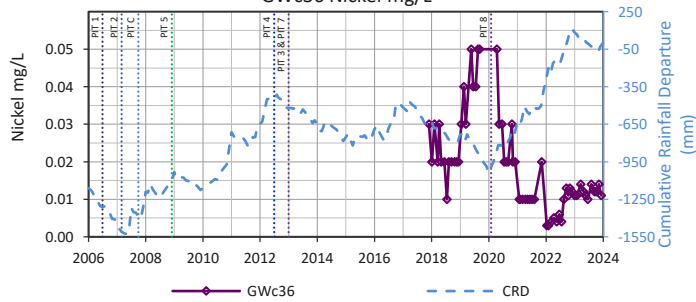
GWc36 Lead mg/L



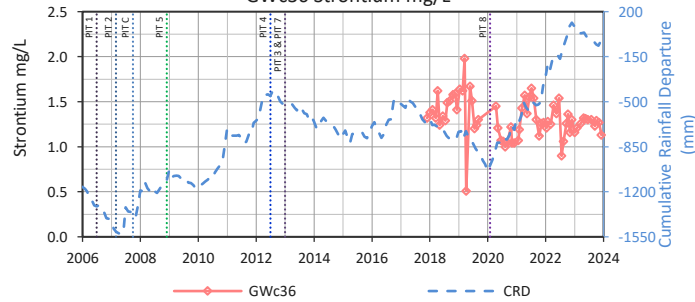
GWc36 Manganese mg/L



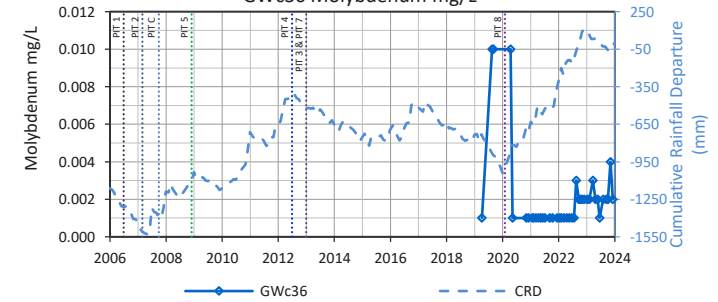
GWc36 Nickel mg/L

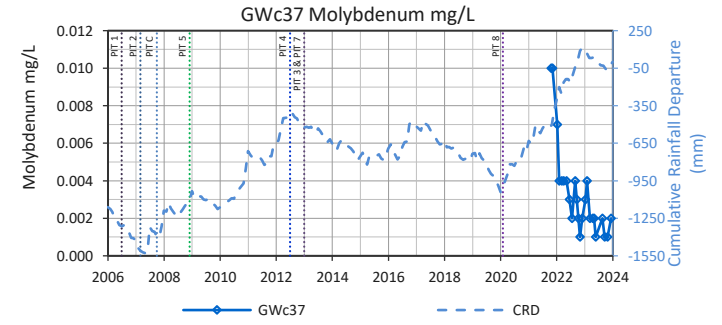
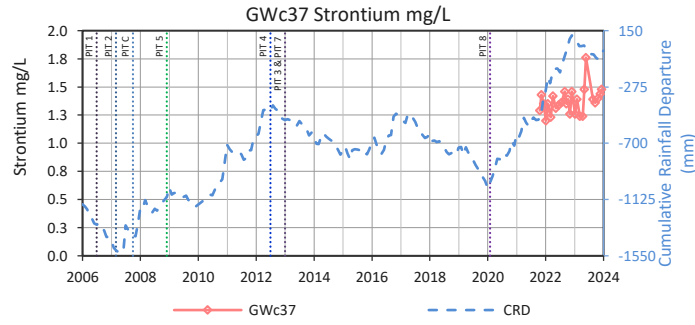
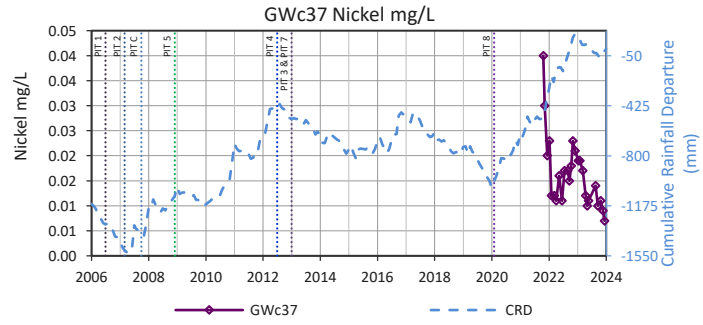
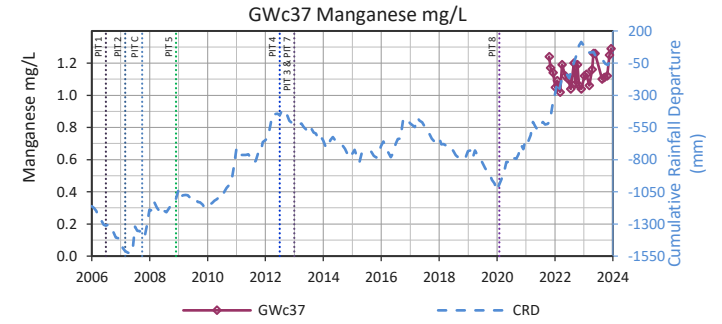
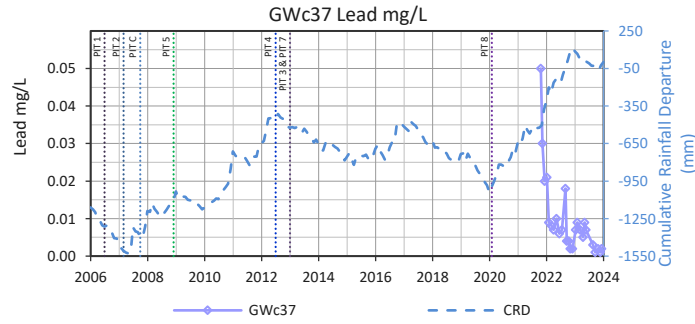
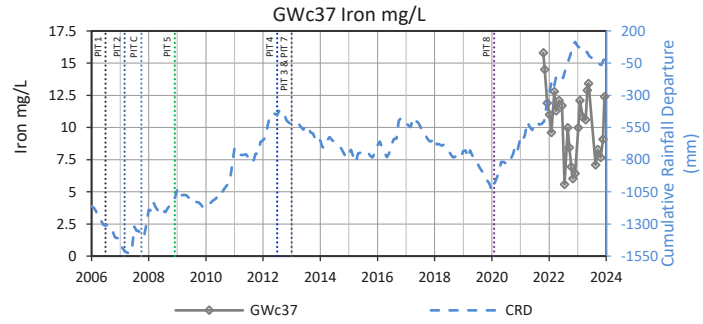
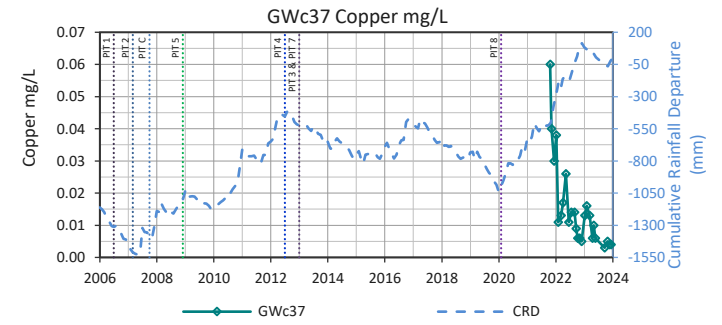
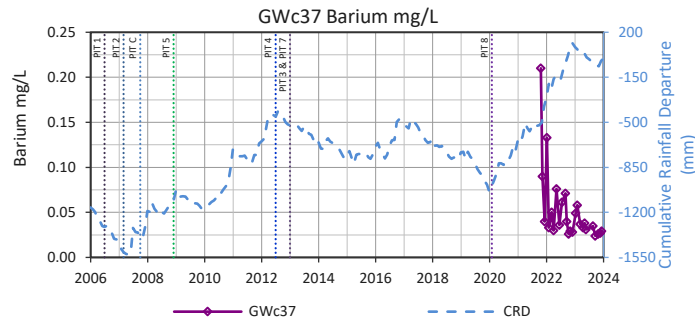
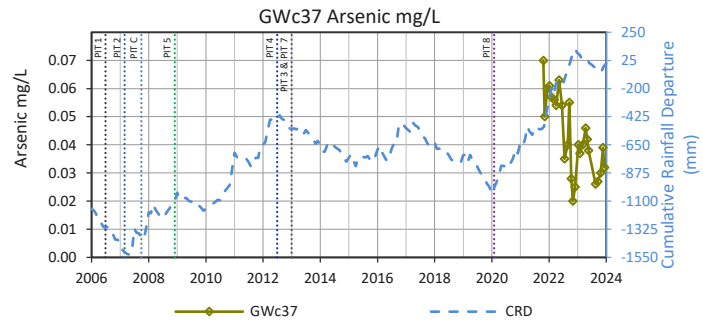
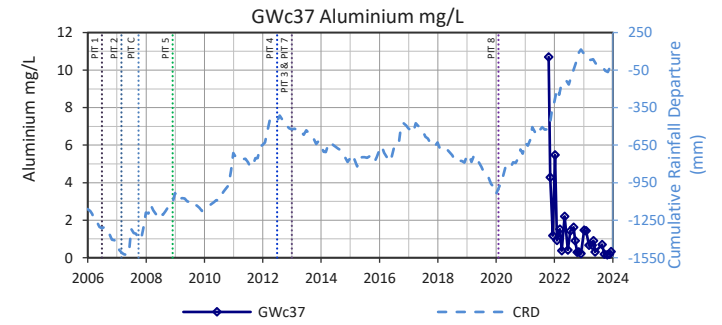
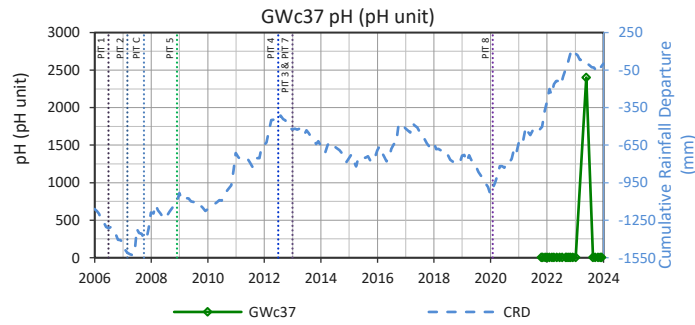
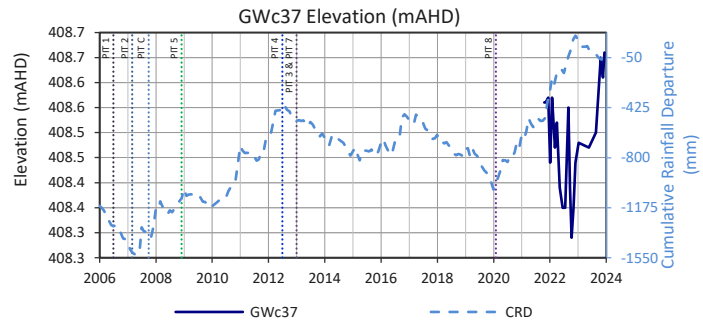


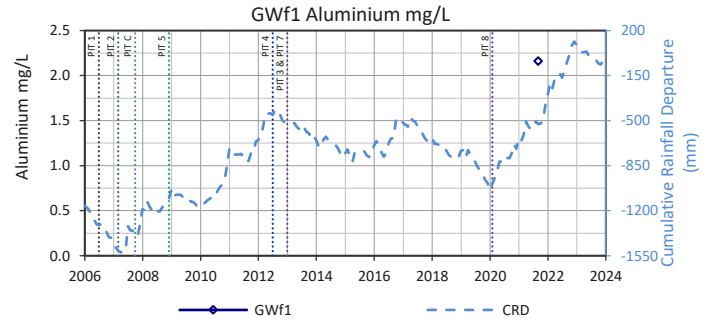
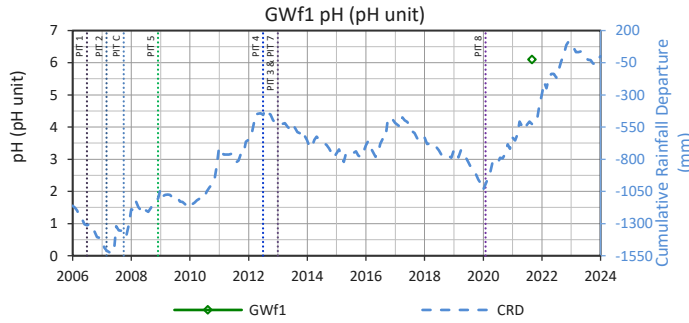
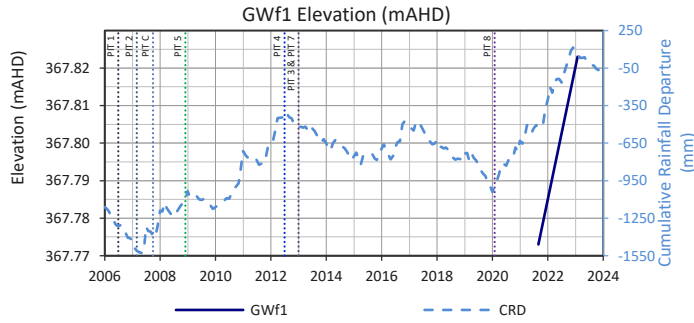
GWc36 Strontium mg/L



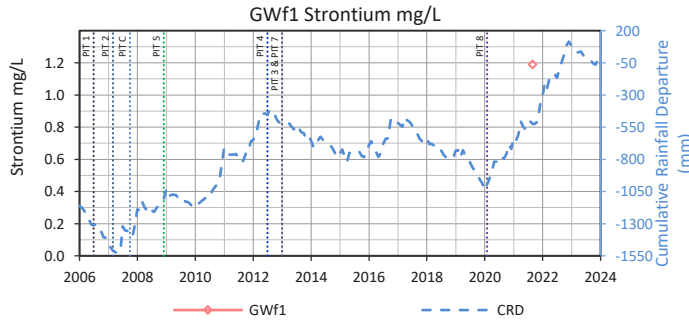
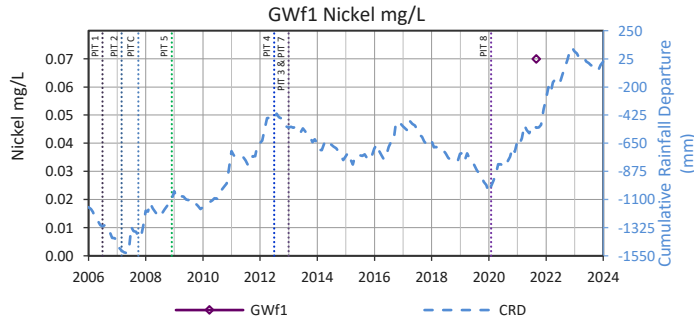
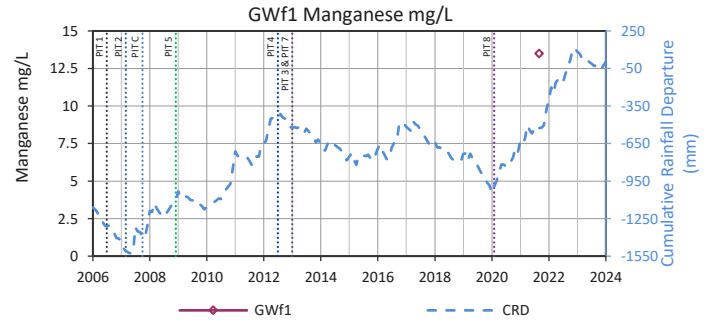
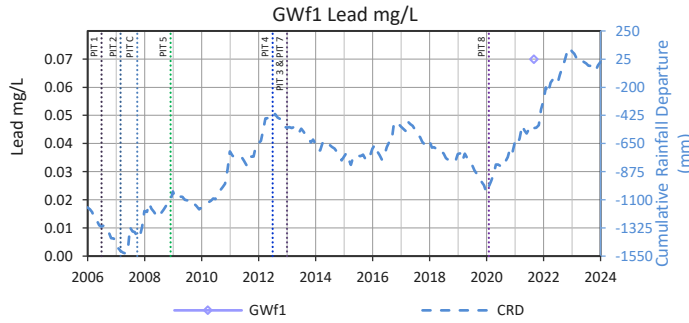
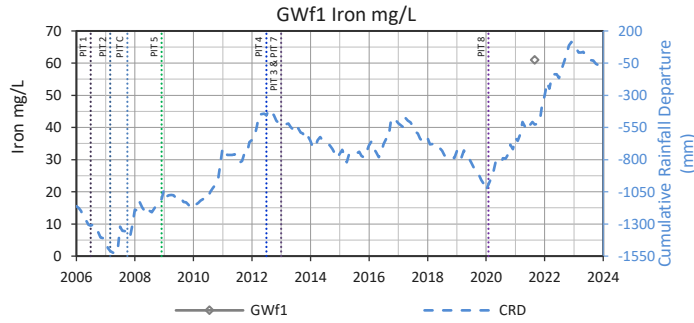
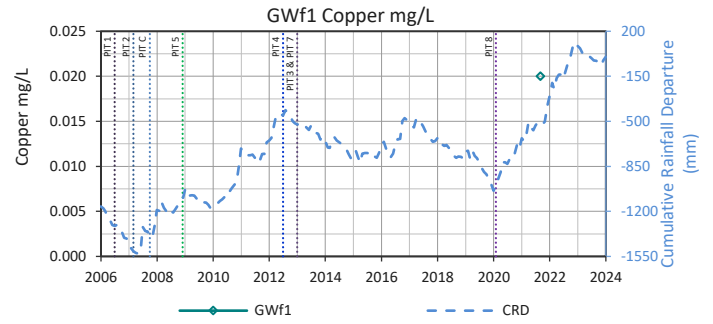
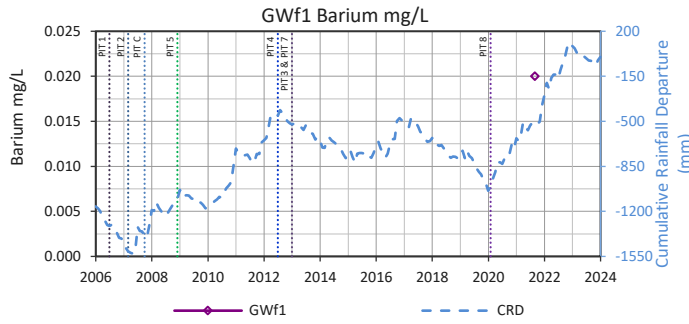
GWc36 Molybdenum mg/L



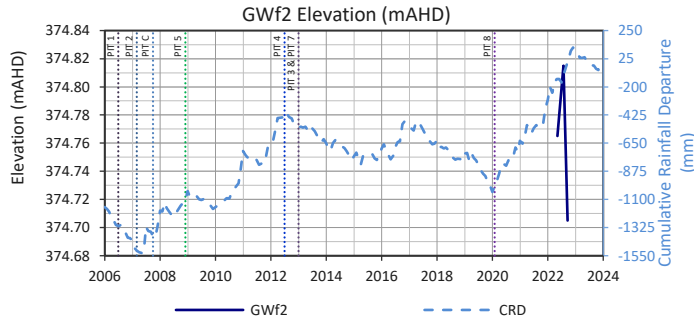




No Data Available for Arsenic mg/L

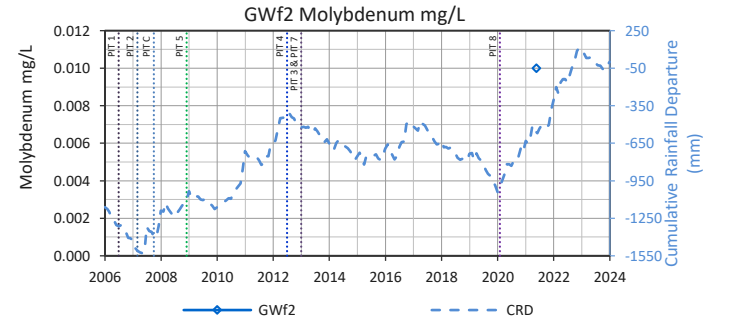
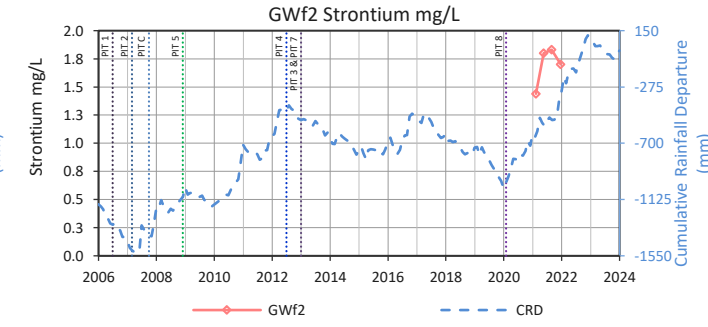
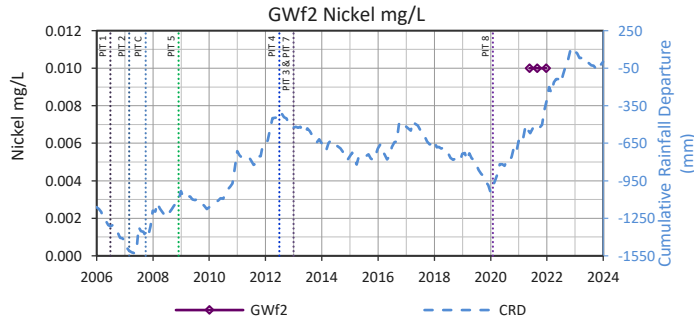
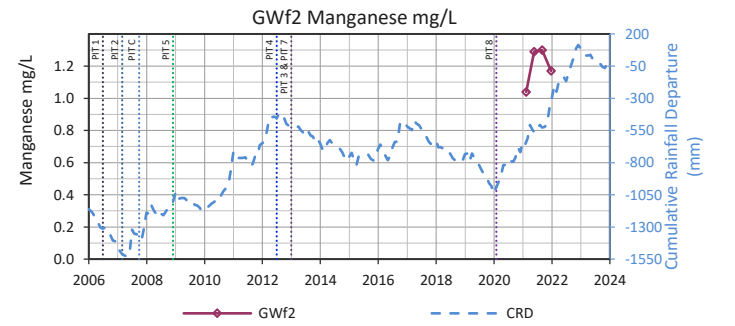
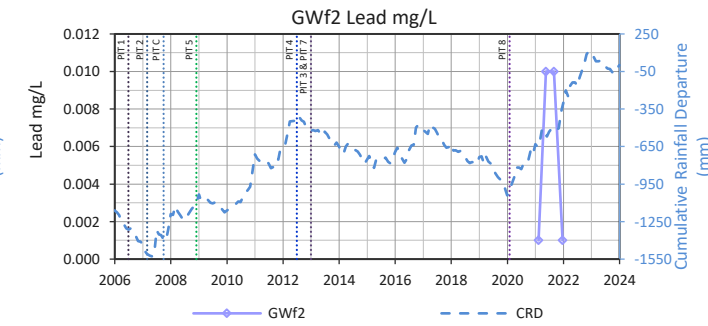
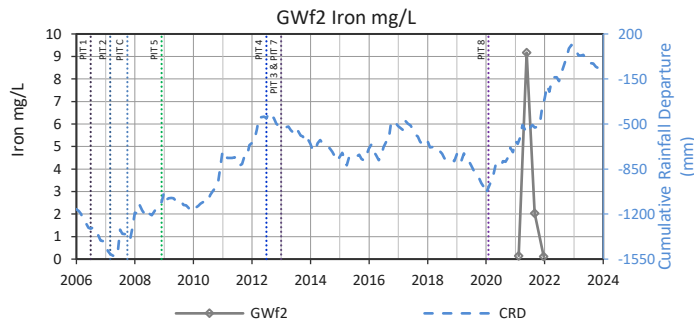
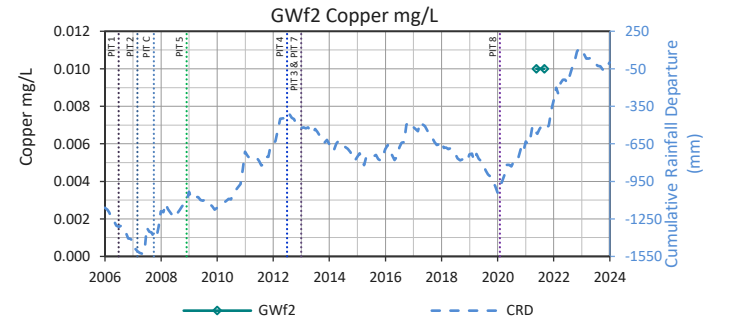
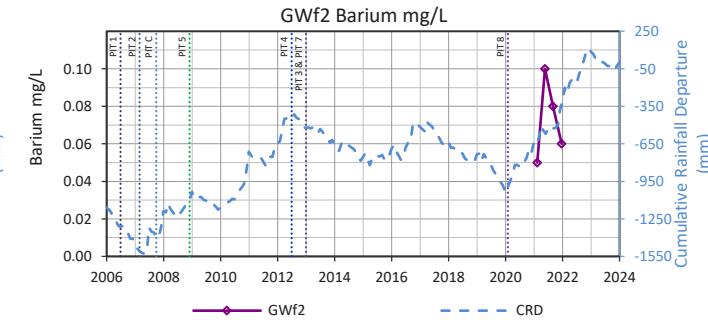
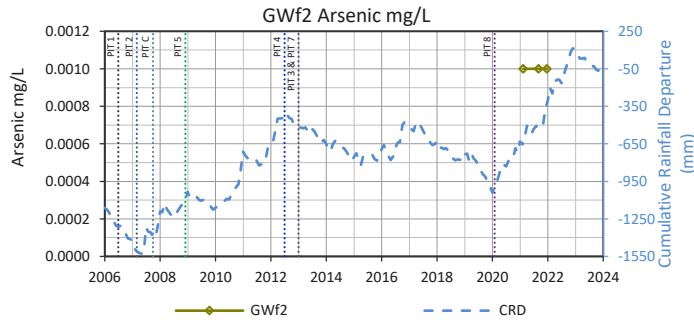
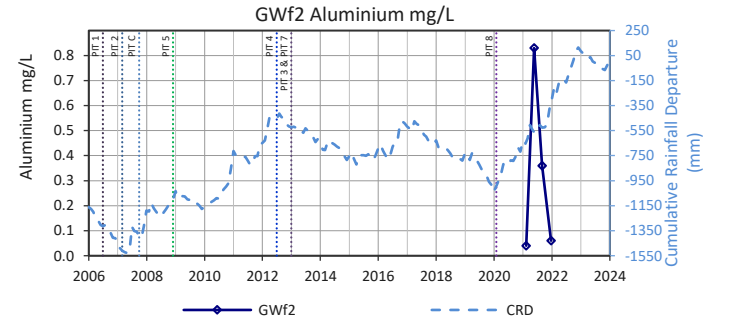


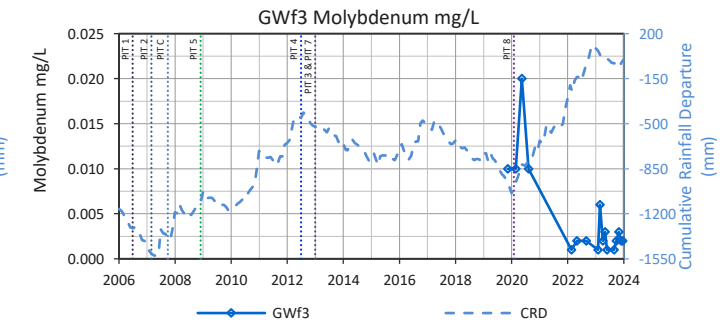
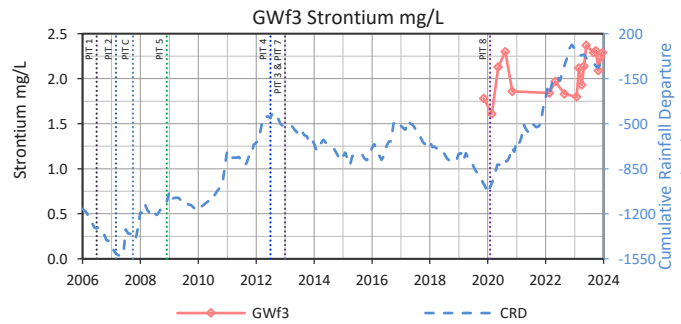
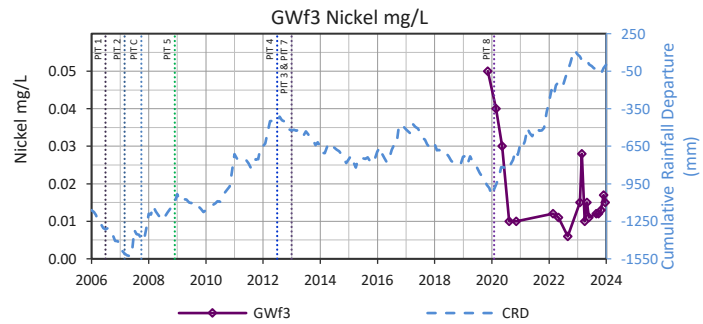
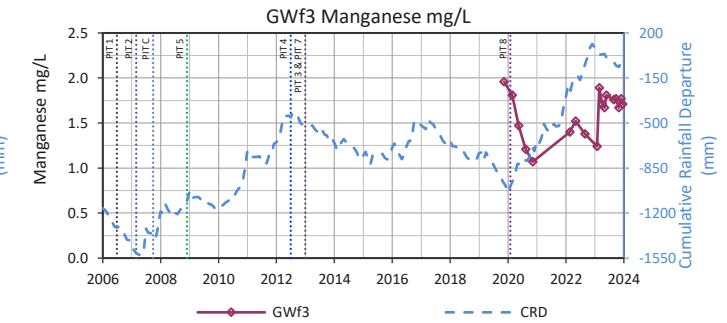
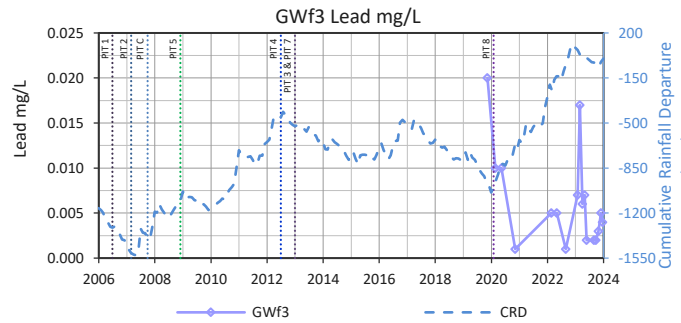
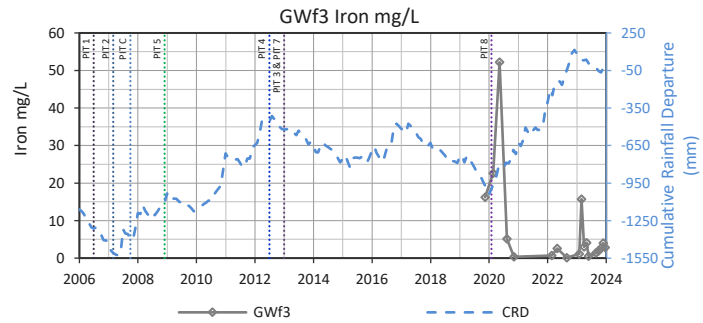
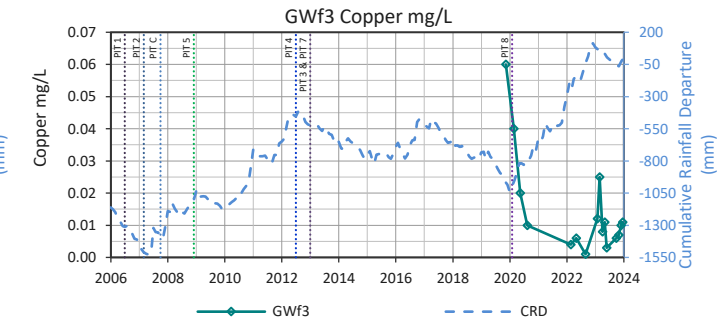
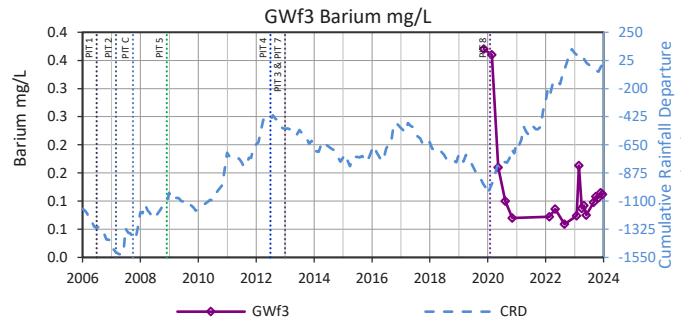
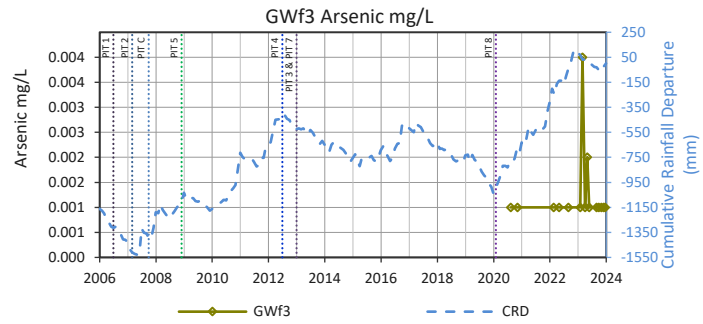
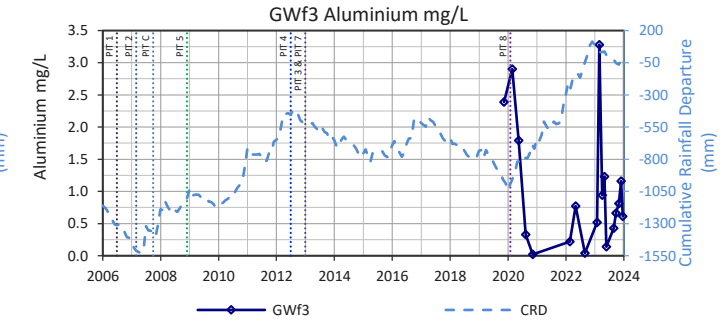
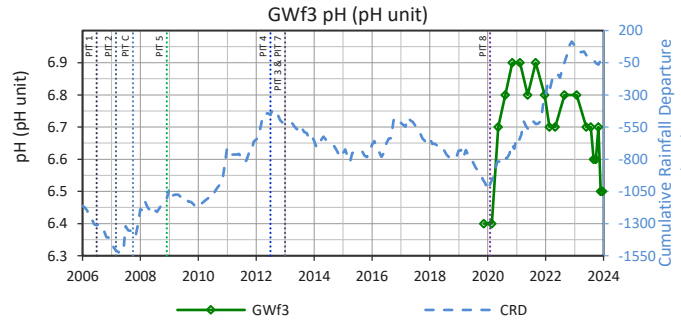
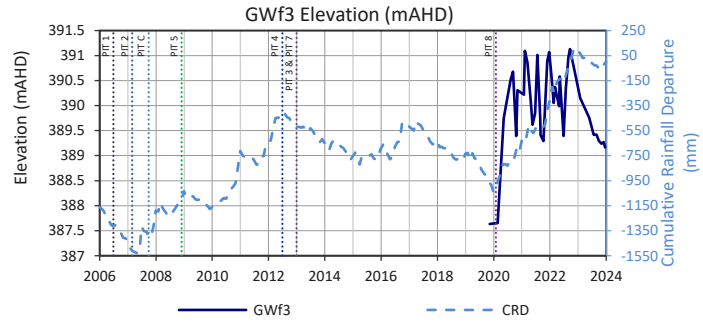
No Data Available for Molybdenum mg/L

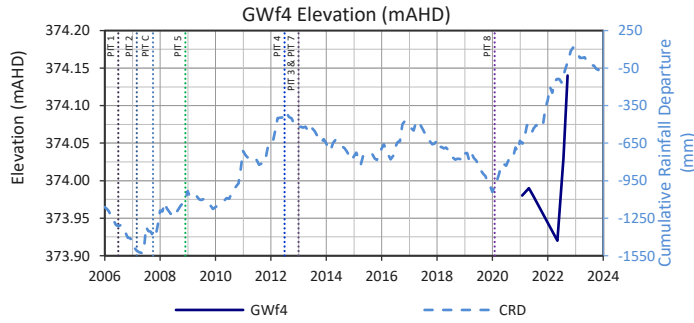


GWf2

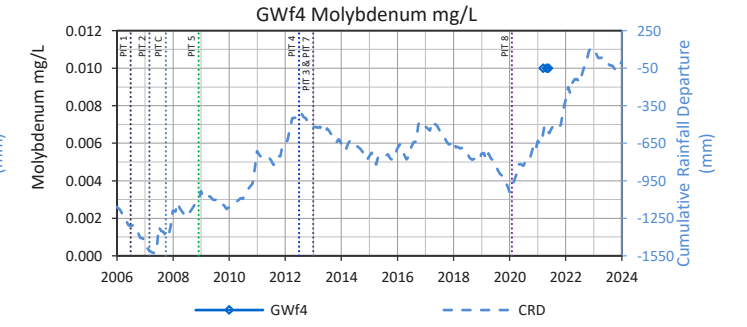
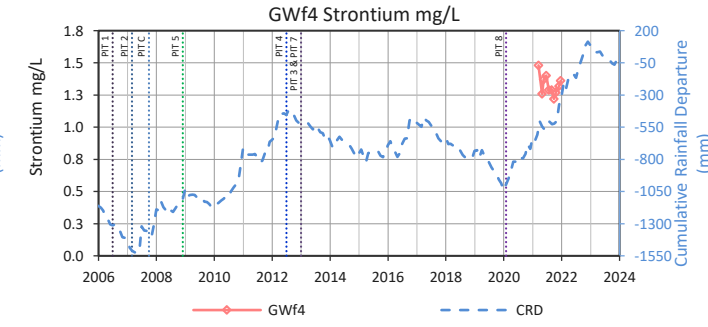
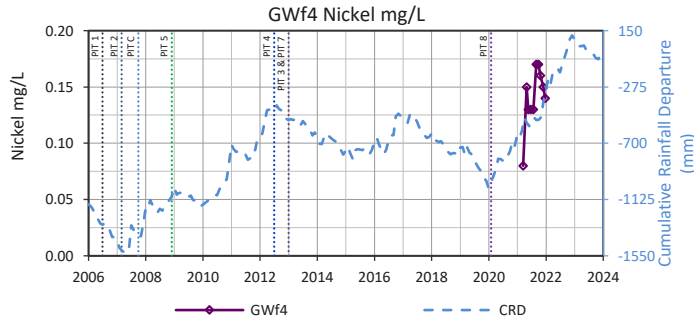
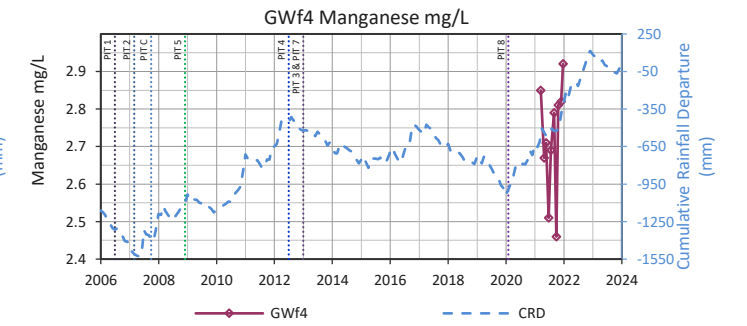
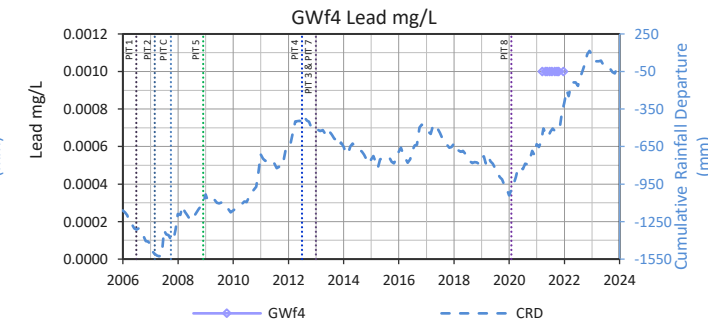
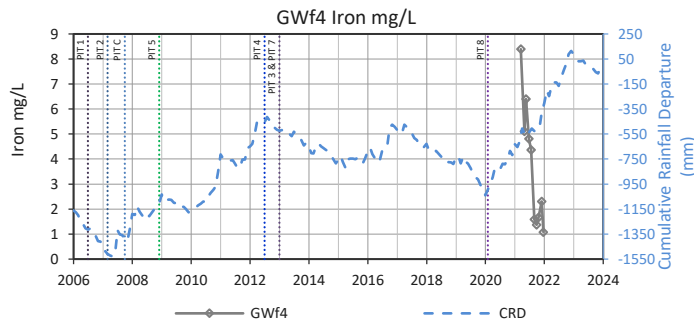
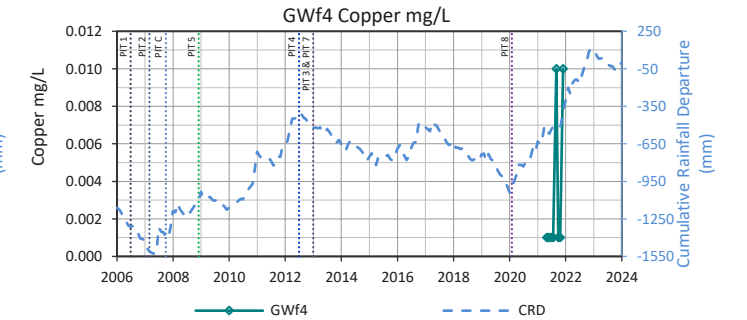
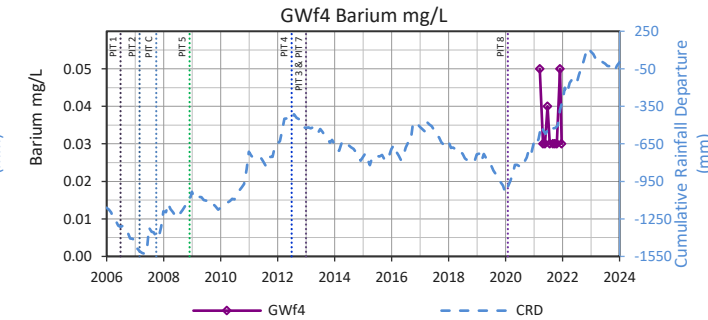
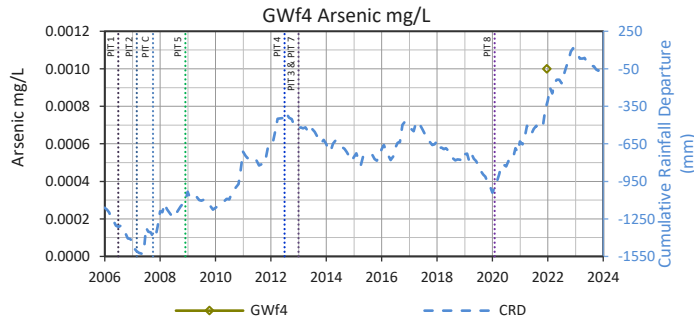
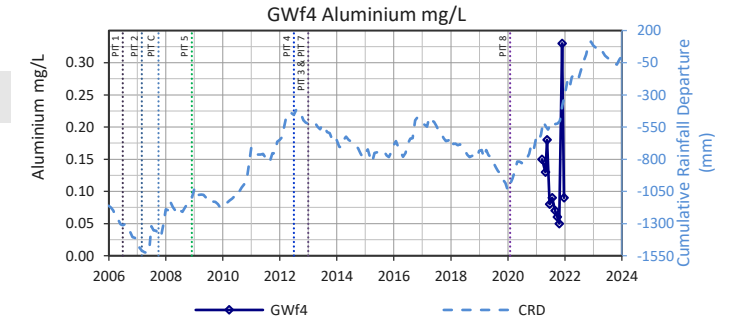
No Data Available for pH (pH unit)

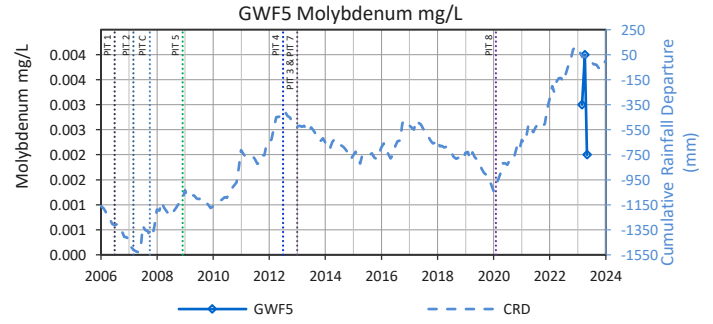
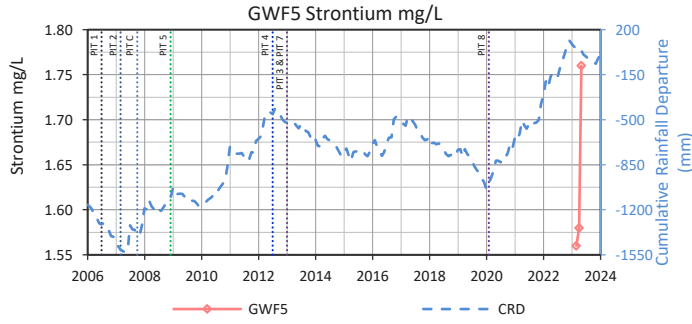
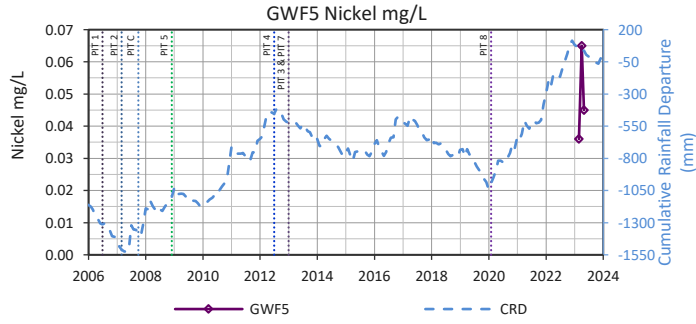
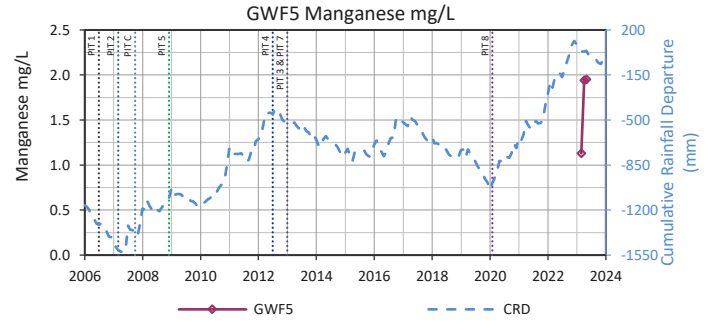
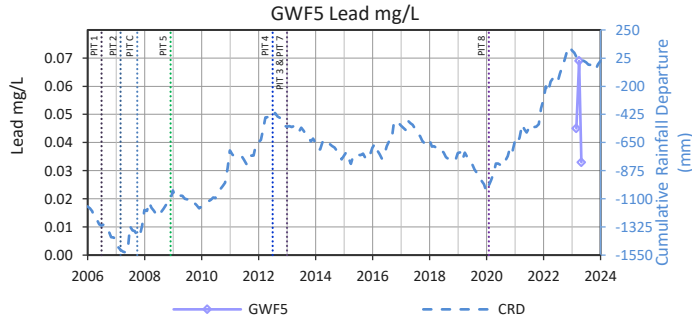
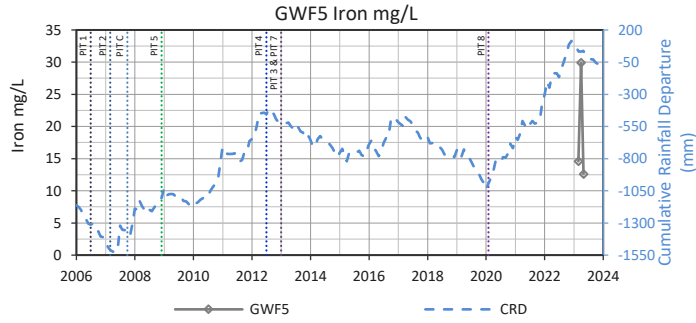
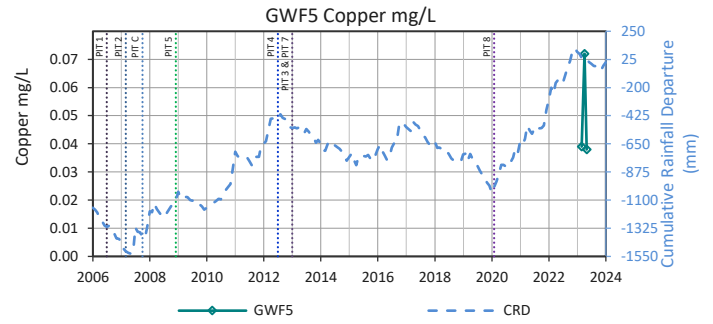
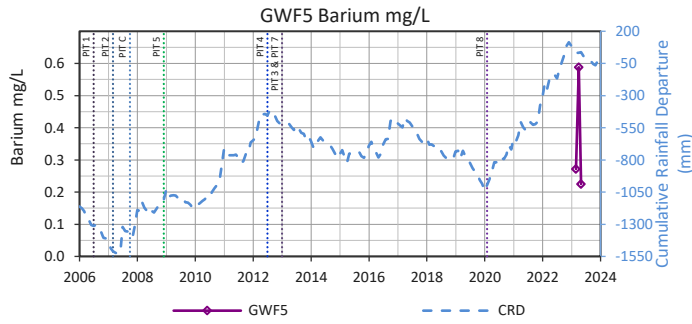
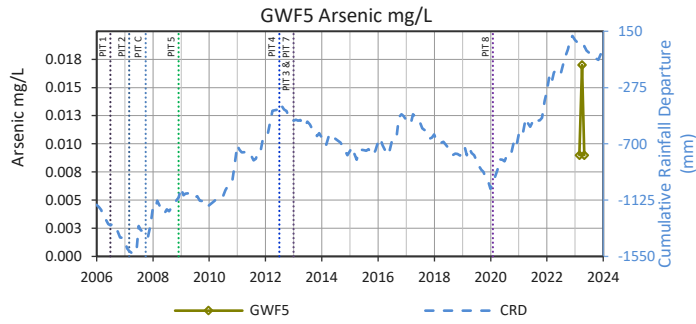
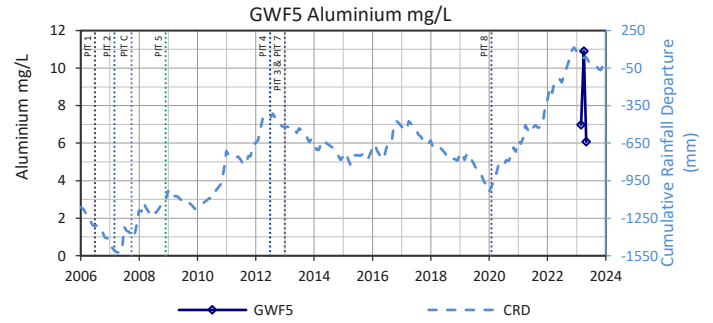
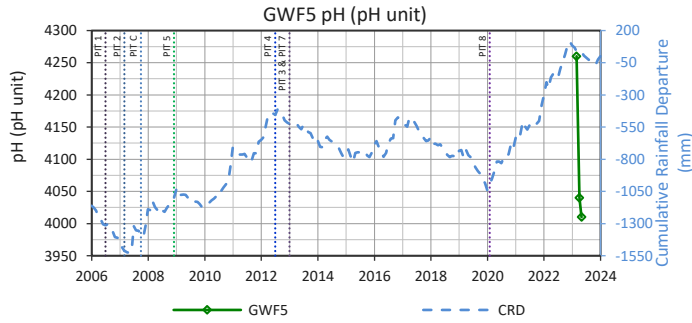
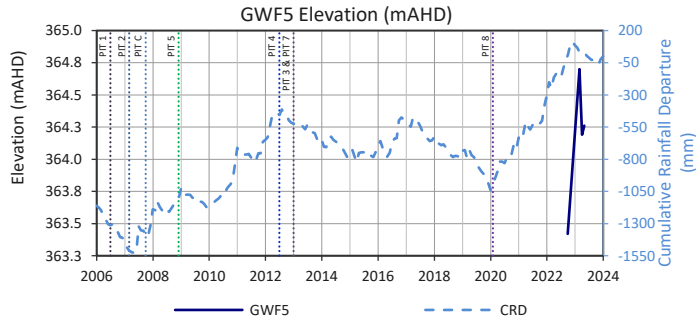


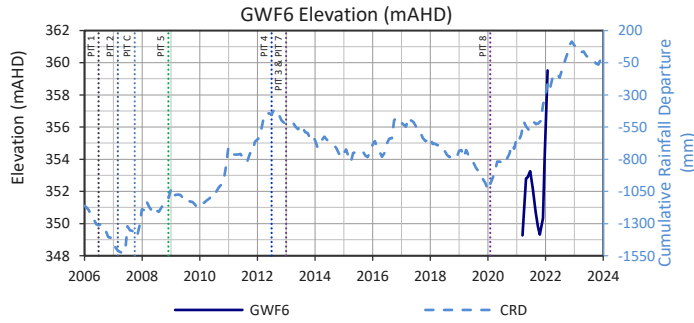




GWf4
No Data Available for pH (pH unit)

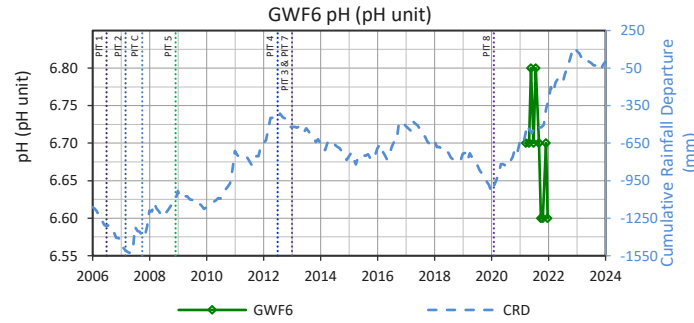






GW6

No Data Available for Arsenic mg/L



GW6

No Data Available for Barium mg/L

GW6
No Data Available for Aluminium mg/L

GW6

No Data Available for Copper mg/L

GW6

No Data Available for Iron mg/L

GW6

No Data Available for Lead mg/L

GW6

No Data Available for Manganese mg/L

GW6

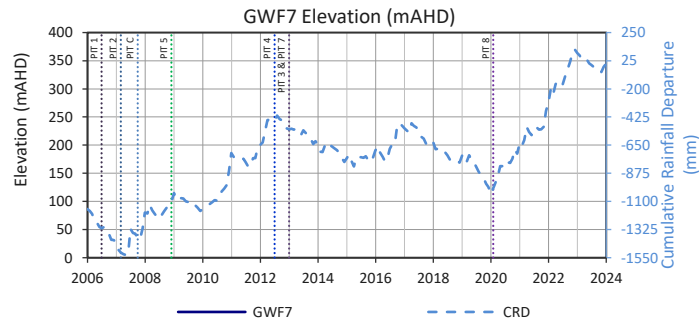
No Data Available for Nickel mg/L

GW6

No Data Available for Strontium mg/L

GW6

No Data Available for Molybdenum mg/L



GW7

No Data Available for Arsenic mg/L

GW7

No Data Available for Barium mg/L

GW7

No Data Available for Aluminium mg/L

GW7

No Data Available for Iron mg/L

GW7

No Data Available for Lead mg/L

GW7

No Data Available for Manganese mg/L

GW7

No Data Available for Nickel mg/L

GW7

No Data Available for Strontium mg/L

GW7

No Data Available for Molybdenum mg/L

PZ13

PZ13

PZ13

No Data Available for Elevation (mAHD)

No Data Available for pH (pH unit)

No Data Available for Aluminium mg/L

PZ13

PZ13

PZ13

No Data Available for Arsenic mg/L

No Data Available for Barium mg/L

No Data Available for Copper mg/L

PZ13

PZ13

PZ13

No Data Available for Iron mg/L

No Data Available for Lead mg/L

No Data Available for Manganese mg/L

PZ13

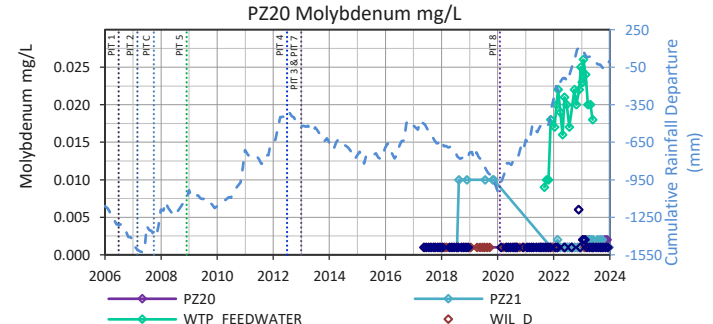
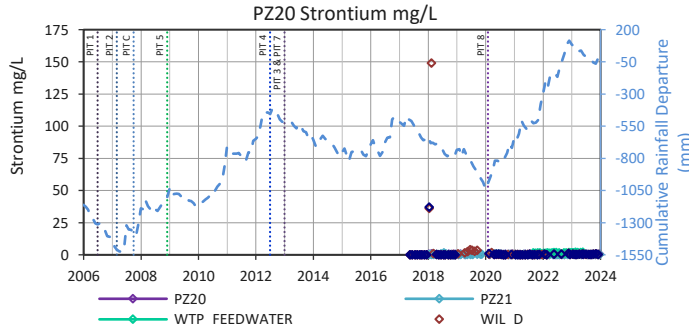
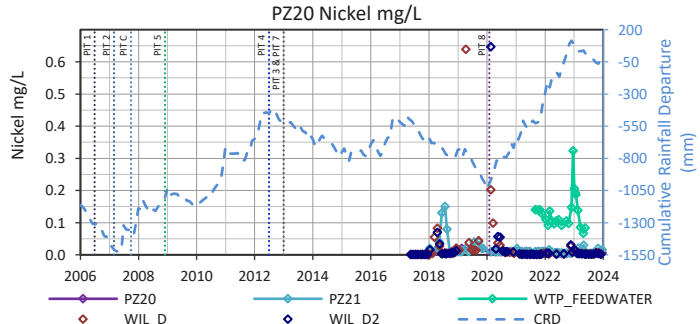
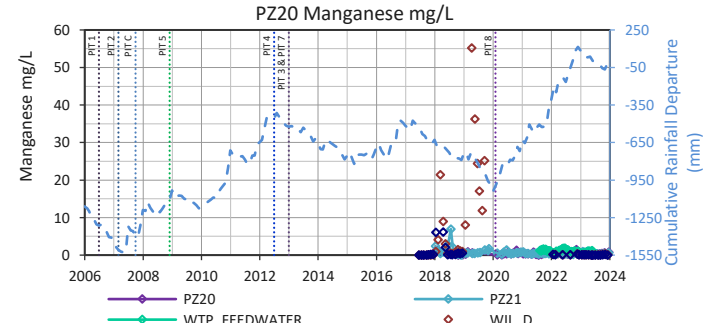
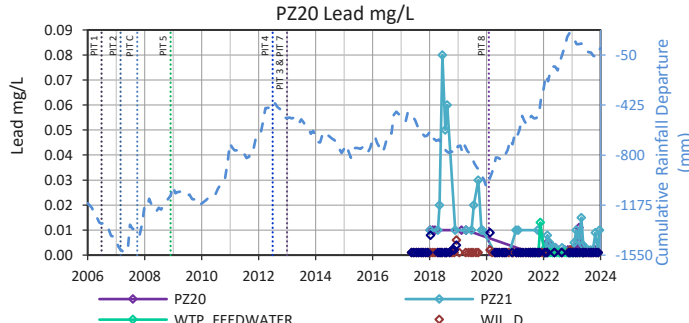
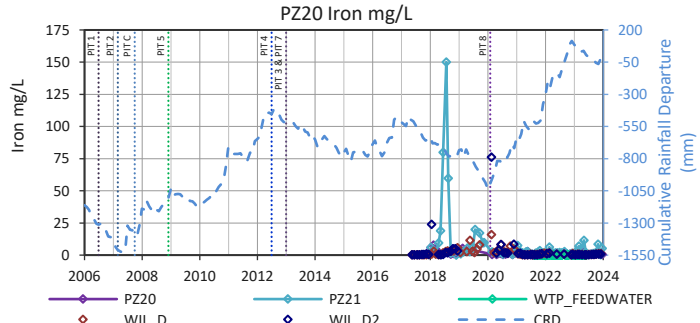
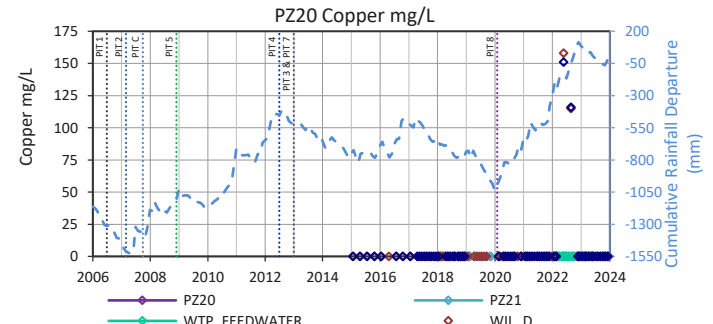
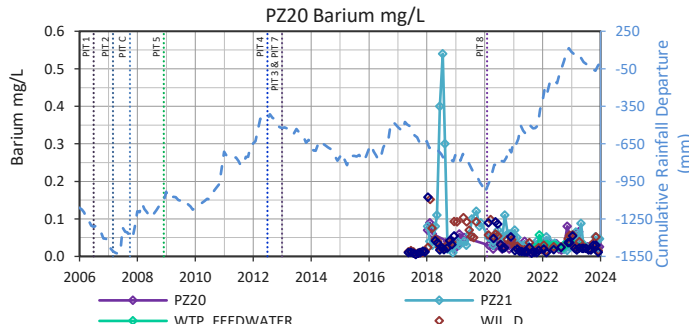
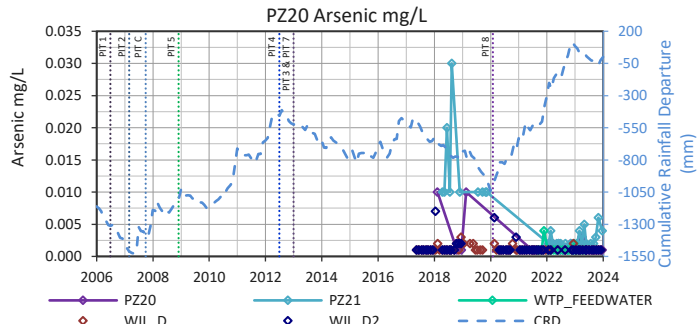
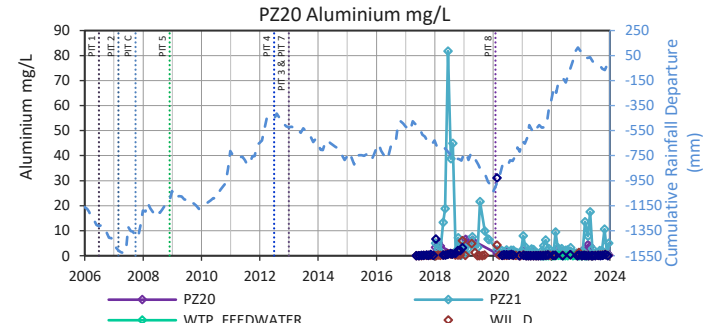
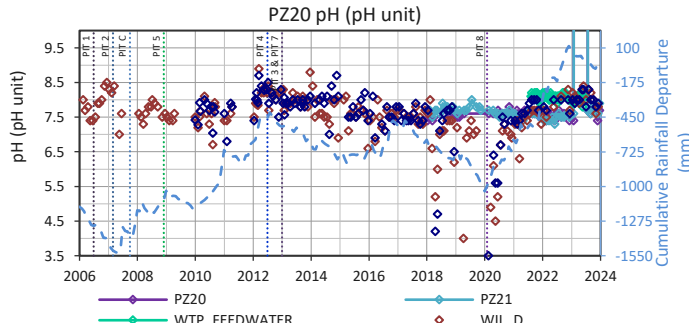
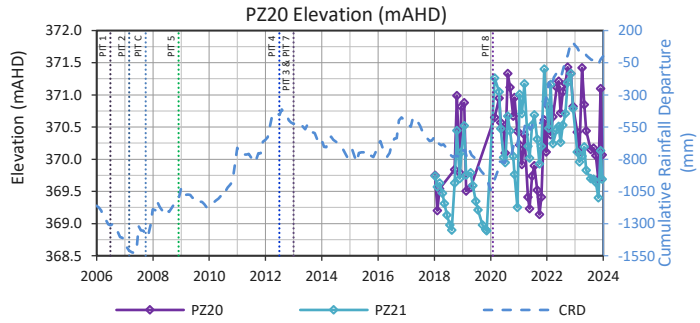
PZ13

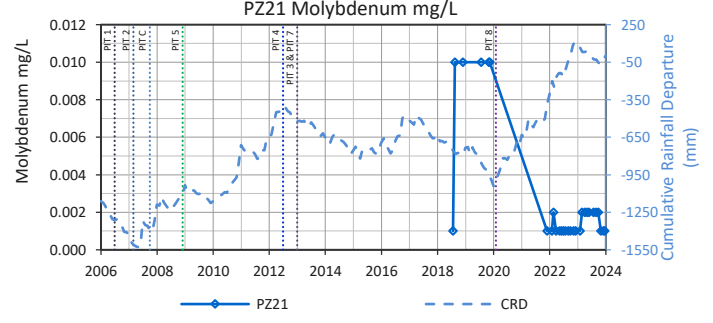
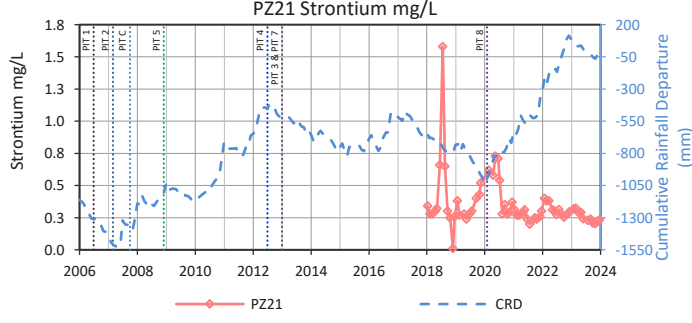
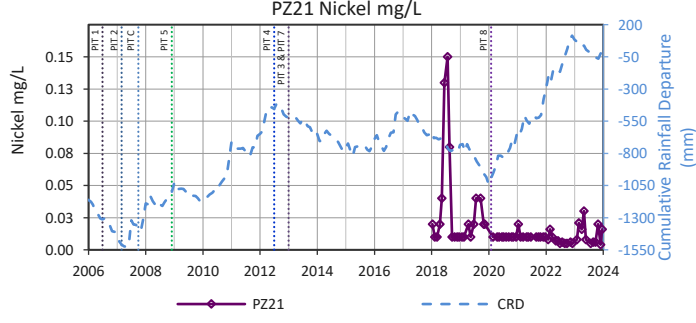
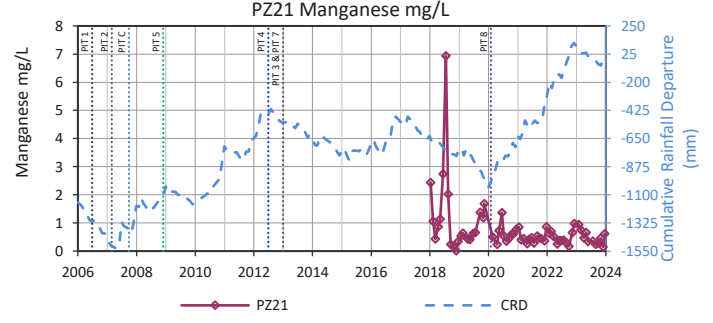
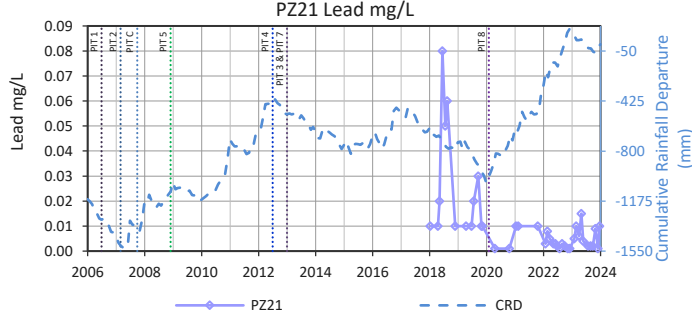
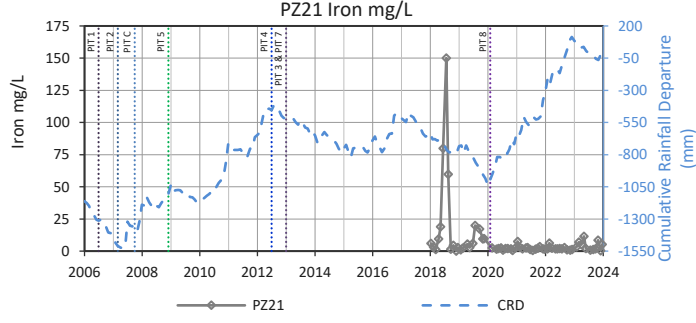
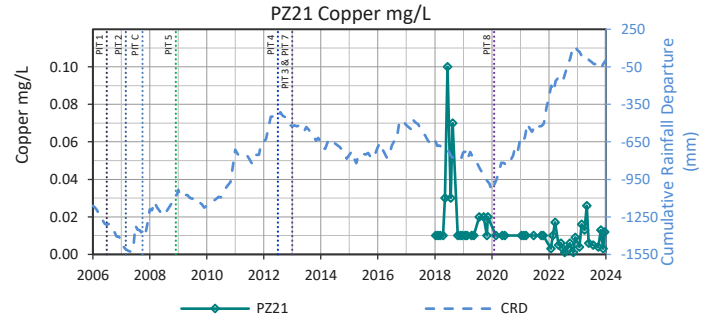
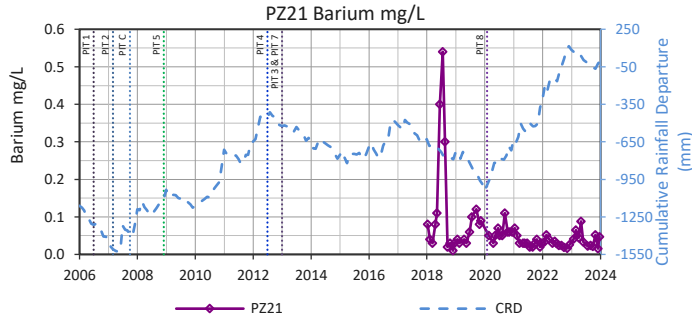
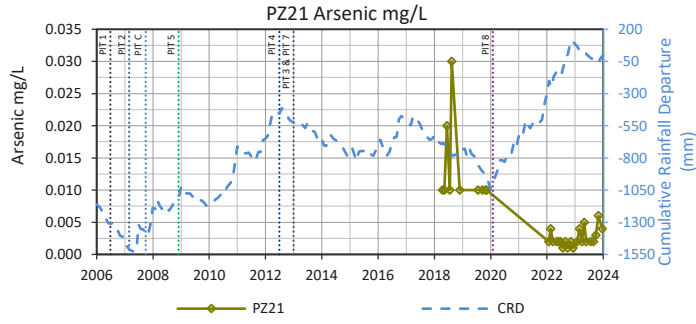
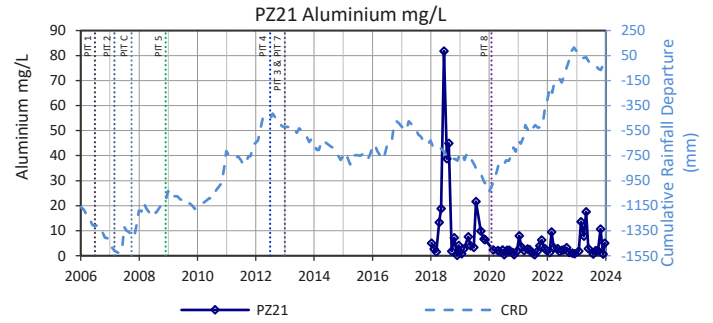
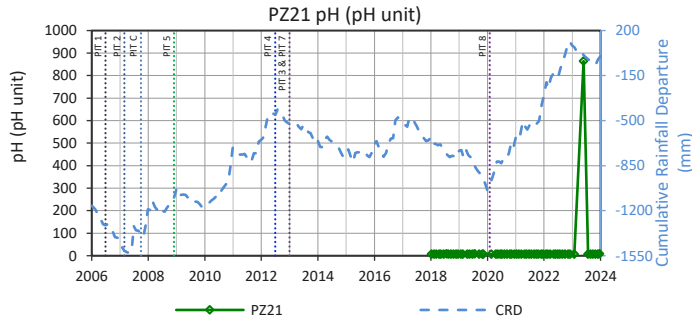
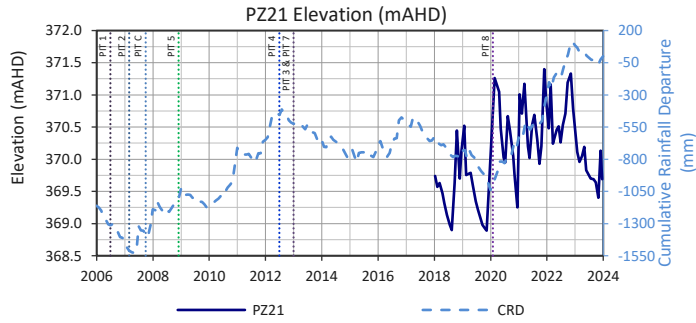
PZ13

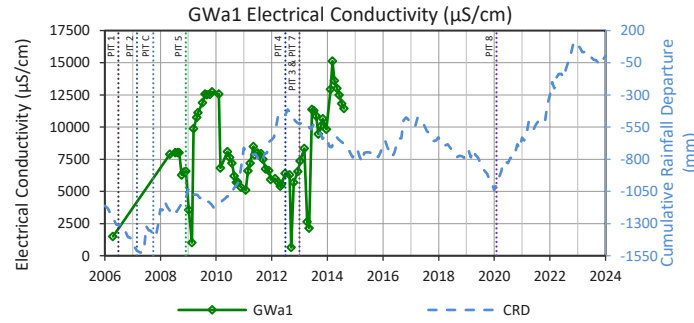
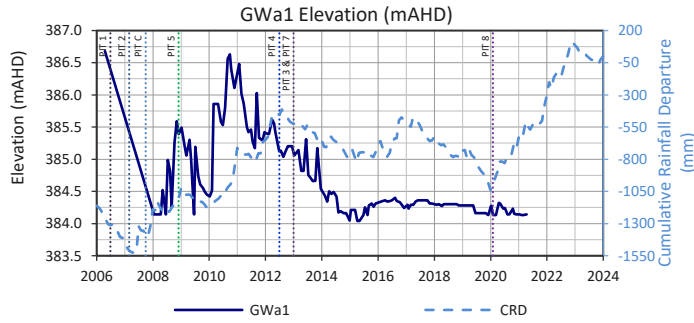
No Data Available for Nickel mg/L

No Data Available for Strontium mg/L

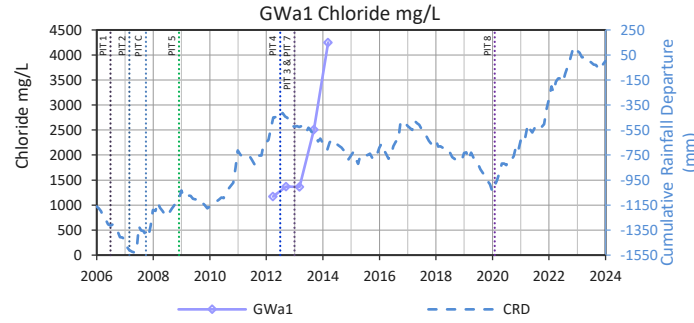
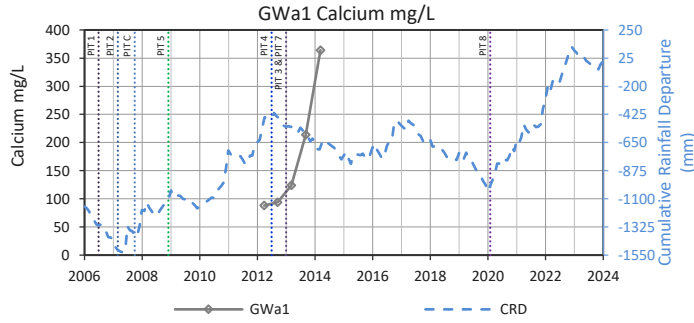
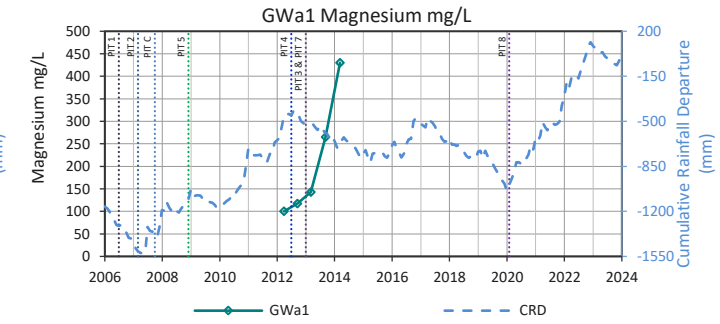
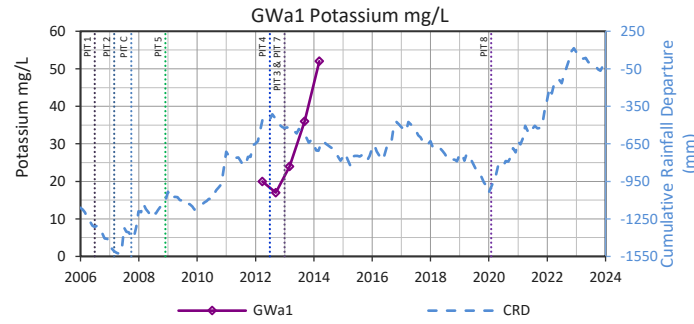
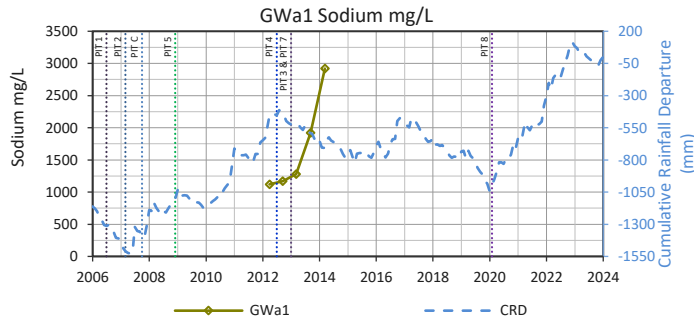
No Data Available for Molybdenum mg/L







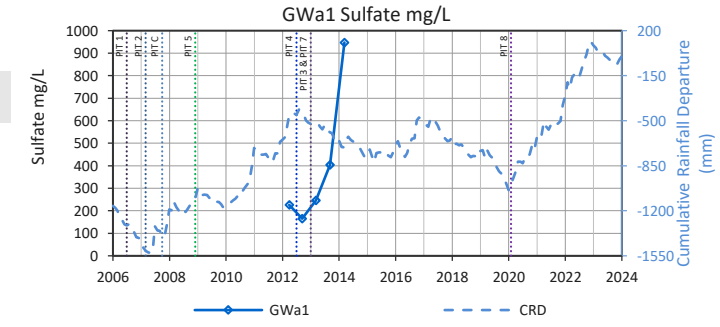
GWa1
No Data Available for Total Dissolved Solids mg/L

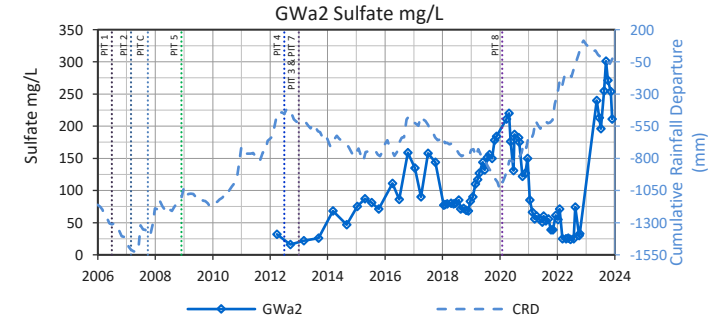
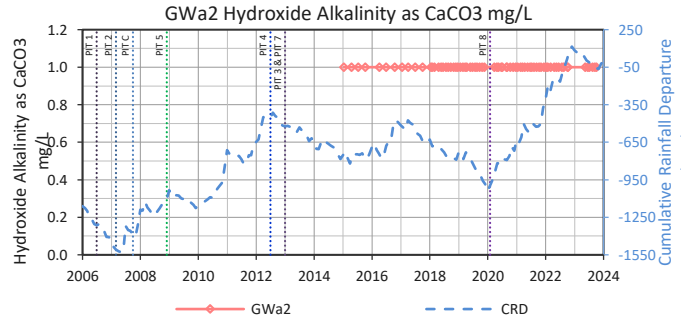
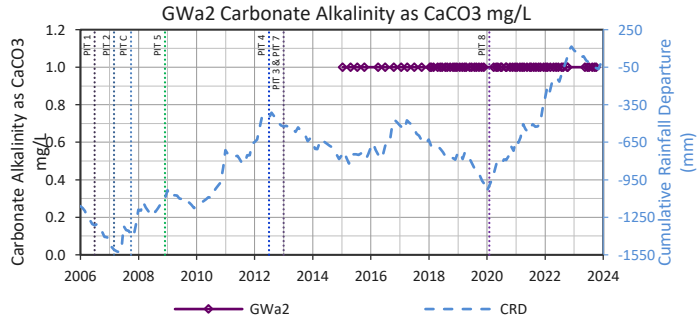
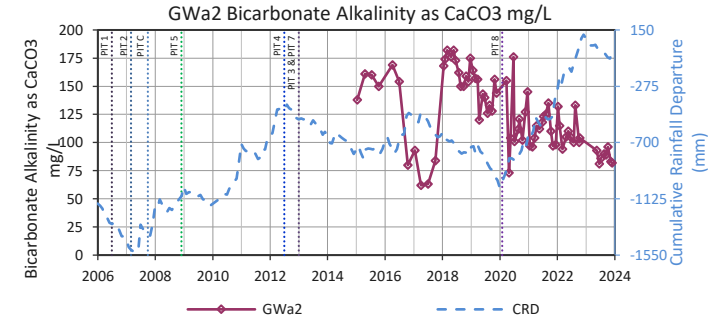
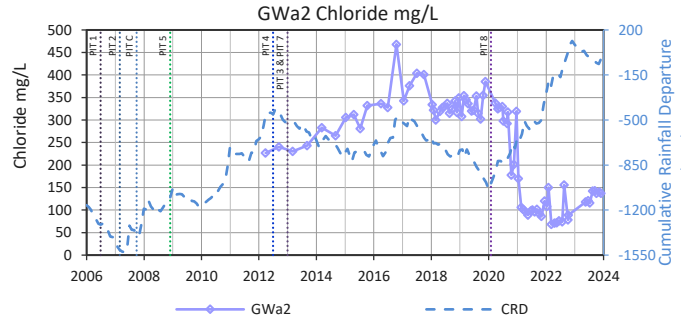
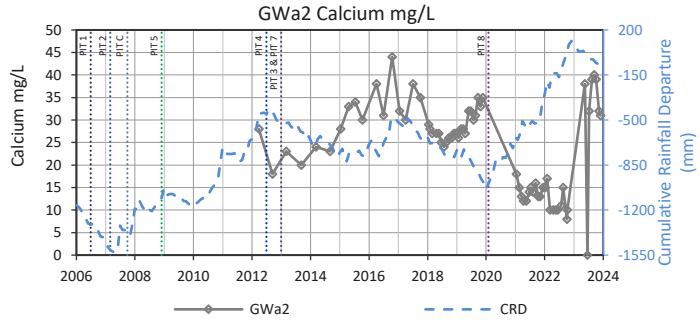
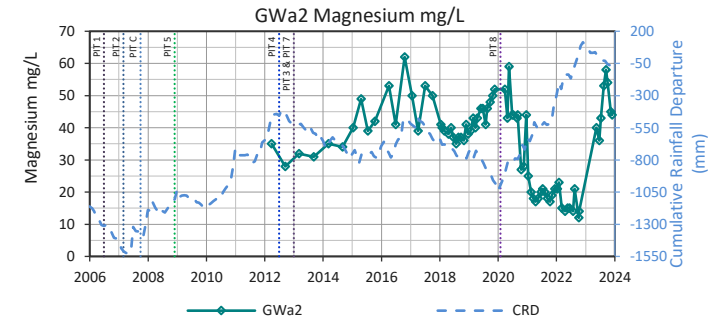
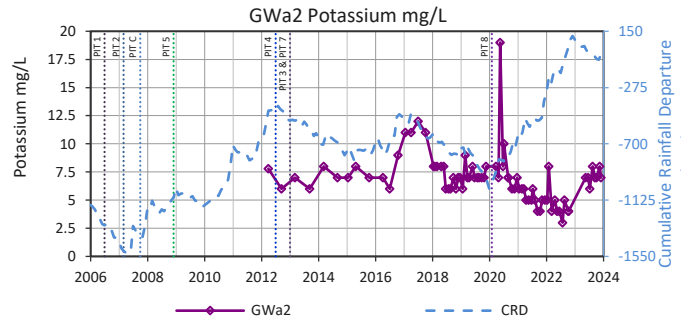
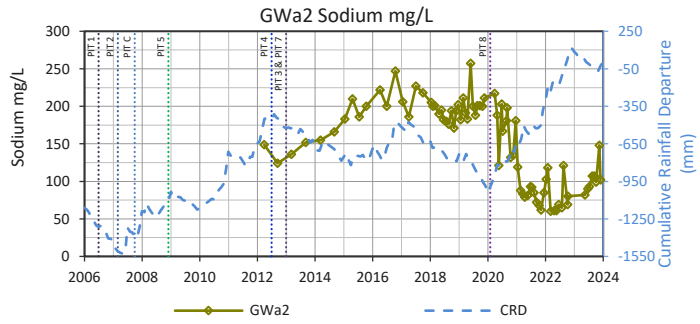
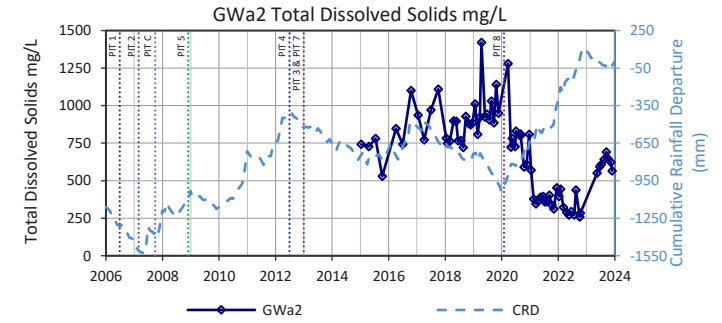
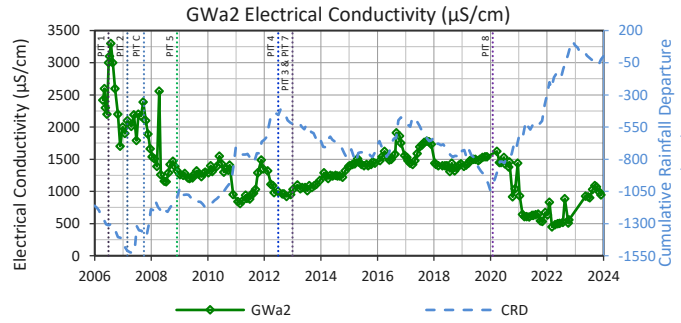
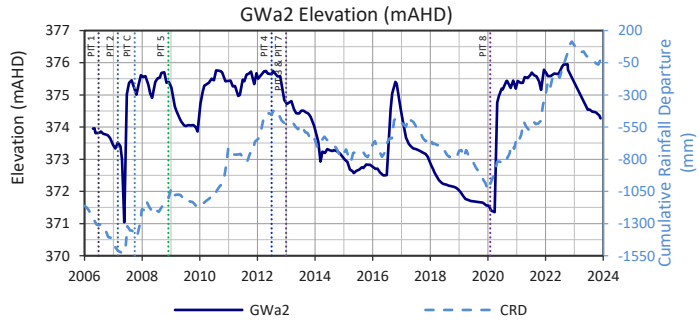


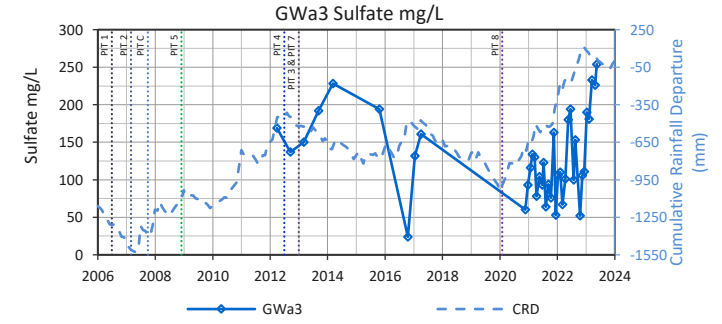
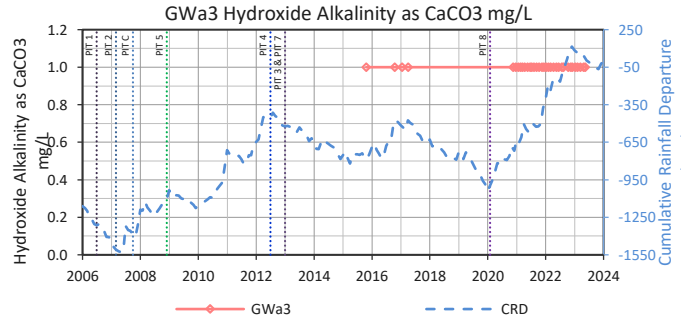
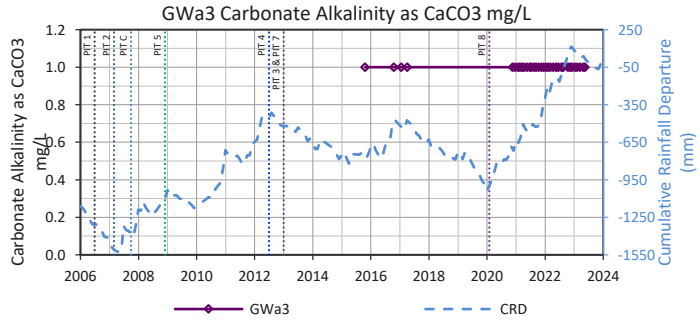
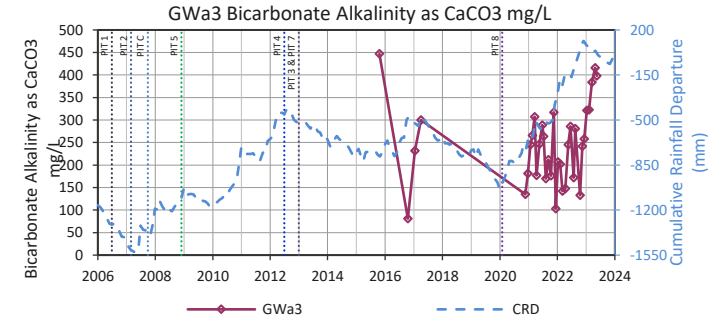
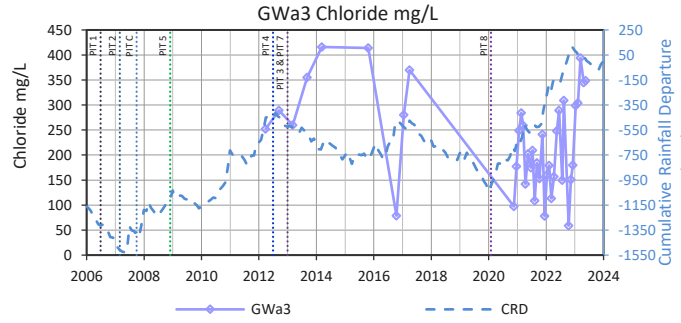
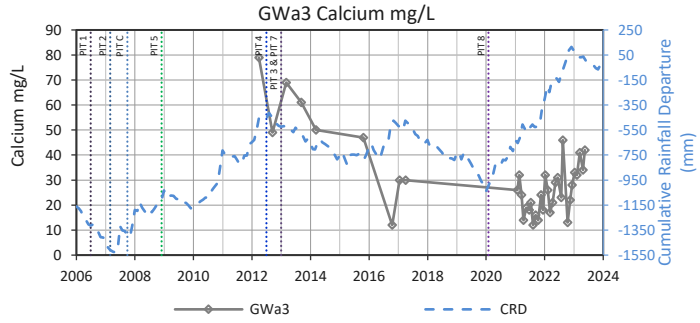
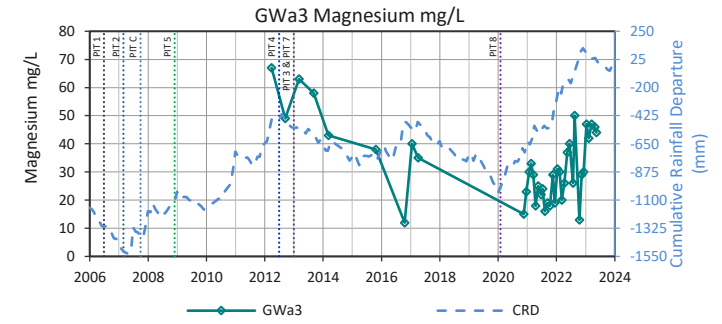
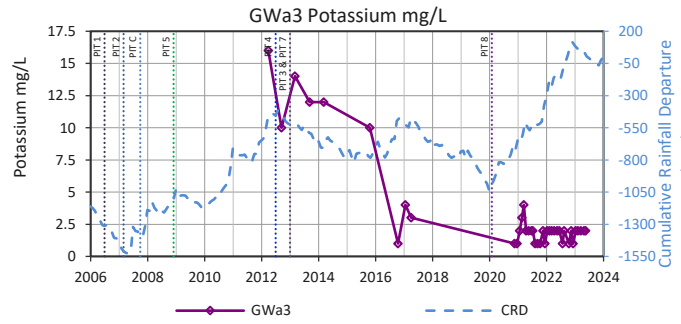
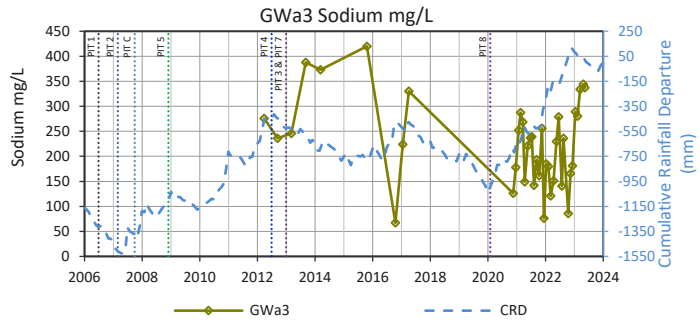
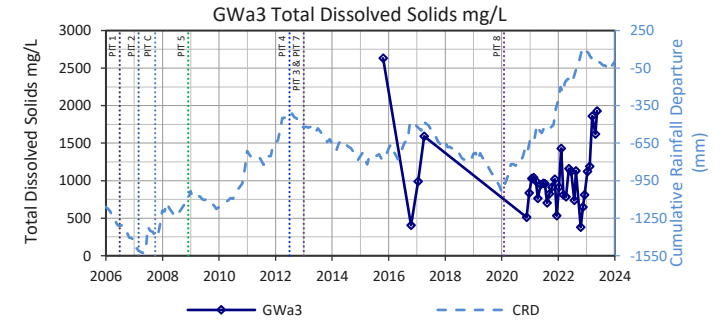
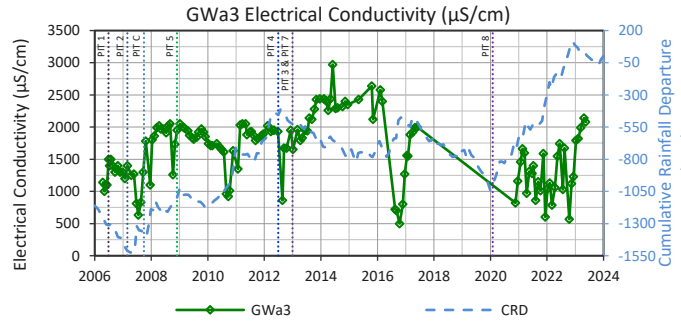
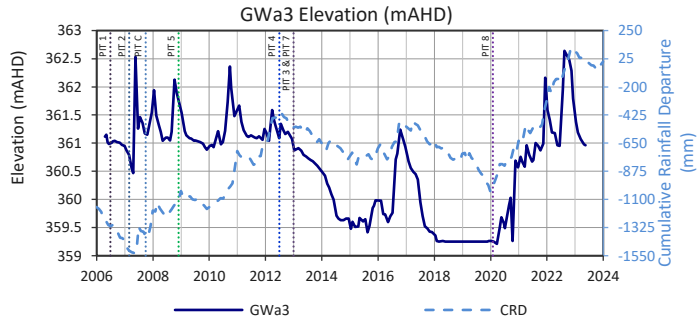
GWa1
No Data Available for Bicarbonate Alkalinity as CaCO3 mg/L

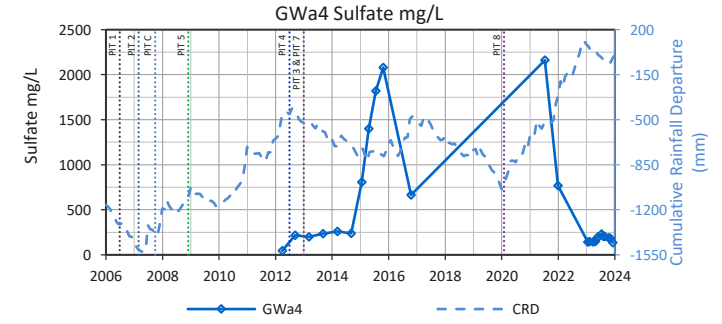
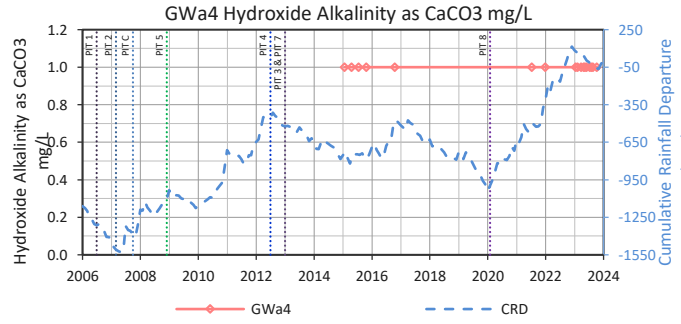
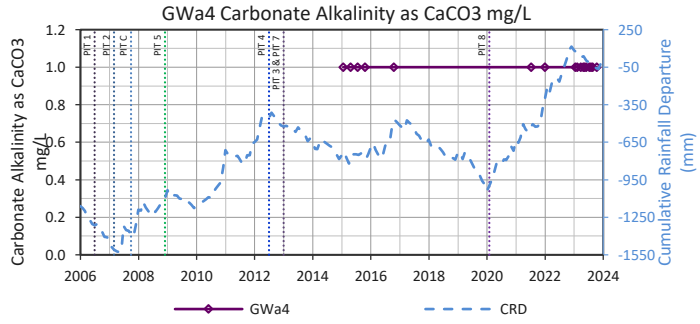
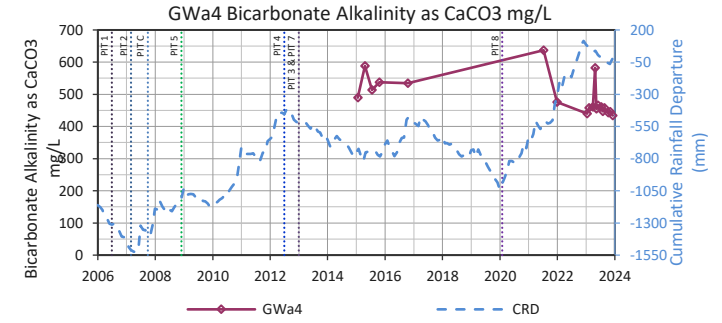
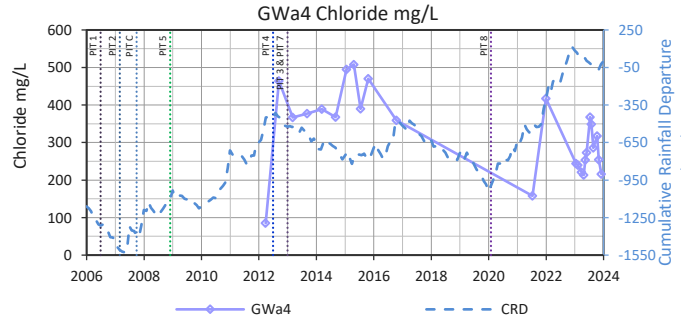
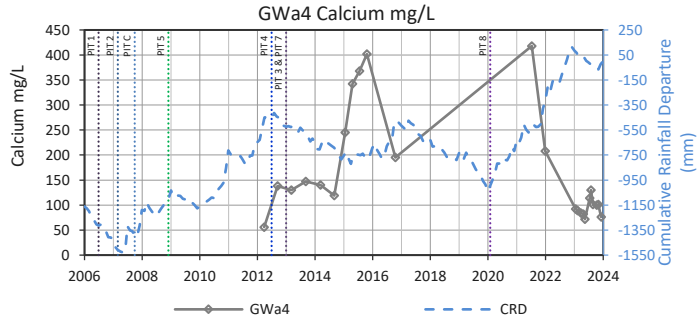
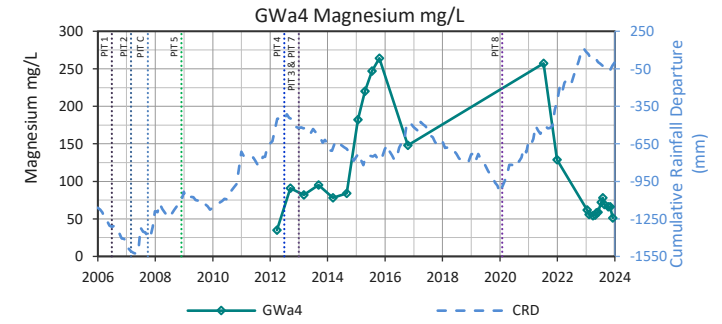
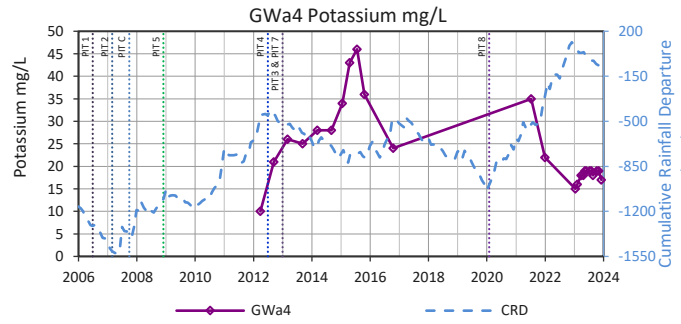
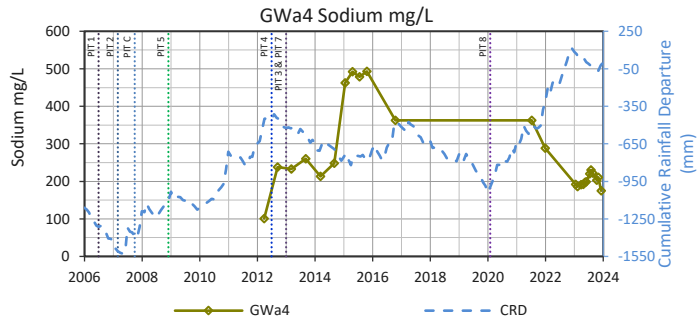
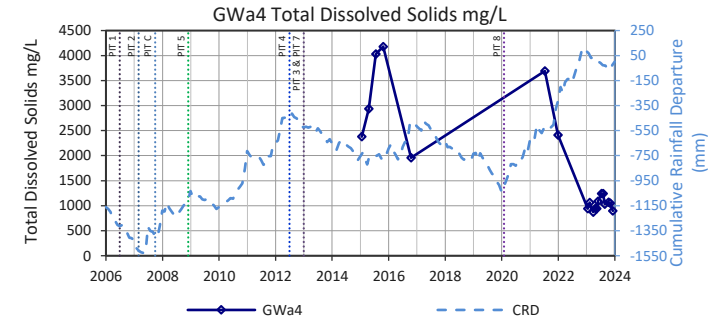
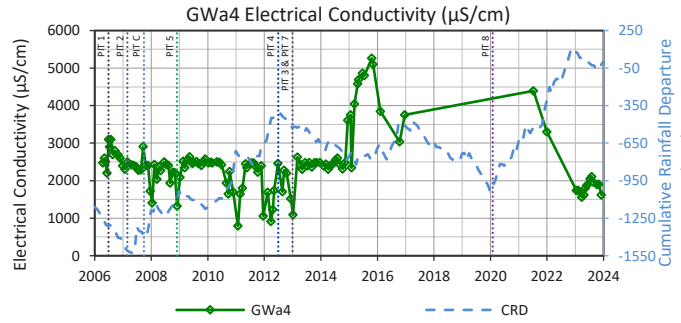
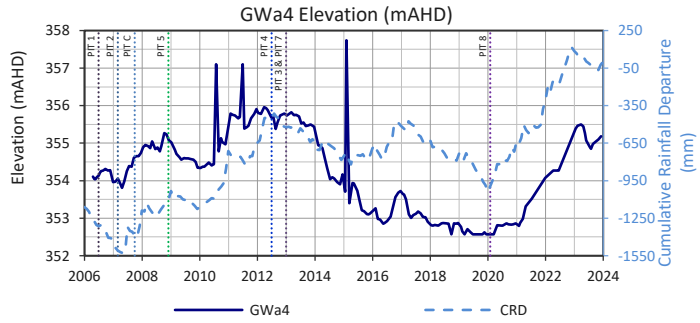
No Data Available for Carbonate Alkalinity as CaCO3 mg/L

