

**APPENDIX 3D  
GROUNDWATER  
MONITORING DATA**

Summary of Groundwater Results 2024

Site	Water Level (mbgl)			pH			EC (uS/cm)		
	Min	Max	Ave	Min	Max	Ave	Min	Max	Ave
GWa1									
GWa2	3.0	3.5	3.3	6.4	6.6	6.5	862.0	981.0	930.4
GWa3	4.1	4.1	4.1	6.8	6.8	6.8	1730.0	1730.0	1730.0
GWa4	2.5	2.9	2.7	6.9	7.0	6.9	1340.0	1750.0	1555.8
GWa5	1.9	2.4	2.1	7.2	7.5	7.4	8140.0	12400.0	9705.0
GWa6	0.8	1.2	0.9	7.2	7.4	7.3	3770.0	5940.0	4910.0
GWa7									
GWa8	1.3	1.7	1.4	7.1	7.2	7.1	1640.0	1850.0	1745.8
GWa10	3.2	3.6	3.4	7.0	7.1	7.1	2790.0	2960.0	2905.8
GWa11	3.5	3.6	3.5	7.5	7.7	7.6	931.0	1330.0	1118.3
GWa12									
GWa14									
GWa15									
GWa16	2.3	3.0	2.7	7.1	7.1	7.1	18600.0	20700.0	19633.3
GWa32	1.7	2.7	2.0	7.2	7.3	7.2	3350.0	4010.0	3730.0
GWa34	3.6	3.9	3.7	6.5	6.8	6.7	2890.0	3022.5	3022.5
GWa36									
GWc1	9.0	9.7	9.3	7.0	7.1	7.0	1860.0	3360.0	2869.2
GWc2	2.2	4.0	3.0	7.2	7.6	7.4	1220.0	1280.0	1239.2
GWc3	1.5	2.5	2.1	7.0	7.2	7.1	3220.0	4120.0	3732.5
GWc4	13.5	13.6	13.5	6.6	6.7	6.6	2330.0	2450.0	2417.5
GWc5	5.2	5.3	5.3	6.5	6.6	6.6	5310.0	5580.0	5445.8
GWc10	1.8	3.5	2.8	6.9	7.7	7.1	3760.0	3890.0	3820.8
GWc11	5.4	8.0	6.8	6.4	6.8	6.5	2080.0	2760.0	2366.7
GWc12	6.3	8.0	7.1	7.4	7.5	7.4	2550.0	2880.0	2698.3
GWc14	3.0	3.7	3.3	7.3	7.6	7.5	3390.0	3620.0	3537.5
GWc15	4.3	5.3	4.8	7.0	7.4	7.1	3640.0	4010.0	3757.5
GWc16	29.9	31.2	30.6	7.1	7.2	7.2	2090.0	2530.0	2364.2
GWc17									
GWc18									
GWc19									
GWc24									
GWc25	25.4	27.1	26.2	6.5	6.9	6.6	1330.0	1410.0	1366.4
GWc26	51.0	53.5	52.6	7.2	7.3	7.3	1470.0	1510.0	1495.0
GWc27	15.2	16.7	15.7	3.5	4.2	4.0	15.2	16.7	15.7
GWc28									
GWc29									
GWc30	29.4	31.8	29.9	6.6	6.8	6.7	2800.0	3140.0	2973.3
GWc31									
GWc32	3.7	4.5	3.8	6.5	6.8	6.6	3410.0	3520.0	3465.8
GWc33									
GWc34	19.5	19.9	19.7	7.0	7.0	7.0	3990.0	3990.0	3990.0
GWc35									
GWc36	7.9	9.6	8.6	6.4	6.6	6.5	3680.0	3980.0	3864.2
GWc37	24.9	25.1	25.0	6.2	6.3	6.2	2400.0	2480.0	2440.0
GWf1									
GWf2									
GWf3	18.1	19.3	18.6	6.6	6.8	6.7	3200.0	4490.0	3970.0
GWf4									
GWf5									
GWf6									
GWf7									

Summary of Groundwater Results 2023

Site	Water Level (mbgl)			pH			EC (uS/cm)		
	Min	Max	Ave	Min	Max	Ave	Min	Max	Ave
GWa1									
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