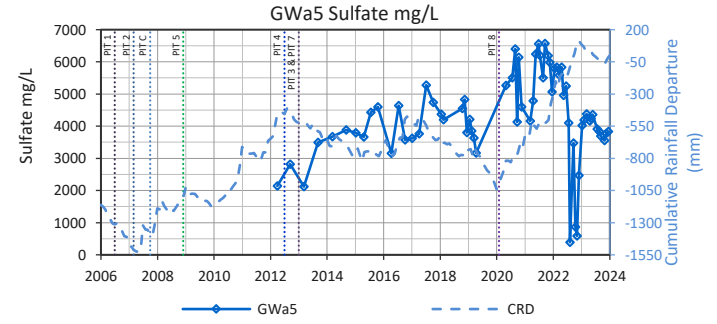
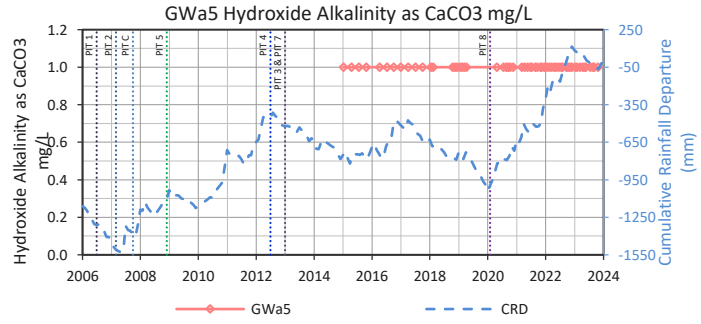
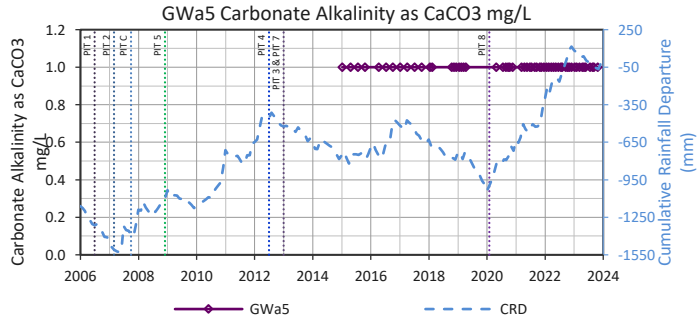
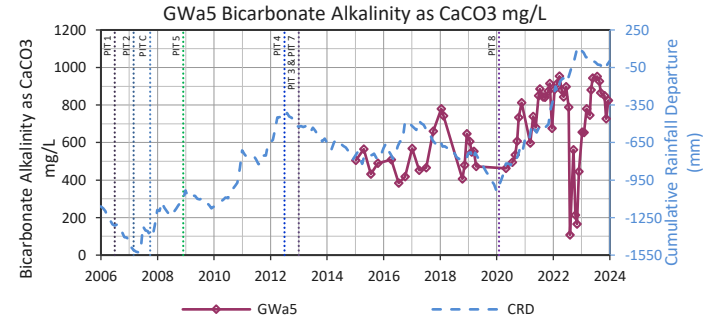
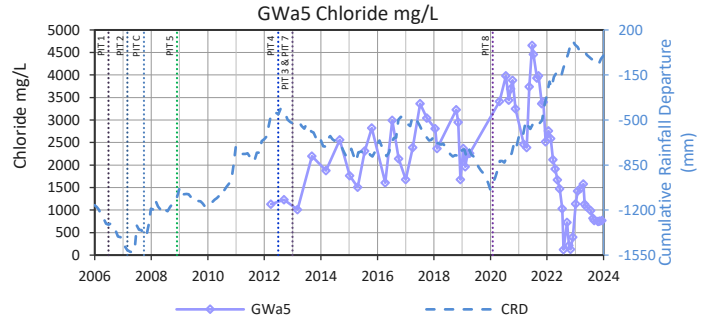
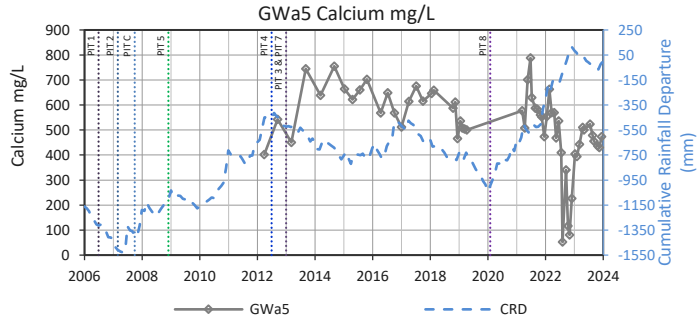
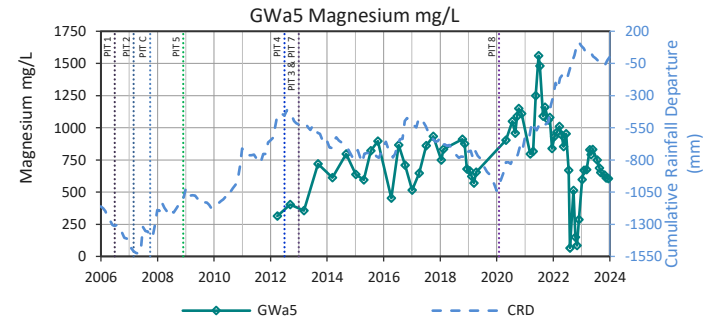
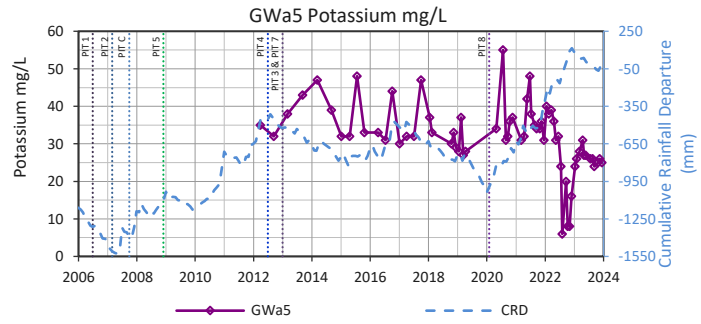
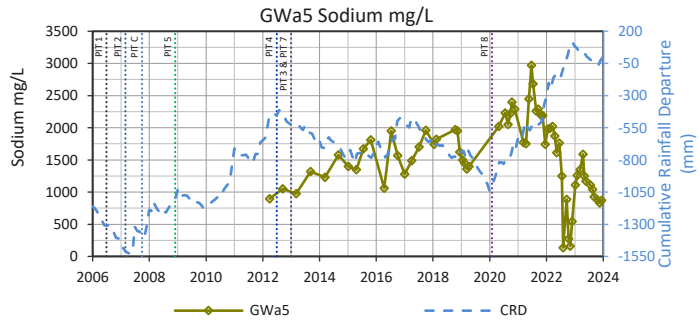
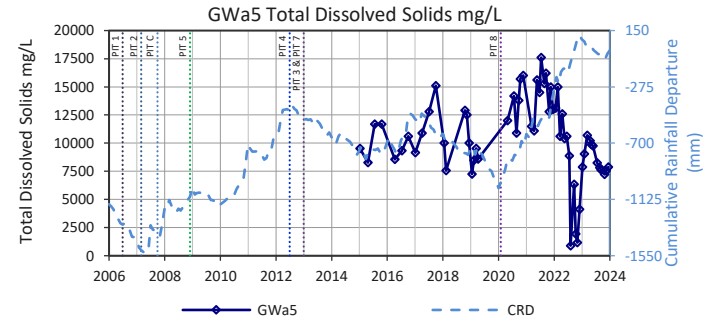
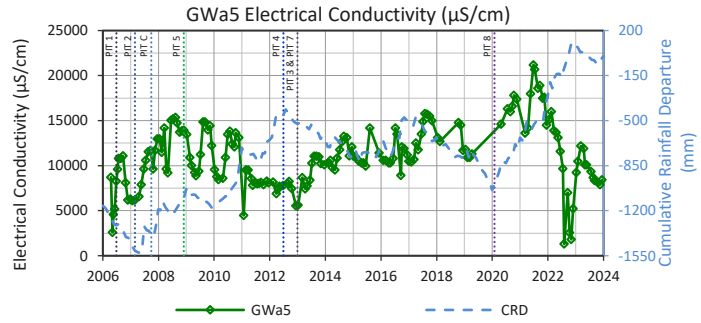
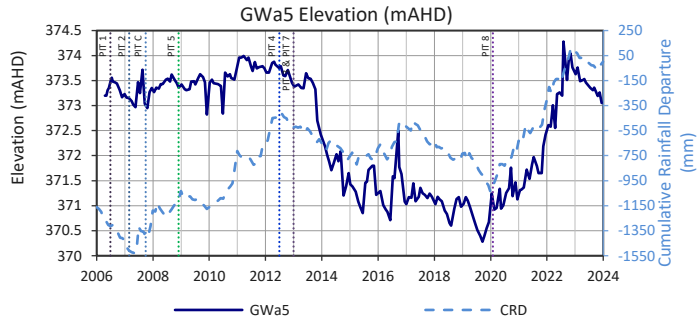
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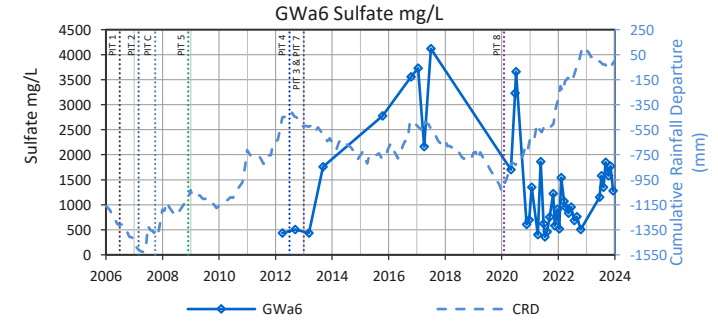
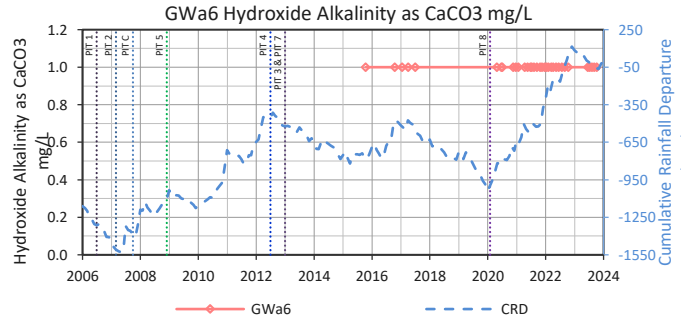
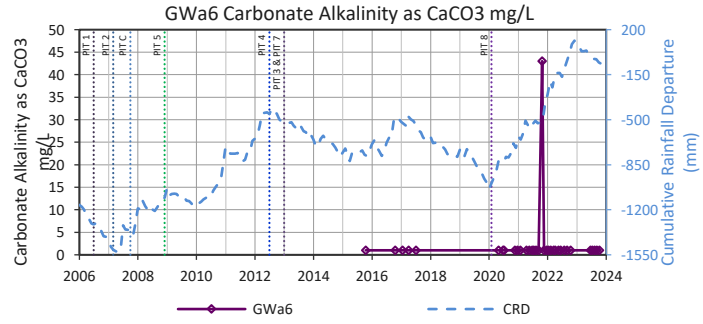
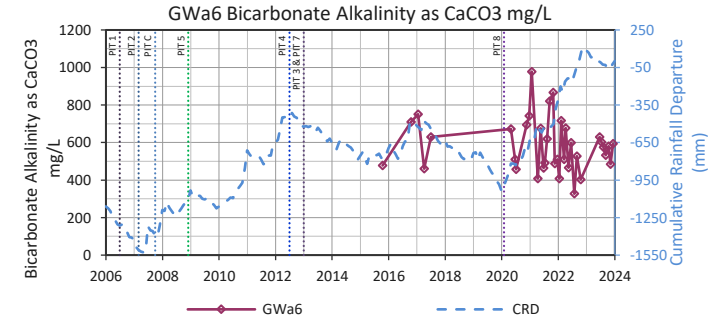
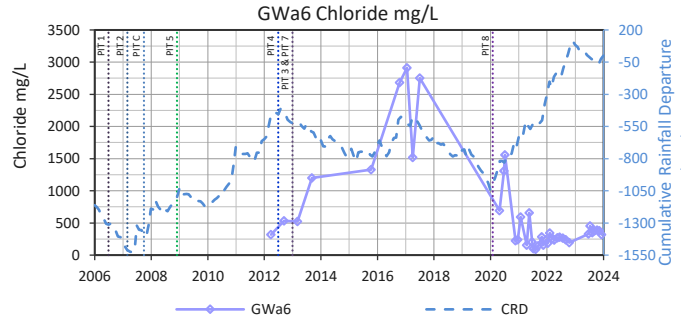
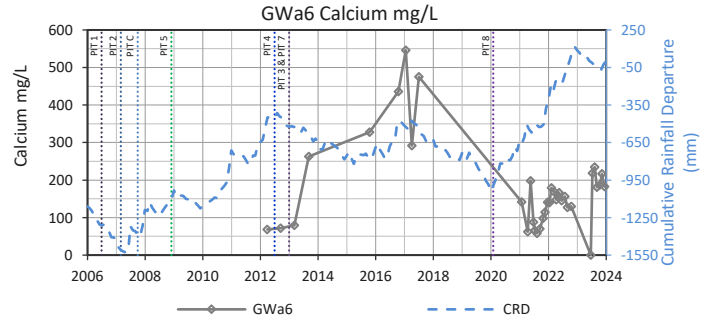
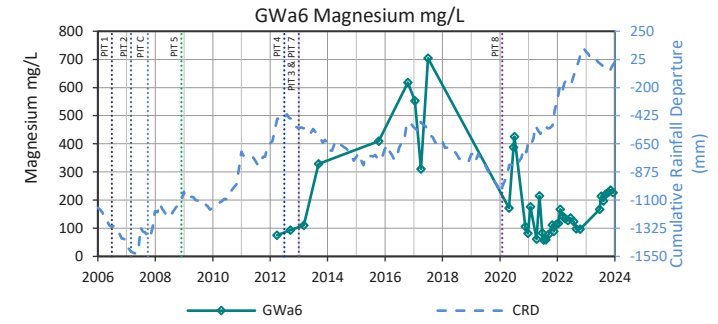
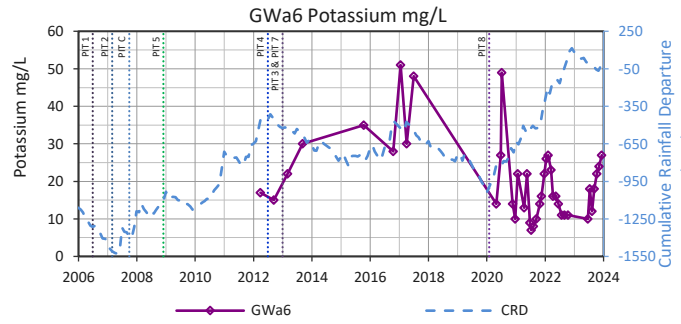
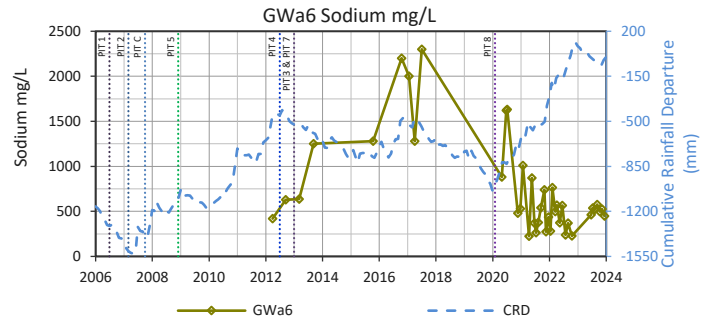
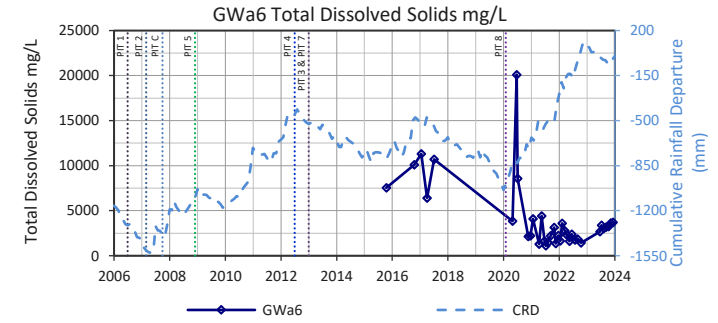
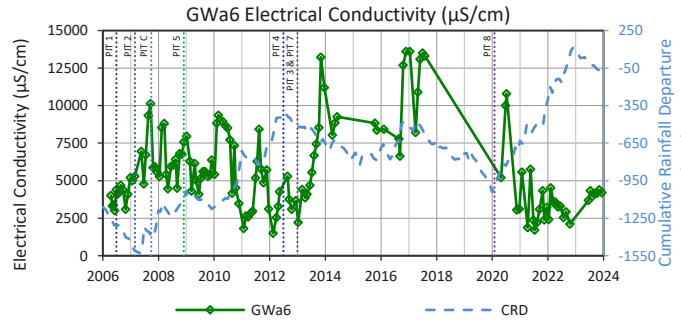
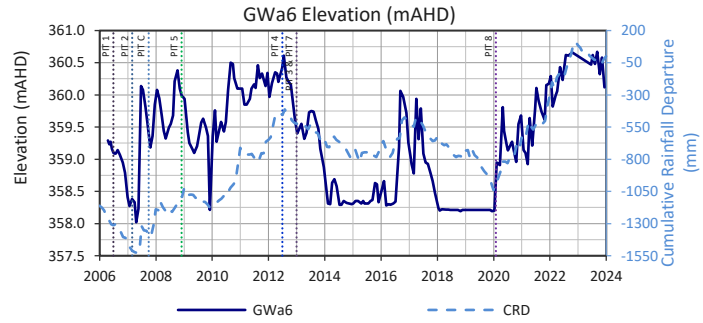


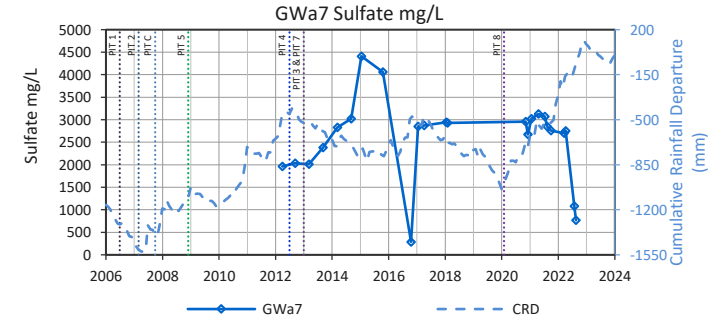
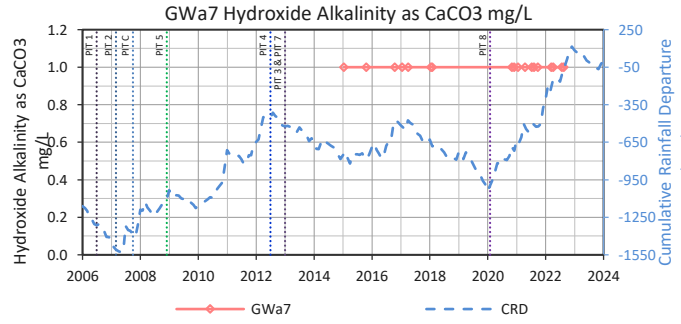
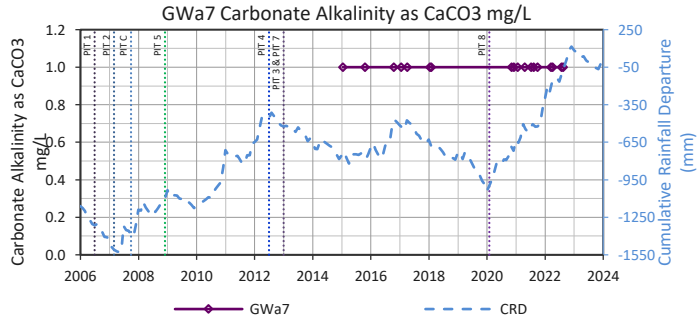
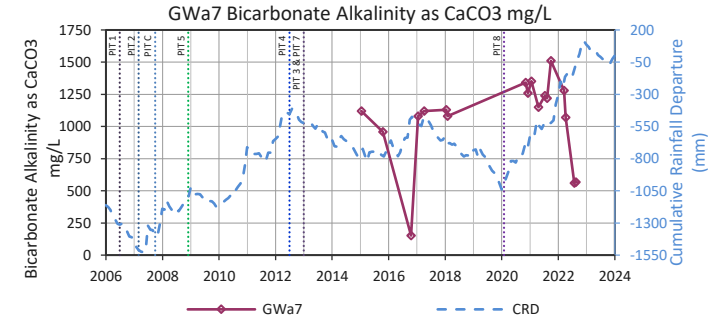
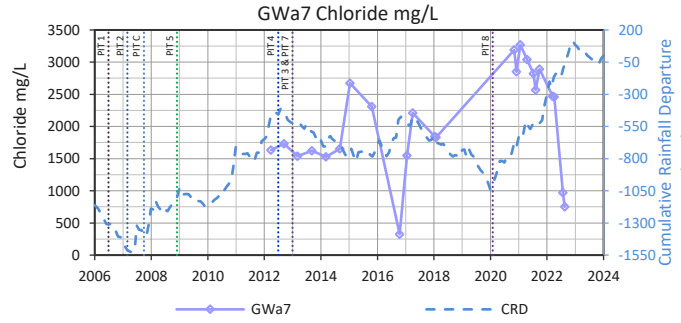
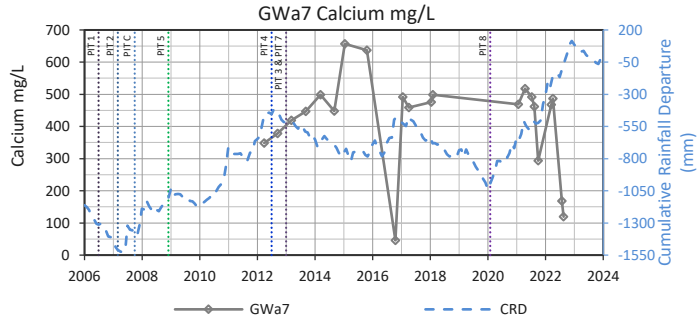
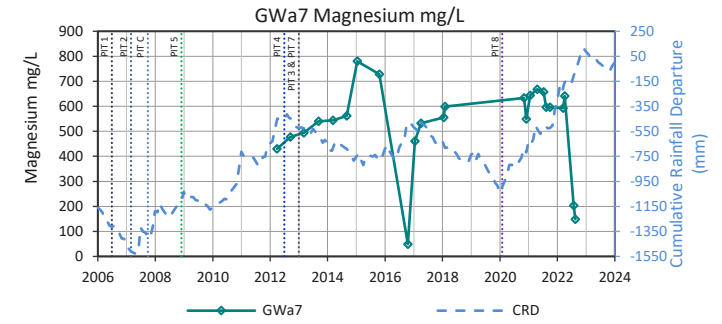
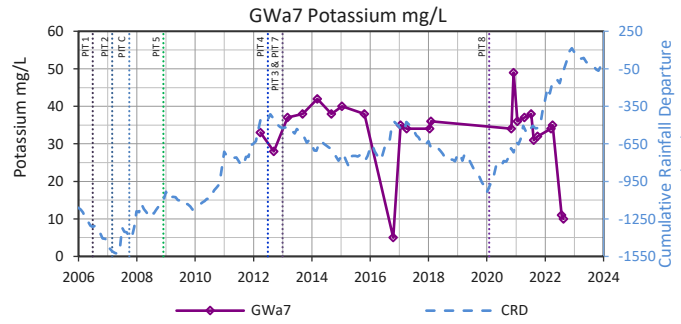
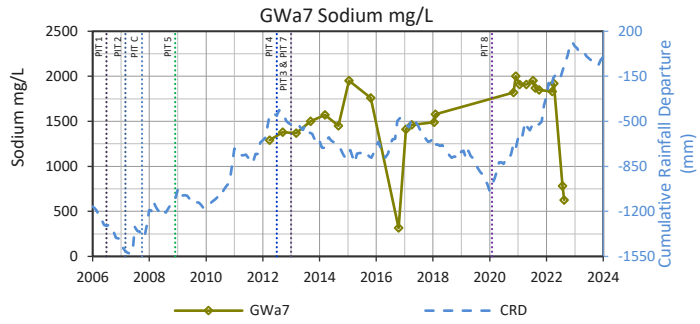
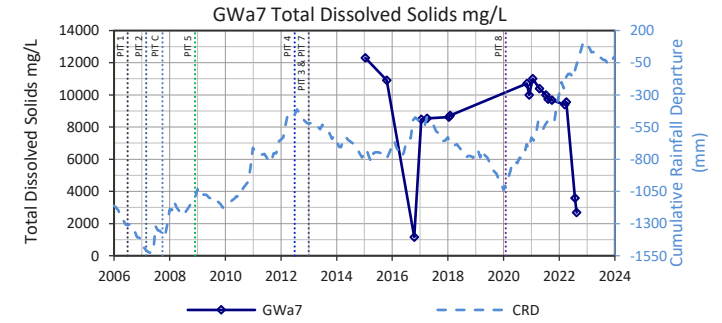
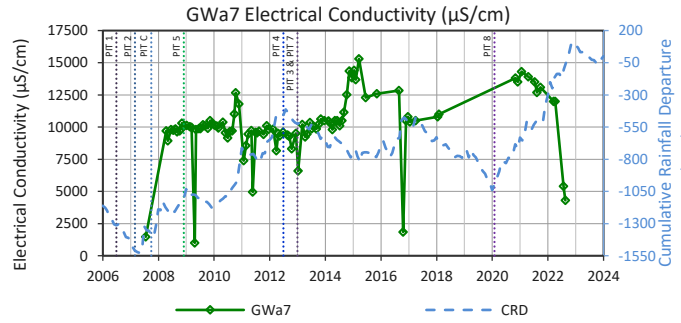
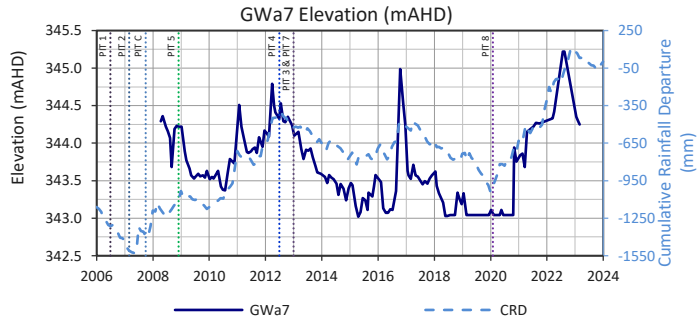


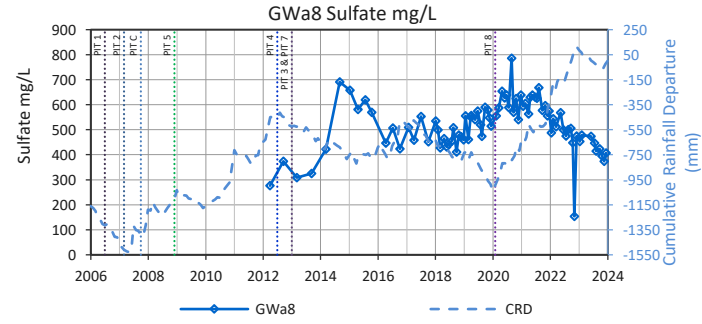
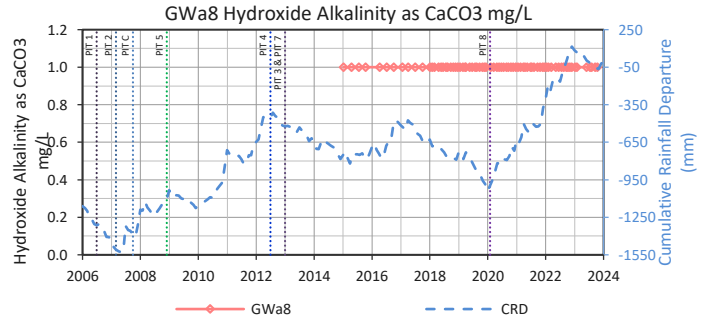
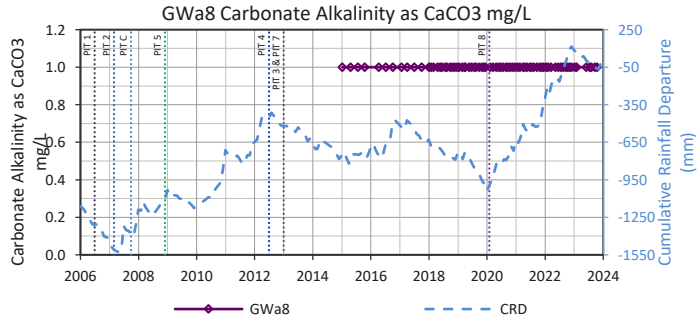
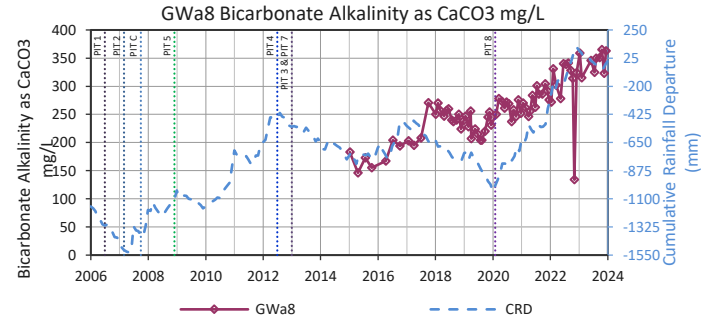
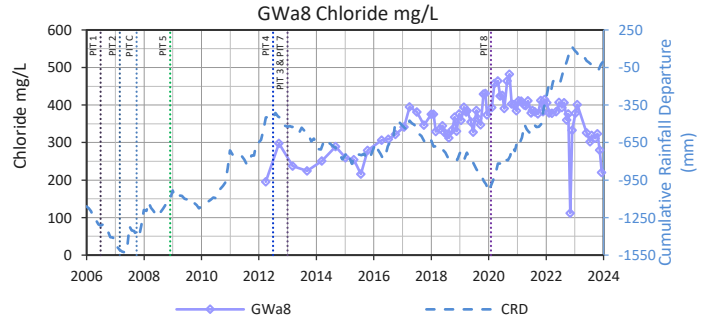
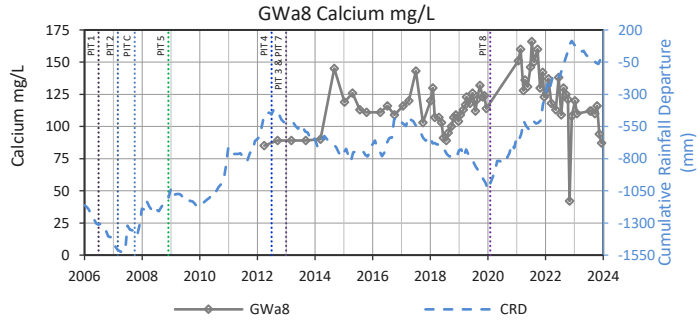
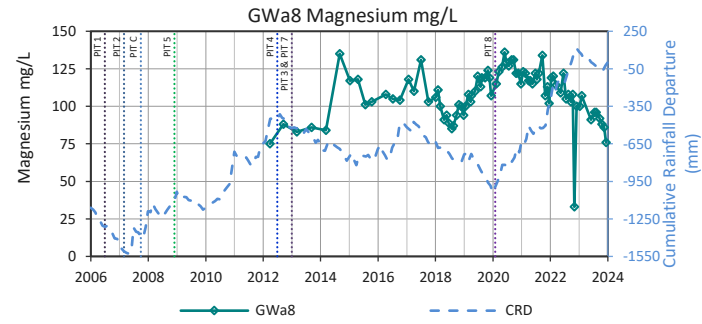
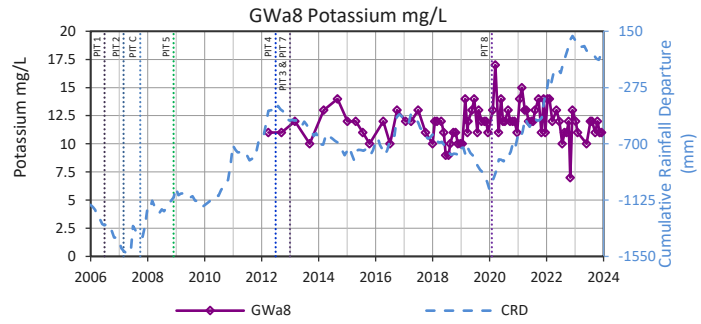
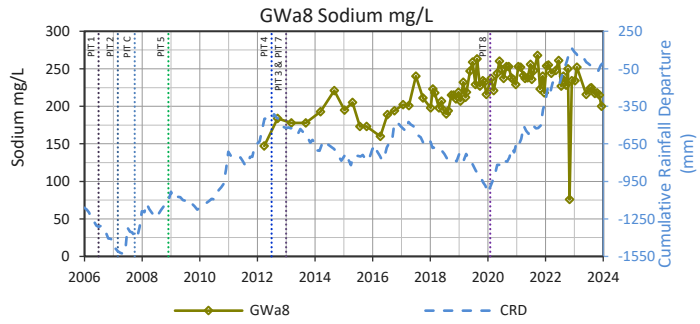
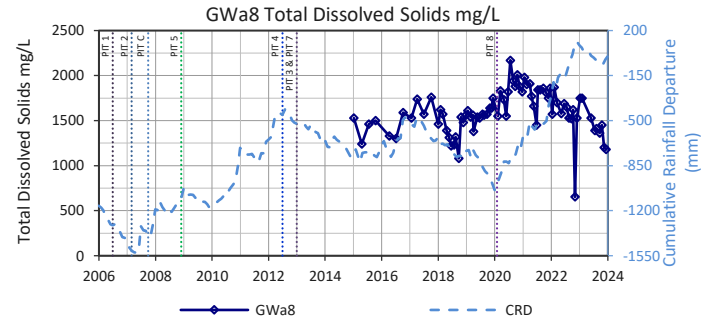
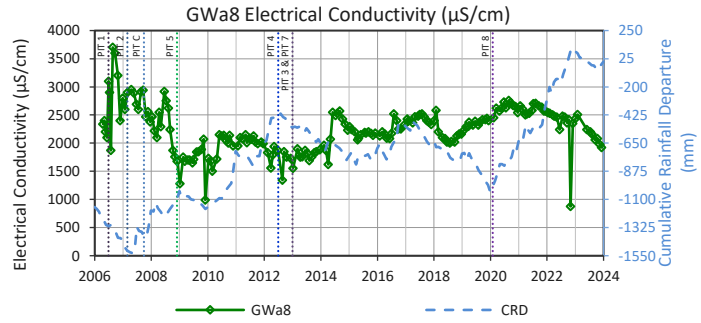
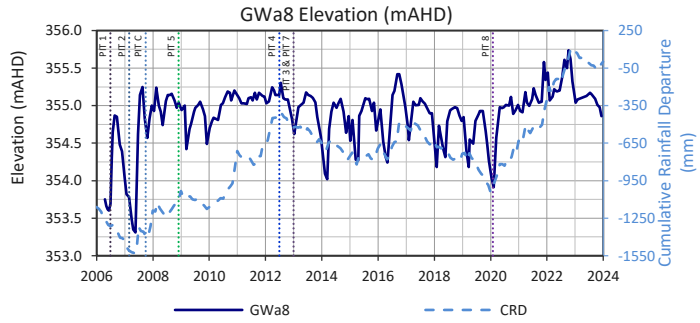


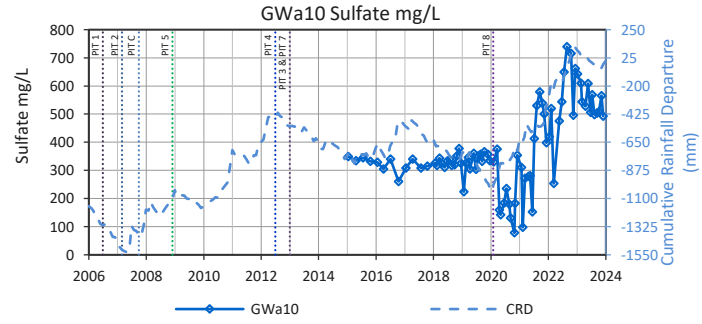
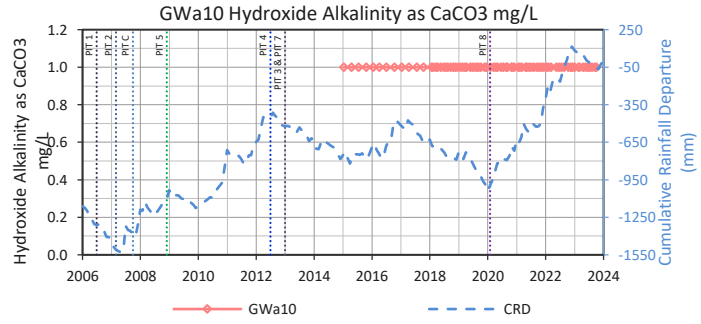
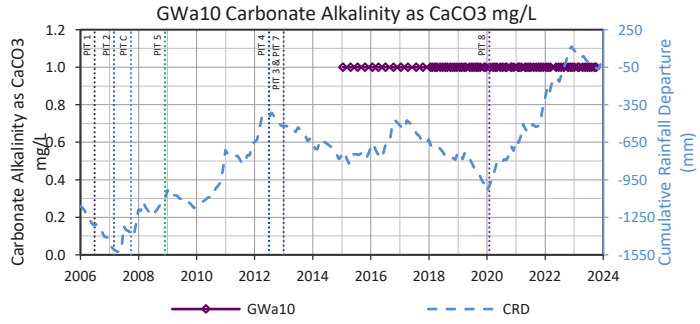
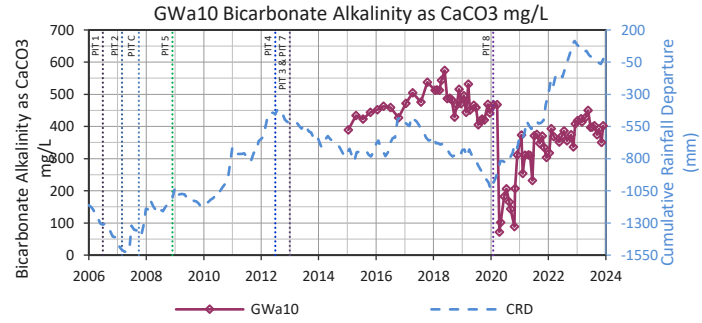
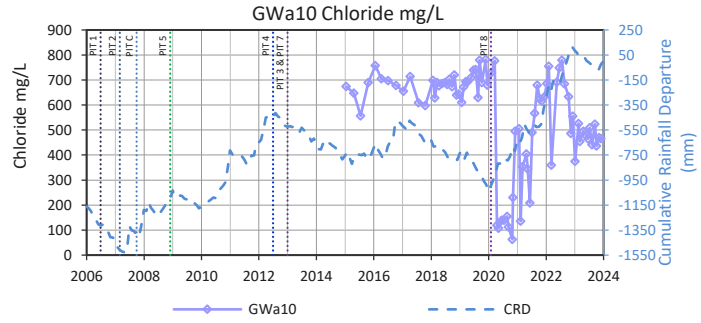
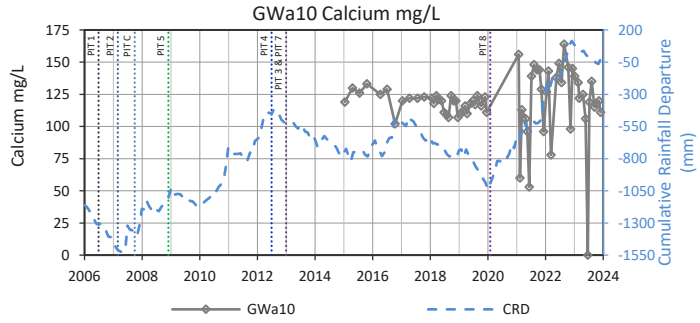
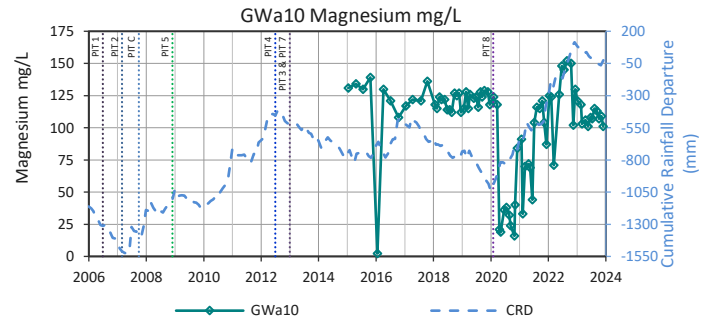
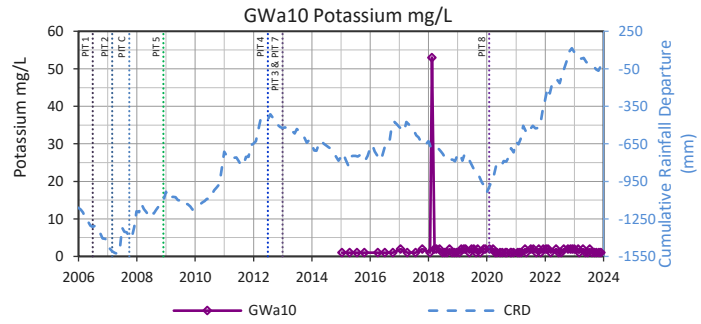
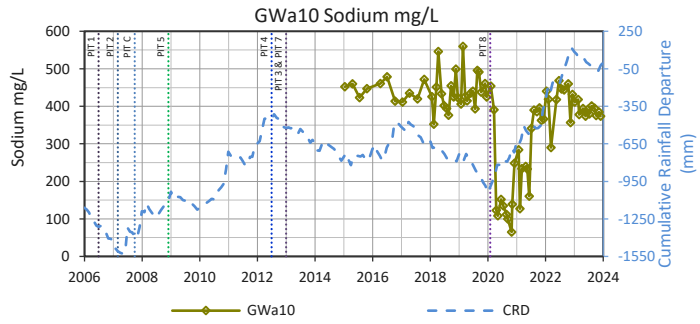
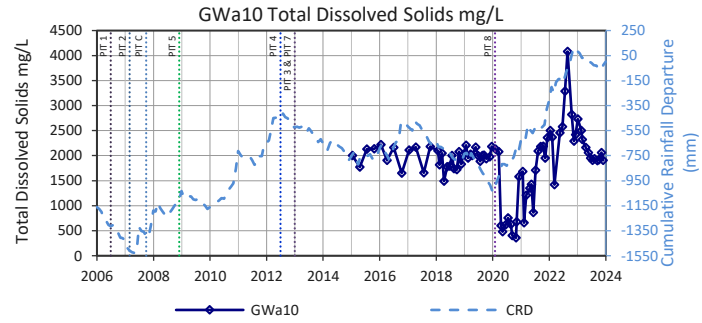
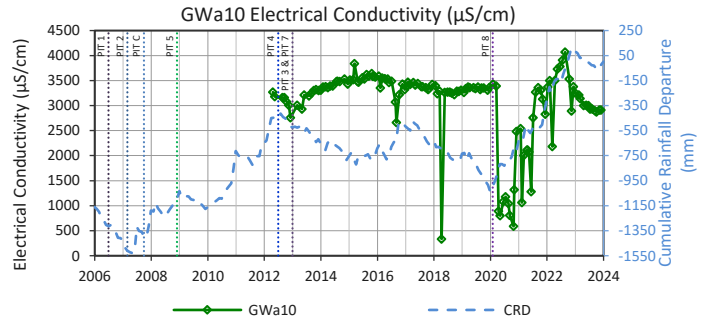
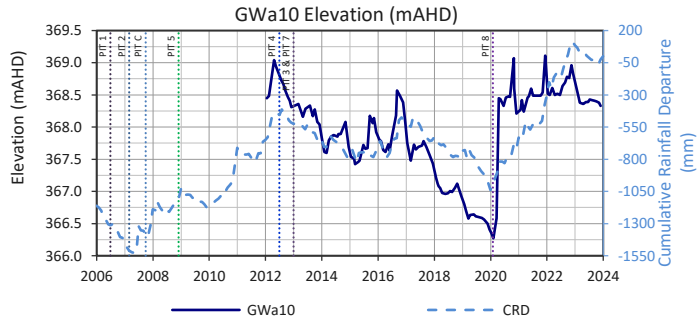


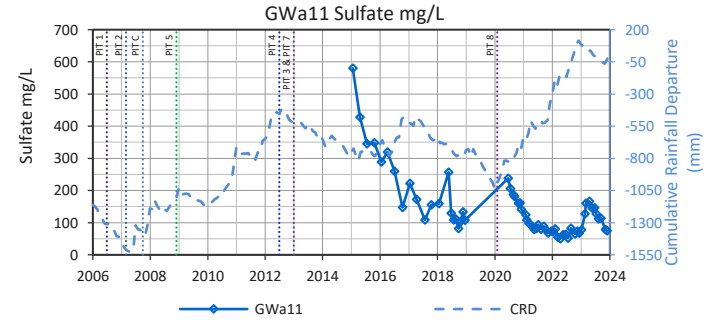
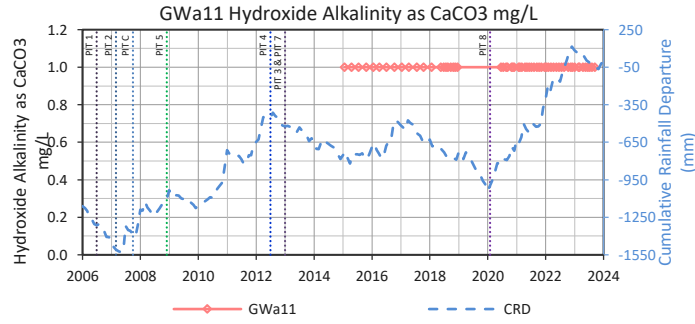
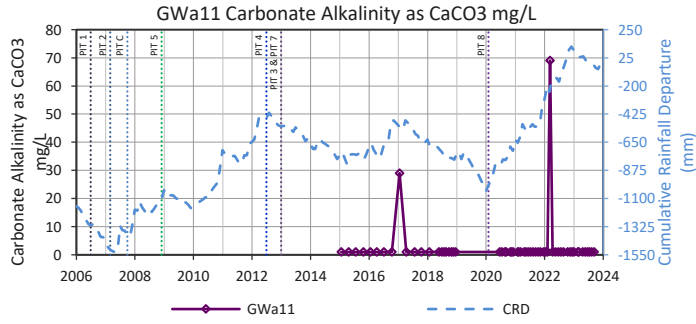
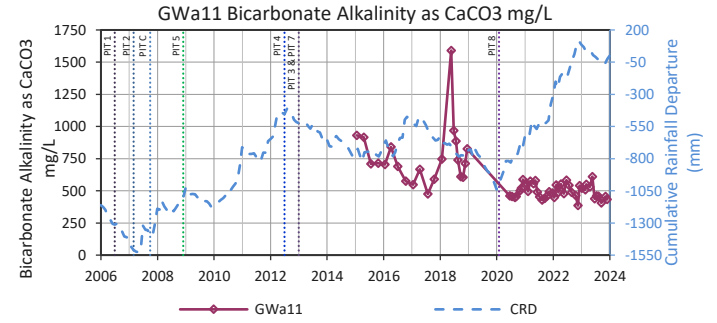
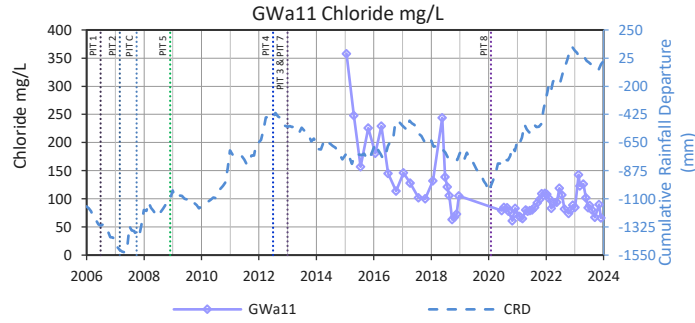
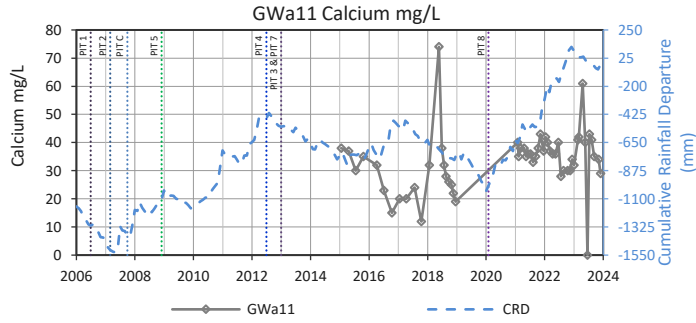
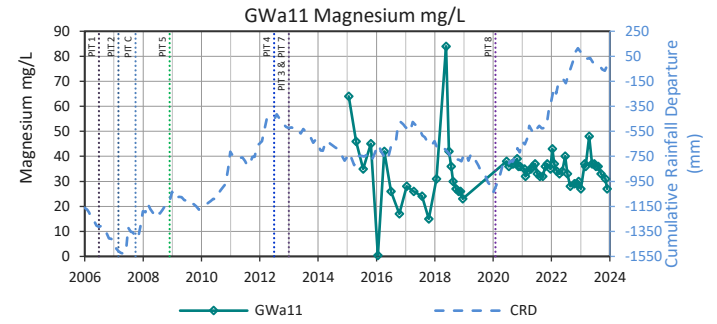
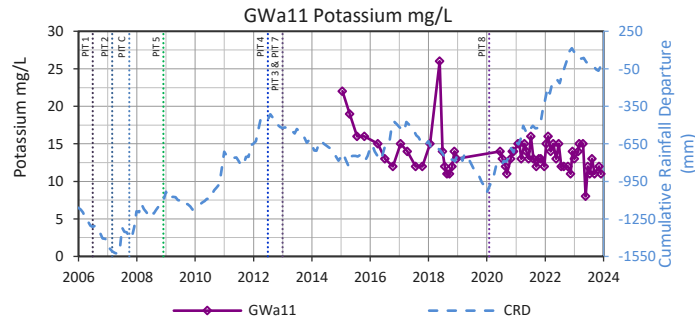
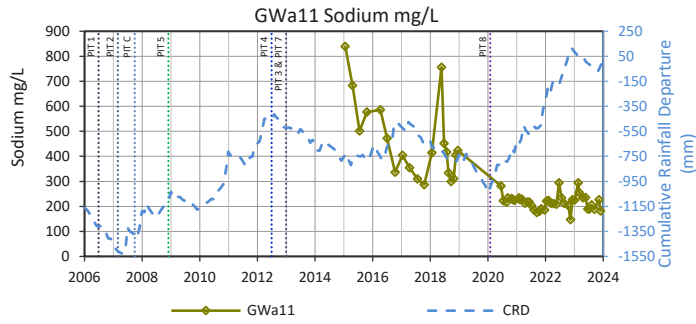
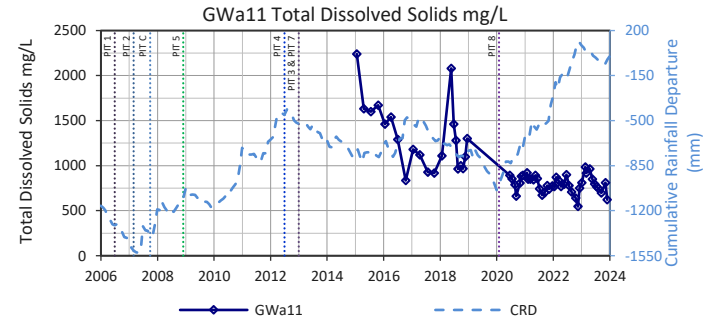
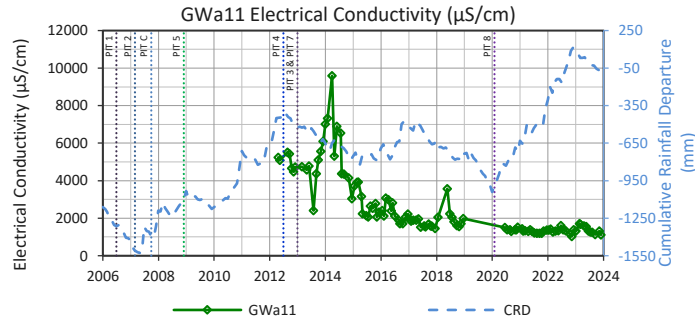
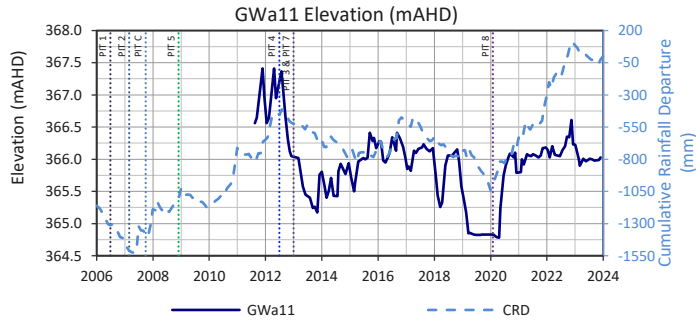


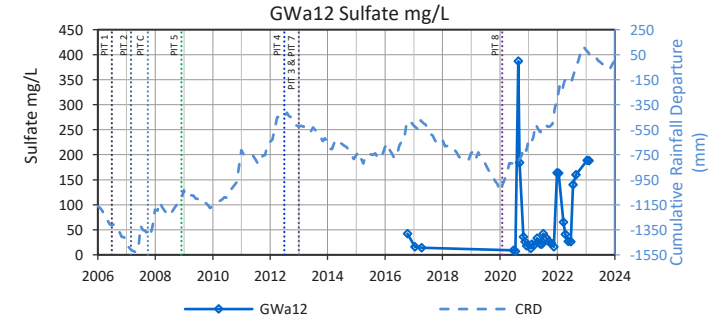
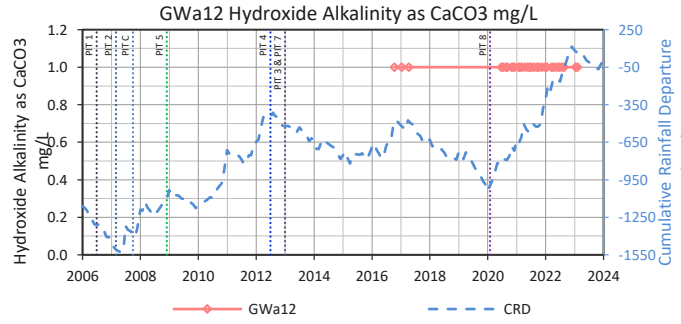
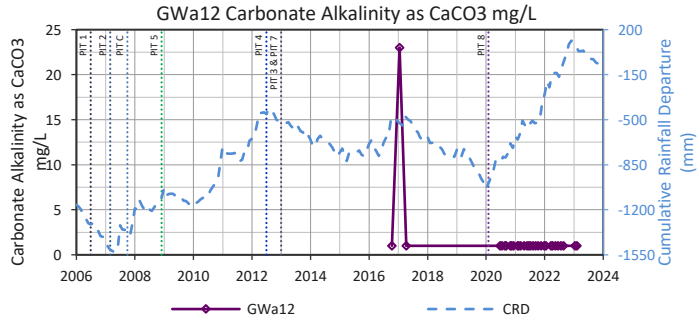
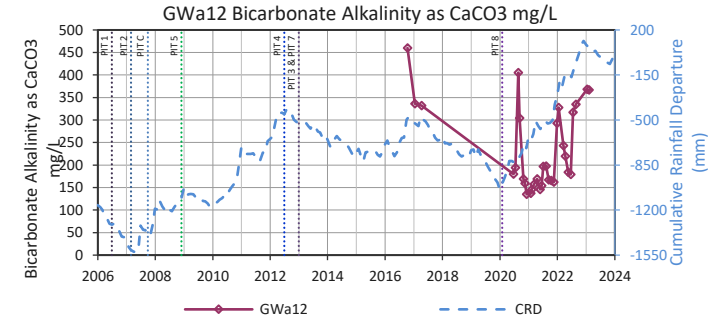
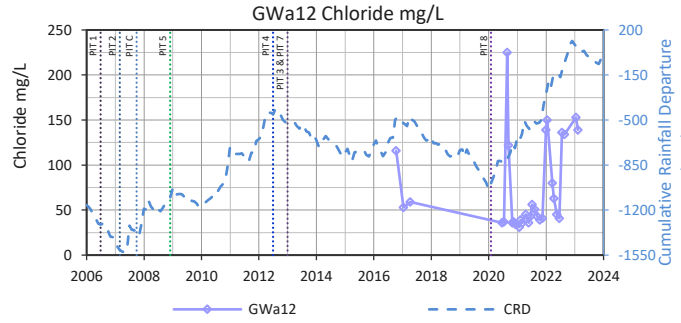
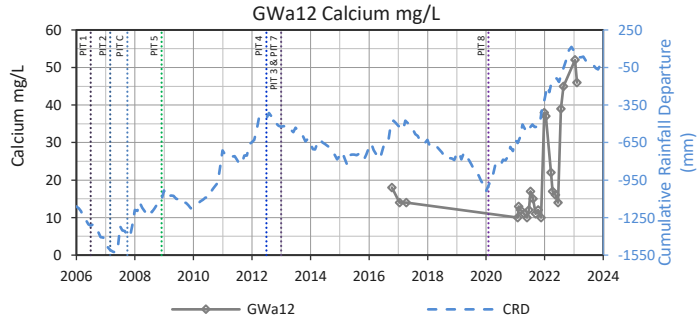
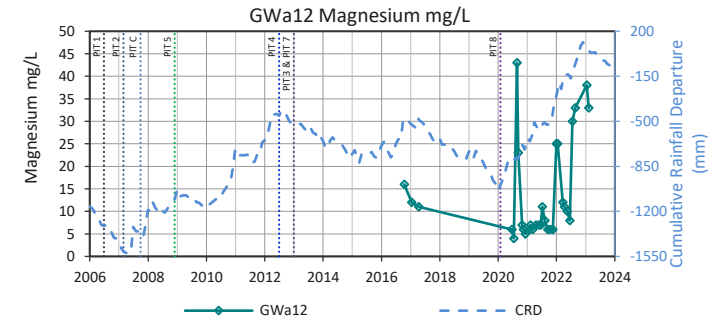
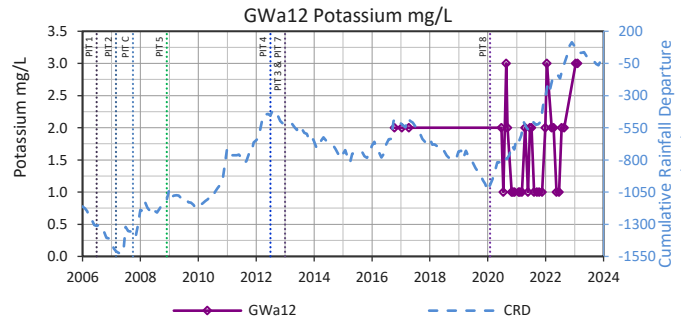
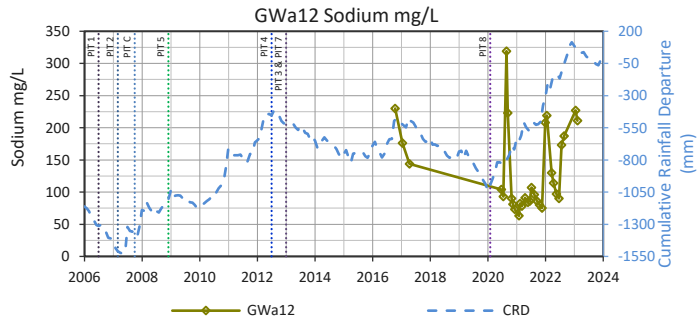
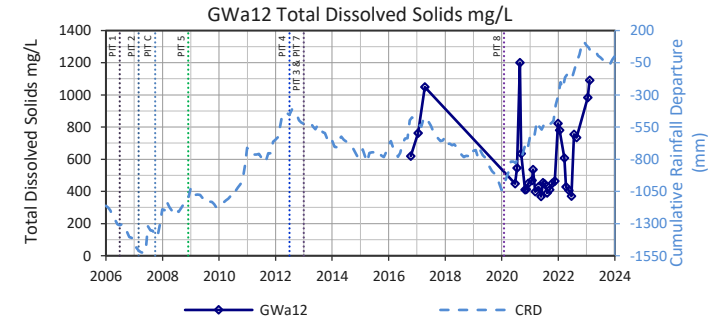
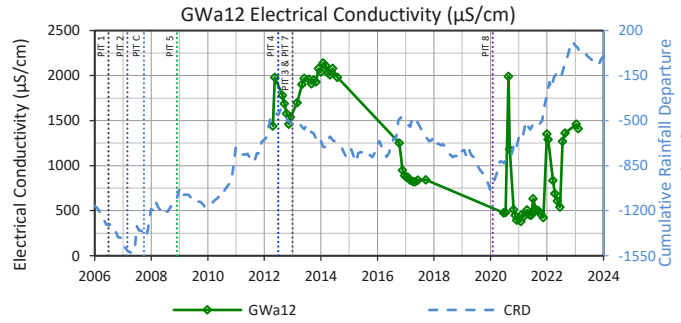
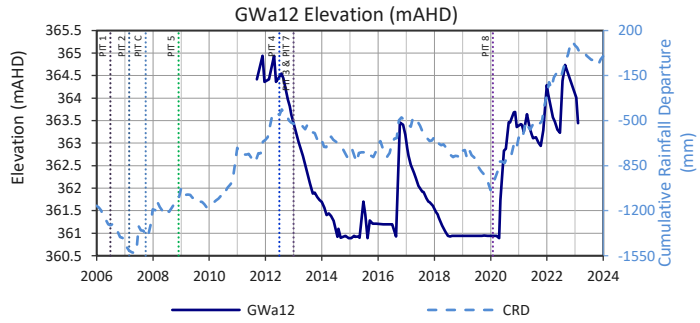


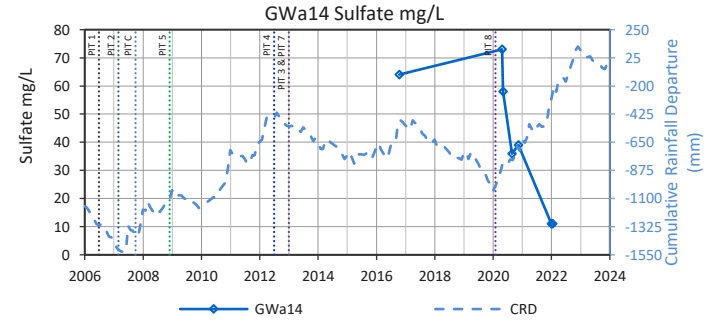
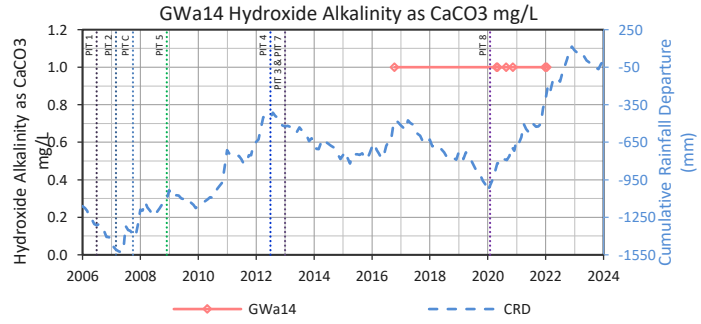
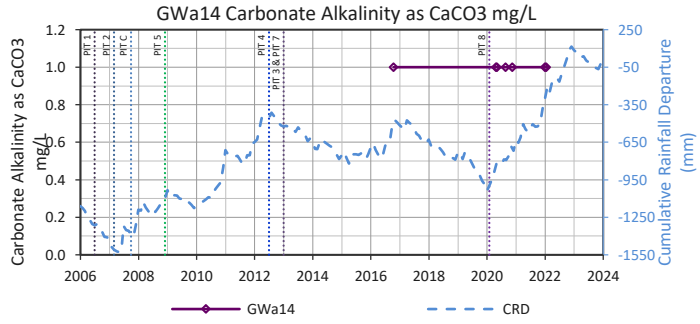
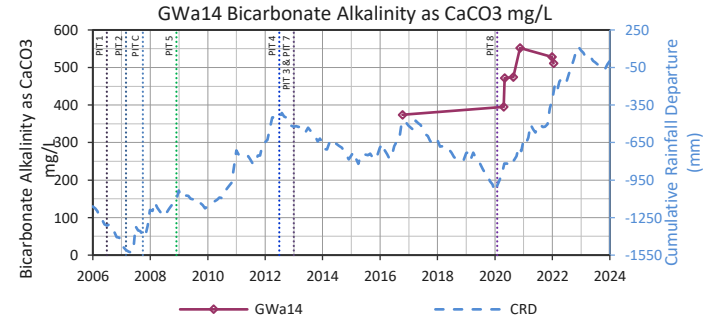
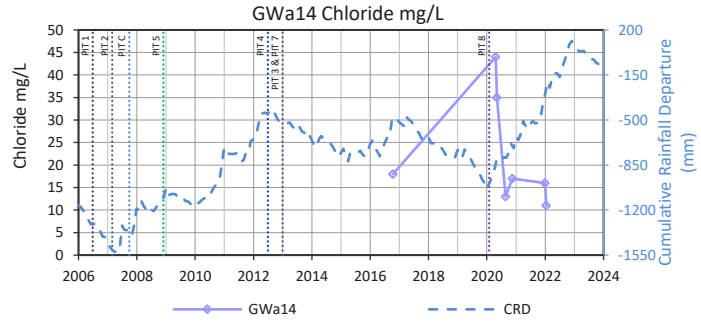
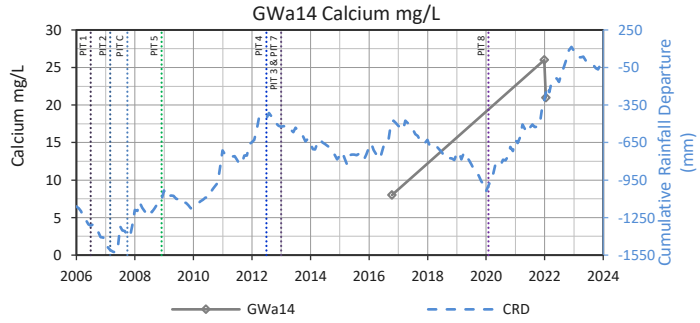
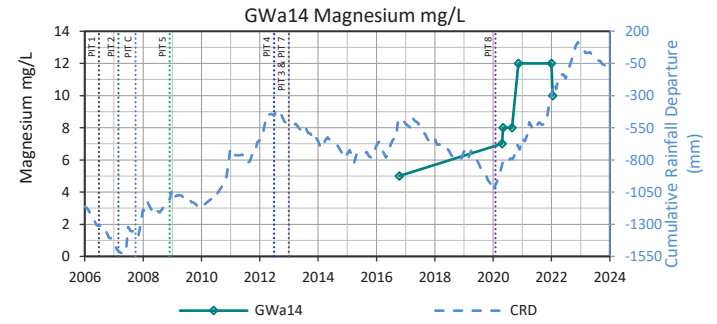
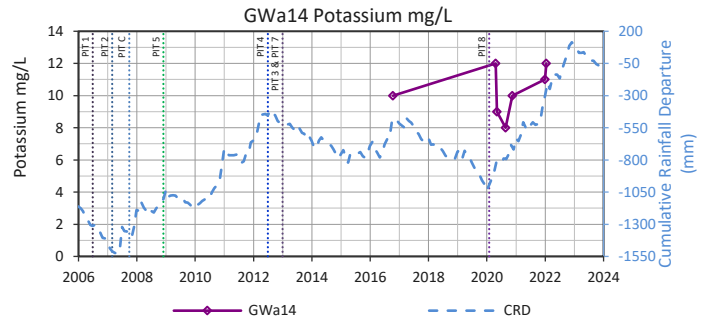
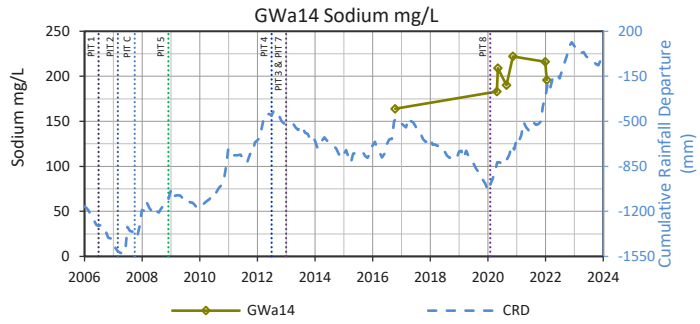
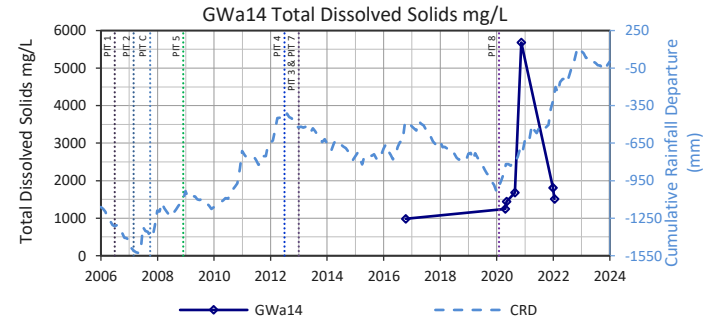
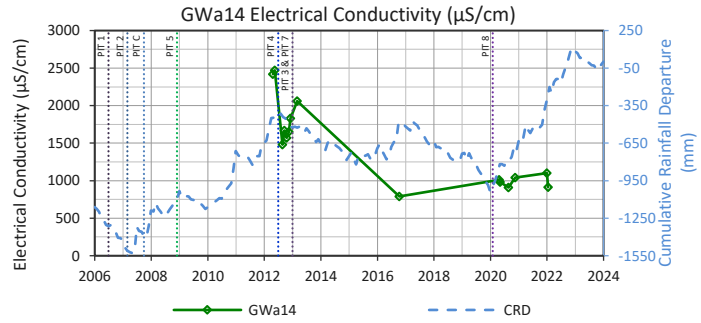
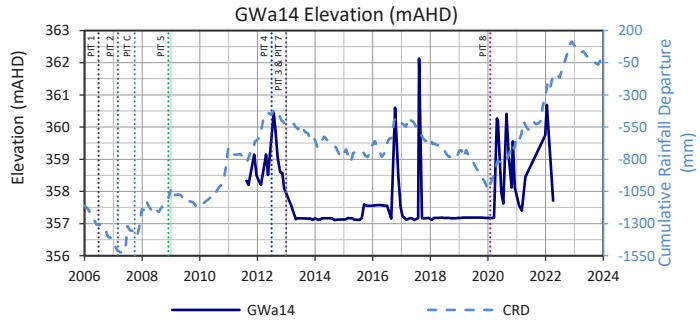


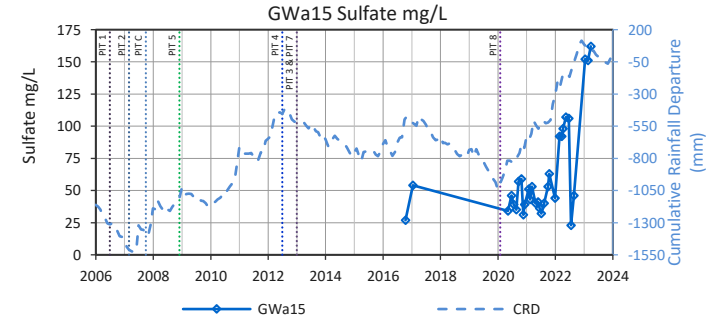
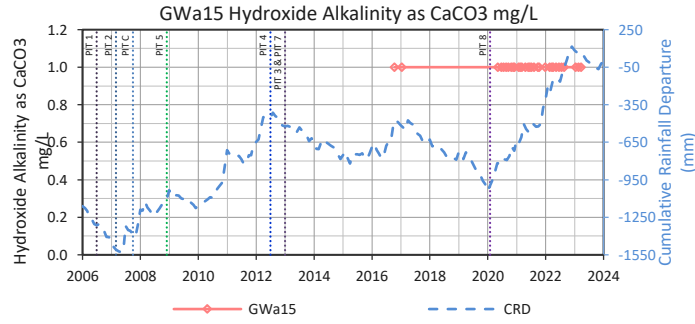
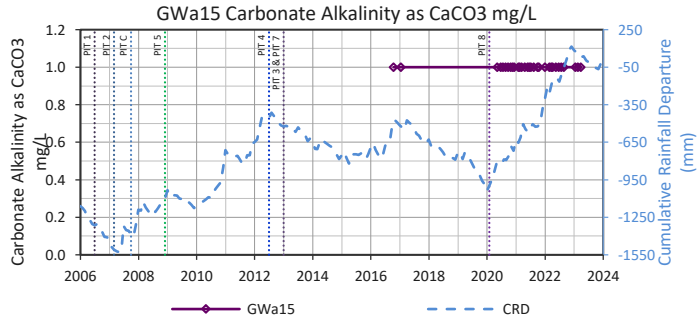
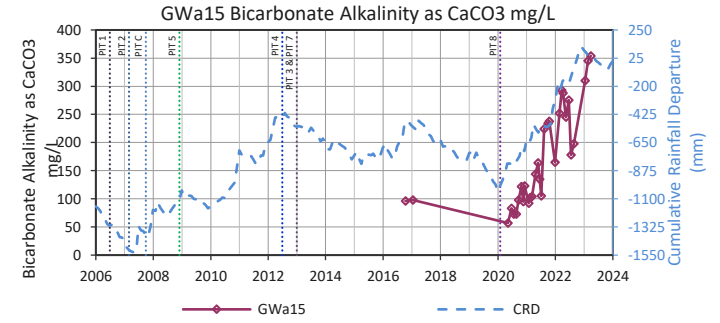
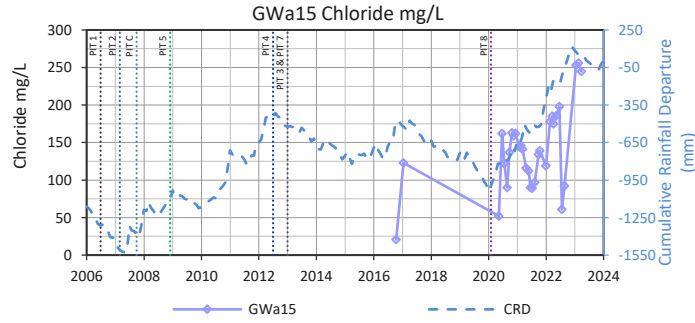
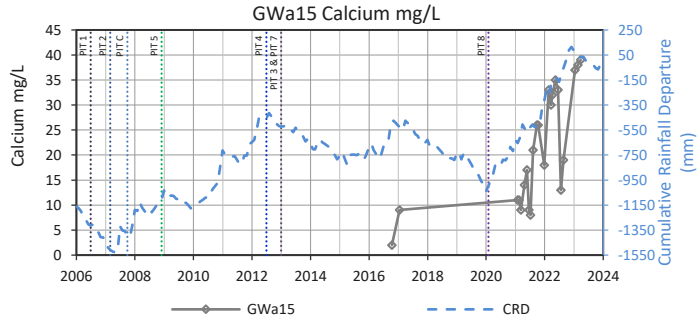
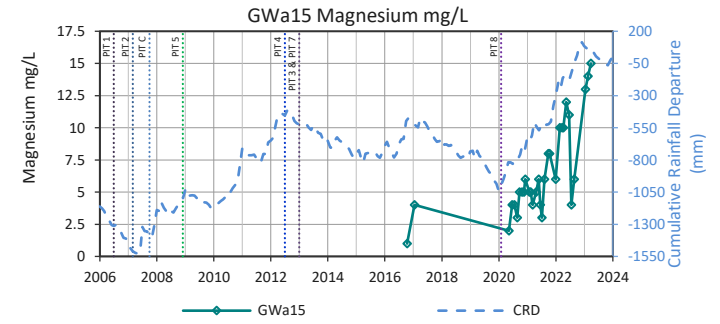
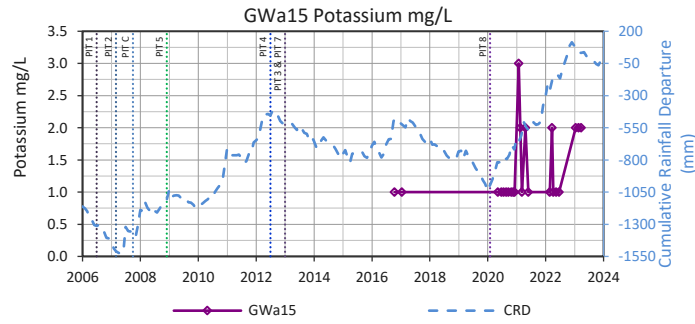
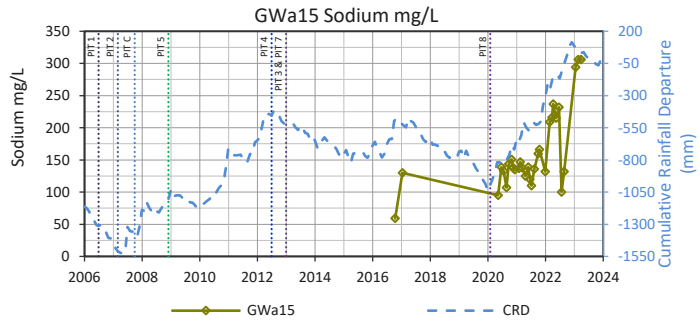
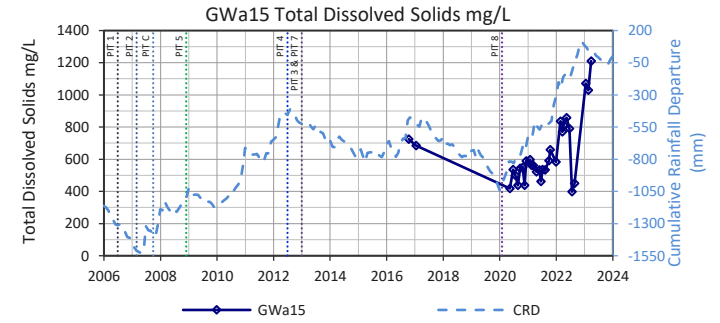
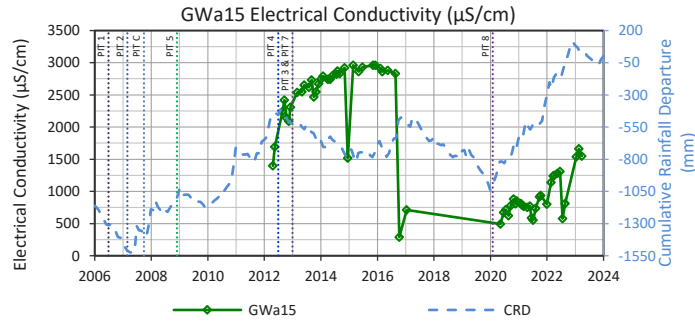
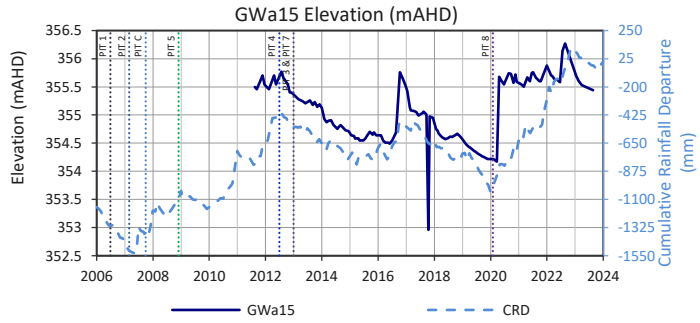


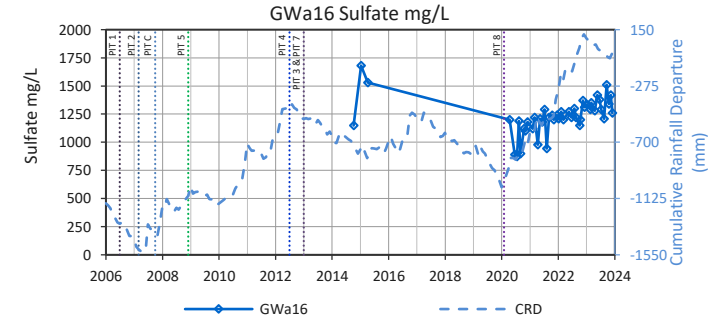
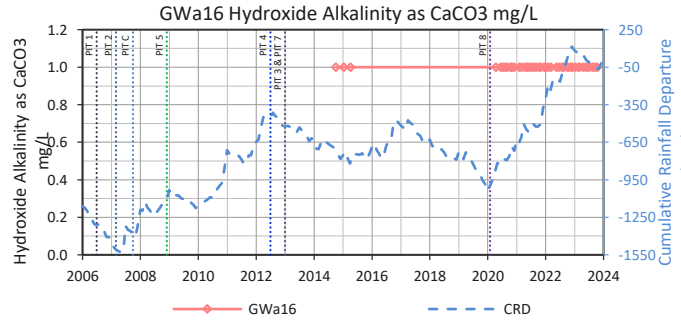
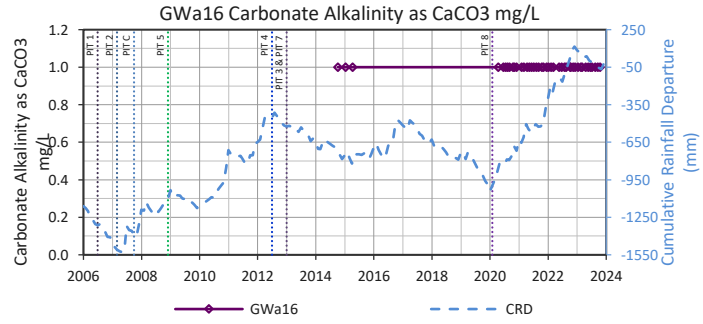
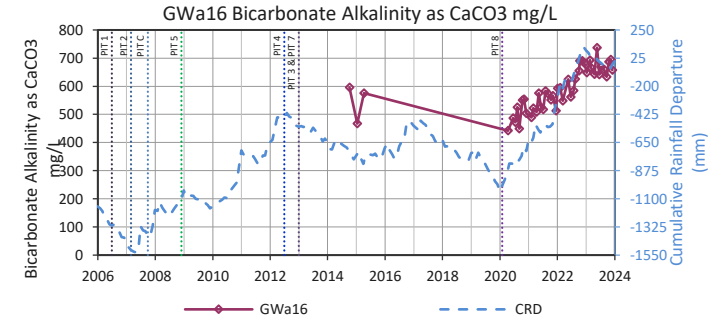
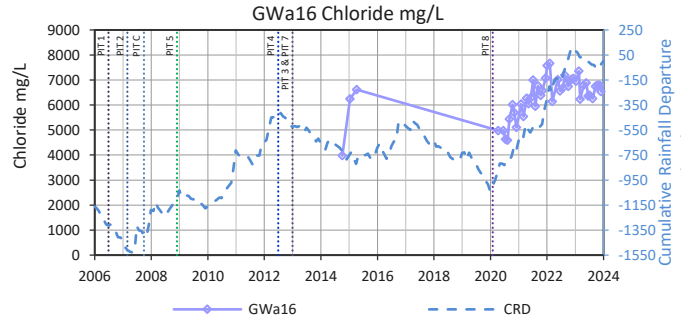
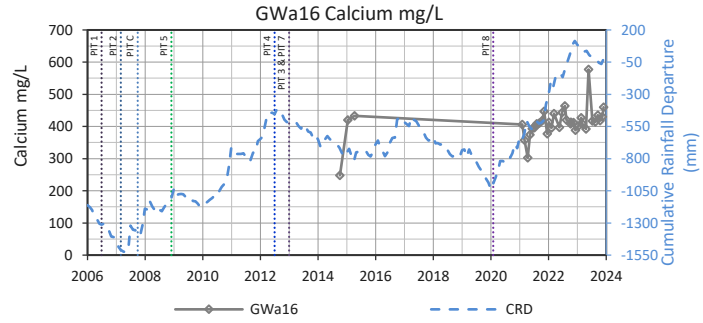
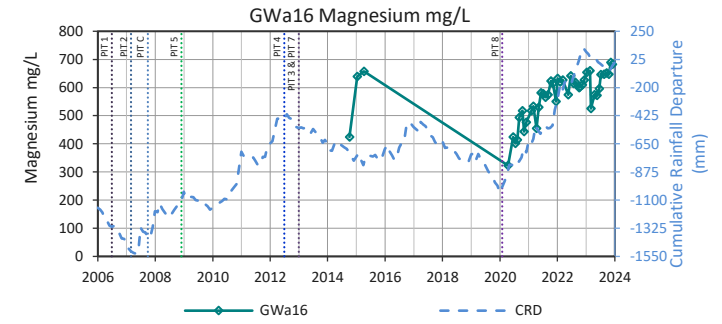
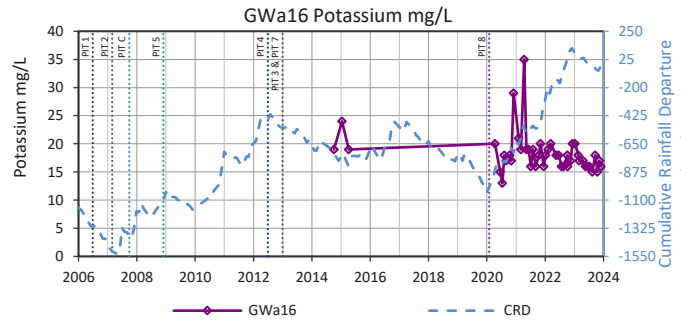
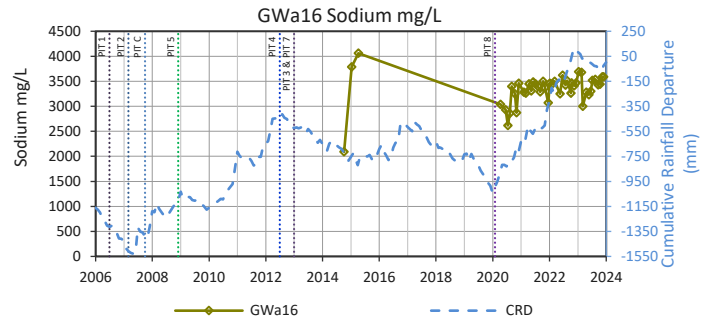
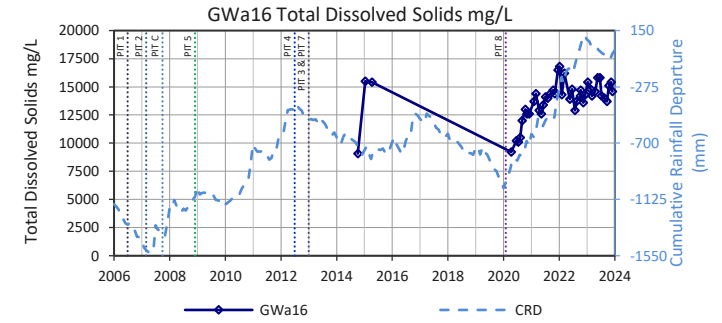
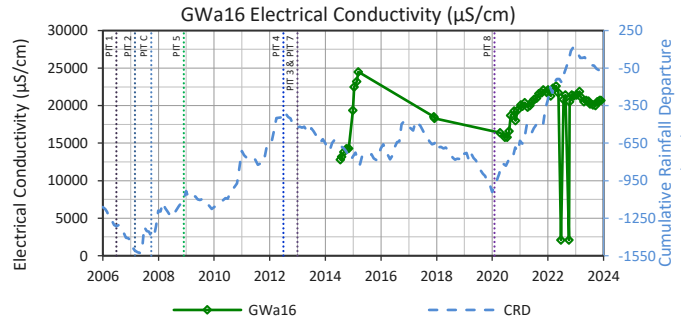
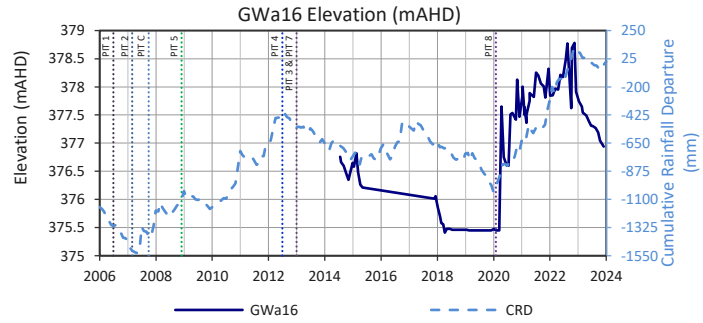


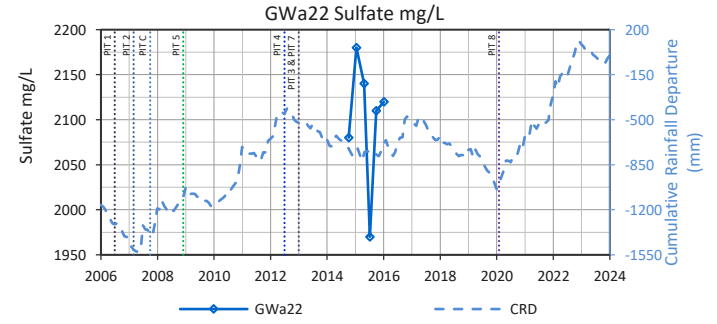
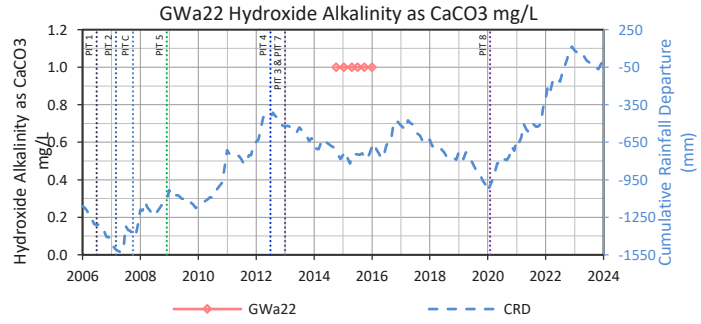
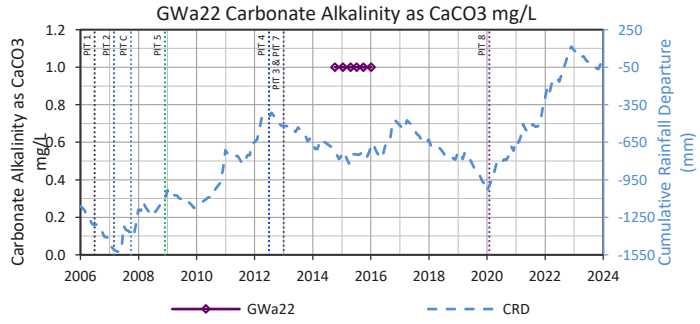
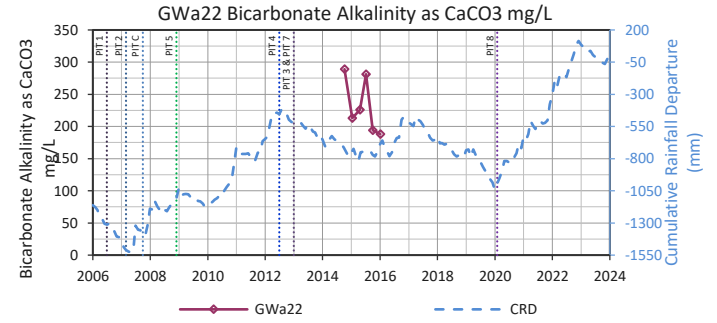
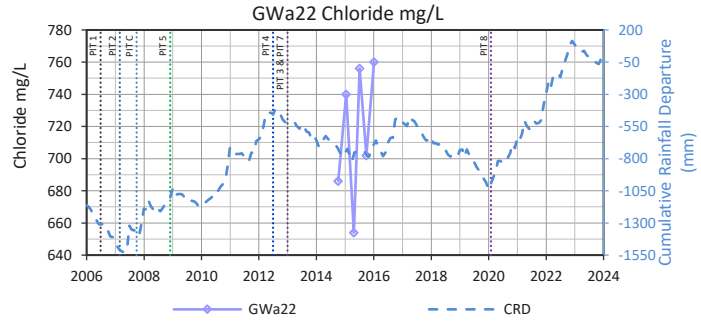
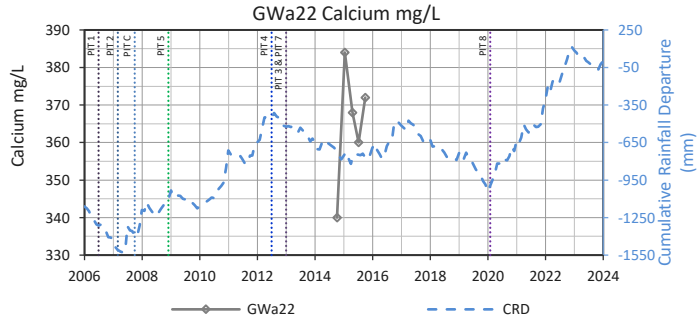
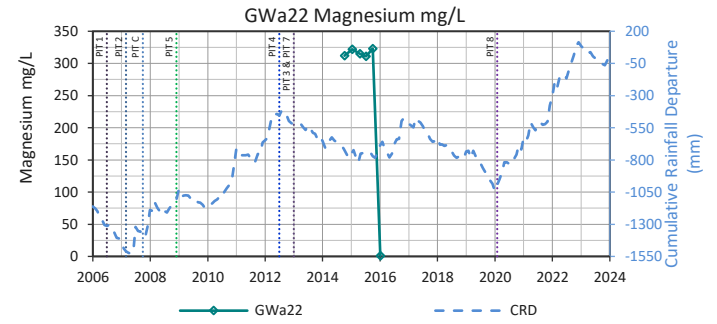
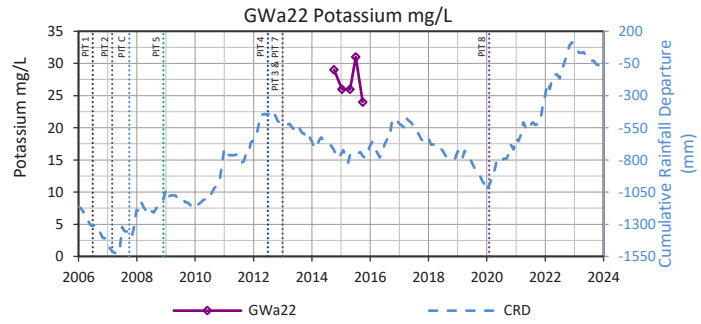
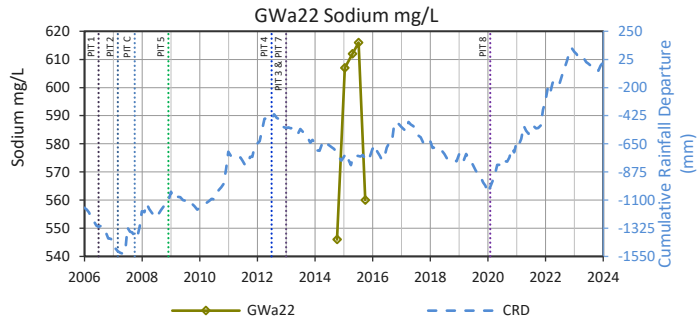
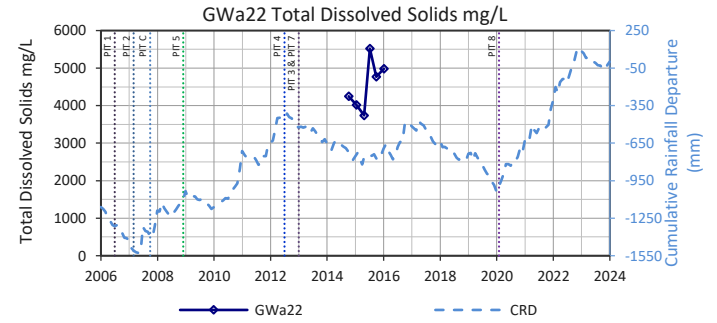
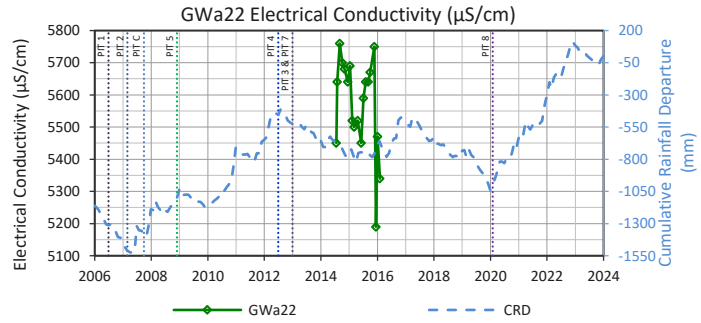
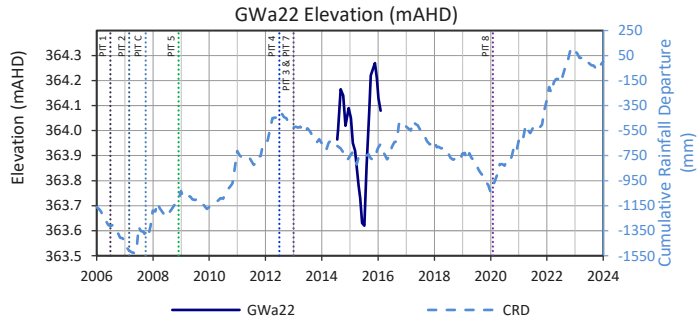


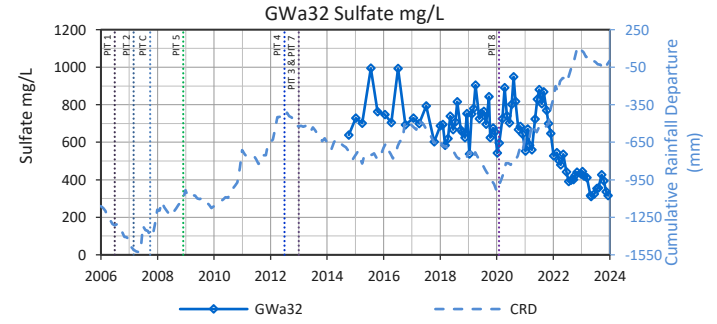
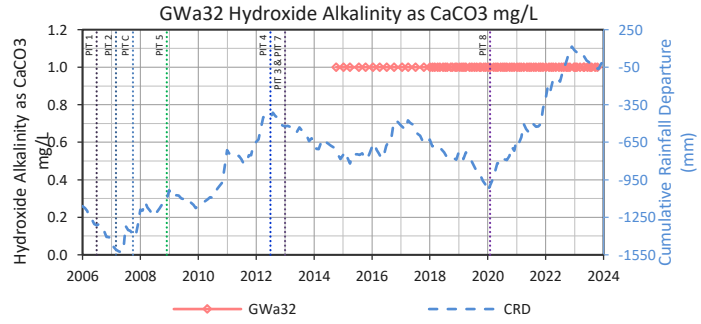
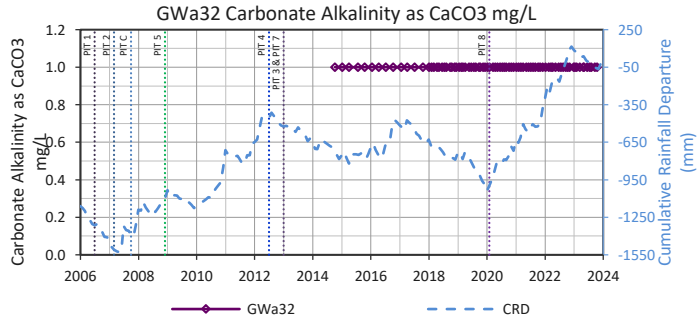
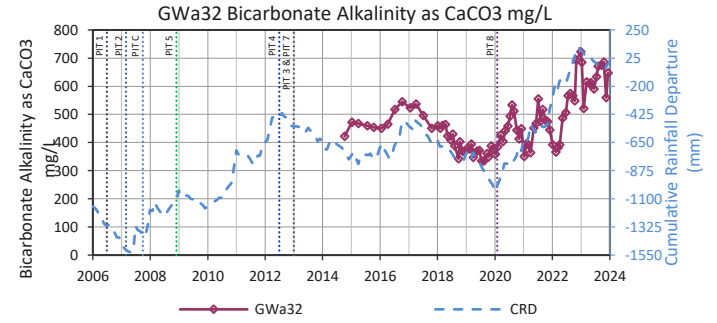
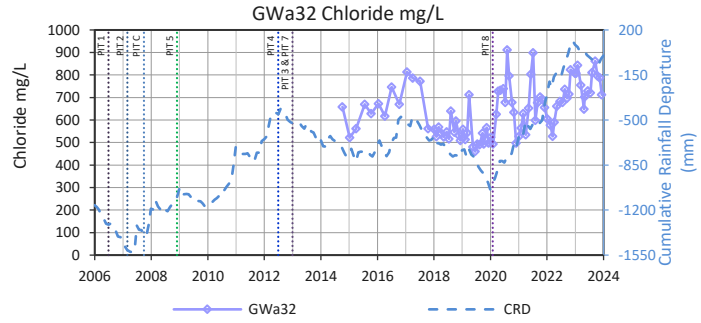
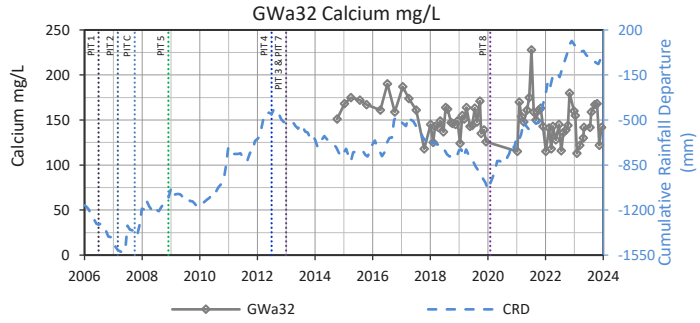
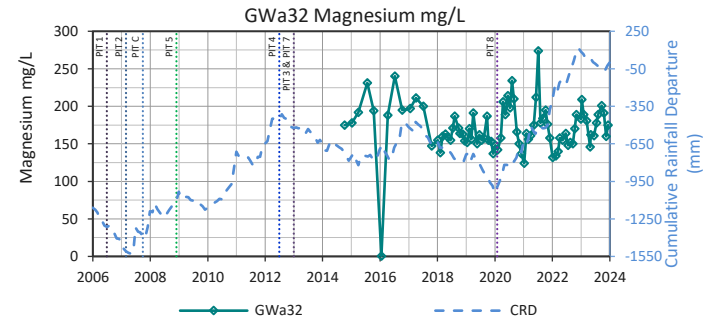
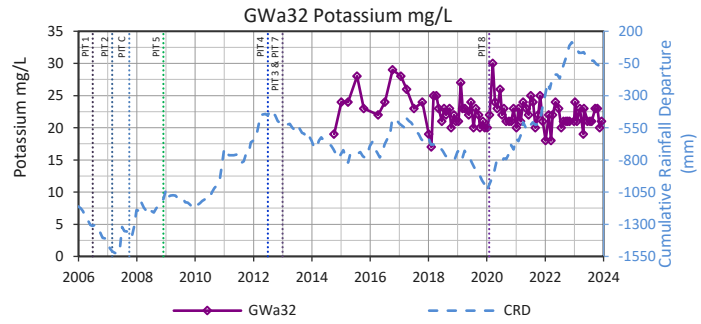
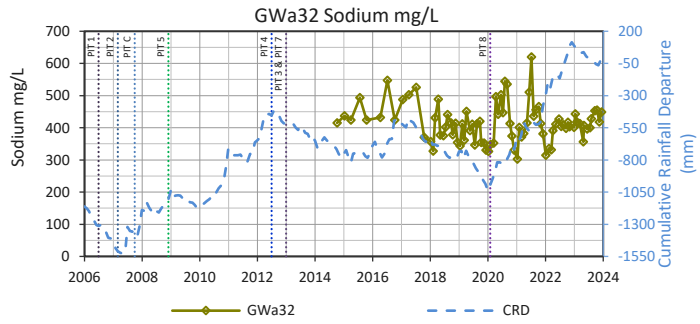
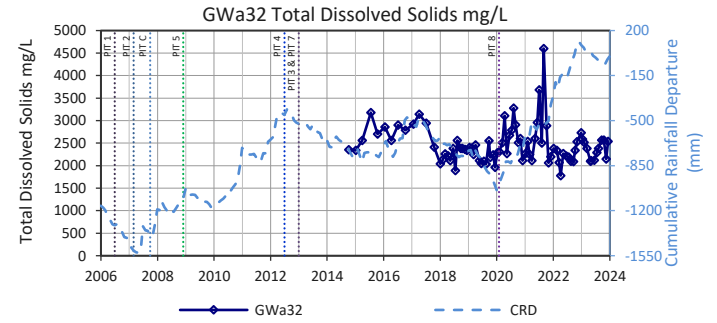
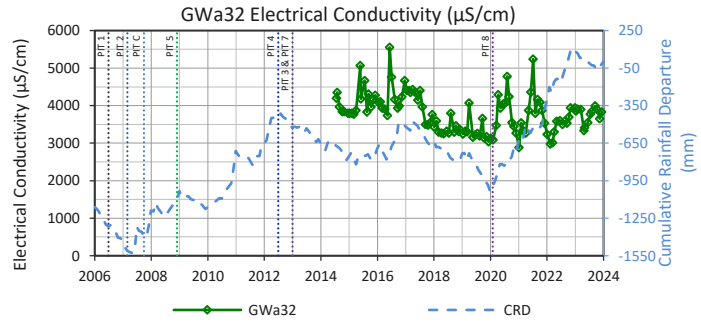
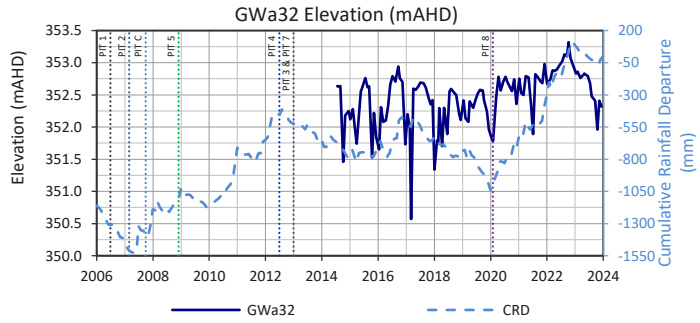


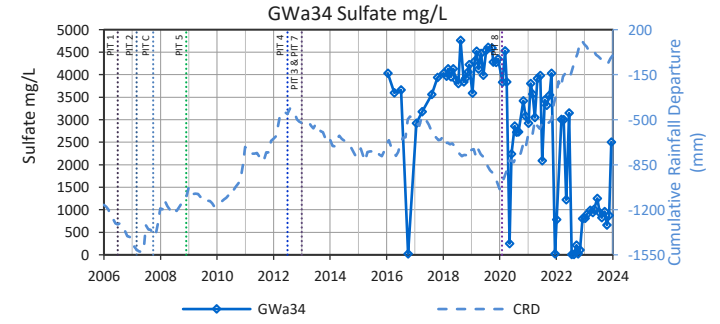
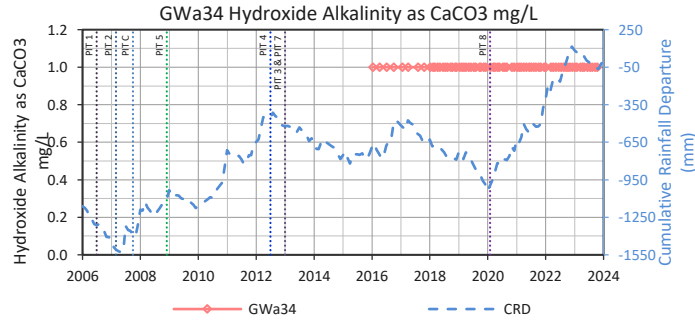
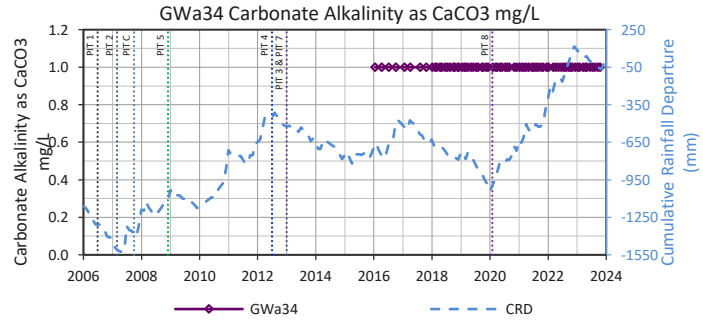
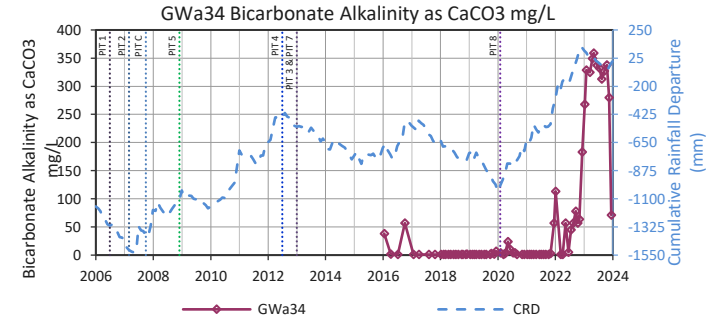
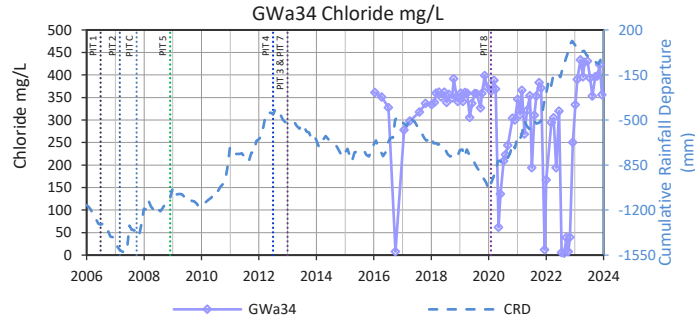
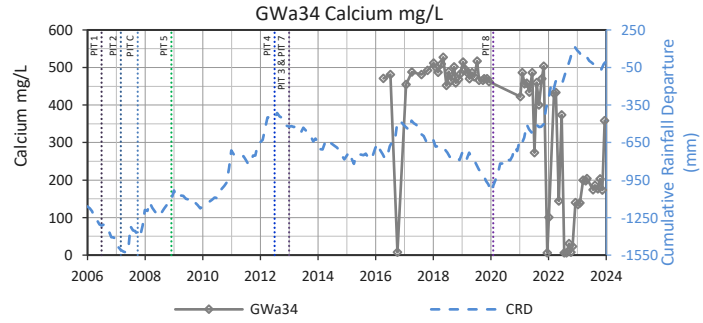
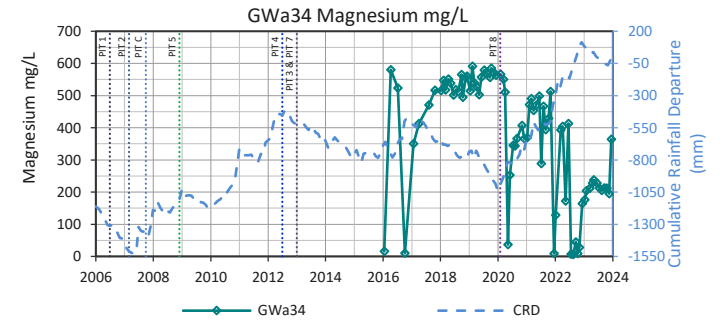
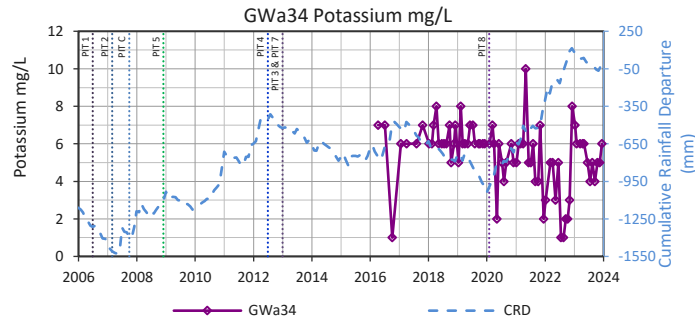
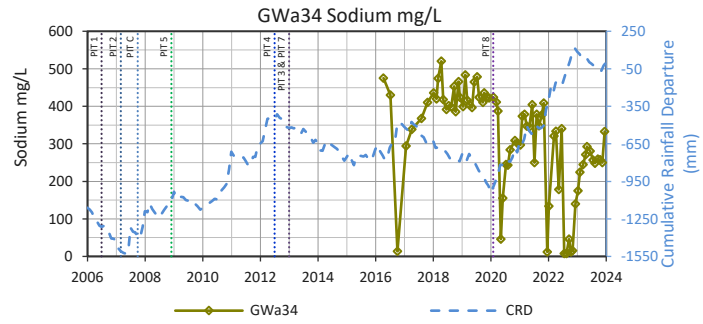
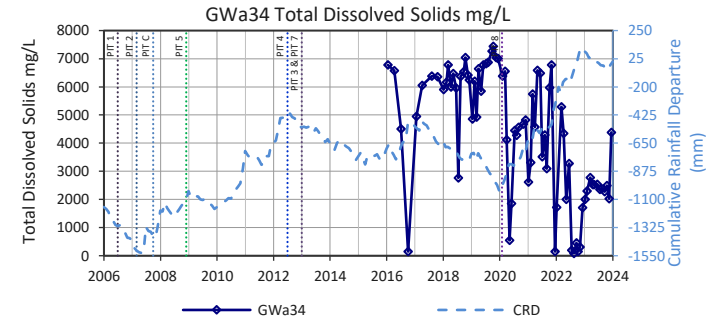
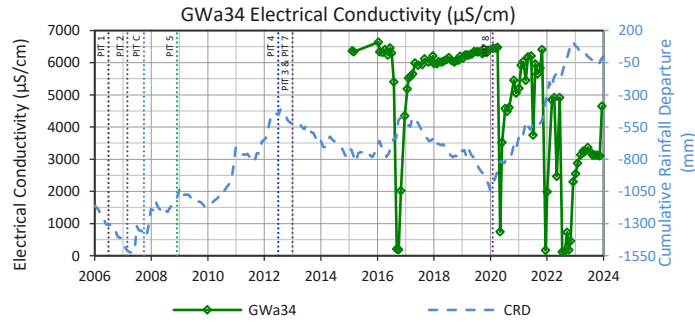
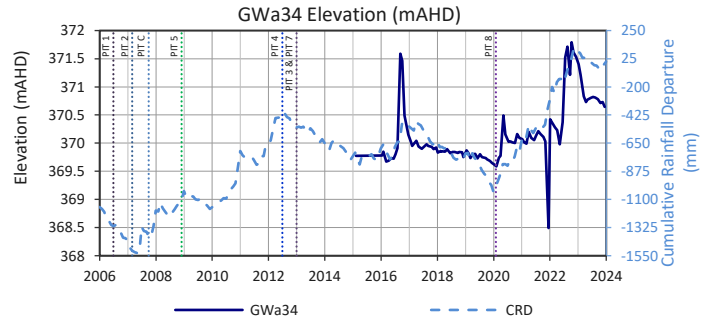


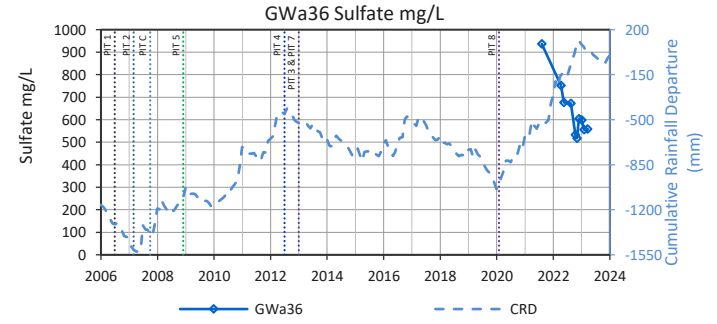
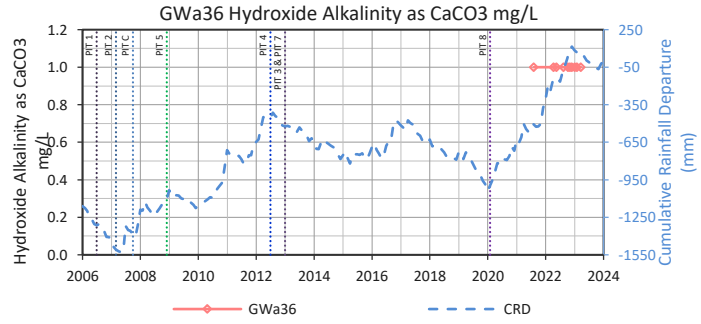
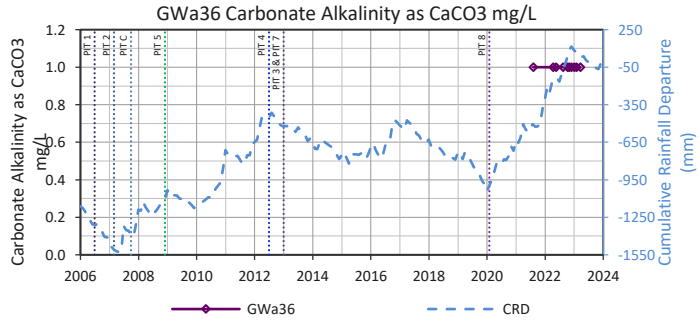
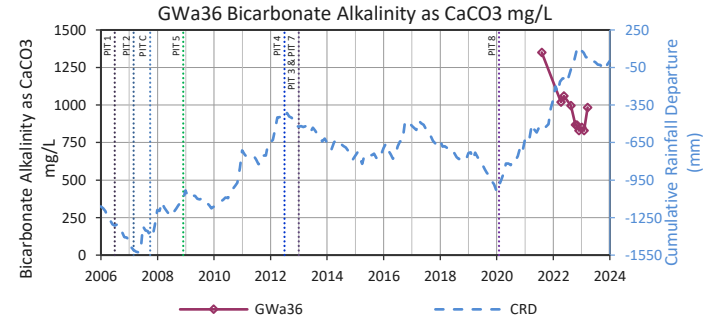
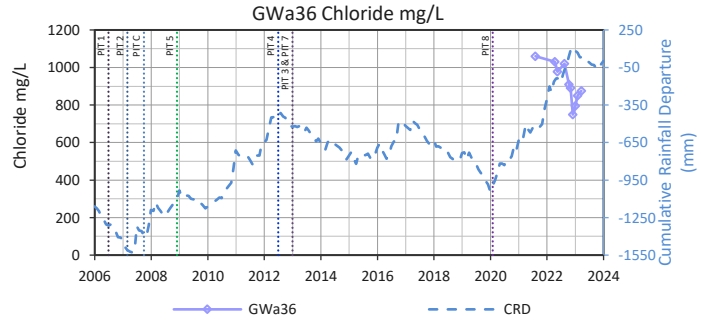
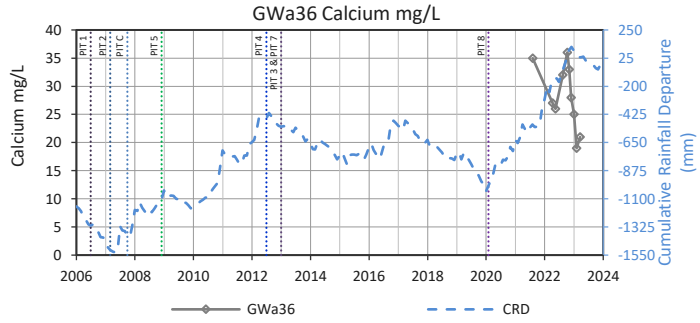
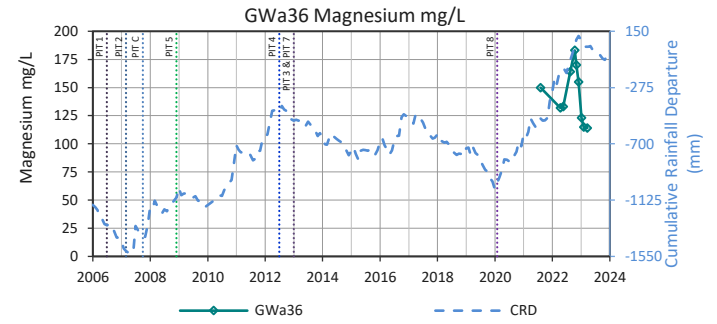
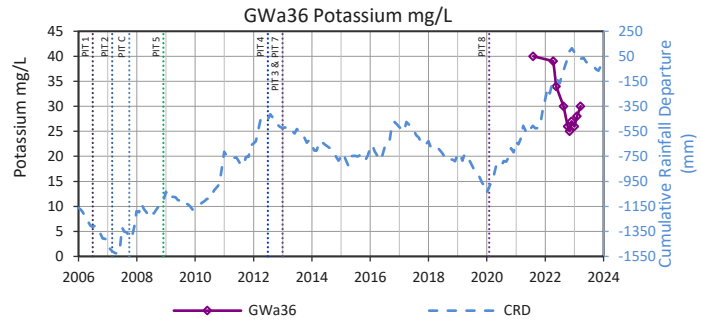
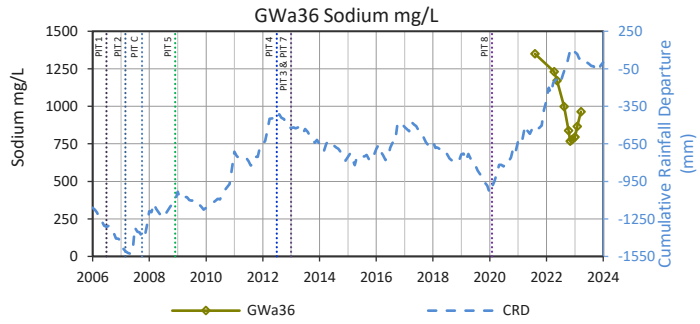
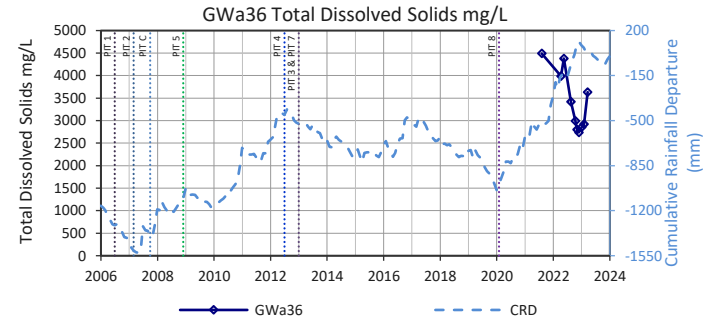
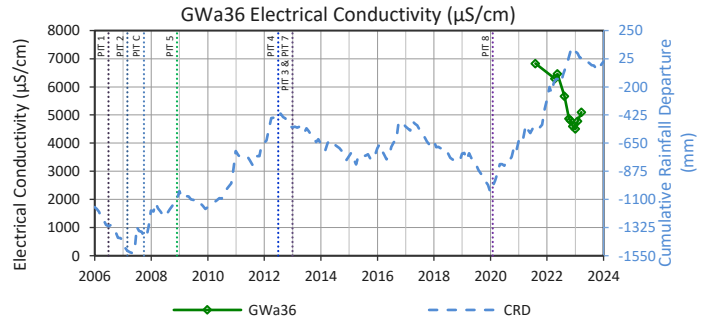
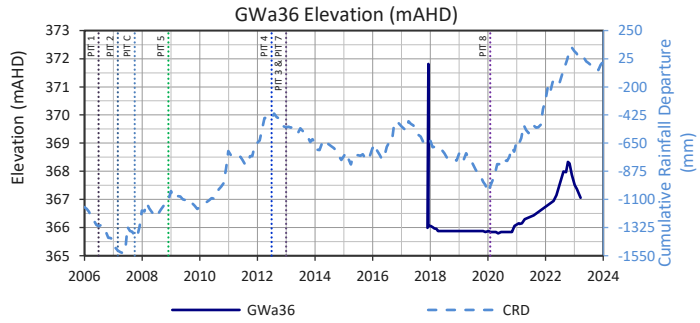




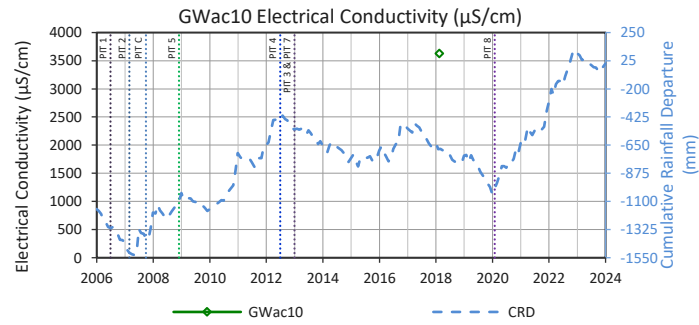








No Data Available for Elevation (mAHD)



No Data Available for Total Dissolved Solids mg/L

No Data Available for Sodium mg/L

No Data Available for Potassium mg/L

No Data Available for Magnesium mg/L

No Data Available for Calcium mg/L

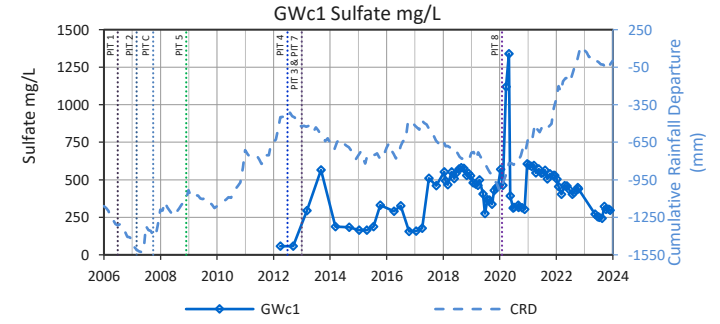
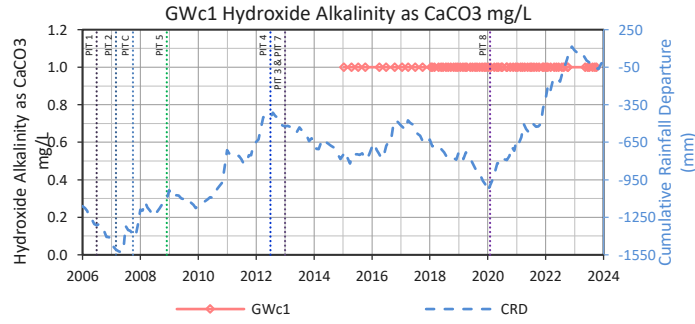
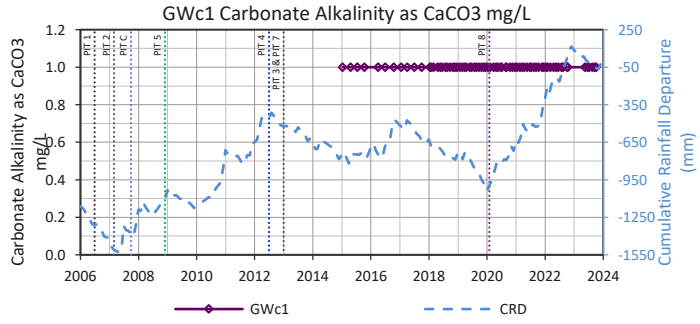
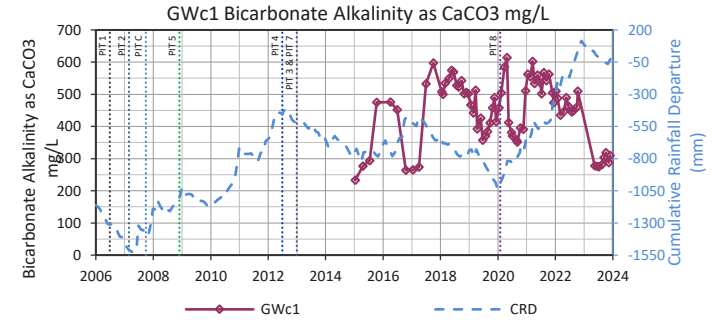
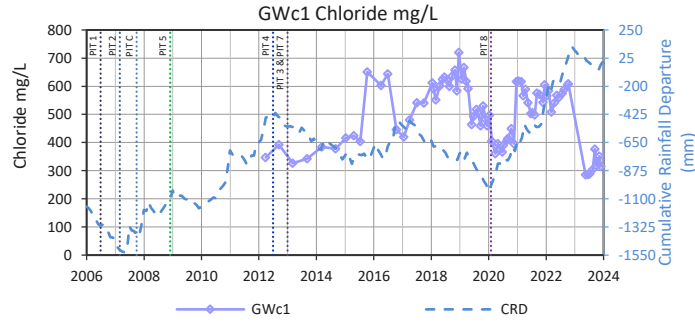
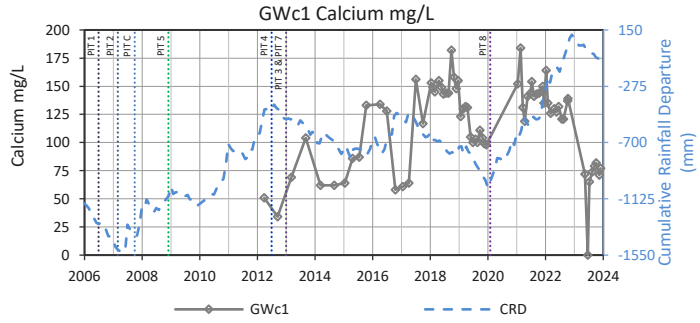
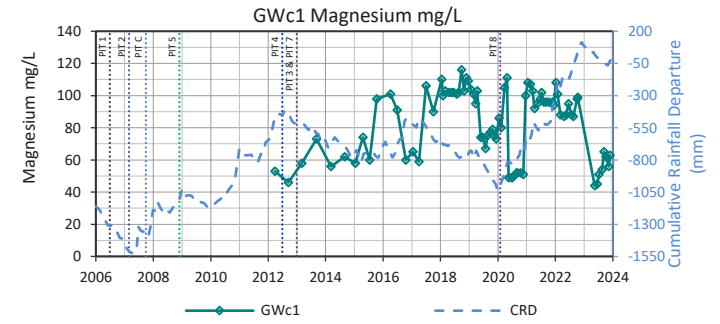
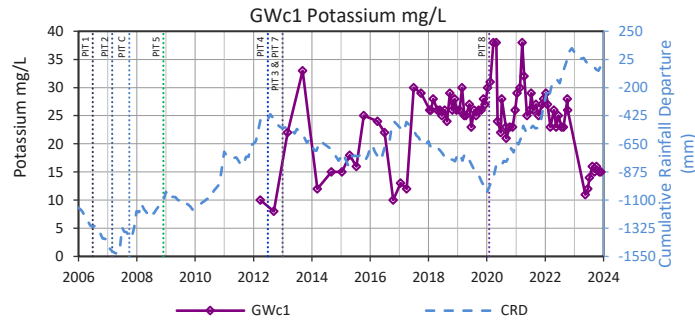
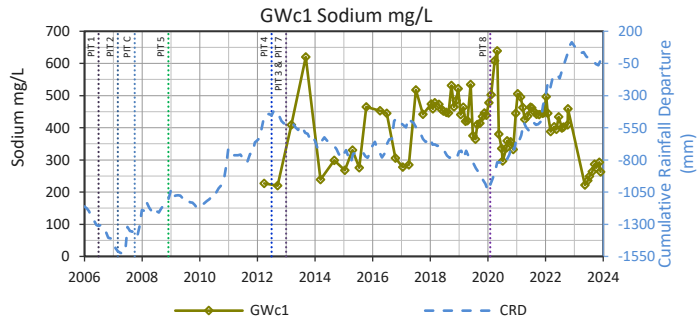
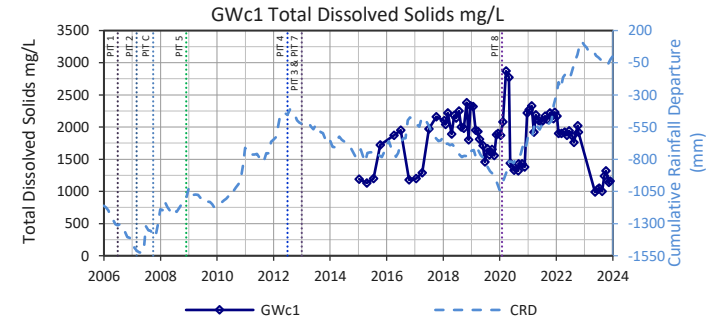
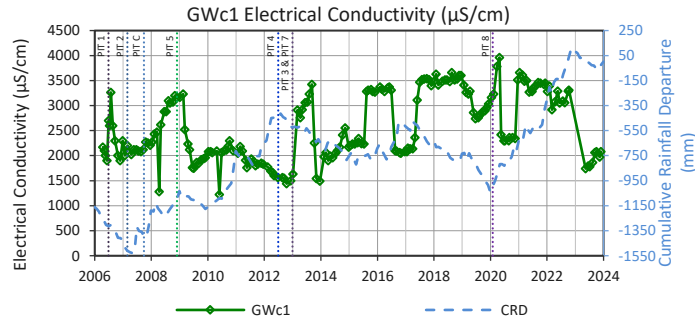
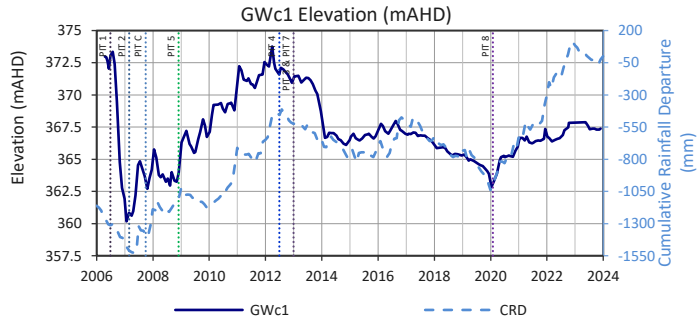
No Data Available for Chloride mg/L

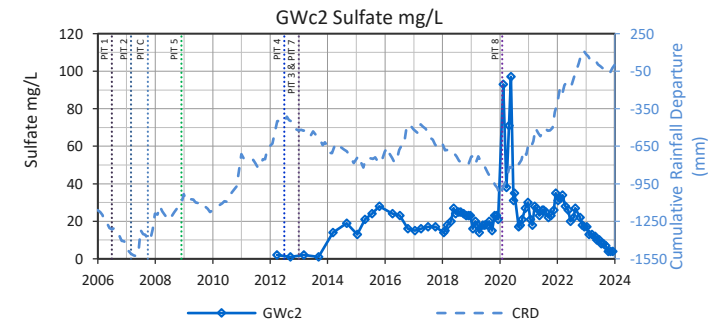
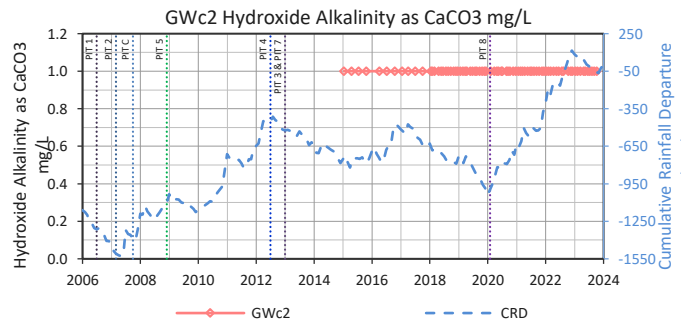
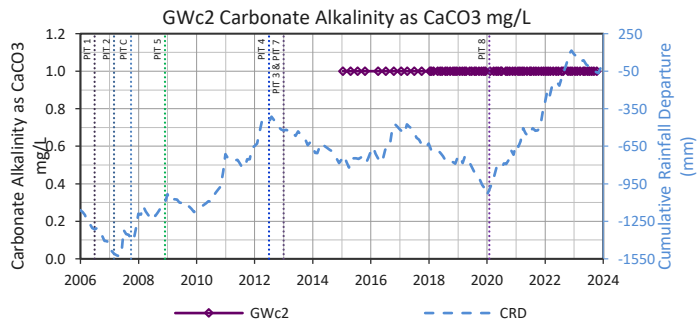
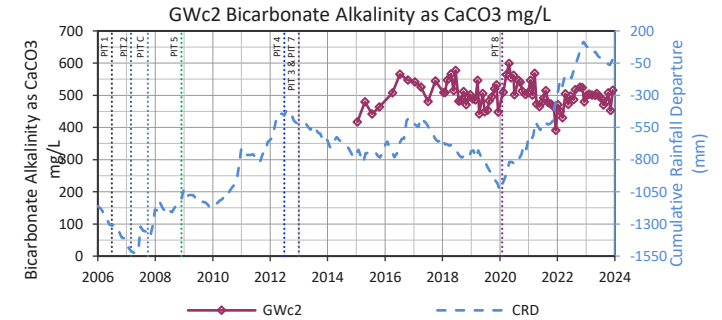
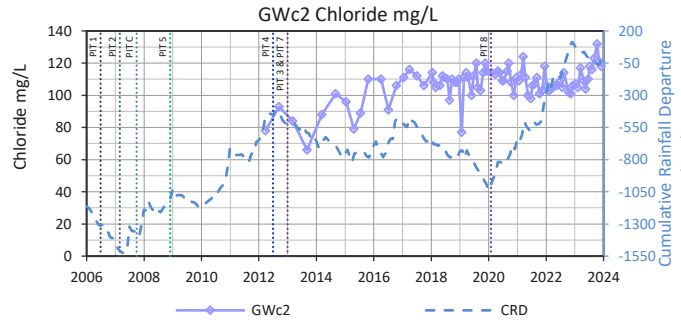
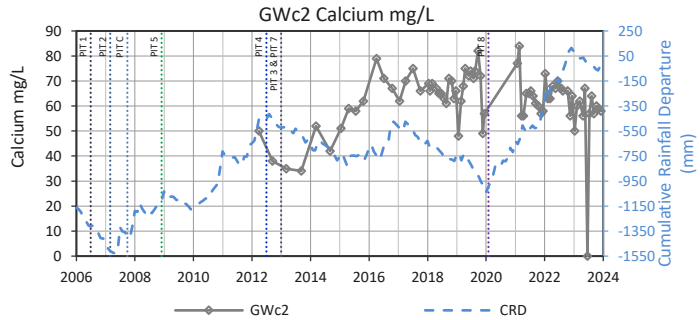
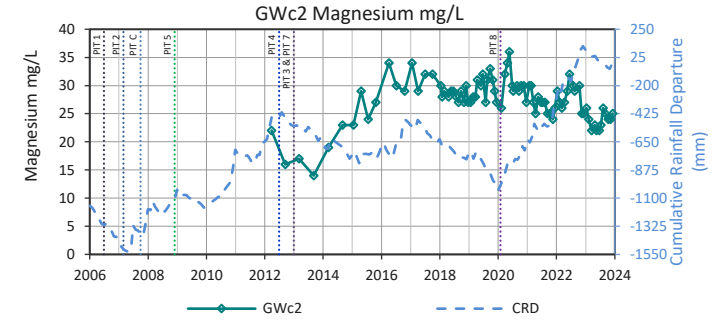
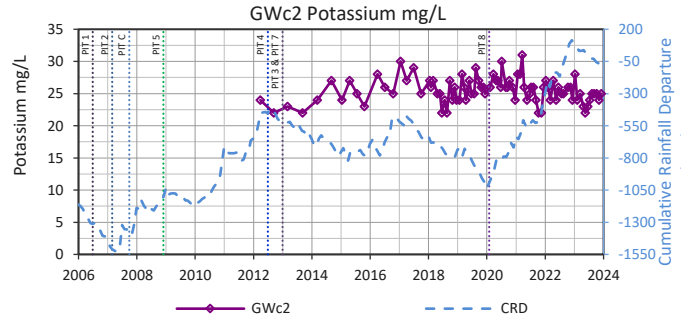
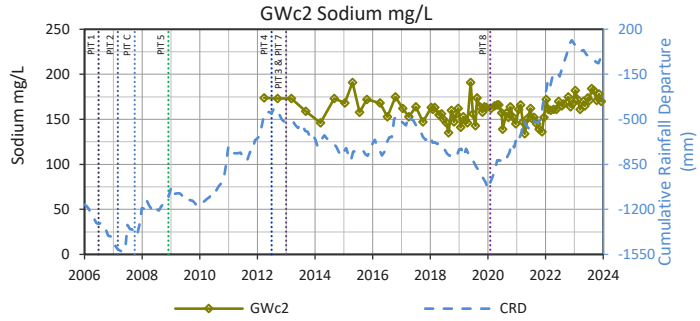
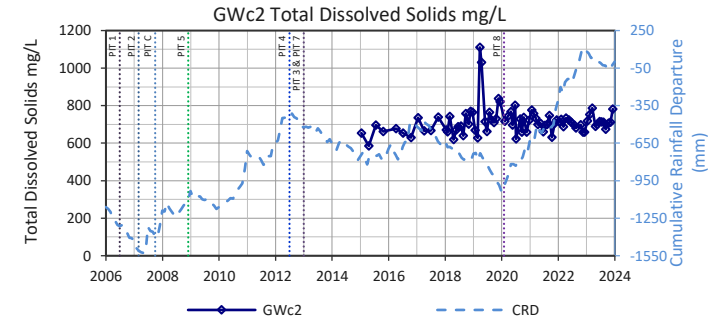
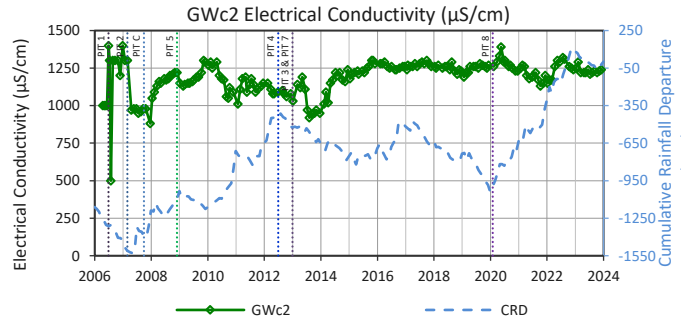
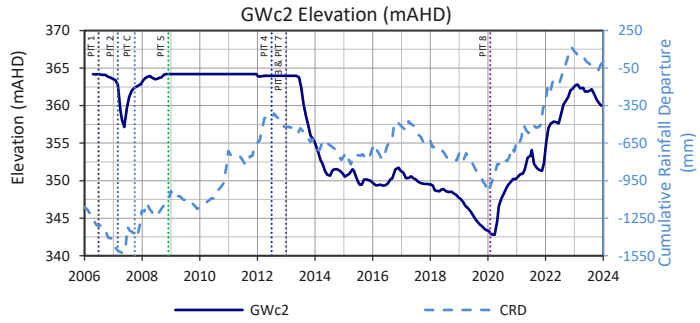
No Data Available for Bicarbonate Alkalinity as CaCO3 mg/L

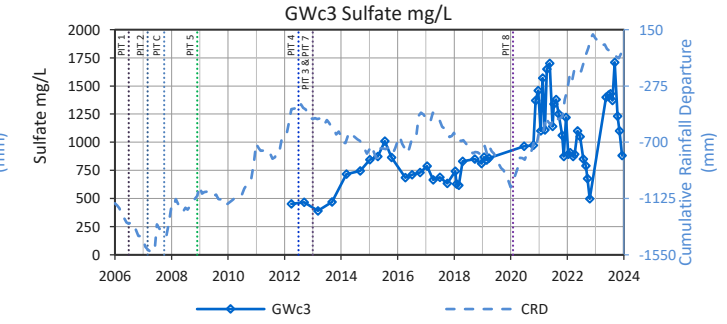
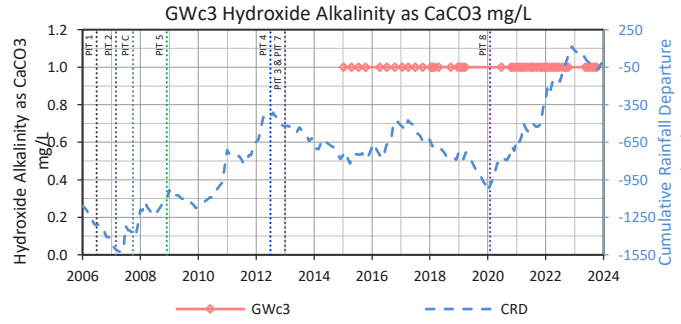
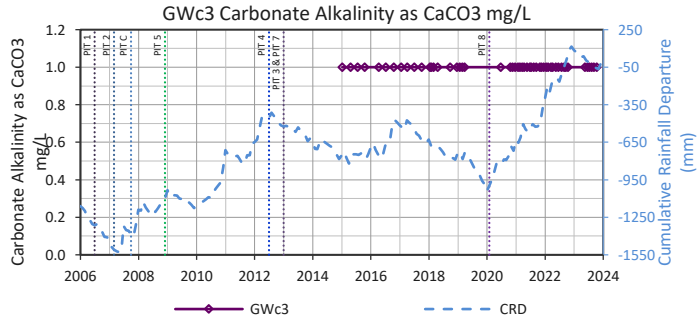
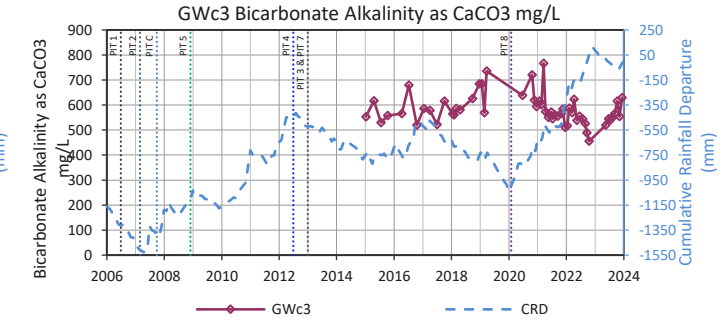
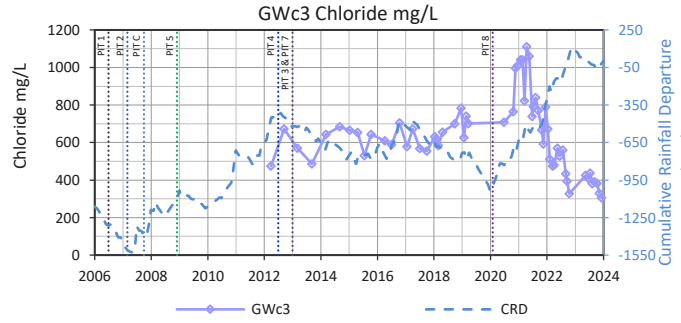
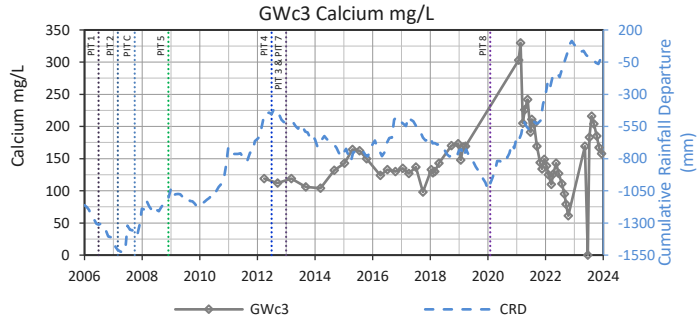
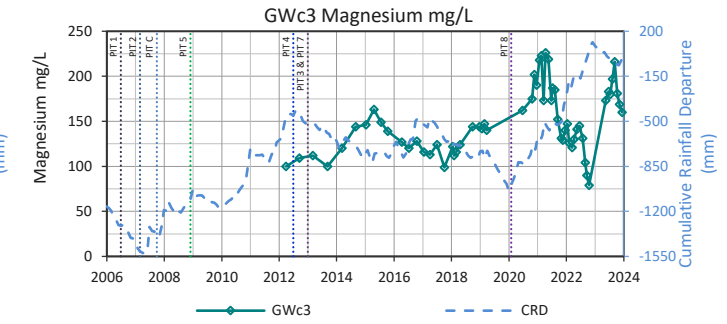
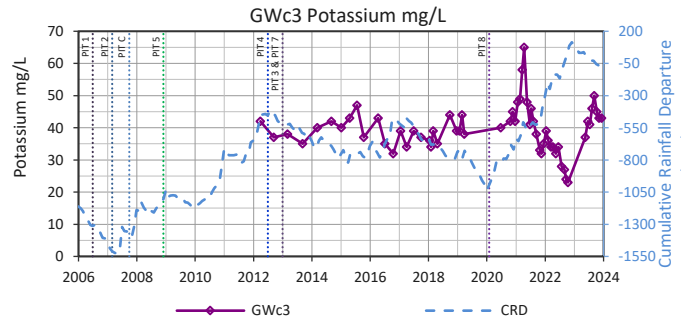
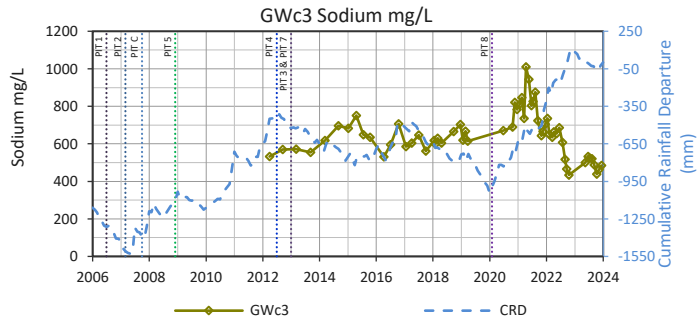
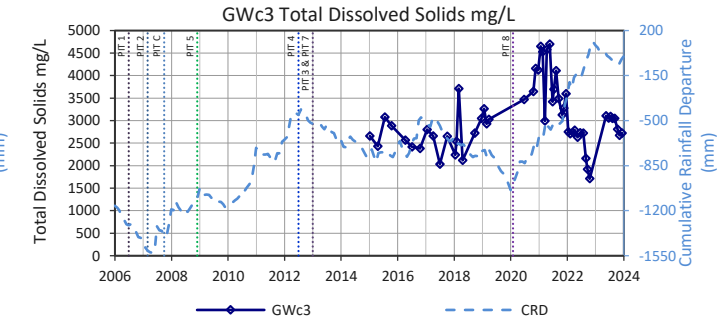
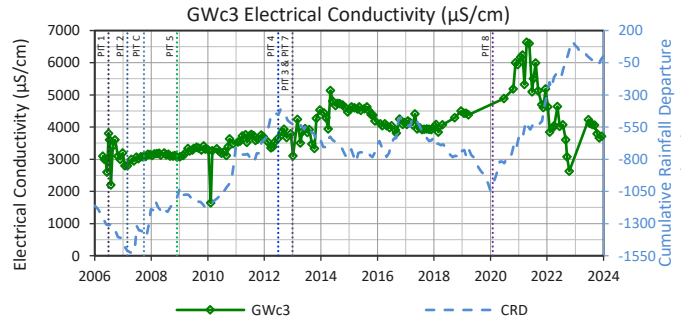
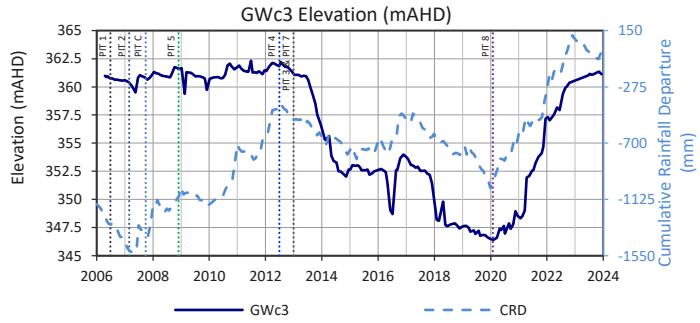
No Data Available for Carbonate Alkalinity as CaCO3 mg/L

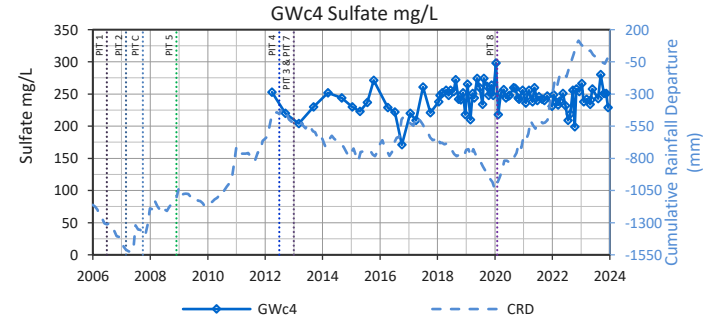
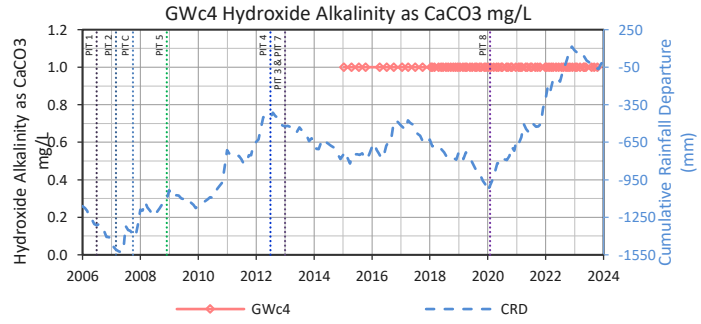
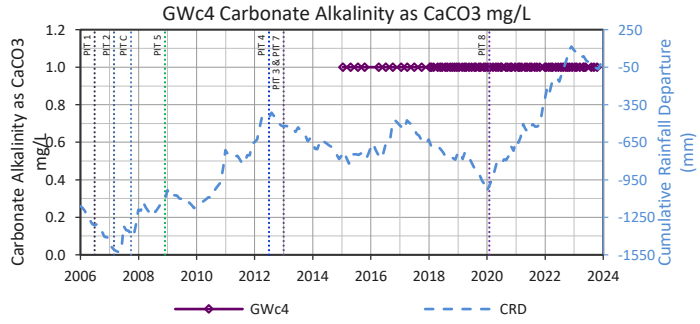
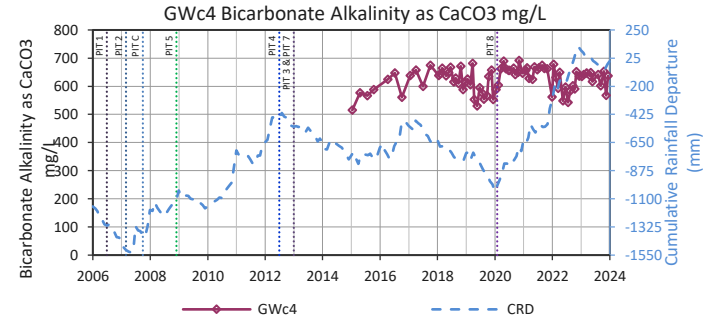
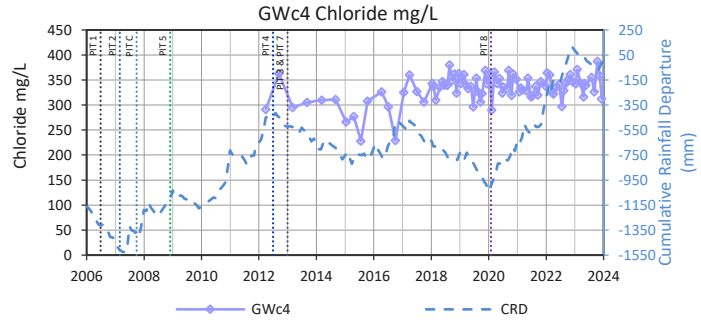
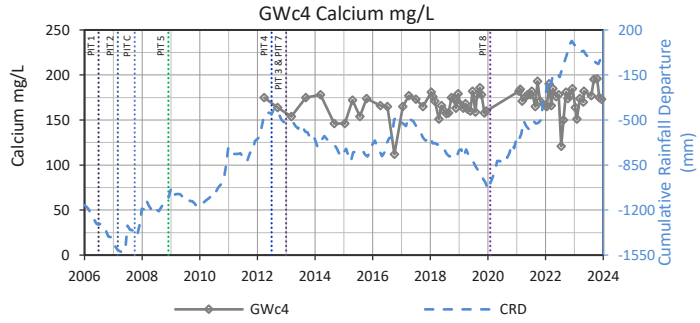
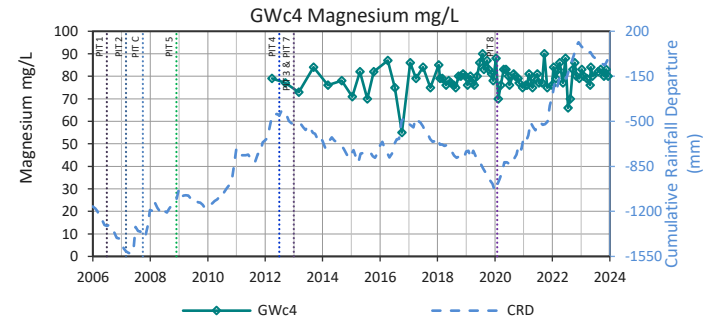
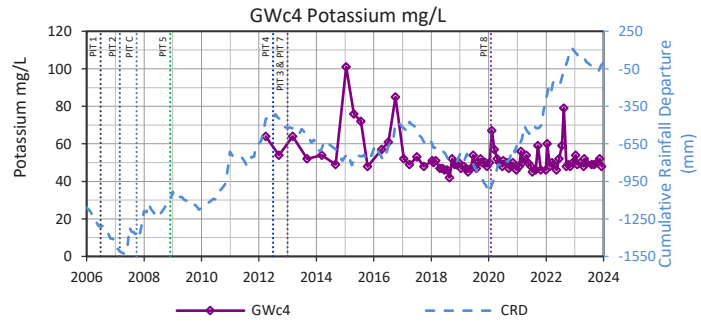
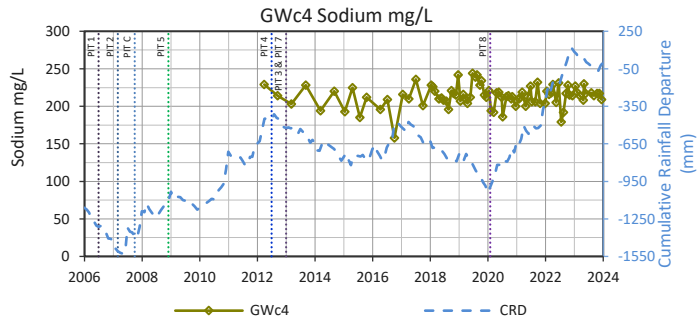
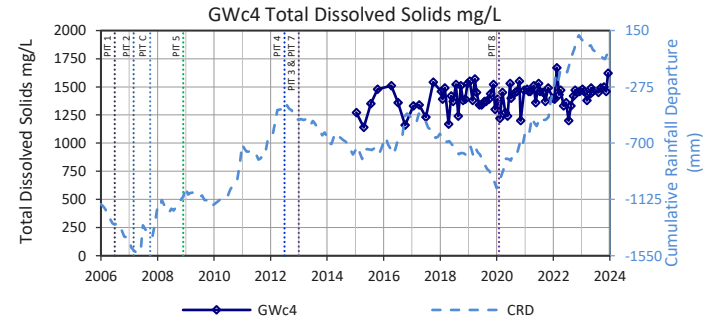
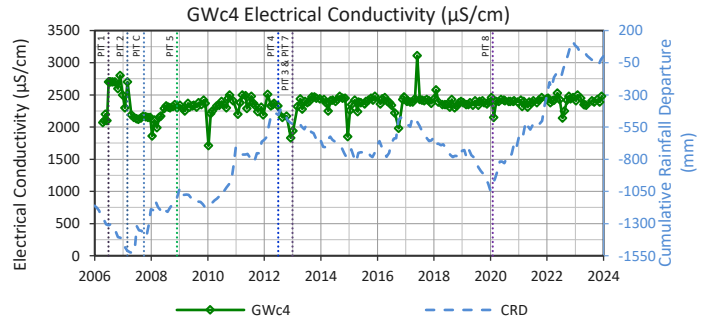
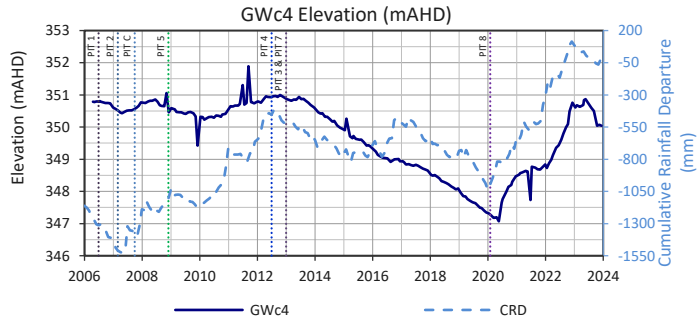
No Data Available for Hydroxide Alkalinity as CaCO3 mg/L

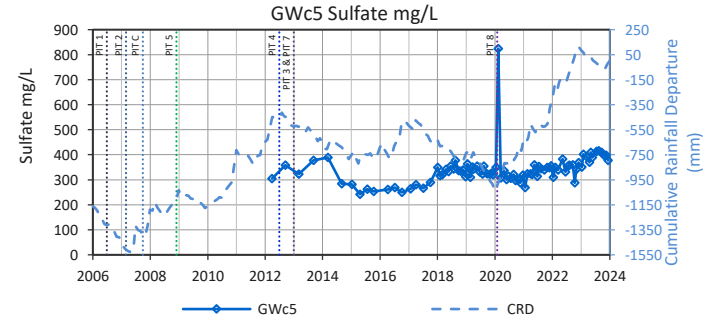
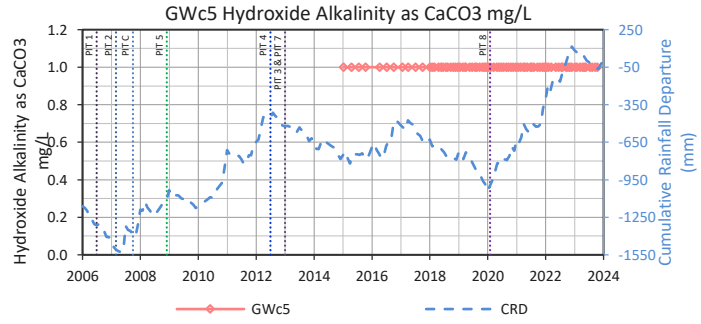
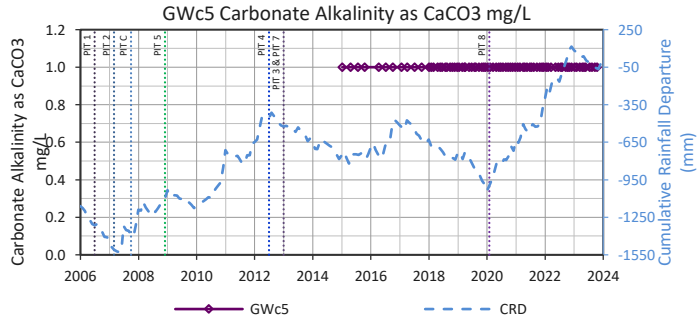
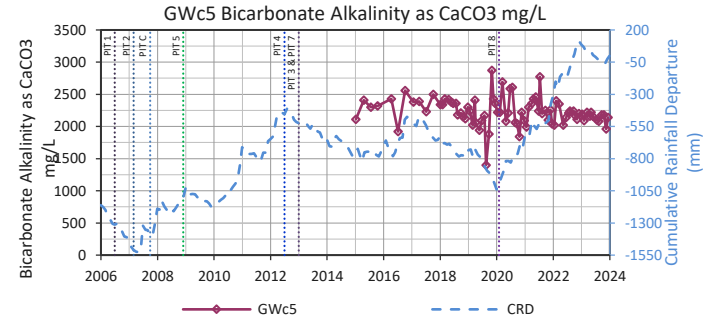
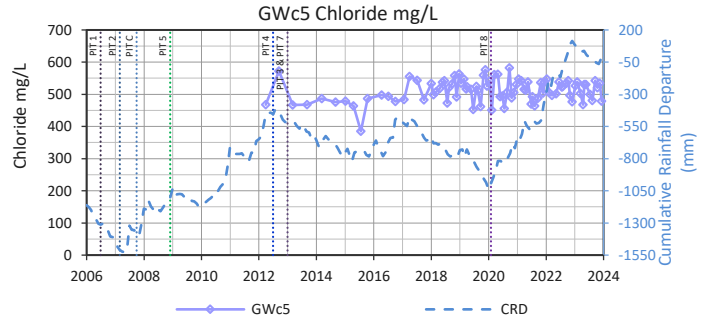
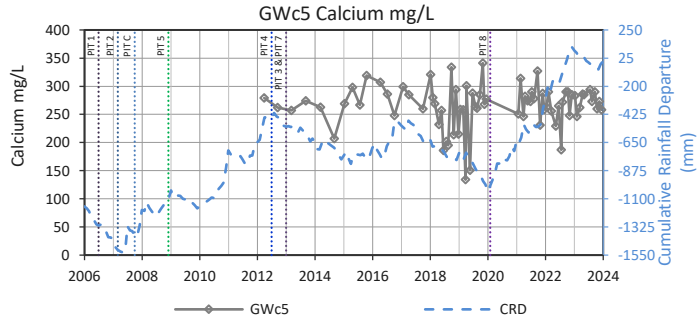
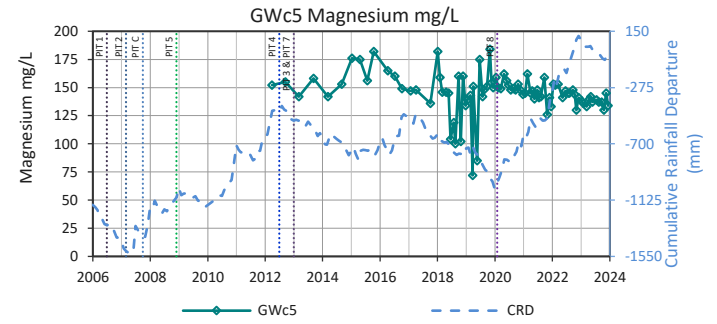
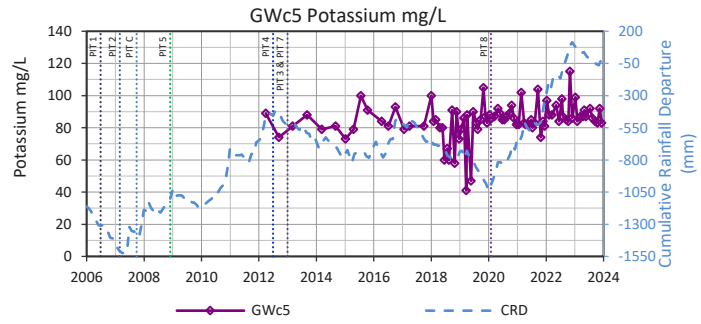
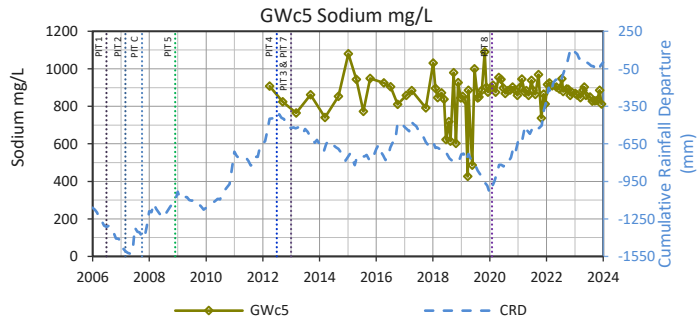
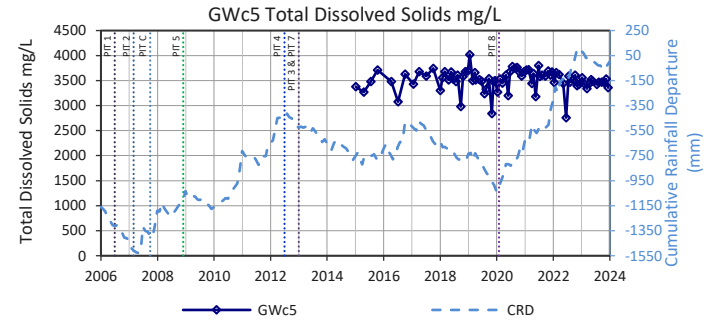
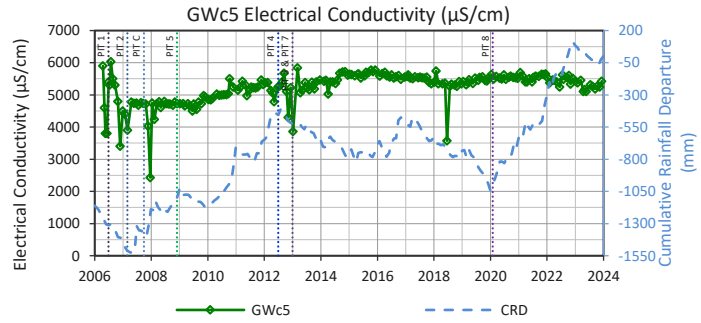
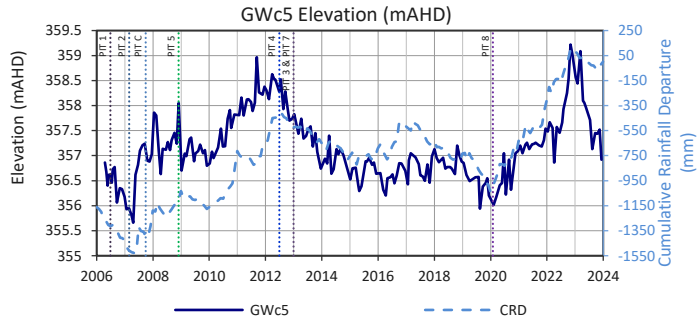
No Data Available for Sulfate mg/L

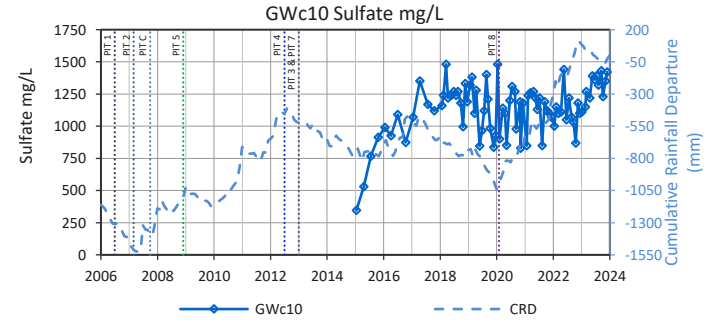
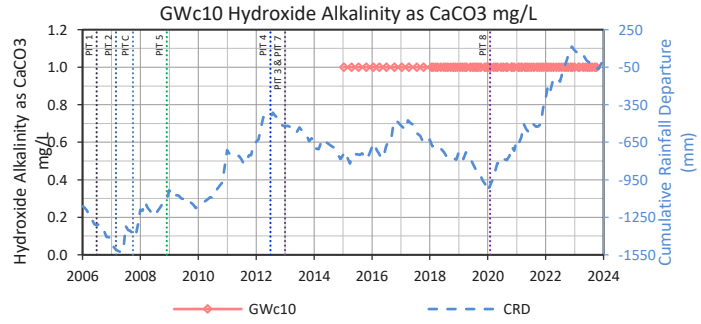
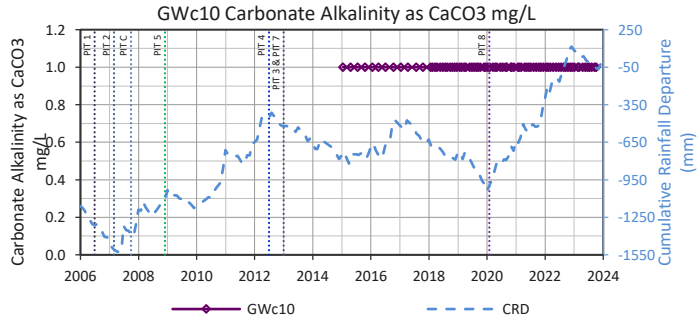
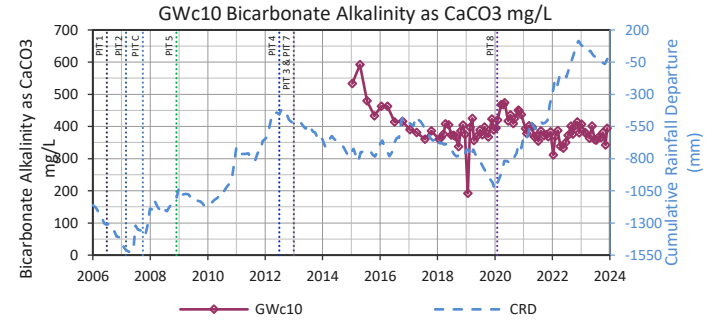
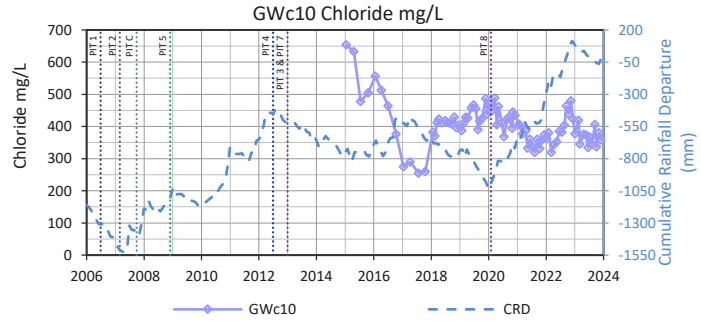
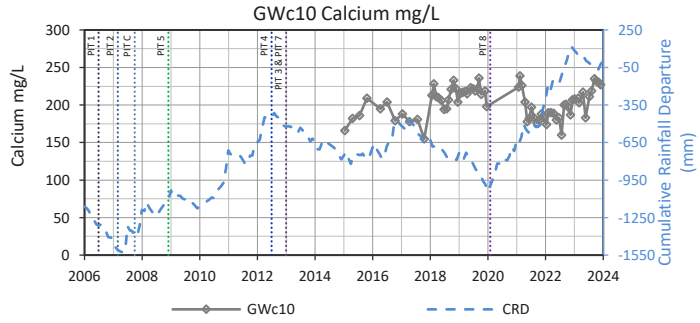
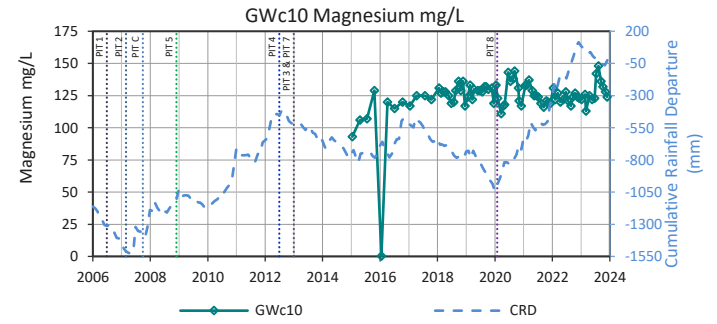
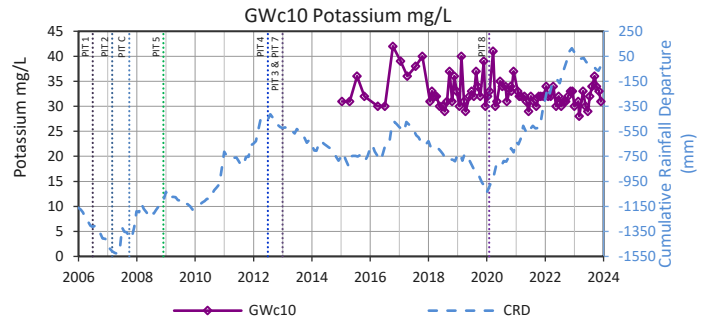
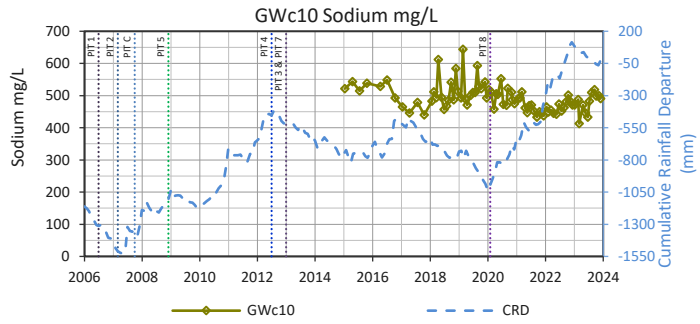
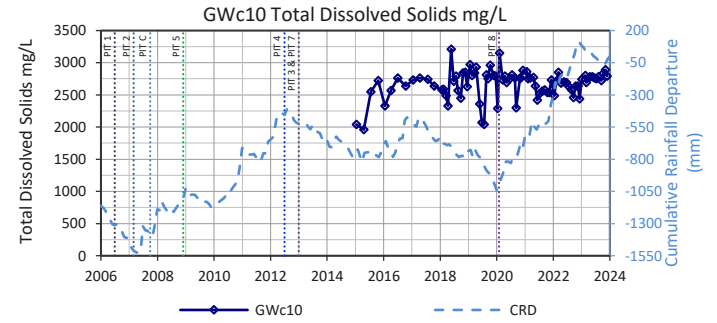
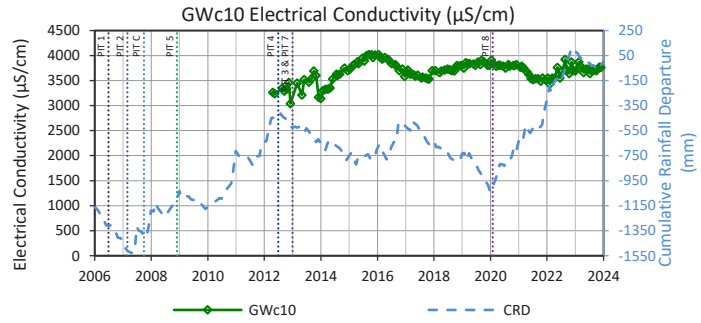
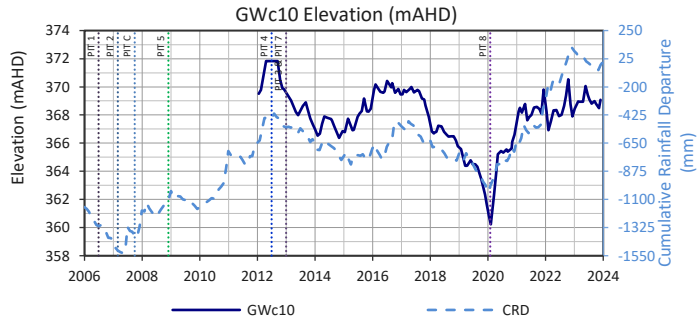


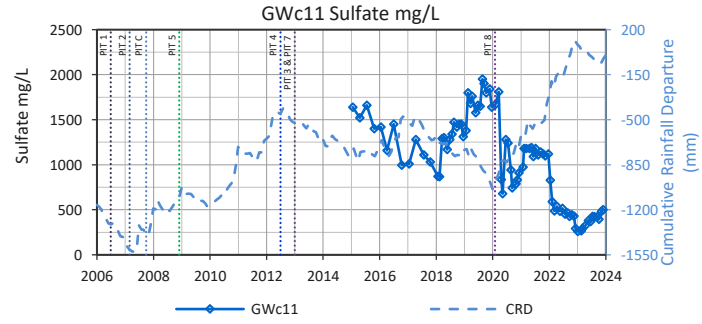
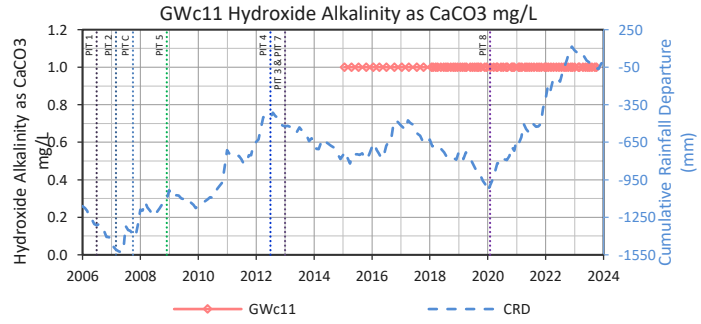
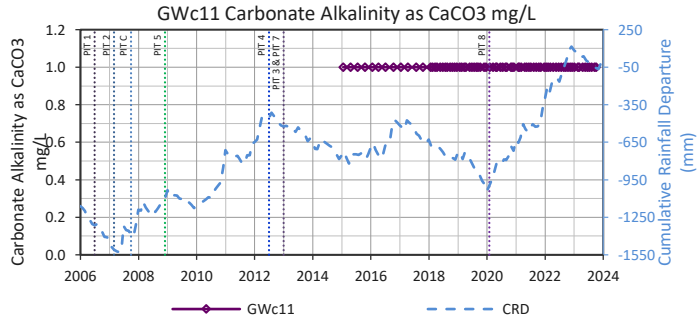
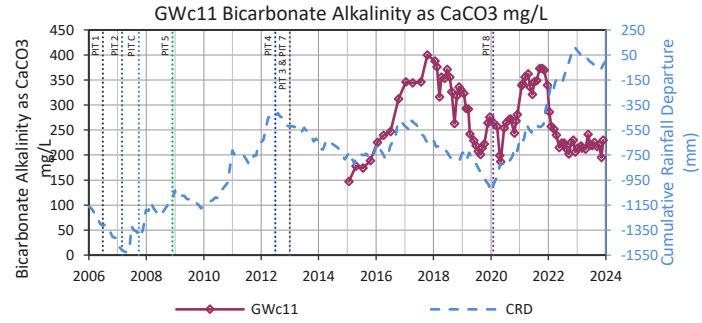
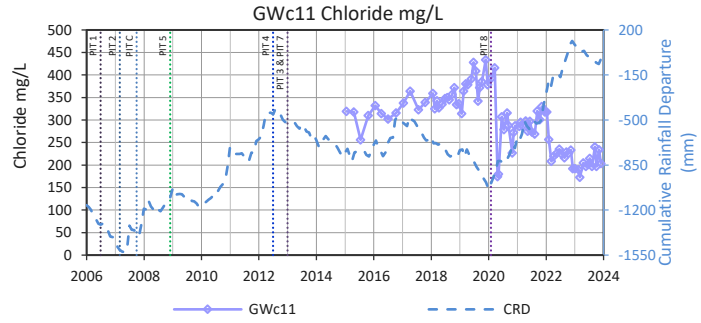
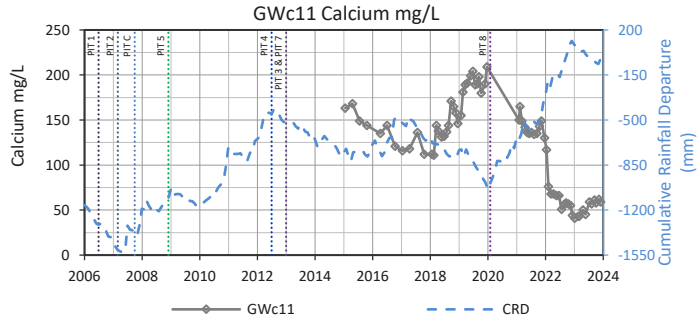
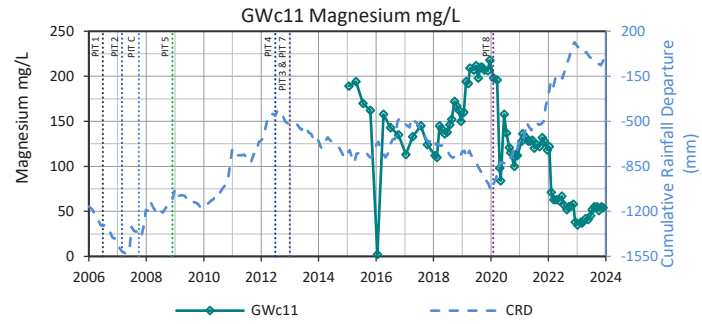
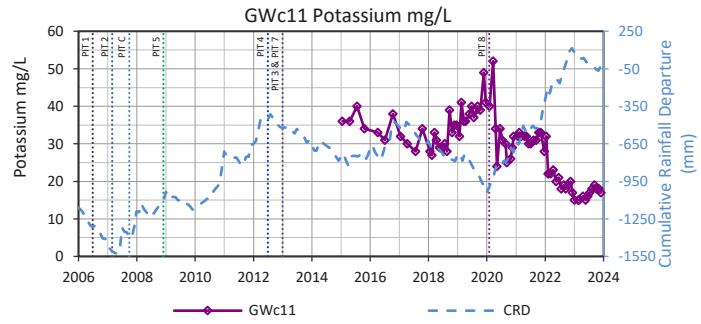
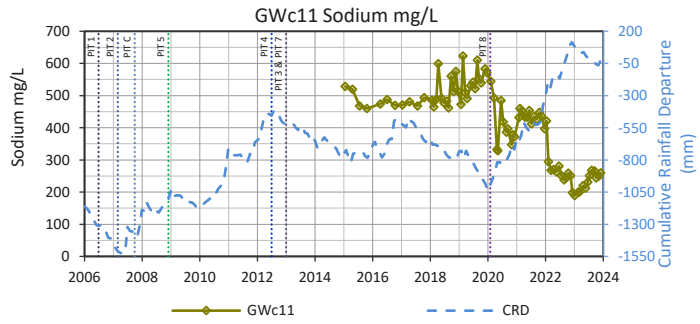
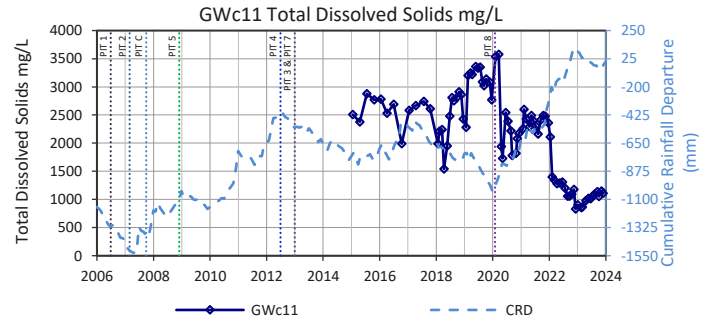
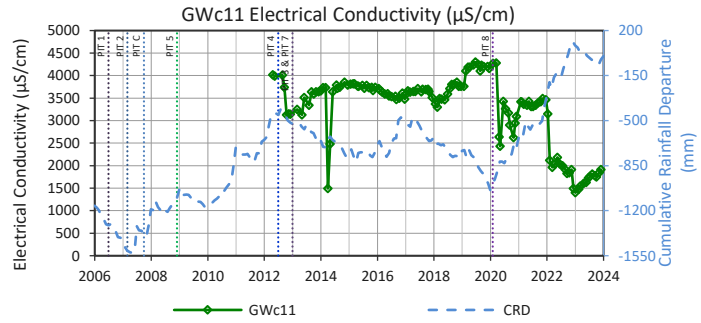
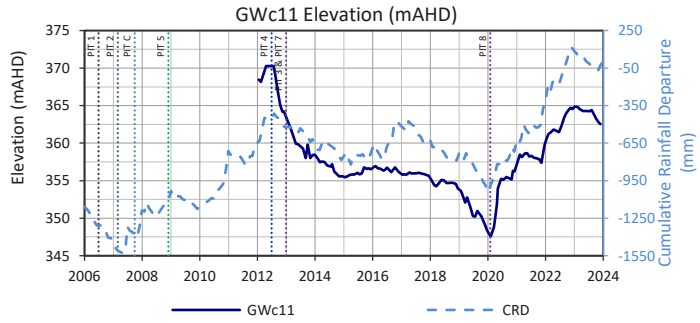


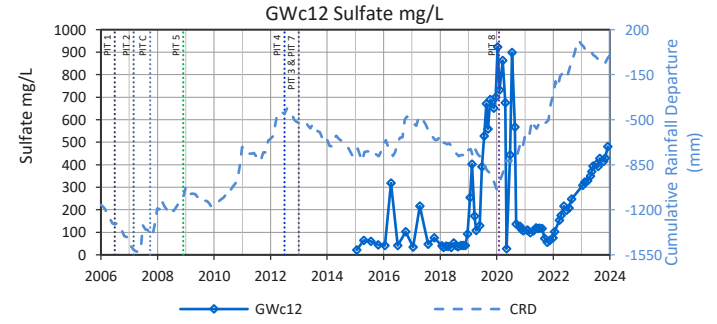
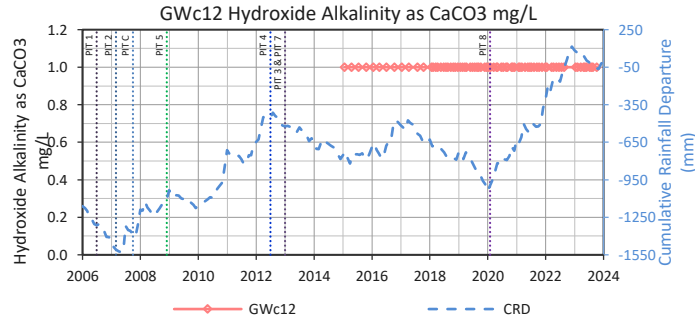
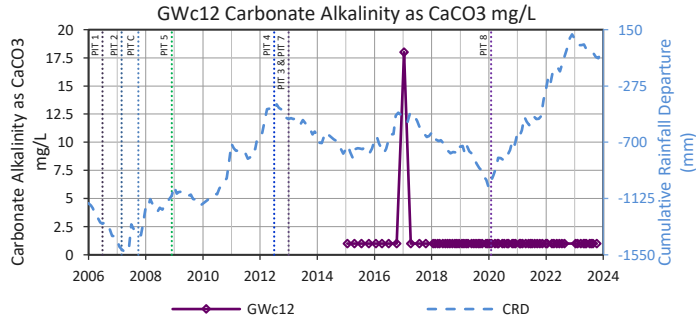
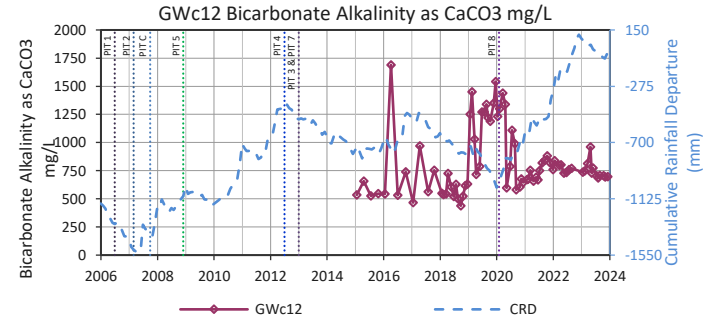
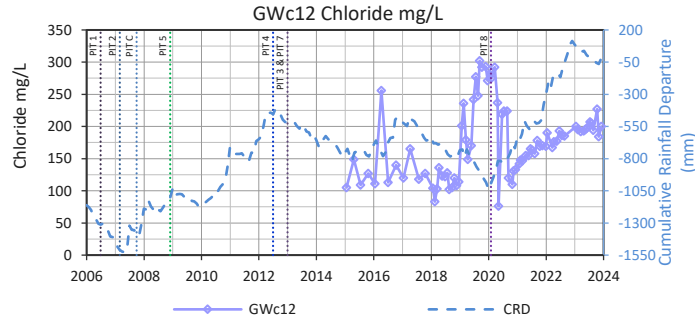
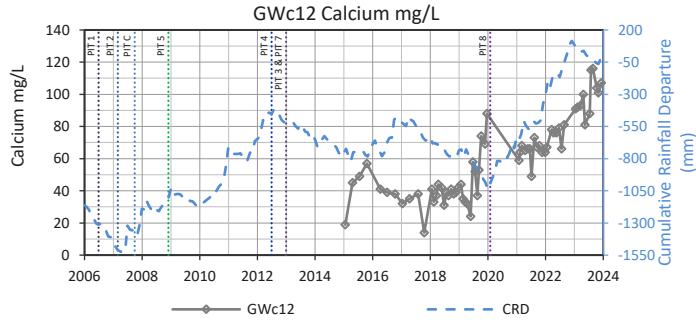
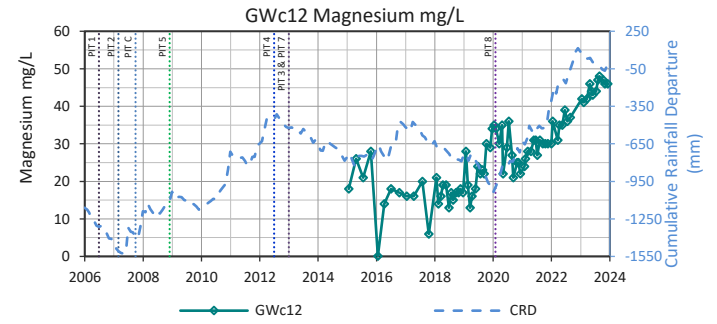
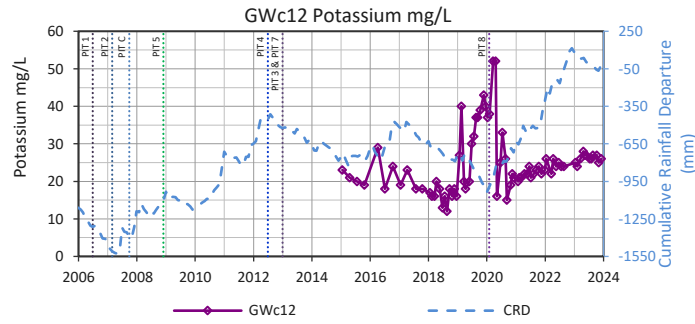
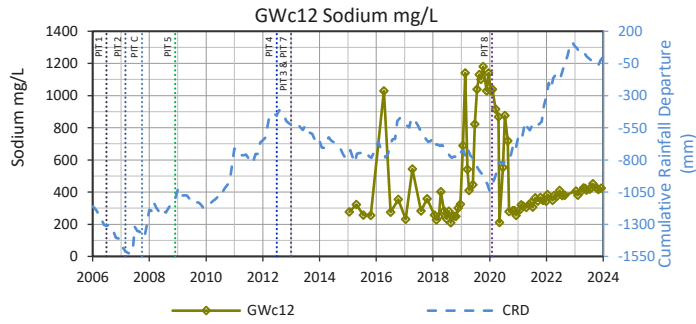
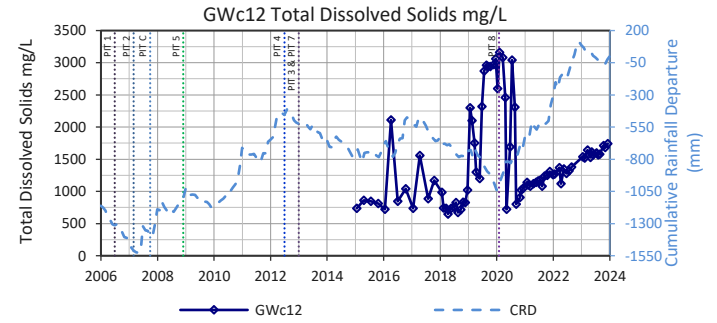
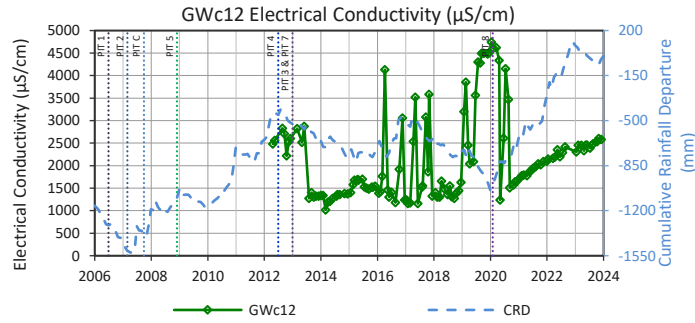
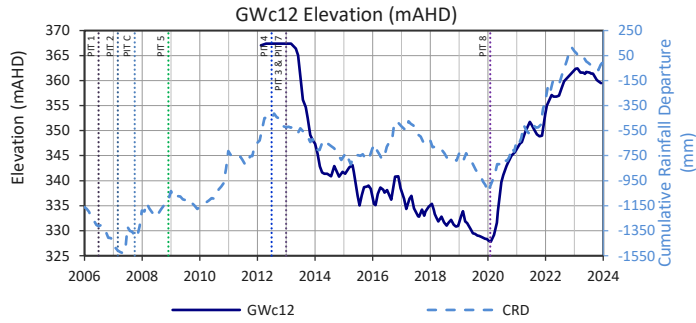


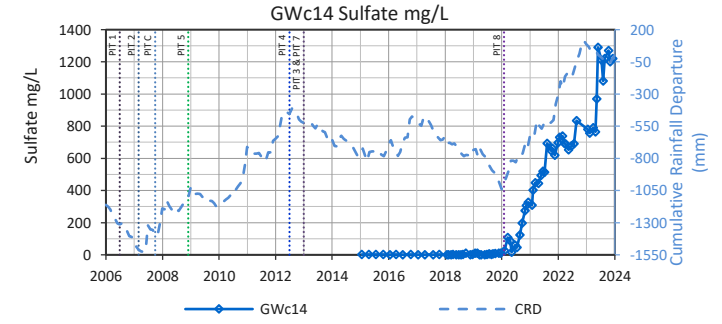
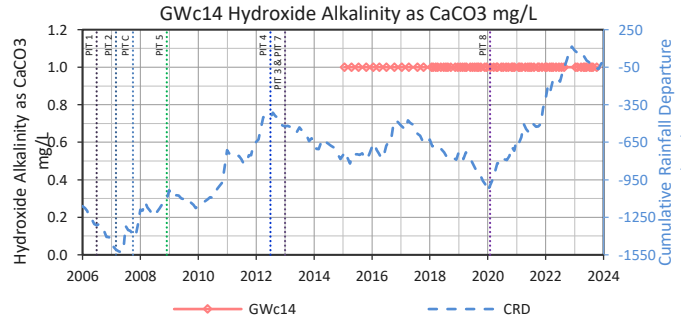
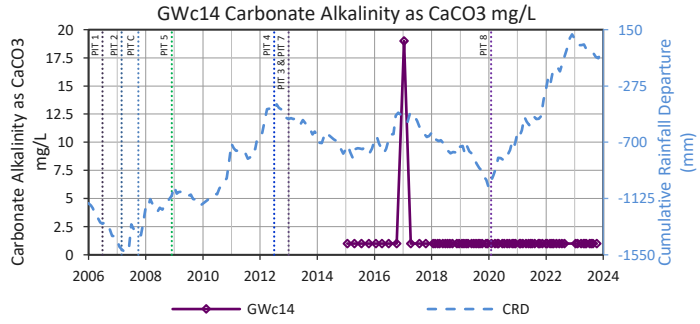
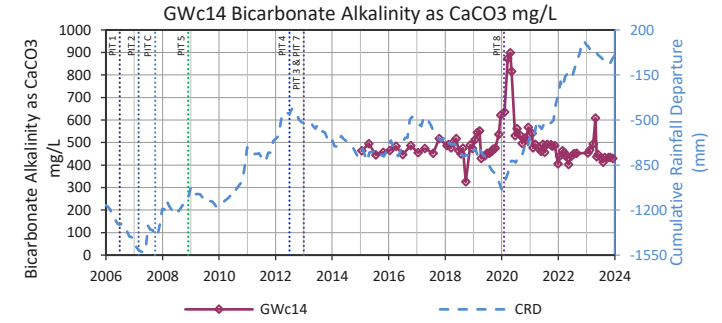
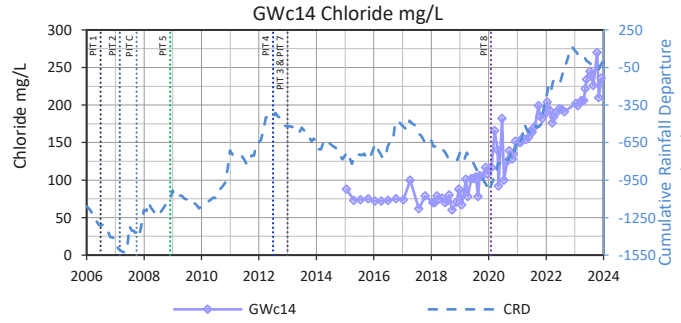
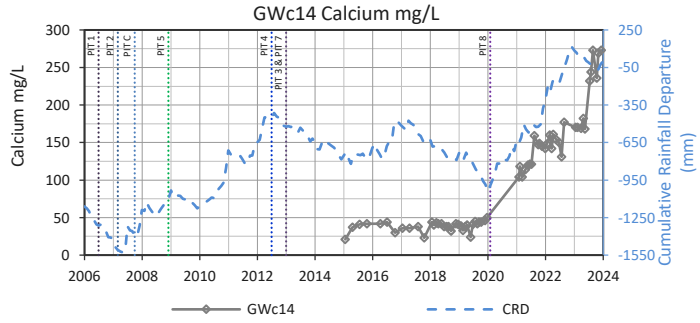
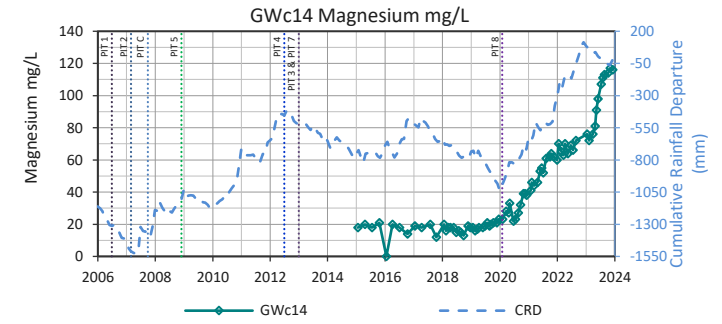
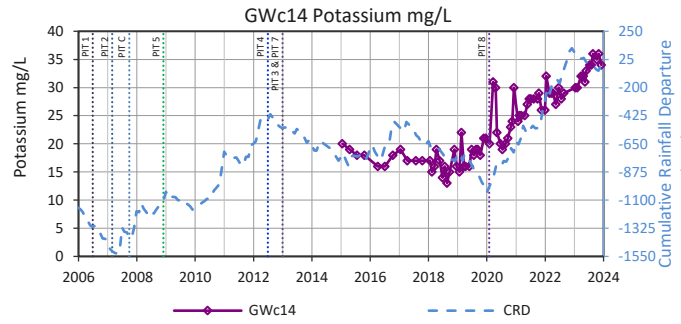
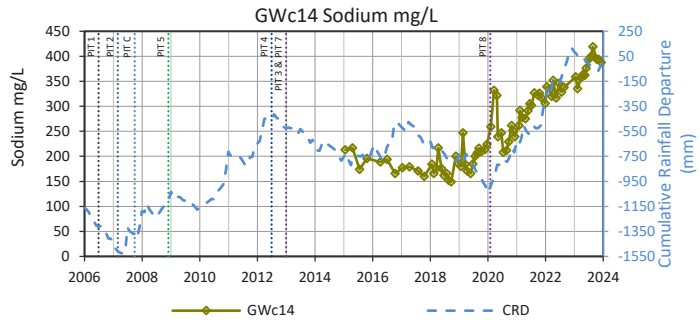
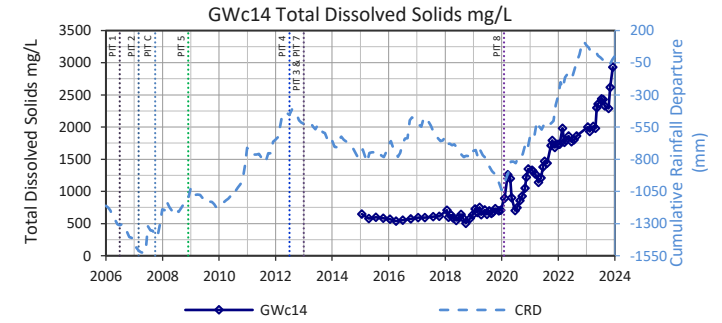
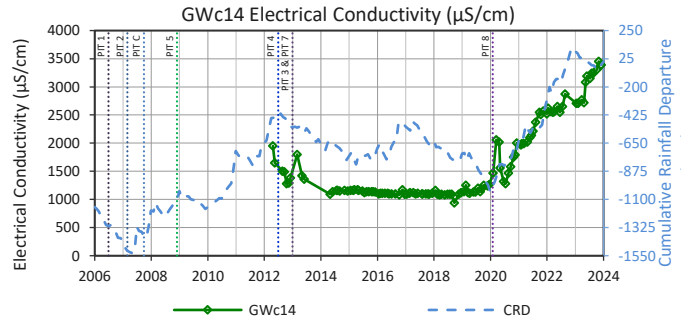
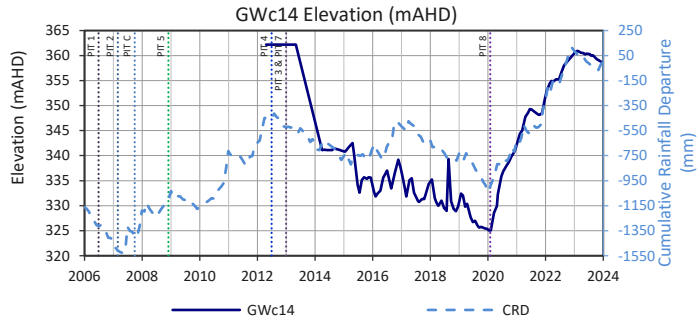


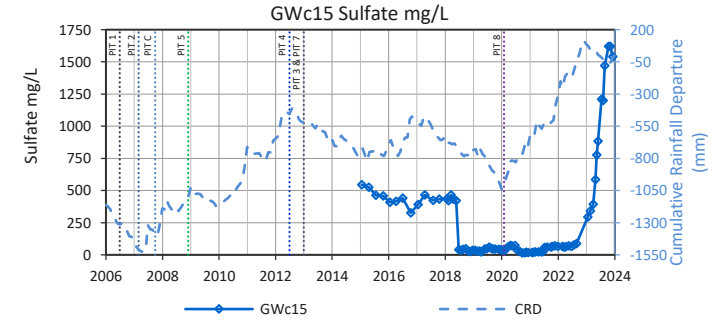
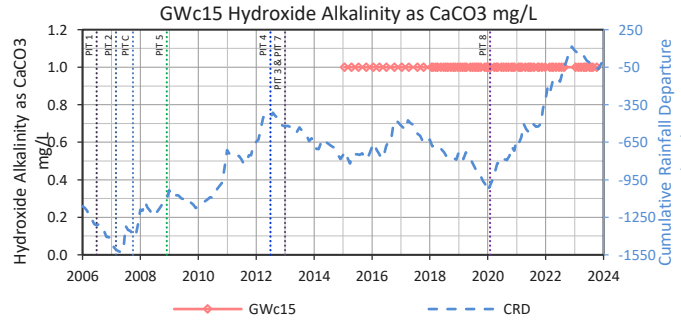
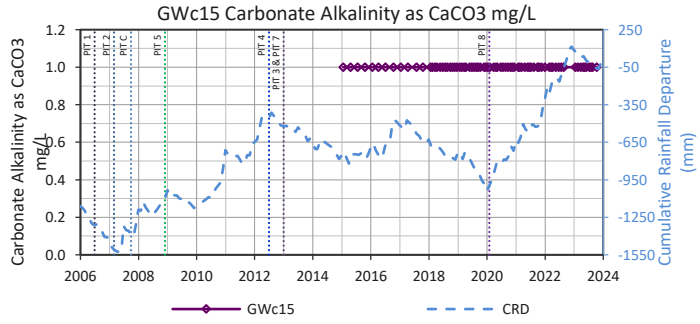
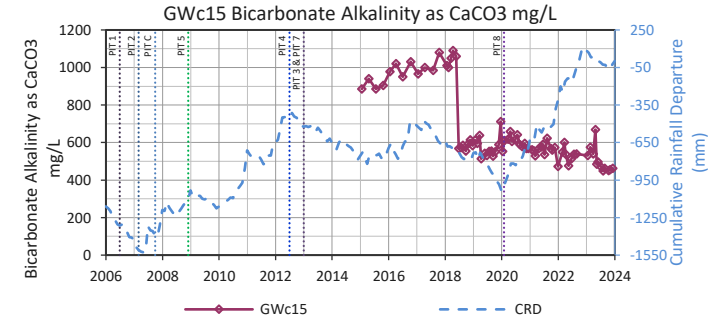
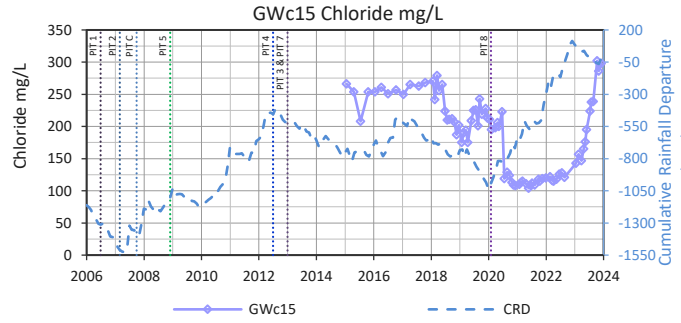
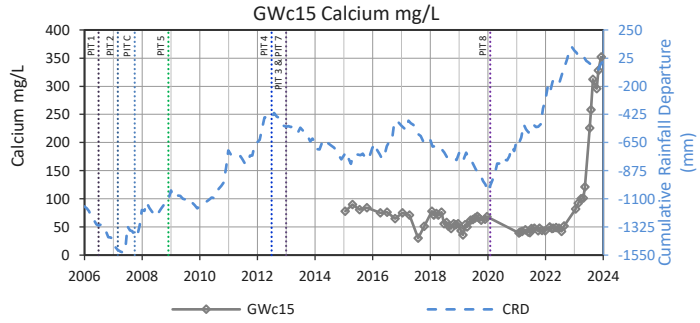
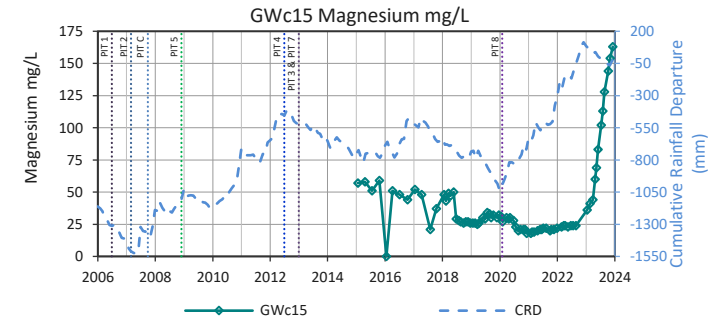
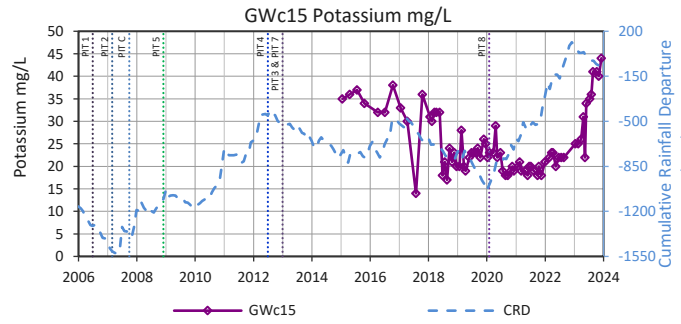
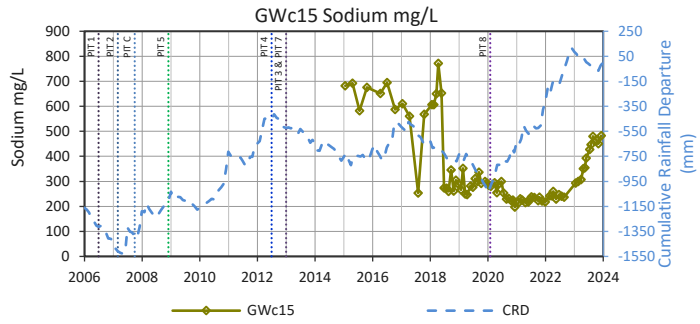
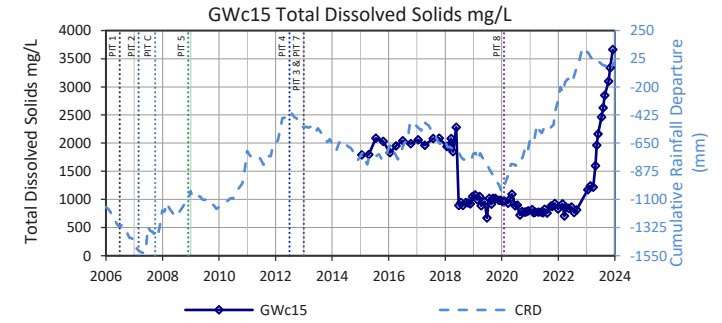
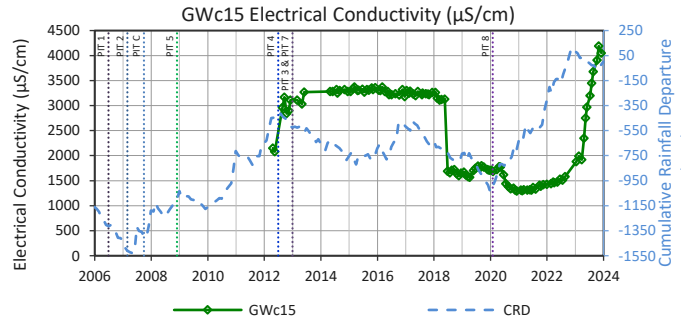
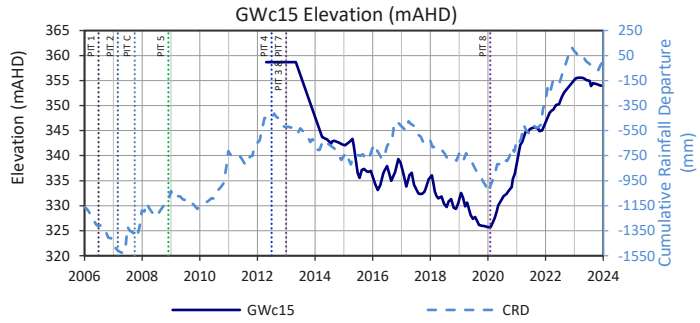