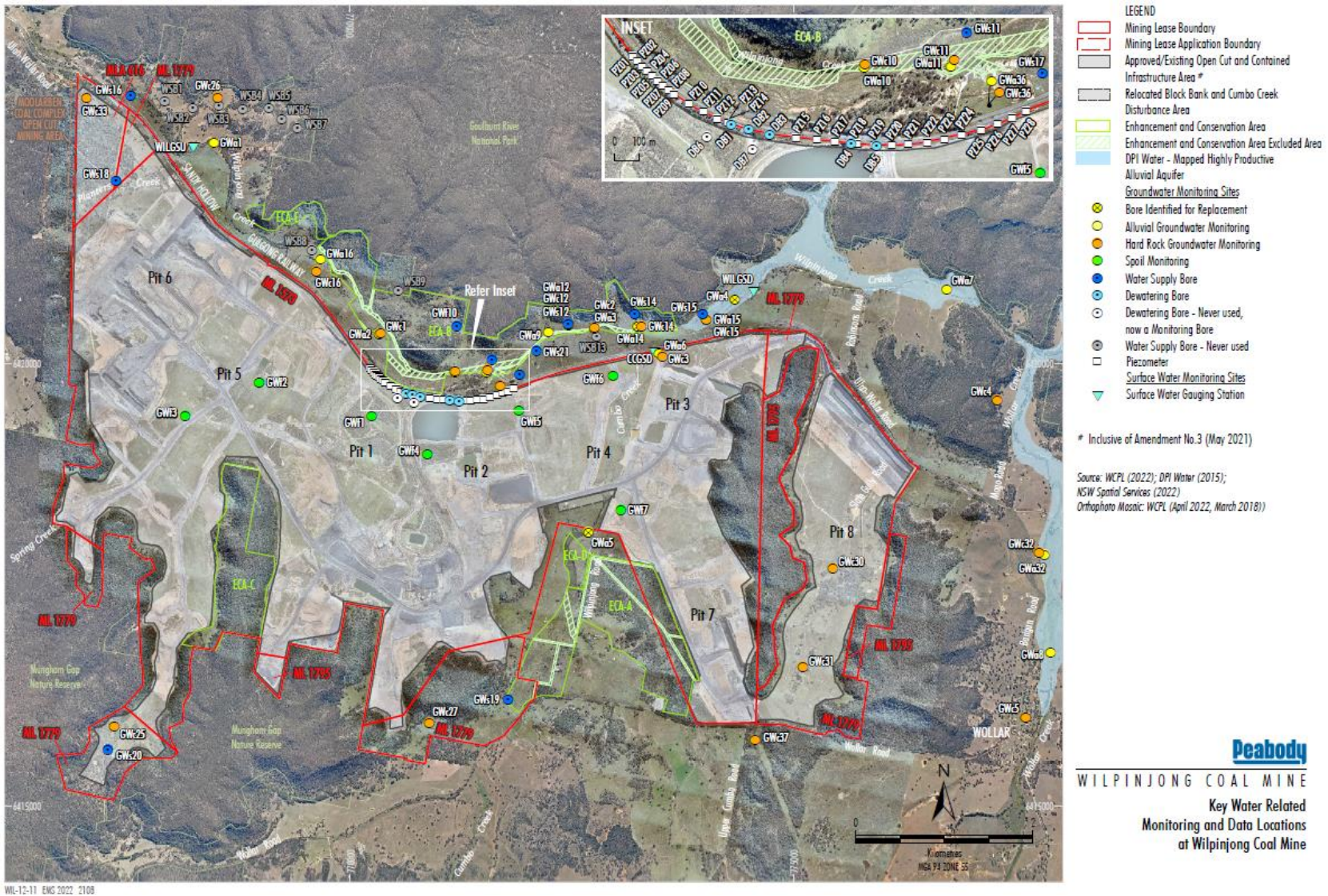
Summary of Groundwater Results 2016

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\_EMS 2022\_2108











Table with columns: 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, 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, No Sample (1=Dry, 2=Inadequate Vol, 3=Not Stabilised, 4=No access), pH pH Unit, pH Redox pH Unit, Potassium - Dissolved mg/L, Redox Potential mV, 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































a Sample Location	Sampling Date	Sampling Time	Aluminium mg/L	Arsenic 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	No Sample 1=Dry 2=Inadequate Vol 3=Not Stabilised 4=No access	pH pH Unit	pH Redox pH Unit	Potassium - Dissolved mg/L	Redox Potential mV	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			
GWC33	06-Dec-2024	1420												Dry											1																	
GWC26	13-Dec-2024	1309		0.02	<0.001	0.222	560	30	23	162	1480	<0.001	13/12/2024	51	7	4	<1	1.53	0.24	<0.001	14	0.021	<0.001	0.001		7.2	8.21	16	232	<0.01	302	0.366	23	22	583	16.7	16.2	854	<0.005			
GWA16	06-Dec-2024	941												Dry											2																	
GWC16	06-Dec-2024	1005		0.03	<0.001	0.106	614	54	<1	326	2160	0.001	06/12/2024	29.88	7.1	12	<1	3.35	1.13	<0.001	25	0.034	<0.001	<0.001		7.2	7.29	20	234	<0.01	370	0.702	66	22	614	22.8	21.4	1240	<0.005			
GWC30	12-Dec-2024	1158		0.02	<0.001	0.043	535	223	<1	529	2880	0.033	12/12/2024	29.41	6.3	11	<1	1.18	5.05	<0.001	144	0.242	<0.001	0.004		6.6	7.32	45	260	<0.01	175	2.13	331	22	535	32.5	31.7	2030	0.01			
GWC31	12-Dec-2024	1215												Dry											2																	
GWC37	12-Dec-2024	1117		0.1	0.028	0.023	189	129	<1	192	2420	0.004		24.94	6.2	9	<1	0.32	7.18	<0.001	107	1.12	<0.001	0.007		6.2	6.97	51	270	<0.01	248	1.32	863	21	189	27.2	27.3	1760	0.034			
GWC27	12-Dec-2024	1035		0.38	0.003	0.047	<1	17	<1	330	1600	0.043	12/12/2024	15.78	6.8	<1	<1	5.62	1.87	0.008	24	2.25	<0.001	0.018		3.9	4.14	30	462	<0.01	237	0.107	300	19.5	<1	15.6	13.9	904	0.279			
GWA32	13-Dec-2024	1001		<0.01	<0.001	0.042	560	139	<1	670	3680	<0.001	13/12/2024	1.96	7.4	6	<1	2	<0.05	<0.001	179	0.139	0.004	0.002		7.3	8.06	22	289	<0.01	454	1.92	492	18.5	560	40.3	42	2440	<0.005			
GWC32	13-Dec-2024	1032		0.03	<0.001	0.037	1290	174	<1	316	3450	0.012	13/12/2024	3.84	4.3	28	<1	3.64	1.94	0.005	115	0.083	<0.001	0.001		6.6	7.07	47	309	<0.01	570	4.33	305	19	1290	41	44.1	2160	0.052			
GWA34	12-Dec-2024	1302		1.08	<0.001	0.025	351	186	<1	343	2940	0.021	12/12/2024	3.77	7.5	5	<1	0.82	1.36	<0.001	189	0.092	0.002	0.024		6.8	7.66	5	298	0.01	247	1.3	942	19	351	36.3	35.7	2280	0.051			
GWC34	12-Dec-2024	1310												Dry											2																	
GWA36	06-Dec-2024	1342												Dry											2																	
GWC36	06-Dec-2024	1349		0.02	0.002	0.019	287	148	<1	372	3900	<0.001		8.05	6.6	28	<1	1.59	33.5	<0.001	154	2.35	0.001	0.015		6.5	6.57	35	29.2	0.03	487	1.31	1310	20.5	287	43.5	42.1	2880	0.026			
GWC25	19-Dec-2024	1028		0.15	<0.001	0.108	268	37	<1	248	1410	0.014	19/12/2024	27.05	8.1	35	<1	5.61	0.35	0.002	56	0.874	<0.001	0.022		6.5	6.66	6	185	<0.01	154	0.413	122	20	268	14.9	13.3	842	0.007			
PZ13	17-Dec-2024	1305												Dry											2																	
PZ20	19-Dec-2024	1159		0.76	0.002	0.033	387	33	<1	27	886	0.003		1.95	7.6	7	<1	1.12	1.47	0.001	36	0.868	<0.001	0.006		7.5	7.5	13	179	<0.01	97	0.317	42	19	387	9.37	9.16	598	0.012			
PZ21	19-Dec-2024	1216		0.96	<0.001	0.016	345	29	<1	22	825	0.003		3.23	7.8	5	<1	3.44	0.6	<0.001	19	0.136	<0.001	0.003		7.6	7.66	6	179	<0.01	122	0.242	75	18.5	345	9.08	8.47	624	0.009			
PZ26	19-Dec-2024	1234												Dry											1																	
GWF1	19-Dec-2024	1246																																								
GWF2	19-Dec-2024	1246																																								
GWF3	19-Dec-2024	1116		0.14	<0.001	0.052	747	187	<1	254	3460	0.004		18.22	8.4	37	<1	0.38	0.46	0.001	246	1.46	<0.001	0.006		6.8	6.93	32	212	<0.01	267	1.48	972	21	747	42.3	42	2850	0.034			



## Groundwater Review



# Annual Review – Wilpinjong Coal Mine

## 2024 Groundwater Compliance

### Wilpinjong Coal Mine

1434 Ulan-Wollar Road Wilpinjong, NSW

Prepared by:

**SLR Consulting Australia**

SLR Project No.: 665.v10014.02417

28 March 2025

Revision: 2.0

## Revision Record

Revision	Date	Prepared By	Checked By	Authorised By
1.0	25 March 2025	R Phayer and A Skorulis	D Western	D Western
2.0	28 March 2025	R Phayer and A Skorulis	D Western	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 Pty Ltd (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 2024 calendar year. It also contains the analysis and information required to address the relevant water licence conditions ‘water year’ 01 July 2023 - 30 June 2024. The report addresses the following objectives:

- 1 Reporting against the commitments in the WCM Groundwater Monitoring Program (GWMP) – 01 January 2024 to 31 December 2024.
- 2 Reporting against water licence conditions for WAL41862 – 01 July 2023 to 30 June 2024 with review of inferred inflows from water balance modelling and groundwater modelling.