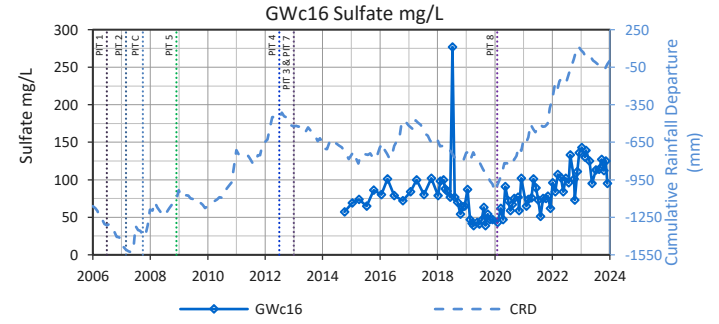
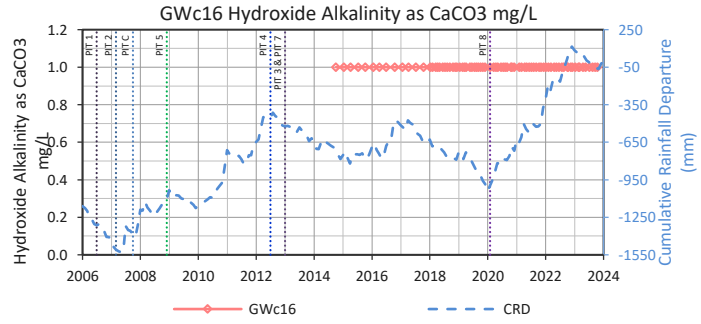
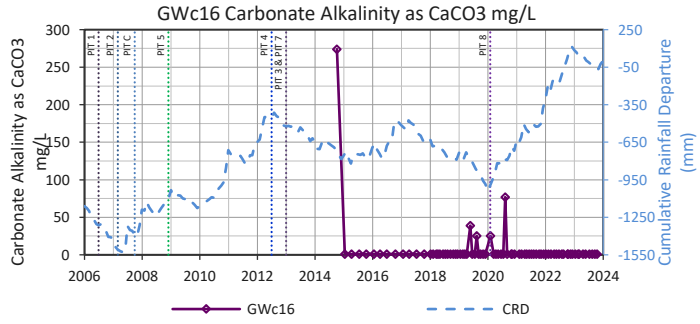
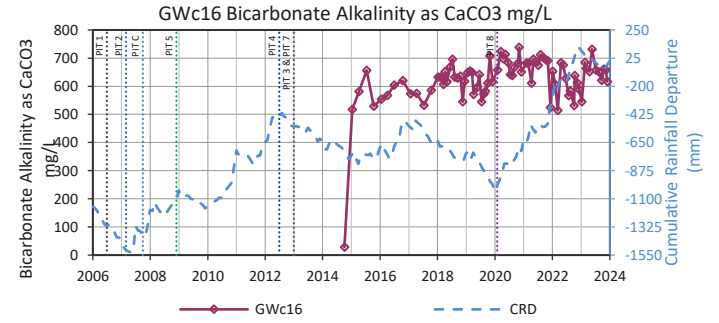
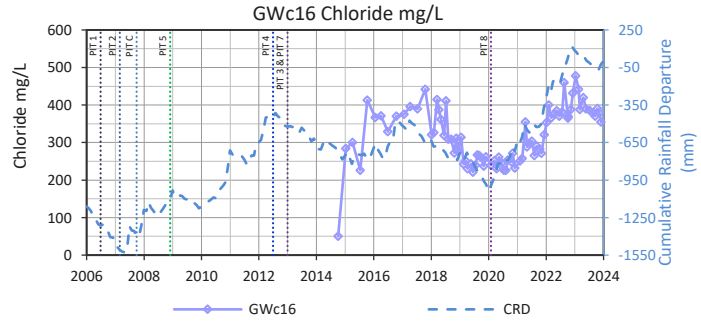
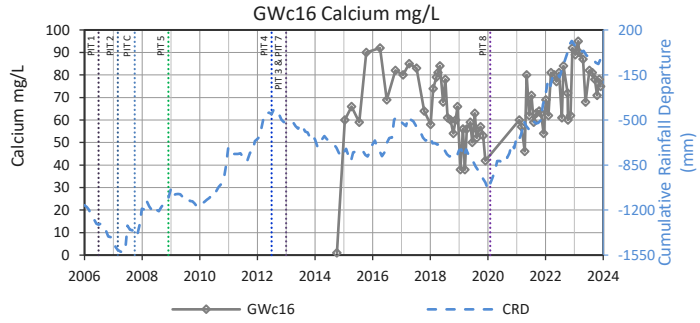
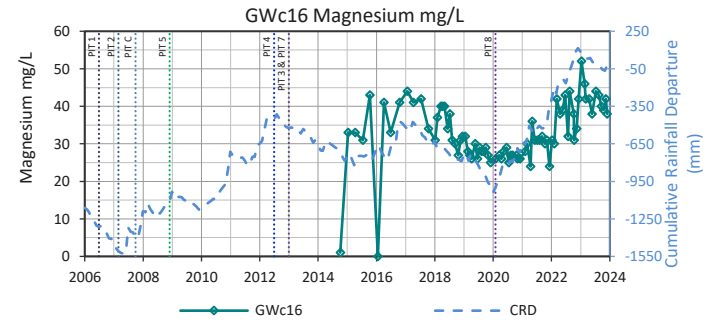
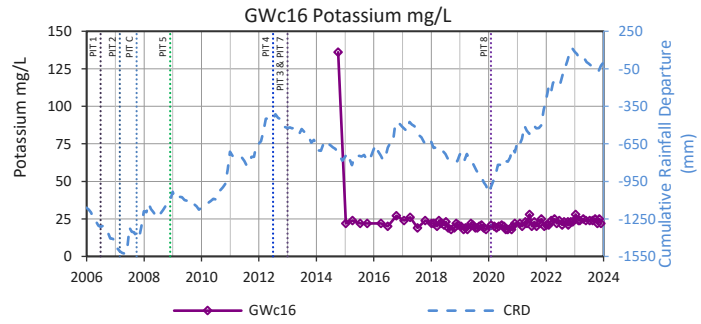
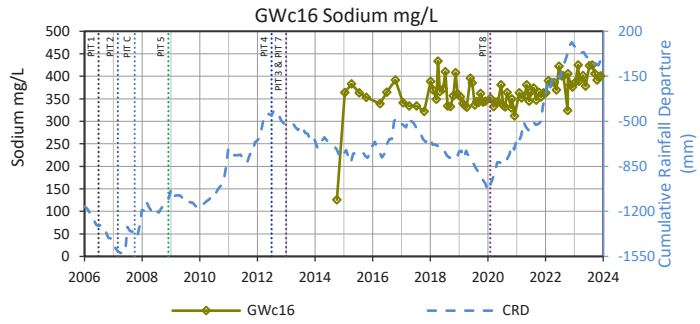
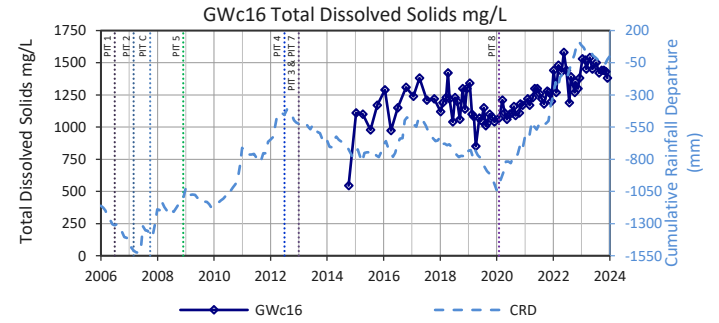
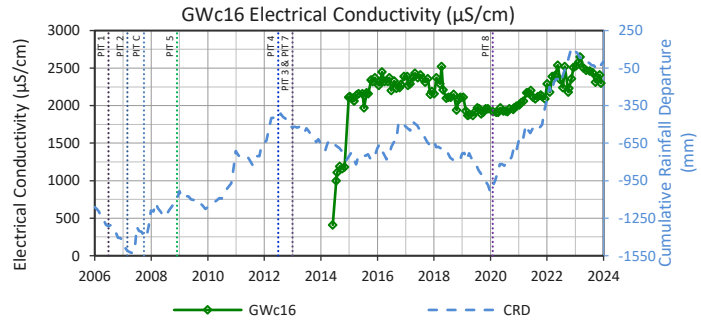
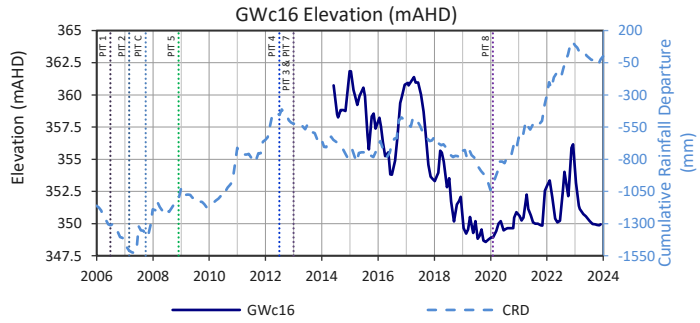


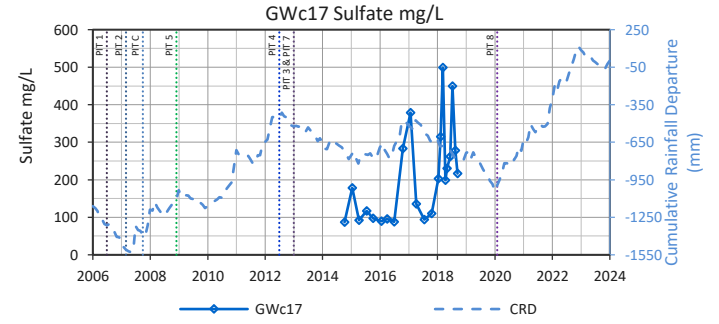
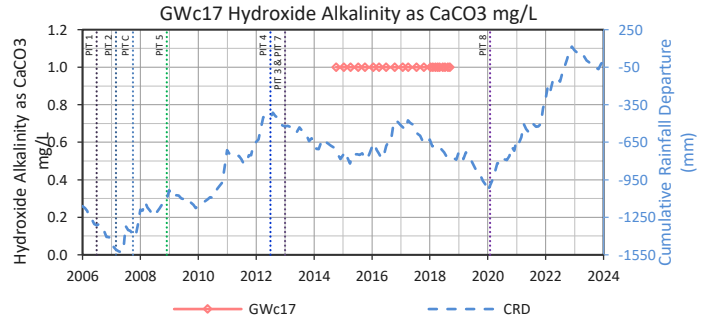
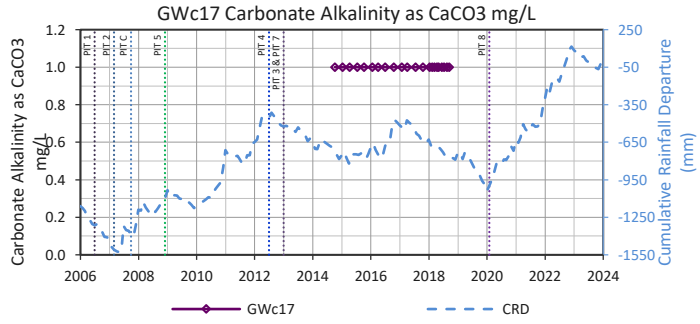
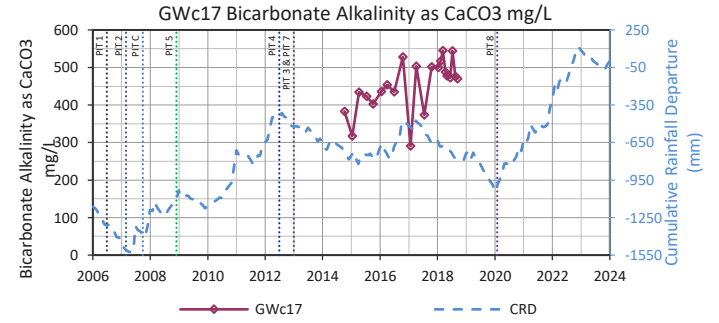
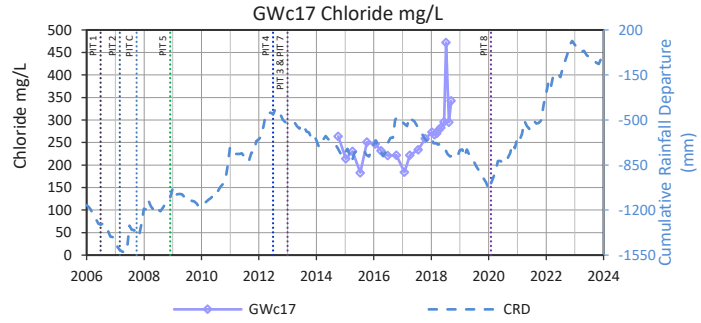
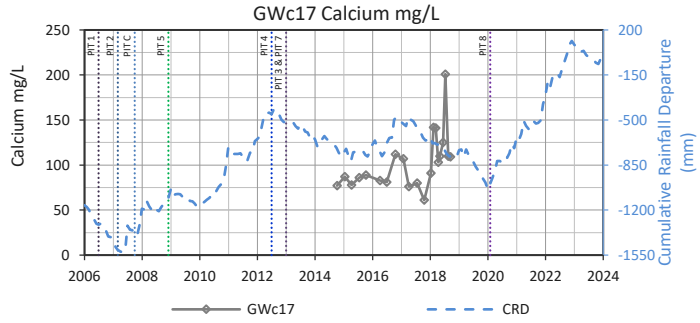
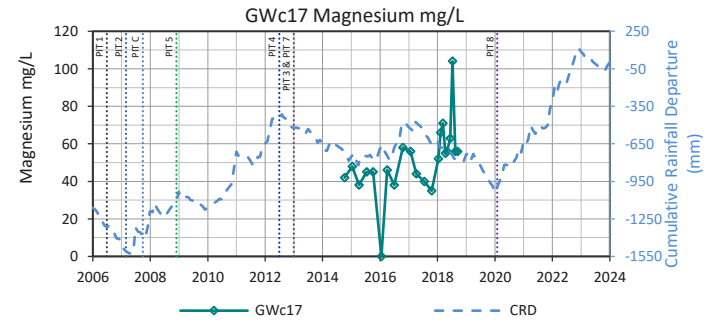
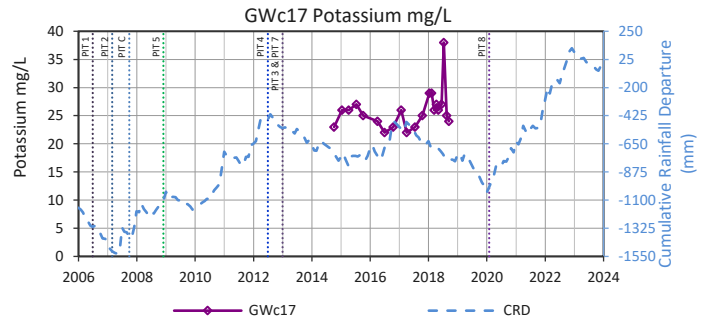
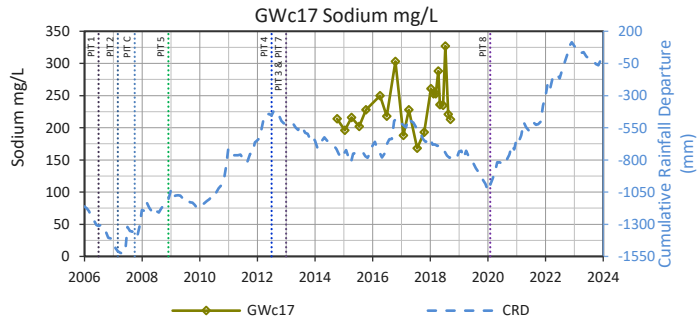
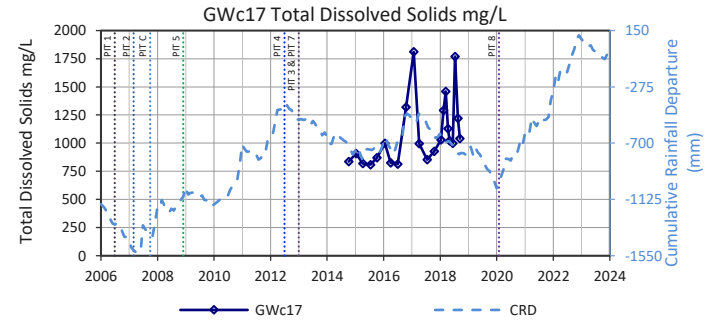
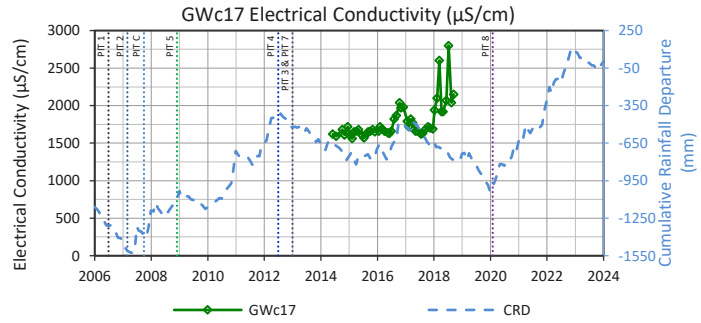
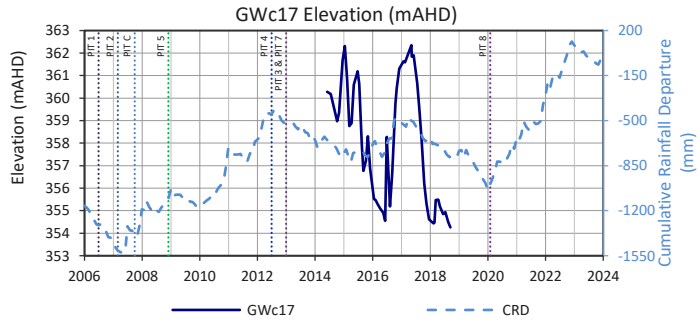


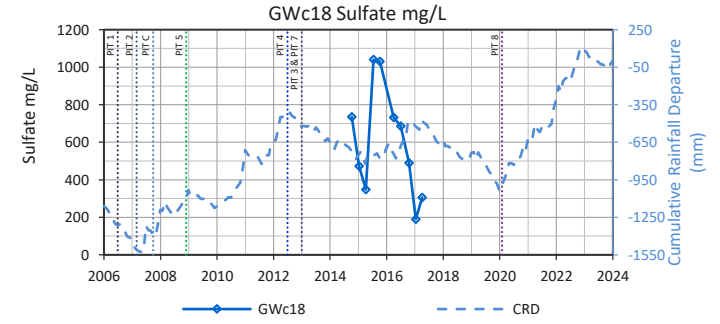
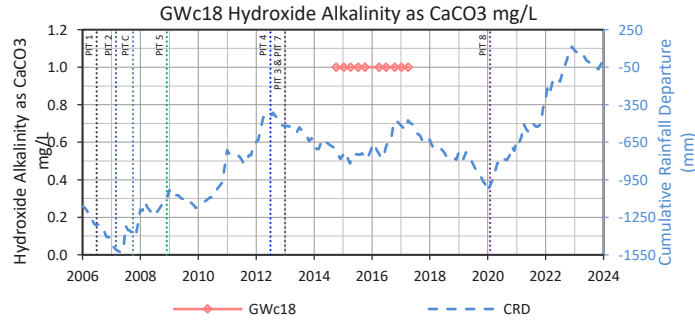
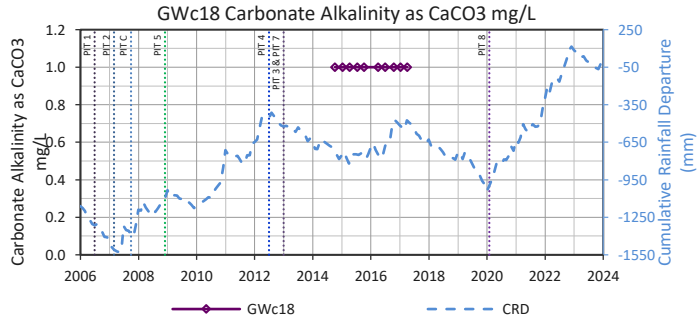
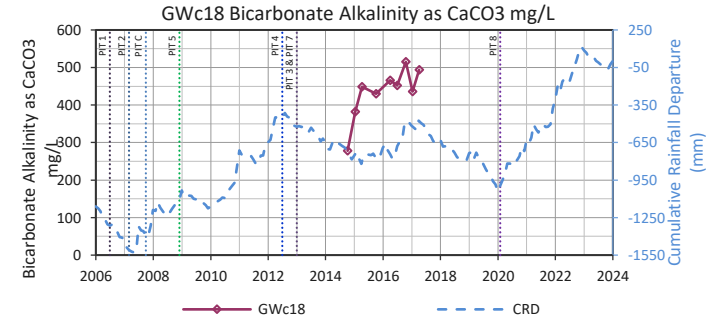
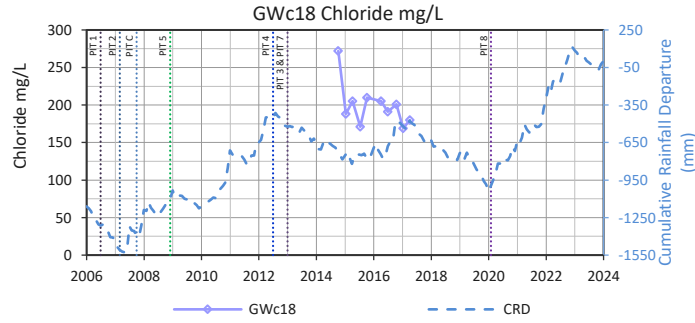
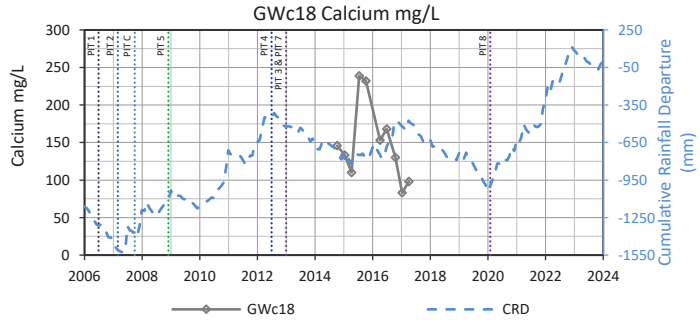
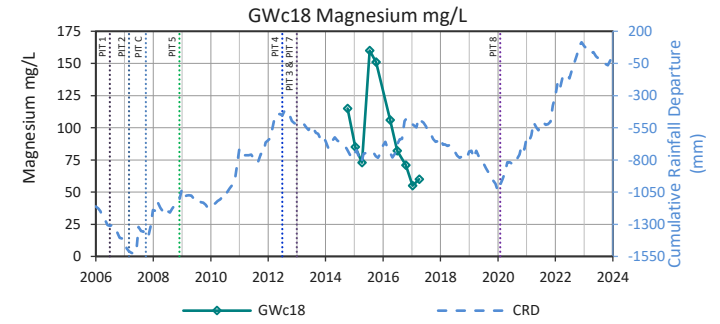
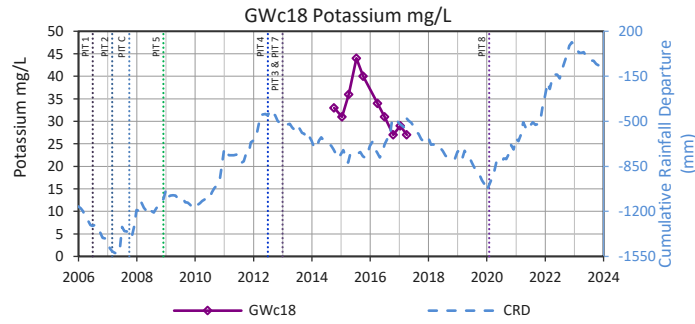
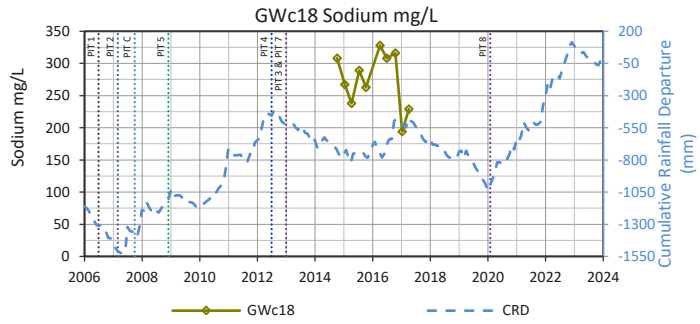
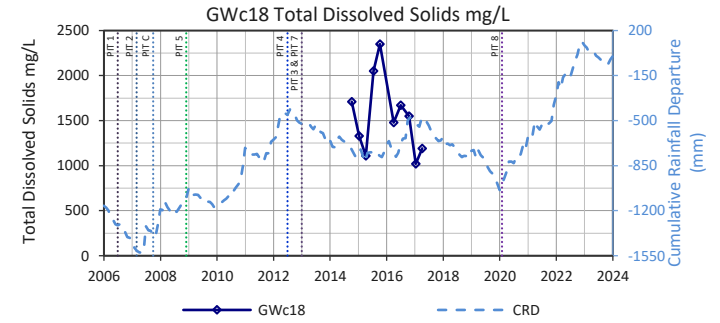
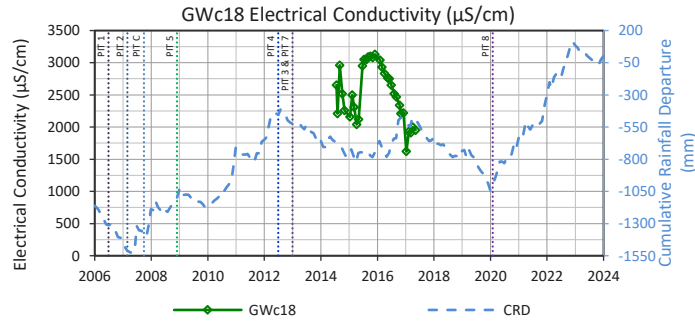
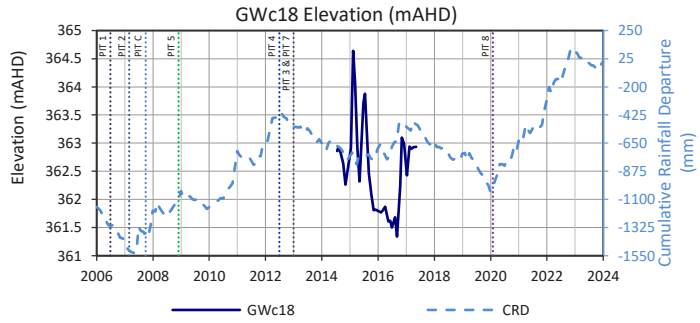


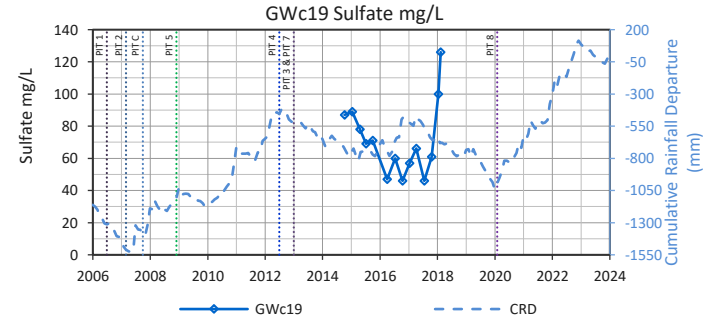
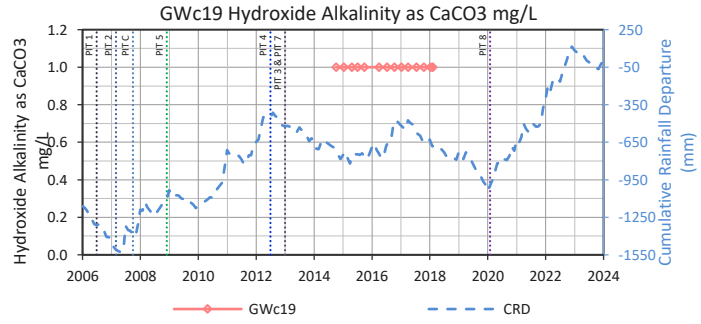
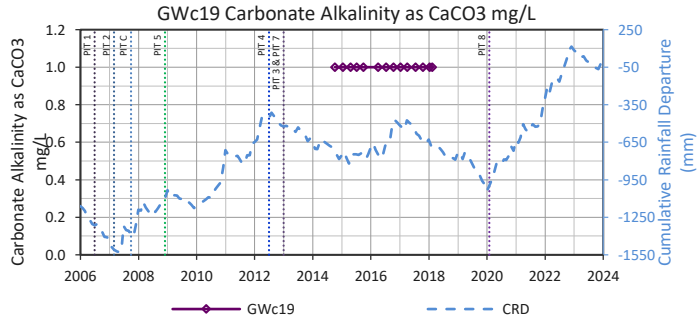
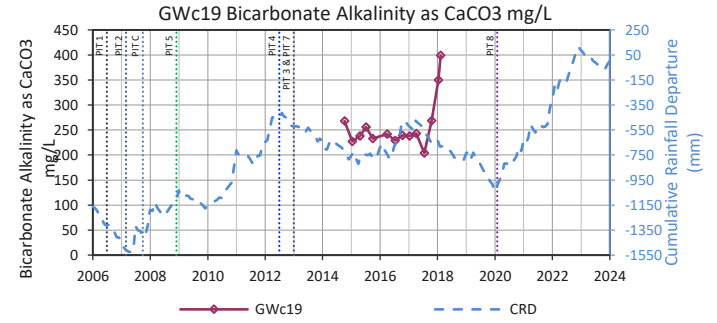
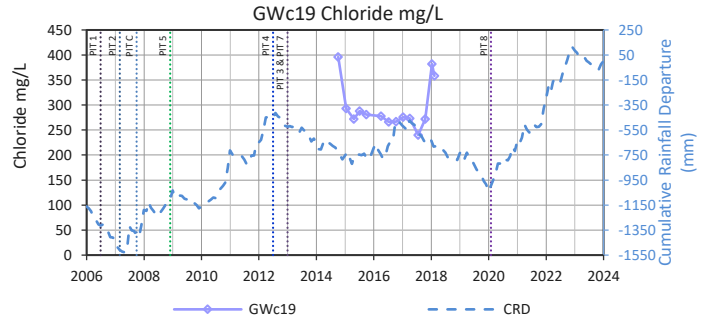
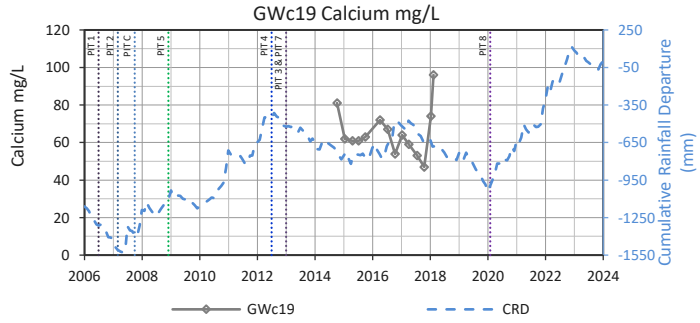
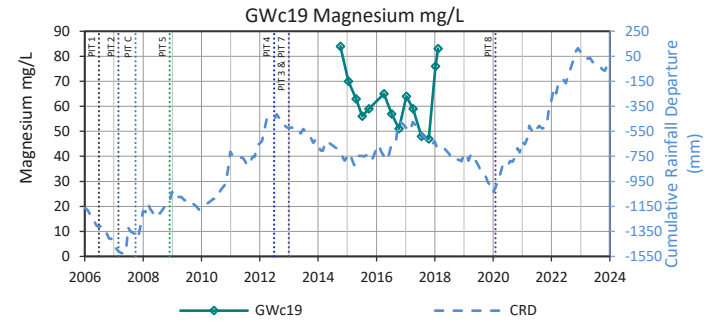
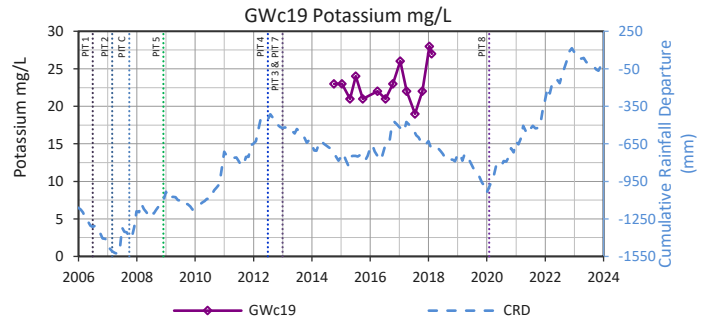
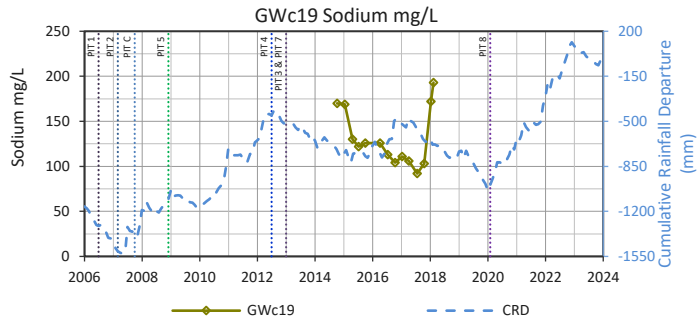
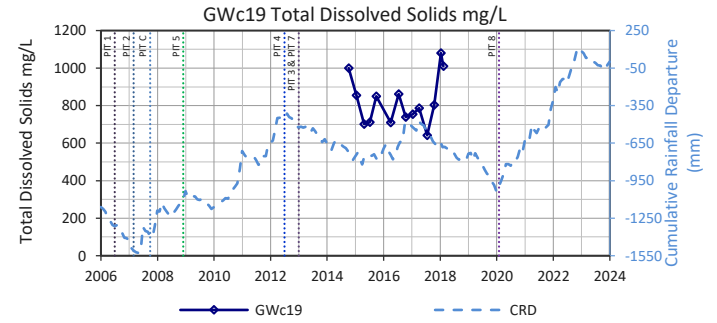
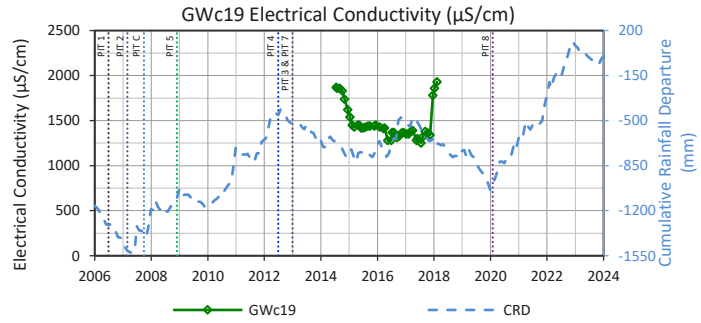
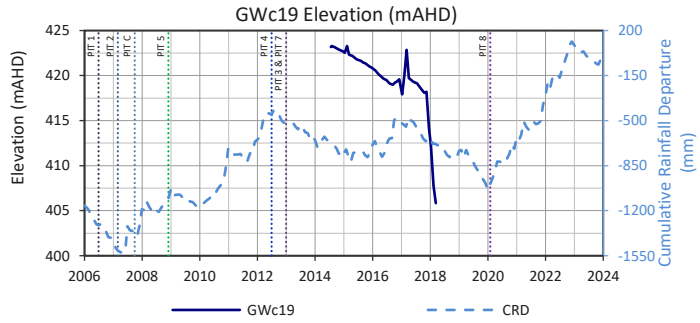


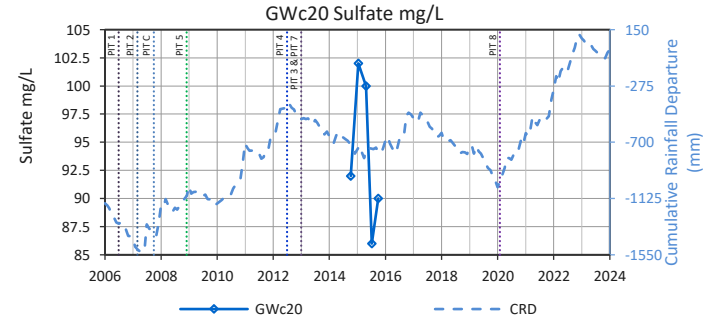
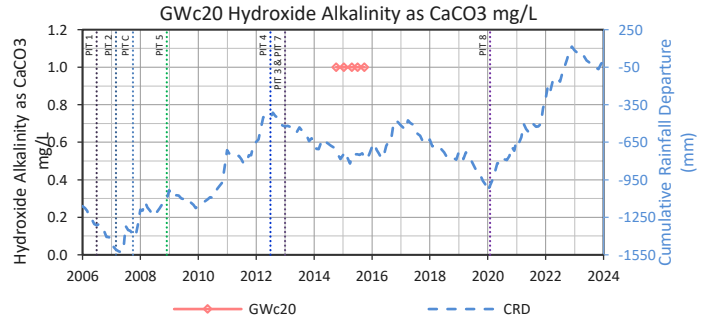
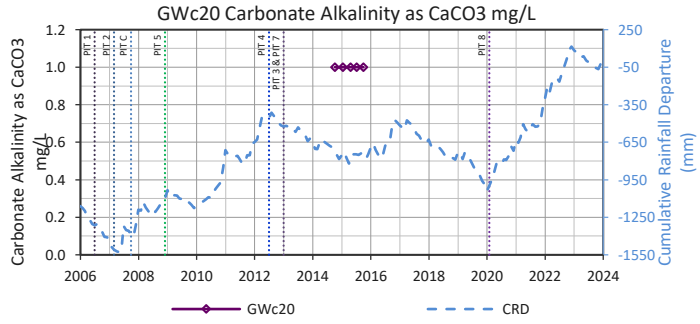
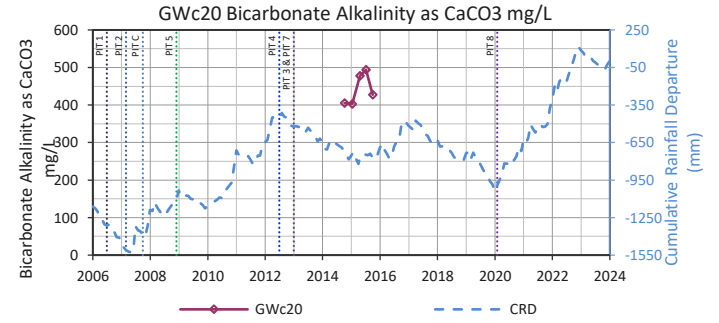
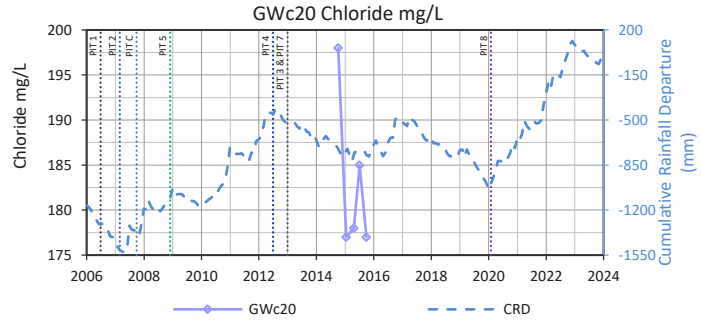
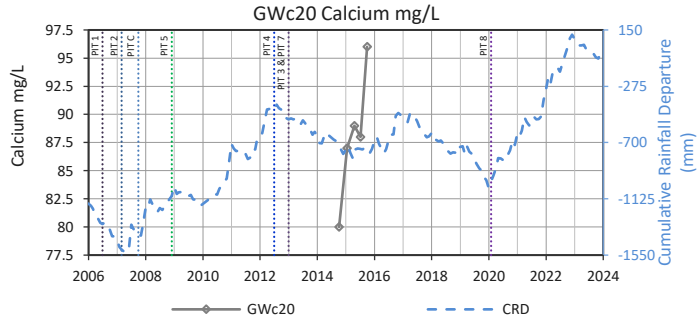
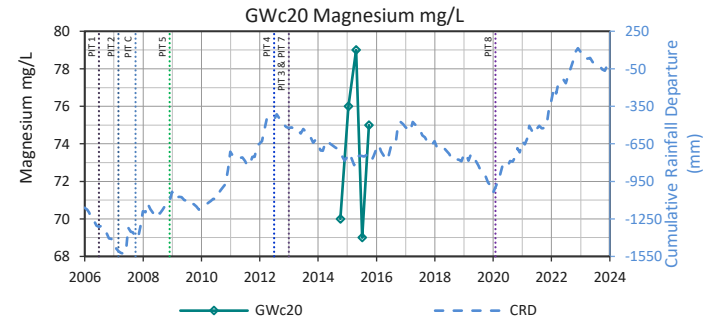
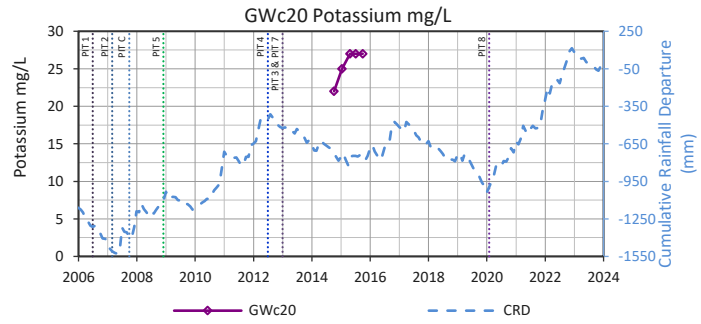
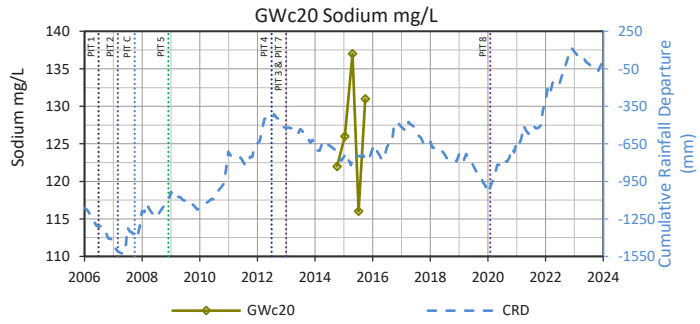
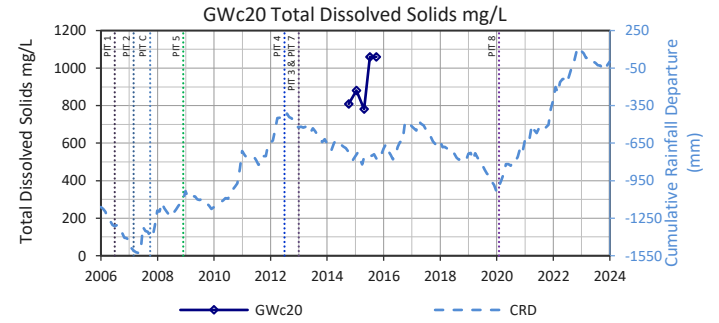
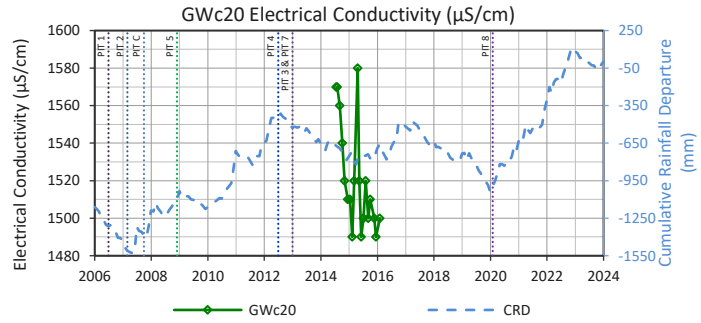
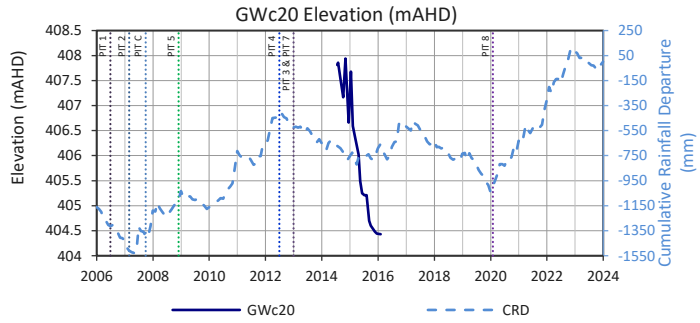


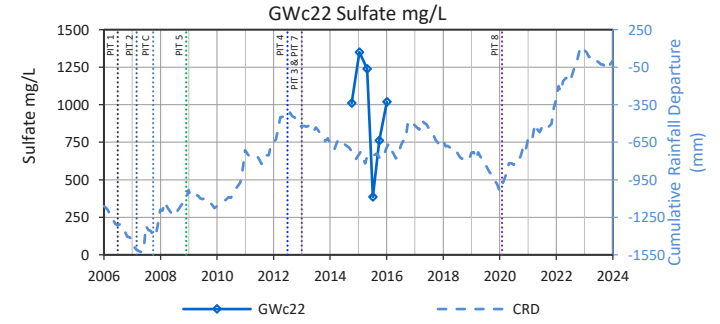
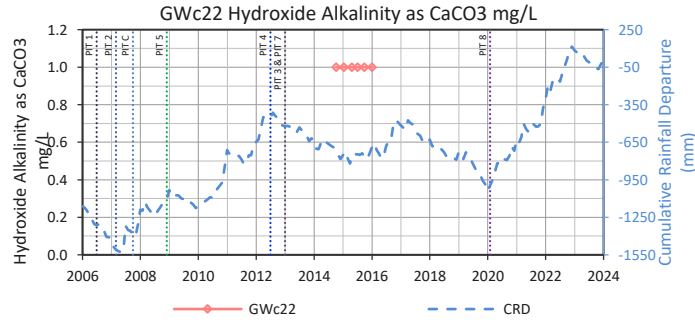
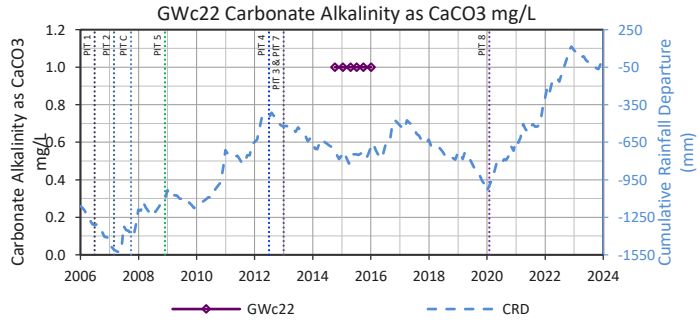
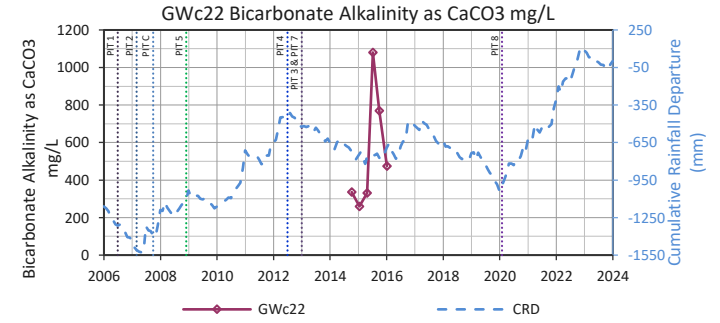
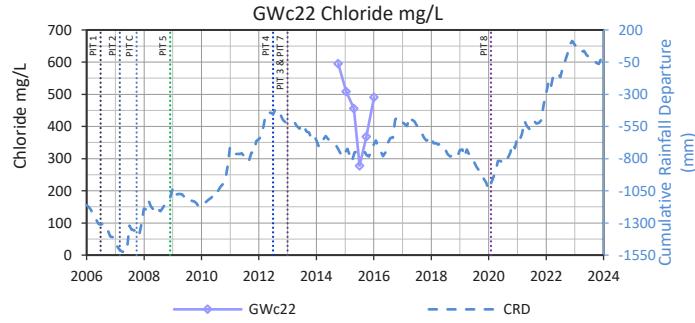
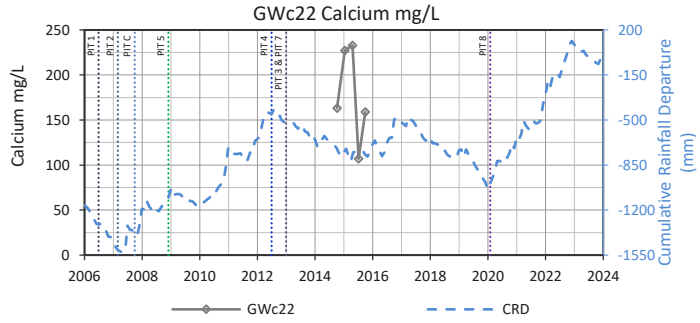
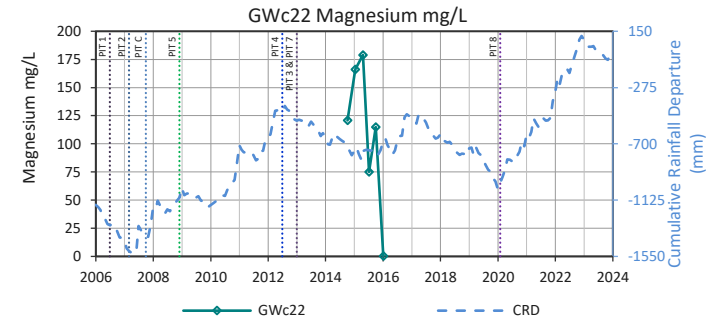
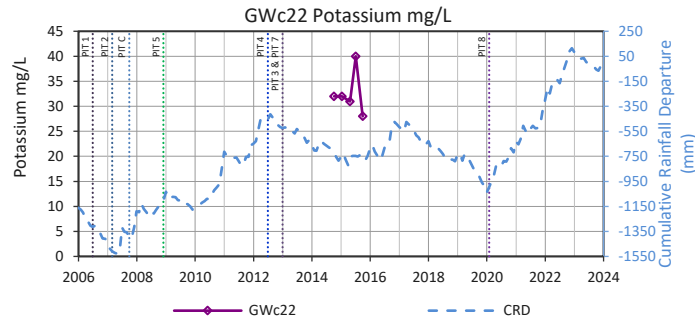
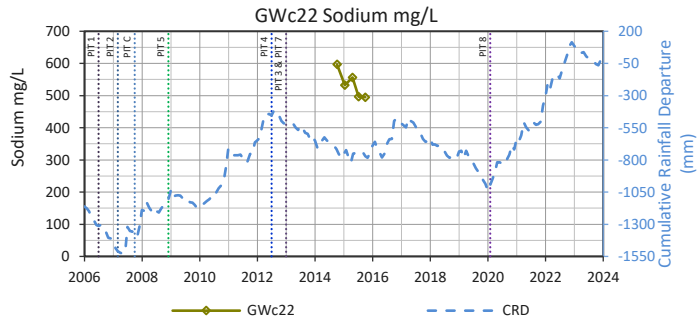
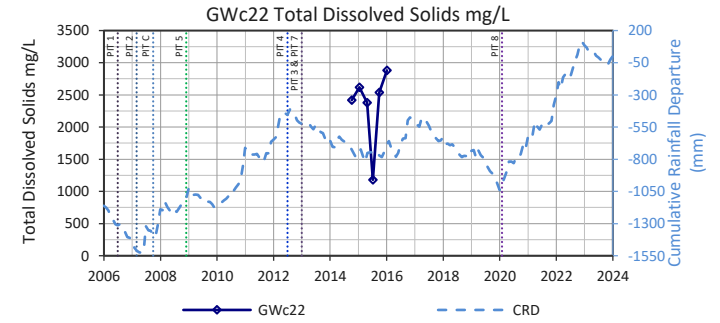
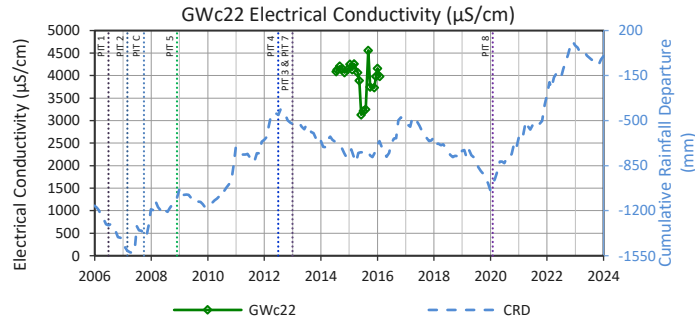
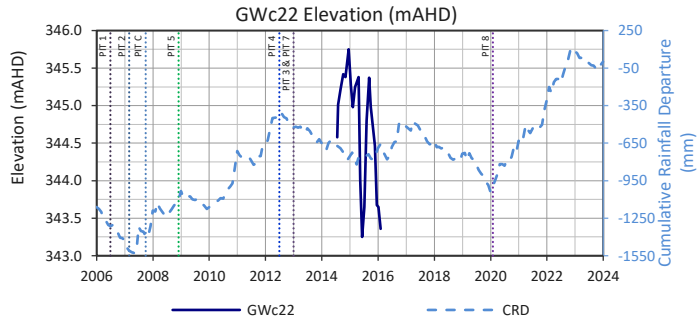


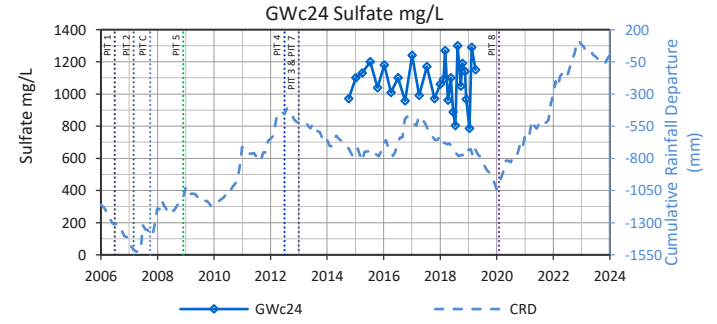
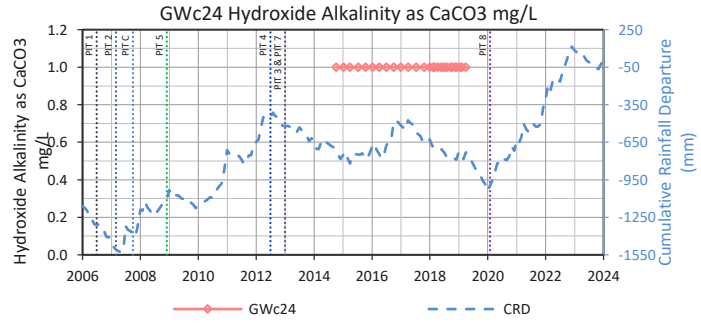
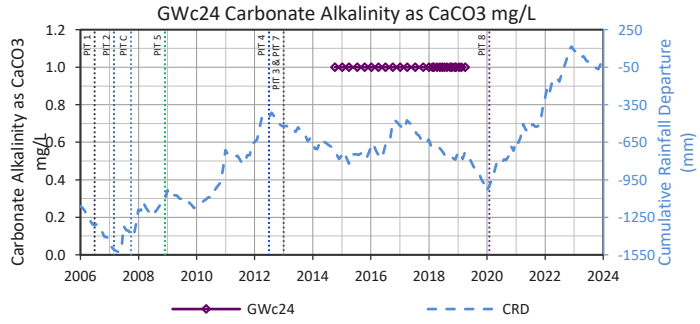
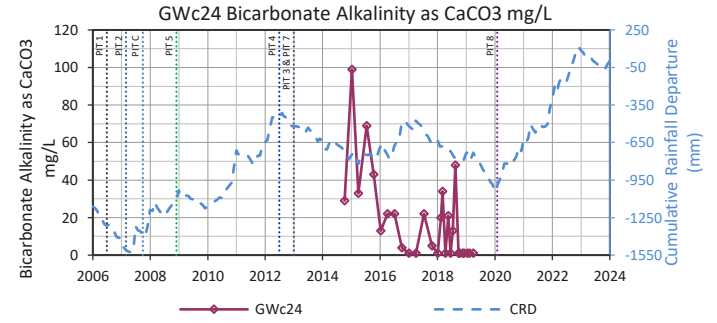
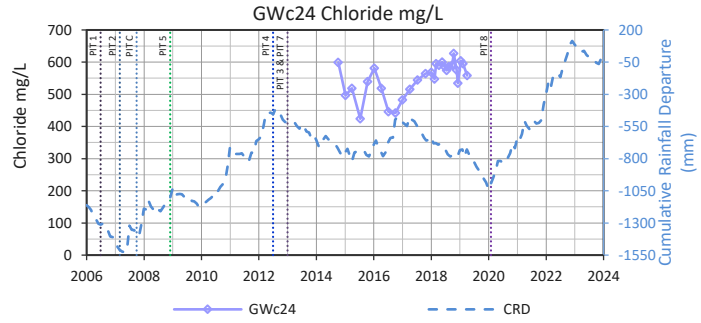
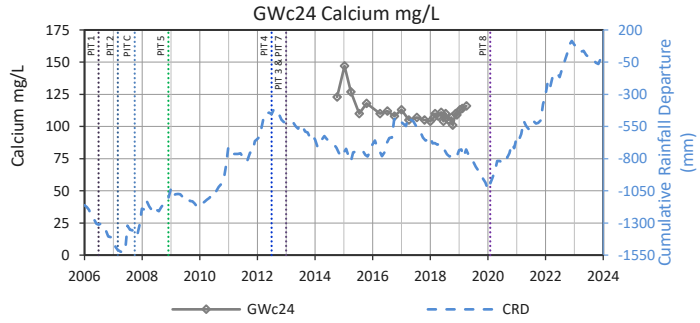
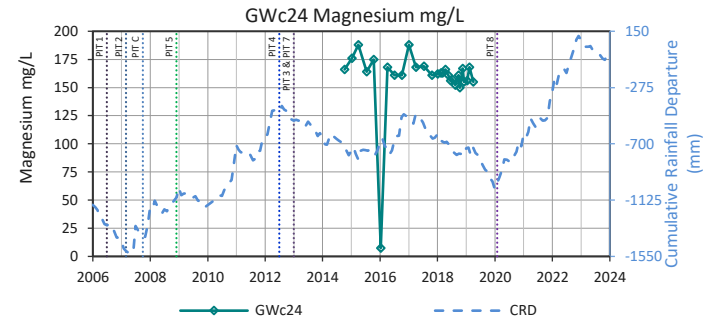
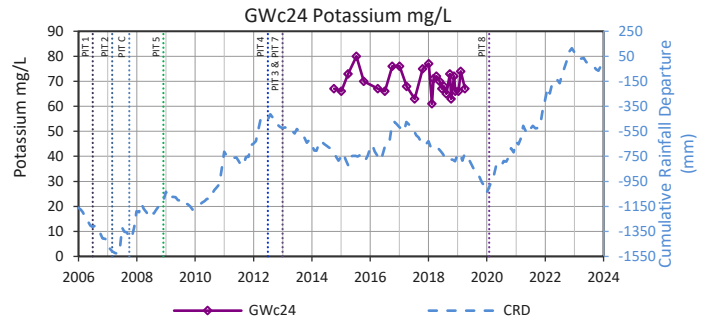
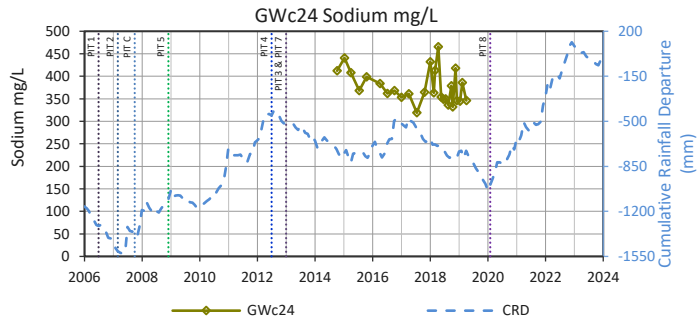
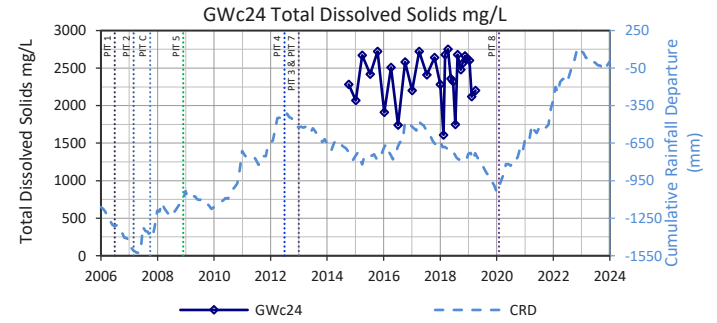
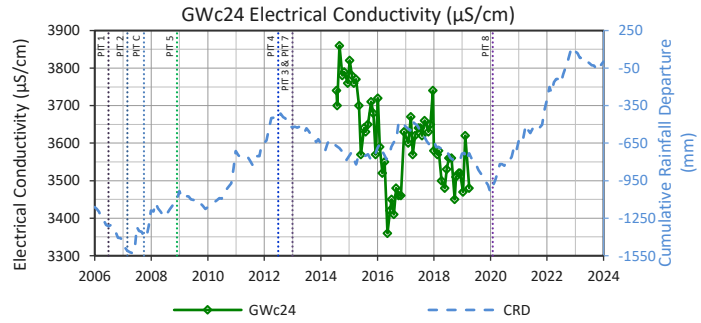
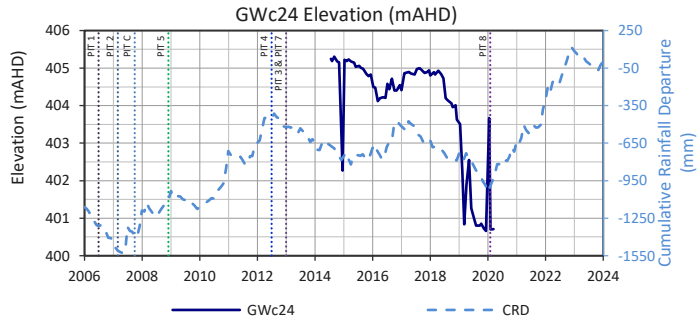


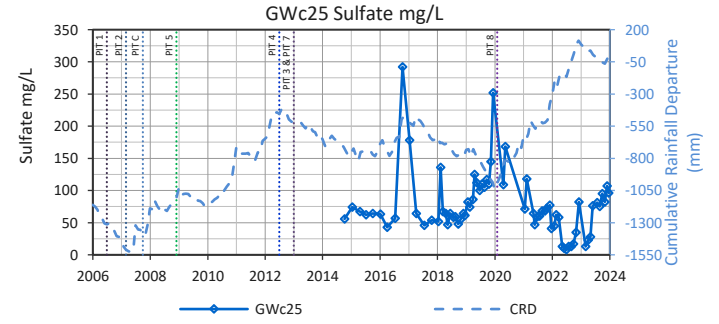
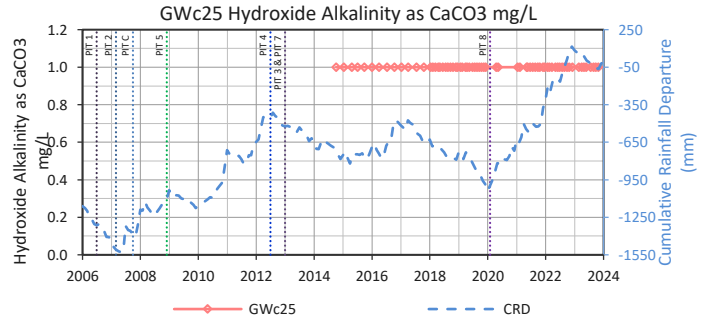
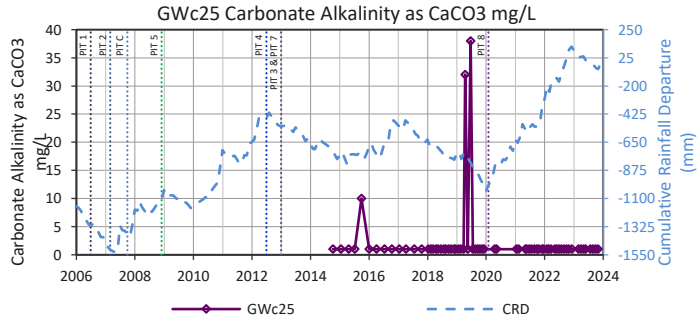
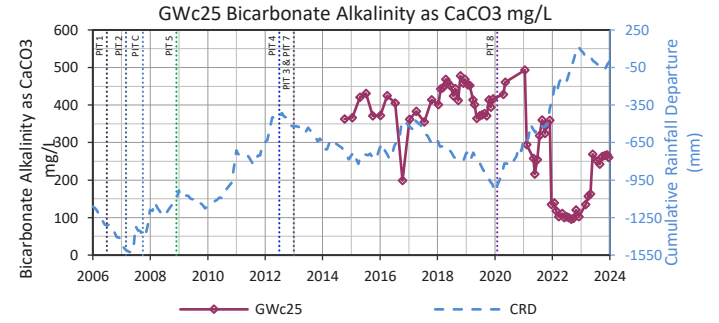
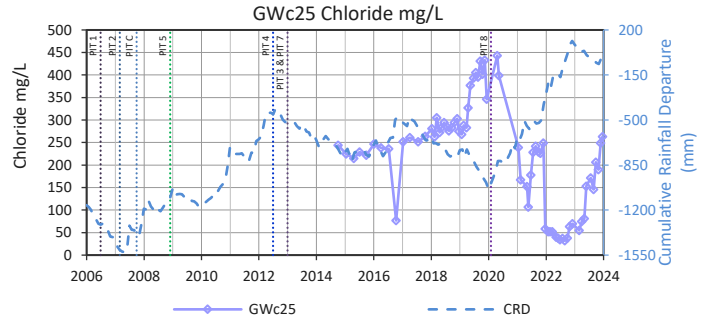
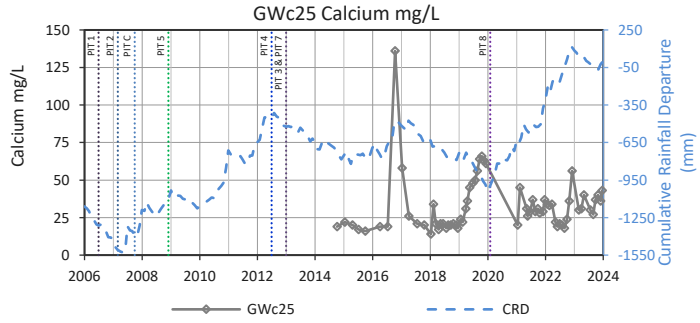
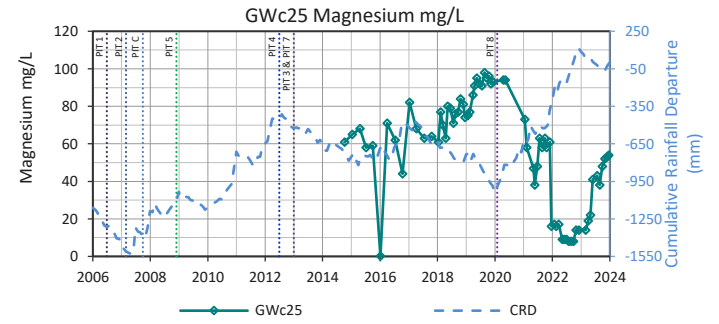
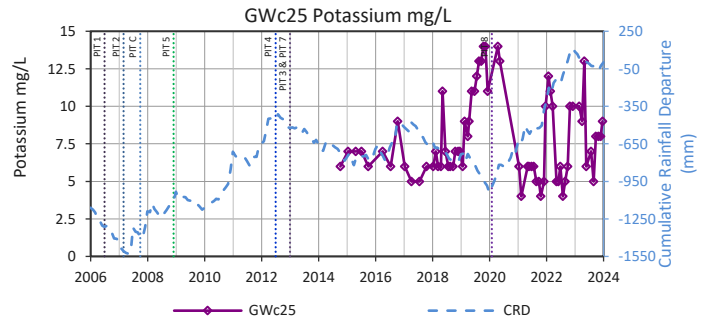
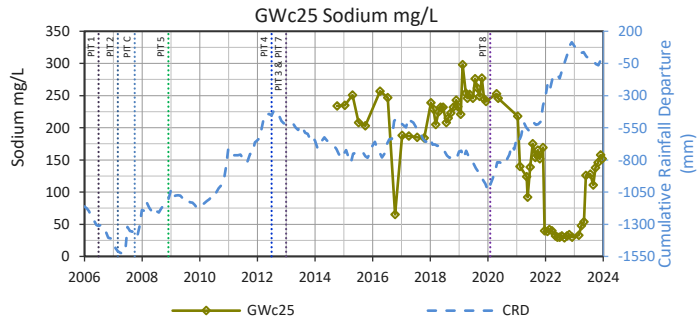
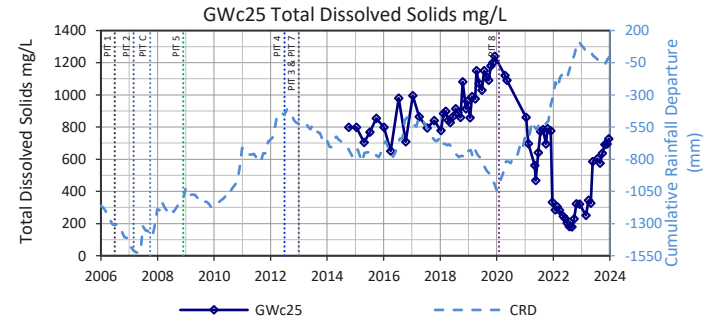
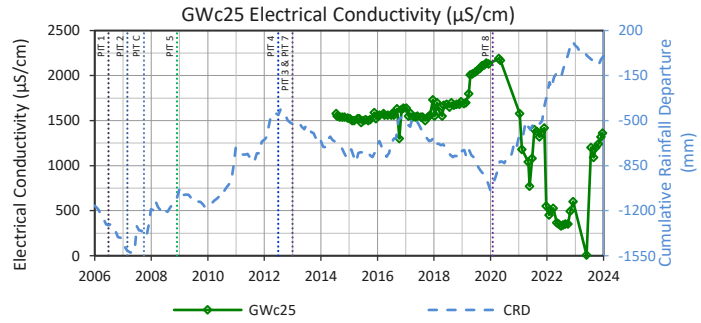
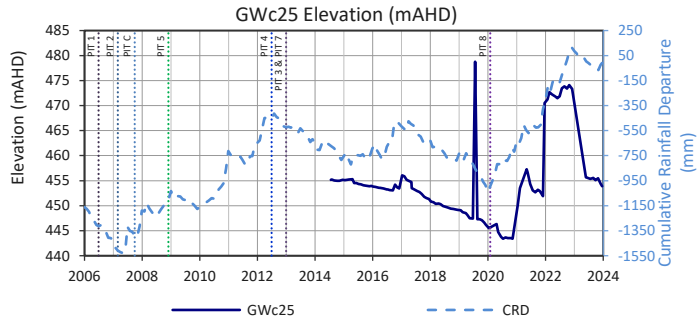


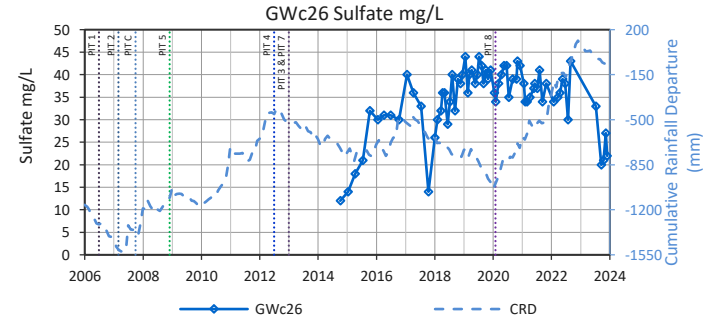
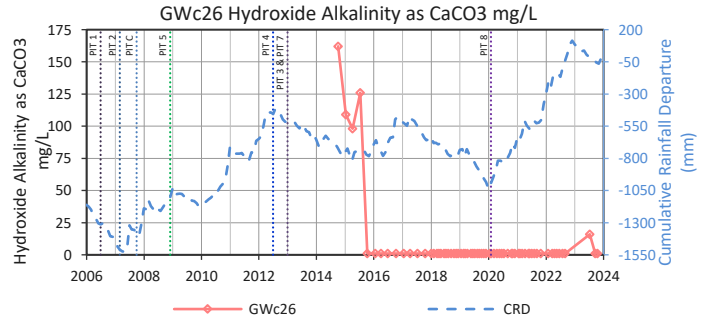
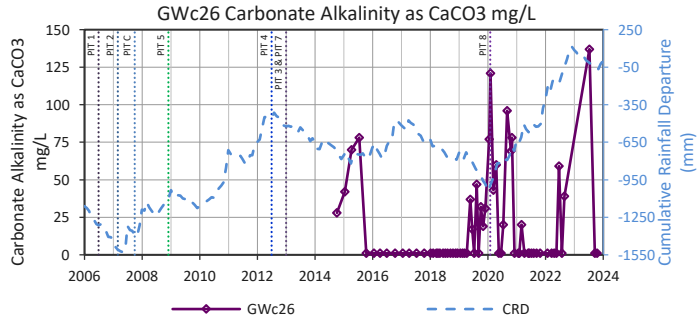
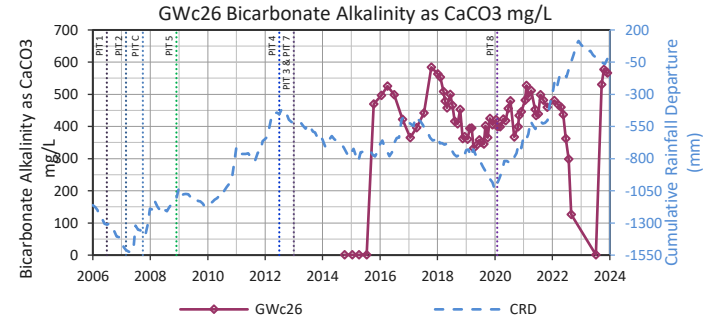
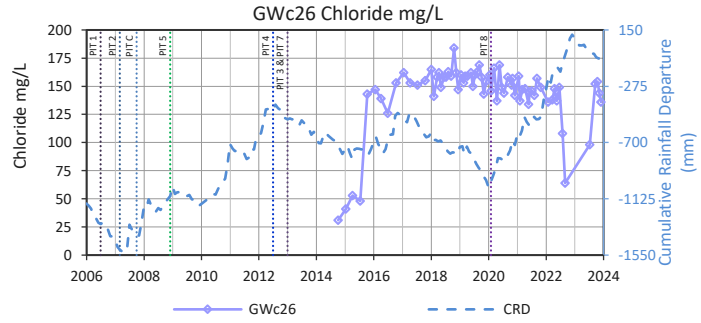
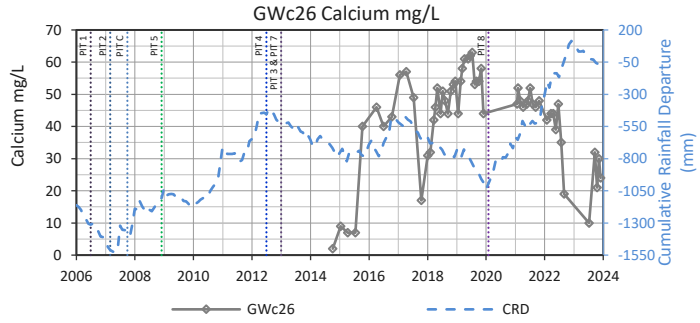
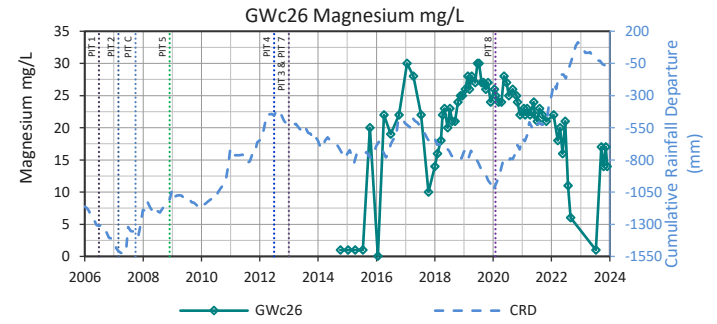
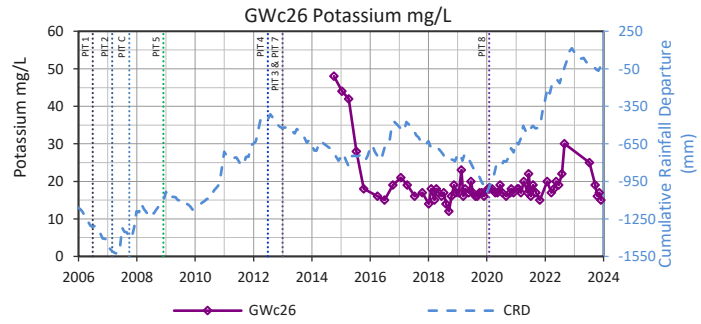
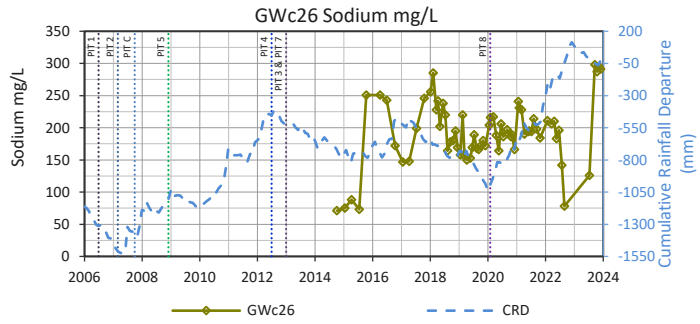
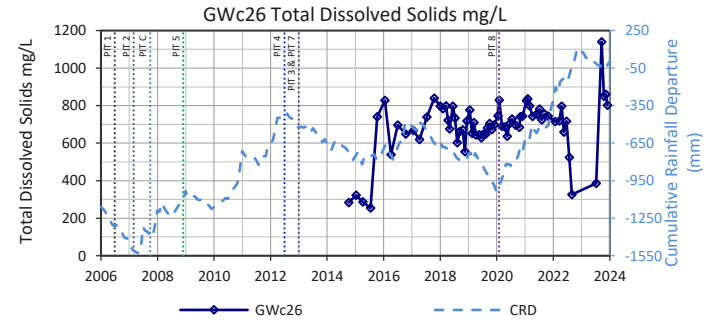
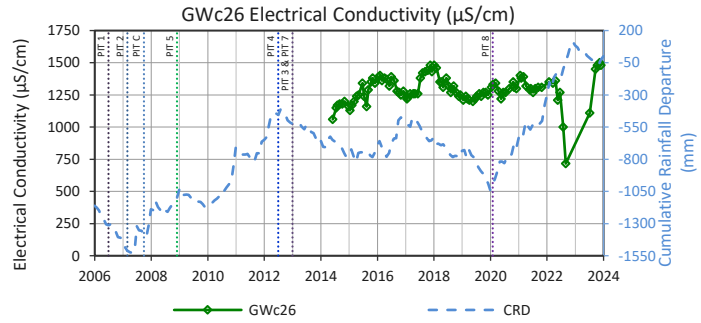
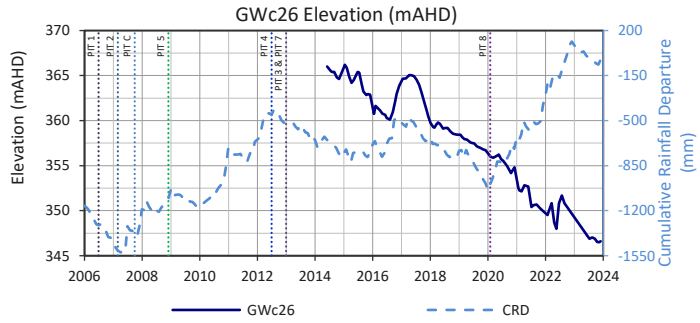


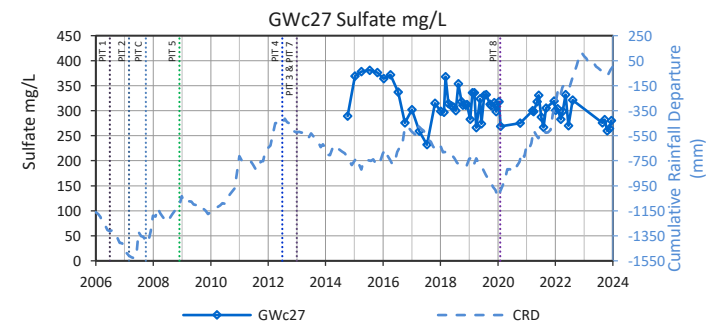
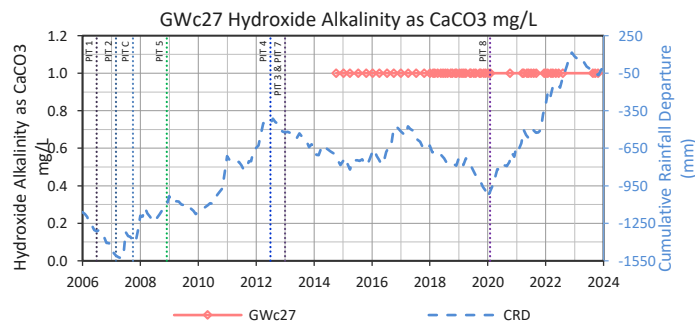
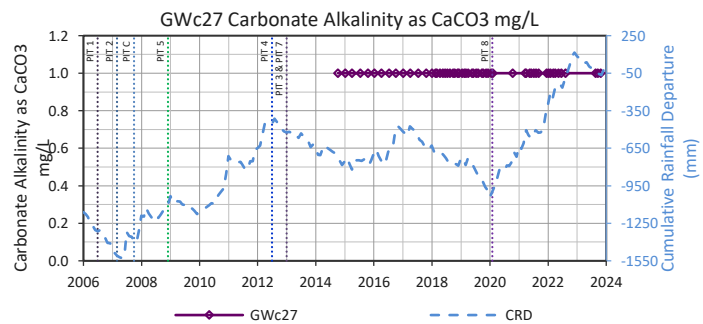
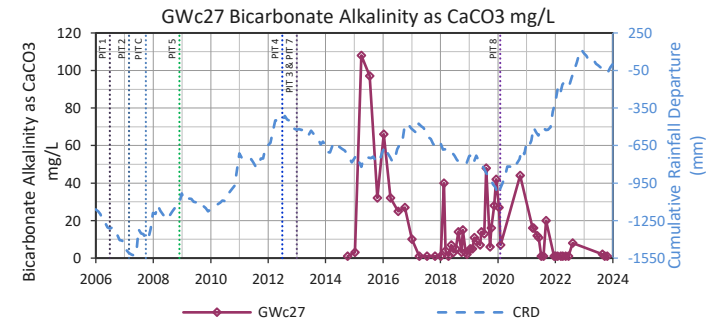
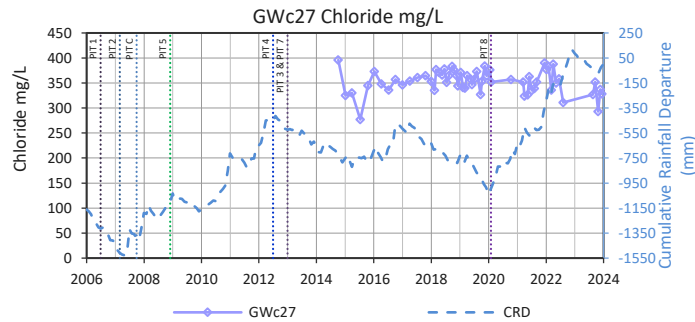
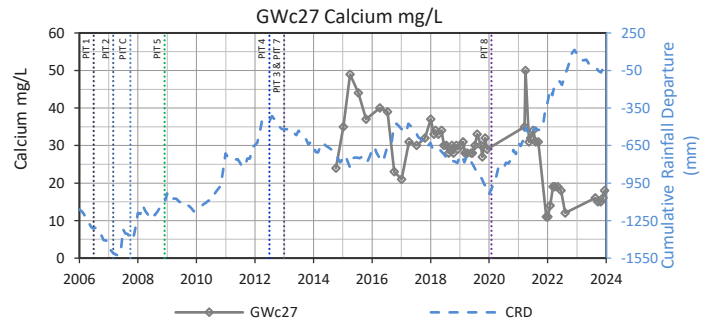
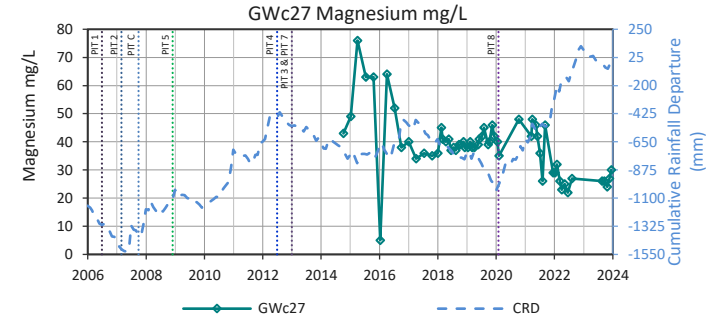
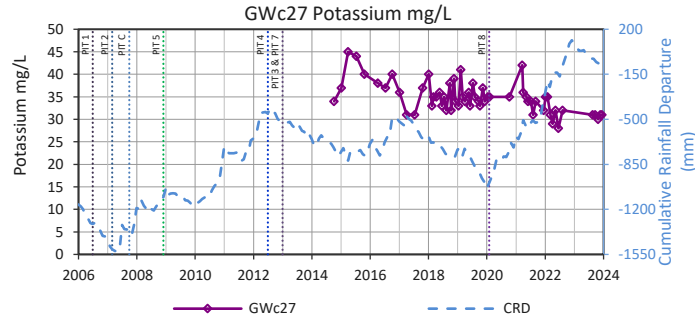
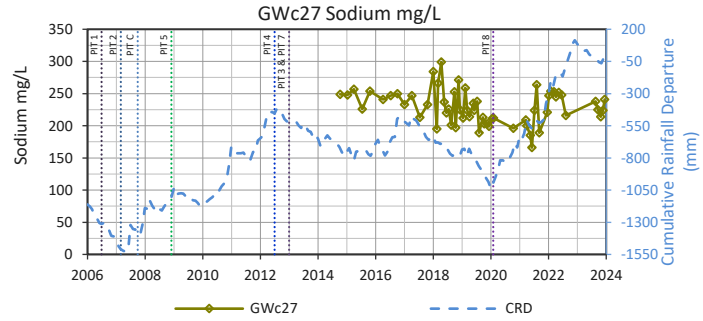
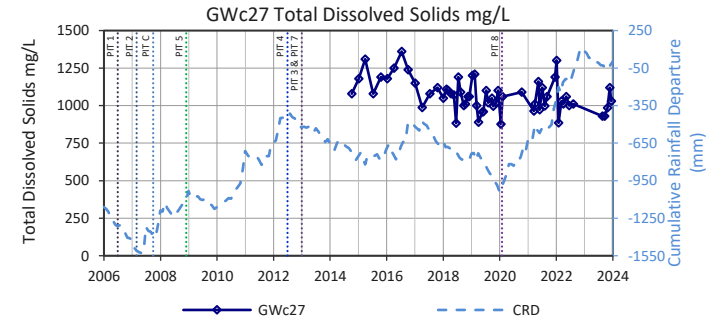
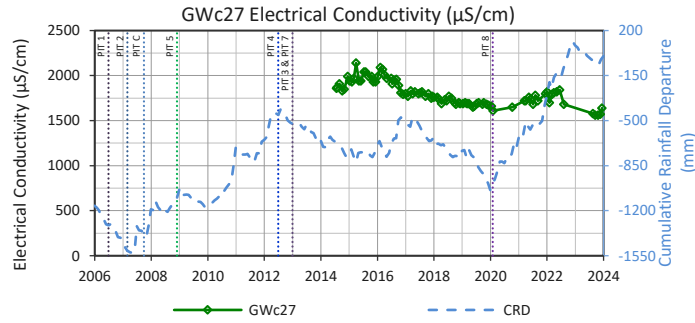
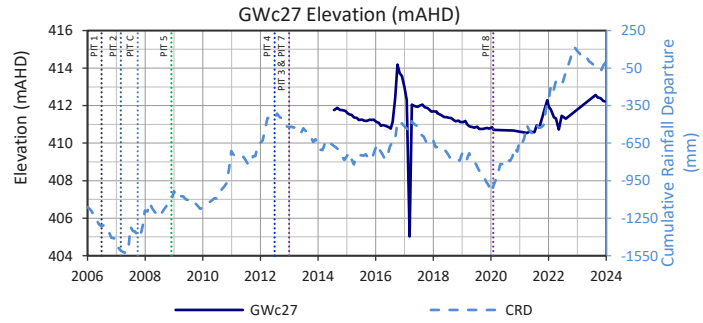


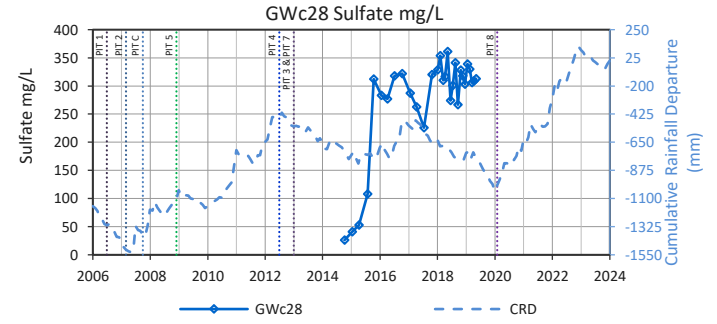
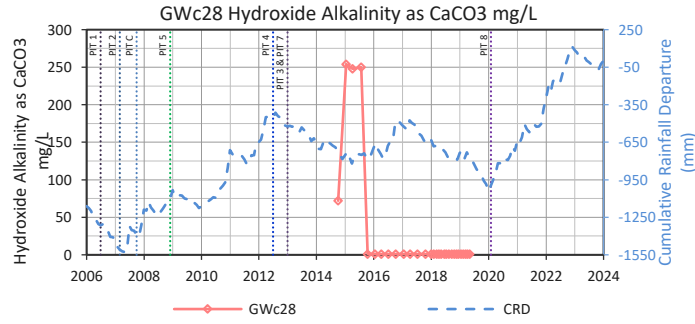
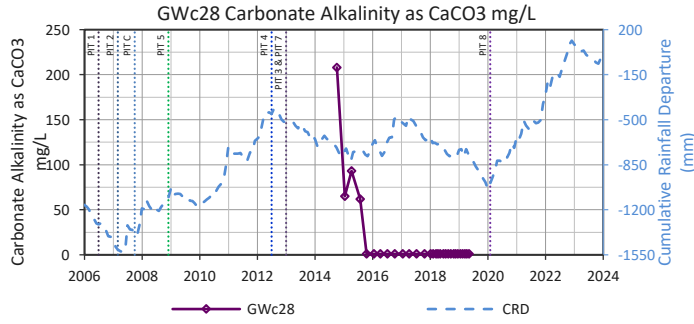
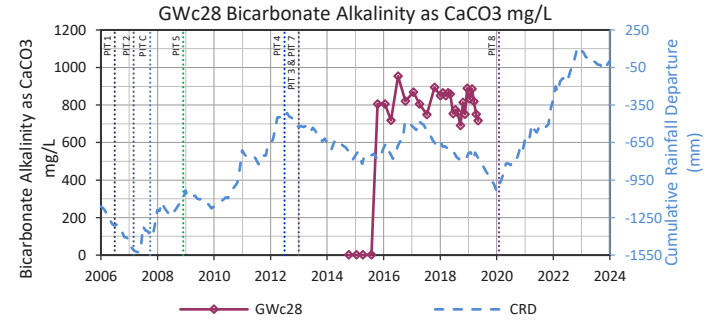
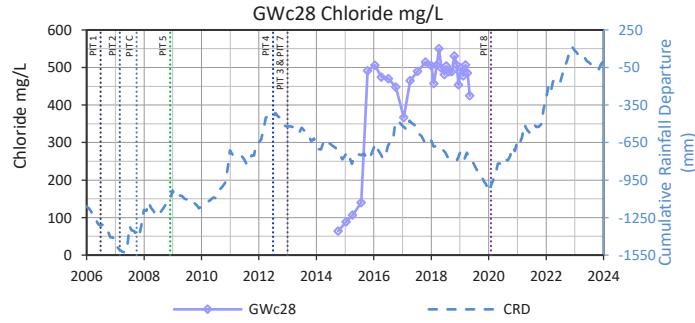
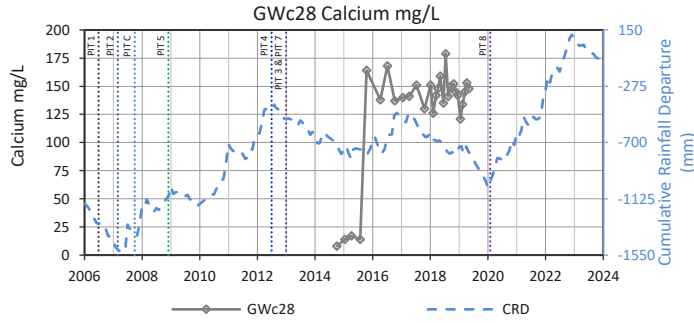
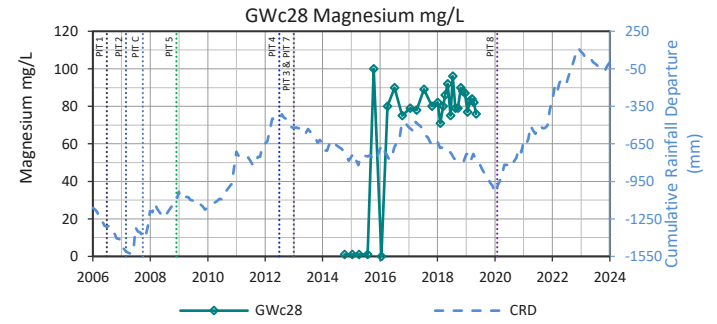
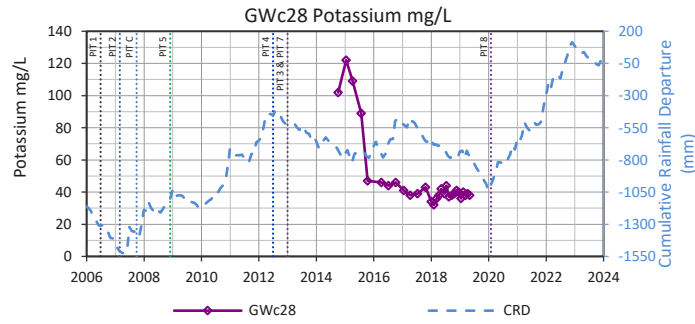
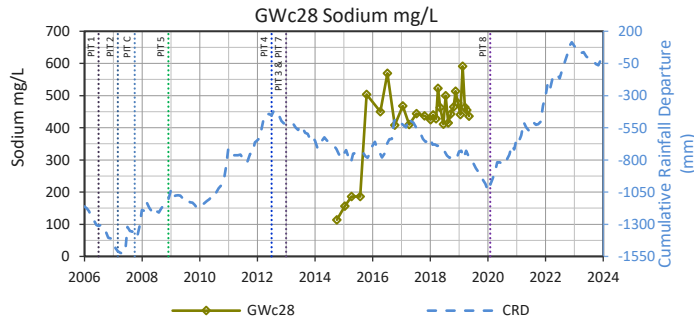
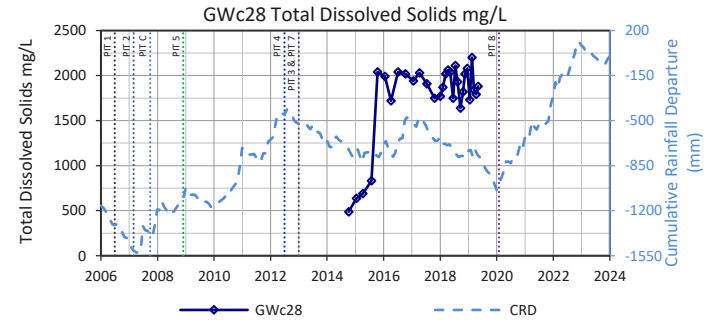
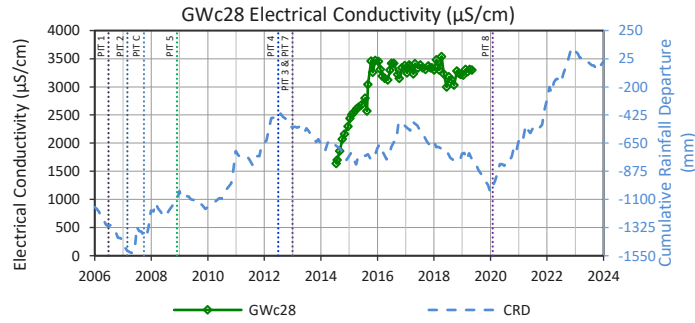
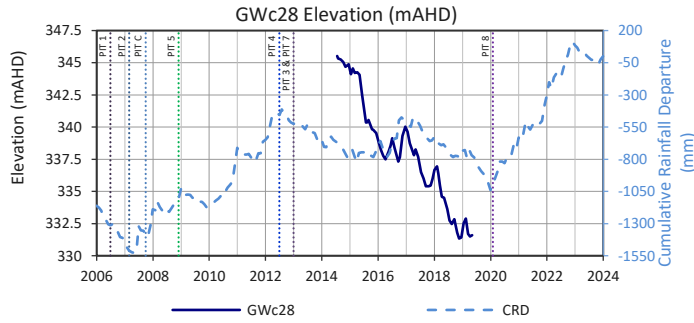


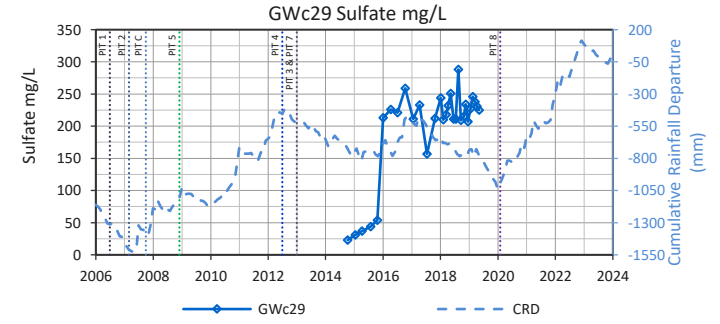
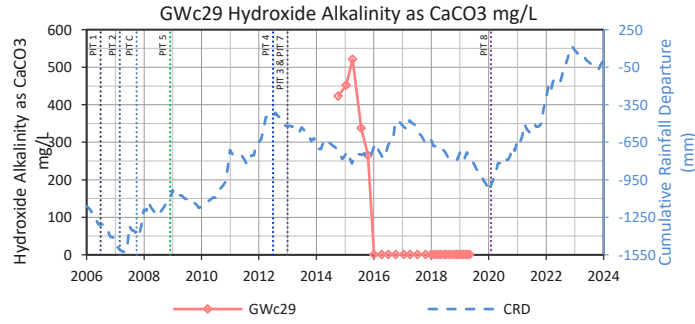
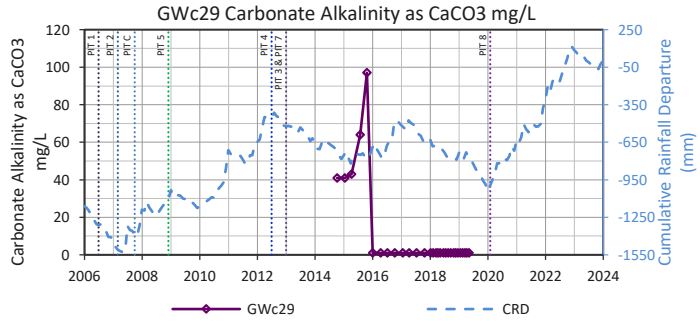
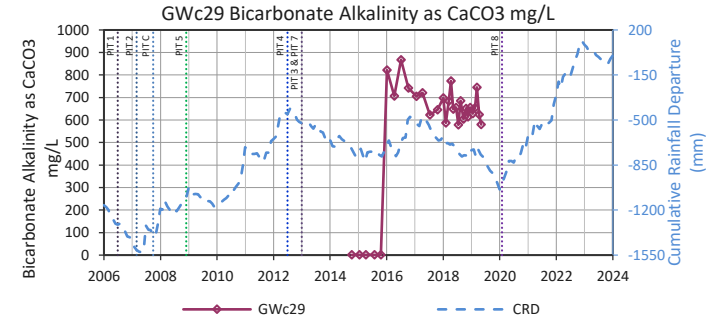
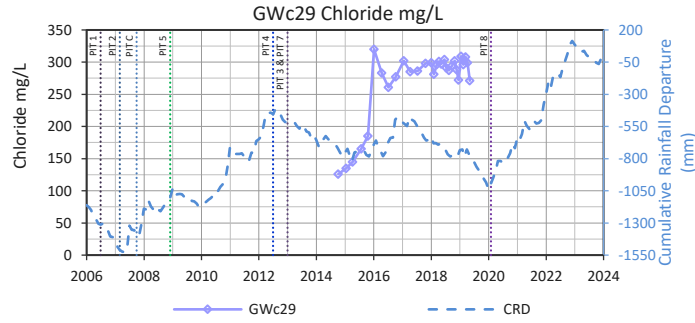
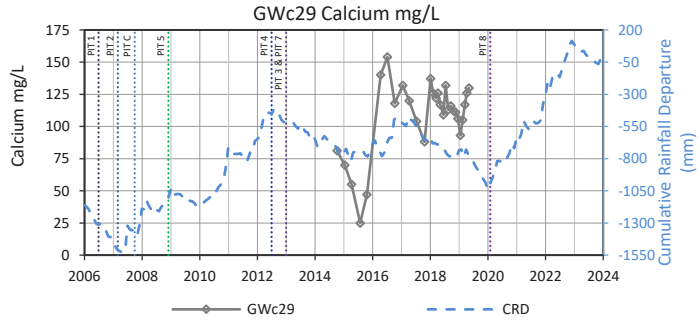
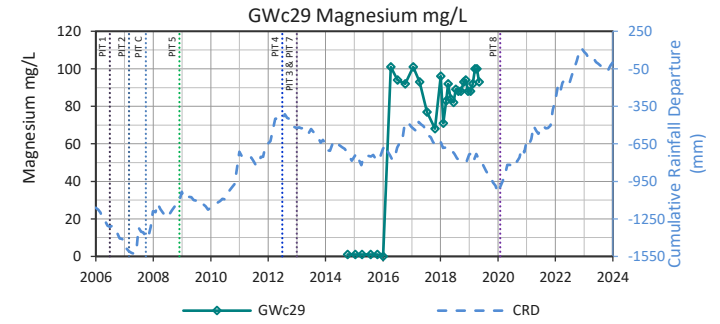
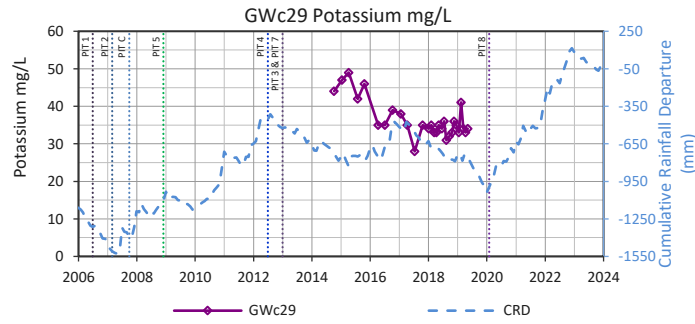
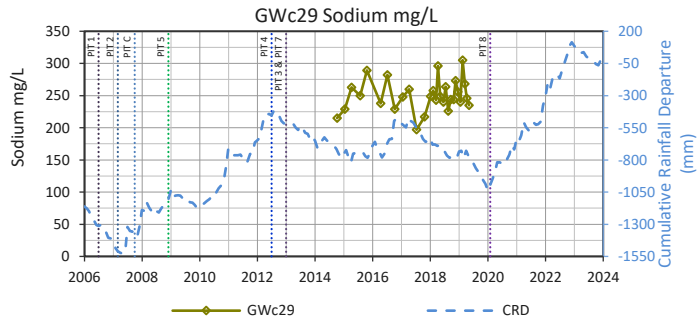
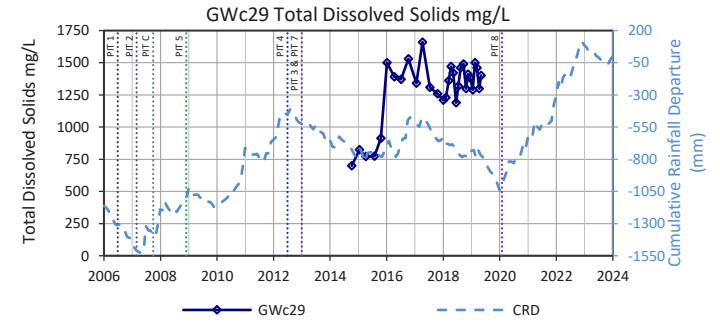
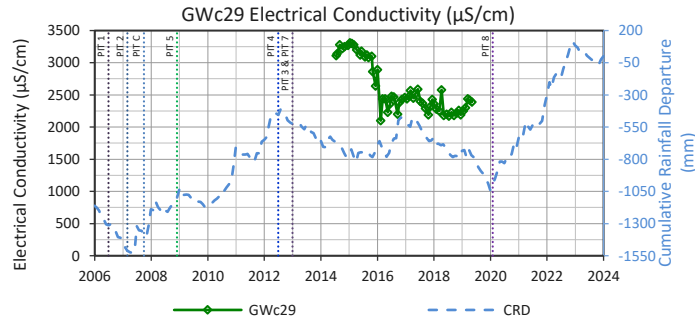
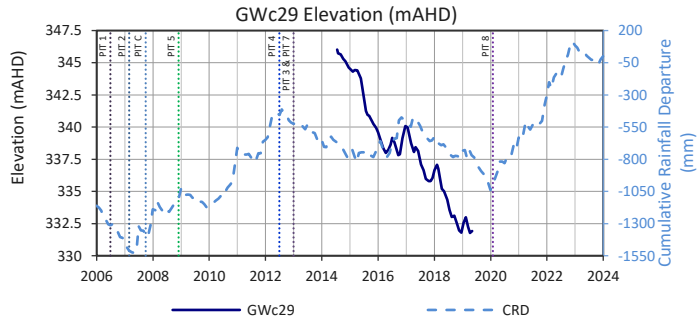