Above average rainfall conditions were experienced in 2024 preceded by below average rainfall from conditions from in 2023. This has resulted in the stabilisation or increase in groundwater levels across many alluvial and coal measures monitoring sites.

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 2024. An inspection at these locations in response to this trigger exceedance was undertaken in November 2024 which identified that these sites contained sediment or were obstructed rather than showing true dry conditions. These bores are recommended to be considered for replacement in future updates to the GWMP.
- Coal measures bores GWc1, GWc3, GWc4 and GWc5 have exceeded the EC trigger level during 2024.
  - GWc1 and GWc3 were replaced in November 2024 as both sites had large sumps which may have resulted in difficulties in removing stagnant water from the bores to gain representative groundwater samples.
  - EC trigger levels at GWc4 and GWc5 were updated in V6.0 of the GWMP, which has been submitted but not yet approved, to consider all observation data to the end of 2023 as there are no observable changes to groundwater quality at this location due to Wilpinjong operations. Both GWc4 and GWc5 would not have exceeded the EC trigger in 2024 under their updated levels.
- No pumping occurred from the WCPL supply borefield in 2024 and none of the cease-to-pump trigger levels were exceeded

The assessment of modelled vs observed levels for 2024 within the shallow groundwater system indicates the timing and magnitude of predicted WCM impacts generally correlate well, often predicting a subdued response to rainfall compared to pre-mining observations 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 (2020-2024) 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 currently reproduced by the groundwater model.

An updated version of the numerical groundwater model is undergoing independent peer review in early 2025. This model has been developed in support of groundwater



assessments associated with proposed future mining in EL 9399 and is calibrated using observation data up to December 2023. Compared to the SLR (2020a) model, the updated model includes observed climate and stream flow series between 2020 and 2023, an updated representation of Wilpinjong operations based on actual mining in this period (as approved under SSD-6764) and will also be recalibrated to groundwater level observations from 2015 to 2023. This updated model should better capture recently observed groundwater trends and be better suited to evaluating potential discrepancies between observations and model predictions that could indicate unexpected groundwater impacts.

WCPL holds a groundwater licence for 3,212 ML/a under WAL 41862 for the Sydney Basin North Coast Groundwater Source. For the 2023-2024 water year the numerical model (SLR, 2020a) predicts an inflow of 550 ML/a while the water balance model estimates groundwater inflow of 694 ML/a (SLR, 2025). Both these values are 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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## Appendices

- Appendix A**     **Groundwater Level Hydrographs**
- Appendix B**     **Trigger Assessment Charts**
- 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 2024 Annual Review for Wilpinjong Coal Mine (WCM).

This report contributes to the requirements of the Annual Review (AR) for the WCM for the 2024 calendar year. It also contains the analysis and information required to address the relevant water licence conditions 'water year' 01 July 2023 - 30 June 2024. The report addresses two main objectives:

- 1 Reporting against the commitments in the WCM Groundwater Monitoring Program (GWMP) – 01 January 2024 to 31 December 2024.
- 2 Reporting against water licence conditions for WAL41862 – 01 July 2023 to 30 June 2024 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 2024 is presented in **Figure 1**, which indicates that mining continued in Pit 6 and Pit 8 in 2024, while backfilling and rehabilitation occurred in areas where mining was recently completed (Pit 7, Pit 5, Pit 2). Groundwater monitoring bore locations are shown in **Figure 2**.



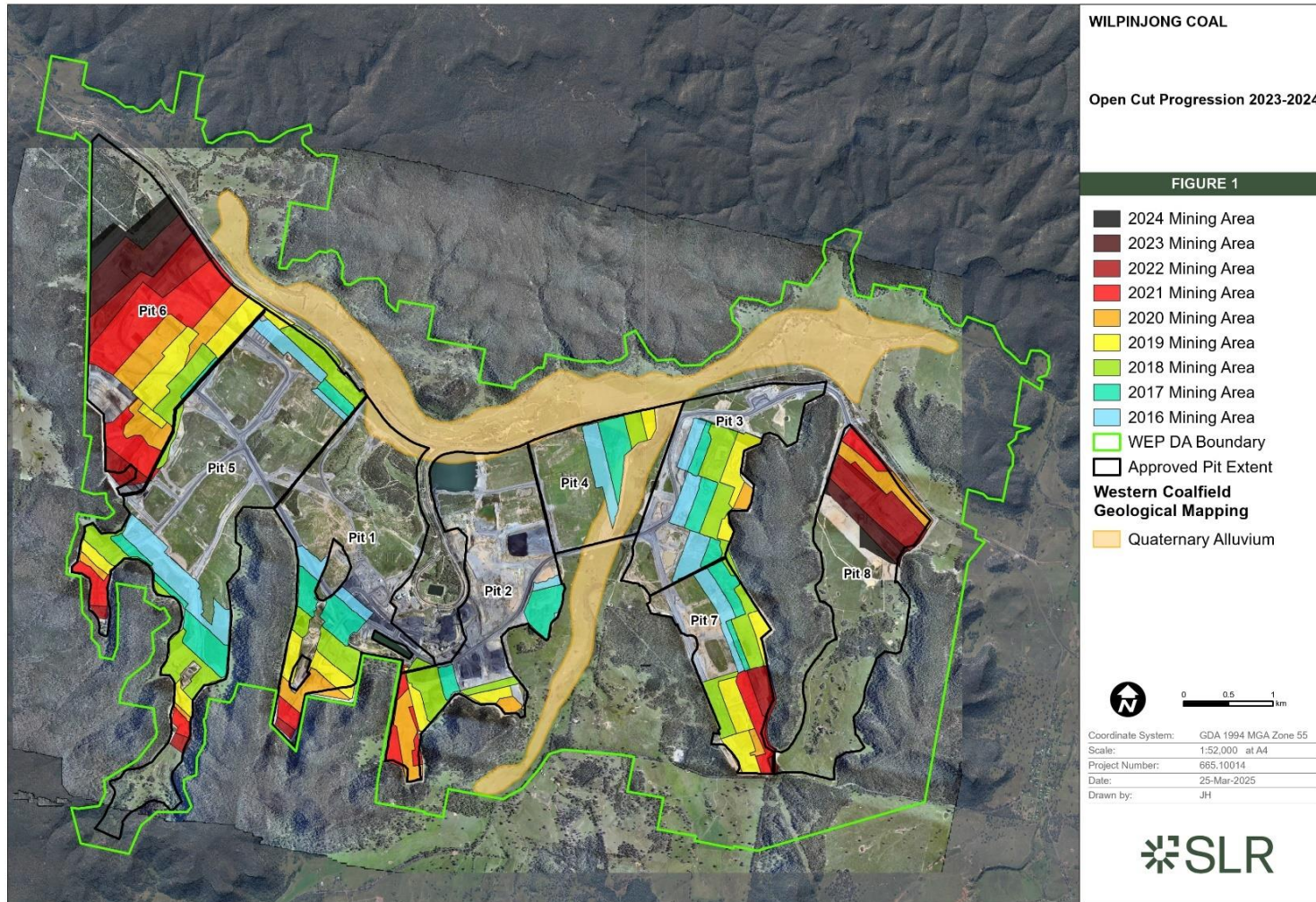


Figure 1 Wilpinjong Coal Mine Open Cut Progression 2016 – 2024



## 1.1 Groundwater Works Undertaken in 2024

The following groundwater works were commissioned by Wilpinjong Coal Mine and undertaken in 2024 in line with the recommendations of previous Annual Reviews, requests from the Department of Planning and the Environment, to maintain the monitoring network, and to expand the monitoring network to be suitable for proposed future operations.

### 1.1.1 Hydrogeological Investigations for Proposed Future Mining

Eight new groundwater monitoring locations were established in July, August and December 2024 with the objective of providing baseline groundwater level, groundwater quality and aquifer parameter data prior to the development of proposed future Wilpinjong operations. Tasks associated with this work are summarised in the points below and **Table 1**.

- Hydraulic Packer testing performed on two boreholes (SGN028 and SGN037A).
- Multi-level vibrating wire piezometer (VWP) installation on two boreholes (SGN028 and SGN037A).
- Standpipe piezometer installation at six locations (SGN003A, SGN003B, SGN037B, TRN095A, TRN095B and TRN095C)
- Slug testing performed on all installed standpipe piezometers (SP).
- Bore development of the newly installed standpipe piezometers.
- Installation and commissioning of telemetry units for remote groundwater level monitoring.