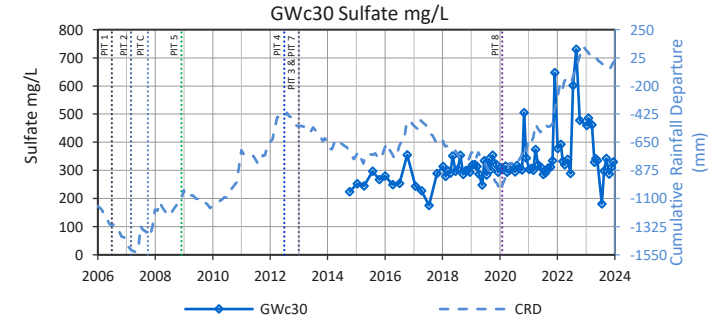
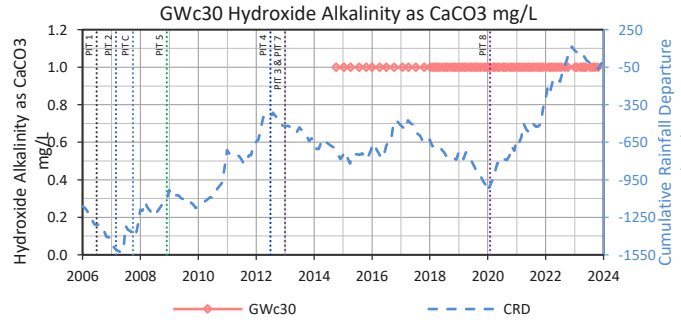
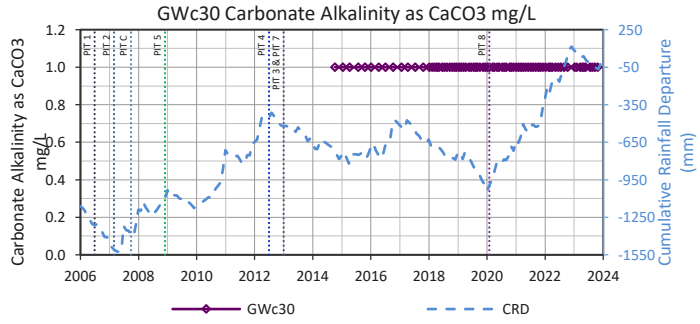
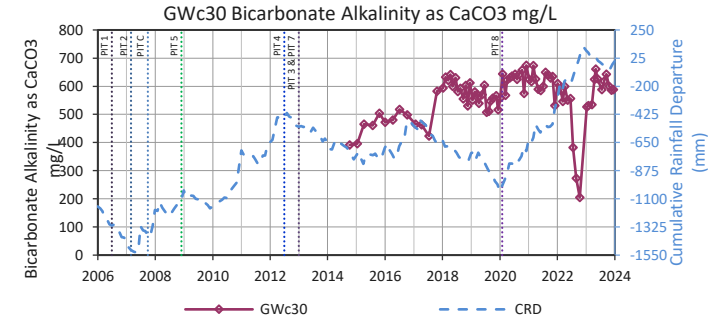
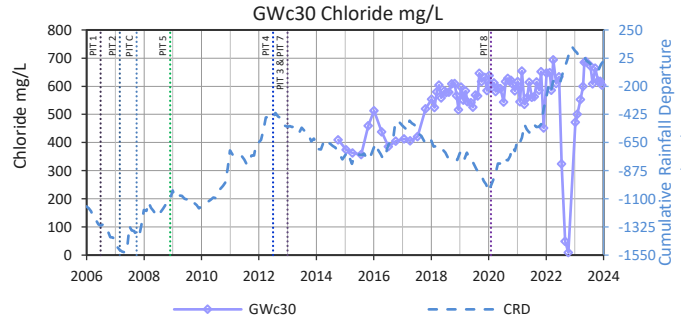
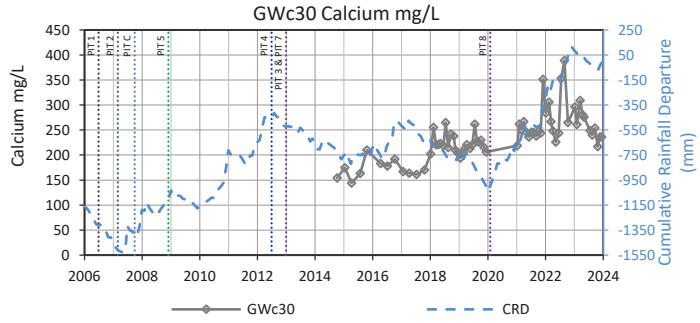
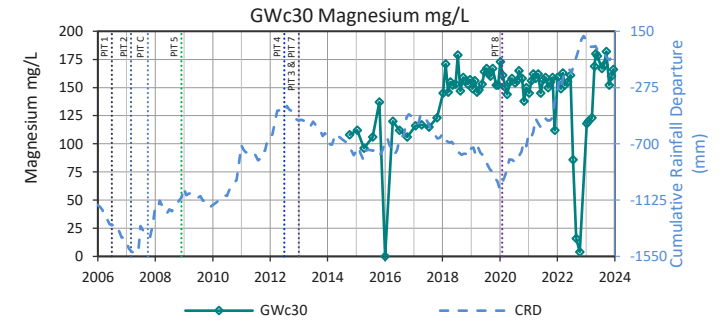
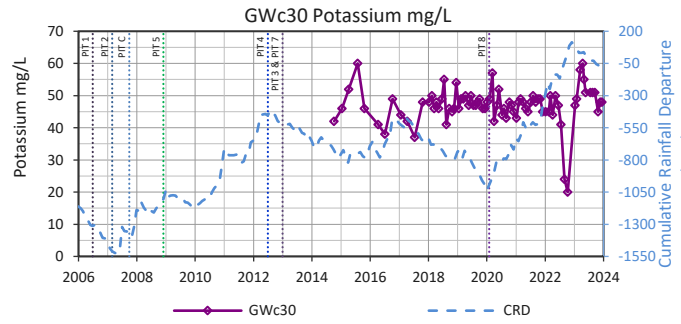
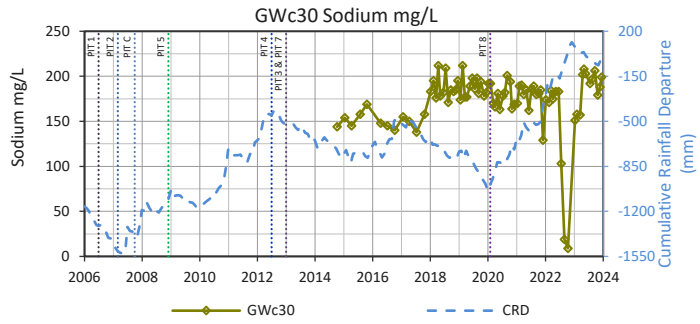
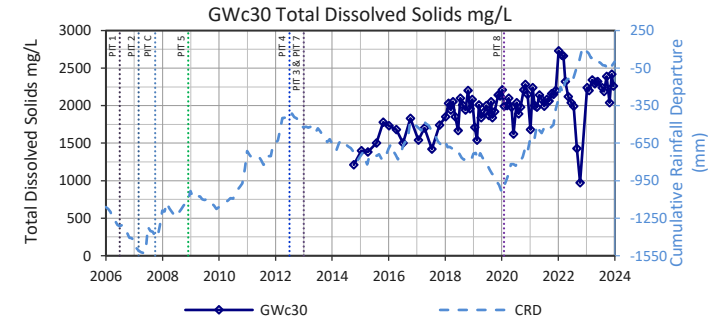
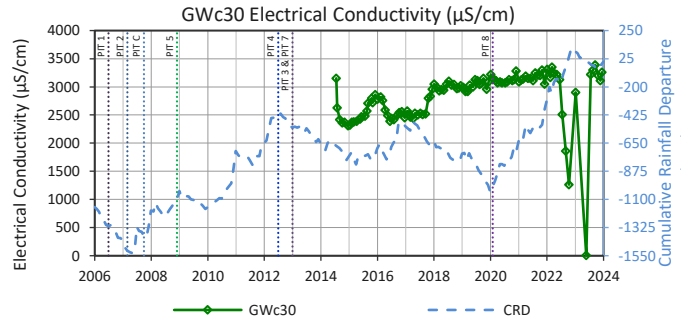
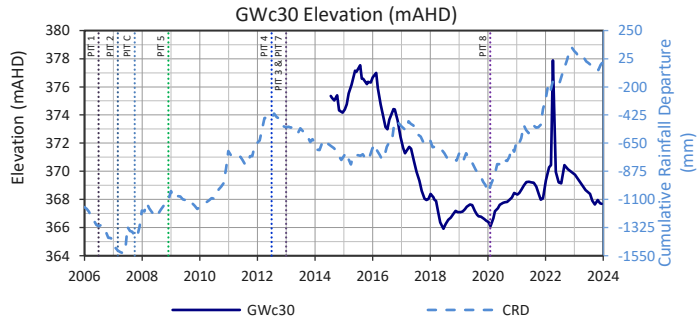


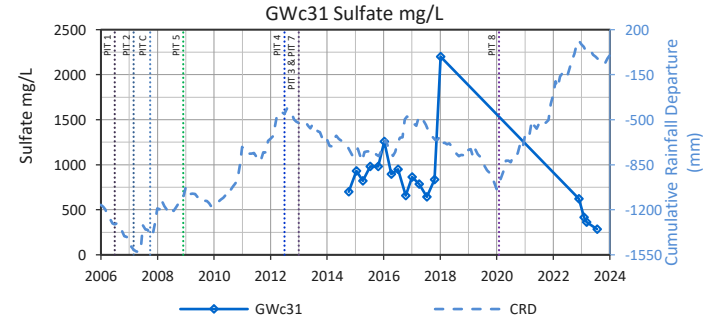
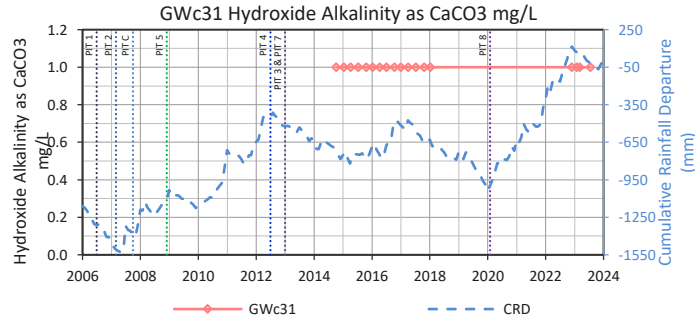
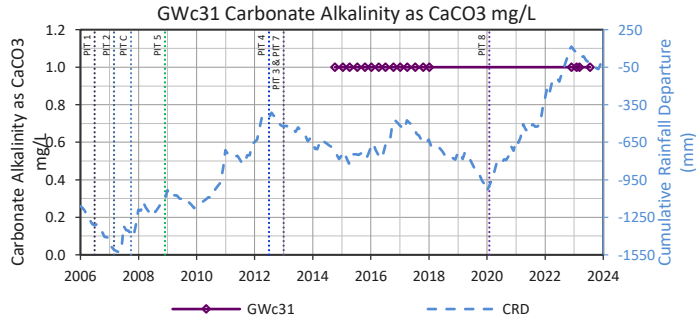
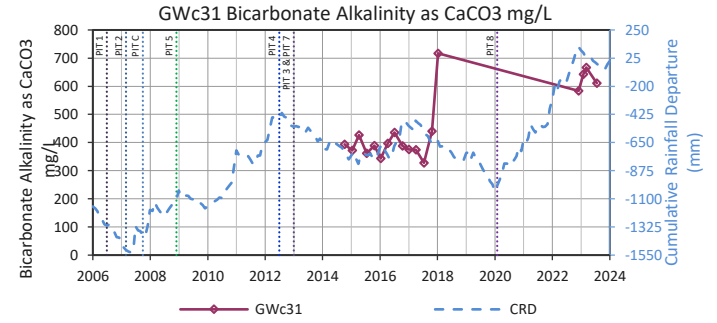
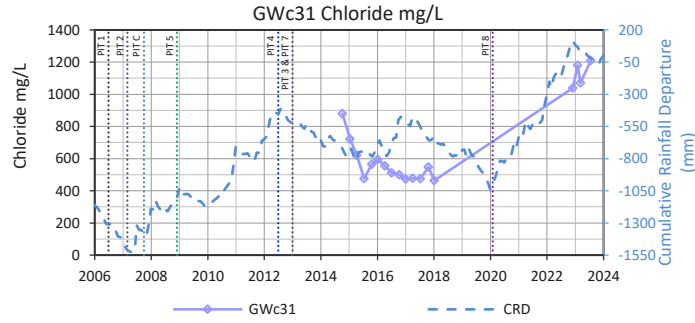
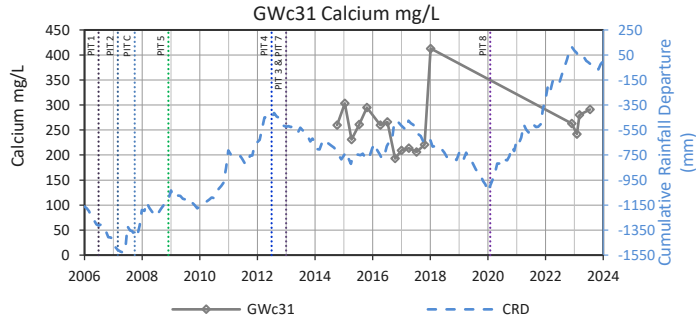
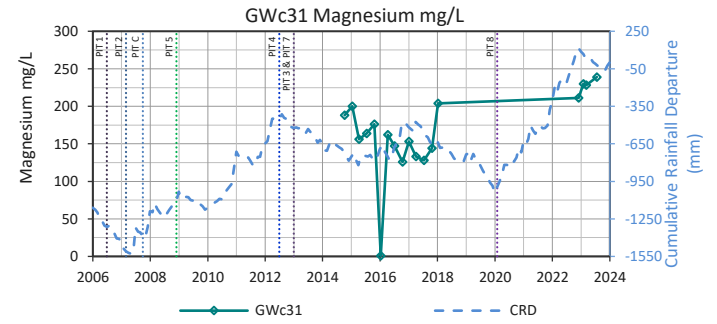
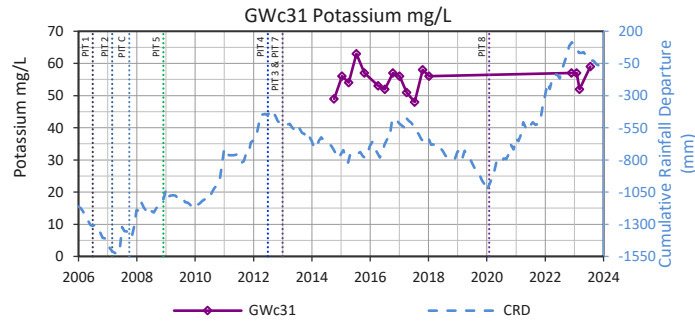
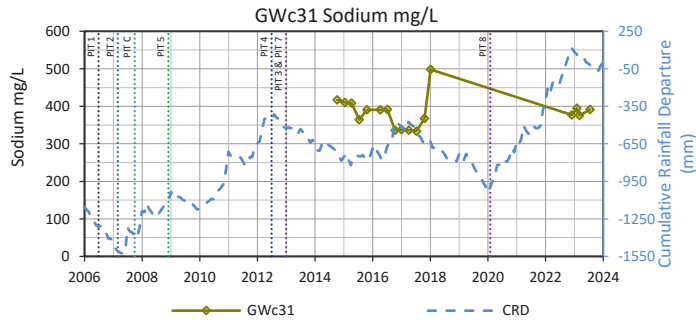
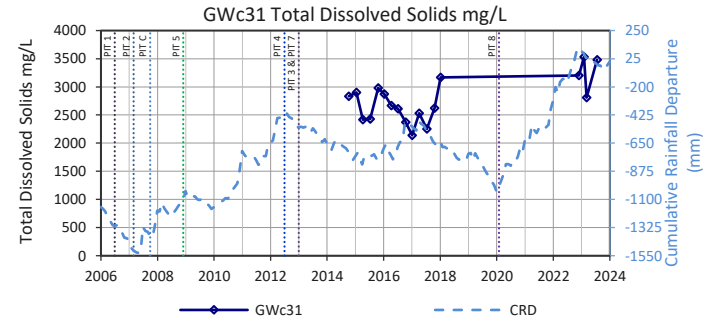
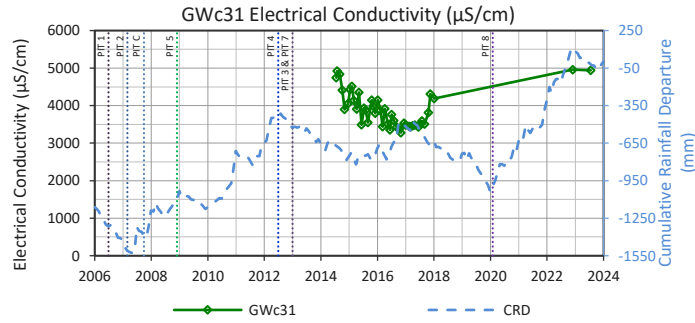
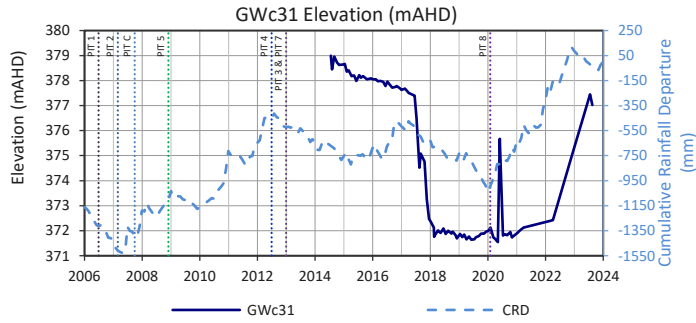


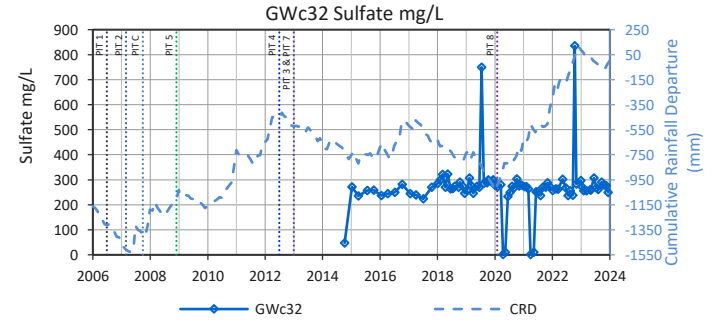
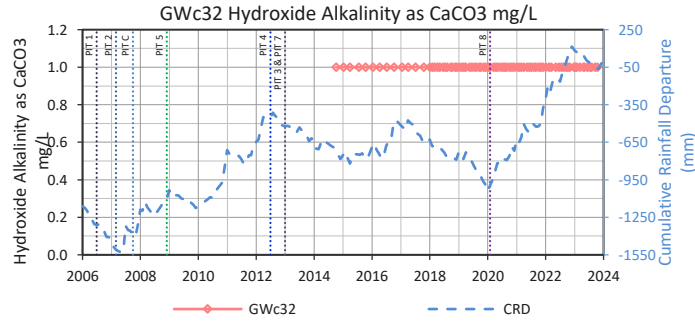
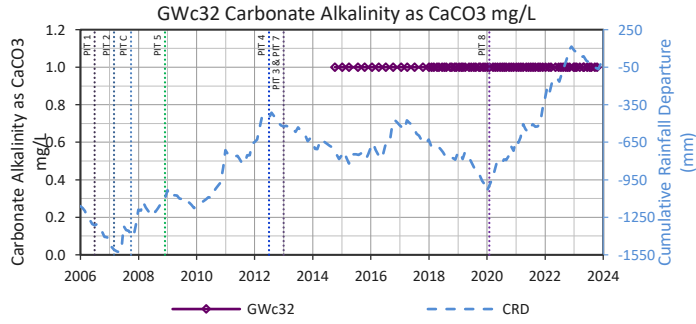
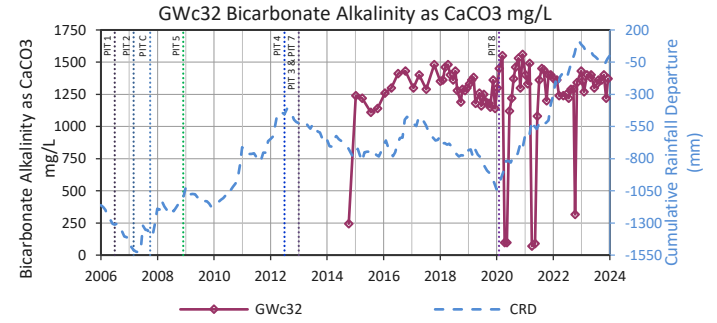
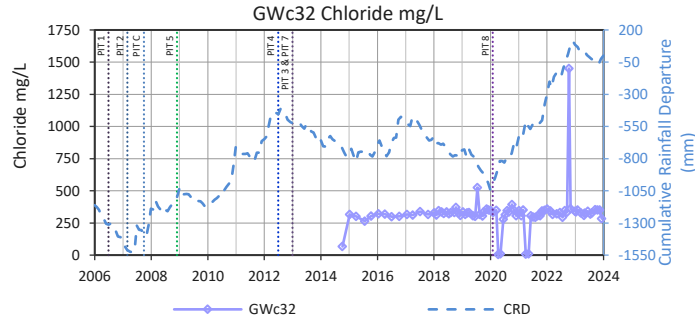
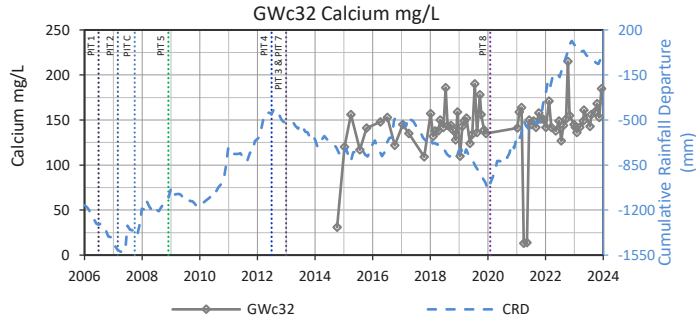
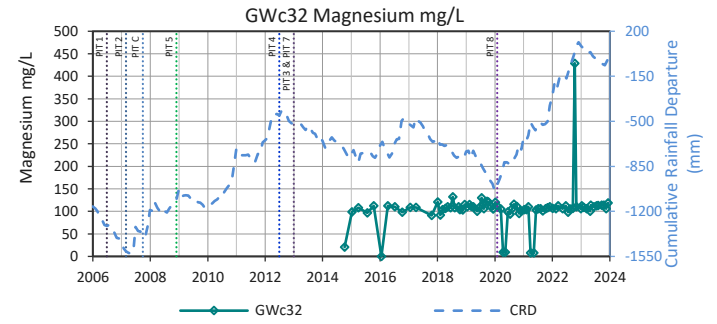
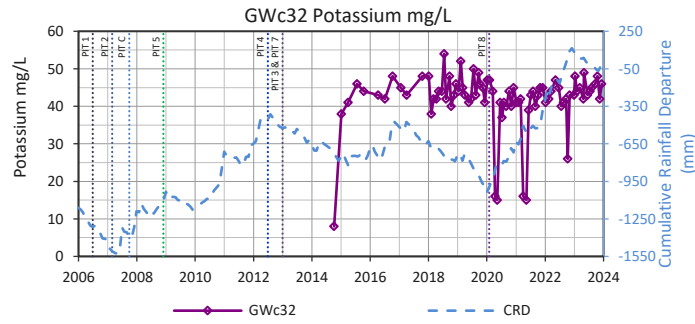
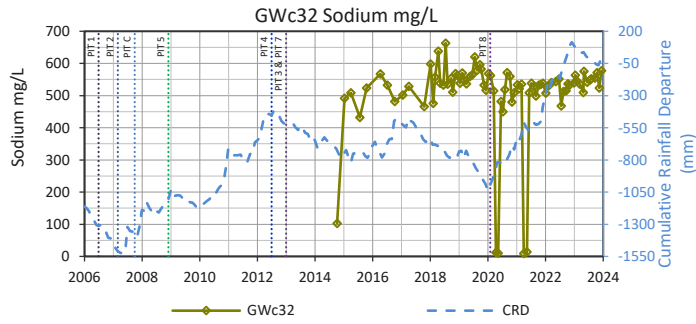
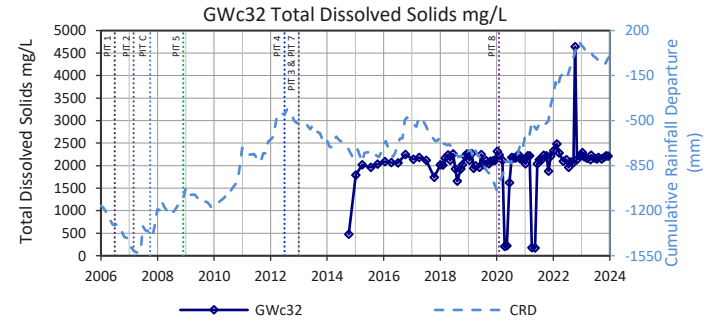
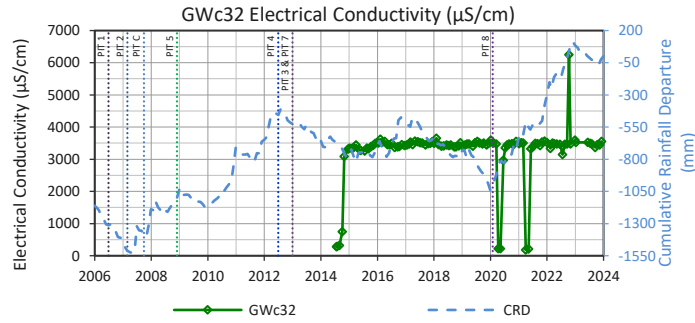
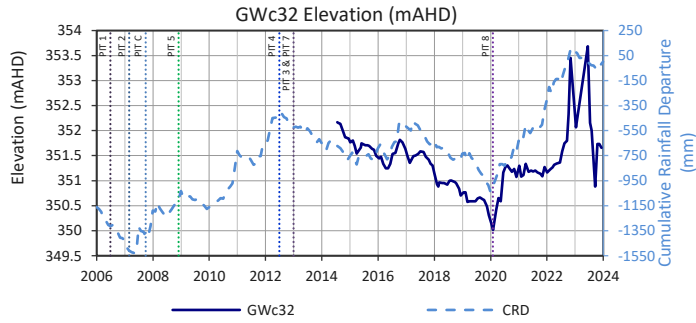


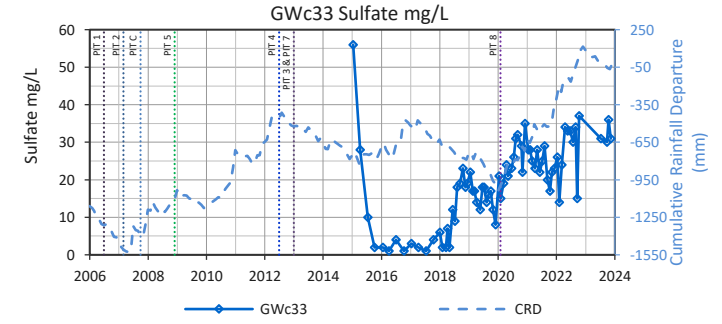
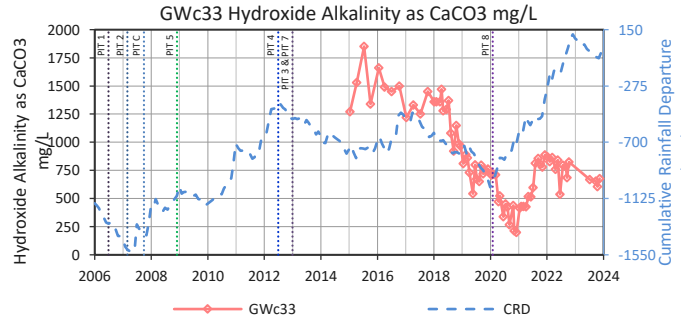
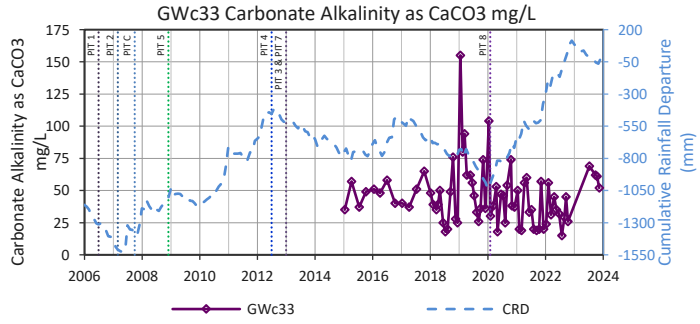
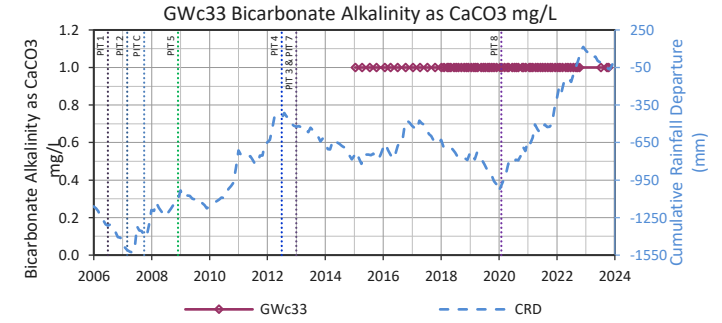
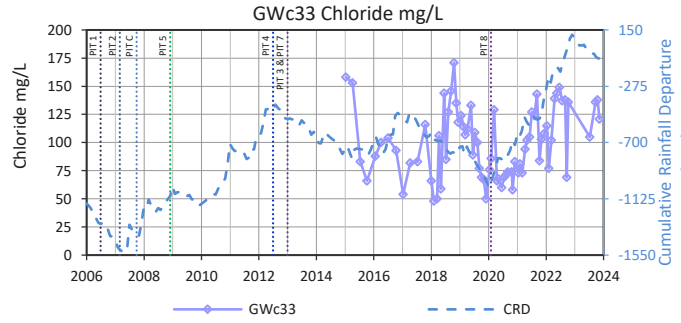
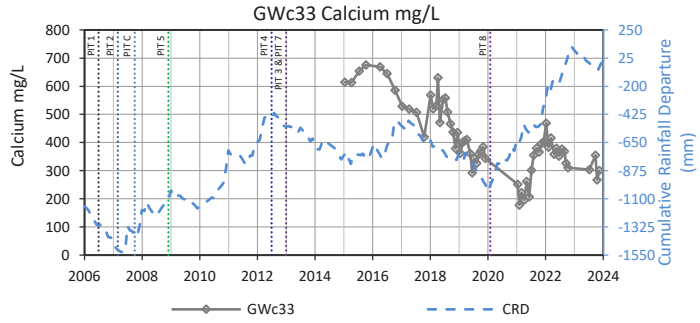
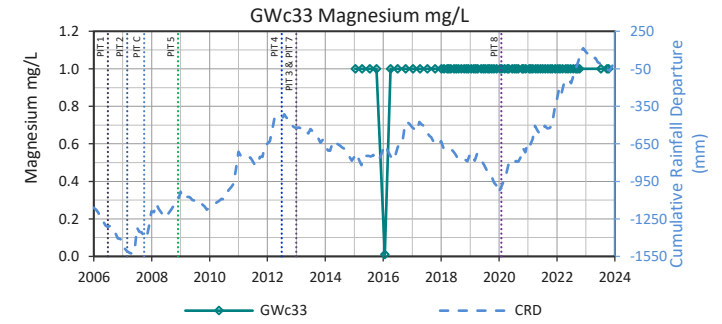
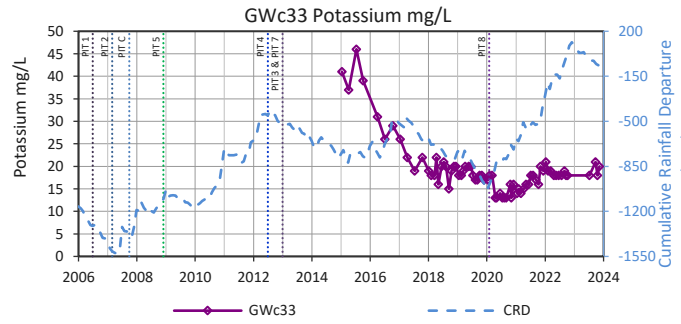
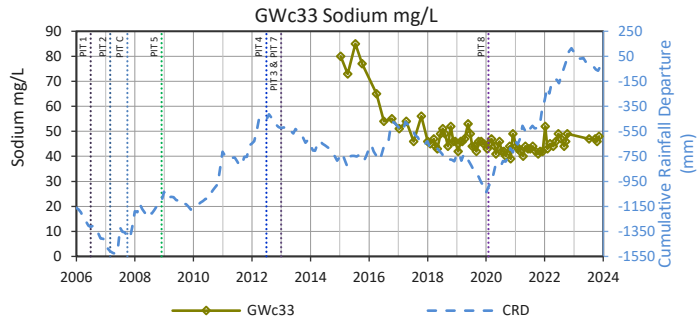
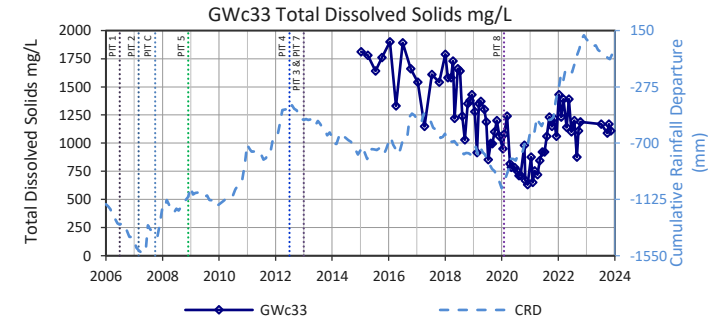
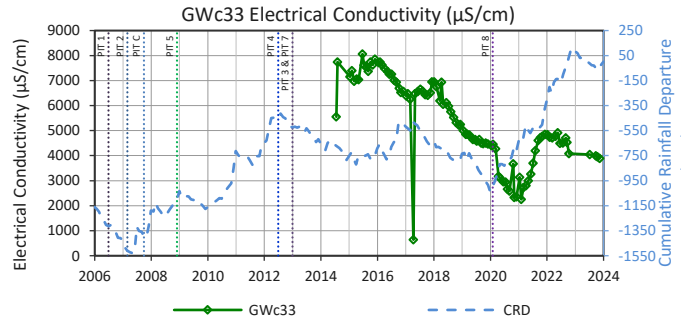
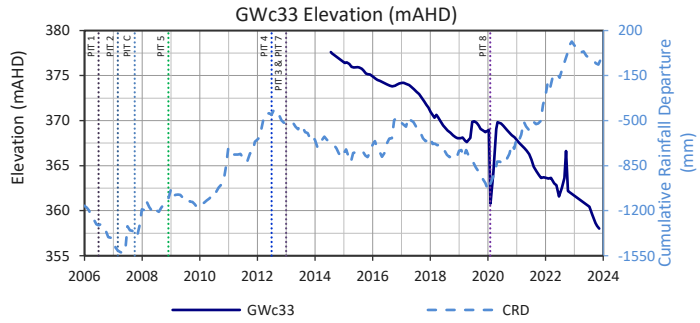


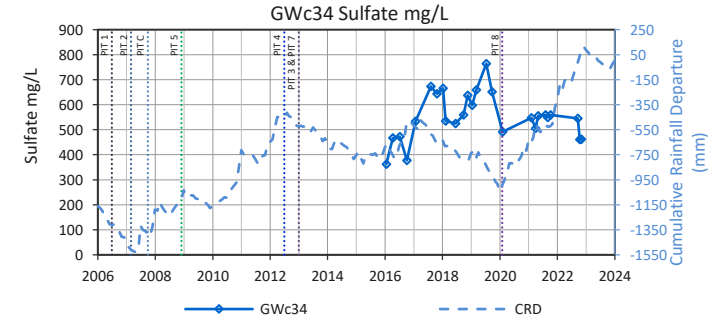
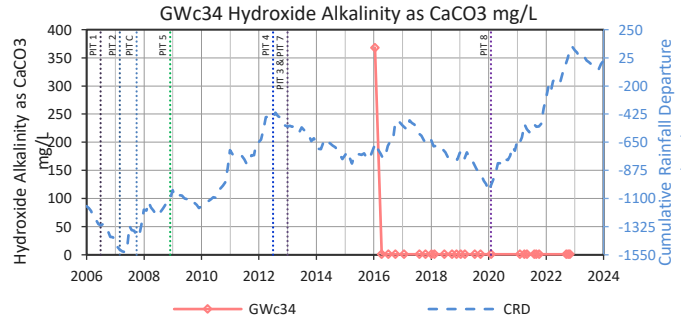
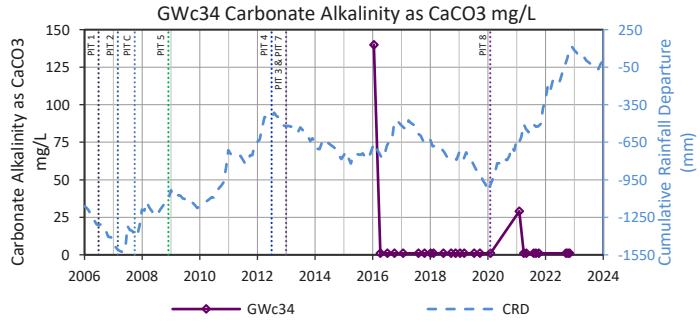
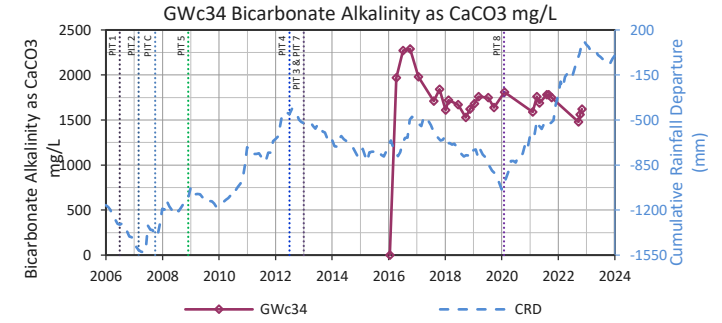
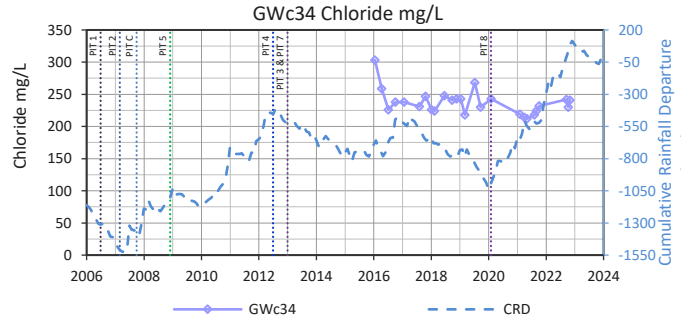
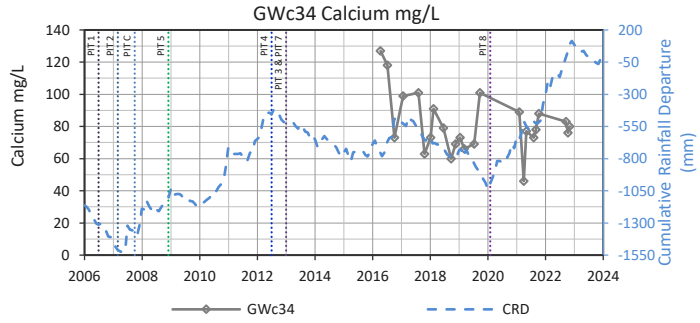
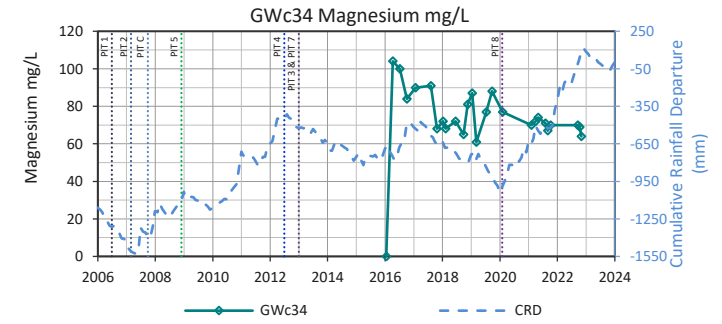
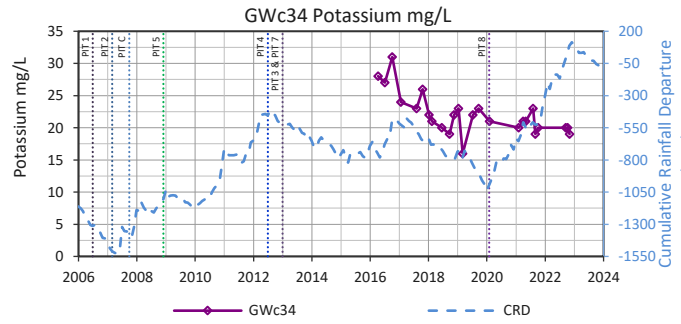
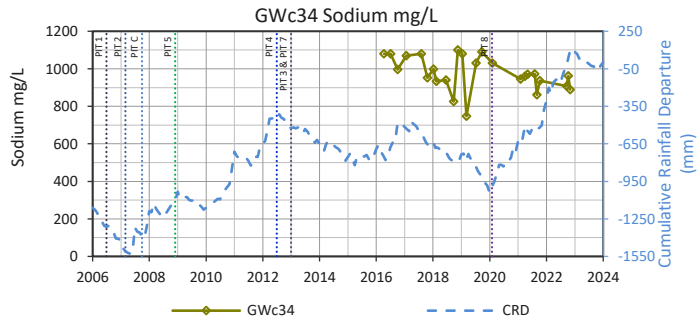
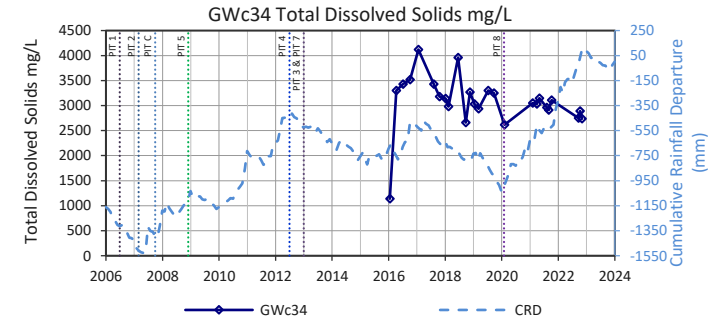
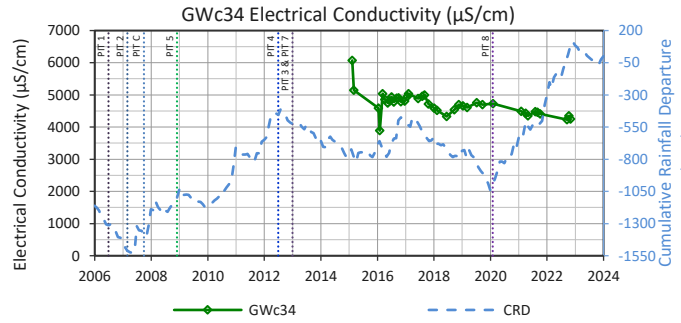
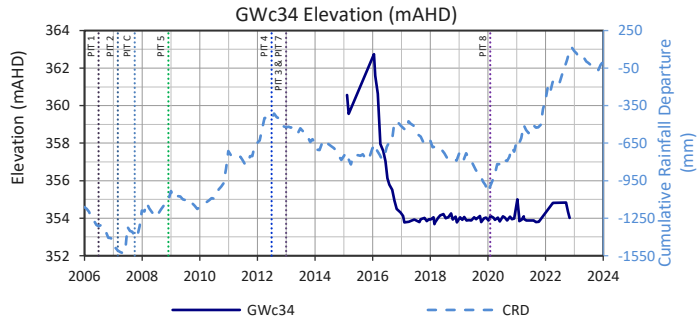


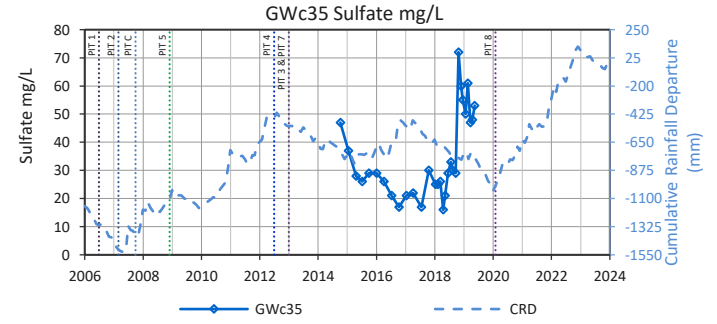
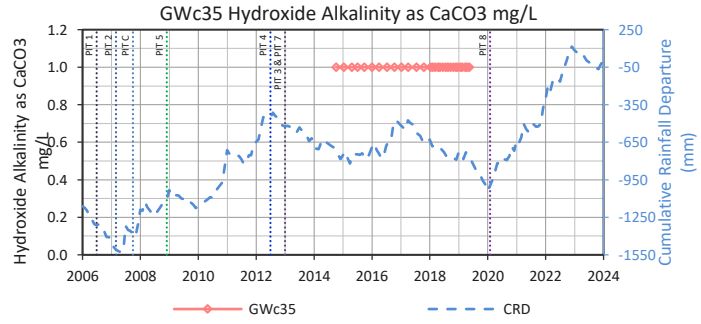
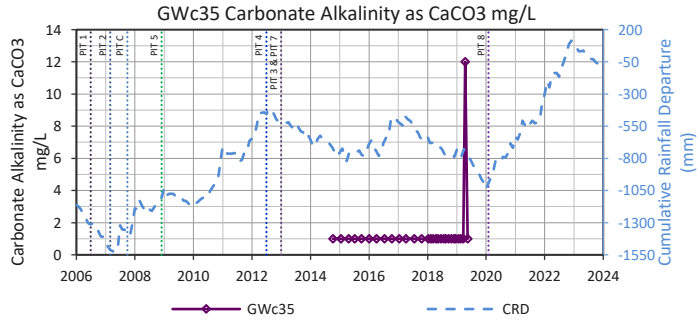
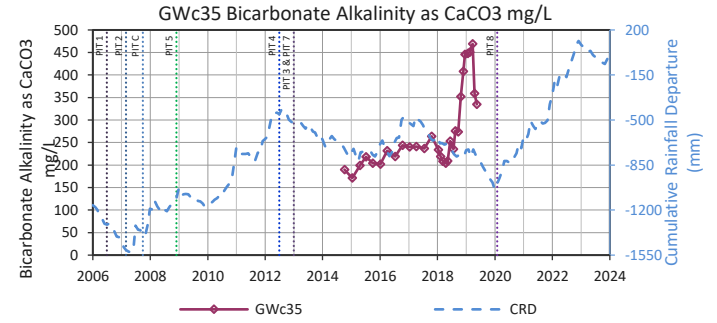
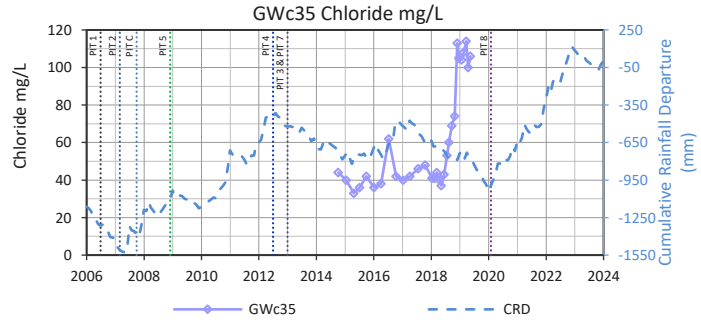
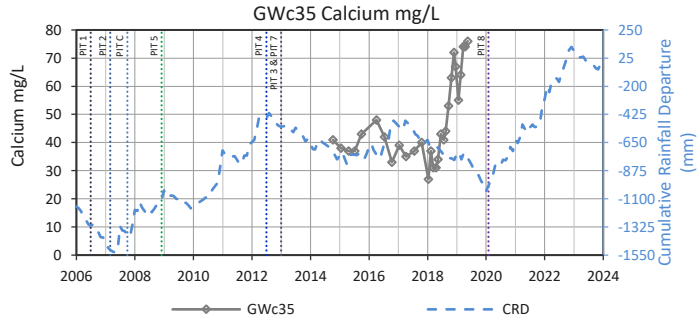
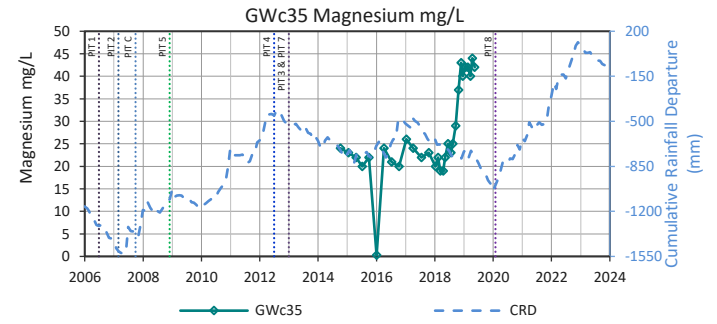
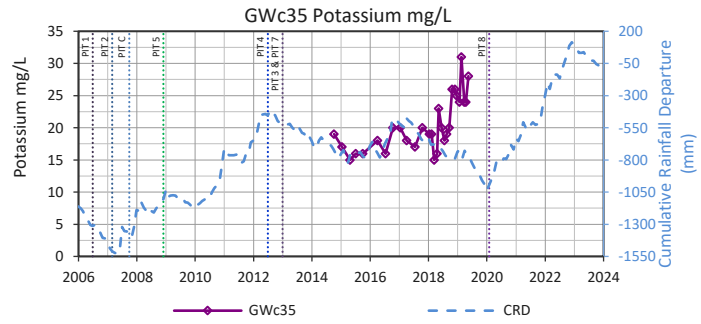
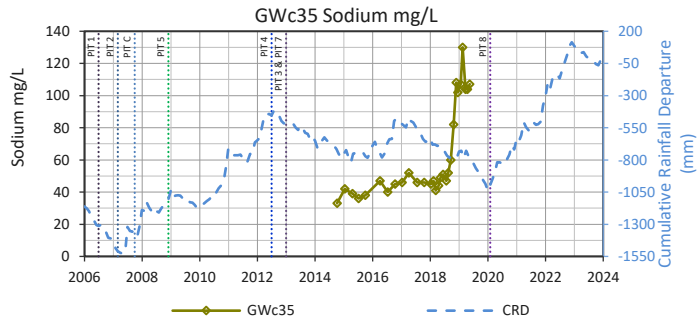
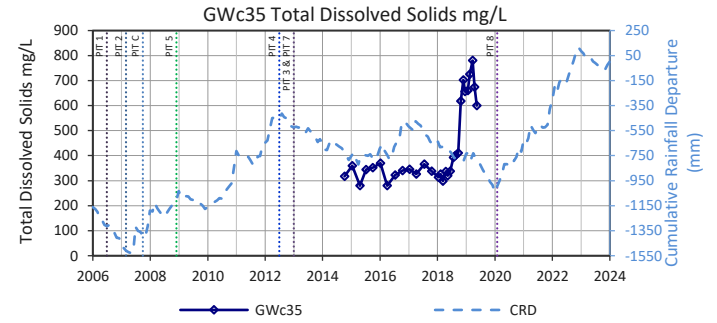
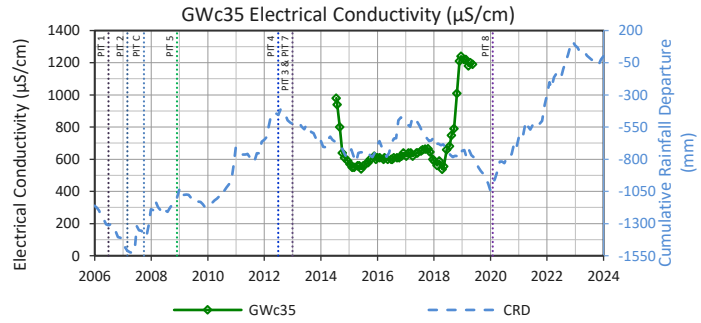
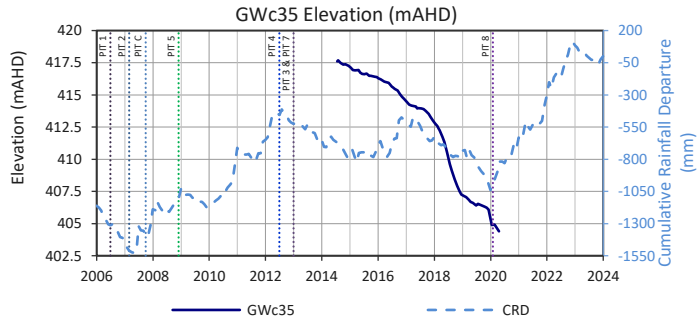


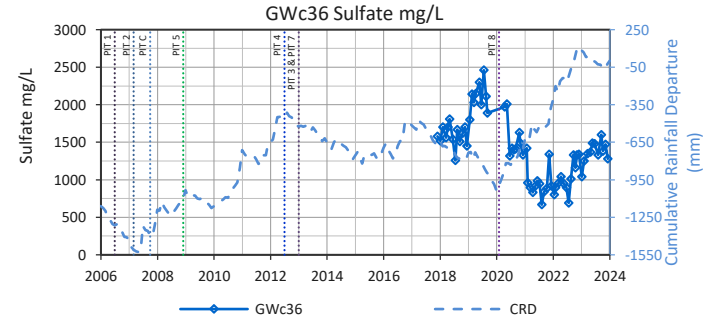
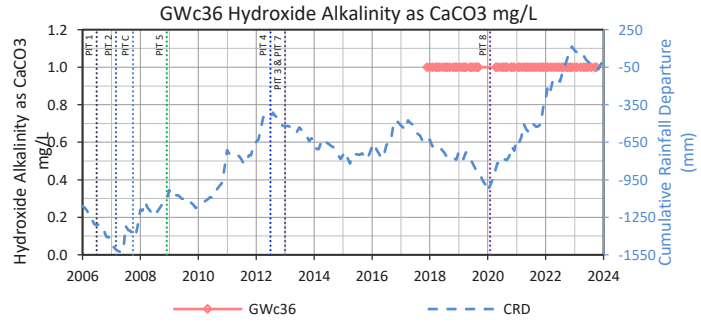
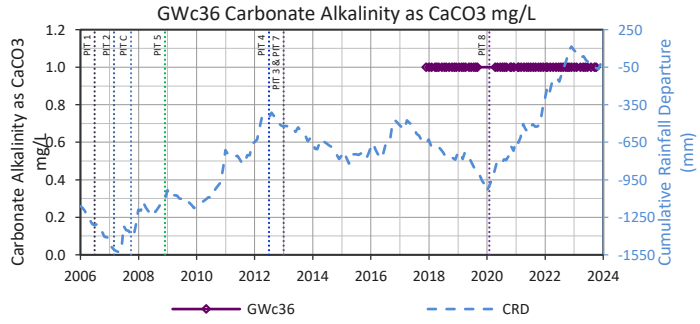
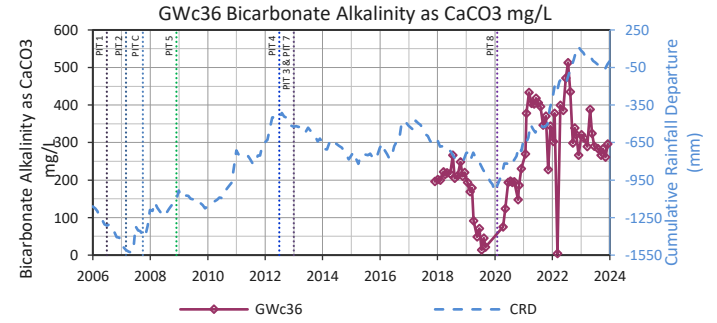
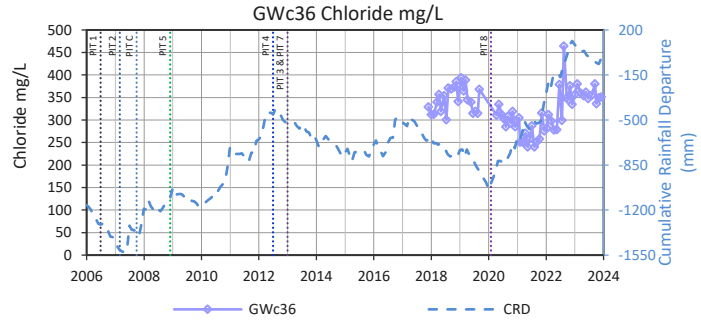
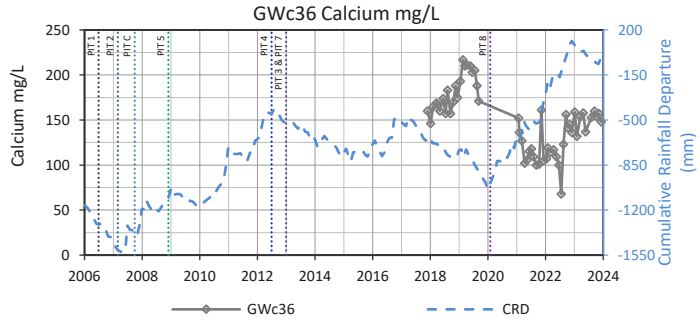
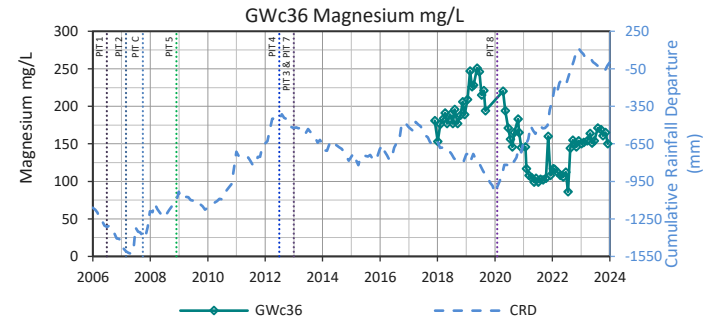
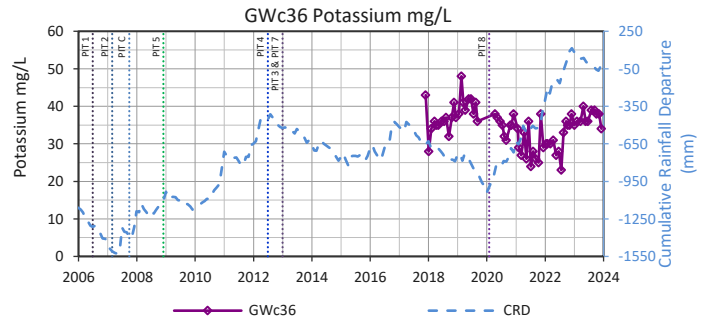
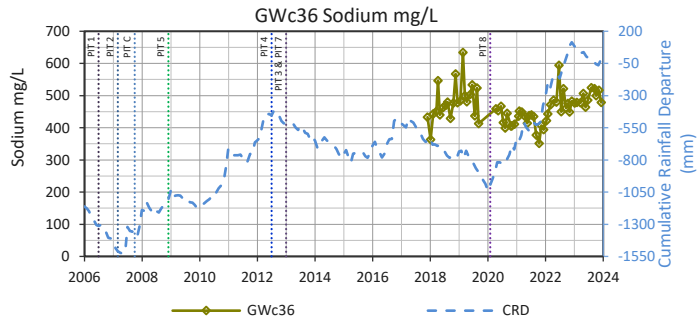
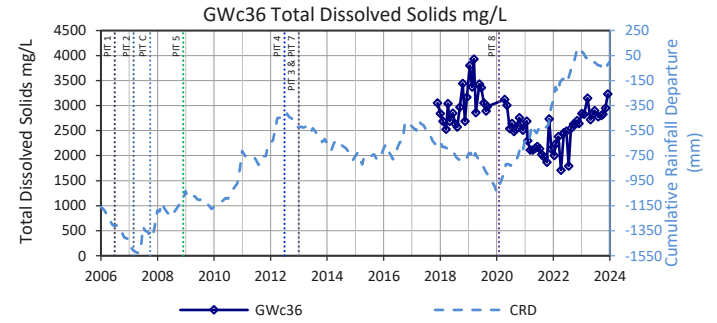
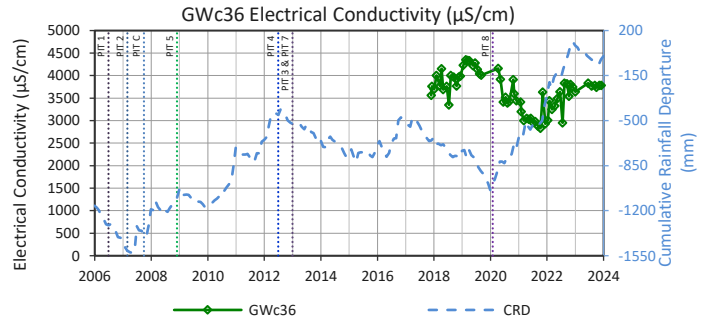
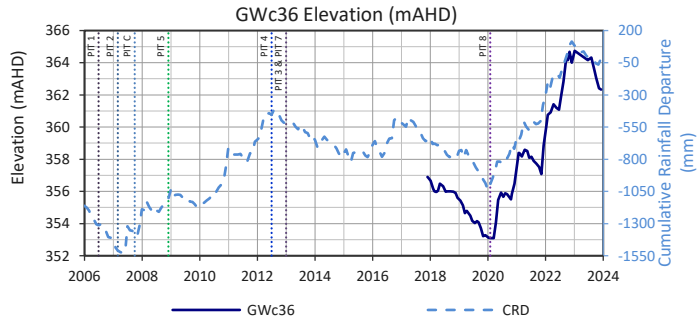


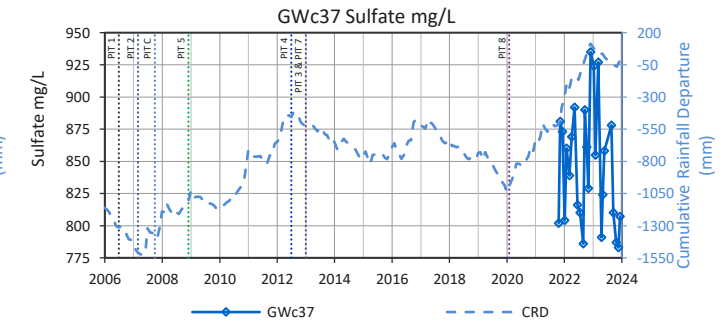
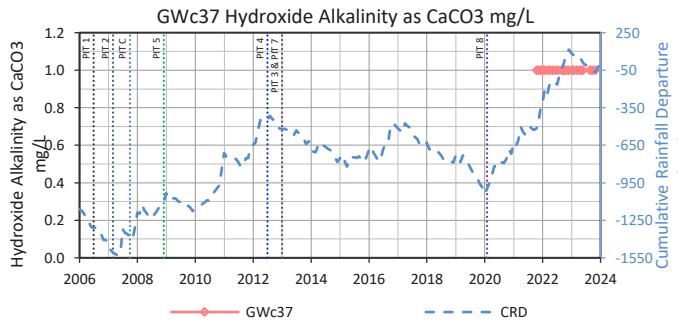
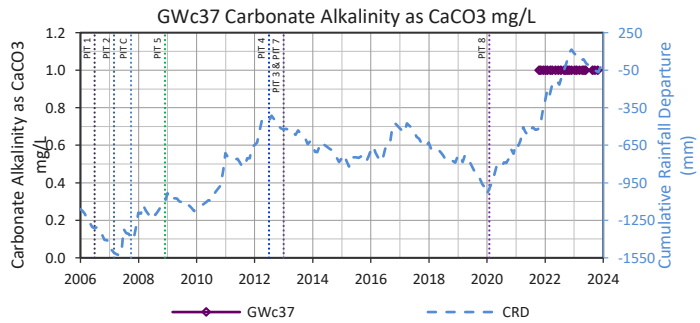
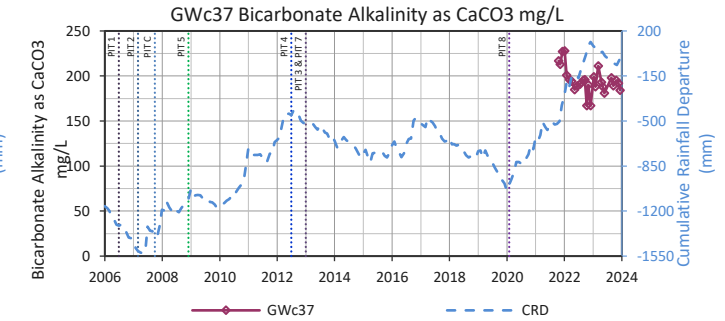
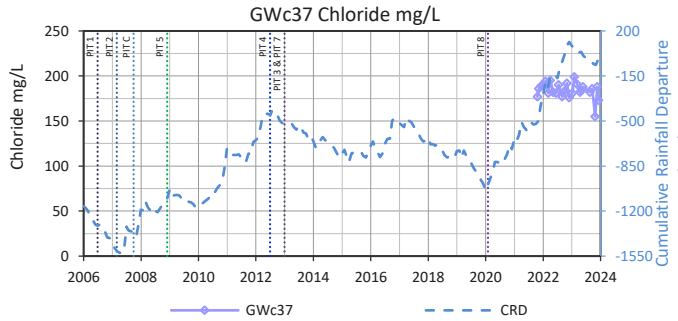
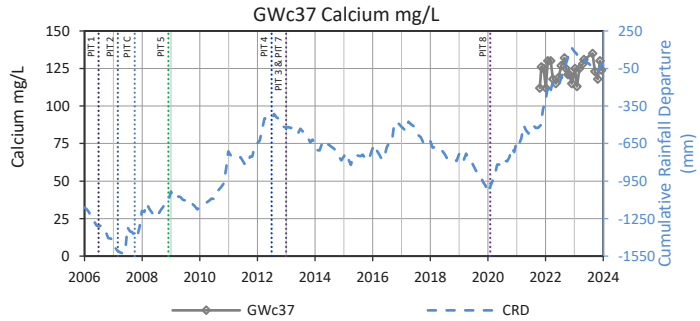
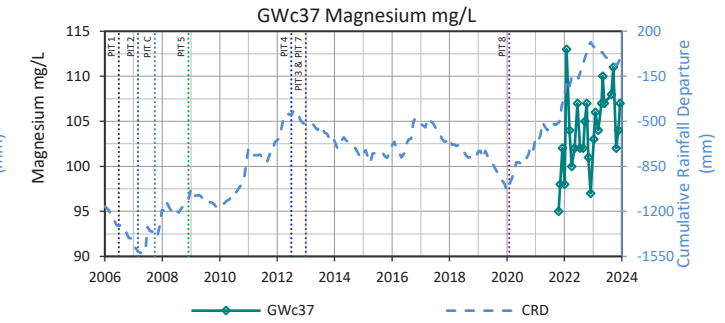
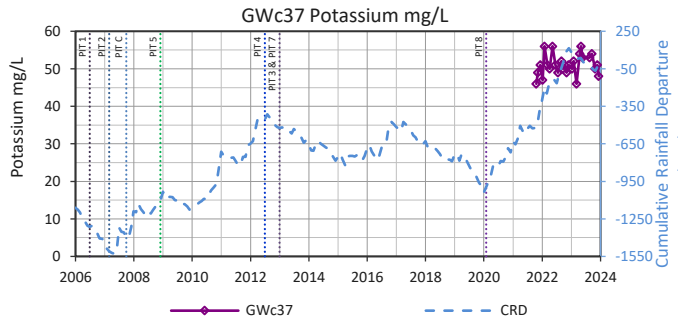
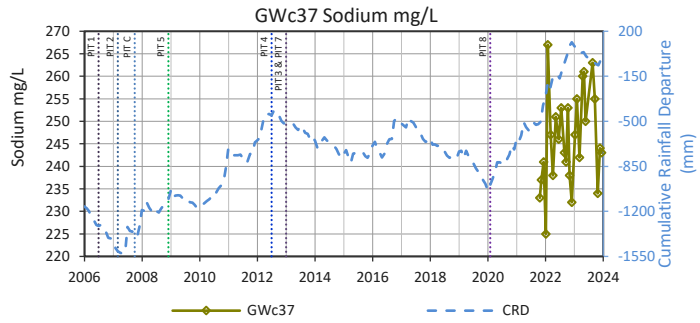
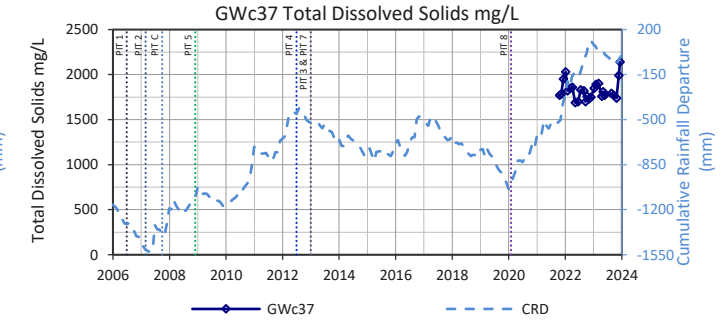
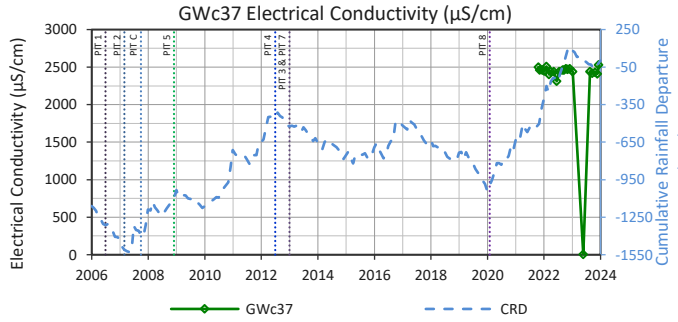
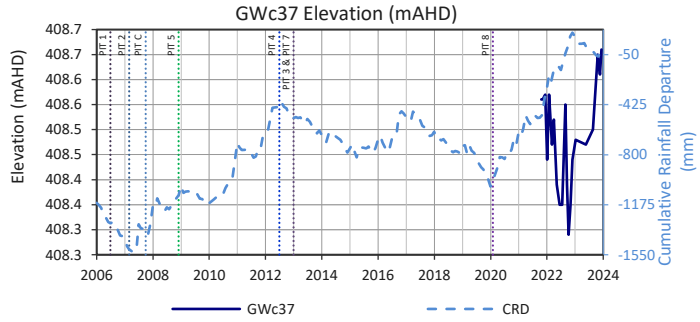


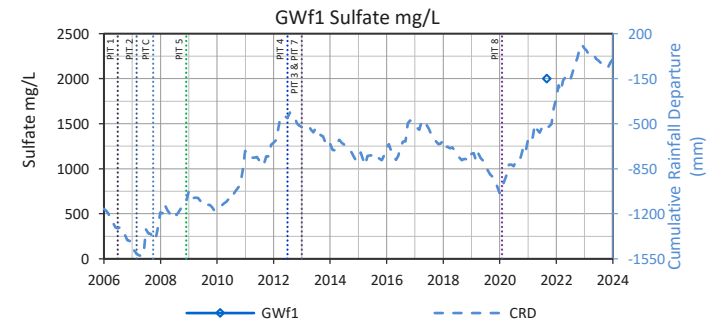
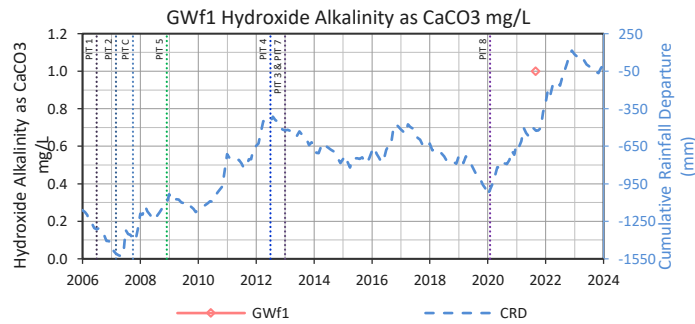
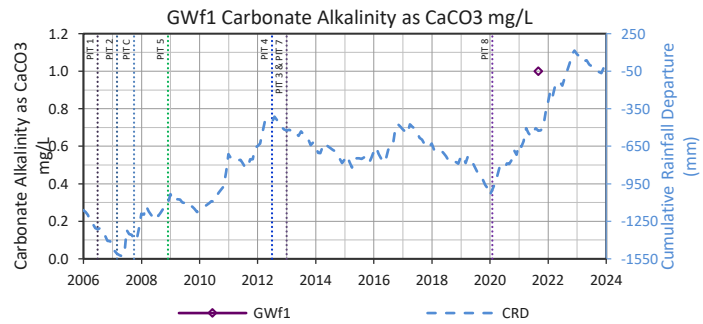
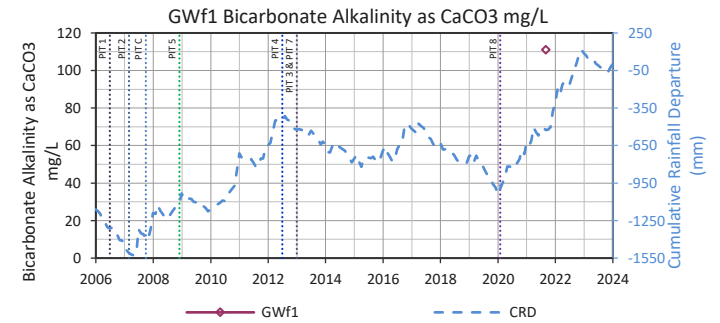
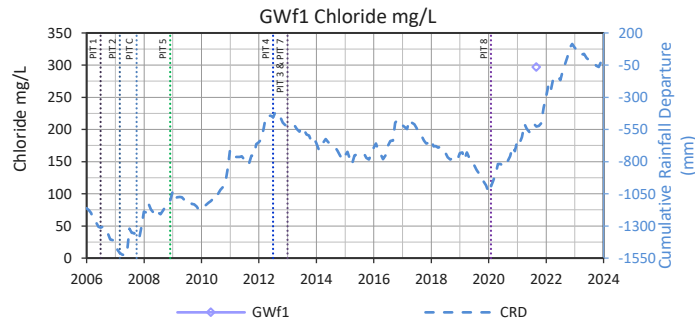
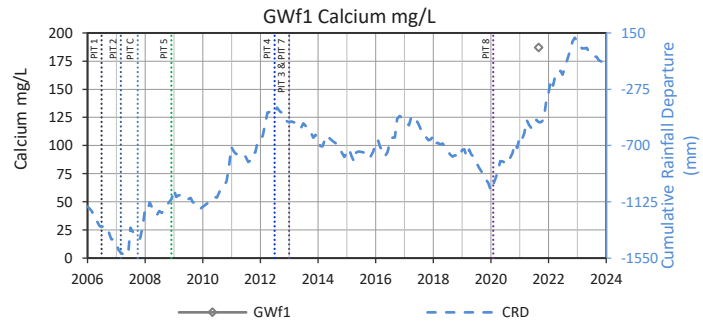
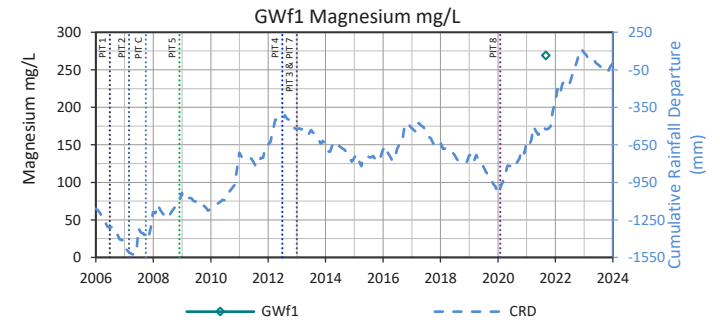
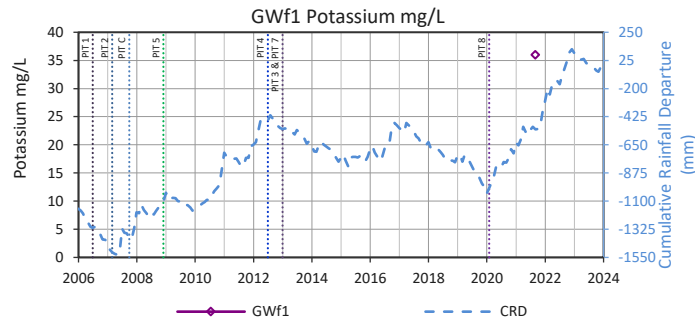
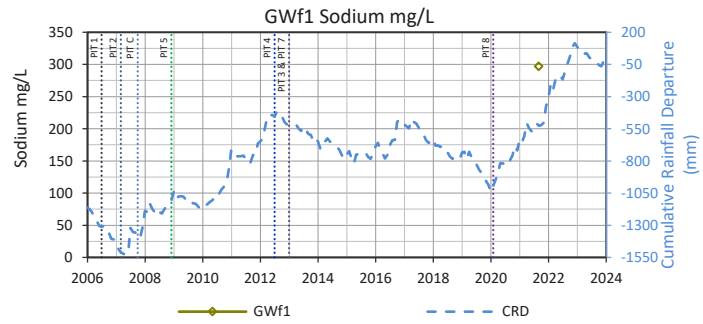
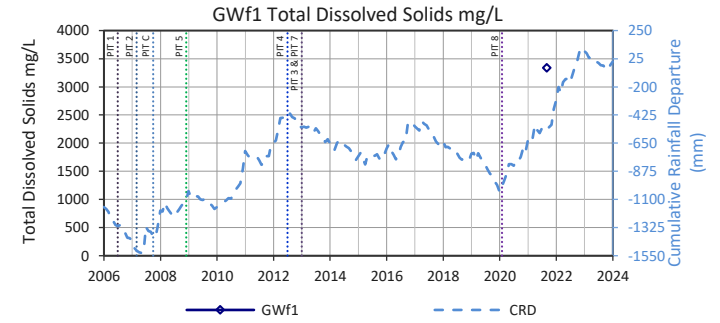
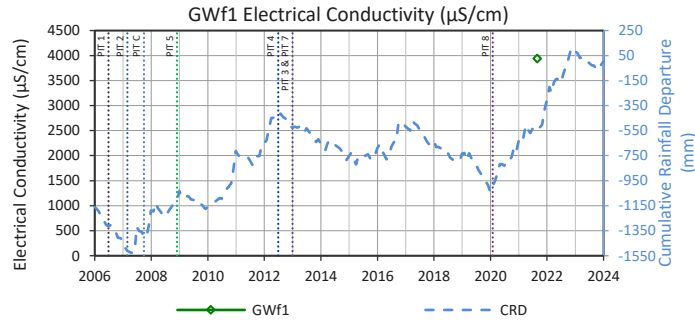
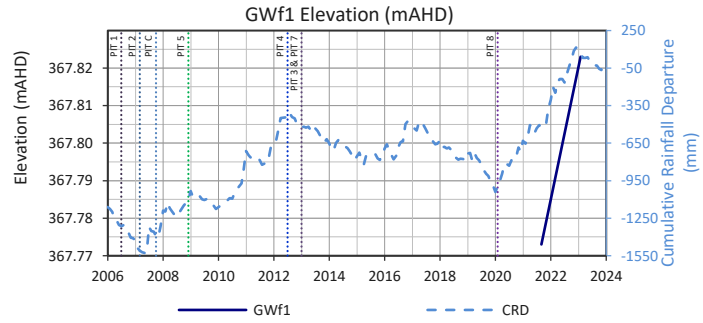


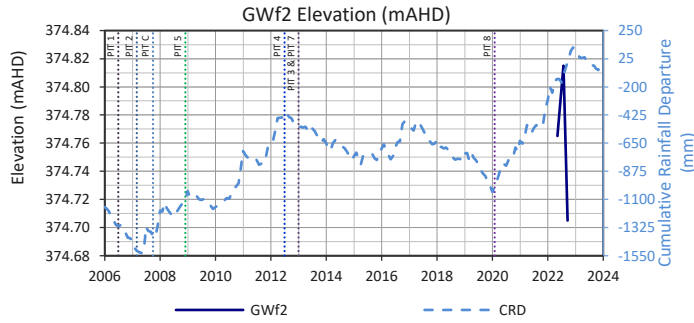






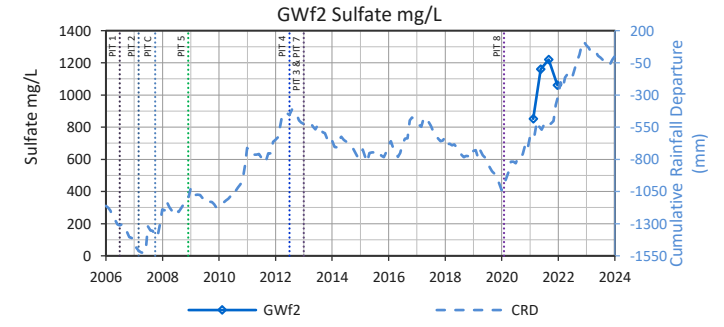
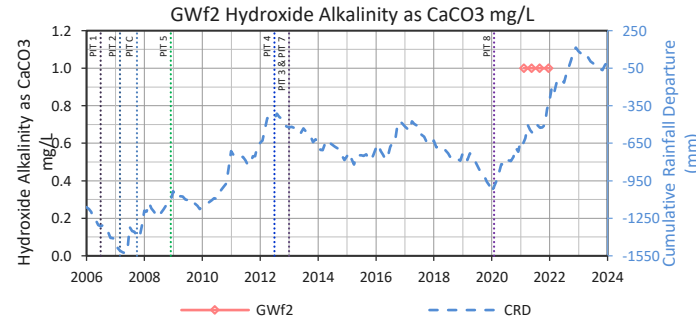
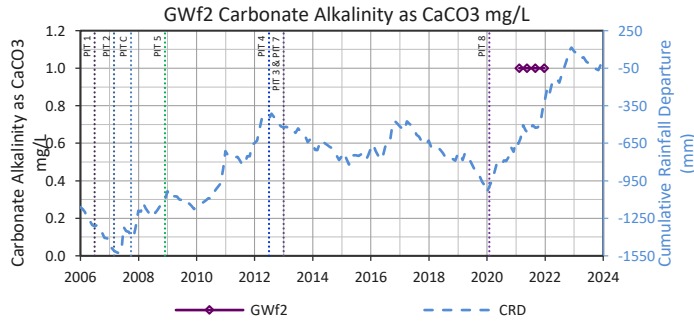
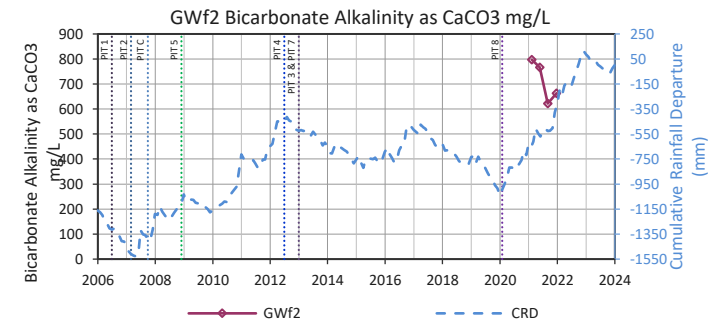
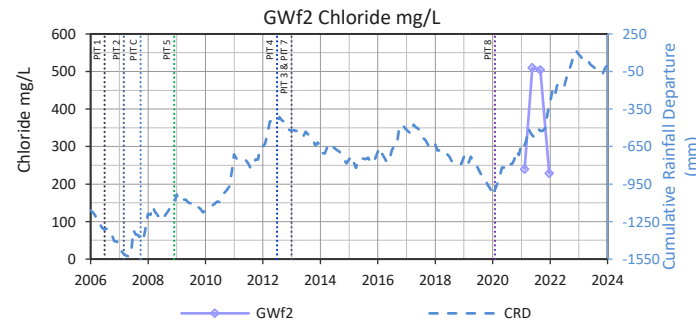
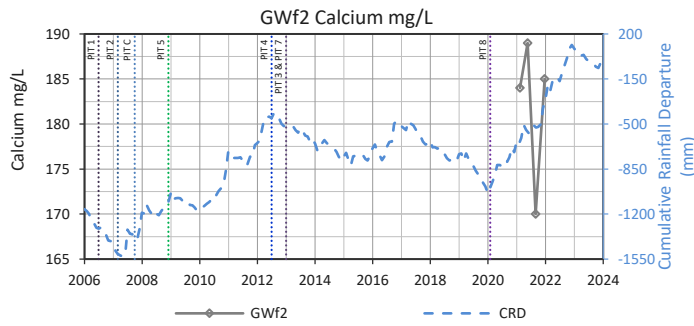
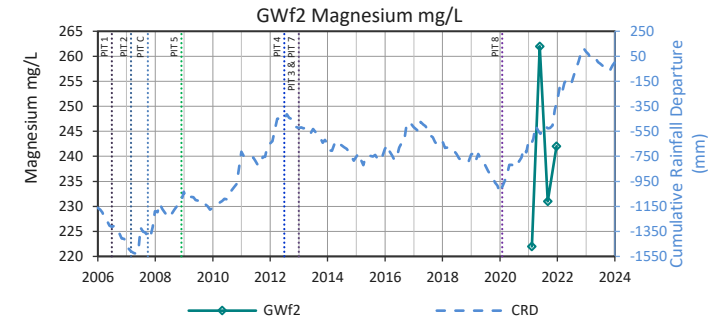
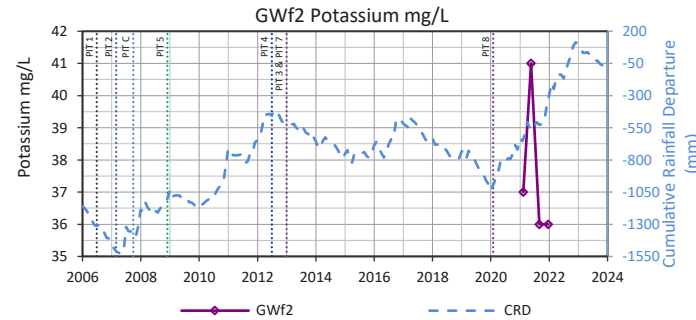
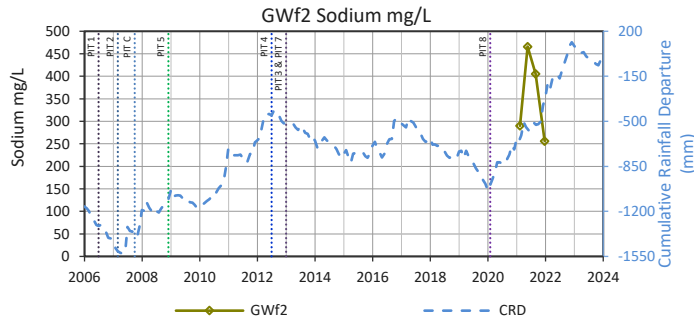
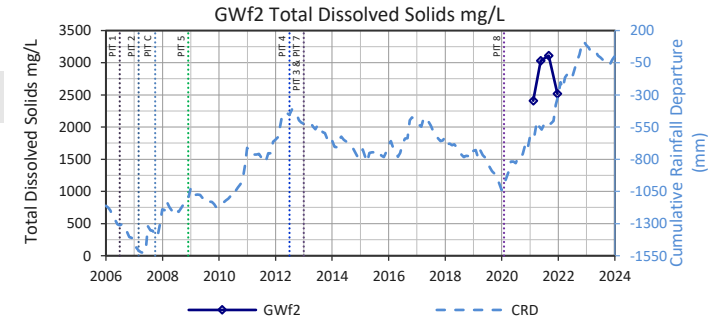


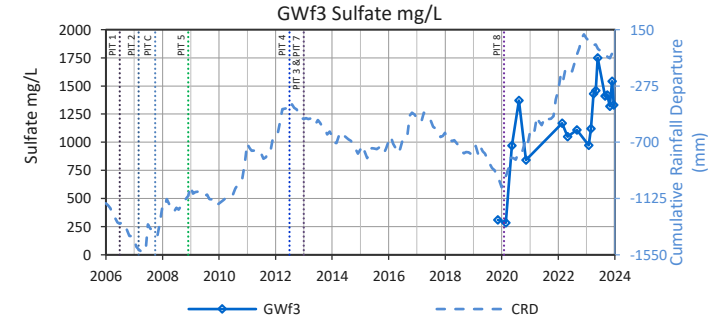
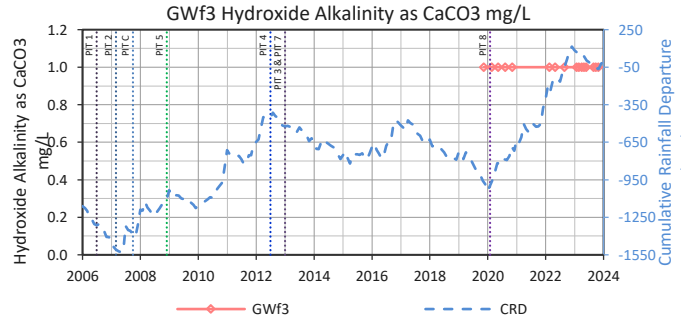
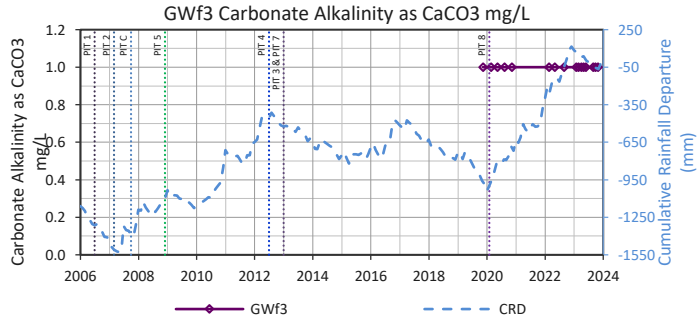
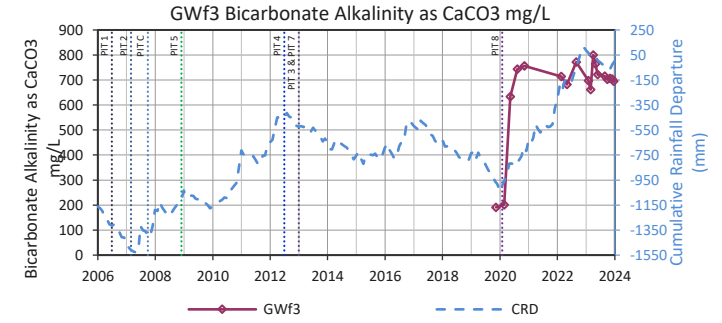
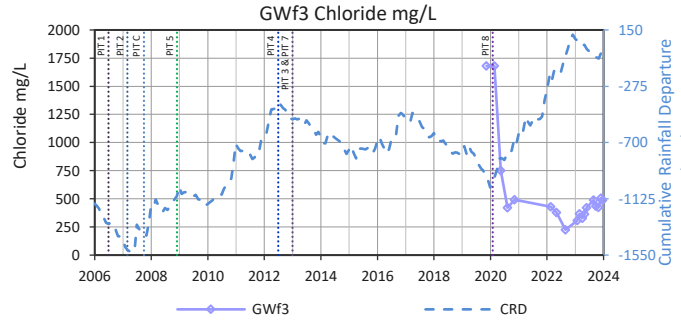
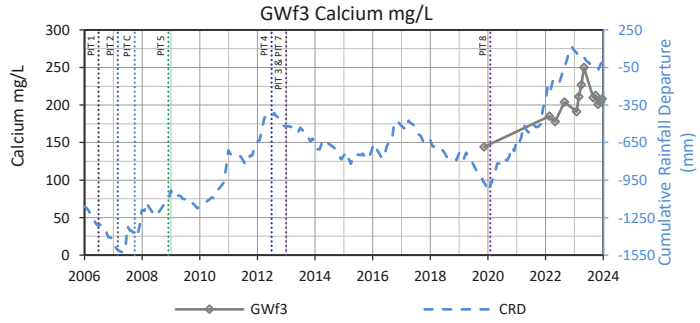
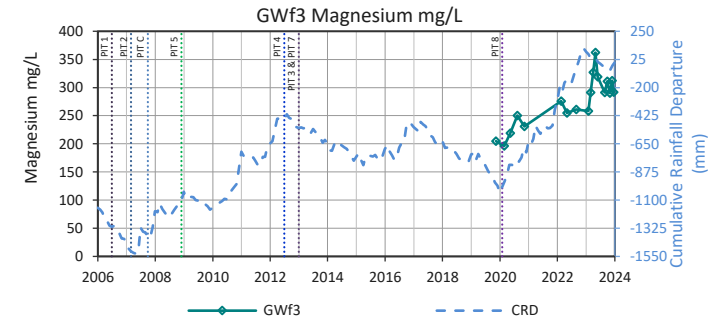
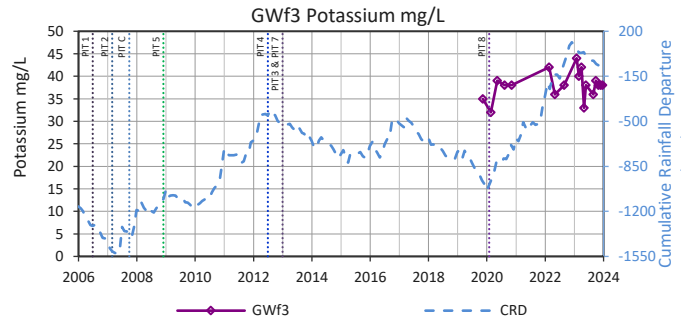
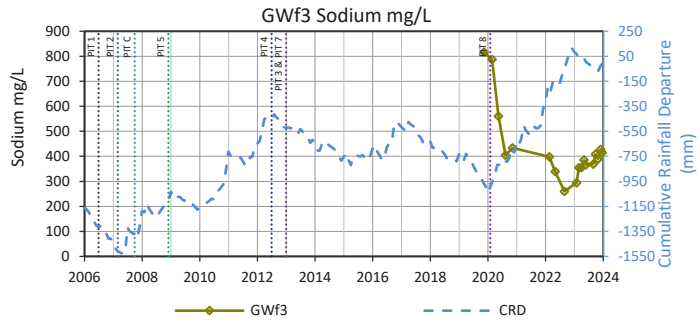
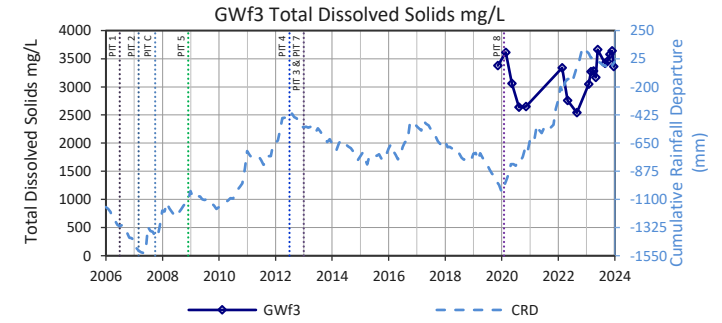
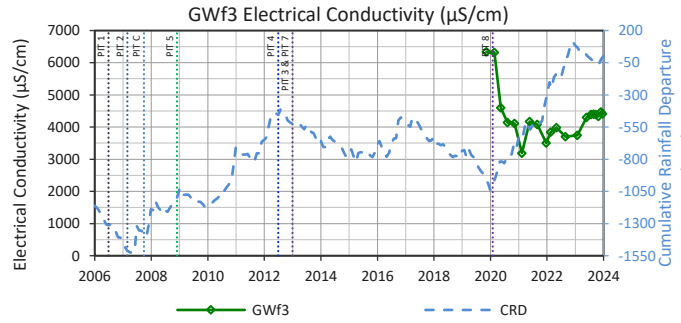
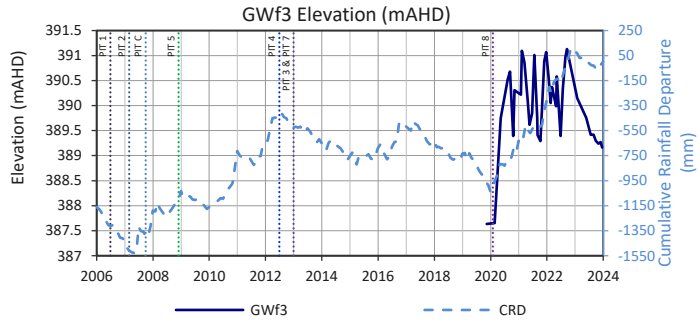


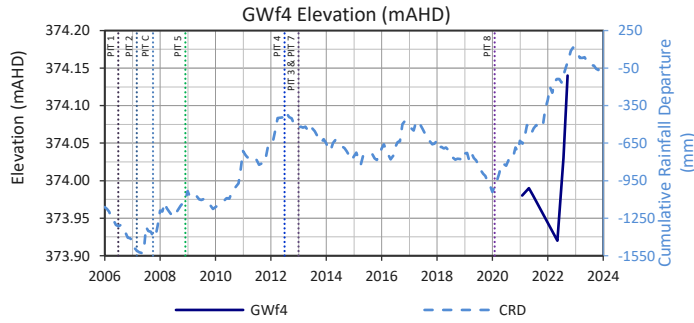


No Data Available for Electrical Conductivity ($\mu\text{S}/\text{cm}$)

GWf2

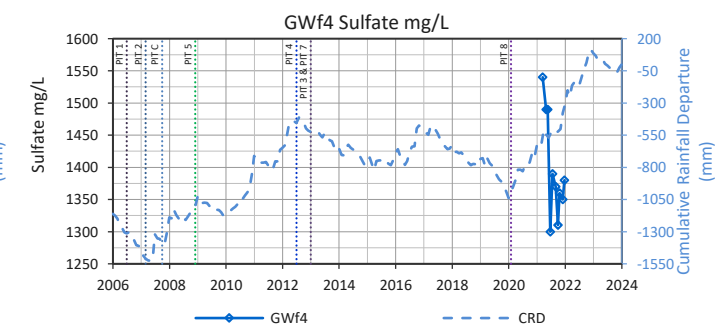
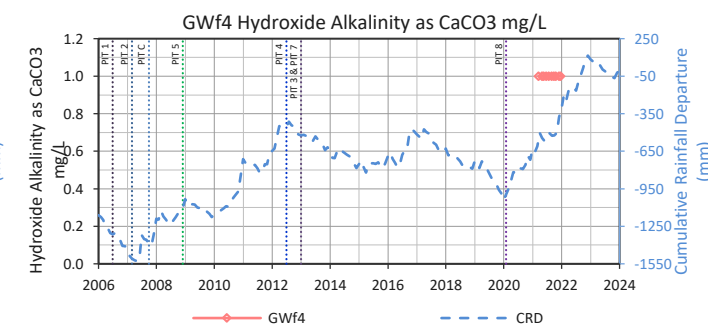
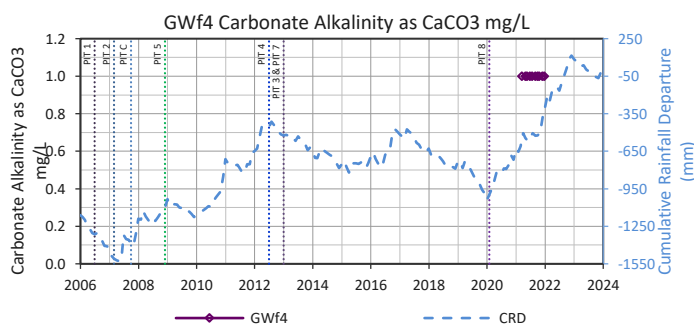
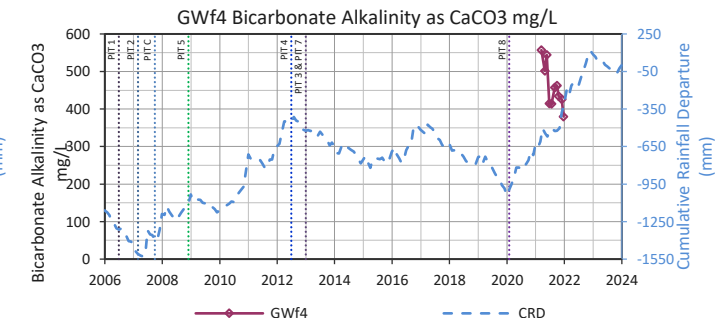
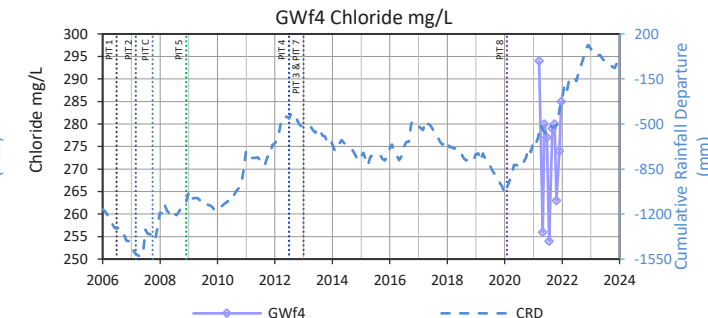
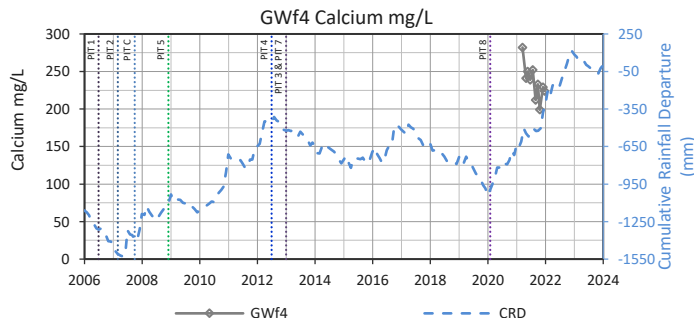
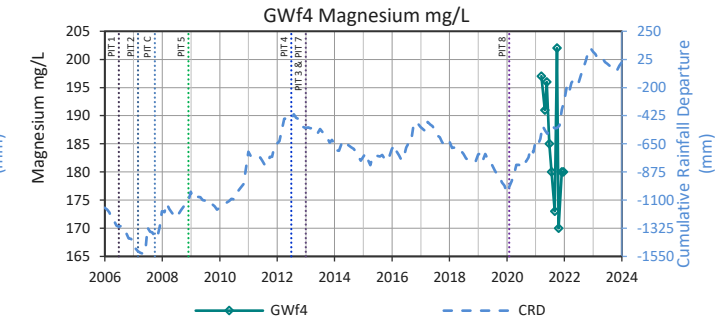
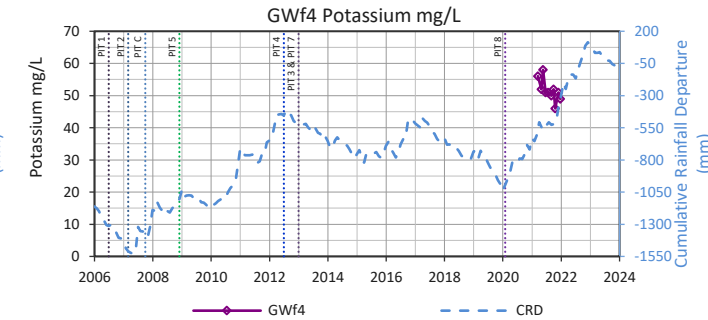
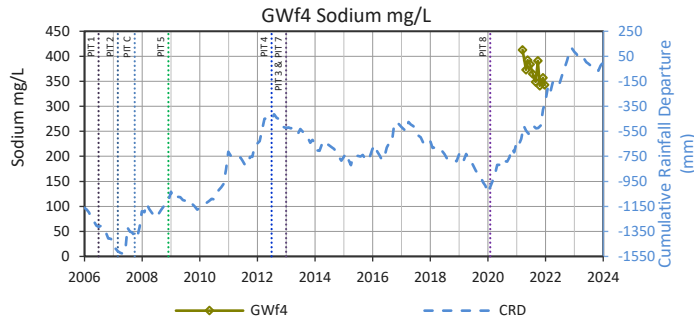
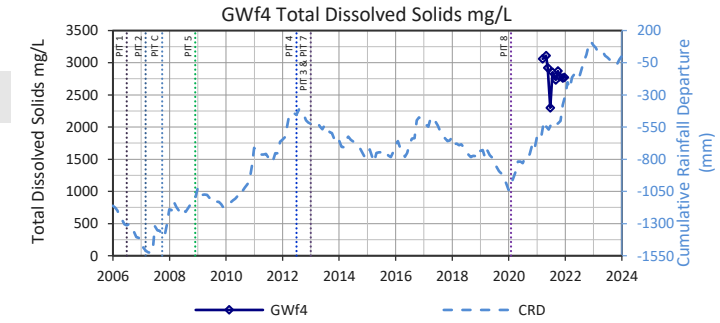