**Table 1: New groundwater monitoring locations for proposed future mining**

Hole ID	Date Constructed	Easting <sup>1</sup>	Northing <sup>1</sup>	Depth (mbgl)	Type	Groundwater Monitoring – Target Lithology	Hydraulic Testing – Type
SGN003A	24-07-2024	774737.3	6421005.4	31.8	SP	ICM (Illawarra Coal Measures) above Ulan Seam (overburden)	Slug testing
SGN003B	24-07-2024	774727.5	6421013.5	3.7	SP	Alluvium	Slug testing
SGN028	31-07-2024	775775.4	6420778.5	80.7	VWP	2x above Ulan Seam (overburden), 1x Ulan seam, 1x under Ulan Seam (Underburden)	Packer testing
SGN037A	13-12-2024	tbd		84	VWP	2x above Ulan Seam (overburden), 1x Ulan seam, 1x under Ulan Seam (Underburden)	Packer testing
SGN037B	02-12-2024	tbd		5	SP	Shallow standpipe in palaeochannel/ Alluvium	Slug testing
TRS095A	13-08-2024	779009.3	6418250.5	101.6	SP	under Ulan Seam (Underburden)	Slug testing
TRS095B	14-08-2024	779019.3	6418238.8	50	SP	Igneous rocks	Slug testing



Hole ID	Date Constructed	Easting <sup>1</sup>	Northing <sup>1</sup>	Depth (mbgl)	Type	Groundwater Monitoring – Target Lithology	Hydraulic Testing – Type
TRS095C	16-08-2024	778991.5	6418252.5	3.4	SP	Alluvium/ shallow unconsolidated strata	Slug testing

### 1.1.2 Downhole Camera and Well Development

Several monitoring bores within the Wilpinjong network have been exceeding depth to water trigger levels despite near average and above average rainfall conditions from 2022 to 2024. The wells exceeding depth to water triggers frequently had a measured total depth that was shallower than previously measured. This warranted an investigation of well integrity.

- Downhole Camera (DHC) survey to confirm screened interval depths and standpipe integrity at 4 locations which were exceeding depth to water trigger levels (GWA3, GWA12, GWA14, GWA15).
- Attempted repair/ clearing of obstructions followed by bore development to remove silt/ sediment within each monitoring wells screened interval.

Summary report (SLR, 2024c) provided to Wilpinjong in December.

**Table 2: Bore development and investigation summary**

Bore ID	Inspection Date/Time	Summary/ outcome	Recommendations/ comments
GWA3	17-10-2024 15:25	Removed gravel during development	Manually slotted screens not consistent with construction guidelines, consider replacement.
GWA12	17-10-2024 11:31	Recovered bailer from the bore.	Manually slotted screens not consistent with construction guidelines, consider replacement.
GWA14	17-10-2024 13:20	Cleaned silt/dirt from the bottom of the well. Bailer not recovered from well.	Manually slotted screens not consistent with construction guidelines. Bore remains obstructed. Consider replacement.
GWA15	17-10-2024 13:42	Two bailers lodged and not recovered from GWA15. Bailers impeded reaching base of bore while developing.	Manually slotted screens not consistent with construction guidelines, bore remains obstructed. Consider replacement.

### 1.1.3 New and Replacement Bores

Previous annual reviews and trigger exceedance investigations identified difficulties in interpreting groundwater level and quality data at several bores within the Wilpinjong monitoring network due to a lack of construction and lithology logs, or due to the well construction identified in downhole camera investigations.

Agency correspondence also requested that additional alluvial/ shallow monitoring locations be installed along Wilpinjong Creek adjacent to Pit 6 to help evaluate potential Pit 6 mining effects.

Five replacement and two new monitoring locations were established in November 2024 (**Table 3**)



**Table 3: Replacement alluvial bores**

Bore ID	Construction Date	Easting <sup>1</sup>	Northing <sup>1</sup>	Construction Type	Total Depth (m)	GW Monitoring - Target Lithology	Borehole Status
GWa7	01-12-2024	776724	6420831	Standpipe	4.62	Wilpinjong Creek Alluvium	Replacement
GWa5	16-11-2024	772681	6418092	Standpipe	4.33	Alluvium along Cumbo Creek	Replacement
GWc38	13-11-2024	768091	6422351	Standpipe	20	Weathered Coal Measures	New
GWa39	13-11-2024	768609	6421611	Standpipe	9	Wilpinjong Creek/Planters Creek Alluvium	New
GWc1	14-11-2024	773519	6420113	Standpipe	43.4	Coal Measures (Ulan Seam)	Replacement
GWc3	15-11-2024	773519	6420074	Standpipe	16.5	Coal Measures (Moolarben Seam)	Replacement
GWa6	15-11-2024	773480	6420111	Standpipe	4.5	Wilpinjong Creek Alluvium	Replacement

<sup>1</sup>Locations to be finalised once surveyed.

## 1.2 Groundwater Monitoring

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**).

New monitoring locations from **Section 1.1** will be included in future updates to the GWMP and monitoring network figures.

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 1.4 and 1.5**, 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**).



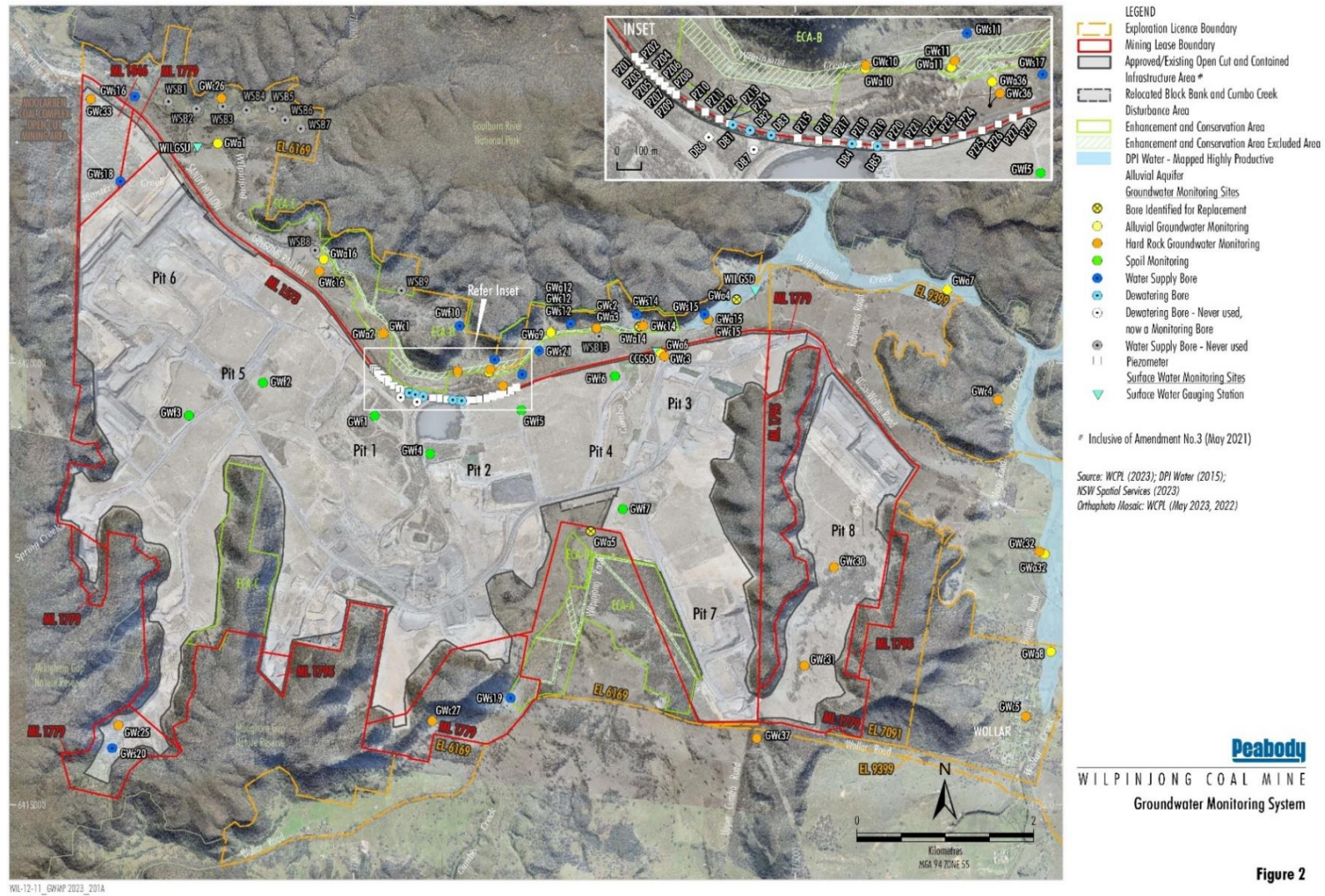


Figure 2 Groundwater Monitoring Sites at Wilpinjong Coal Mine



### 1.3 Climate Data

**Table 4** displays monthly and annual rainfall compared to the long-term average at the Wollar (Barrigan St) BOM station for 2016-2024. Above average rainfall conditions were experienced in 2024 preceded below average rainfall conditions in 2023. The annual total rainfall recorded in 2024 was 779 mm, 29% higher than the long-term average of 600.7 mm.

**Table 5** presents the total rainfall observed by the on-site rainfall gauge in 2024. Overall, in 2024 rainfall recorded on-site at WCM is slightly lower than at the Wollar BOM station with a total of 717.5 mm.