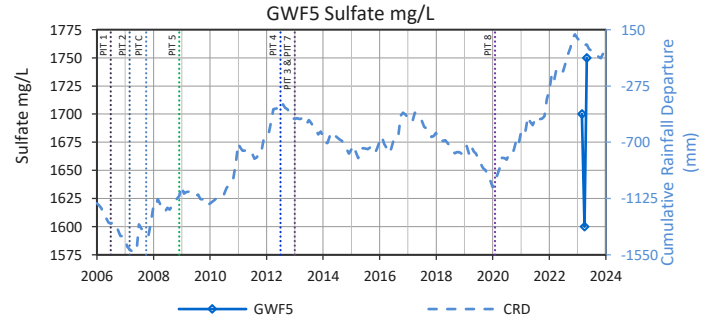
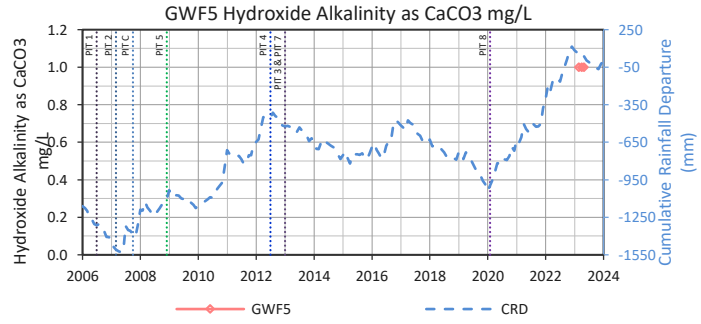
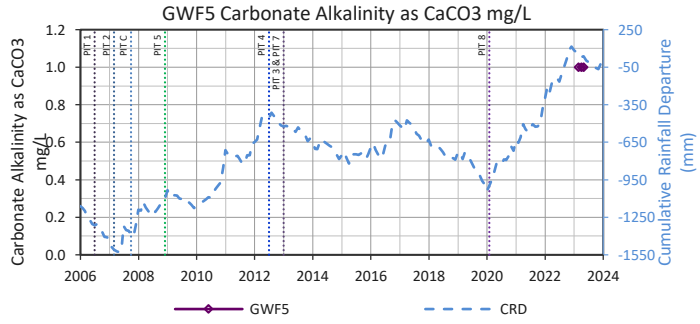
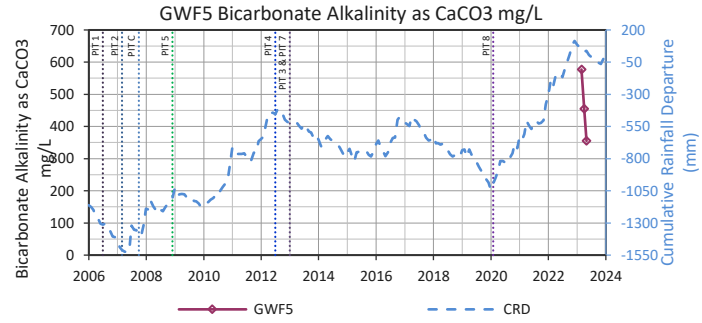
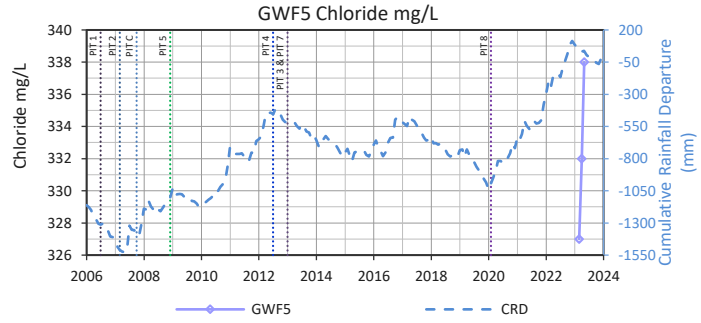
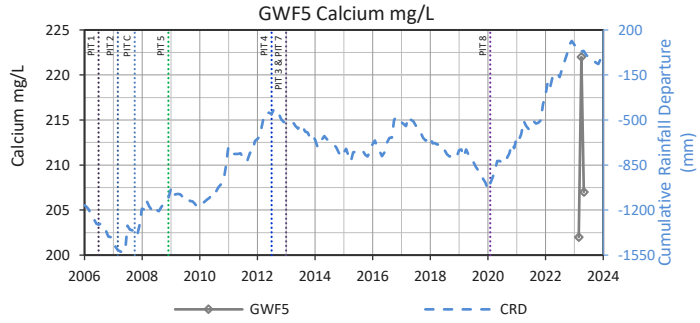
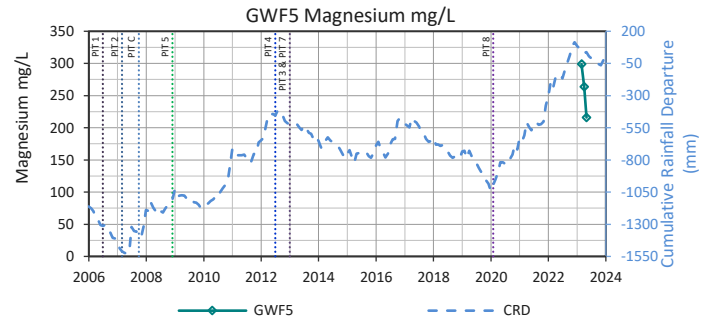
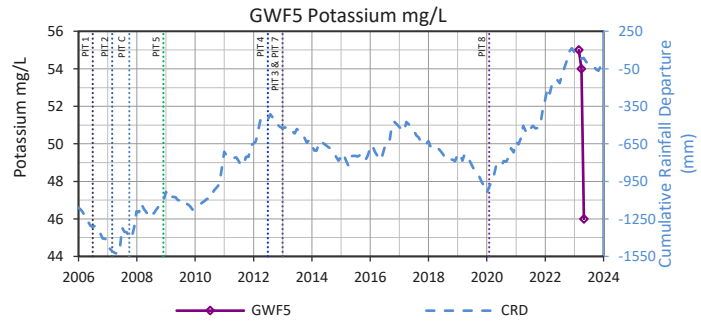
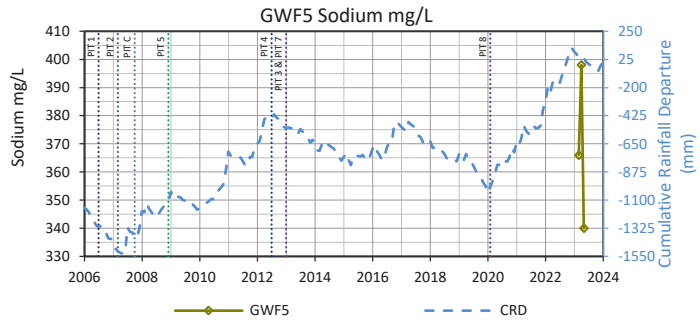
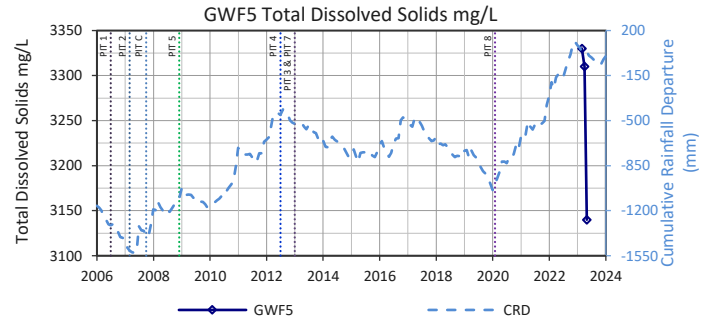
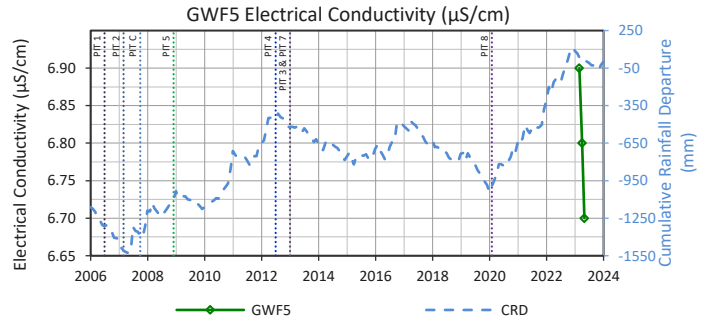
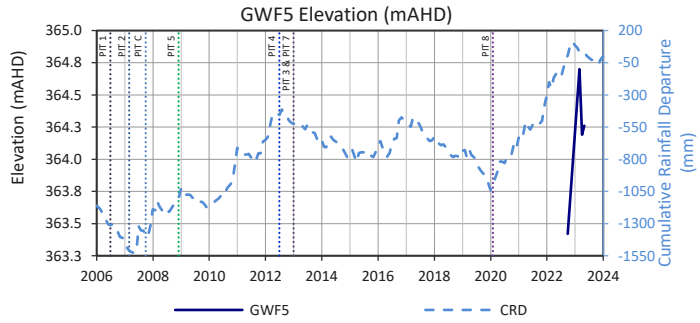


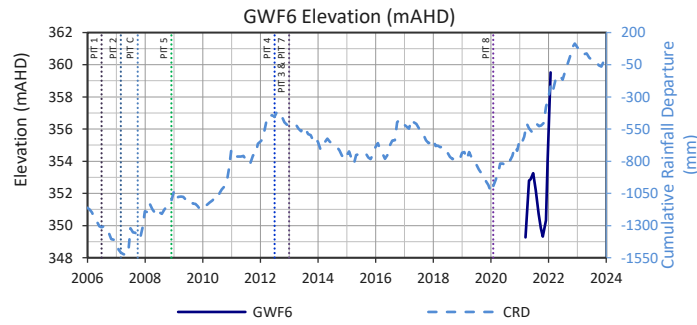


GWf4

No Data Available for Electrical Conductivity ($\mu\text{S}/\text{cm}$)

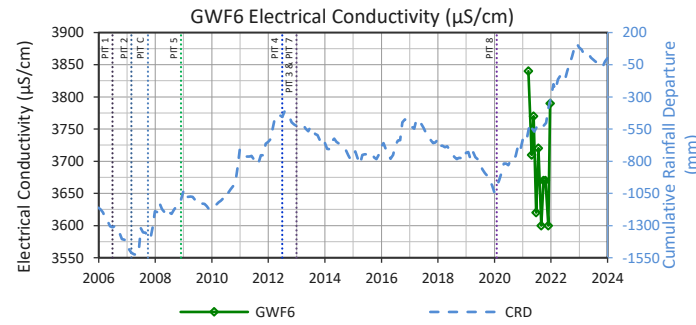






GW6

No Data Available for Sodium mg/L



GW6

No Data Available for Potassium mg/L

GW6
No Data Available for Total Dissolved Solids mg/L

GW6

No Data Available for Magnesium mg/L

GW6

No Data Available for Calcium mg/L

GW6

No Data Available for Chloride mg/L

No Data Available for Bicarbonate Alkalinity as CaCO3 mg/L

GW6

GW6

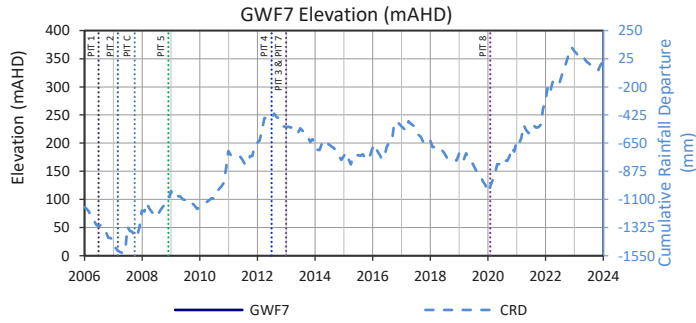
No Data Available for Carbonate Alkalinity as CaCO3 mg/L

GW6

No Data Available for Hydroxide Alkalinity as CaCO3 mg/L

No Data Available for Sulfate mg/L

GW6



GW7

No Data Available for Sodium mg/L

GW7

No Data Available for Potassium mg/L

GW7

No Data Available for Magnesium mg/L

GW7

No Data Available for Calcium mg/L

GW7

No Data Available for Chloride mg/L

GW7

No Data Available for Bicarbonate Alkalinity as CaCO3 mg/L

GW7

No Data Available for Carbonate Alkalinity as CaCO3 mg/L

GW7

No Data Available for Hydroxide Alkalinity as CaCO3 mg/L

GW7

No Data Available for Sulfate mg/L

PZ13

PZ13

PZ13

No Data Available for Elevation (mAHD)

No Data Available for Electrical Conductivity ($\mu\text{S}/\text{cm}$)

No Data Available for Total Dissolved Solids mg/L

PZ13

PZ13

PZ13

No Data Available for Sodium mg/L

No Data Available for Potassium mg/L

No Data Available for Magnesium mg/L

PZ13

PZ13

PZ13

No Data Available for Calcium mg/L

No Data Available for Chloride mg/L

No Data Available for Bicarbonate Alkalinity as CaCO_3 mg/L

PZ13

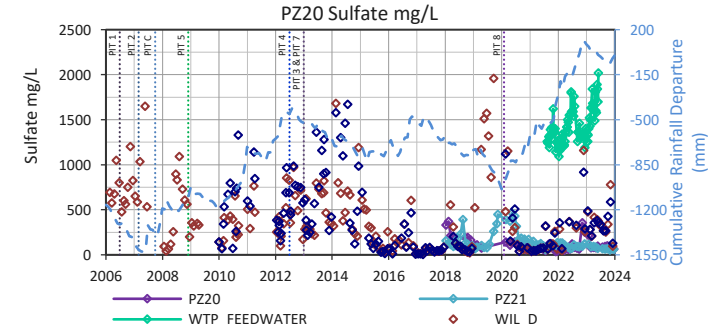
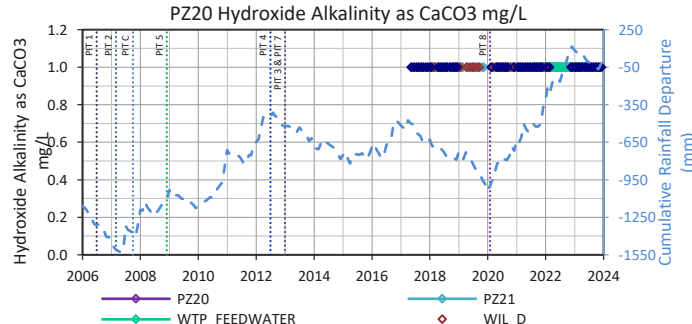
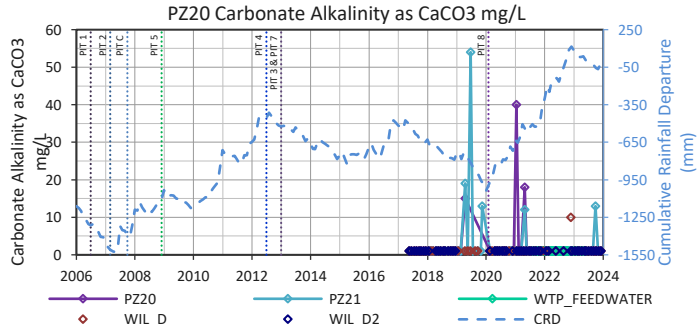
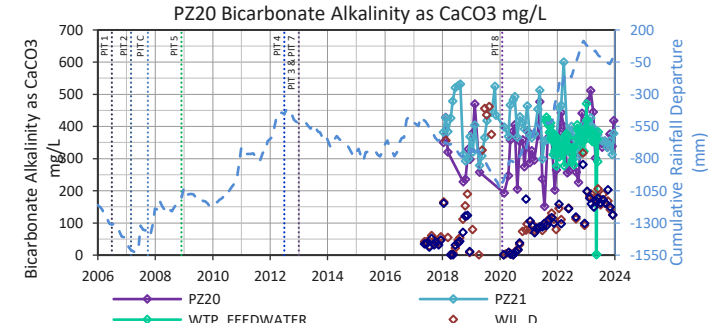
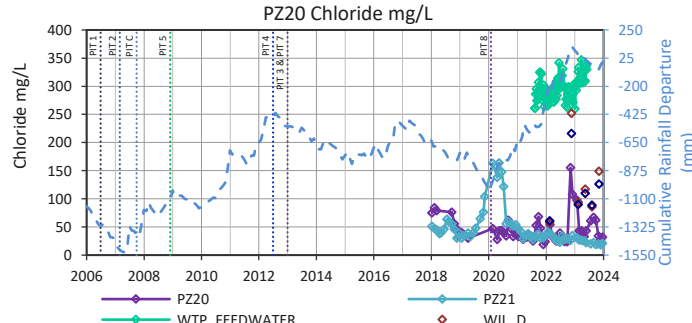
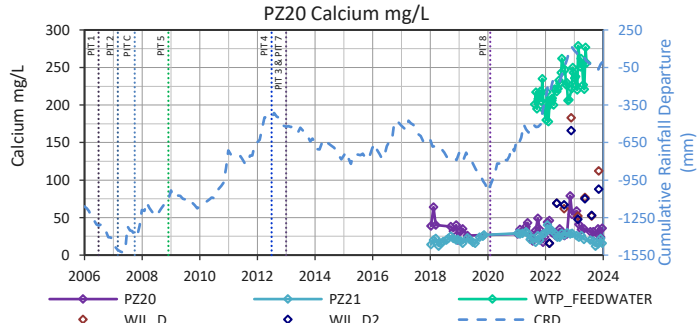
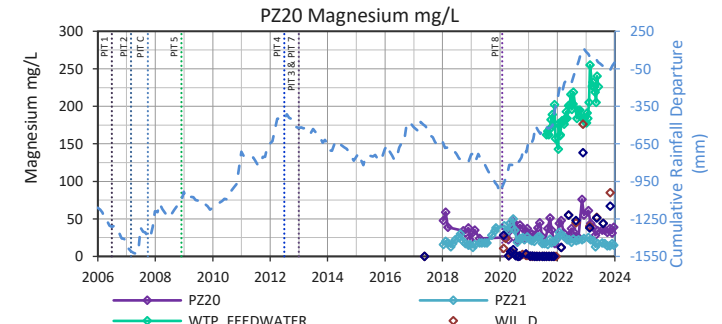
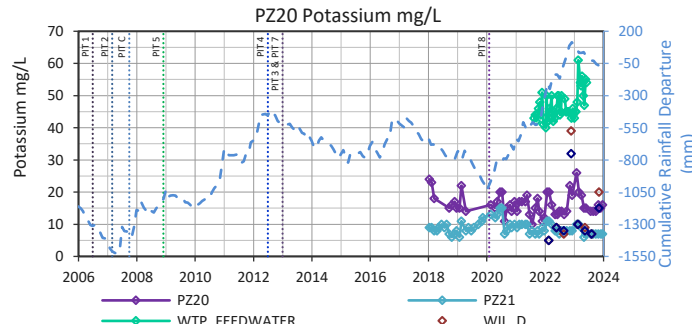
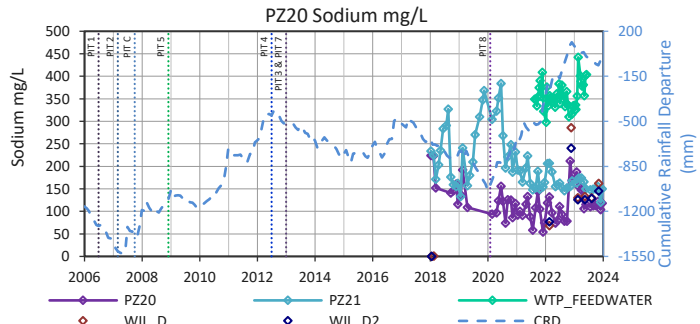
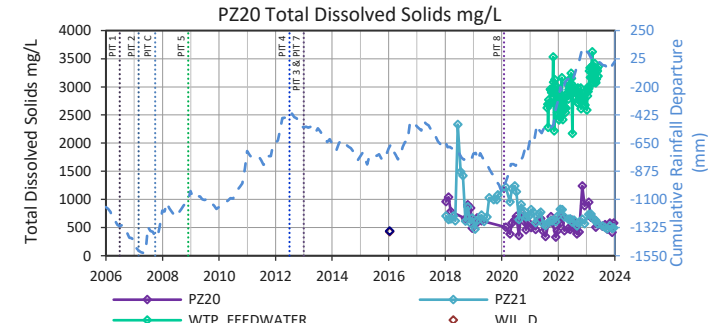
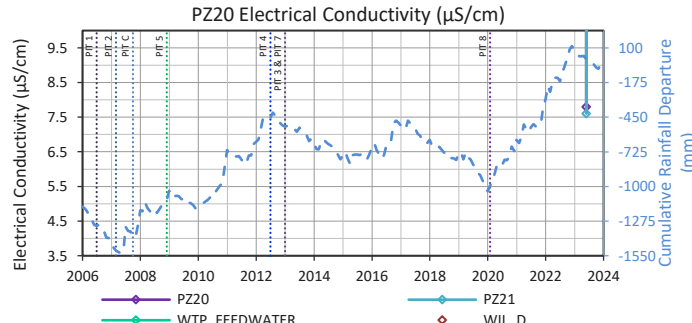
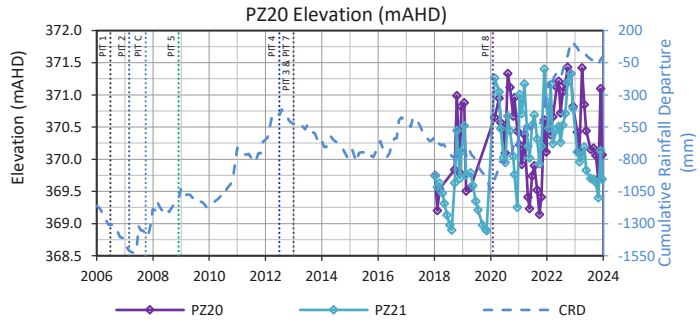
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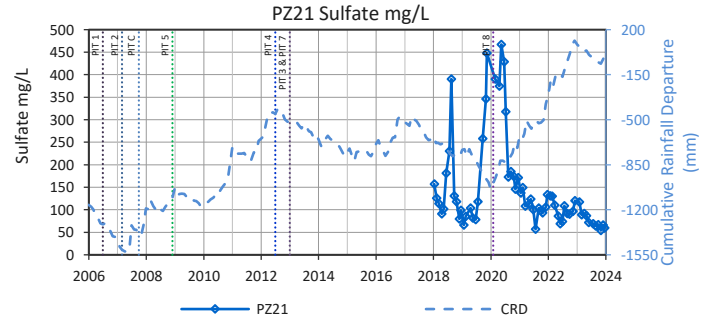
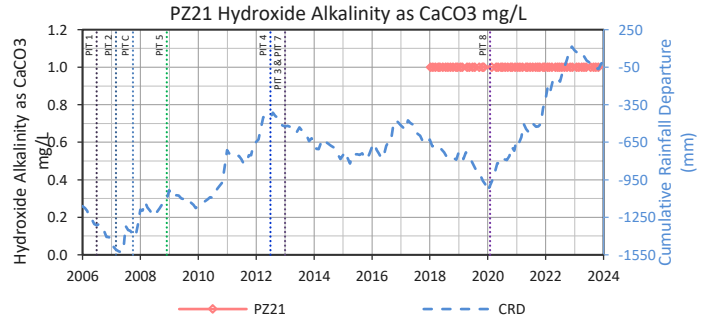
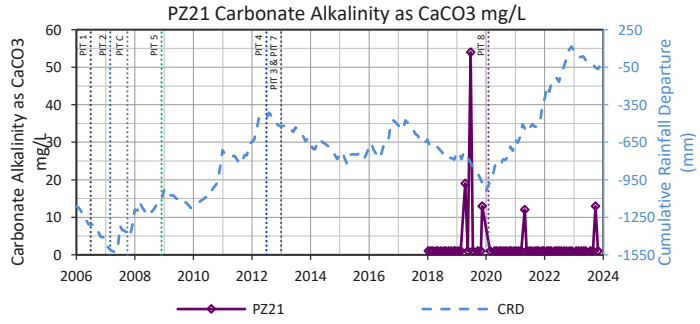
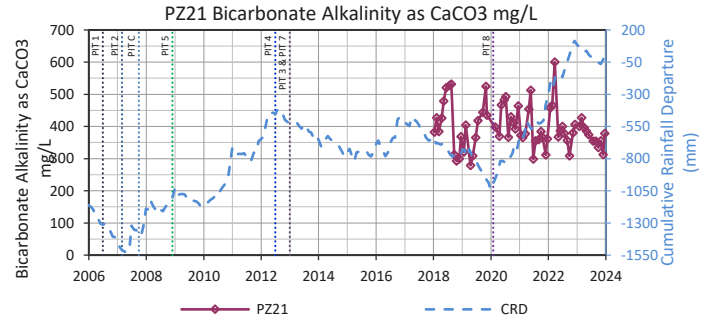
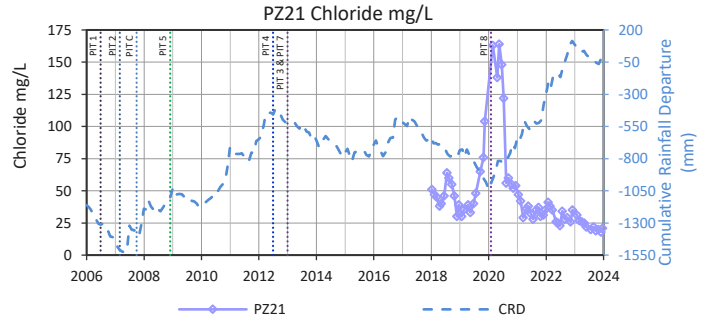
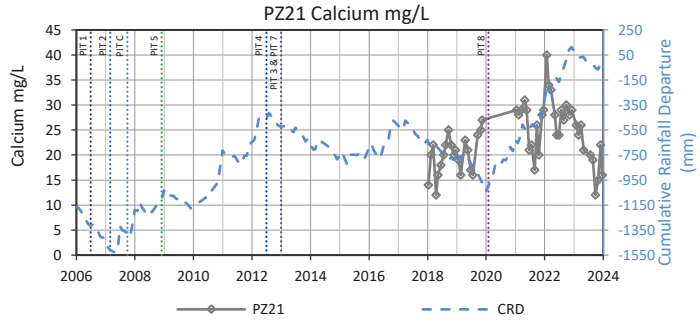
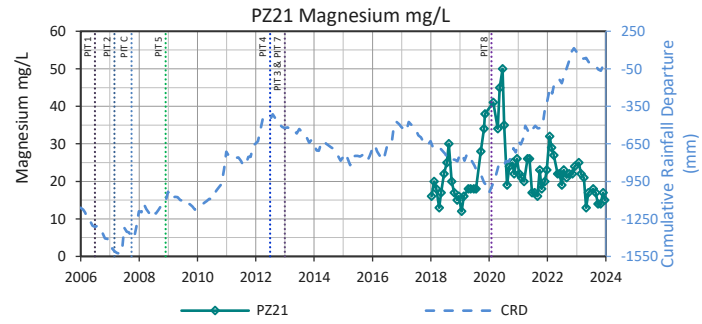
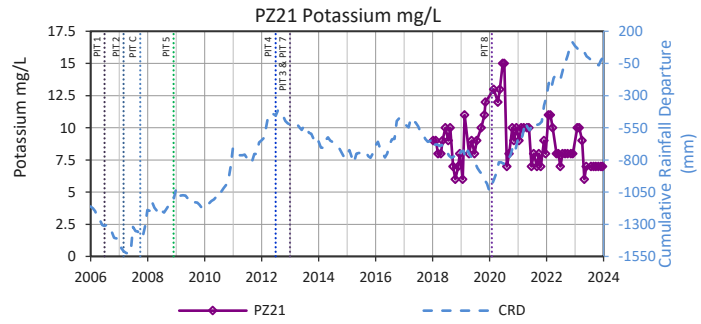
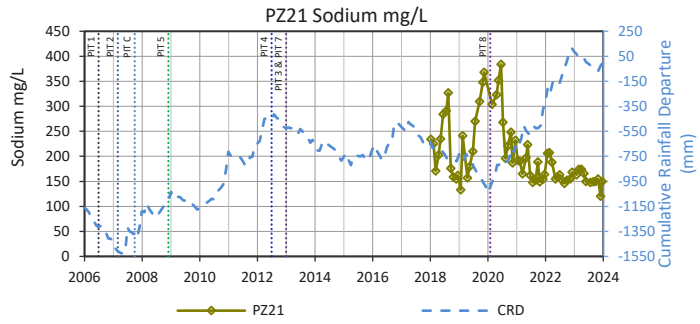
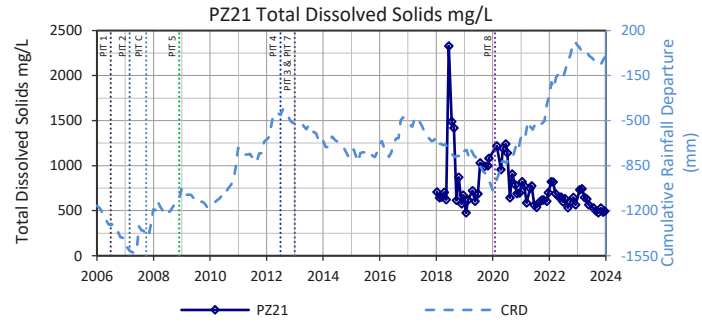
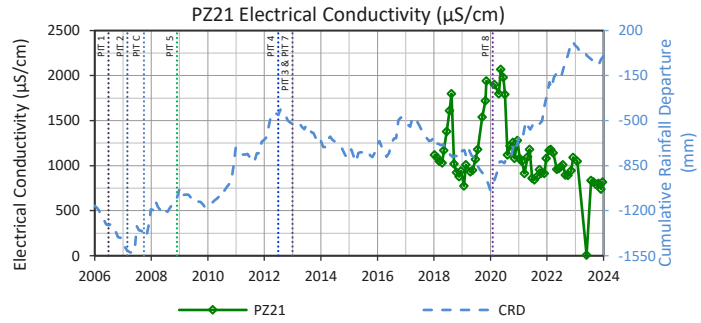
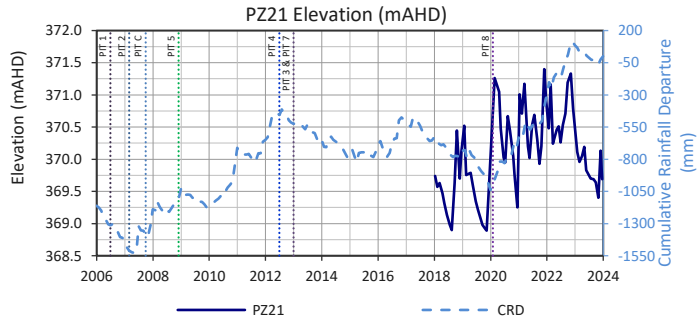
PZ13

No Data Available for Carbonate Alkalinity as CaCO_3 mg/L

No Data Available for Hydroxide Alkalinity as CaCO_3 mg/L

No Data Available for Sulfate mg/L





PZ26

PZ26

PZ26

No Data Available for Elevation (mAHD)

No Data Available for Electrical Conductivity ($\mu\text{S}/\text{cm}$)

No Data Available for Total Dissolved Solids mg/L

PZ26

PZ26

PZ26

No Data Available for Sodium mg/L

No Data Available for Potassium mg/L

No Data Available for Magnesium mg/L

PZ26

PZ26

PZ26

No Data Available for Calcium mg/L

No Data Available for Chloride mg/L

No Data Available for Bicarbonate Alkalinity as CaCO_3 mg/L

PZ26

PZ26

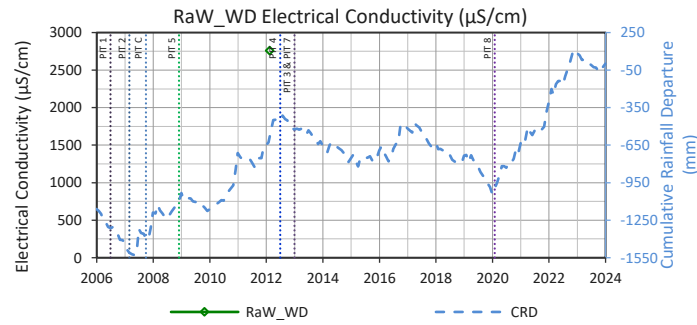
PZ26

No Data Available for Carbonate Alkalinity as CaCO_3 mg/L

No Data Available for Hydroxide Alkalinity as CaCO_3 mg/L

No Data Available for Sulfate mg/L

No Data Available for Elevation (mAHD)



No Data Available for Total Dissolved Solids mg/L

No Data Available for Sodium mg/L

No Data Available for Potassium mg/L

No Data Available for Magnesium mg/L

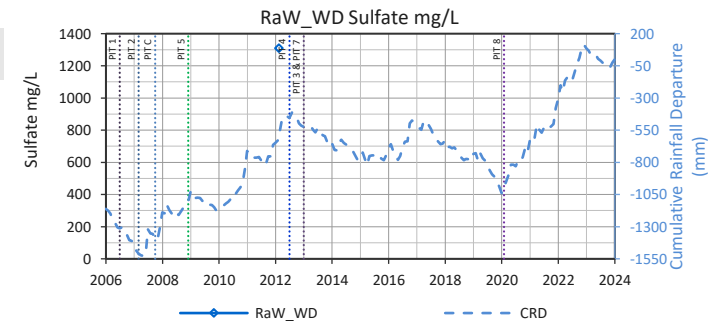
No Data Available for Calcium mg/L

No Data Available for Chloride mg/L

No Data Available for Bicarbonate Alkalinity as CaCO_3 mg/L

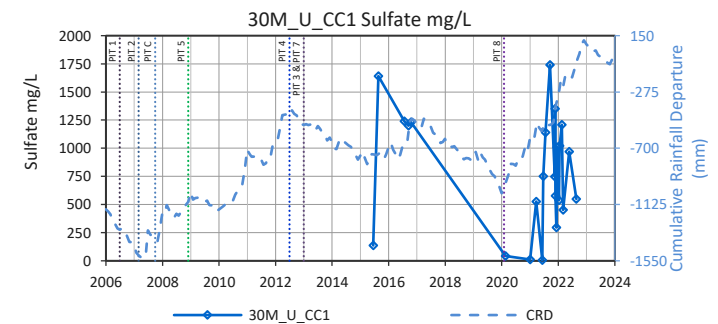
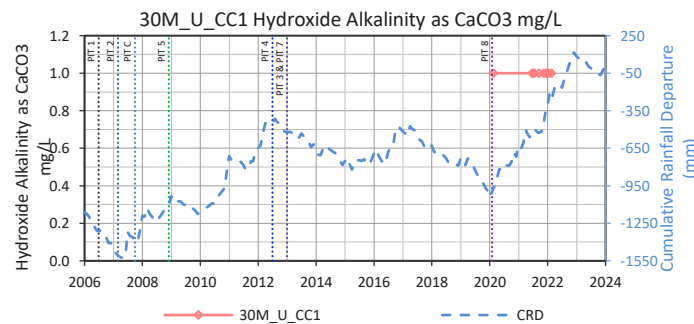
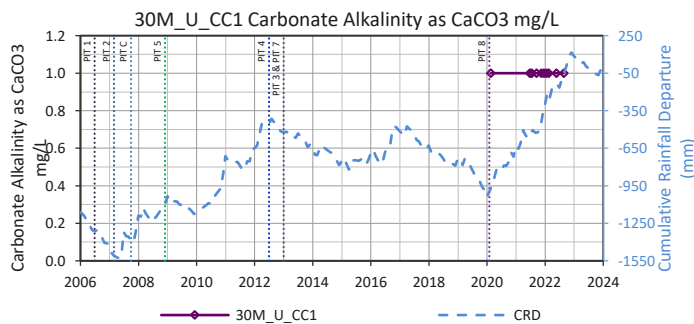
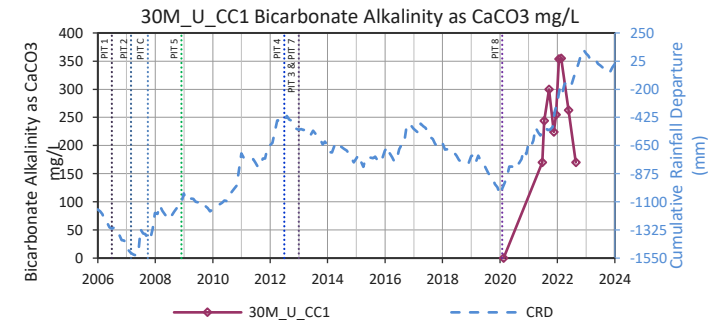
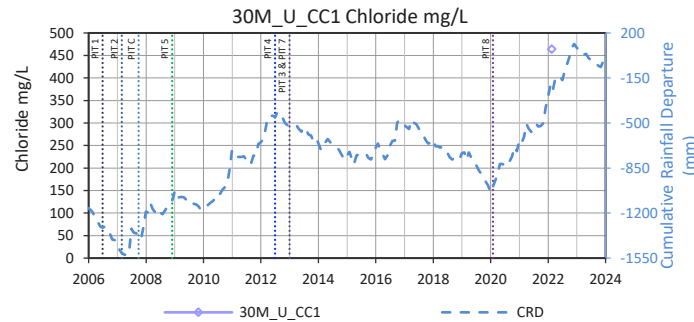
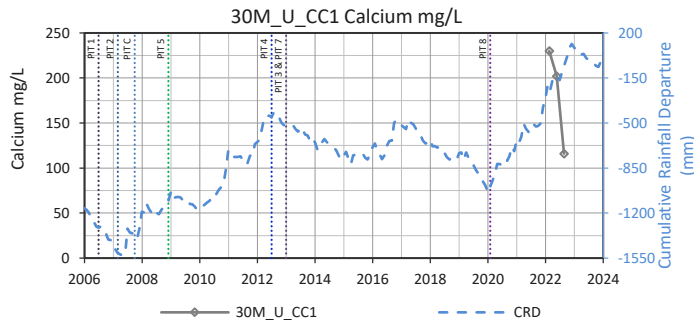
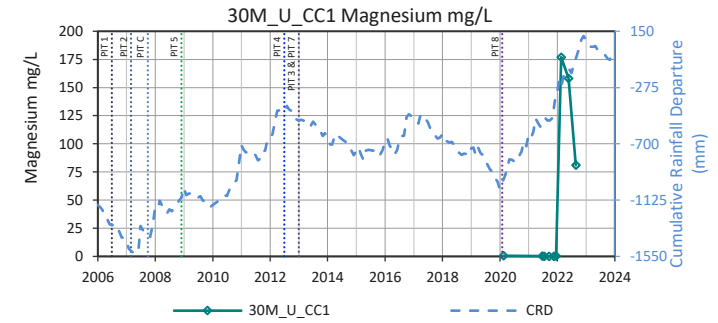
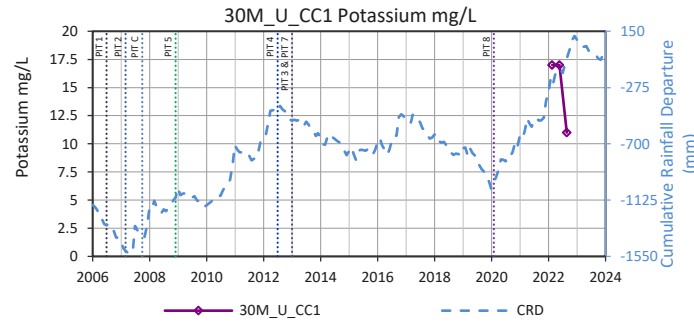
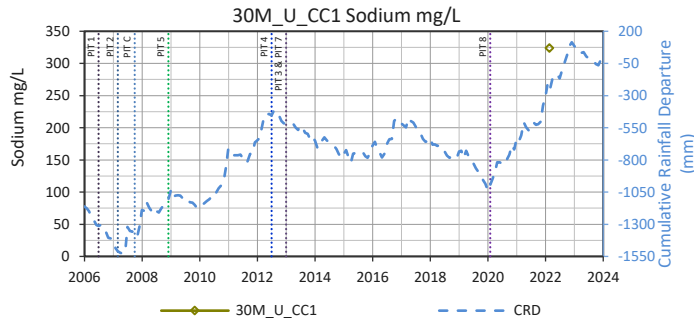
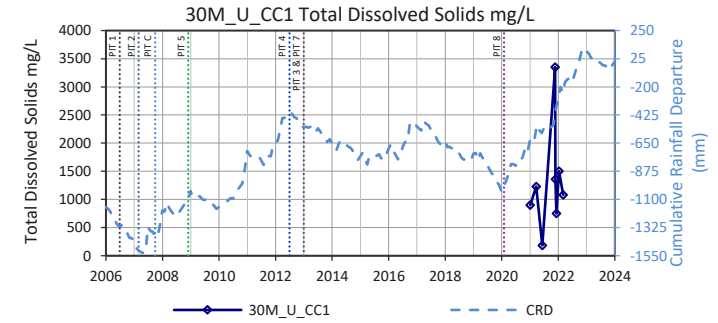
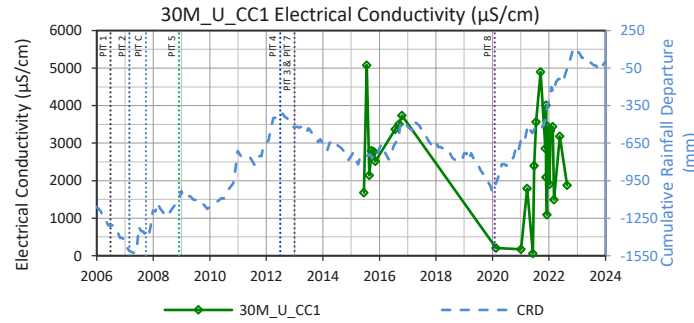
No Data Available for Carbonate Alkalinity as CaCO_3 mg/L

No Data Available for Hydroxide Alkalinity as CaCO_3 mg/L



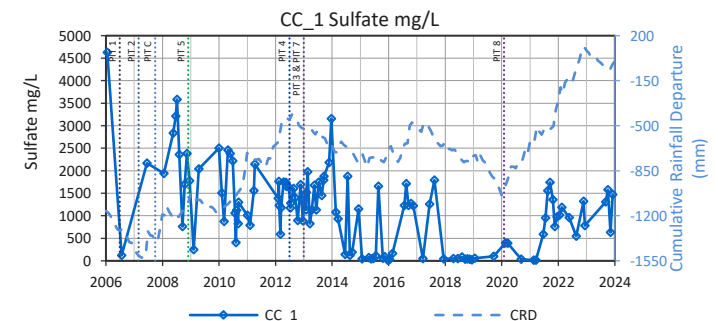
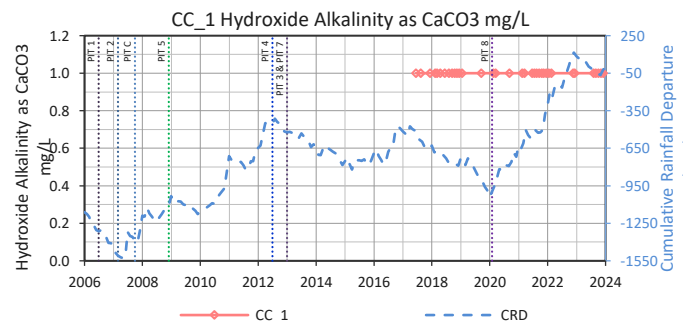
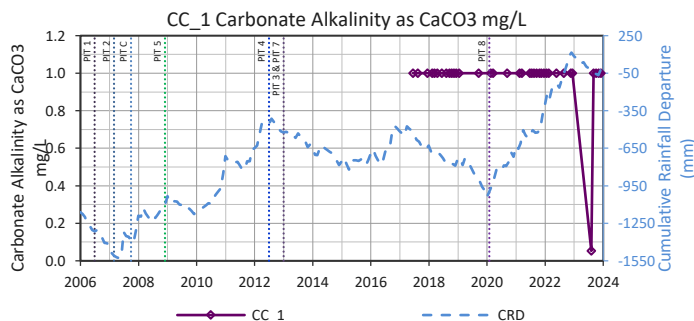
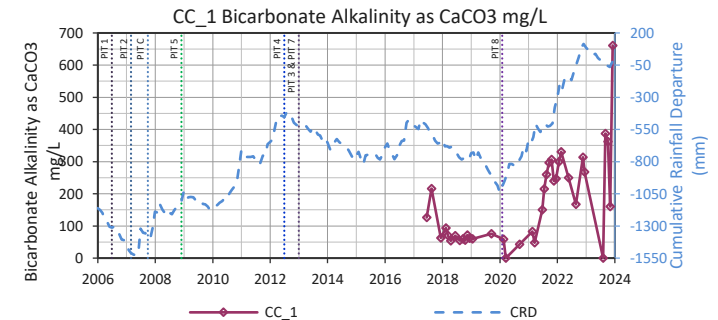
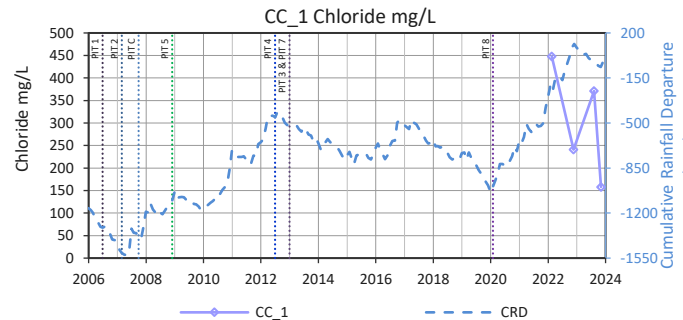
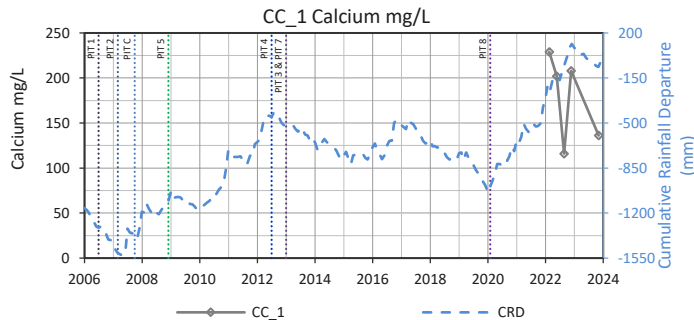
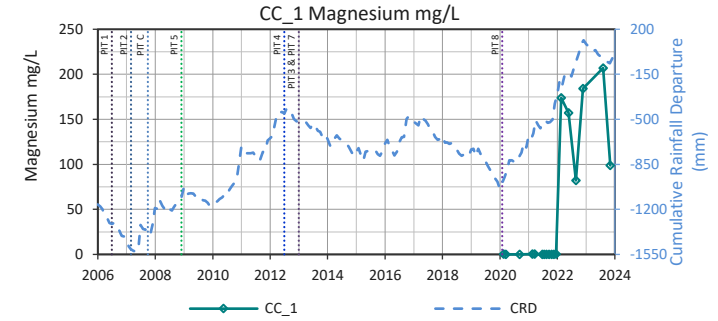
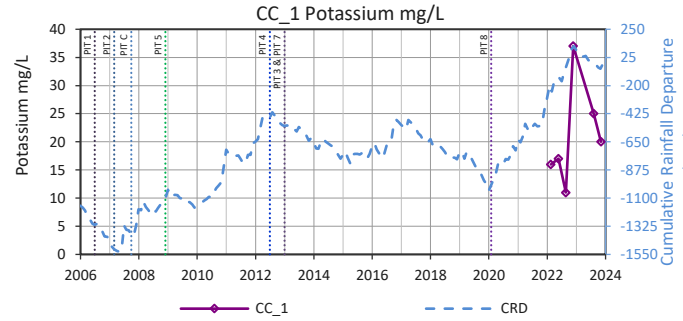
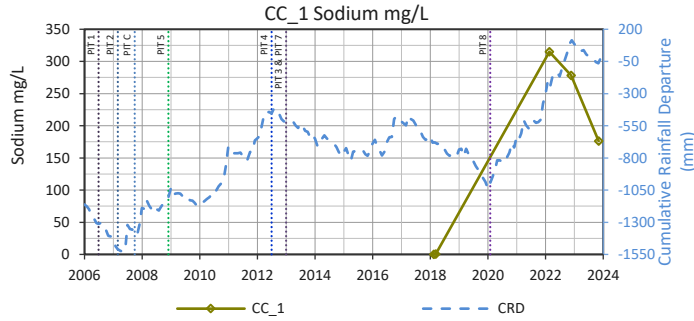
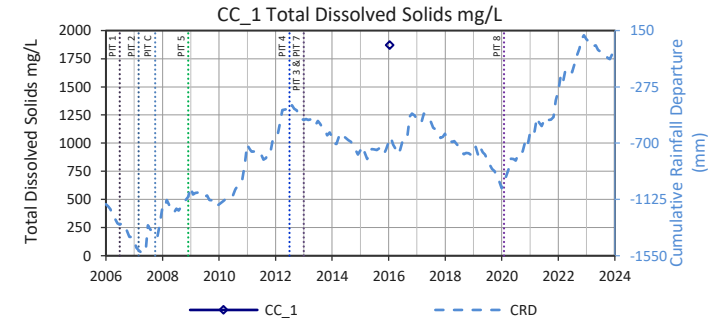
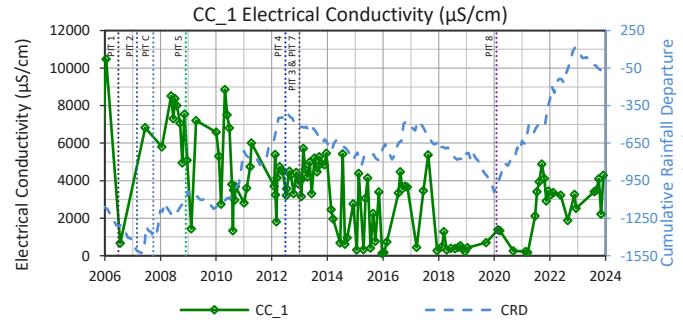
30M_U_CC1

No Data Available for Elevation (mAHD)



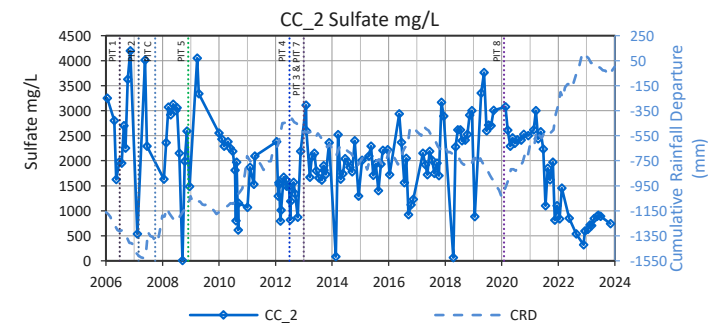
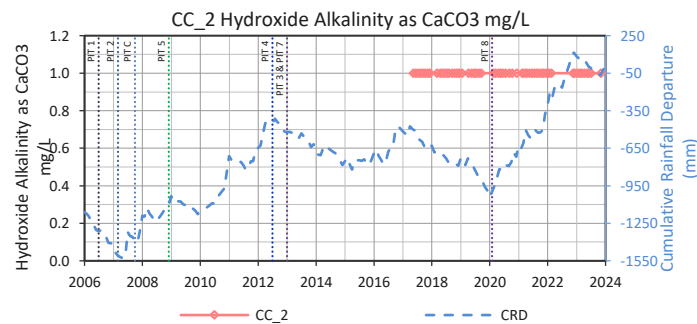
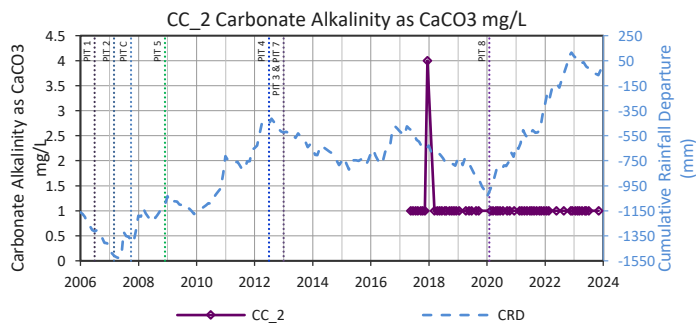
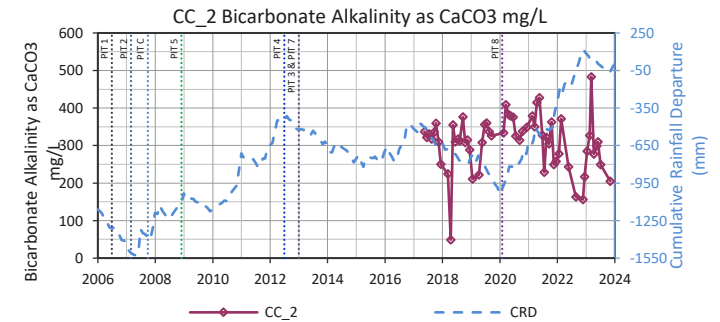
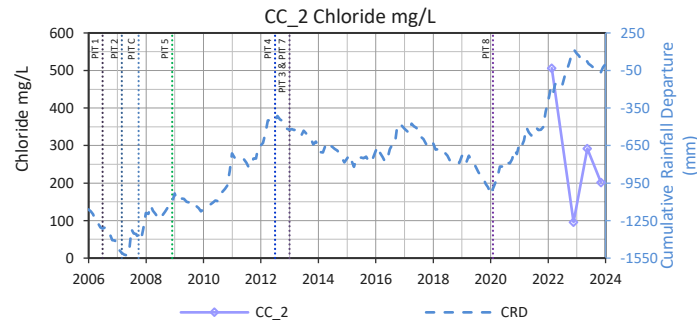
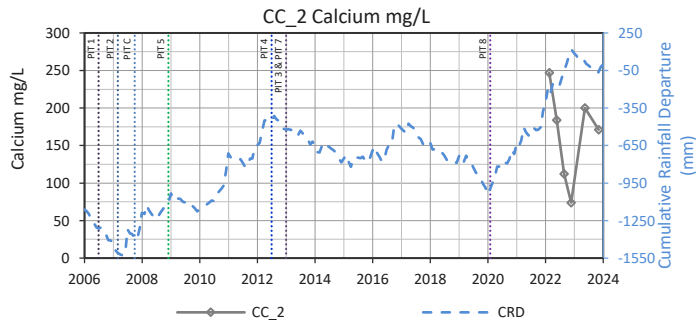
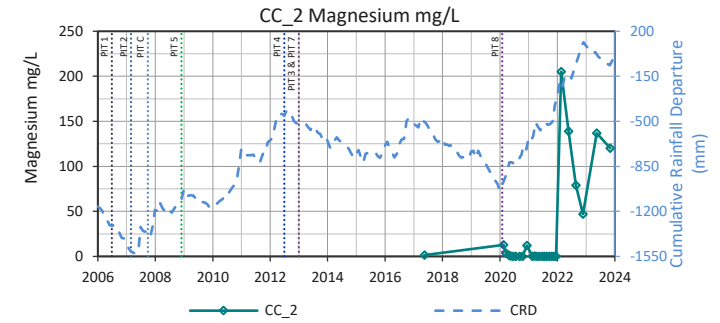
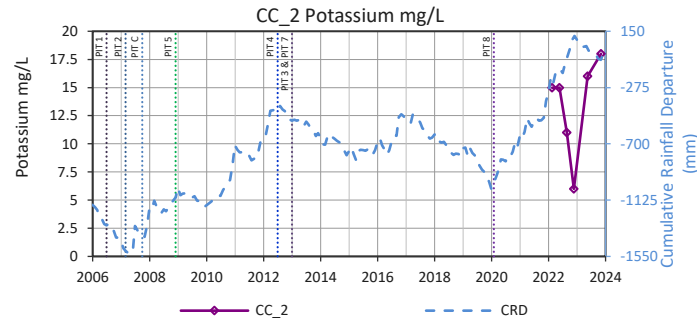
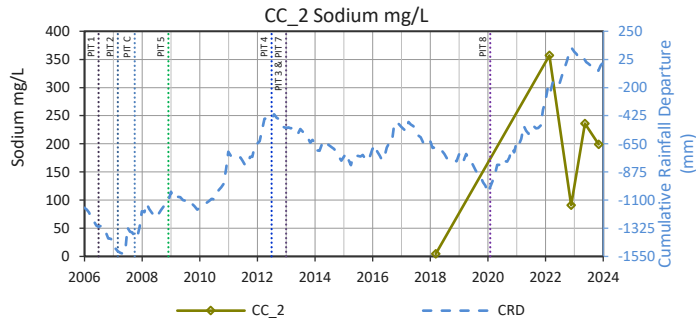
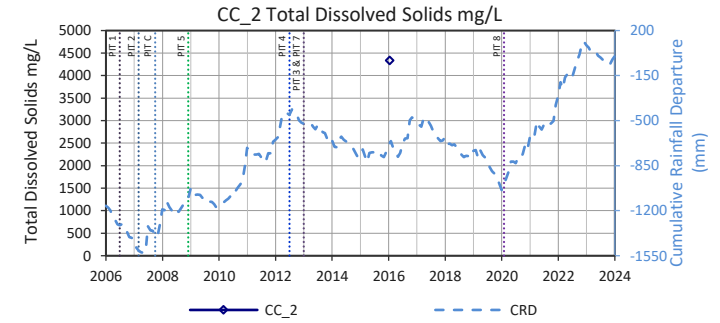
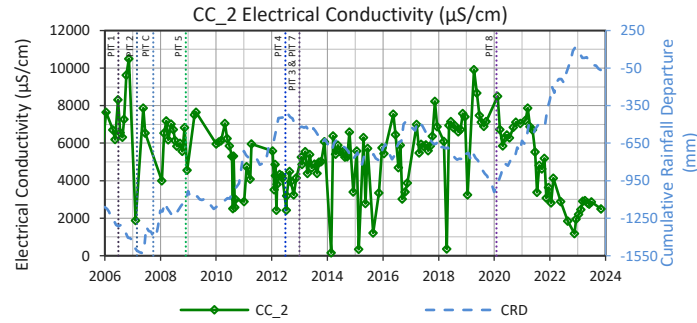
CC_1

No Data Available for Elevation (mAHD)



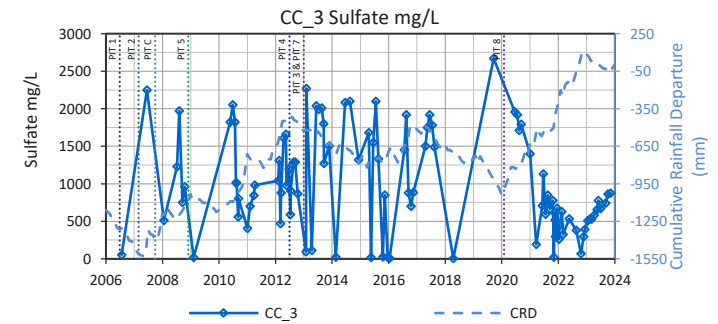
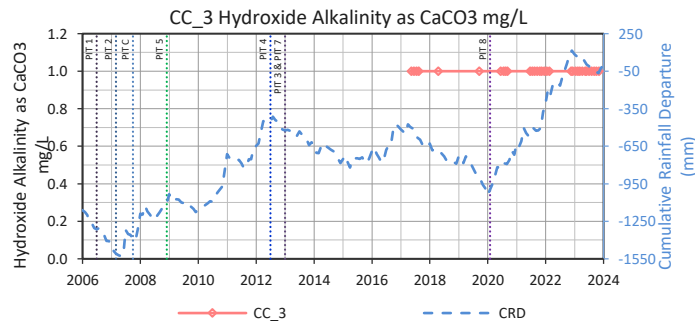
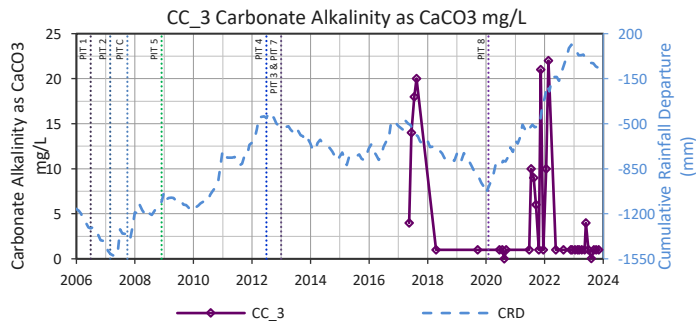
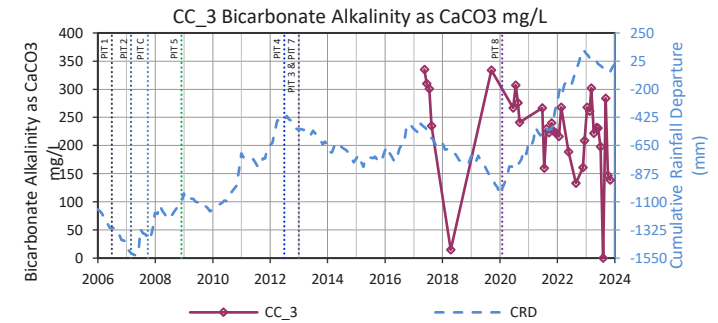
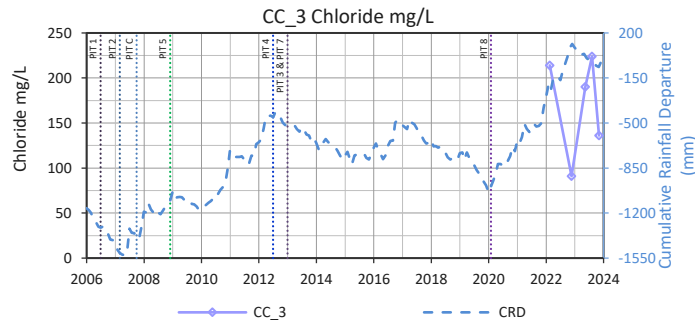
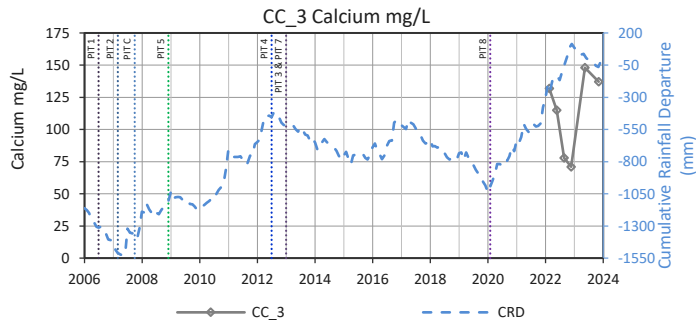
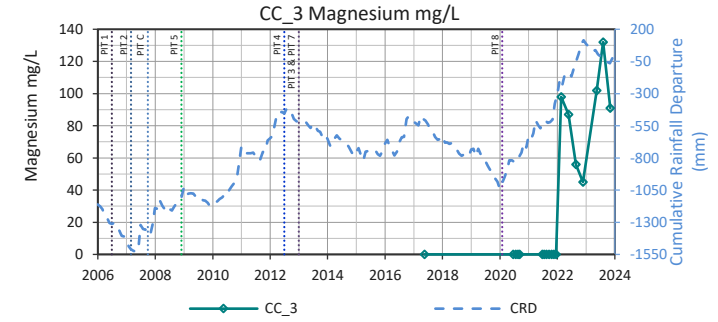
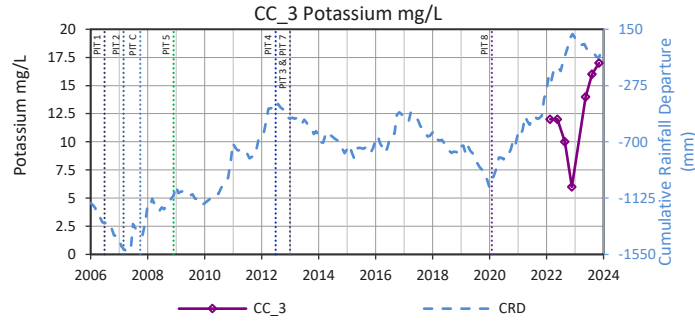
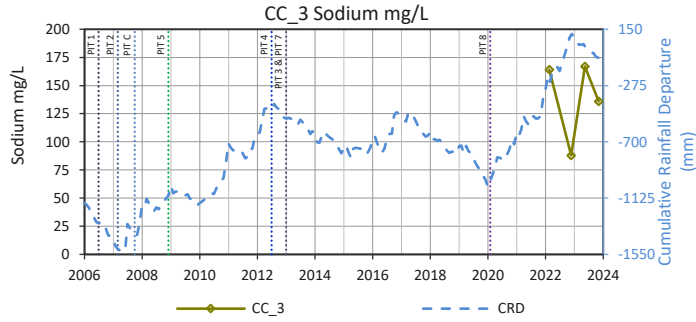
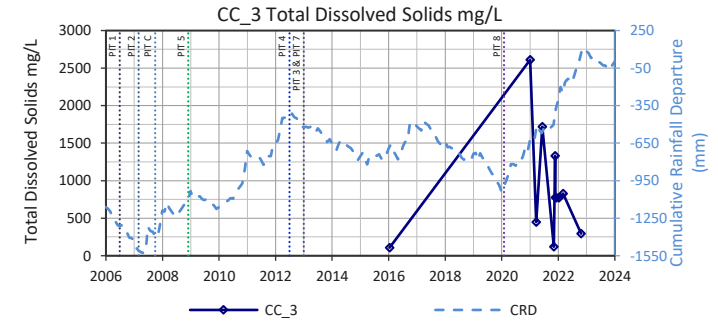
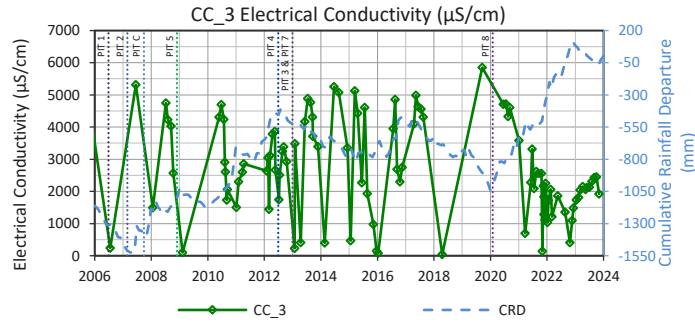
CC_2

No Data Available for Elevation (mAHD)



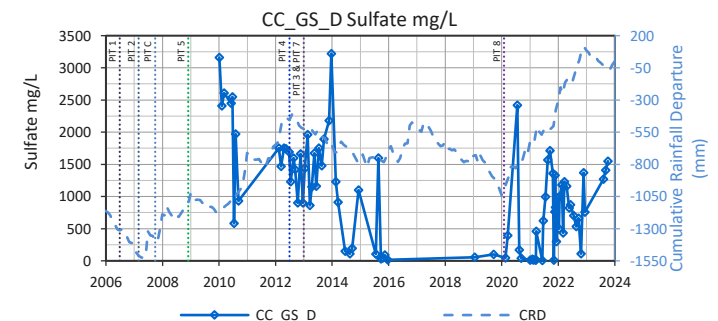
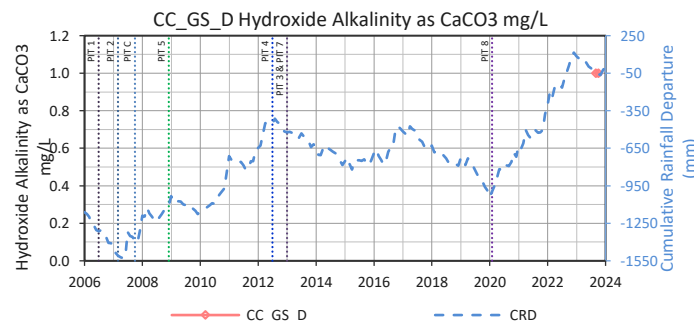
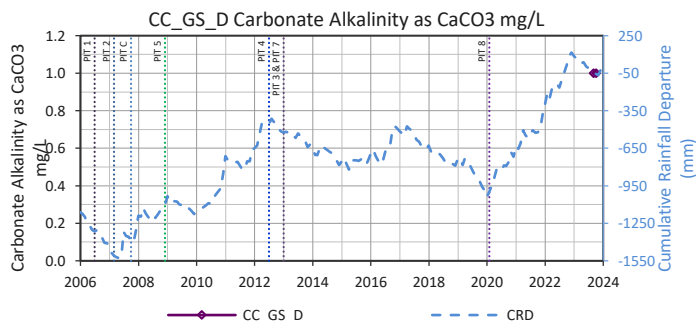
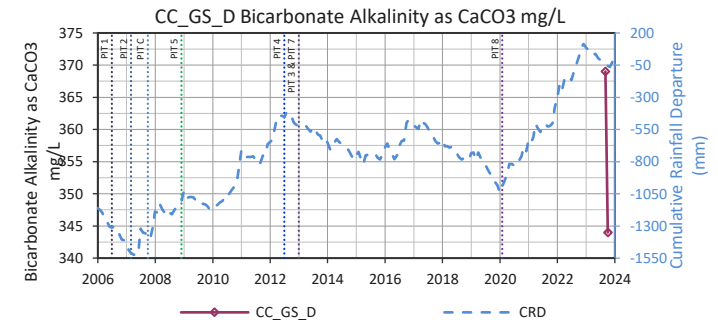
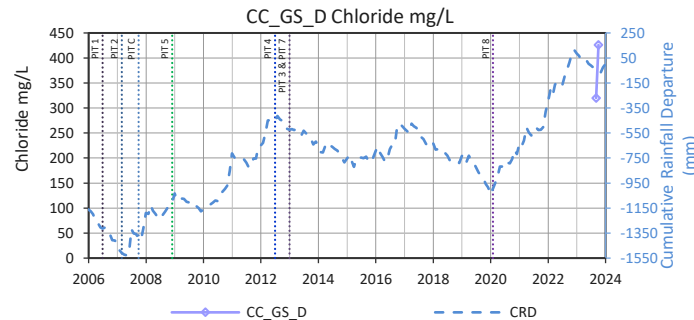
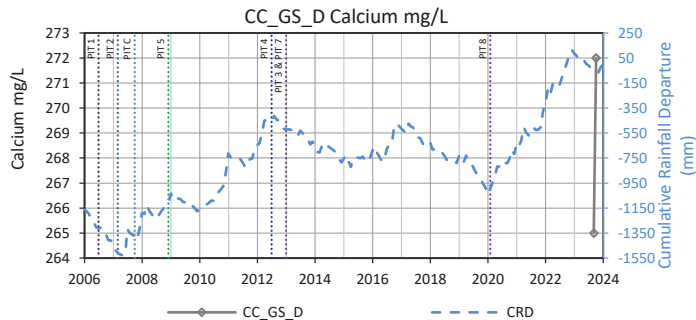
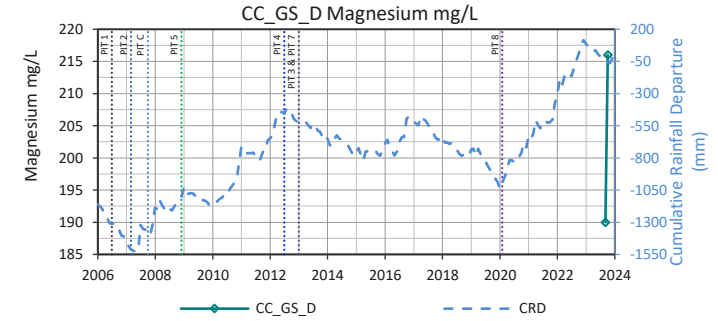
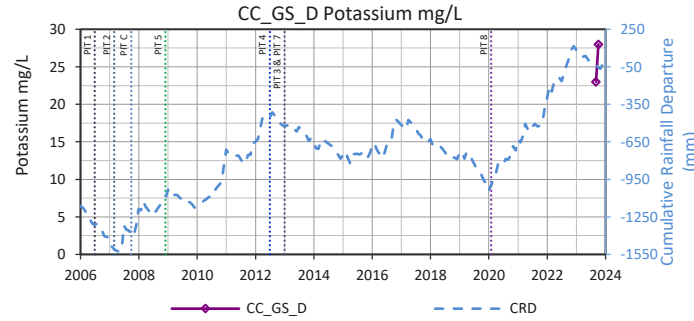
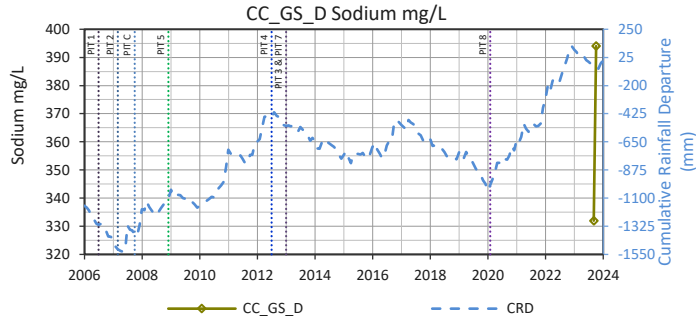
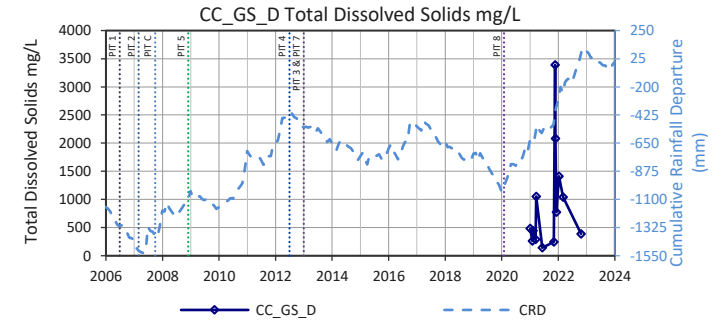
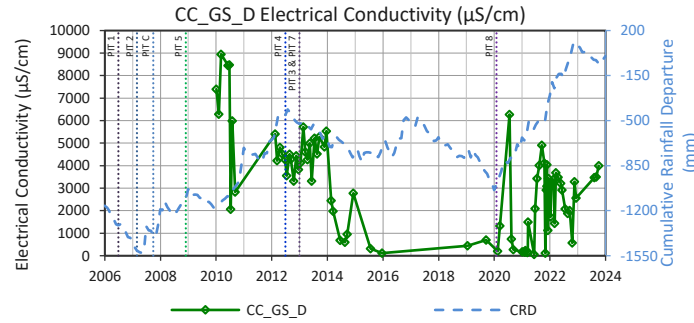
CC_3

No Data Available for Elevation (mAHD)



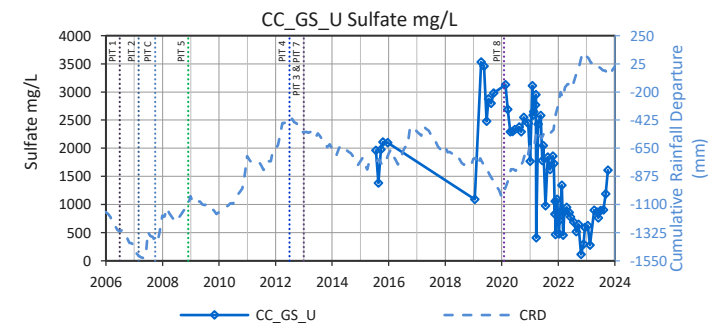
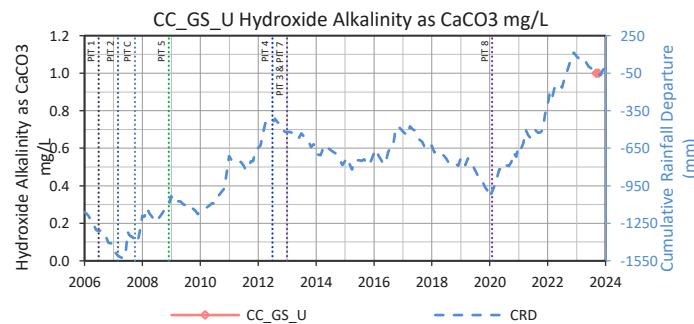
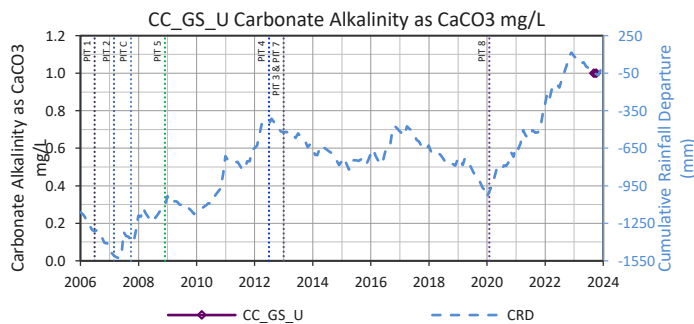
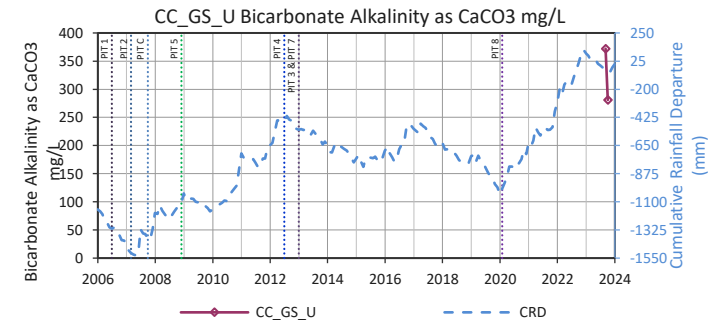
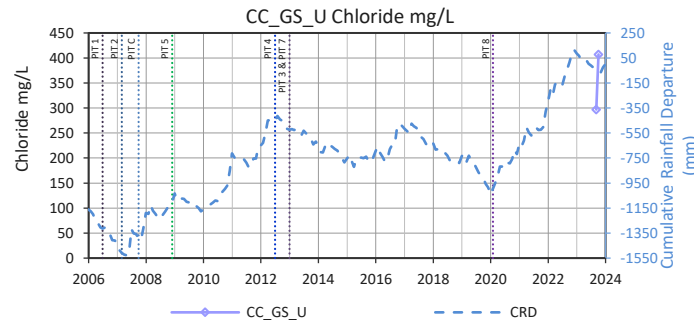
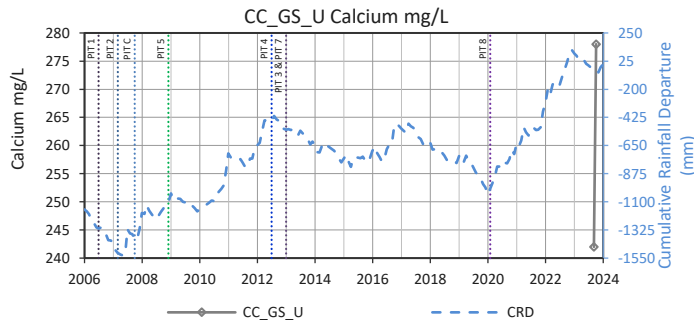
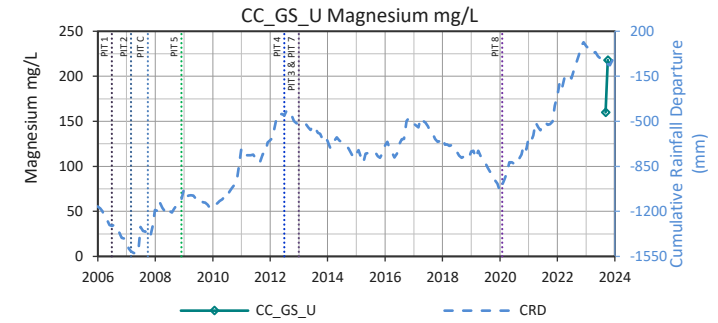
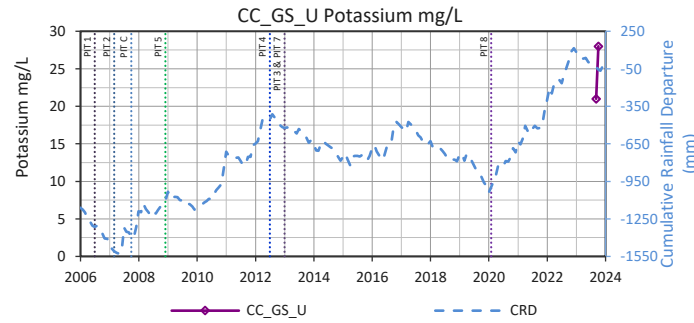
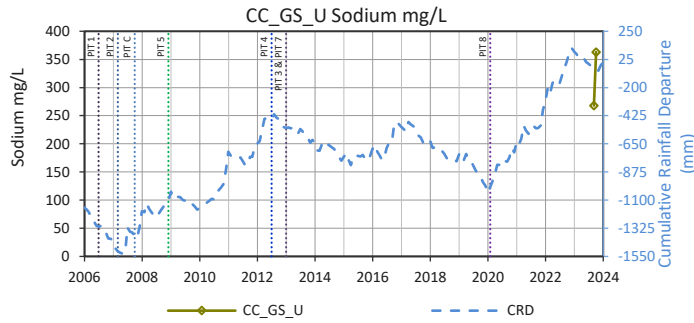
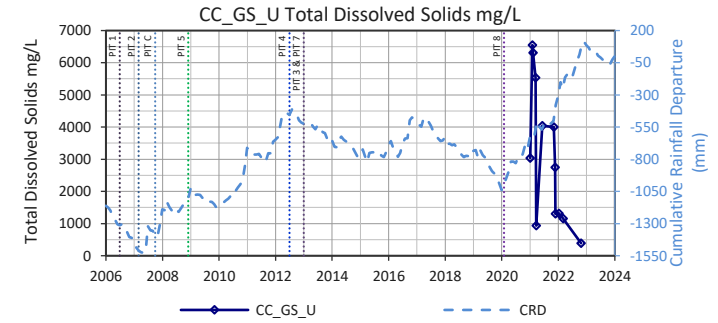
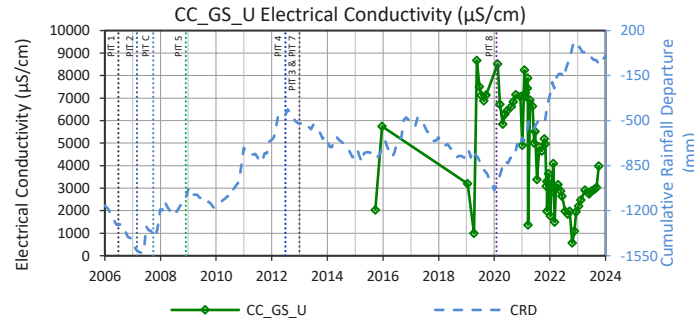
CC_GS_D

No Data Available for Elevation (mAHD)



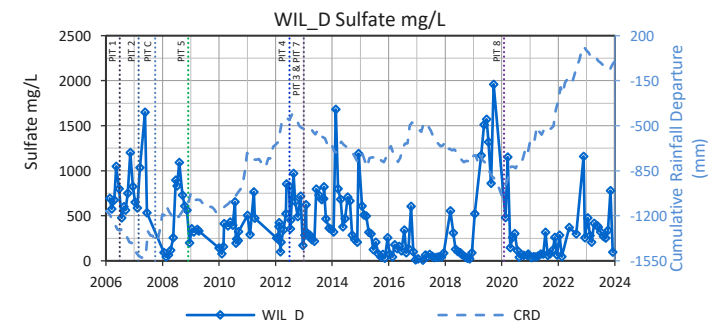
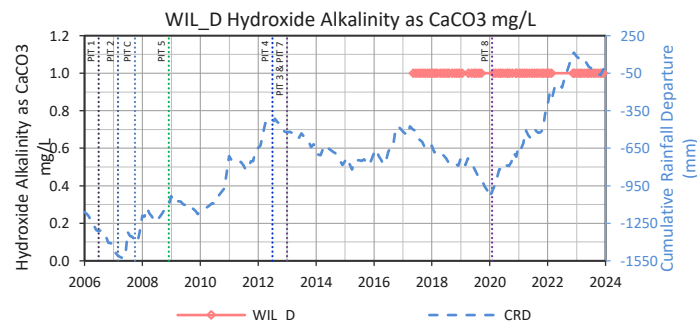
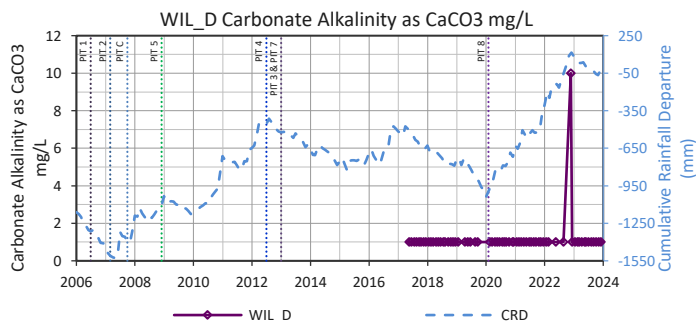
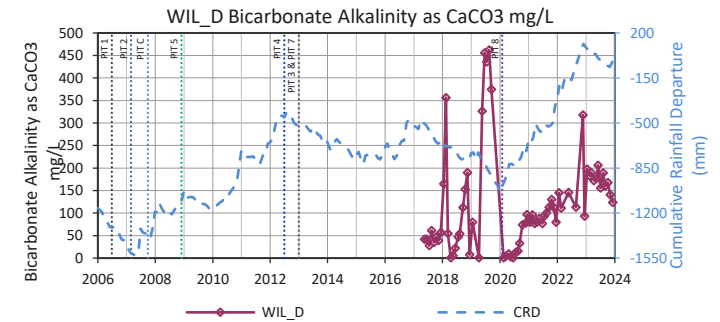
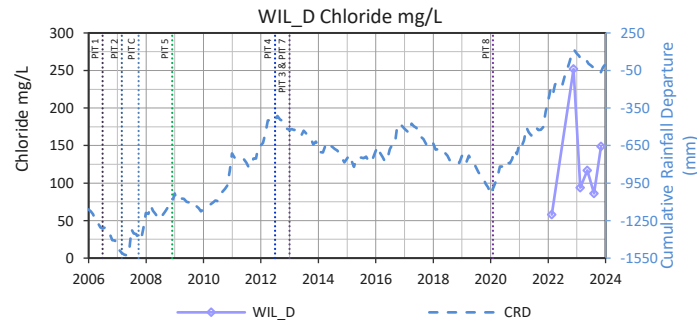
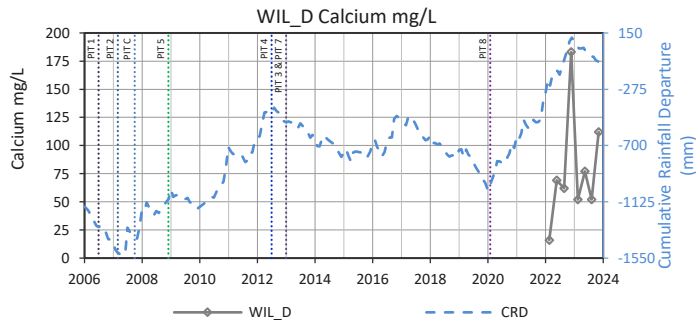
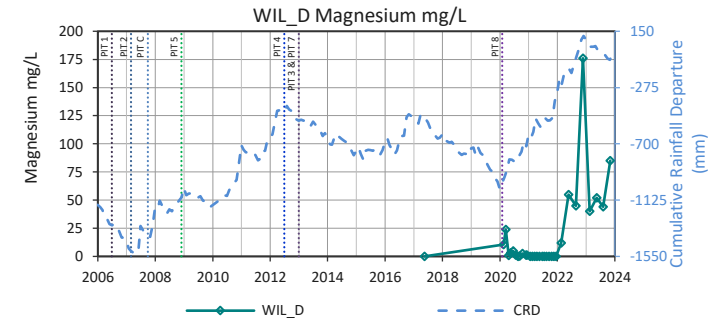
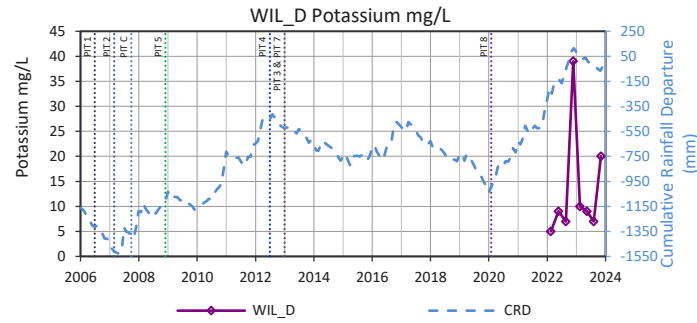
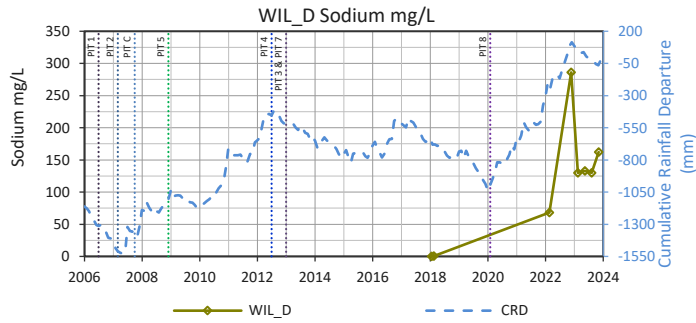
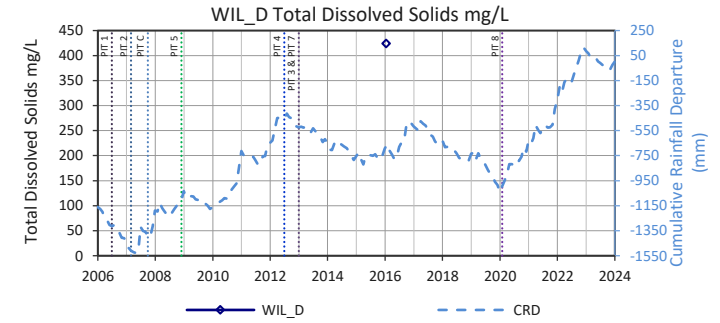
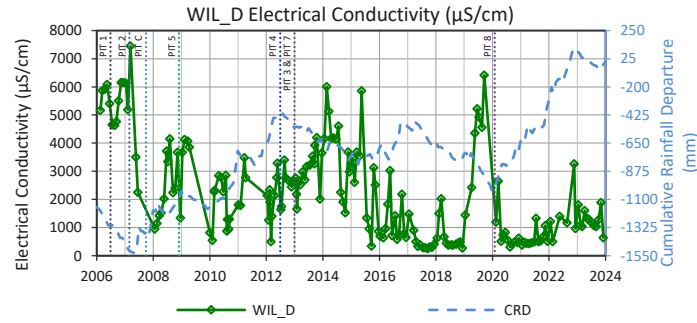
CC_GS_U

No Data Available for Elevation (mAHD)



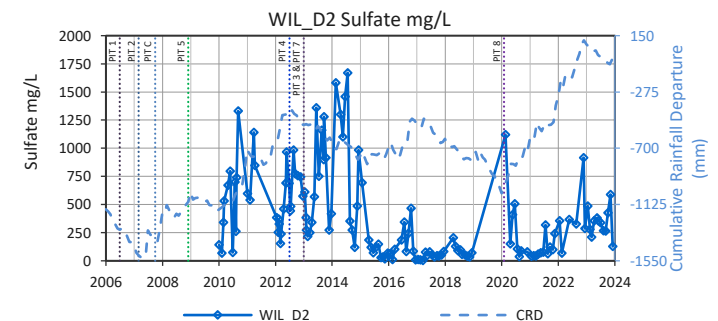
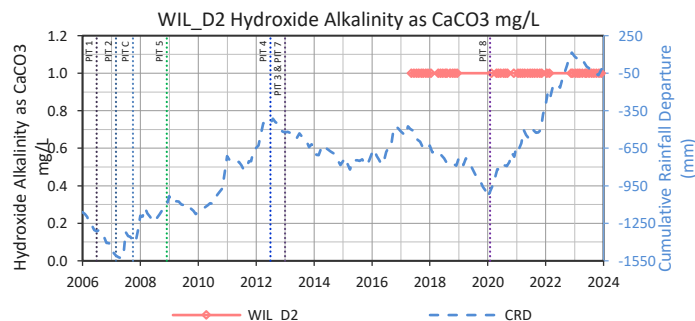
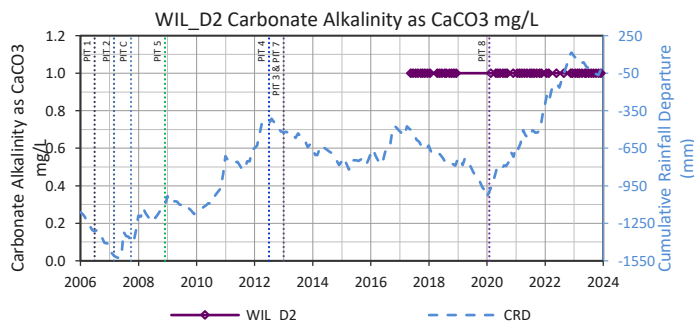
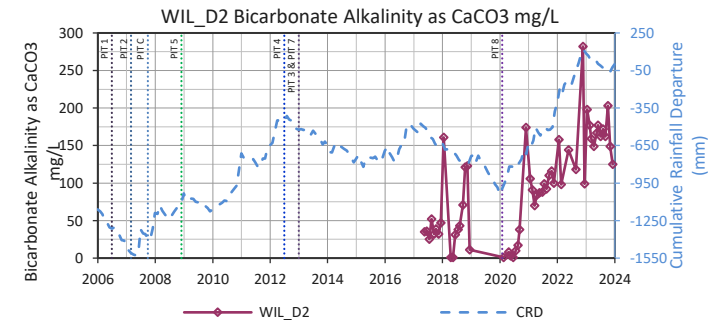
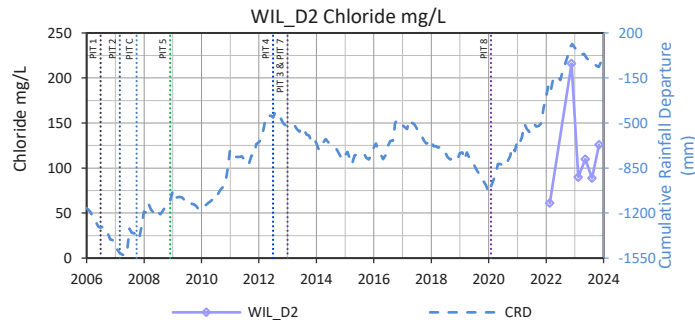
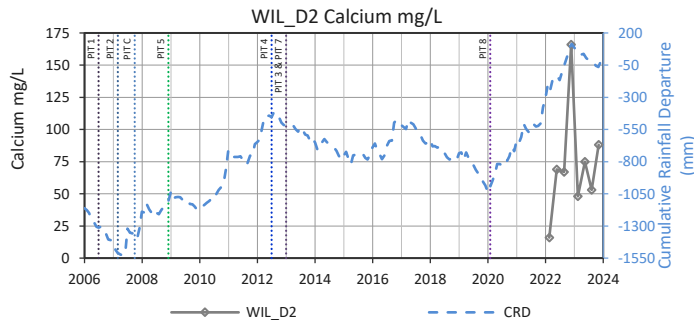
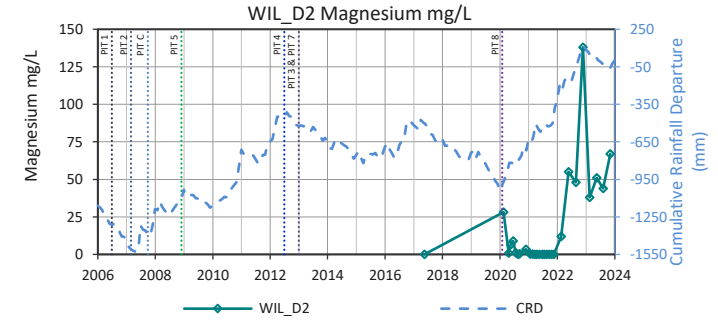
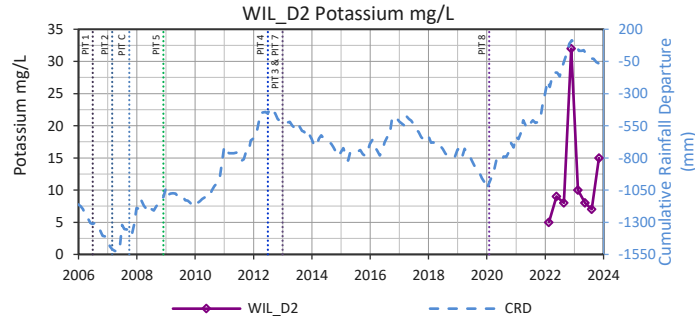
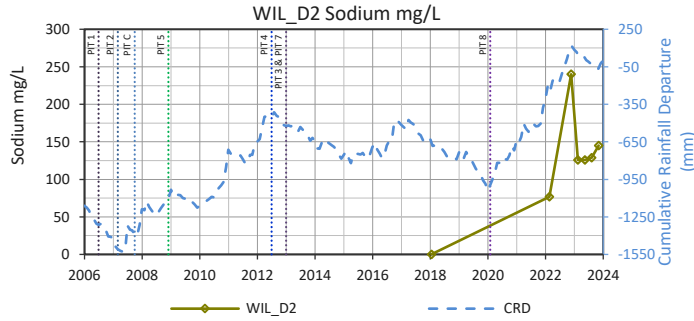
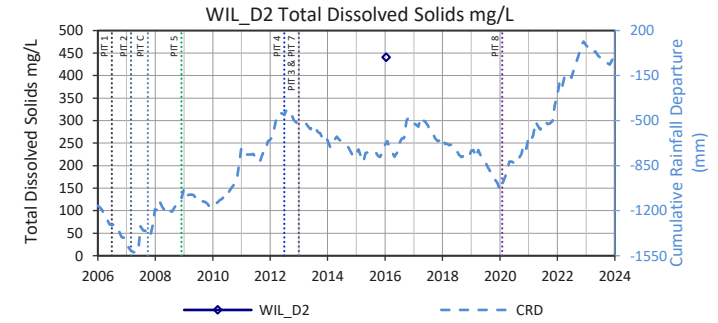
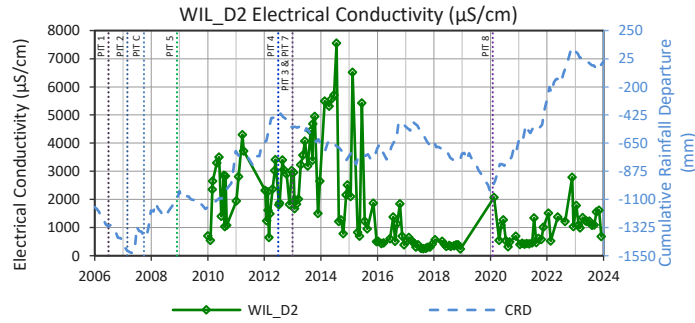
WIL_D

No Data Available for Elevation (mAHD)



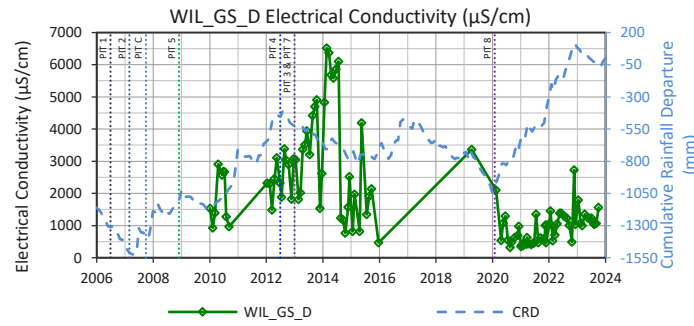
WIL_D2

No Data Available for Elevation (mAHD)



WIL_GS_D

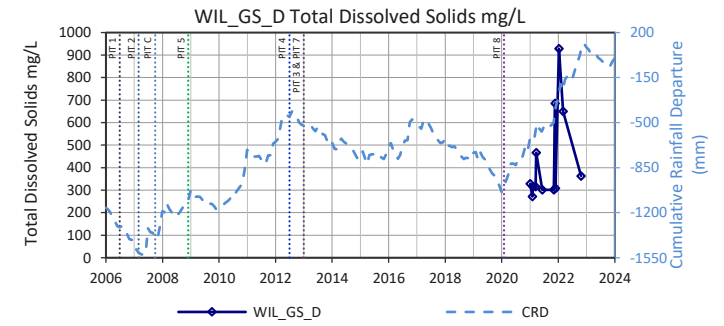
No Data Available for Elevation (mAHD)



WIL_GS_D

No Data Available for Sodium mg/L

No Data Available for Potassium mg/L



WIL_GS_D

No Data Available for Magnesium mg/L

WIL_GS_D

No Data Available for Calcium mg/L

No Data Available for Chloride mg/L

No Data Available for Bicarbonate Alkalinity as CaCO3 mg/L

WIL_GS_D

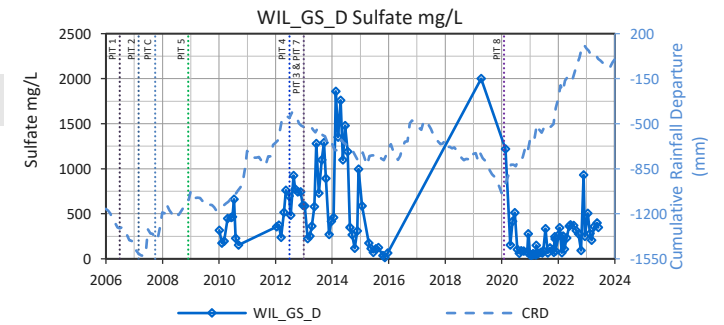
WIL_GS_D

WIL_GS_D

No Data Available for Carbonate Alkalinity as CaCO3 mg/L

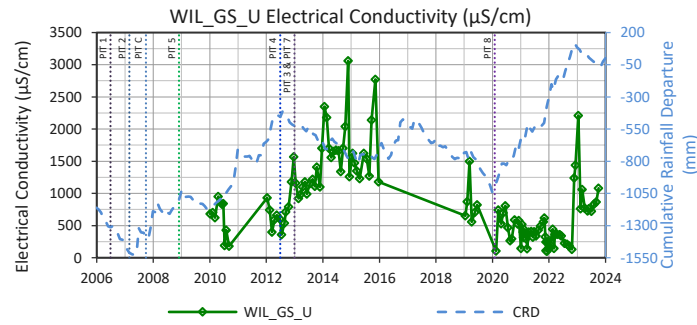
No Data Available for Hydroxide Alkalinity as CaCO3 mg/L

WIL_GS_D



WIL_GS_U

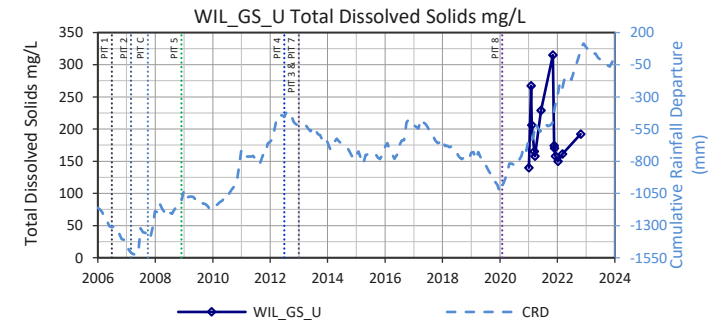
No Data Available for Elevation (mAHD)



WIL_GS_U

No Data Available for Sodium mg/L

No Data Available for Potassium mg/L



WIL_GS_U

No Data Available for Magnesium mg/L

WIL_GS_U

No Data Available for Calcium mg/L

No Data Available for Chloride mg/L

No Data Available for Bicarbonate Alkalinity as CaCO3 mg/L

WIL_GS_U

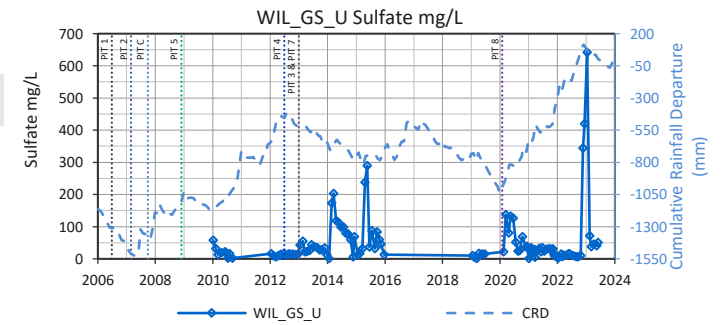
WIL_GS_U

WIL_GS_U

No Data Available for Carbonate Alkalinity as CaCO3 mg/L

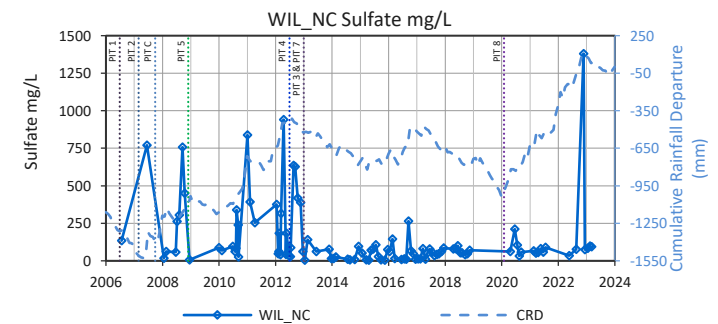
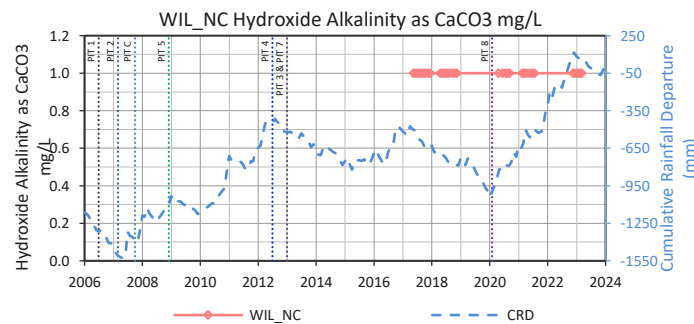
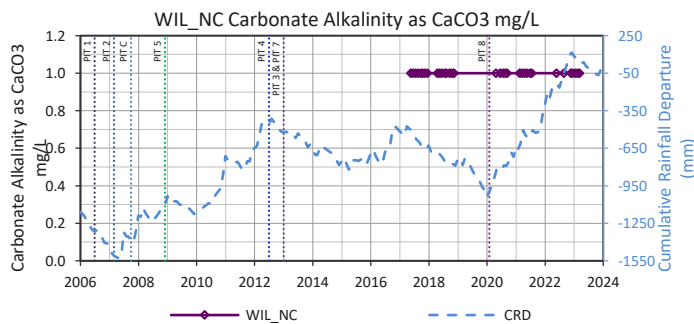
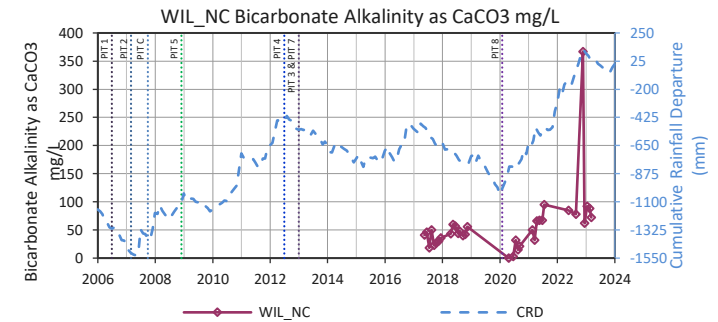
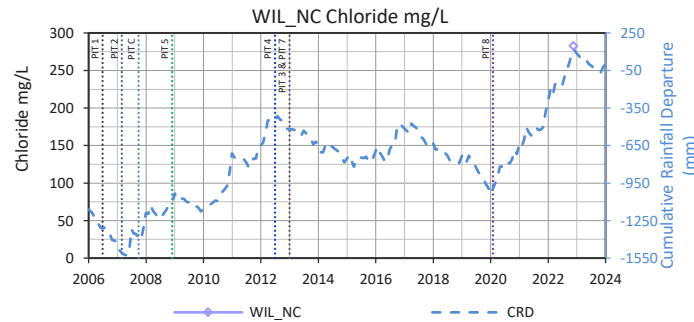
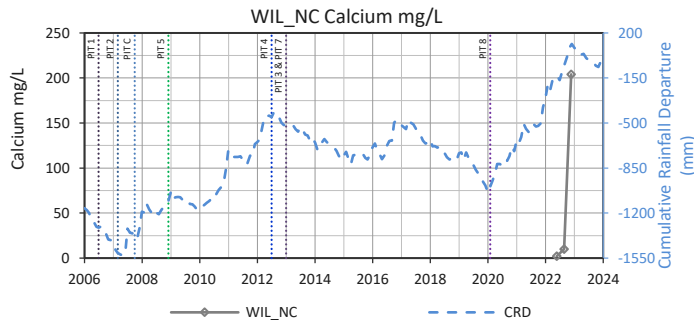
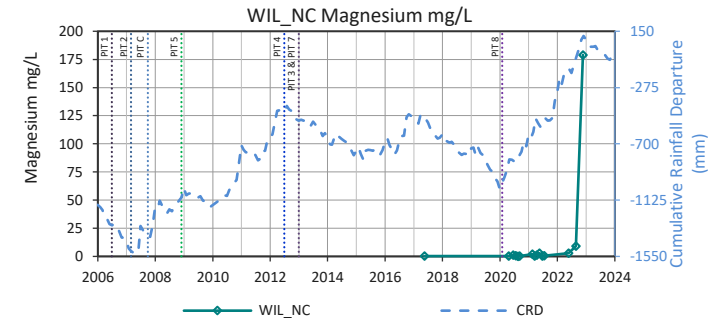
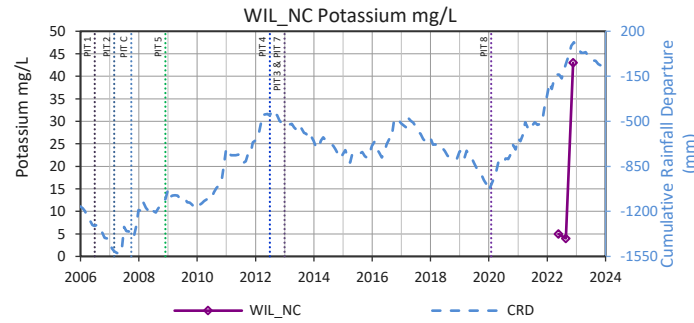
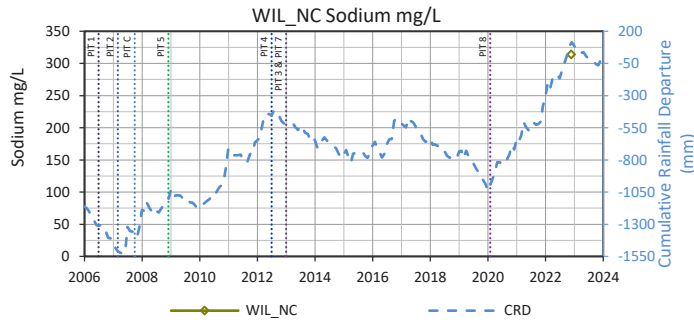
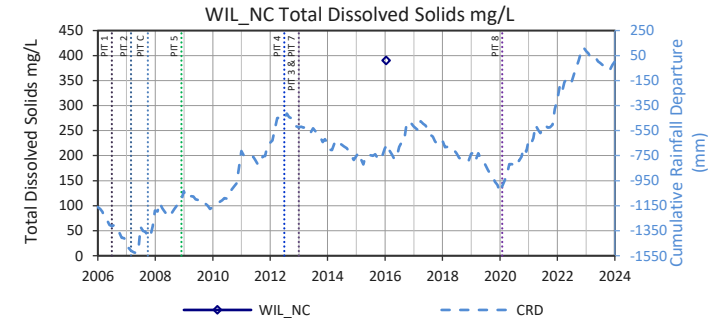
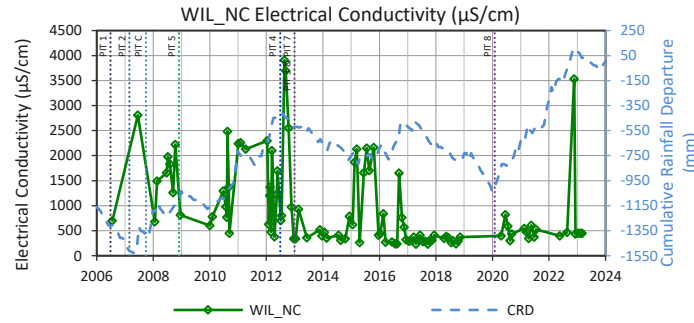
No Data Available for Hydroxide Alkalinity as CaCO3 mg/L

WIL_GS_U



WIL_NC

No Data Available for Elevation (mAHD)

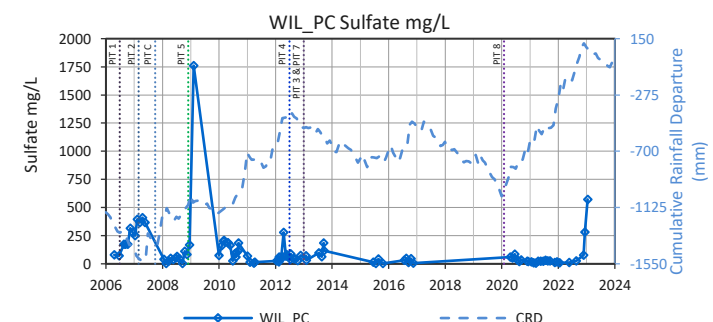
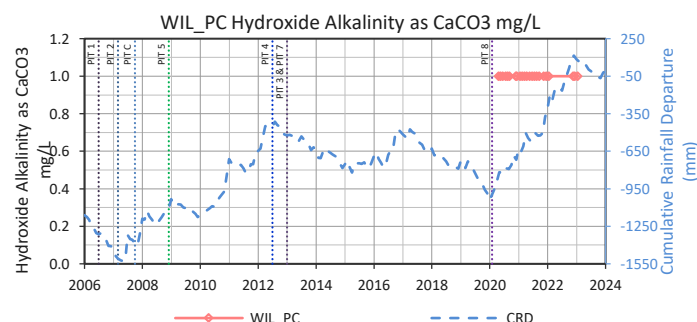
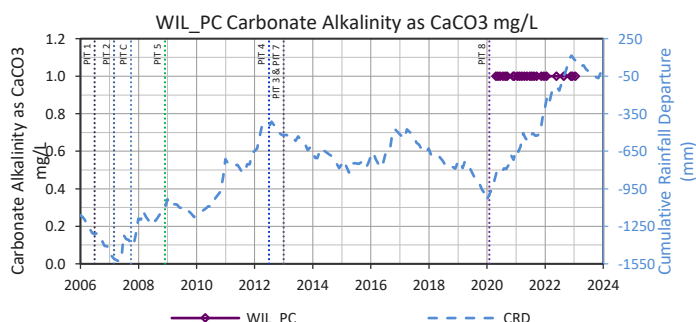
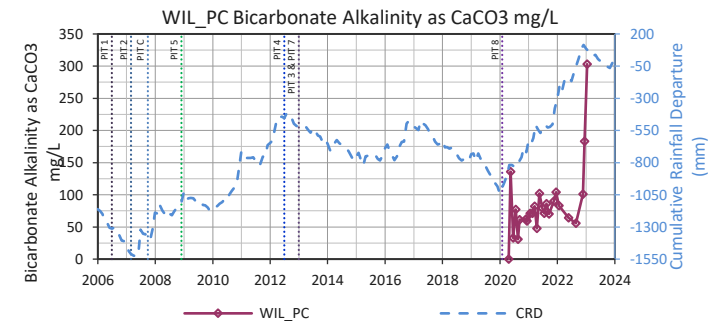
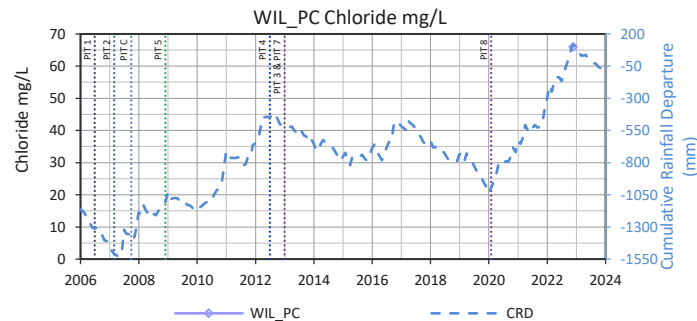
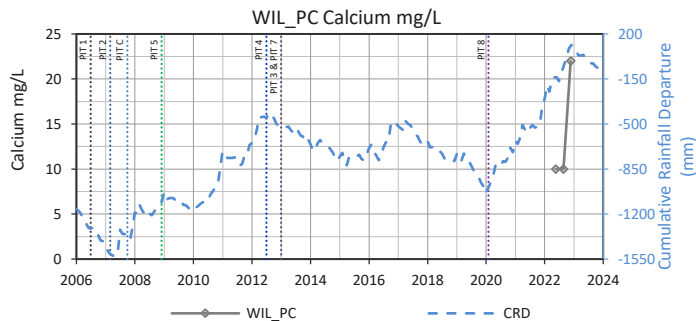
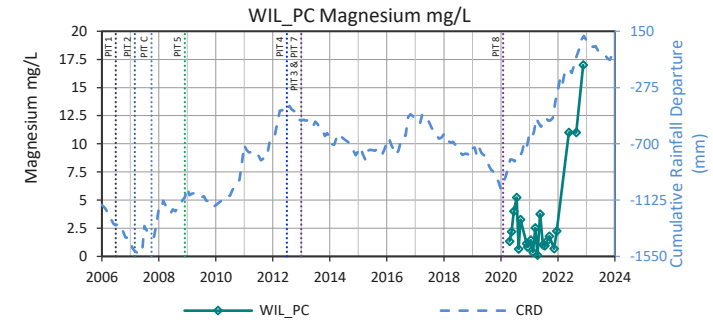
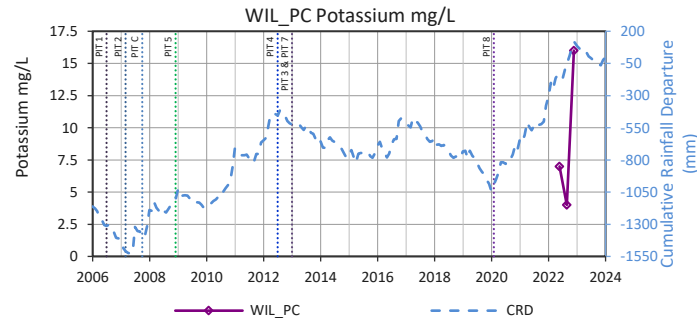
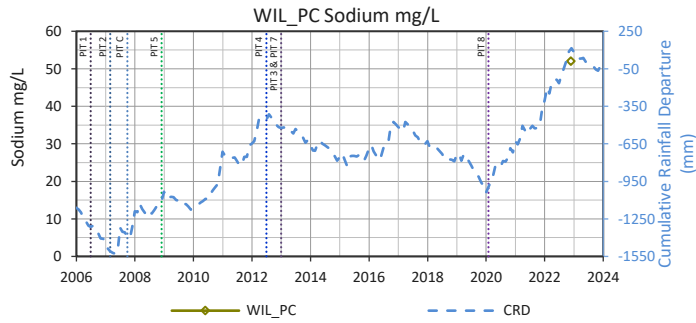
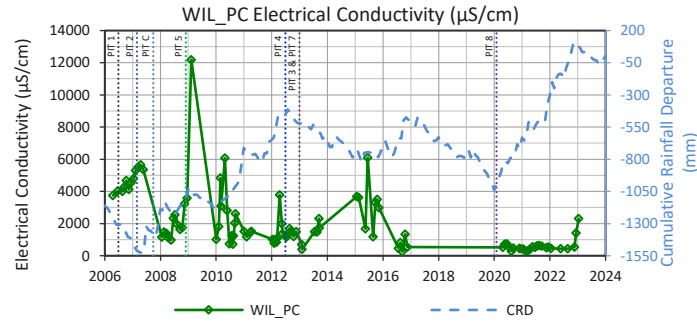


WIL_PC

WIL_PC

No Data Available for Elevation (mAHD)

No Data Available for Total Dissolved Solids mg/L

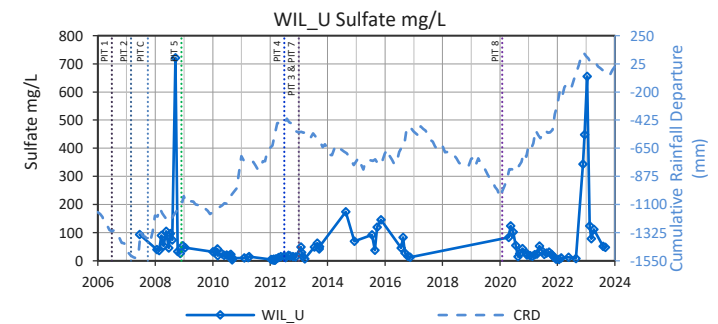
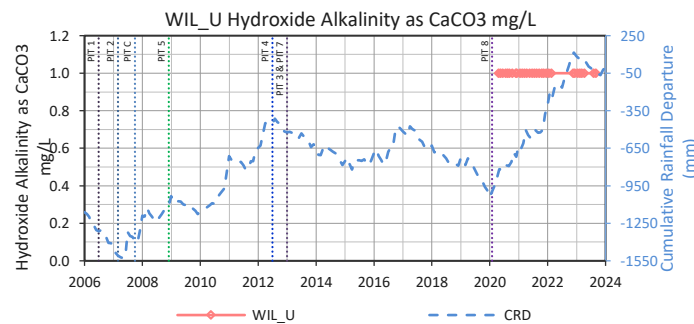
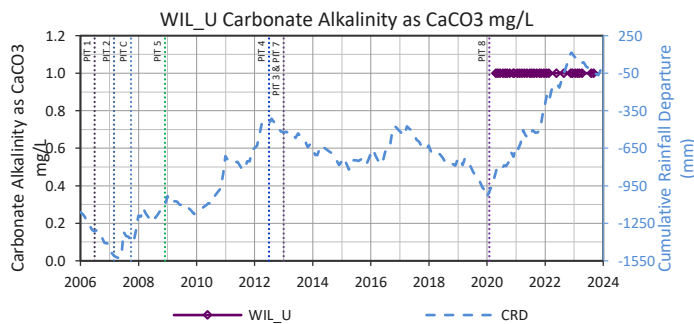
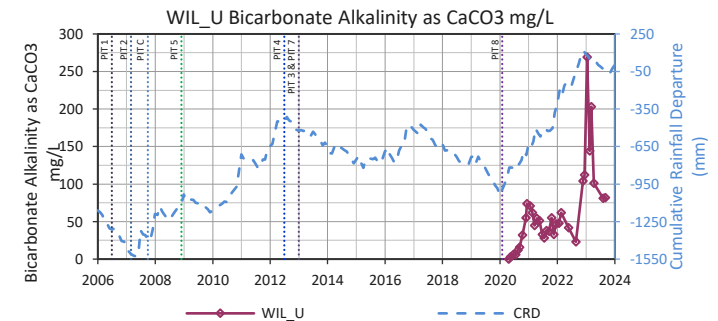
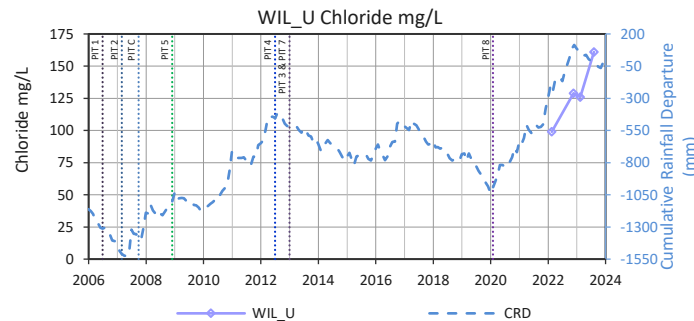
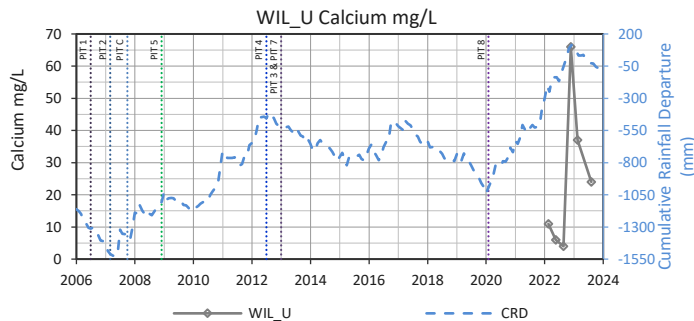
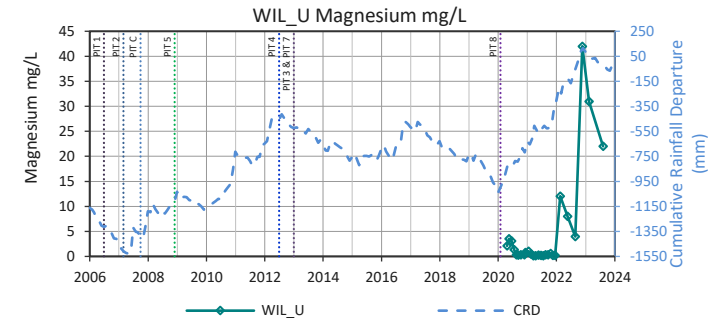
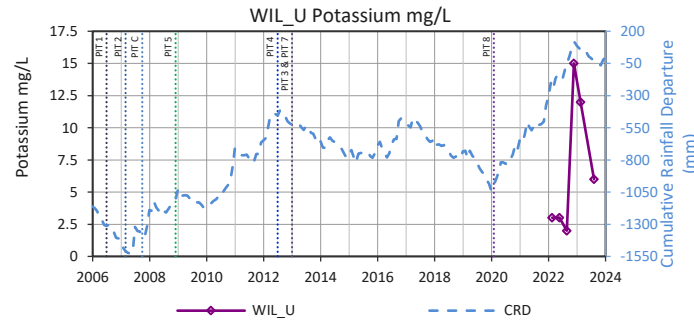
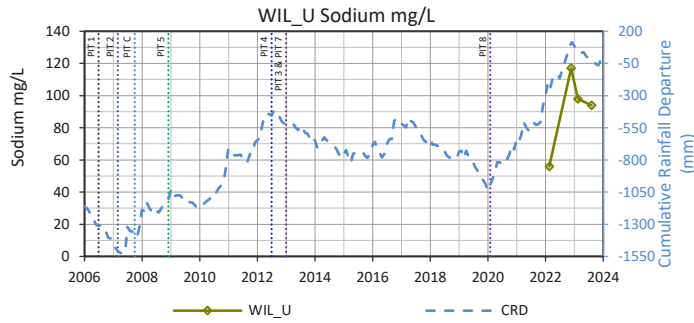
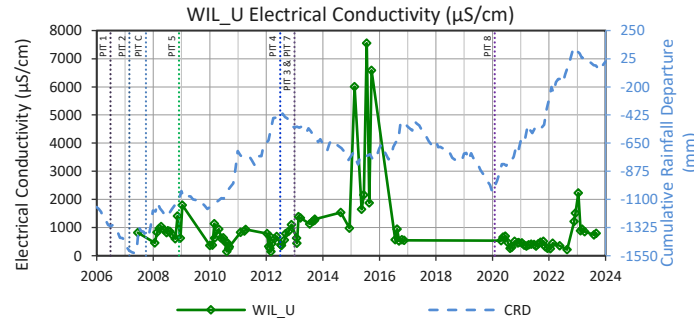


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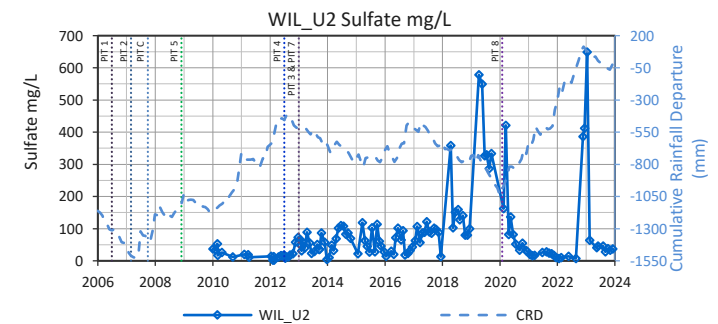
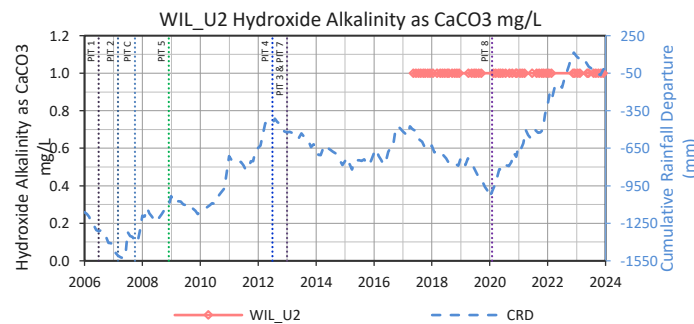
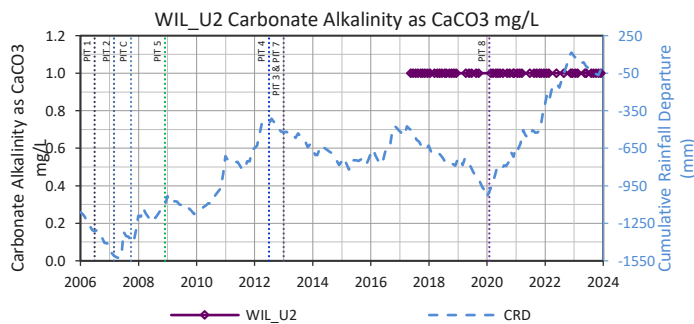
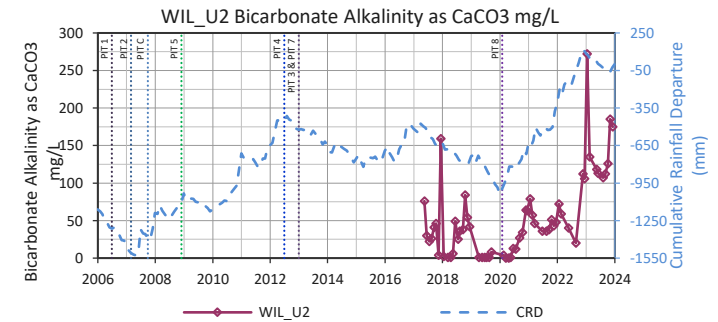
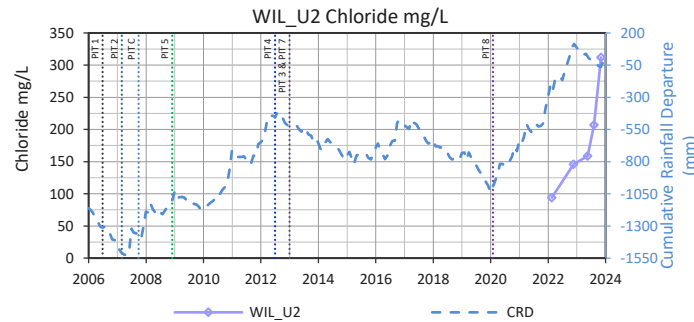
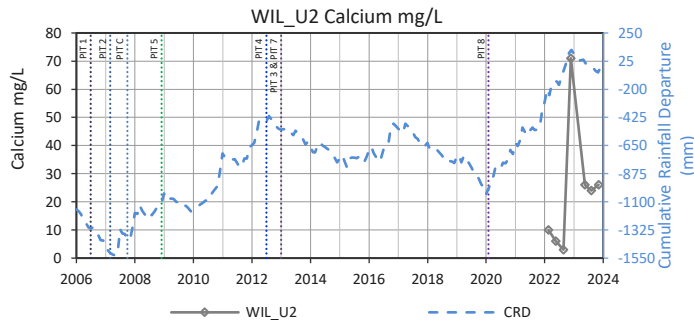
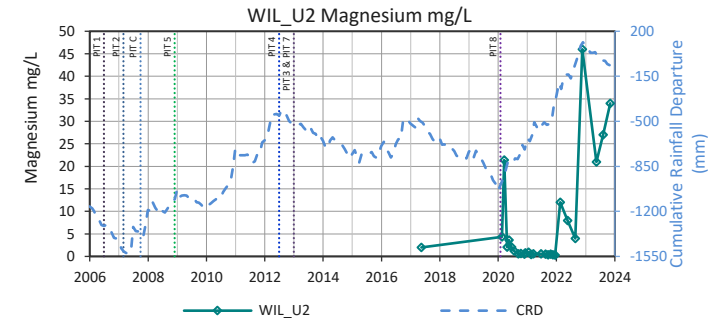
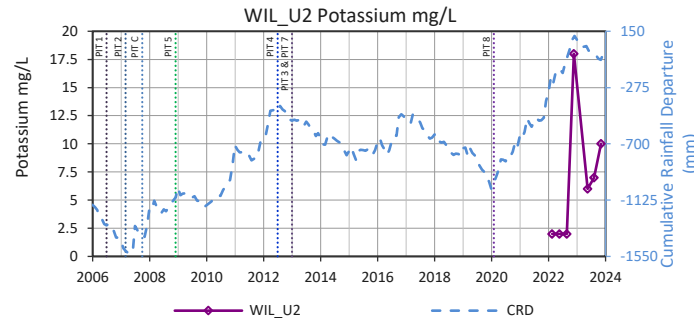
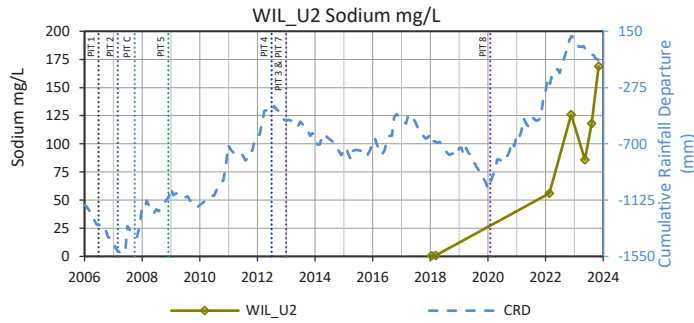
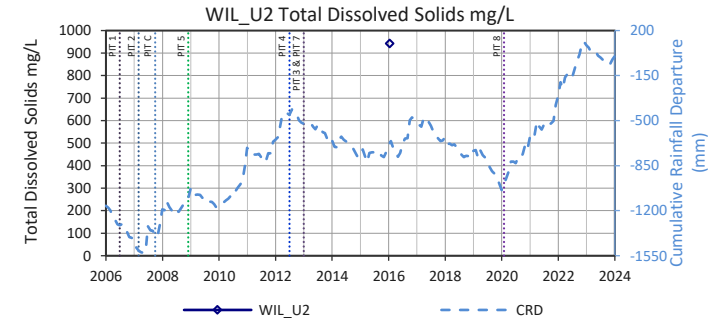
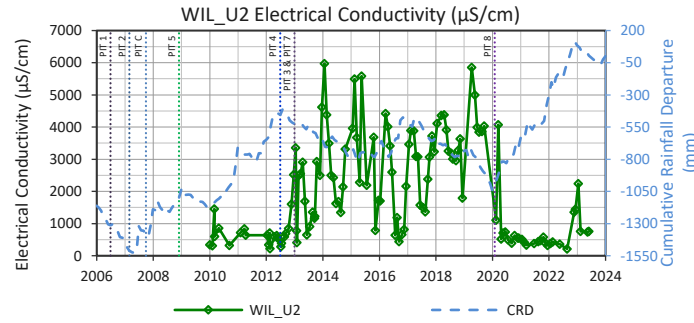
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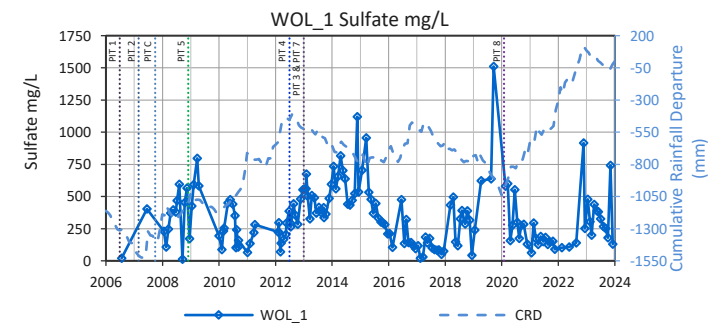
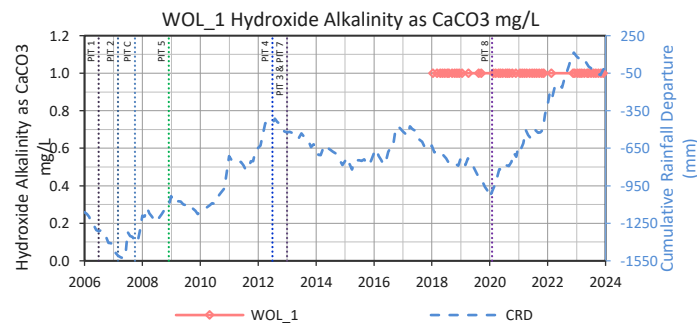
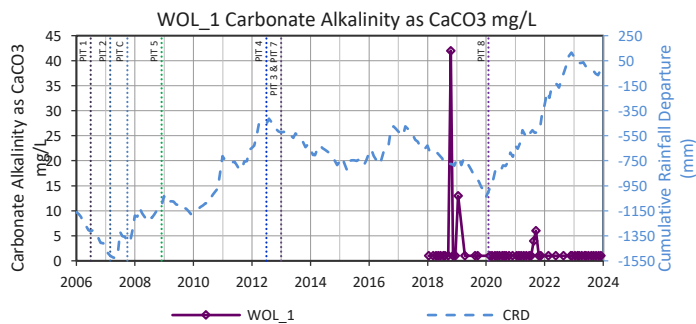
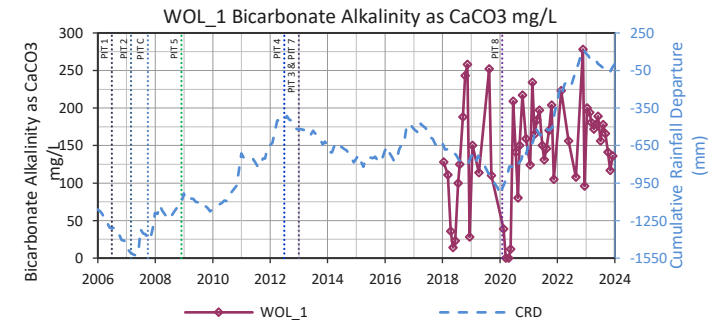
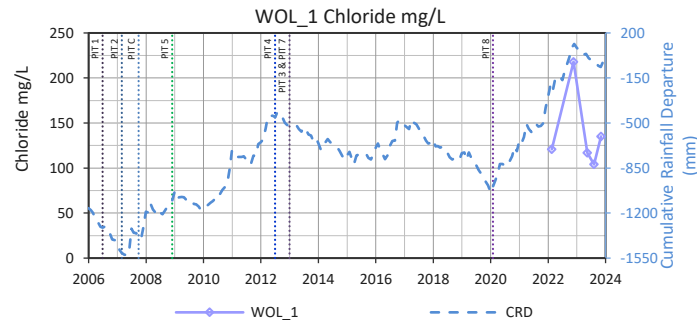
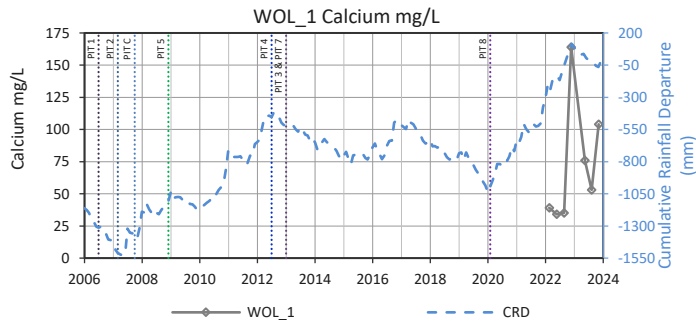
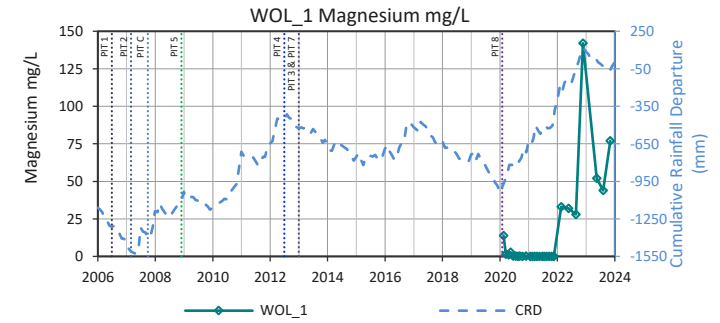
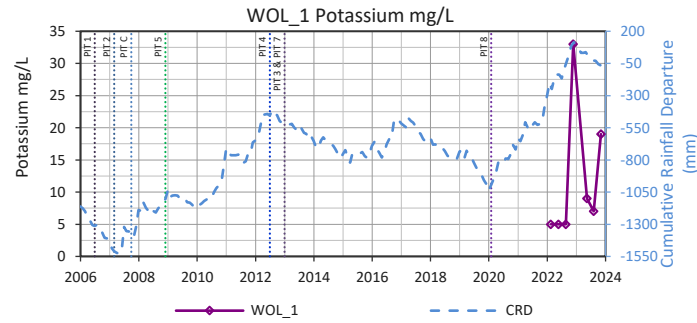
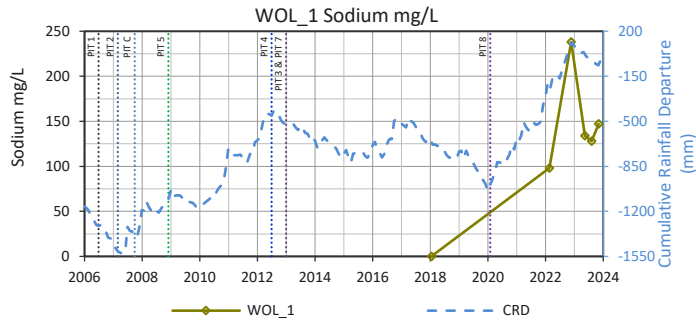
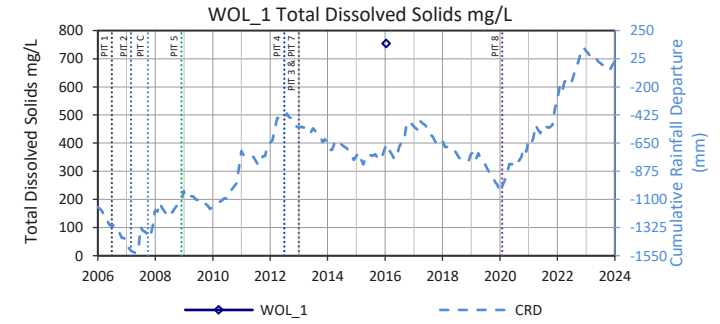
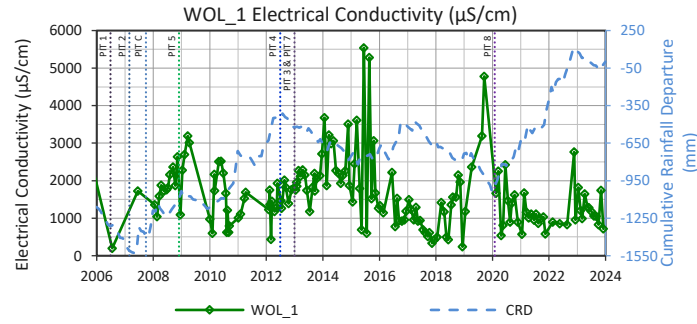
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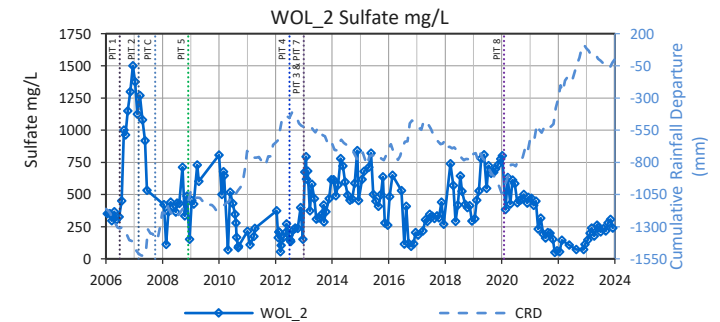
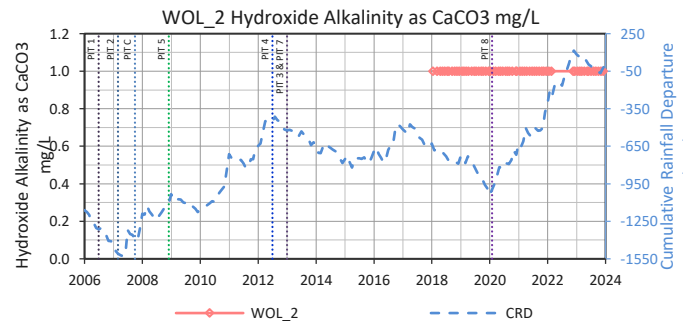
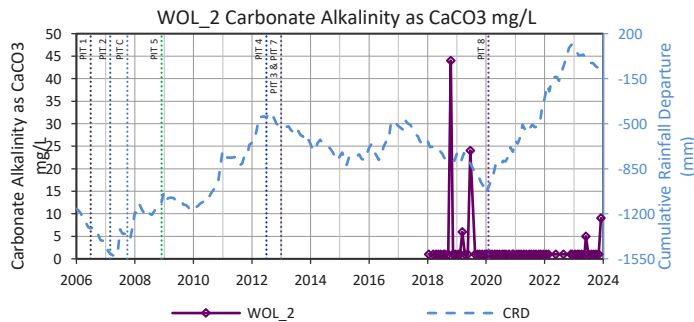
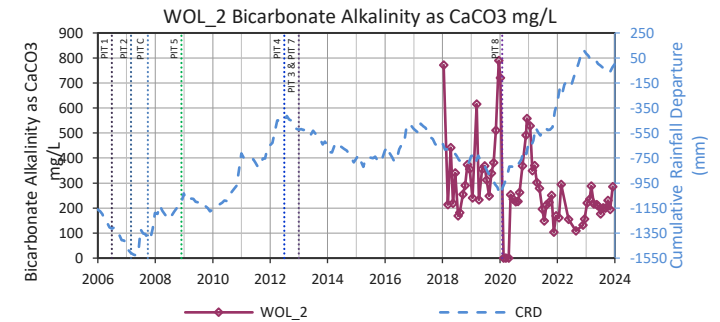
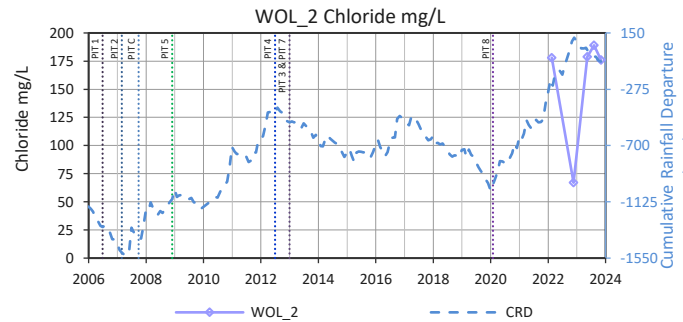
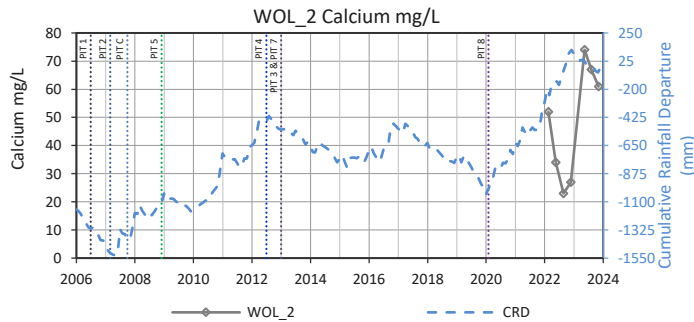
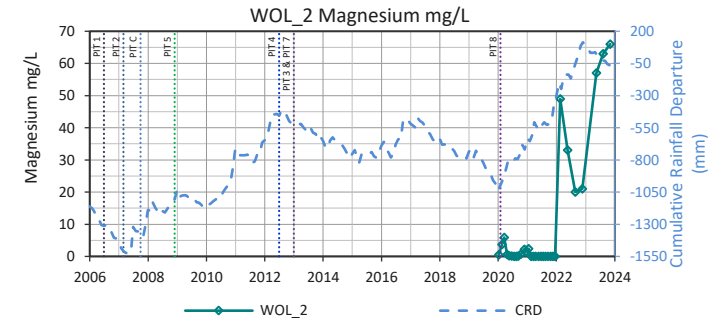
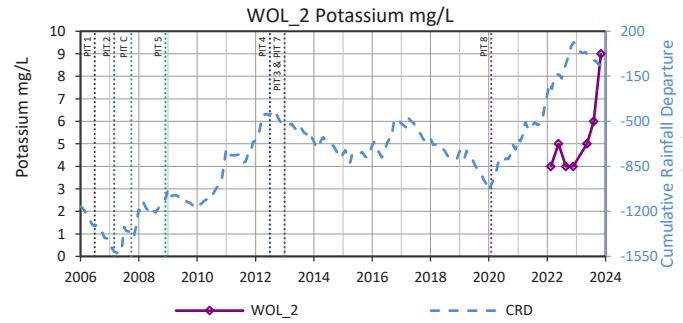
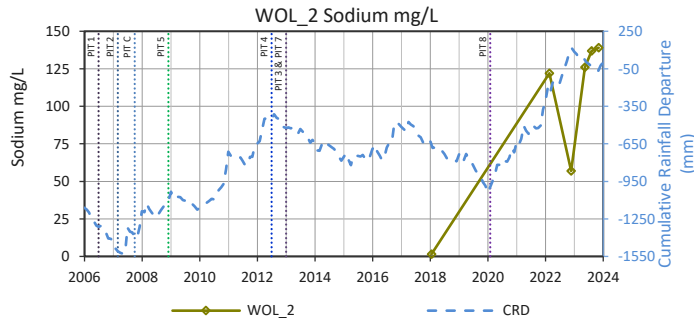
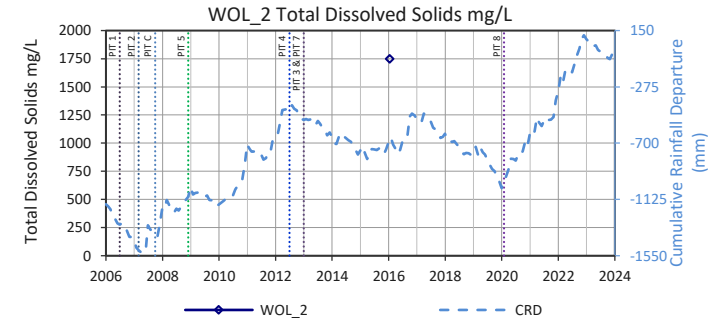
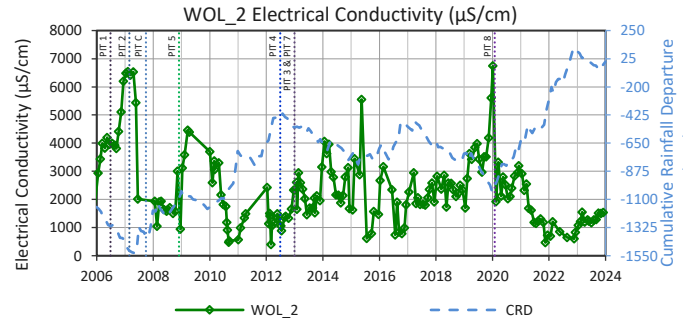
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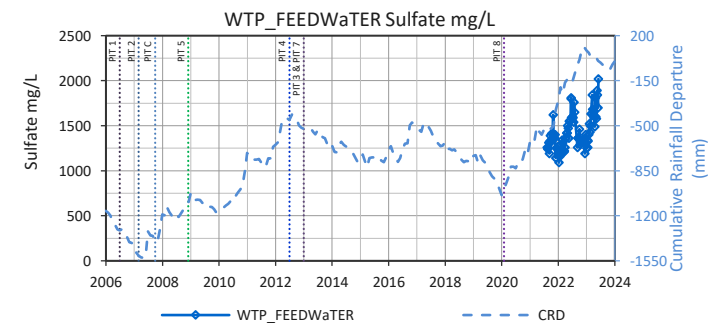
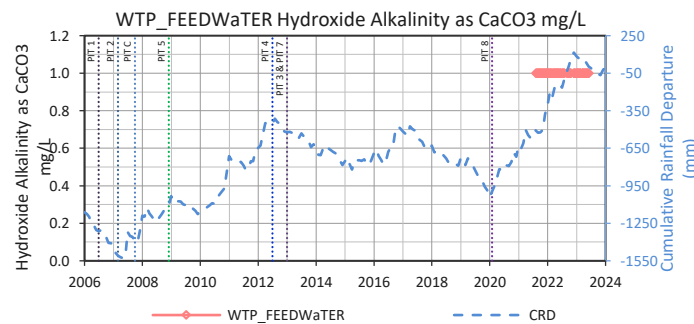
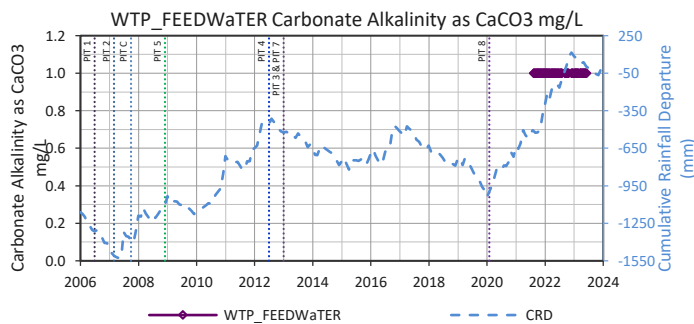
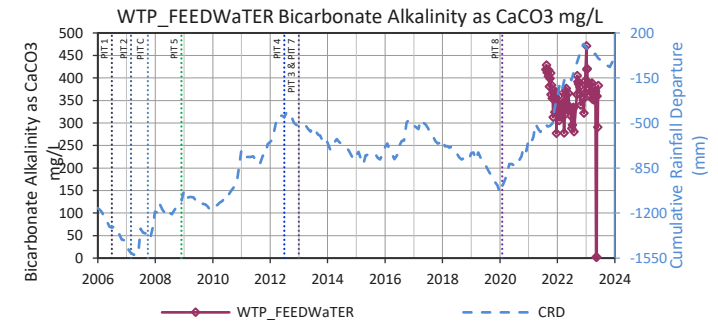
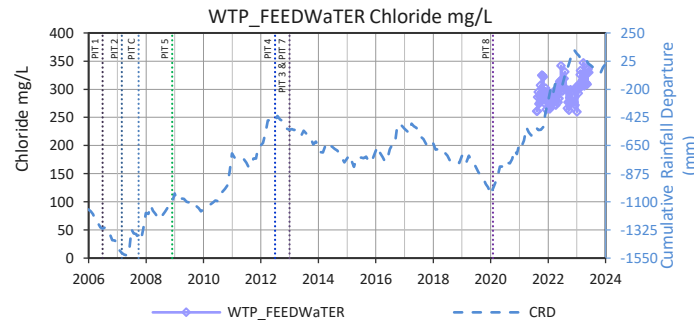
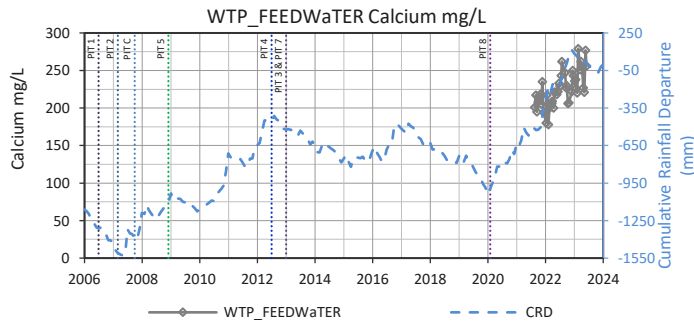
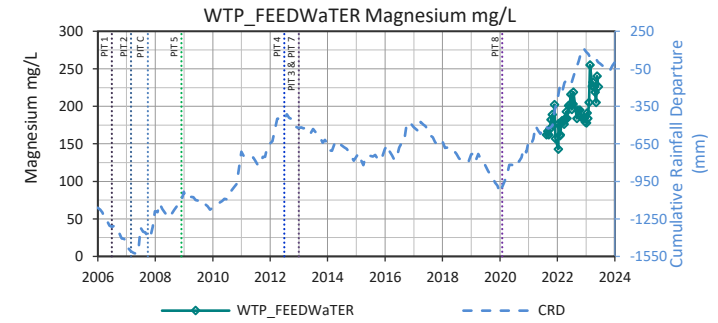
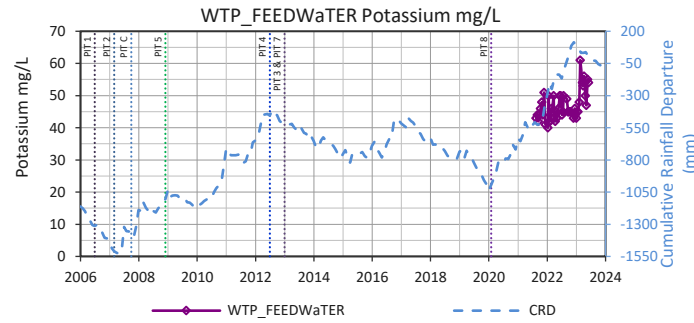
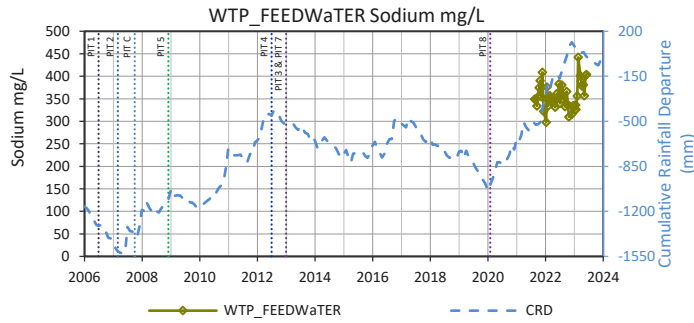
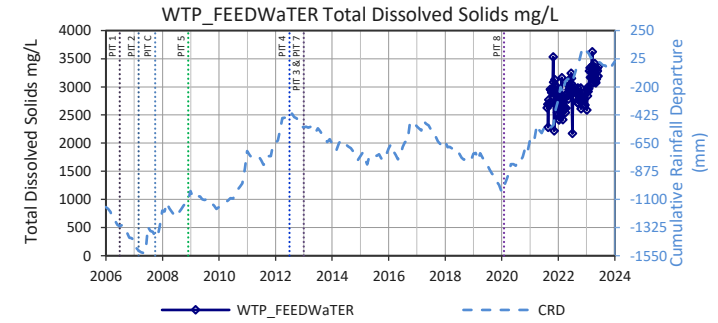
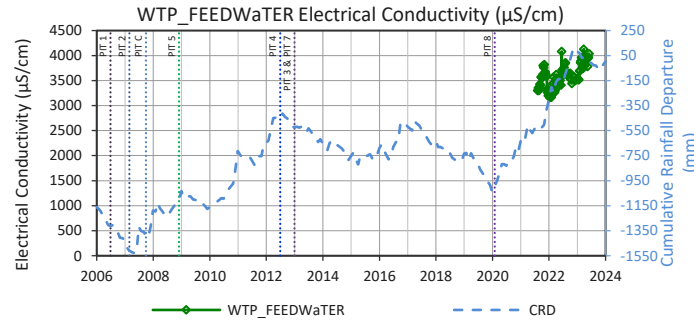
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WTP_FEEDWaTER

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Appendix D Model Performance

Annual Review – Wilpinjong Coal Mine

2023 Groundwater Compliance

Wilpinjong Coal Mine

SLR Project No.: 665.v10014.02411

28 March 2024



Figure D 1: GWa1 Model Performance

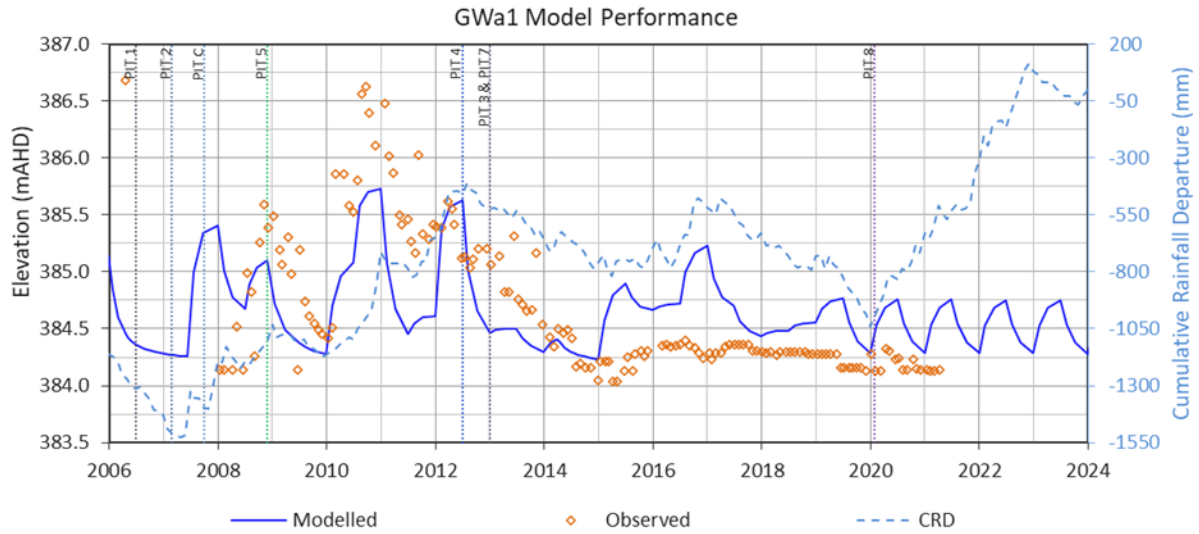


Figure D 2: GWa2 Model Performance

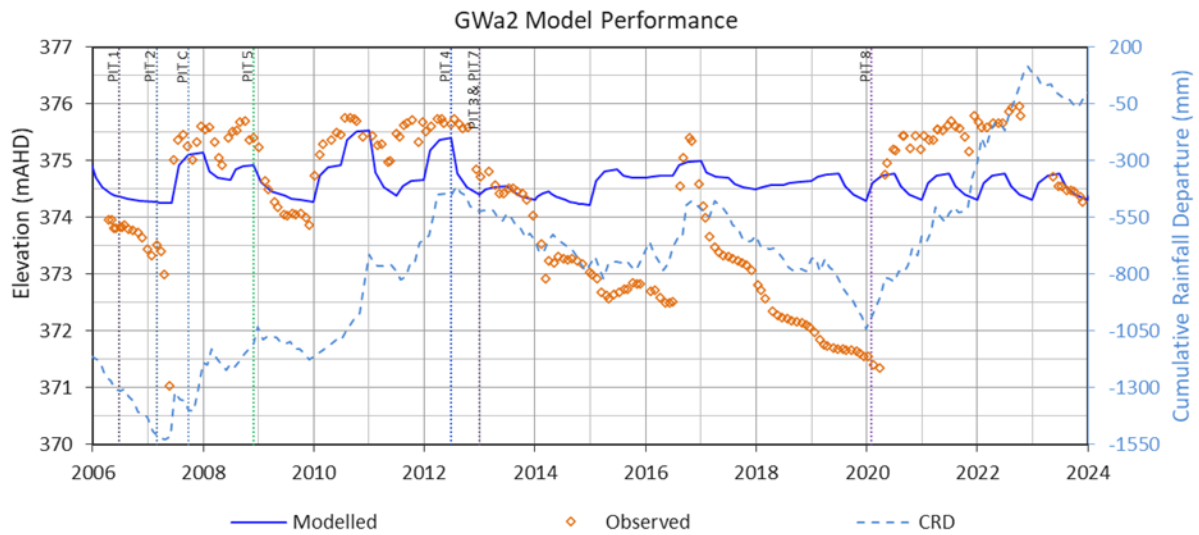


Figure D 3: GWa3 Model Performance

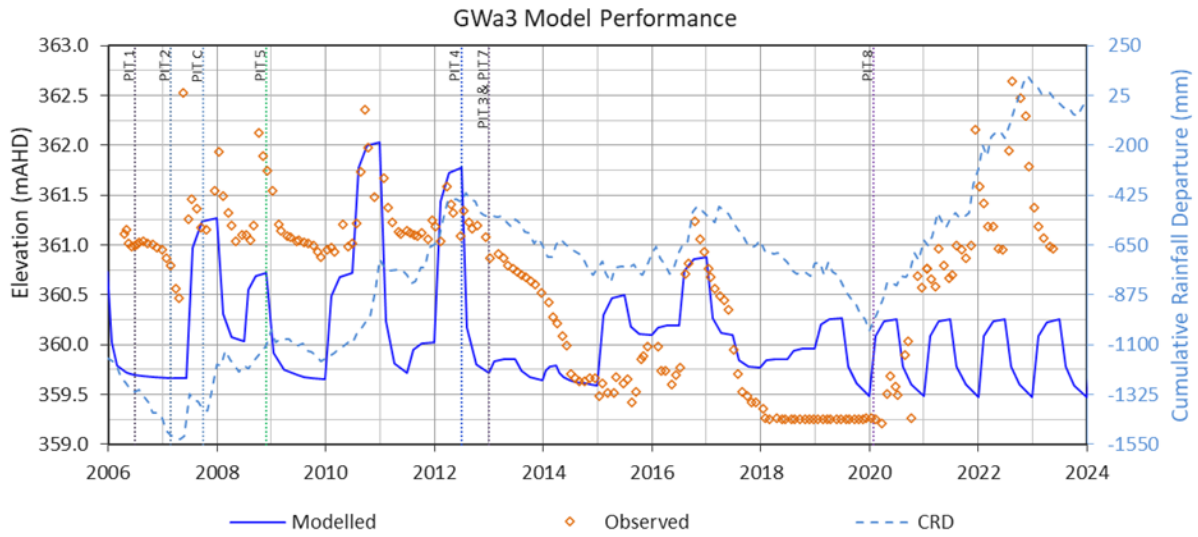


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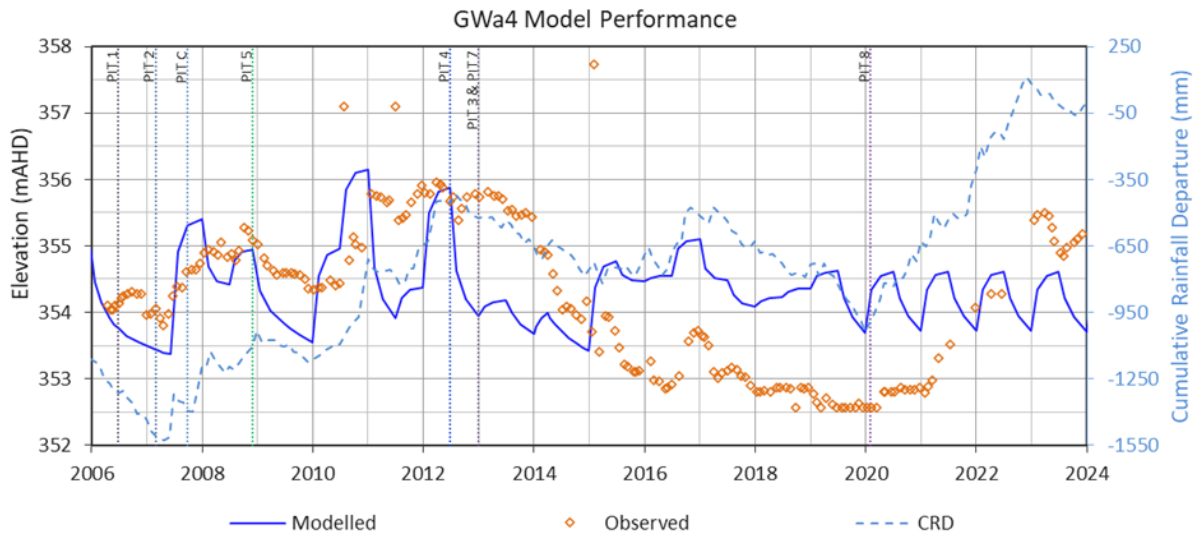


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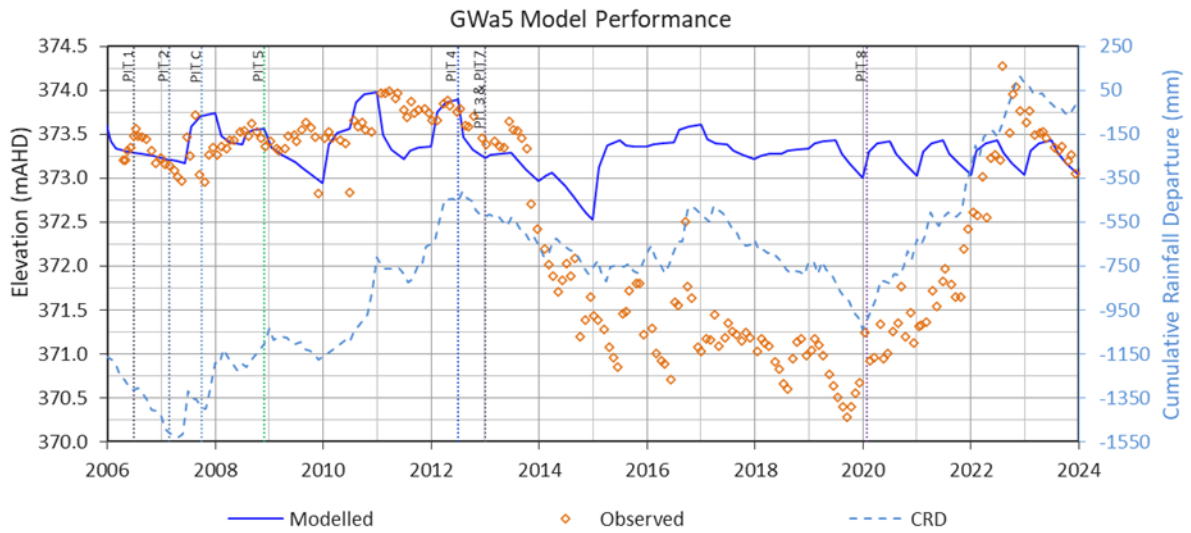


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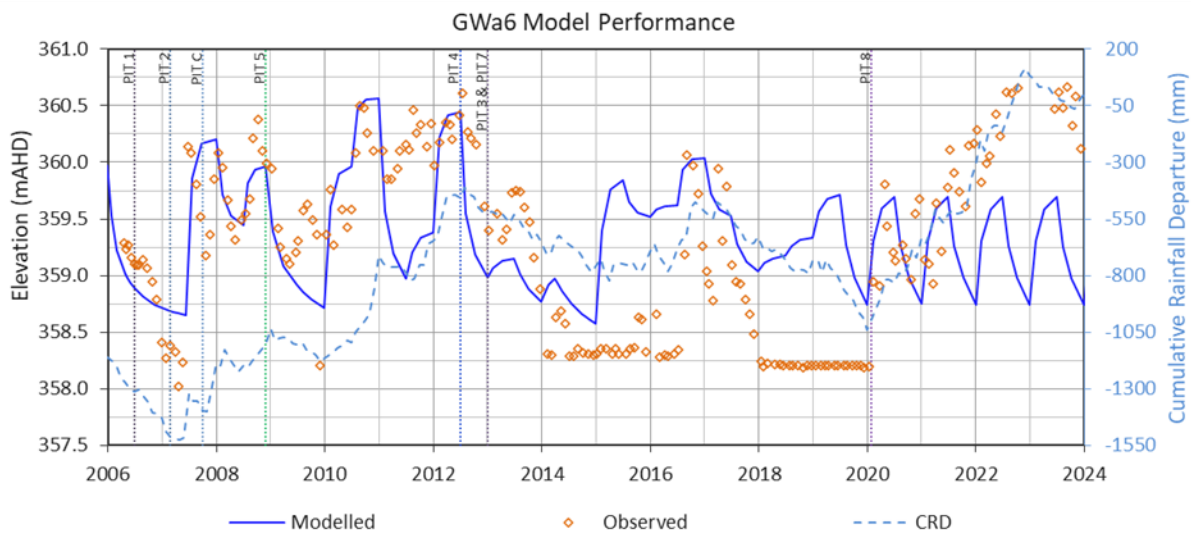


Figure D 7: GWa12 Model Performance

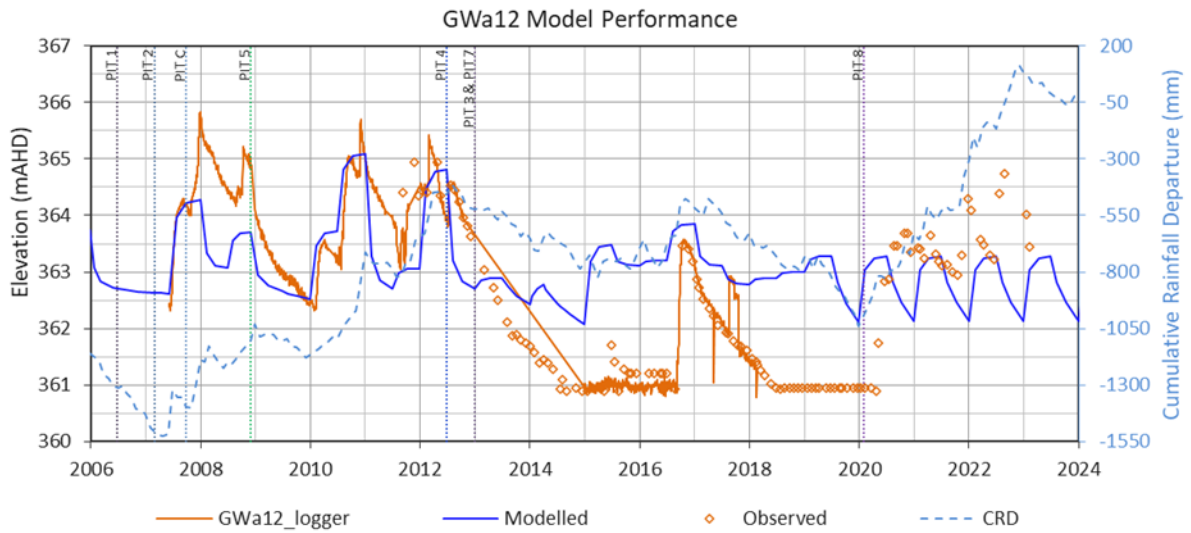


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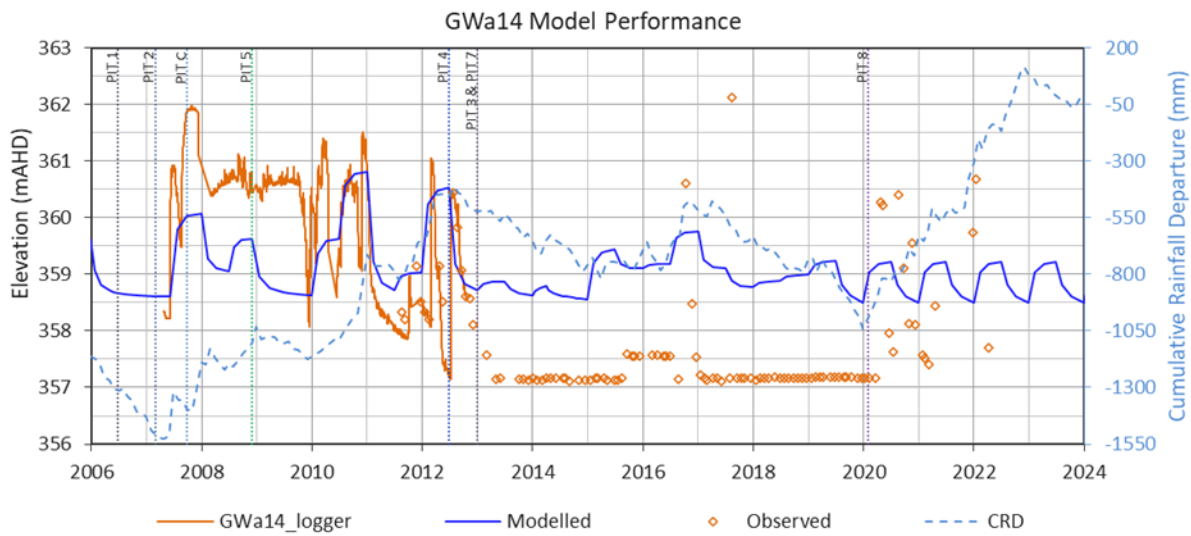


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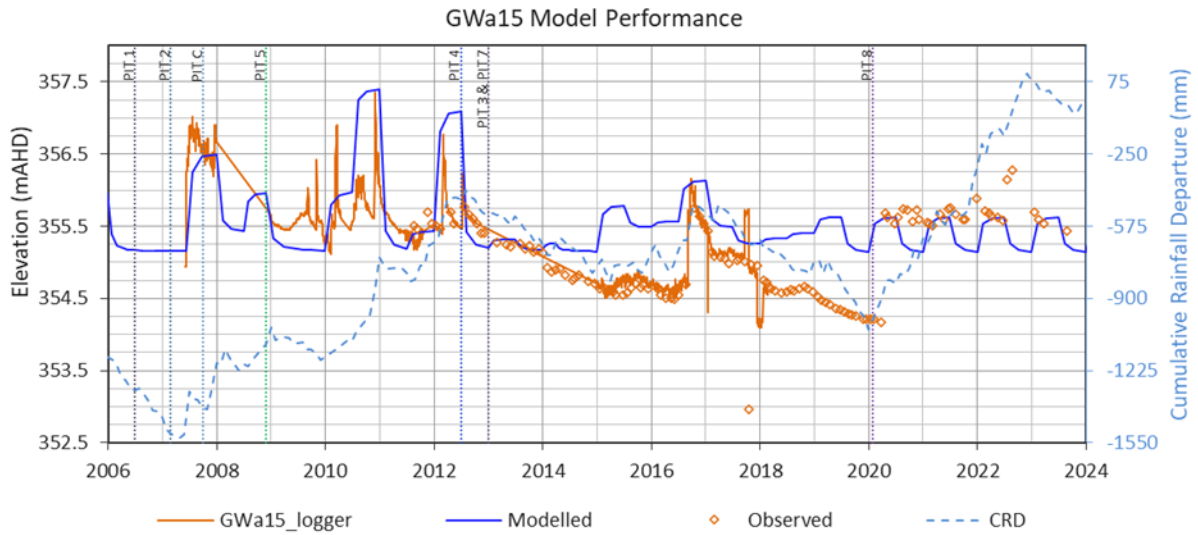


Figure D 10: GWc1 Model Performance

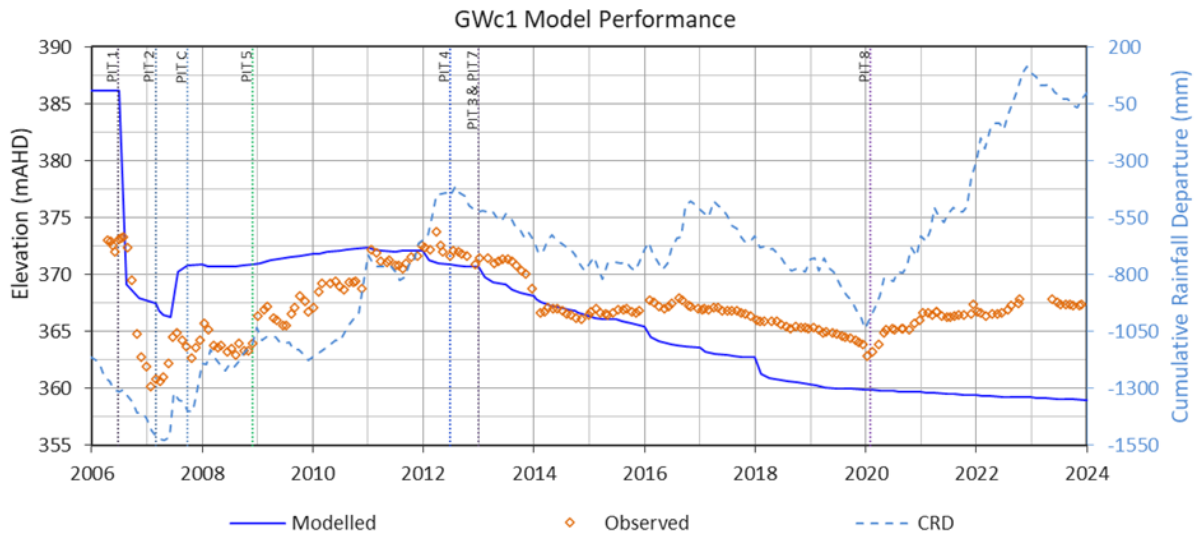


Figure D 11: GWc2 Model Performance

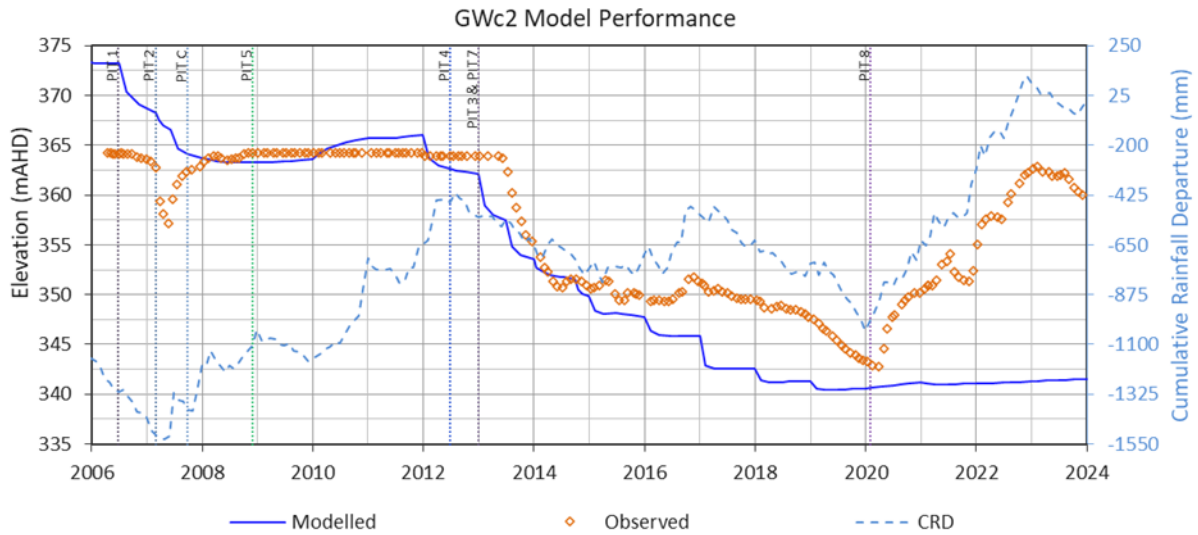


Figure D 12: GWc3 Model Performance

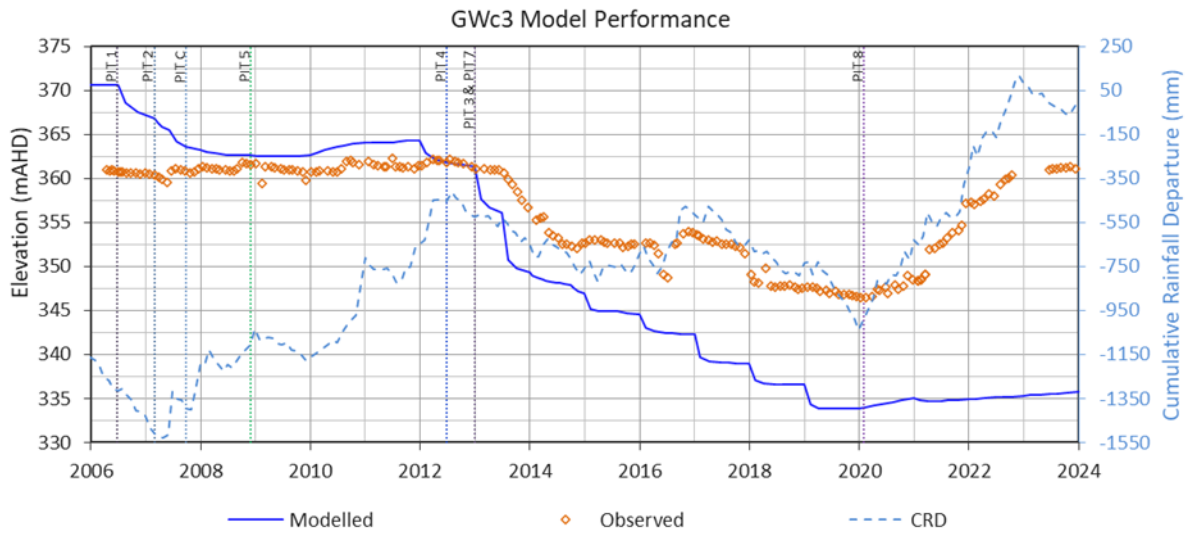


Figure D 13: GWc11 Model Performance

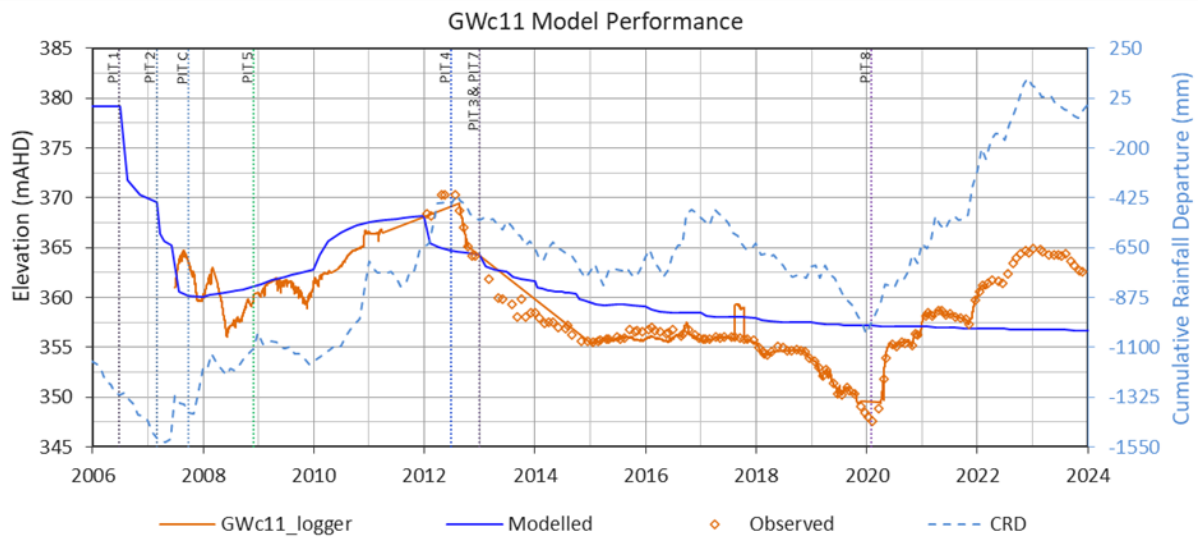


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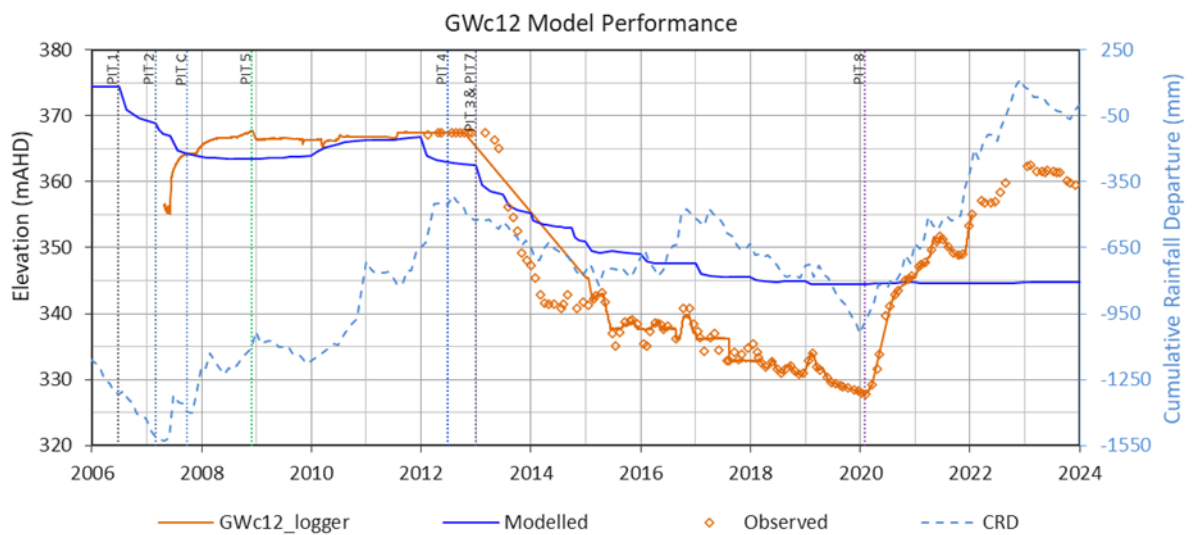


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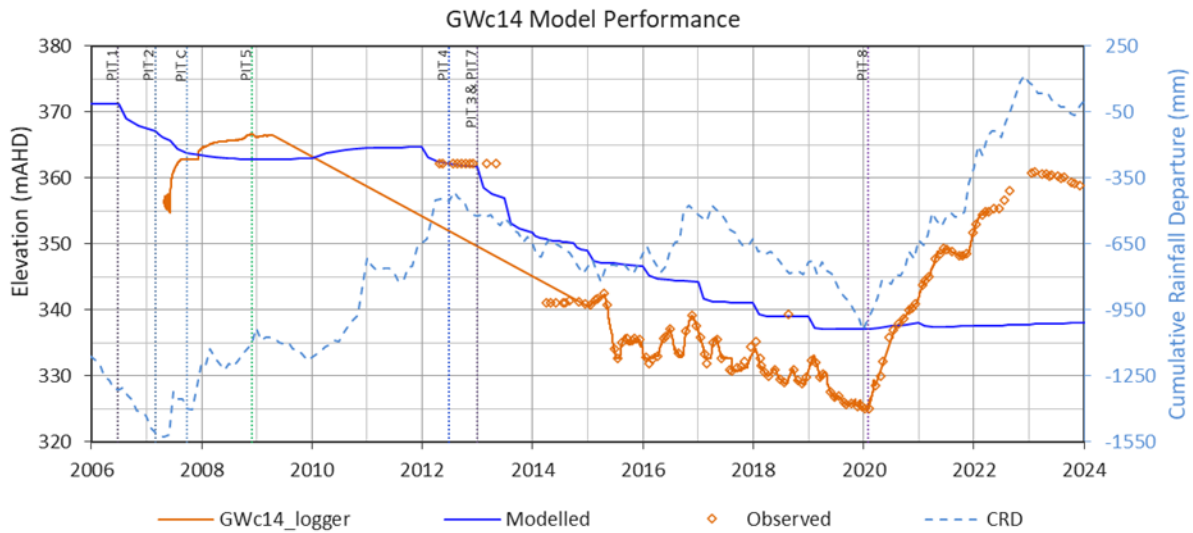


Figure D 16: GWc15 Model Performance

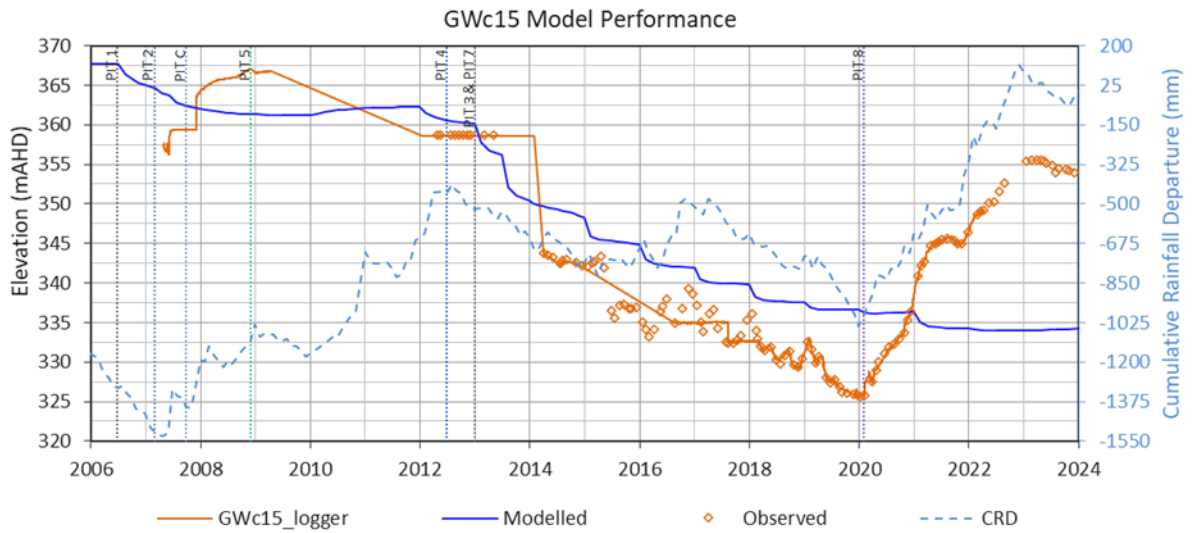


Figure D 17: GWc22 Model Performance

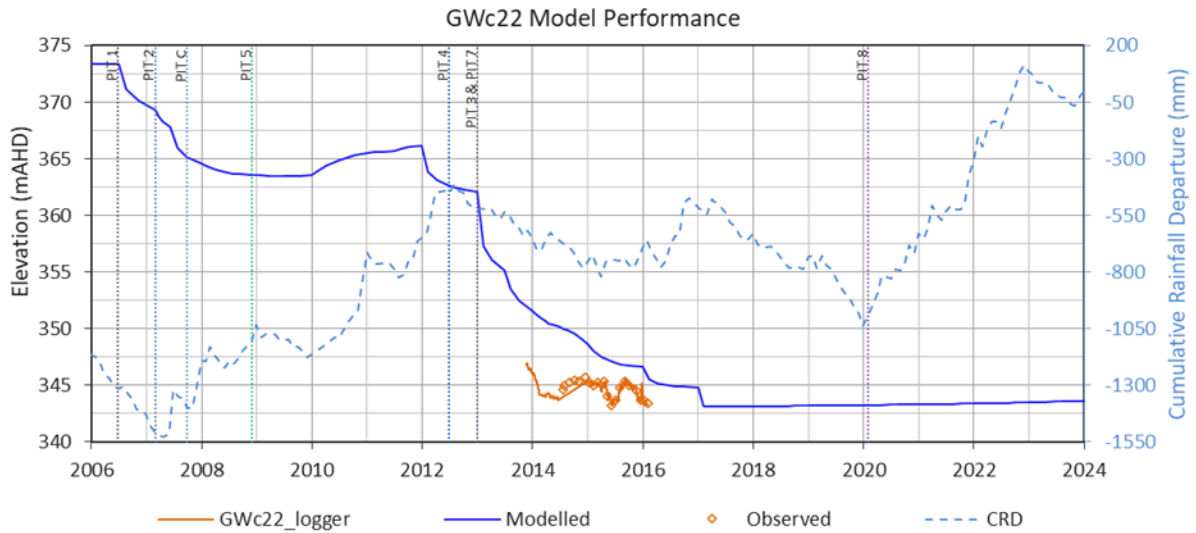


Figure D 18: GWc28 Model Performance

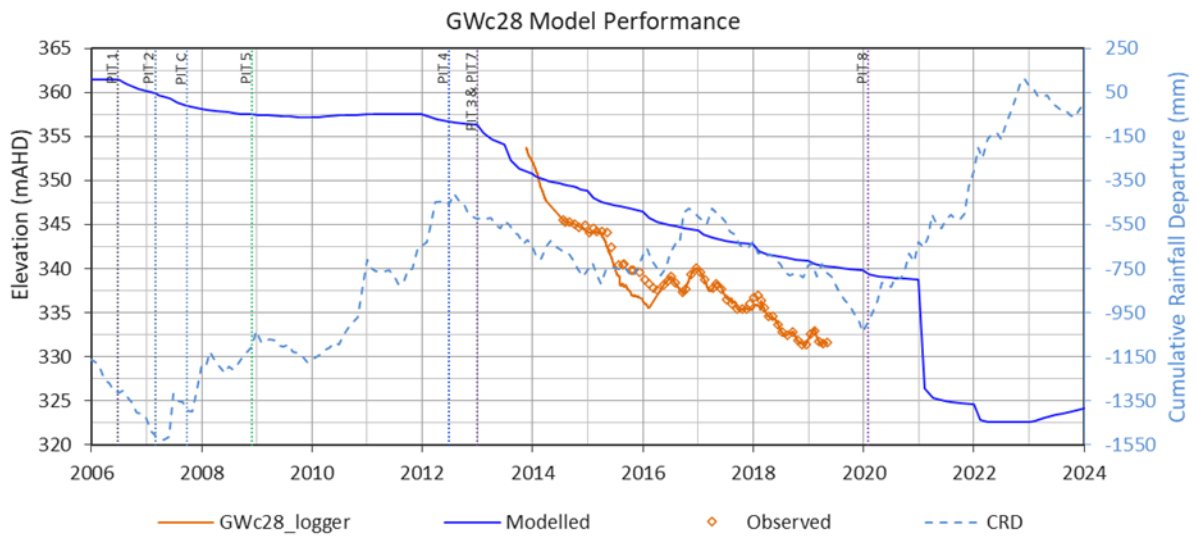
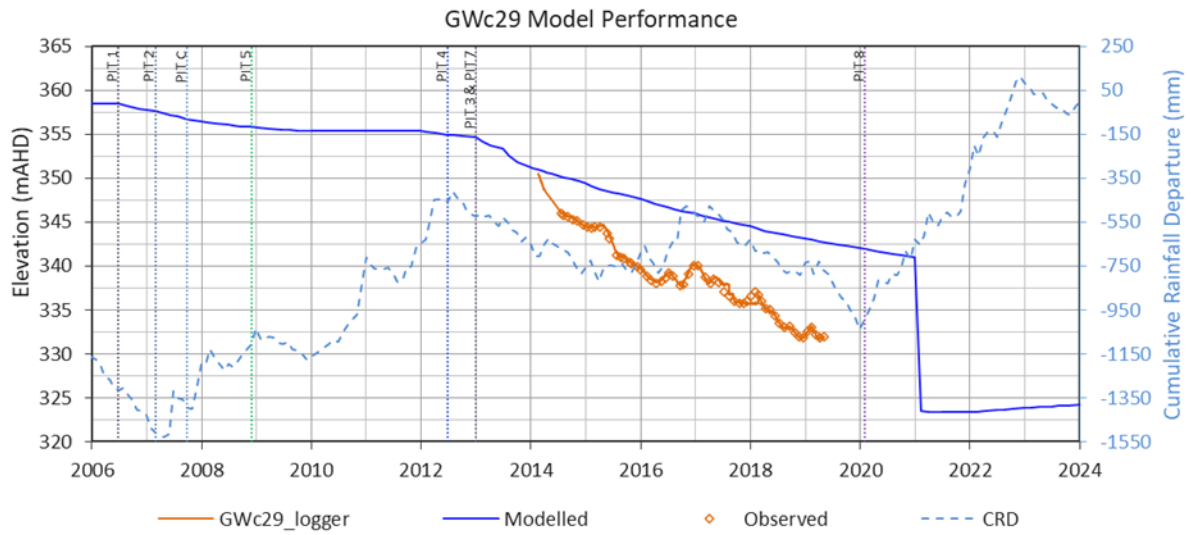
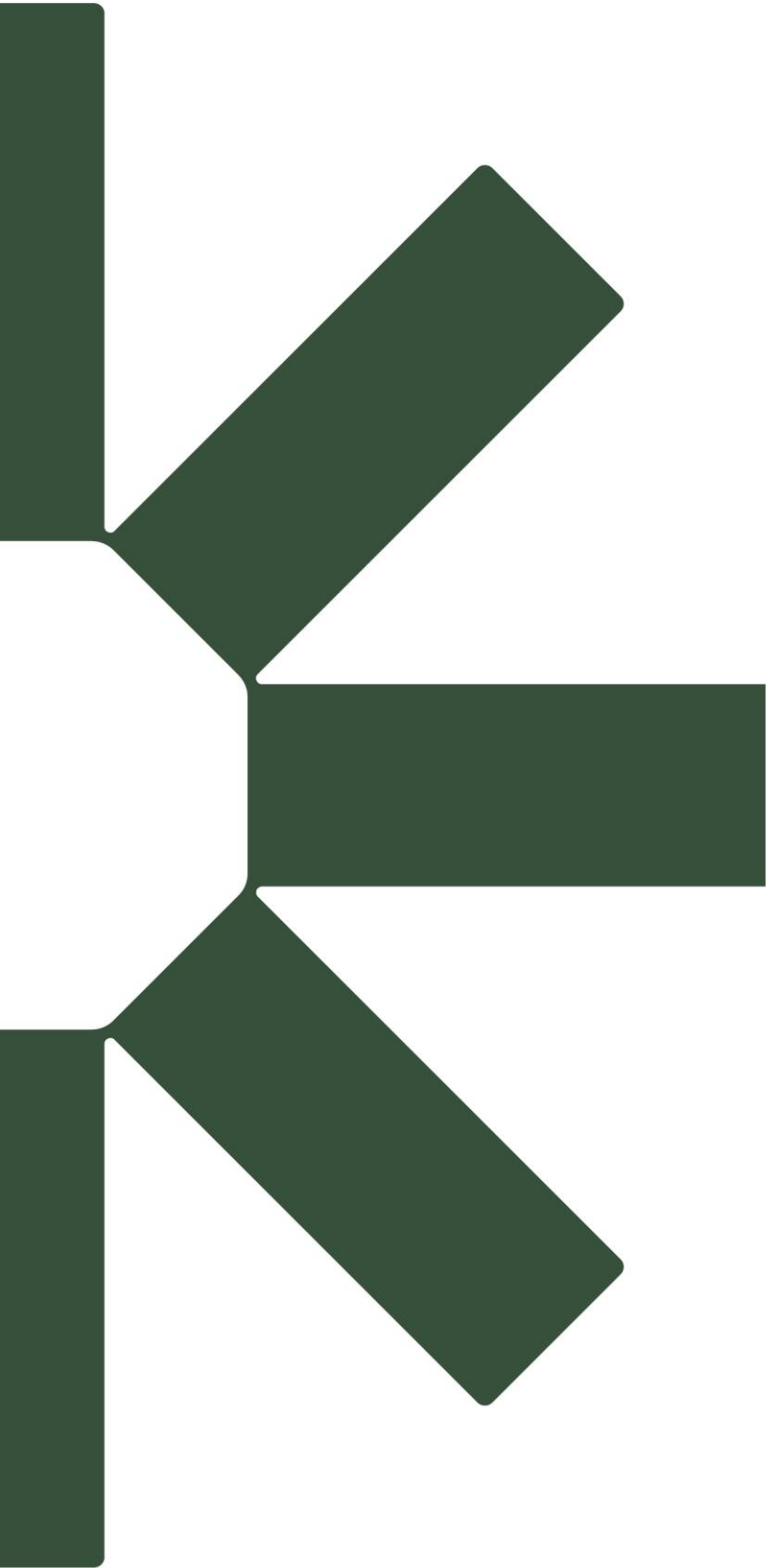


Figure D 19: GWc29 Model Performance





Making Sustainability Happen



EC Trigger Investigation of GWc1, GWc3, GWc4 and GWc5

Wilpinjong Coal Mine

Wilpinjong

1434 Ulan Wollar Road
Wilpinjong
NSW, 2850

Prepared by:

SLR Consulting Australia

Tenancy 202 Submarine School, Sub Base
Platypus, 120 High Street, North Sydney NSW
2060, Australia

SLR Project No.: 665.10014.01515

15 December 2023

Revision: 3

Revision Record

Revision	Date	Prepared By	Checked By	Authorised By
1	12 October 2023	Thea McIntyre	David Western	David Western
2	6 December 2023	Thea McIntyre & Adam Skorulis	David Western	David Western
3	15 December 2023	Thea McIntyre & Adam Skorulis	David Western	David Western

Basis of Report

This report has been prepared by SLR Consulting Australia (SLR) with all reasonable skill, care and diligence, and taking account of the timescale and resources allocated to it by agreement with Wilpinjong (the Client). Information reported herein is based on the interpretation of data collected, which has been accepted in good faith as being accurate and valid.

This report is for the exclusive use of the Client. No warranties or guarantees are expressed or should be inferred by any third parties. This report may not be relied upon by other parties without written consent from SLR.

SLR disclaims any responsibility to the Client and others in respect of any matters outside the agreed scope of the work.



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Appendices

Appendix A	Time series of groundwater levels, ph and Electrical conductivity
Appendix B	Piper plots
Appendix C	Dissolved Metals Information



1.0 Introduction

SLR Consulting Australia Pty Ltd (SLR) has been commissioned by Wilpinjong Coal Pty Ltd (WCPL) to investigate groundwater recharge mechanisms and drivers for changing water quality and Electrical Conductivity (EC) trigger exceedances at four coal measures monitoring bores.

This report presents a review of relevant existing information and findings on possible drivers for the observed EC trigger exceedances. Recommendations on further work to improve the confidence of these findings, as well as updates to the EC trigger levels are provided.

1.1 Project background

Wilpinjong Coal Mine (WCM) is owned and operated by Wilpinjong Coal Pty Limited (WCPL), a wholly owned subsidiary of Peabody Energy Australia Pty Ltd (Peabody). WCM is an existing open cut coal mining operation situated approximately 40 kilometres (km) north-east of Mudgee, near the Village of Wollar, in central New South Wales (NSW). WCM produces thermal coal products which are transported by rail to domestic customers for use in electricity generation and to port for export.

Coal measures monitoring bores GWc1, GWc3, GWc4 and GWc5 are monitored on a monthly basis as part of the Groundwater Management Plan (GWMP) (Peabody 2017). In line with the groundwater response plan for trigger exceedances outlined in the GWMP, further investigation is required at these bores, as recommended in the 2021 and 2022 Annual Review reports, due to ongoing or historical exceedances of EC trigger values.

1.2 Groundwater Management Plan EC compliance

Water quality triggers were established in the GWMP for EC, amongst other parameters, based on the water quality records for the baseline period between 2004 and 2009. As defined in the ANZECC and ARMCANZ (2000) guidelines, the trigger levels for EC were defined based on the 80th percentile of available baseline data for each bore.

The EC trigger values established in the 2017 GWMP are:

- GWc1 = 2,844 $\mu\text{S/cm}$
- GWc3 = 3,304 $\mu\text{S/cm}$
- GWc4 = 2,412 $\mu\text{S/cm}$
- GWc5 = 4,798 $\mu\text{S/cm}$

The GWMP also establishes a Trigger Action Response Plan (TARP) that should be followed if a trigger value is exceeded on three consecutive monthly monitoring events.

The GWMP stipulates that Peabody should “conduct a preliminary investigation with a review of the monitoring results in conjunction with site activities being undertaken at the time, baseline groundwater monitoring results, groundwater results at nearby locations, the prevailing and preceding meteorological and streamflow conditions and changes to the land-use/activities being undertaken in the contributing hydrogeological regime, including mining activities”.



The investigation undertaken to complete this report is considered the required 'preliminary investigation'.

The EC observations exceeding the trigger values at each bore are:

- GWc1 – periodic exceedances of the EC trigger since observations commenced in 2006 (2008/9, 2013, 2015/16, 2017-19, 2021/22).
- GWc3 – EC observations above the trigger level from 2013-22. Current observations near the trigger level.
- GWc4 – Stable EC observations near and above the trigger level since monitoring commenced in 2006.
- GWc5 – EC observations above the trigger level since 2010 have been relatively stable since 2013.

1.3 Scope of this report

The objective of this report is to investigate groundwater recharge mechanisms and drivers for changing water quality at GWc1, GWc3, GWc4 and GWc5 and EC trigger exceedances.

To achieve this objective, the following scope of work is presented in this report:

- Review and analysis of available information (**Section 2.0**) including:
 - Bore construction details.
 - Available groundwater quality data and preparation of graphs including:
 - graphs and maps to display up-to-date water level and quality trends;
 - water-type analysis using Piper diagrams; and
 - review of water quality and hydraulic gradients from potential water sources that may be driving observed changes in water quality.
- Summary and recommendations (included in **Section 3.0**)
 - Commentary on the potential mechanisms that could be causing the high EC and change in groundwater quality.
 - Identification of any information gaps or uncertainties and recommendations to address them.
 - Recommendations on the update of trigger levels where no effect attributable to Wilpinjong operations can be identified.



2.0 Review of existing information

This section includes a review of the available information. This assessment is limited to GWc1, GWc3, GWc4 and GWc5. However, to understand the relationship between the coal measures and the alluvium at each location, information from the nearest alluvium bore (GWA2, GWA6, GWA7, and GWA8) is also assessed. In addition, where relevant, information from other surrounding coal measures bores and mining operation features has been included.

A summary of climate conditions and mining operations is also included.

2.1 Information available

The following data was reviewed in preparation of this report:

- Annual Review 2022, Groundwater Compliance Report (SLR 2023)
- Annual Review 2021, Groundwater Compliance Report (SLR 2022)
- Wilpinjong Coal Groundwater Management Plan, August 2017, WI-ENV-MNP-0041
- Updated water quality database sent by WCPL, updated to May 2023
- Pit dam water elevation monitoring data sent by WCPL up to July 2023

2.2 Climate

Monthly rainfall at WCM is presented on **Figure 1** along with the cumulative rainfall departure (CRD). The monthly rainfall series is coloured based on whether a month is above (blue) or below (brown) the long-term average for that month.

The CRD shows trends in actual rainfall over time relative to the long-term average and provides a historical record of relatively wet and dry periods. A positive slope in the CRD indicates periods of above average rainfall, while a negative slope indicates periods of below average rainfall. A neutral slope indicates rainfall conditions are equal to average rainfall conditions.

Since commencement of mining, WCM has experienced extended periods of above average rainfall conditions between 2007 and 2012 as well as between 2020 and 2022 as indicated by a sharp upward trend in the CRD. This contrasts with the declining CRD trend preceding these periods (**Figure 1**).



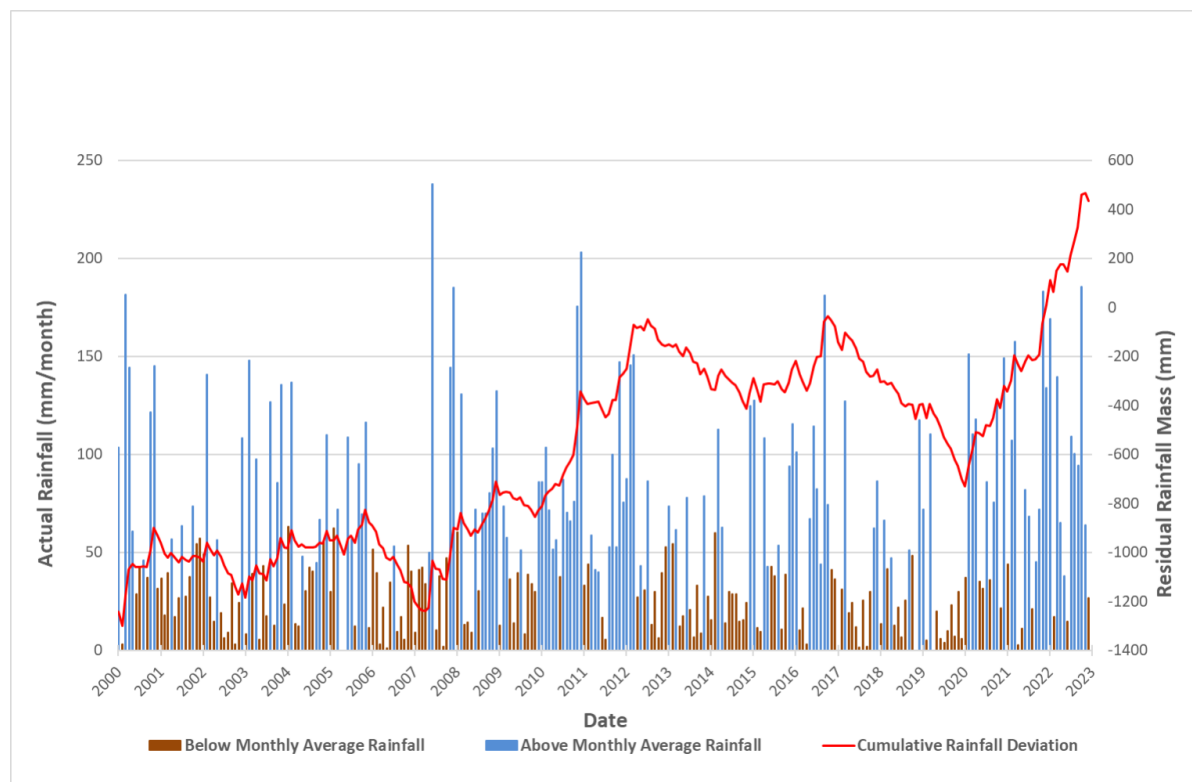


Figure 1 Monthly rainfall and CRD

Table 1 highlights the ongoing wet conditions experienced from 2020 to 2022, which was preceded by drought conditions from 2017 to the end of 2019. The annual total rainfall recorded in 2022 was 989 mm, 65% higher than the long-term average of 593.8 mm.

Variation in rainfall (at both annual and monthly time-scales) can be a key influence on surface water and shallow groundwater conditions, and deeper groundwater conditions where there is connectivity, and can influence water chemistry. Values below 20% of the average and more than 80% of the long-term average have been highlighted in **Table 1**.

Table 1 Long Term Average Rainfall and Recent Rainfall (Monthly and Annual)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Ave	67	63	55	39	37	44	43	41	42	52	57	61	594
2016	101	10	21	3	67	114	82	44	181	74	41	36	776
2017	13*	31	127	19	24	12	1	26	2	30	63	86	421
2018	13	66	41	47	13	22	7	26	51	49	44	118	496
2019	72	5	111	0	20	6	4	10	23	7	30	6	294
2020	37	151	110	118	35	31	86	36	76	128	22	149	979
2021	44	107	158	3	11	82	68	21	45	72	183	134	927
2022	169	17	140	65	38	15	109	101	95	126	85	31	989
2023	49	28.5	55	43.5	4	30.5	-	-	-	-	-	-	-

* No rainfall recorded at Wollar (Barrigan St). Rainfall from Bylong (Glenview) – 062107 used.



2.3 WCM Operation

WCM has been in operation since 2006 and includes 8 open pits. Open cut mining targets the Ulan Coal Seam and the underlying Moolarben Coal Member (Peabody 2022).

WCM operates a number of surface water storages (pit dams) and tailings dams around the site including Pit Dam 2, located 900 m east (downstream on Wilpinjong Creek) from GWc1. Water has also accumulated in partially backfilled open cuts around the site (Pit 3&4) following the period of above average rainfall from 2020 to 2022. Pit 3&4 voids are located within 300 m of GWc3.

WCM has been monitoring water elevations in the pit dams since 2016. The elevation of the pit dams has been plotted on the hydrographs of the nearest coal bore in **Appendix A**.

A reverse osmosis (RO) plant has been installed to allow on-site treatment of mine water and subsequent discharge to Wilpinjong Creek in accordance with an Environment Protection Licence (EPL).







Groundwater has been extracted from dewatering bores ('DB' series bores) and water supply bores ('GWS' series bores) at WCM. Approximately 15 ML of groundwater was extracted from the 'DB' series bores over two months in 2006 which were then discontinued as extraction bores. Groundwater was extracted from the 'GWS' series bores in 2007 (approximately 98 ML over 3 months) and then again in 2019 (approximately 114 ML over 12 months). Compared to the predicted pit water inflows estimated from the groundwater model (1,300 ML/year in 2013-14 reducing to a minimum of 500 ML/year in 2024-25), the volumes pumped from the 'DB' and 'GWS' series bores are small (SLR 2020) and hence, not considered further in this assessment.

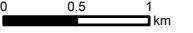
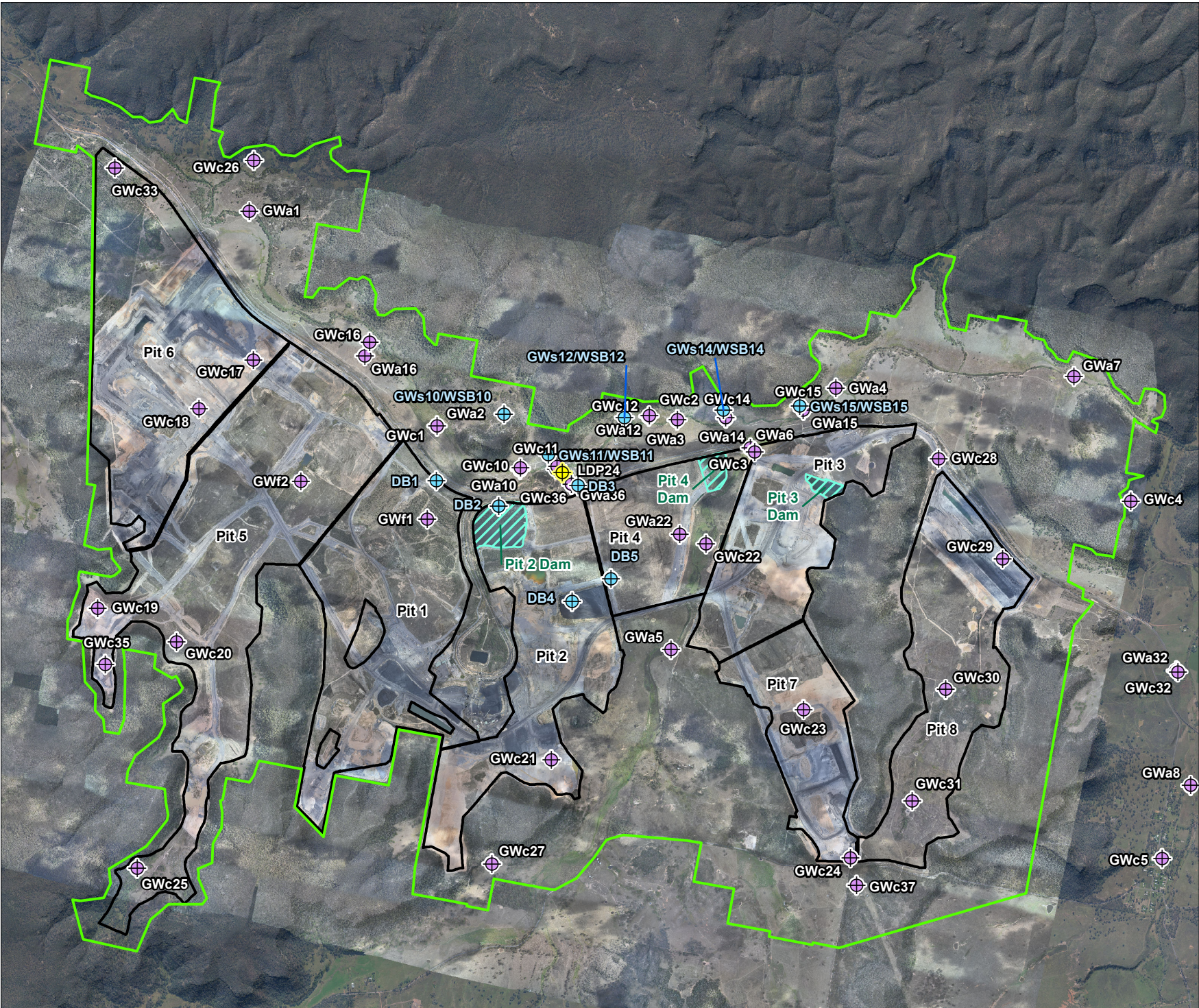
The location of the open pits, pit dams, dewatering and water supply bores and the discharge point of the RO plant (EPL 12425) is shown in **Figure 2**.



Bore Locations

FIGURE 2

-  Monitoring Bore
-  Licensed Discharge Point
-  Dewatering and Water Supply Bore
-  Water Pit Dam
-  WEP DA Boundary
-  Approved Pit Extent



Coordinate System:	GDA 1994 MGA Zone 55
Scale:	1:52,000 at A4
Project Number:	665.10014
Date:	10-Oct-2023
Drawn by:	JH



2.4 Geological Setting

The local surface and structural geology at WCM has been summarised from the HydroSimulations (2015) Environmental Impact Statement (EIS) for the Wilpinjong Extension Project (WEP) and is presented on **Figure 3** (HydroSimulations, 2015).

The key geological features of the WCM area are:

- Elevated sandstone plateaus of the Narrabeen Group.
- Permian Illawarra Coal Measures (ICM), the dominant outcropping lithology over the mining lease, which includes:
 - the Moolarben Coal Member, which is a secondary economic coal resource;
 - Ulan Coal Seam (the primary economic coal resource);
 - Marrangaroo Sandstone and underlying Nile Sub-Group; and
 - Shoalhaven Group and older units acting as the 'basement'.
- Recent, Quaternary-aged alluvium/colluvium along Wilpinjong Creek and alluvium along Cumbo Creek and Wollar Creek. Alluvial bodies are quite narrow (laterally) near to WCM.
- Unconsolidated deposits in the western portions of the WCM. Near to and within the Moolarben Coal Complex this represents a coarse-grained lithology almost 60 m deep.

Major structural features associated with a number of hingelines and faults, as shown on the Western Coalfield Map (Yoo, 1998). Faults have been observed and mapped by WCPL, such as that in Pit 3. The potential influence of these structures on groundwater conditions is currently unknown.



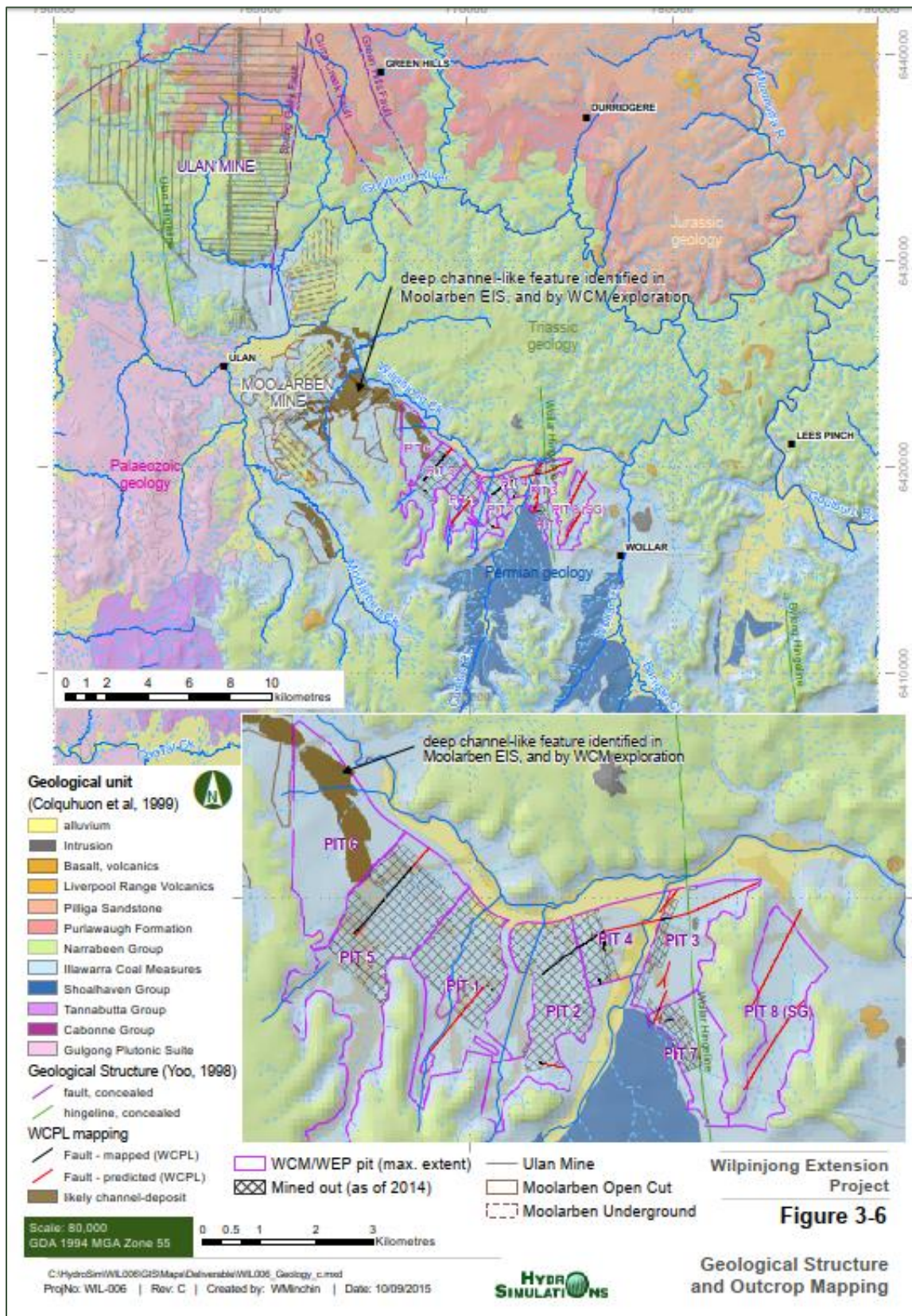


Figure 3 Wilpinjong Surface Geology and Structural setting (HydroSimulations, 2015)



2.5 Hydrogeological Setting

The hydrogeological conceptualisation developed for the Wilpinjong Extension Project (WEP) by Hydrosimulation (Hydrosimulation 2015) is summarised below.

Two groundwater systems are identified:

- A porous rock groundwater system: primarily the Illawarra Coal Measures.
- An alluvial groundwater system: associated primarily with Wilpinjong, Wollar and Cumbo Creeks.

Recharge to the groundwater systems would occur primarily from rainfall and runoff infiltration, and lateral groundwater flow. Perched water tables might be sustained at high elevations due to the presence of occasional mudstone and/or siltstone beds between the sandstone layers.

Alluvium associated with Wilpinjong Creek, Wollar Creek and Cumbo Creek are conceptualised as gaining systems under natural conditions with groundwater discharging upwards from the Permian rocks to the alluvium. This likely results in mixing between rainfall/runoff derived water and the Permian sourced groundwater.

Groundwater quality within and surrounding WCM is highly variable but generally poor. In some areas such as lower Cumbo Creek, the highest groundwater salinity is found in the alluvium and may indicate discharge of Permian water to the alluvium that subsequently undergoes evapo-concentration, further increasing the salinity. In other areas such as watercourses associated with Wilpinjong and Wollar Creeks, higher salinity is found in the coal measures compared to the alluvium, which may be related to dilution in the overlying alluvium by fresher rainfall/ runoff.



2.6 Bore construction detail

Bore construction details (e.g. gravel pack interval, hydraulic seal (bentonite/ grout), presence of well end-cap, etc) or site-specific lithology information is not available for the bores included in this study. Downhole camera surveys (DHC) were carried out in 2021 and 2022 where the depth of the bore and the screened interval was inferred based on camera outputs. Based on the depth of the screened interval, and the geological model of the site, the unit targeted by each bore was also inferred (see **Table 2**). Based on the results of the DHC, it is also noted that there is a 15 m sump at GWc1 and a 5 m sump at GWc3.

Table 2 Construction and geological summary of coal measures bores

Bore ID	Easting ¹	Northing ¹	Ground Elevation (m AHD)	Casing Stickup (m)	Downhole Camera Survey		Inferred Intersected Strata
					Screened interval m + (m AHD)	Total depth (m)	
GWc1	770339	6420335	376.3	0.29	22 – 28 (354.3 - 348.3 –)	43.4	Ulan Seam (D-G Plies)
GWc3	773517	6420073	362.5	0.42	4.8 – 11.1 (357.7 - 351.4)	16.3	Turill Seam/ Moolarben Seam of
GWc4	212468	6419295	362.6	0.37	66 - 72 (296.9 - 290.6)	77.5	² Ulan Seam basal plies (D-G Plies)
GWc5	777608	6415996	362.2	0.56	32 – 53 (330.2 - 309.2)	54.4	² Marrangaroo Formation/ Shoalhaven Group ²

+GWc1 and GWc5 carried out by DHC in 2020, GWc3 carried out in 2021.

¹GDA1994 MGA Zone 55

²GWc4 and GWc5 are located outside of the extent of the geology model reviewed for this investigation. Geology inferred based on near-point from model to both GWc4 and GWc5.

An updated site geological model could be reviewed, or additional drilling could be undertaken to confirm the most likely target formations of GWc4 and GWc5. This is recommended to be considered as part the broader GWMP and monitoring network review (see **Section 3.2**).



2.7 Groundwater levels

Hydrographs showing the groundwater level of each coal measures monitoring bore and nearest alluvium bore are presented in **Appendix A**. The hydrographs also show the date of operation of each pit, the water elevation in the closest pit dam (for GWc1 and GWc3) and the CRD (described in **Section 2.2**). The location of the pits is shown in **Figure 2**.

This section provides a discussion on observed water level trends at each of the bores considered in this investigation only. Further analysis and evaluation of the drivers of observed water level change are further discussed in **Section 3.1**.

2.7.1 GWc1

Figure A - 1 shows that at GWc1 groundwater levels in the coal seam are below groundwater levels in the overlying alluvium indicating that a downward vertical gradient exists between the alluvium and the Ulan Seam at this location. In mid-2006, there was a 13 m decrease in groundwater elevation at GWc1 which coincided with mining at Pit 1 and the 2007 drought, suggesting that this decrease was likely influenced by mining and climate at that time. Groundwater levels later recovered and have followed a similar trend to the CRD.

Where data is available, (from 2016 onwards) groundwater elevations at GWc1 also display a similar trend (although generally at a lower elevation) to water elevations in Pit Dam 2. Pit 2 Dam is located 950 m southeast of GWc1 and is separated from the backfilled Pit 1 void (directly adjacent to GWc1) by a section of unmined rock. Considering the hydraulic gradient only, stored water in Pit 2 Dam could potentially flow from the Pit 2 Dam to GWc1 by a hydraulic connection via the Ulan Seam. It is noted however, that backfilled Pits 1 & 5 are closer to GWc1, and water levels within these pits could also theoretically be influencing observed groundwater levels at GWc1. As further explained in **Section 2.8**, the water type from Pit 2 Dam is distinct from the GWc1 water type and additional data is needed to demonstrate any hydraulic connection between the backfilled Pits 1 and 5 and GWc1.

2.7.2 GWc3

Figure A - 2 shows that GWc3 used to have levels above that of the nearby alluvial bore, GWA6, indicating a historical upward hydraulic gradient from the coal measures to the alluvium at this location. This upward gradient is observed to continue during the millennium drought which ended in 2007. Depressurisation in the coal measures, likely due to mining at Pit 3, Pit 4, and Pit 7, is observed in GWc3 from 2014 onwards, resulting in GWc3 groundwater levels dropping below those in the overlying alluvium (downward hydraulic gradient). GWc3 and GWA6 were recorded as dry from early 2014 to early 2016, and again from 2018 to 2020 (during dry climatic periods when mining related drawdown is also observed). It is noted that observations which are considered 'dry' at GWc3 are those which have returned a depth to water greater than the depth of the screened interval (see **Table 2**). As bore construction at this location is not well understood (sealed or slotted end-cap), it is difficult to verify whether water collected from a bore sump would be representative of surrounding aquifer conditions.

From 2020 onwards, groundwater elevations at GWc3 were similar to the water level in the adjacent Pit 4 void and Pit 3 void. Pit 4 and Pit 3 voids are located 300 m west and 250 m southeast respectively. Based on water elevations, there is potential for hydraulic connection between Pit 4 and/or Pit 3 and GWc3 via the Turill/ Moolarben Seams. The potential for connection is not completely understood and requires further investigation.



2.7.3 GWc4 and GWc5

The evaluation of vertical hydraulic gradients from/ to the coal measures near GWc4 and GWc5 is difficult to directly evaluate due to the distance between each coal measures bore and the selected accompanying alluvial/ shallow bore. GWA7 is 1.3 km from GWA4 and may be more influenced by Wilpinjong Creek conditions (GWc4 is closer to Wollar Creek), while GWA8 is 0.8 km downstream of GWc5 (**Figure 2**).

Figure A - 3 shows consistent groundwater elevations (minimal fluctuations) at GWc4 through the millennium drought (to 2007), before decreasing ~3 m between 2013 and 2020. This coincides with mining at Pit 3 and 7 as well as a period of below average rainfall from 2017 to 2020. It is noted that a minimal response to above average rainfall in 2016 was observed. From 2020 to 2022, GWc4 groundwater levels return to near-baseline levels, which coincides with a period of above average rainfall (see **Section 2.2**). These trends suggest some depressurisation at GWc4 due to mining in-addition to dry climatic conditions.

Figure A - 4 shows groundwater levels at GWc5 follow the CRD trend, with no evident depressurisation due to Wilpinjong mining observable at this location. It is noted that groundwater elevations during the millennium drought (up to 2007) are the lowest observed at GWc5, suggesting that a combined mining-climate influence, as is inferred at GWc4, is not occurring at this location.

2.8 Water Quality

2.8.1 Field EC

Time series graphs showing the variation of EC have been prepared and are presented in **Appendix A**. For each coal measures monitoring bore the EC of the closest alluvium bore is also shown on the same graph as well as the CRD.

The EC of Water Treatment Plant (WTP) Feedwater (sourced from Pit 2 Dam), and other potential pit/mine water sources (Other_P2Dam_RawWD) are also considered within this EC review. While Pit 2 Dam is not directly adjacent to any of the monitoring locations considered in this assessment, it stores water pumped from other pits within WCM prior to treatment and discharge from the RO Plant. EC observations for these sources are available from 2012 to 2021 (Other_P2Dam_RawWD), and mid-2021 to 2023 (WTP_Feedwater) and are considered a useful proxy for 'mine affected water' at WCM.

The following sections provide a discussion on observed trends in the EC data only. Analysis of the trends, and evaluation of potential drivers of water quality change are discussed in **Section 3.1**.

2.8.1.1 GWc1

Figure A - 1 shows the variation of EC at GWc1 and nearby alluvium bore GWA2 along with WTP_Feedwater, Other_PitDam_RawWD, spoil bore GWf3 the CRD and the current EC trigger level of 2,844 $\mu\text{S}/\text{cm}$.

The EC at GWc1 is characterised by low ECs ranging between 1,500 to 2,500 $\mu\text{S}/\text{cm}$, with rapid increases to stable peaks ranging between 3,000 and 3,500 $\mu\text{S}/\text{cm}$. These peaks exceed the EC trigger value for this bore. EC at GWc1 exceeded the trigger level throughout 2021 and 2022 and has periodically exceeded the trigger value in since 2008.



The following observations in EC at GWc1 are made:

- There is no direct correlation between the peaks and troughs in EC and rainfall, with the peaks occurring during both low rainfall times (2019 to 2020) as well as high rainfall times (2021). No seasonal trend is observed.
- The changes in EC do not correlate with changing groundwater levels at GWc1.
- The EC pattern is not observed in the overlying alluvium at GWA2, or at the nearby coal bores - GWc16 (EC around 2,000 – 2,500 $\mu\text{S}/\text{cm}$) and GWc10 (EC around 2,800 to 4,000 $\mu\text{S}/\text{cm}$) (SLR, 2023). The EC trends appear unique to GWc1.
- GWc1 is located 1.3 km upgradient of the discharge point from the RO plant to Wilpinjong Creek and would not likely be influenced by it.
- There is no water quality monitoring of spoil or mine voids directly adjacent to GWc1, however there is water quality monitoring of stored water within Pit 2 Dam (WTP Feedwater) and three (3) spoil bores (GWf1, GWf2, and GWf3) that are in the vicinity of GWc1.
- Water quality monitoring of Pit 2 Dam (WTP Feedwater) shows EC levels that are similar to, but slightly higher than (3,500 – 4,000 $\mu\text{S}/\text{cm}$) GWc1 EC observations during trigger exceedance periods.
- Water quality monitoring of spoil bore GWf3 (located ~2 km south-west of GWc1) shows EC trends are similar to those observed in WTP_Feedwater but are generally higher than GWc1. It is noted that neither GWf3 or WTP_Feedwater show the same sharp decline in EC that is observed at GWc1 in 2023. Spoil bores GWf1 and 2 have historically remained dry.
- As mentioned in **Section 2.7.1**, hydraulic gradients indicate there is a potential flow path between stored water (Pit 2 Dam), groundwater within the spoil (GWf3), and groundwater at GWc1. However, the absolute EC and variation in EC at GWc1 is not matched by Pit 2 Dam stored water (WTP_Feedwater) and GWf3 and there is no clear evidence of direct influence or mixing.

2.8.1.2 GWc3

Figure A - 2 shows the variation of EC at GWc3 and GWA6 along with the CRD and the current EC trigger value of 3,304 $\mu\text{S}/\text{cm}$. As mentioned in **Section 2.7.2**, groundwater levels in GWc3 dropped below the screen level between 2019 and 2021 and those data points are not shown on **Figure A - 2**.

The following is observed:

- Baseline EC at GWc3 (2006-2009) varies between 2,000 $\mu\text{S}/\text{cm}$ and 3,800 $\mu\text{S}/\text{cm}$.
- EC at GWc3 has varied from approximately 3000 $\mu\text{S}/\text{cm}$ to 6,500 $\mu\text{S}/\text{cm}$ between 2009 and 2021 during which time the trigger level was exceeded. It is noted that periods where observed depths to water were below the base of the screen have been discounted. (early 2014 to early 2016, and again from 2018 to 2020) as it cannot be established whether this water is representative of surrounding aquifer conditions.
- Baseline EC at GWA6 (2006 - 2009) varied between 2,000 $\mu\text{S}/\text{cm}$ and 10,000 $\mu\text{S}/\text{cm}$ and was generally between 2,000 to 7,000 $\mu\text{S}/\text{cm}$, higher than the EC at GWc3 (except for some periods in 2011, 2012 and 2013). Since 2021, EC at GWA6 has decreased to between 2,000 and 6,000 $\mu\text{S}/\text{cm}$, similar to GWc3.



- There is a steady increase in EC between 2007 and the commencement of mining at Pit 3 and Pit 7 (2013) and then a relatively greater increase coinciding with the decline in groundwater levels associated with the mining of Pit 3 and Pit 4. This is followed by a period of overall stabilisation until 2021. Between 2021 and 2022 EC at GWc3 declined but still exceeded the EC trigger level until September 2022 when it fell below the trigger level for the first time since 2011.
- Based on elevation, there is potential for hydraulic connection between the Pit 4 and/or Pit 3 void and GWc3 via the Turill/ Moolarben Seams. While the EC of the WTP Feedwater (used as proxy for EC of Pit 4 and 3 voids) has been similar to the EC observed at GWc3, at other times it has not. As mentioned in **Section 2.7.2** the potential hydraulic connection is not completely understood and will require further investigation that also consider the influence from Cumbo Creek surface water and alluvial groundwater.
- The RO Plant discharge to Wilpinjong Creek is unlikely to influence water quality at this location.

2.8.1.3 GWc4

Figure A - 3 shows the variation of EC at GWc4 and GWA7 along with the CRD and the current EC trigger value at GWc4 of 2,412 $\mu\text{S}/\text{cm}$.

Baseline EC (2006 – 2009) at GWc4 varies between approximately 1,900 $\mu\text{S}/\text{cm}$ and 2,800 $\mu\text{S}/\text{cm}$ and EC has remained within that range for the entire period of observation (up to 2023). Minor and temporary exceedances of the EC trigger level occurred in 2006, 2007, 2017, 2021 and 2022. EC at the nearest alluvium bore (GWA7) has varied between 1,000 $\mu\text{S}/\text{cm}$ and 14,000 $\mu\text{S}/\text{cm}$ between 2007 and 2023 but has typically averaged around 10,000 $\mu\text{S}/\text{cm}$.

No change in EC trends is observed during the decline in groundwater level at GWc4 from 2013 – 2020 attributed to a mining and climate effect. Similarly, no change in EC trends is observed at GWc4 during the observed groundwater level recovery associated with above average rainfall from 2020 – 2022.

2.8.1.4 GWc5

Figure A - 4 shows the variation of EC at GWc5 and GWA8 along with the CRD and current EC trigger level at 4,798 $\mu\text{S}/\text{cm}$.

EC gradually increased from early 2010 to 2015 from ~4,800 $\mu\text{S}/\text{cm}$ to 5,800 $\mu\text{S}/\text{cm}$, and then stabilised around 5,500 $\mu\text{S}/\text{cm}$ at the end of 2017 through to 2022. GWc5 is continuing to show EC levels consistently above the trigger level but below the maximum values observed before and during Pit 1 extraction at 6,030 $\mu\text{S}/\text{cm}$.

Groundwater EC at GWA5 appears to be fluctuating independently of rainfall or groundwater level trends. Similarly stable EC trends are observed at nearby alluvial bore GWA8.

2.8.2 Field pH

The variation of pH at GWc1, GWc3, GWc4 and GWc5 is shown on **Figure A - 1**, **Figure A - 2**, **Figure A - 3** and **Figure A - 4** respectively. pH at the coal measures bores reviewed in this investigation has never exceeded the 6.5 – 8.0 range defined as minimum and maximum trigger levels in the GWMP. Generally, the pH in the coal measures bores is lower than the pH in the nearest alluvial bores.



It is noted that mine water proxy data from Pit 2 (WTP_Feedwater) consistently has a higher pH than both GWc1 and GWc3 observations both during and outside of periods where EC is exceeding trigger levels.

2.8.3 Water Type

Piper diagrams allow a graphical representation of major ion (Ca^{2+} , Mg^{2+} , Na^+ , K^+ , Cl^- , HCO_3^- and SO_4^{2-}) composition of a water sample. Results that group in a cluster represent a similar water type, with water types defined according to the area in which they plot on the piper diagram.

Major ion information necessary to create the Piper plots was only available from 2012 onwards for Wilpinjong groundwater monitoring sites. Major ion information for the WTP_Feedwater which is used as a mine water proxy has data available from 2021.

The figures in **Appendix B** show Piper Plots for the coal measures bores, and corresponding alluvial bores, for all years with available water quality data (i.e. 2012 onwards). With GWc1 and GWc3 plots, which are closest to backfilled WCM pits, also including WTP_Feedwater data the following is observed:

- All four of the “GWc” bores are dominated by sodium and potassium cations.
- GWc1 and GWc3 are weakly dominated by chloride, GWc4 does not have a dominant anion and GWc5 is strongly dominated by the bicarbonate and carbonate anions.
- GWc1 and GWc3 show similar water signatures to their corresponding alluvial bores suggesting some mixing between the alluvial and underlying coal measures groundwater at these locations.
- GWc4 and GWc5 show distinct water type signature from their nearest alluvial/ shallow bore. This may be explained by the following:
 - GWc4 is 1.3 km from GWA7, with GWA7 located north of Wilpinjong Creek, while GWA4 is closer to Wollar Creek. The distance between the sites and their location in separate catchments may explain the distinct water types.
 - GWc5 is 0.8 km from GWA8 and is likely screened (see **Section 2.6**) below the Ulan Seam. The connection between the geology below the Ulan Seam and the Wollar Creek alluvium may be limited, not allowing for mixing.
- It is noted that there is no notable change in water type in any of the bores over the history of monitoring (from 2012 onwards).
- WTP_Feedwater results plot in a consistent location on the piper diagram and show an overall mixed water type, with sulfate the dominant anion and no dominant cation. There is no clear overlap of water type between WTP_Feedwater and water types at either GWc1 or GWc3.



2.8.4 Dissolved Metals

Time series of dissolved metals (aluminium, arsenic, barium, copper, iron, lead, manganese, nickel, selenium, and molybdenum) extracted from the 2022 Groundwater Annual Report (SLR 2023) are included in **Appendix D**. Concentrations in dissolved metals are only available from 2015 onwards.

No specific trends were identified based on this data.



3.0 Summary and Recommendations

This section presents the summary of the information reviewed in **Section 2.0** and recommendations for updating EC trigger levels and/or investigations improve the understanding of EC trigger exceedances.

3.1 Summary

The following presents a summary on the possible mechanisms responsible for the EC trends and trigger exceedances at each of the four bores.

3.1.1 GWc1

The following findings are drawn from information reviewed in **Section 2.0** relevant to GWc1:

- The effect of mining at Pit 1 is observed in groundwater levels at GWc1, with drawdown observed in 2006 - 2007, and some ongoing effect observable with groundwater level recovery to below that of pre-mining in response to above average rainfall from 2020 - 2022. Groundwater elevation trends at GWc1 also follow the CRD, suggesting some climatic influence.
- Since 2016, when water level monitoring of Pit Dam 2 began, groundwater elevations at GWc1 display a similar trend to the water level elevations at Pit Dam 2 (which also generally follow CRD trends). Due to the gradient from stored water in Pit 2 to GWc1, and the potential flow pathway from the Pit 2 dam to GWc1 via the Ulan Seam, there may be a potential hydraulic influence. It is noted however, that backfilled Pits 1 & 5 are closer to GWc1, and water levels and quality within these pits could also be a potential influence on observed groundwater quality conditions at GWc1. Although a gradient has been identified, there is no conclusive evidence of a groundwater quality connection as indicated by the points below.
- EC in GWc1 was similar to WTP Feedwater EC in late 2021 and early 2022, before GWc1 EC declines to below the trigger level in 2023. There is no clear correlation between earlier mine water proxy data (Other_P2Dam_RawWD) and GWc1 EC. It is noted that proxy mine water quality data does show some peaks and troughs, acknowledging these are more subtle than the peaks and troughs at GWc1 and occur at different times.
- The water type from the mine water proxy site (WTP_Feedwater) is distinct from the GWc1 water type and shows no clear evidence of direct influence or mixing. It is noted that WTP_Feedwater is not stored directly adjacent to GWc1.
- Relationships between the EC variation unique to GWc1 and timing of mining operations and climate variation have been investigated as part of this review and no direct relationship could be established for either mining or climate.
- Bore construction details are not available for GWc1, and it is difficult to evaluate whether the screened interval targeting the Ulan Seam is the only pathway for groundwater inflow into the bore. In the absence of other evidence, the step-change variation in EC observed in EC may be related to bore construction.



3.1.2 GWc3

The following findings are drawn from the information reviewed in **Section 2.0** relevant to GWc3:

- Groundwater levels at GWc3 are observed to be influenced (depressurisation) by Pit3, Pit4 and Pit 7 mining, resulting in a reversal of the pre-mining upward hydraulic gradient to the overlying Cumbo Creek alluvium. Groundwater level recovery at GWc3 in response to the above average rainfall from 2020-2022 shows a close relationship with the observed water level increase in the adjacent Pit 4 void, and similar trends to the Pit 3 void.
- Between 2006 and 2013 (before any influence of mining was observed in groundwater levels) EC at GWc3 was slightly fresher than the overlying alluvium. The cause of the observed increase in EC from 2007 to 2013 is not known. A similar increasing trend in EC is observed at GWc5 which is further from mining than GWc3 at that time.
- During the mining of Pits 3, 4 and 7 (mainly 2014-2016), when depressurisation is observed in GWc3, coal measures groundwater quality may have been influenced by recharge from more saline groundwater in the overlying alluvium, due to the observed downward hydraulic gradient.
- EC observations at GWc3 are at their maximum for the monitoring record during 2021, above both alluvial (GWA6) and mine water proxy (WTP_Feedwater) EC. This may be related to the re-mobilisation of salts from strata that was desaturated during the 2017-2020 drought. EC declines from mid 2021 to late 2022 before increasing again in 2023, with current EC observations at GWc3, GWA6 and the mine water proxy all around 4,000 $\mu\text{S}/\text{cm}$. The declining EC (mid 2021 to late 2022) is likely related to the increase in low EC water in the system associated with above average rainfall conditions during this time, while recent observations show potential for some interaction between the groundwater system near GWc3 and adjacent stored water.
- The water type from the mine water proxy site (WTP_Feedwater) is distinct from the GWc3 water type. It is noted that a similar comparison against water stored in Pit 3 and Pit 4, directly adjacent would be of use.

Based on the above findings, the observed EC trends at GWc3 may have been influenced by a combination of mining and climatic influences.

SLR recommends further investigation/ consideration of:

- GWc3 bore construction, which may necessitate replacement or reconstruction of this bore.
- any connection between the stored water in Pit 3 and/or Pit 4 and the adjacent Permian and alluvial aquifers at this location.

Once there is improved confidence in bore construction and any relationship between the water storages and the Permian groundwater system at GWc3 is better understood, an appropriate update to the EC trigger level can be considered.

3.1.3 GWc4

The following conclusions are drawn from the information reviewed in **Section 2.0** relevant to GWc4:



- Relationships have been investigated between EC trends at GWc4, the timing of mining operations and climatic variation for the period of monitoring. While some drawdown due to Pit 3 and Pit 7 mining is likely to have occurred, there was no meaningful change to EC observations.

Based on the above conclusions, there is no meaningful change in EC observed at GWc4 caused by WCM mining.

A revised EC trigger level at this bore is recommended based on the 80th %ile EC observation from the entire GWc4 monitoring record (to 2023). This value would be 2,440 $\mu\text{S/cm}$ which is 28 $\mu\text{S/cm}$ higher than the current trigger level (2,412 $\mu\text{S/cm}$). Ongoing review of water quality against compliance trigger levels from the GWMP (Peabody, 2017) is recommended for GWc4, with trigger exceedances evaluated against the established TARP process.

3.1.4 GWc5

The following conclusions are drawn from the information reviewed in **Section 2.0** relevant to GW5:

- Relationships have been investigated between EC variation at GWc5, the timing of mining operations and climatic variations. No direct relationship could be established, and there is no evidence of WCM mining influencing groundwater level or quality at GWc5.

The observed EC is likely to be representative of normal conditions at this site. SLR recommends that the trigger level could be revised to include all data until 2023 as no influence of mining has been observed. This value is 5,560 $\mu\text{S/cm}$ which is 762 $\mu\text{S/cm}$ higher than the current trigger level (4,798 $\mu\text{S/cm}$). Ongoing review of water quality against compliance trigger levels from the GWMP (Peabody, 2017) is recommended for GWc4, with trigger exceedances evaluated against the established TARP process.

3.2 Recommendations

As a result of this preliminary investigation into observed EC trigger exceedances at WCM coal measures monitoring bores, SLR recommends the following:

- Redrill/ replacement of GWc1 and GWc3 so that bore construction can be ruled out as influencing EC observations. Alternatively, decommissioning GWc1 and use of GWc16 as its replacement could be considered.
- Undertaking further investigation of the potential connection between the alluvial and Permian aquifers in lower Cumbo Creek (monitored by GWA6 and GWc3), and the adjacent Pit 3 and Pit 4 water storages.
- Update the GWc4 EC trigger level to 2,440 $\mu\text{S/cm}$ based on the 80th percentile EC value from the entire monitoring record.
- Update the GWc5 EC trigger level to 5,560 $\mu\text{S/cm}$ based on the 80th percentile EC value from the entire monitoring record.



- While updates to specific trigger levels at GWc4 and GWc5 have been provided as part of this report, it is understood that a broader review of the GWMP, groundwater monitoring network, and groundwater trigger levels will be undertaken by WCPL as part of the next GWMP update. This review should:
 - capture the recommendation to re-drill and/or decommission and replace GWc1 and GWc3;
 - consider the location of currently active and future mine areas;
 - focus on the use of monitoring wells where construction and intercepted geology is well understood; and
 - consider updating water quality trigger levels using a risk-based approach to reflect environmental, human, and industry use values at a broader 'aquifer' scale.



4.0 References

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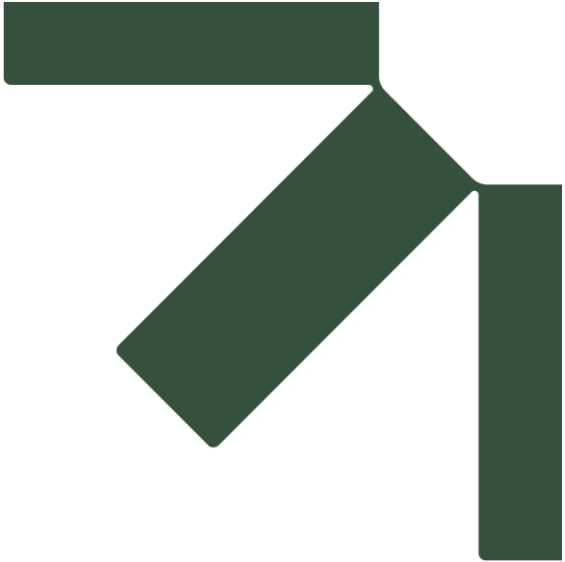
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Appendix A Time series of groundwater levels, ph and Electrical conductivity

EC Trigger Investigation of GWc1, GWc3, GWc4 and GWc5

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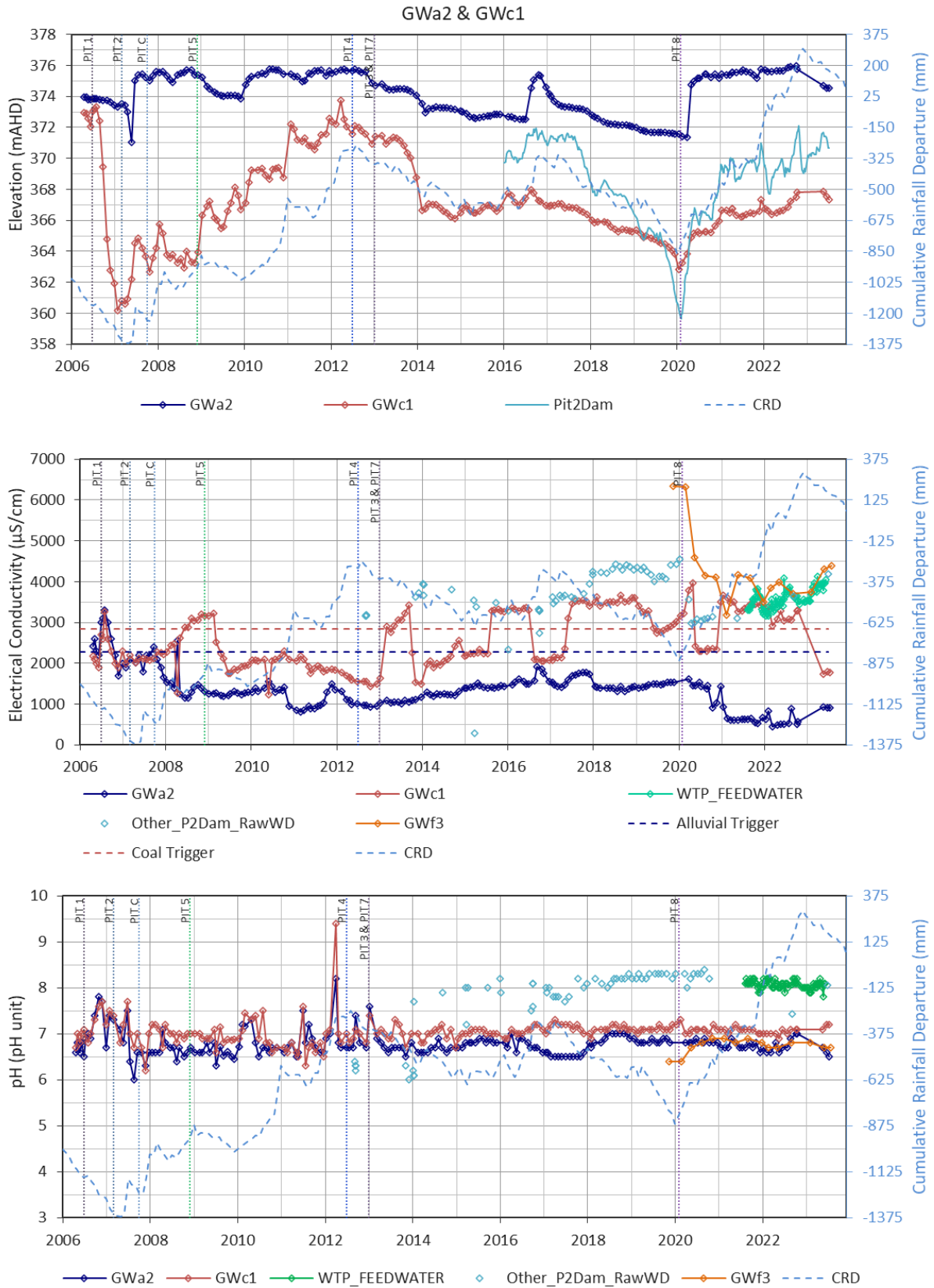


Figure A - 1 Time series GWc1 and GWa2



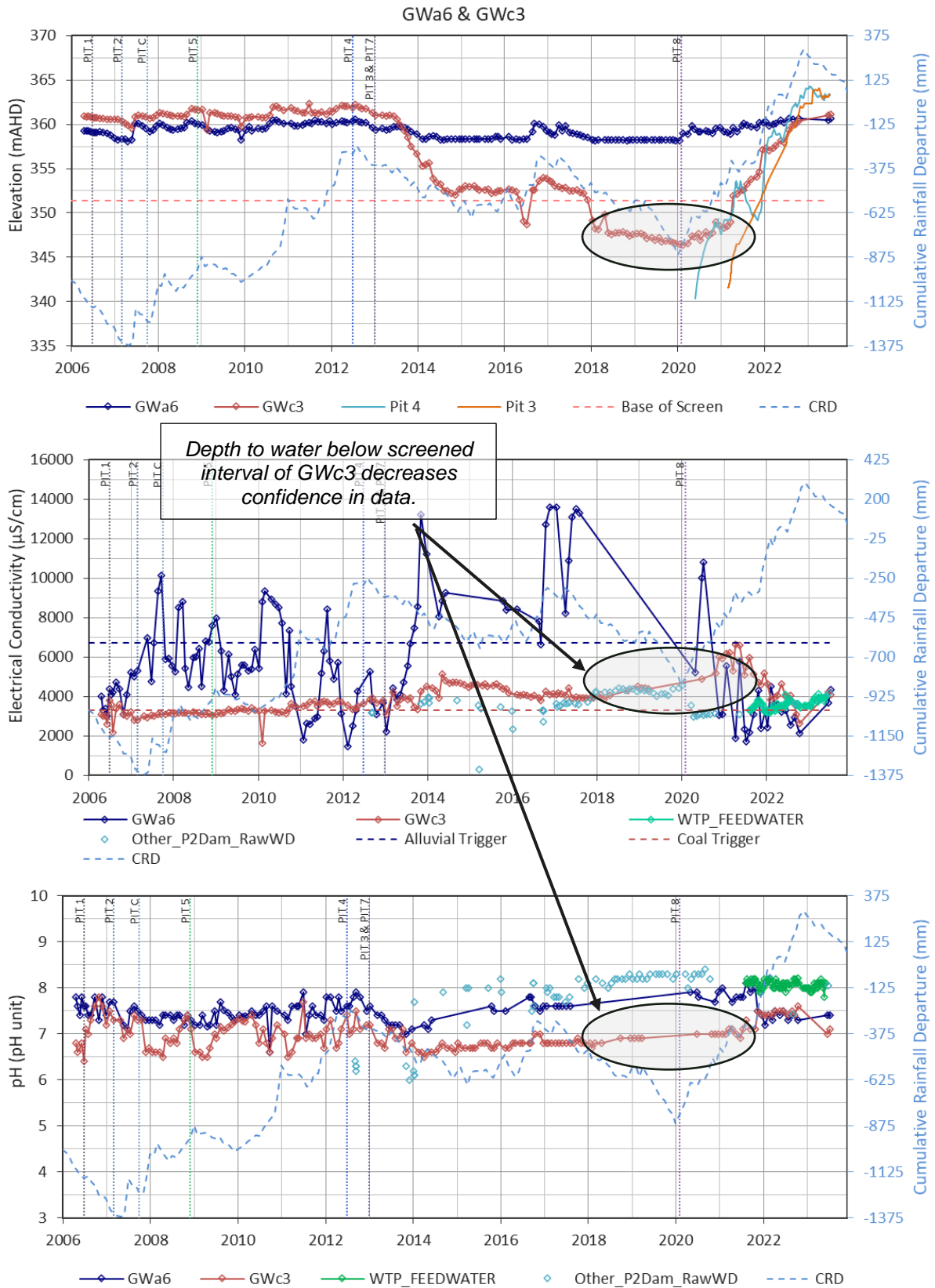


Figure A - 2 Time series GWc3 and GWa6



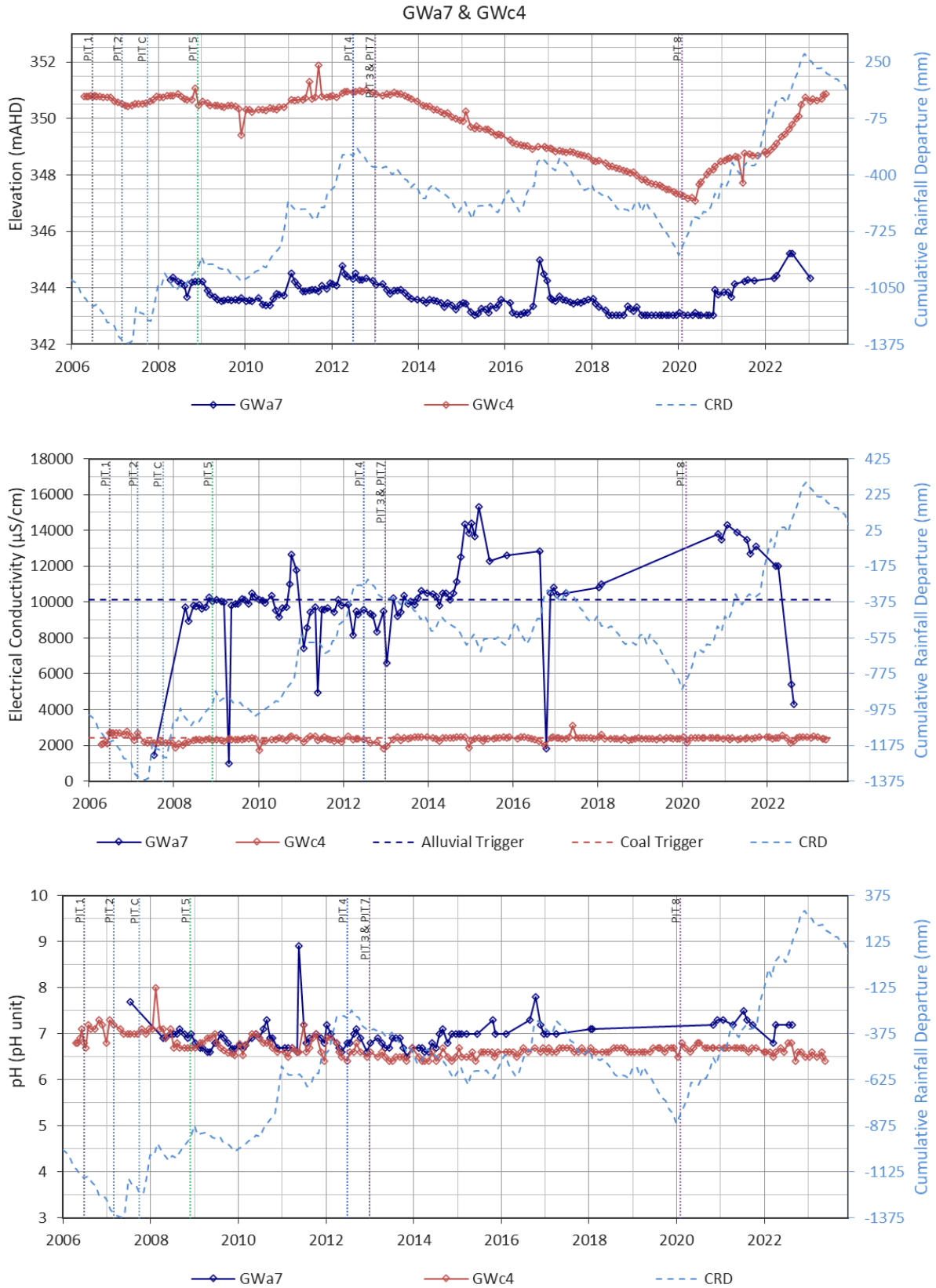


Figure A - 3 Time series GWc4 and GWa7



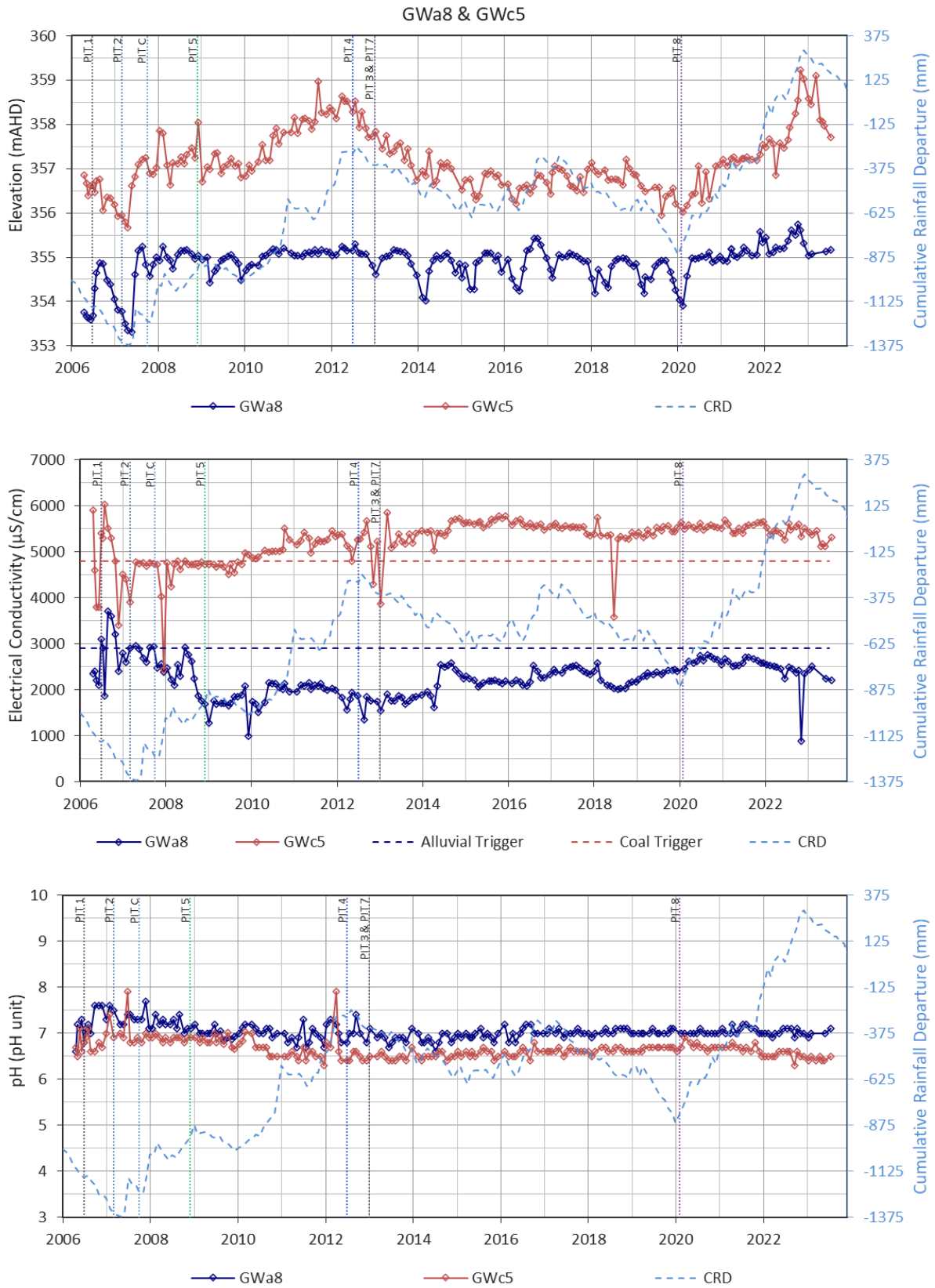


Figure A - 4 Time series GWC5 and GWA8





Appendix B Piper plots

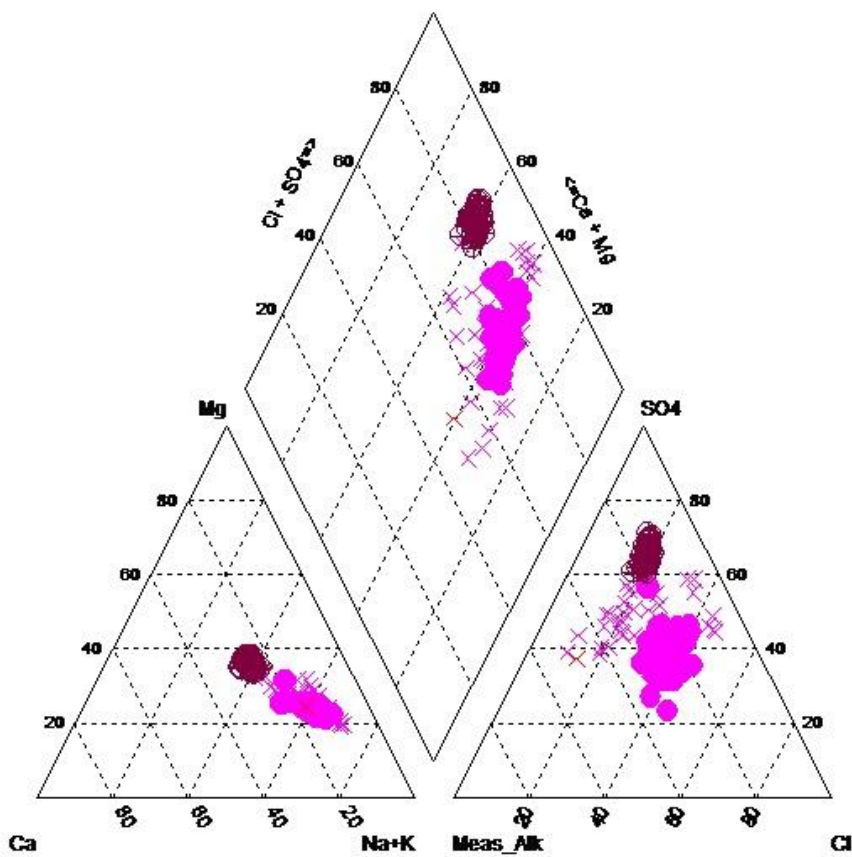
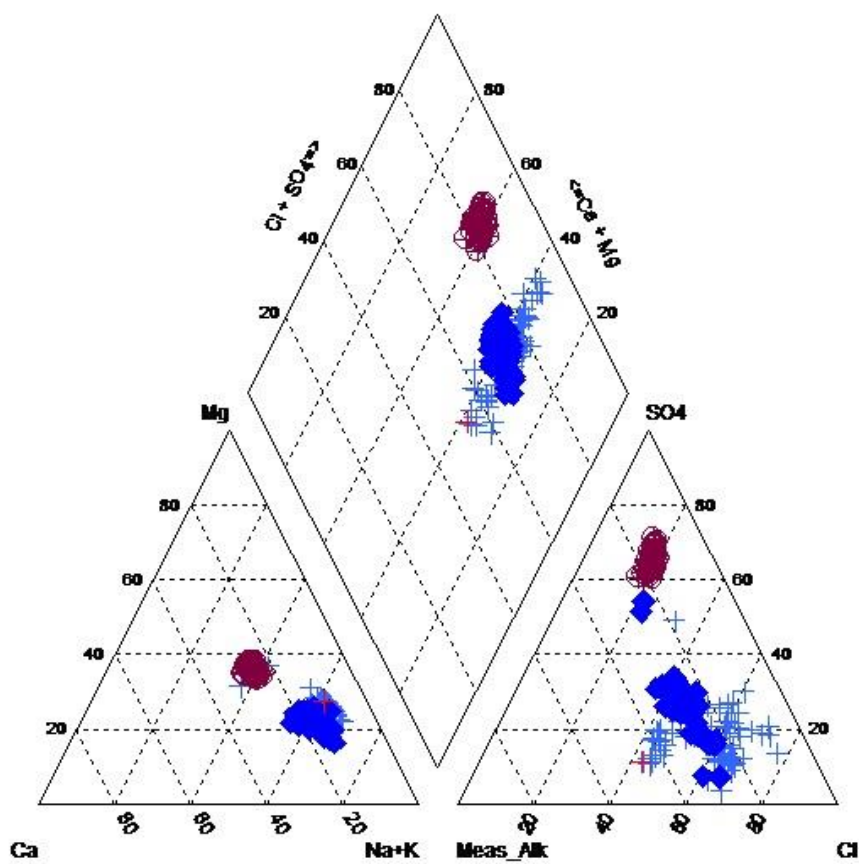
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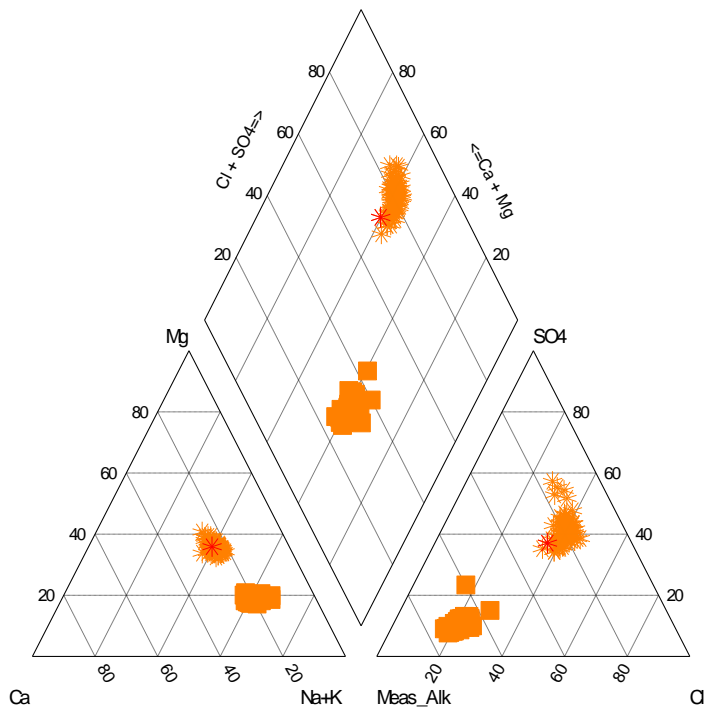
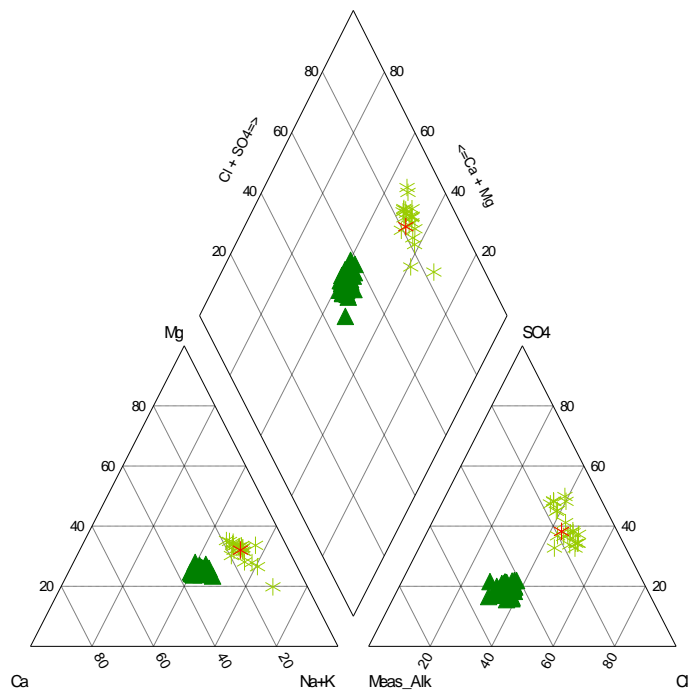
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Appendix C Dissolved Metals Information

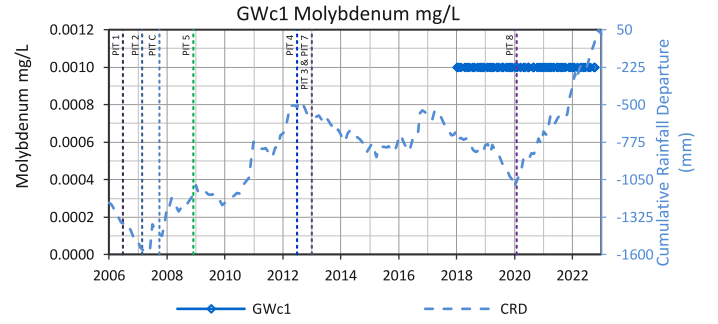
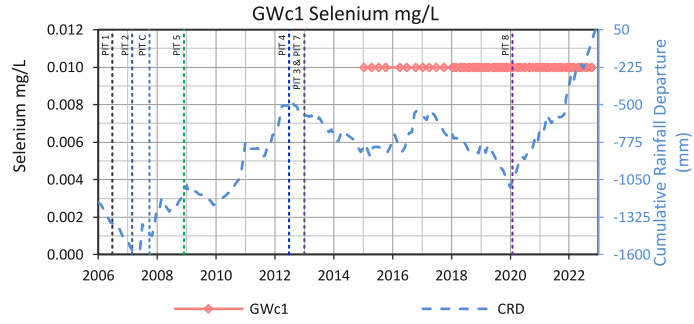
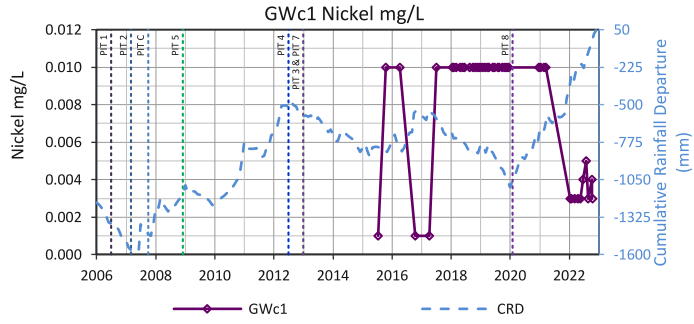
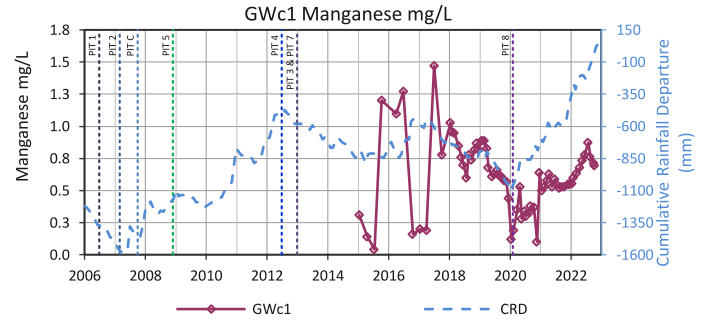
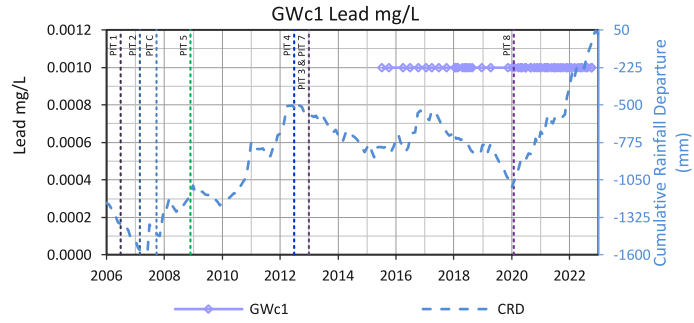
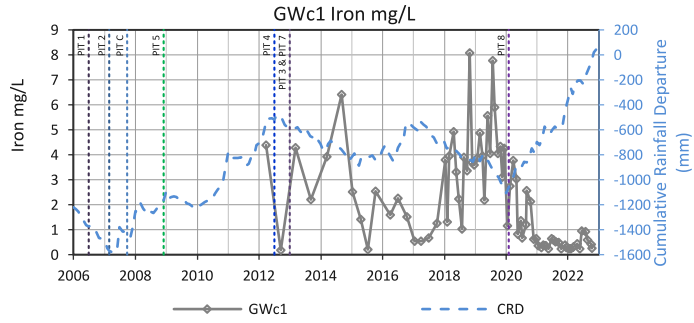
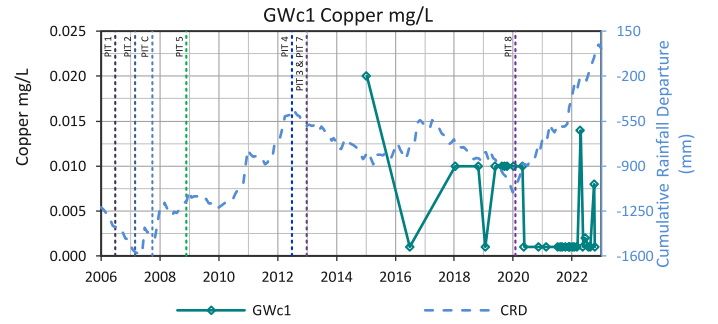
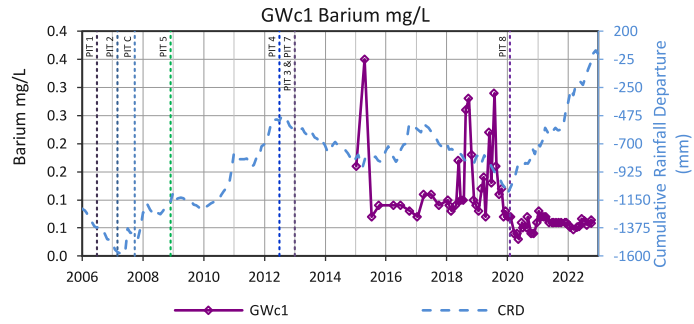
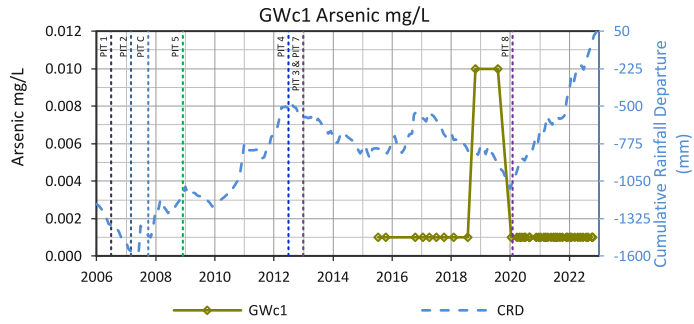
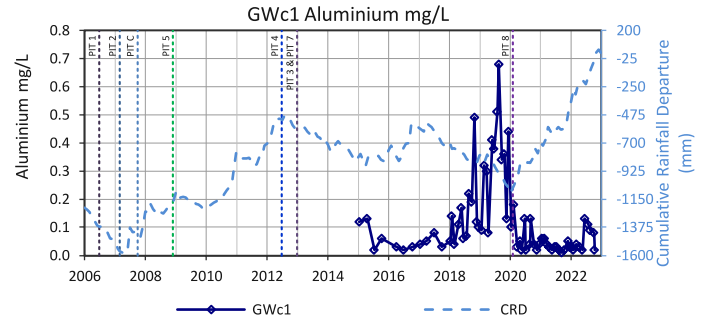
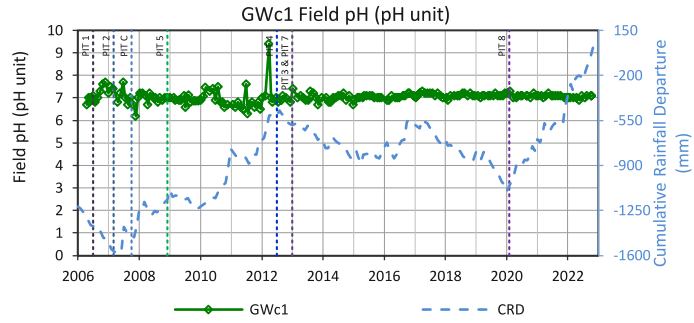
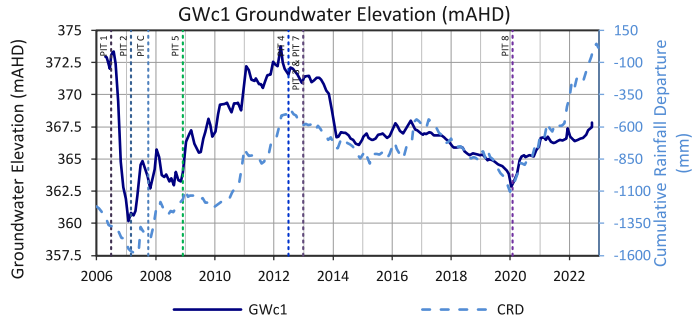
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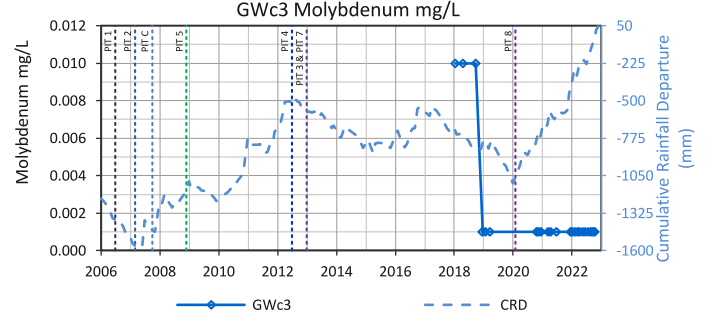
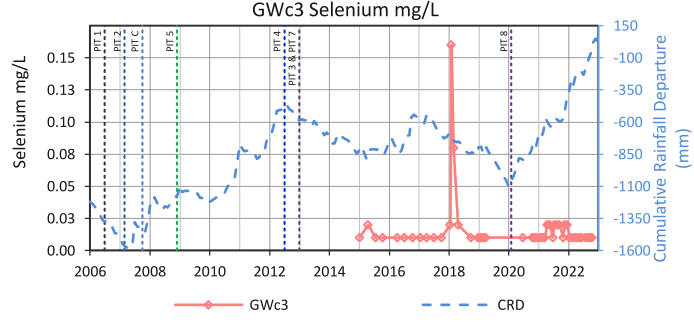
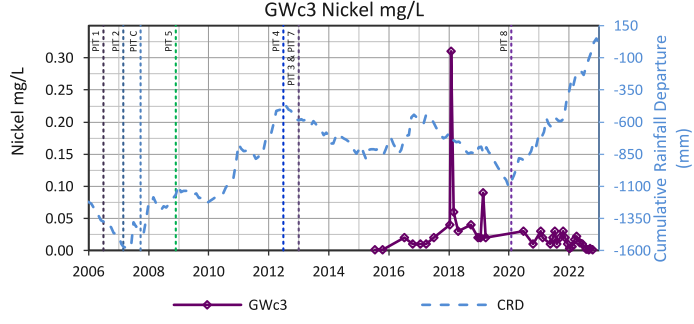
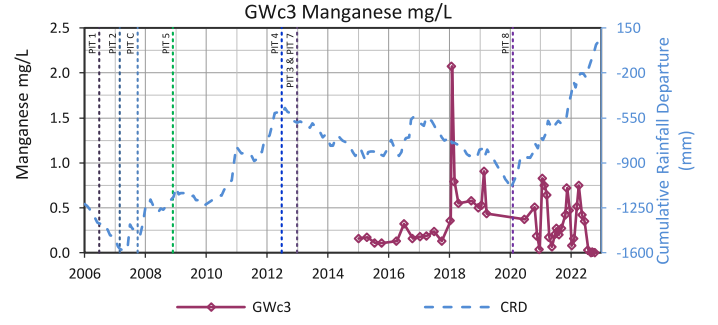
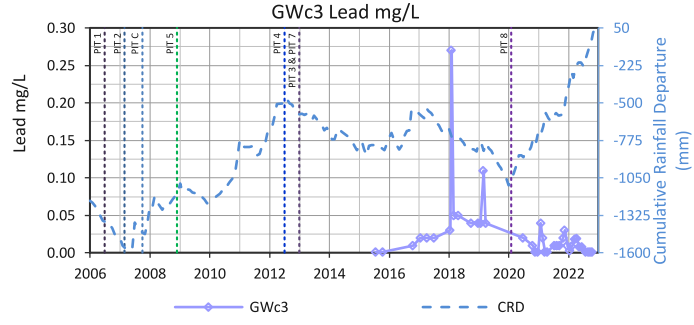
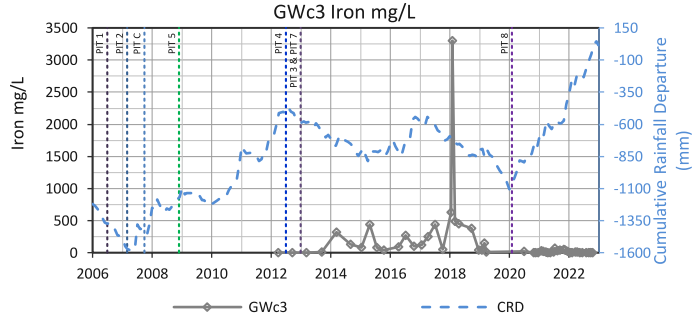
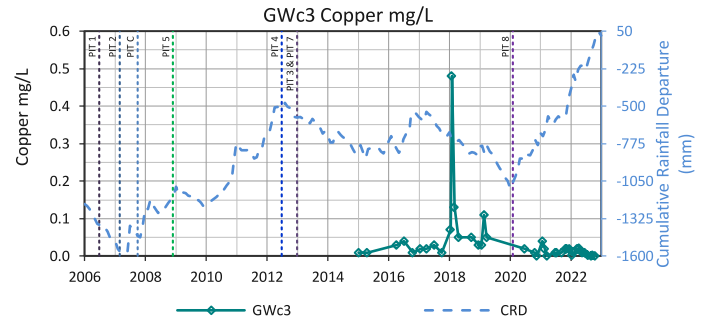
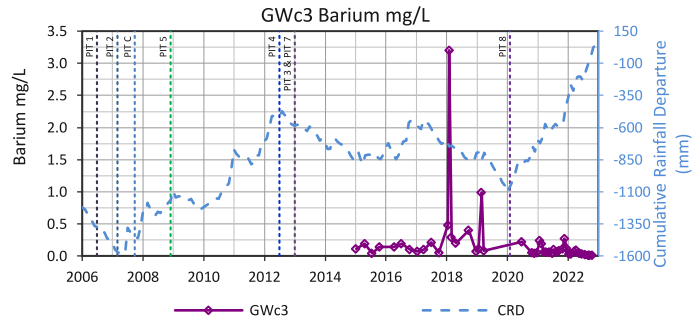
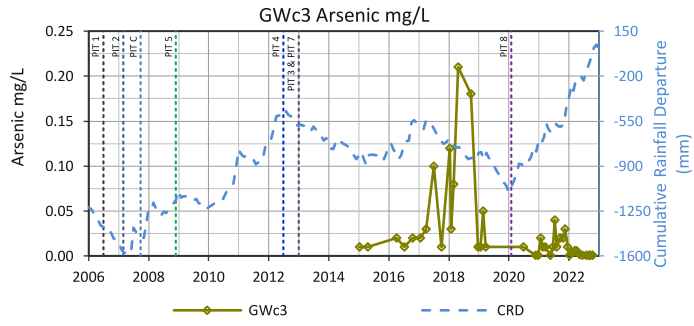
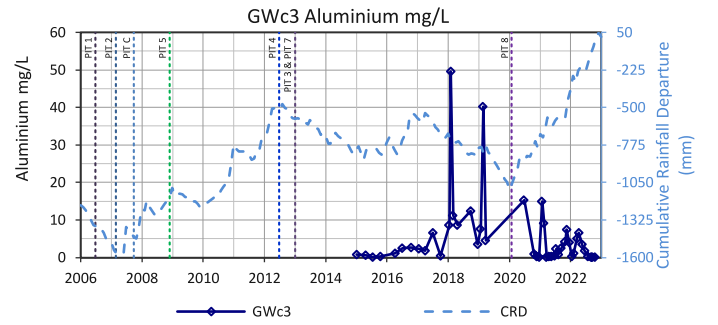
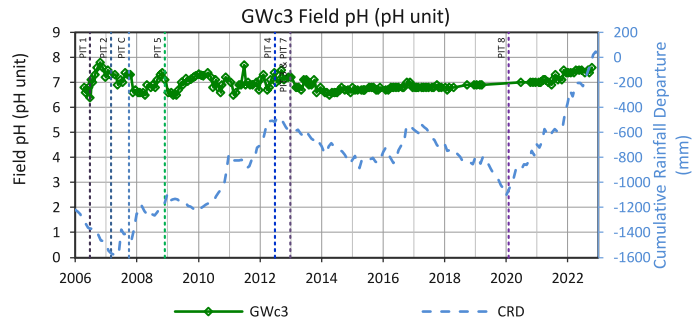
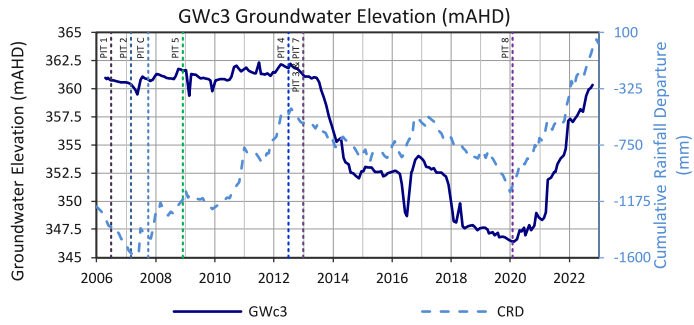
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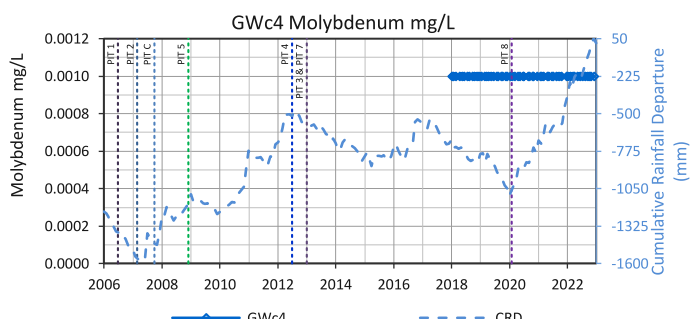
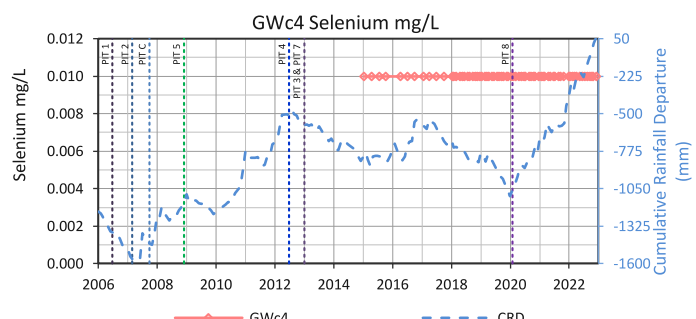
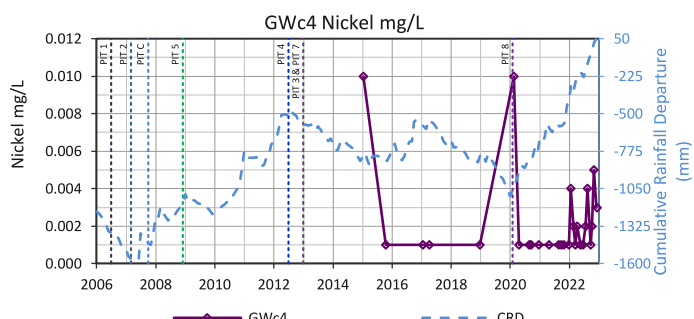
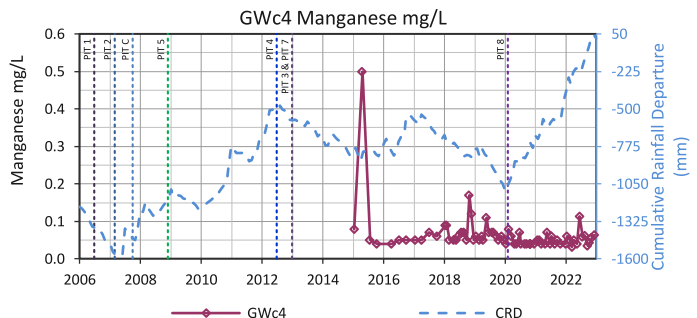
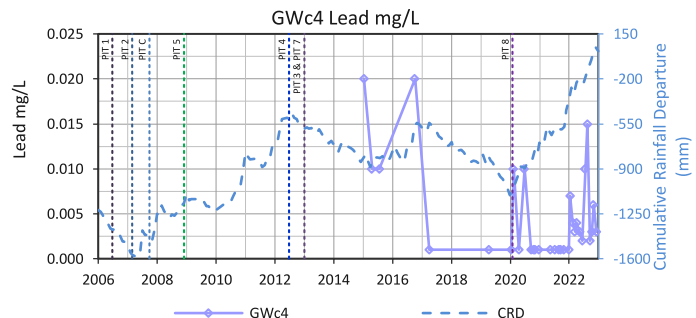
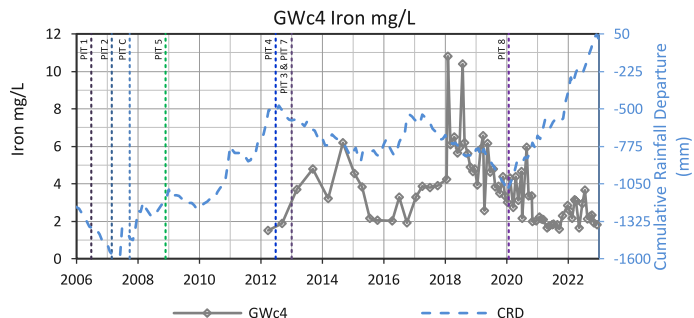
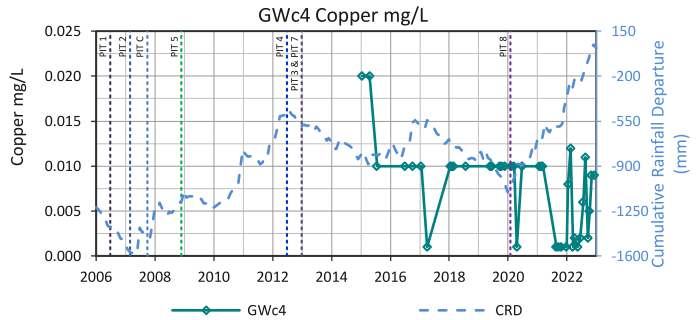
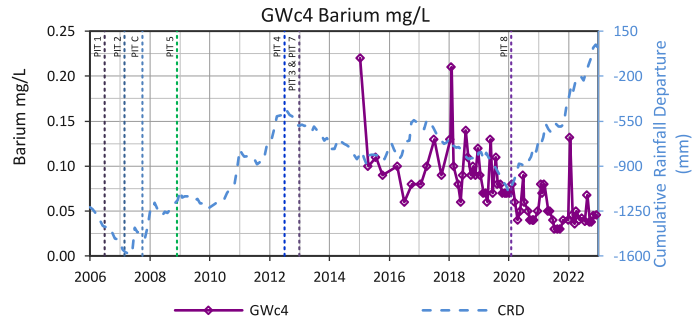
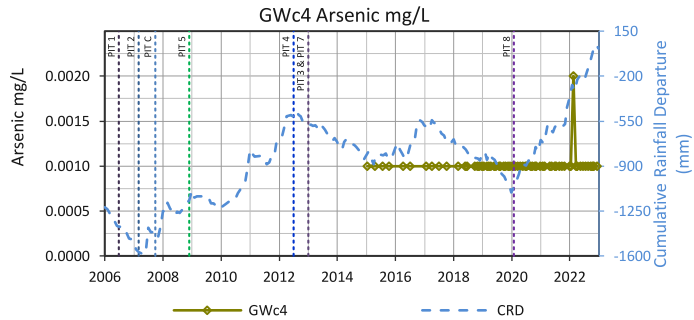
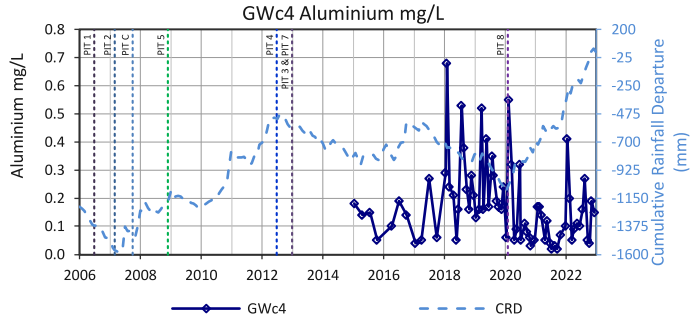
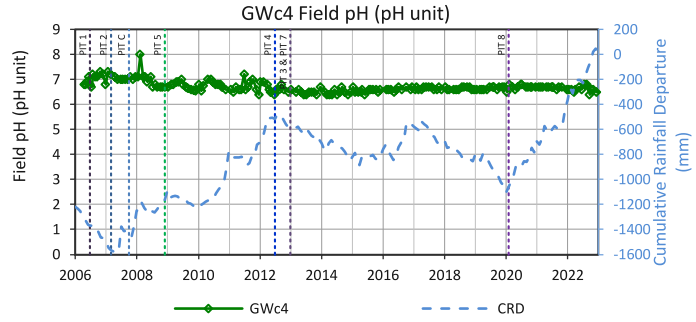
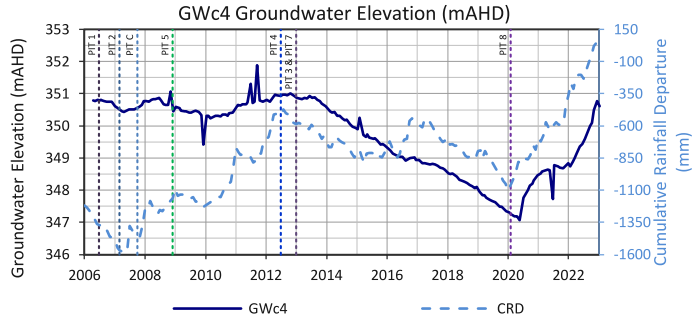
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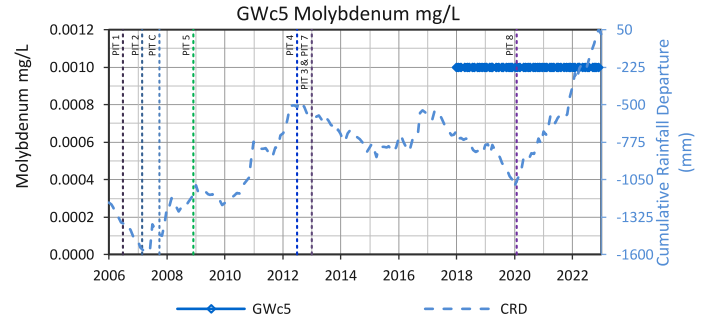
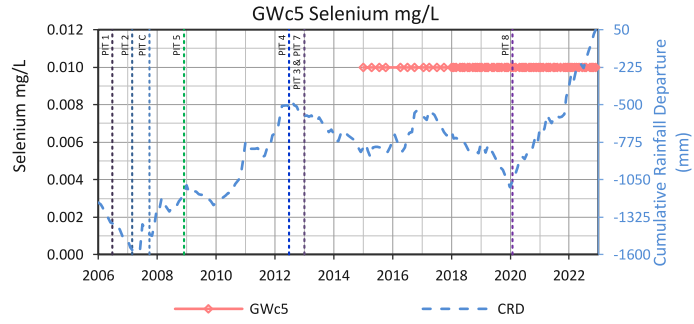
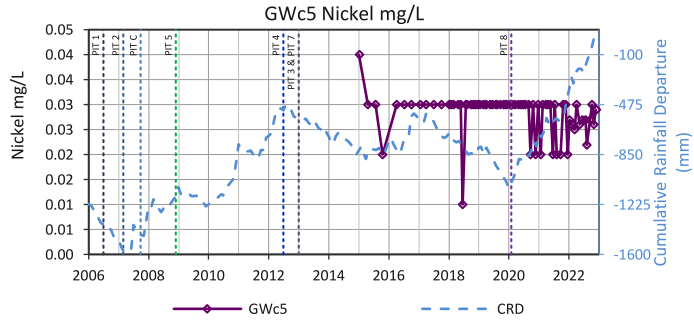
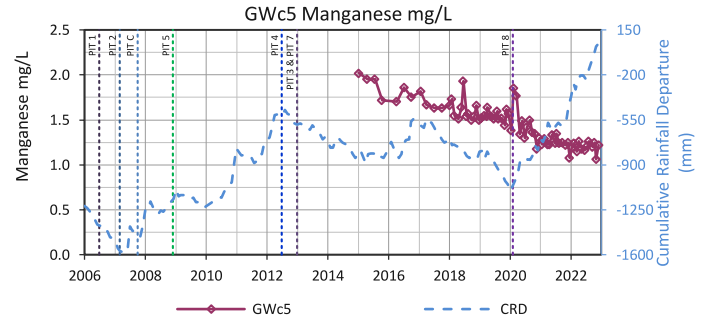
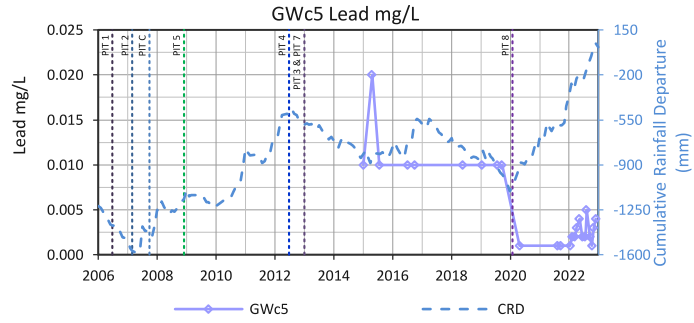
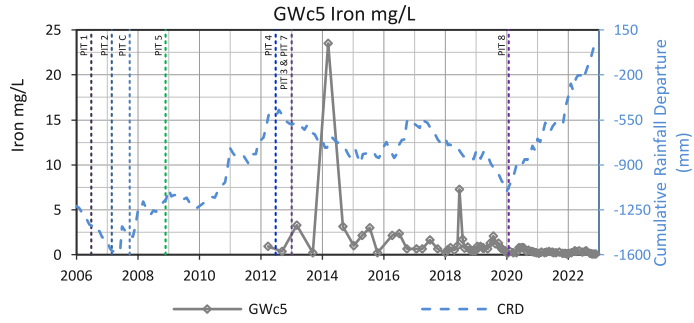
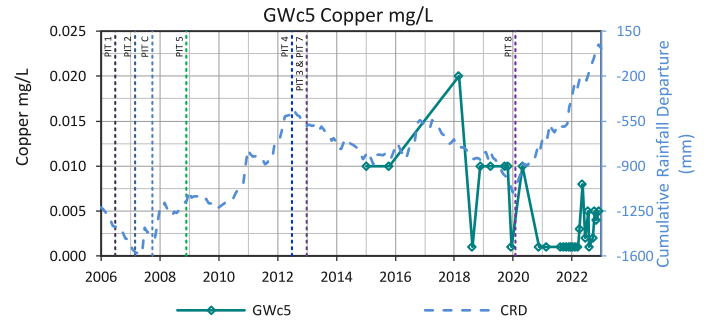
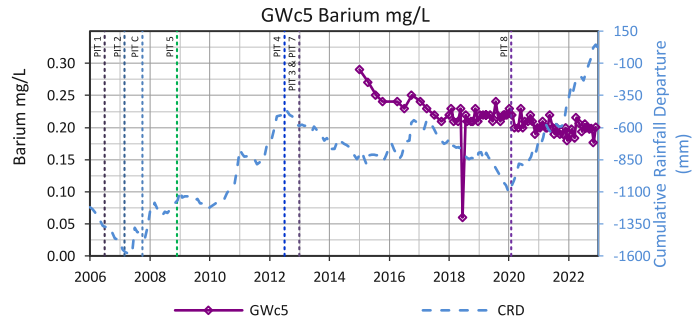
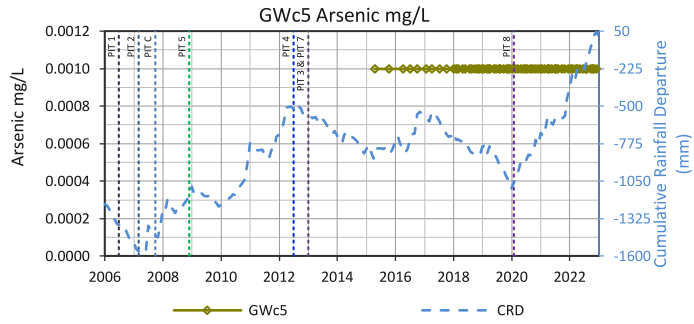
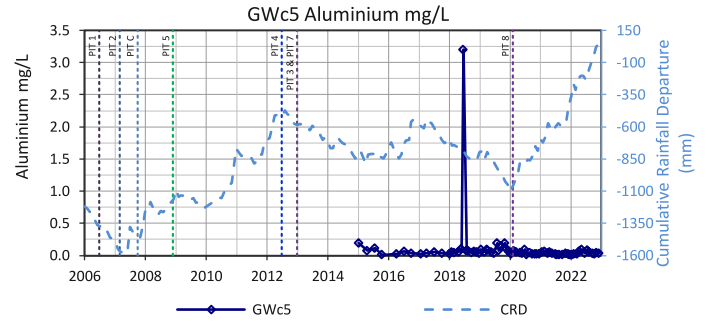
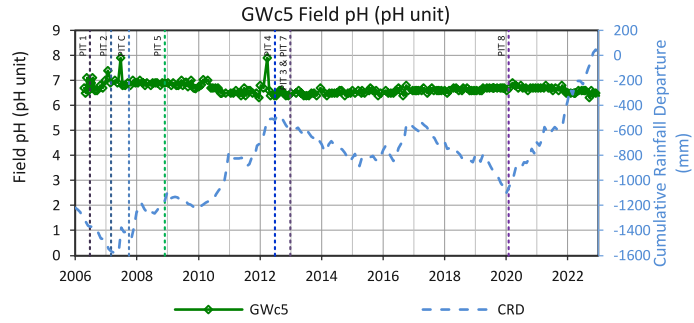
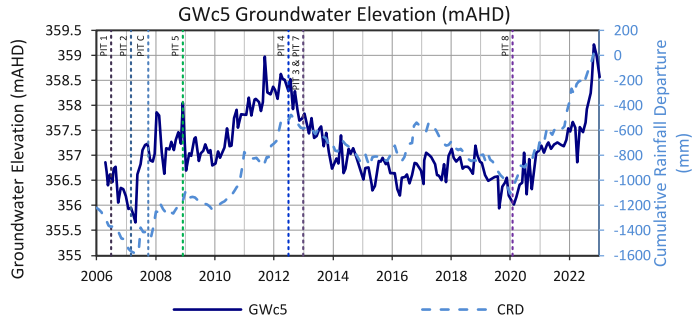
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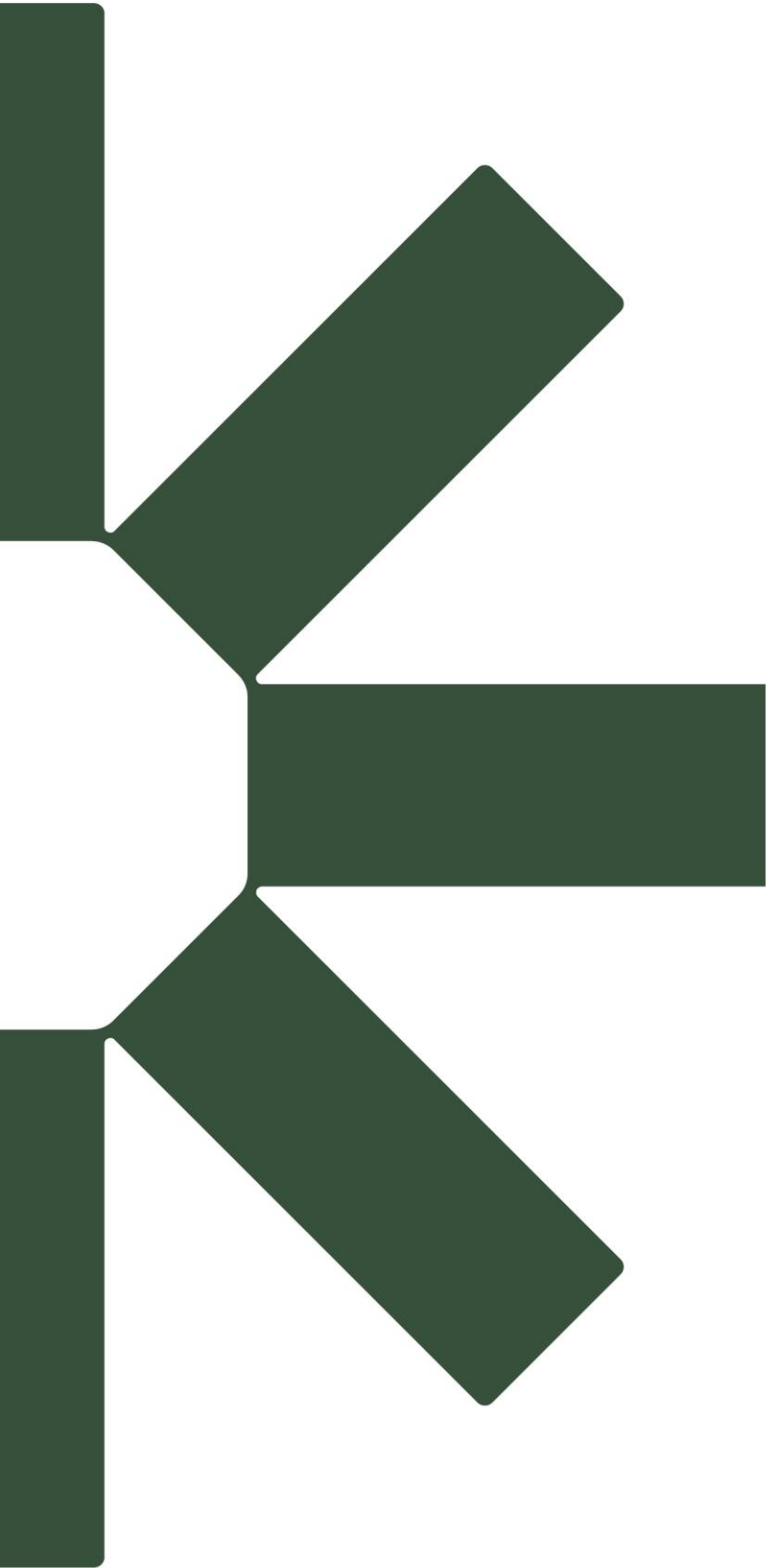
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