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

**Table 4: BOM Rainfall Station 062032 (Wollar, Barrigan St) Rainfall Data**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
<b>Avg</b>	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
<b>2016</b>	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
<b>2017</b>	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
<b>2018</b>	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
<b>2019</b>	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
<b>2020</b>	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
<b>2021</b>	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
<b>2022</b>	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
<b>2023</b>	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
<b>2024</b>	88.5	39.5	71	73.9	63.5	81.5	60	42.5	36	52	103	68	779.4

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

**Table 5: Wilpinjong Site 24-hour Rainfall Data**

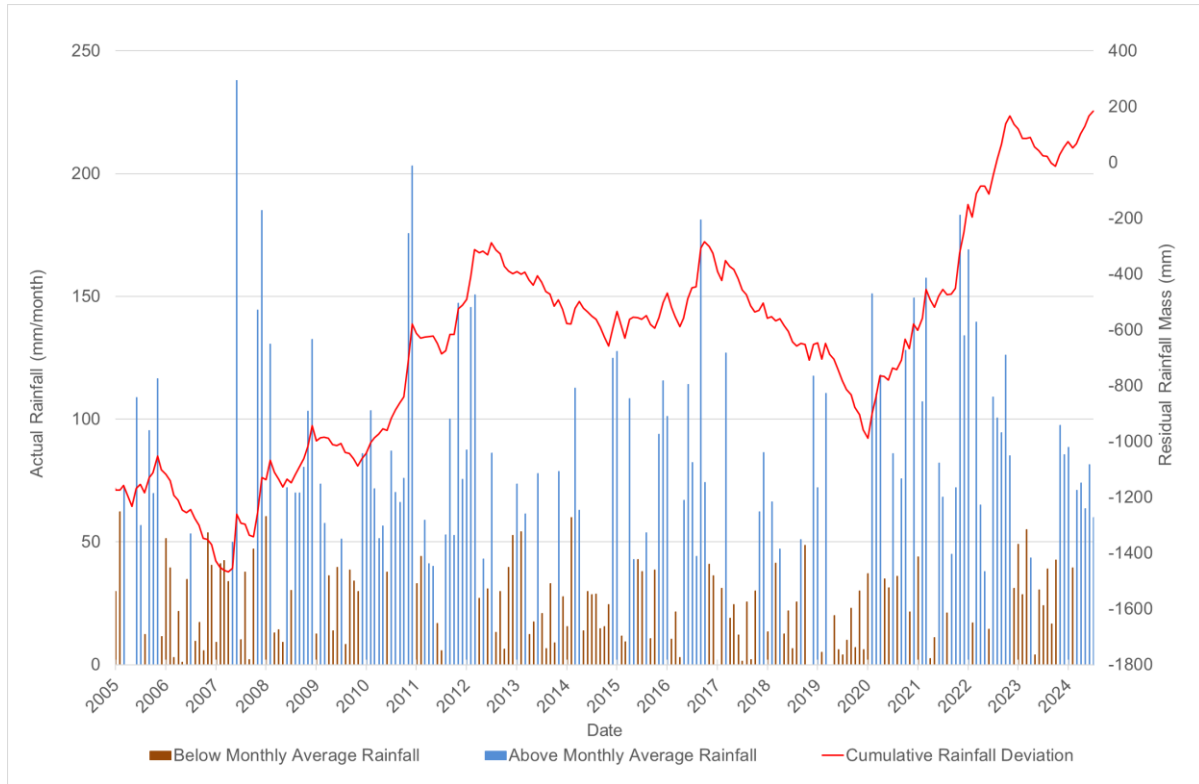
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
<b>2019</b>	54.8	7.4	108.8	0	17.6	10.6	2.6	10.2	23	5.6	22	3	265.6
<b>2020</b>	27.2	127	92	117	16	23.4	70	36.4	77.2	150.6	17.4	161.6	915.8
<b>2021</b>	52.6	126.6	159.8	1.8	9.4	84.4	66.6	25.4	44.2	40.8	249.2	81.4	942.2
<b>2022</b>	101.4	16	119.8	95	43.6	13	136.4	103.2	93.8	185.4	64	26.6	998.2
<b>2023</b>	48.6	24.6	64.6	47.8	2.8	28.8	23.2	29.6	18	36.2	94	59.4	477.6
<b>2024</b>	78.6	32.8	75	61.8	69.2	58.8	39.8	42.5	36	52	103	68	717.5

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.

The CRD from the Wollar (Barrigan St) BOM station **Figure 3**, shows a decline in the CRD for the for most of 2023 with below average annual rainfall conditions. The last two months in 2023 see an increase in CRD consistent with higher rainfall in November and December, with the upward trend in the CRD continuing for 2024 reflecting the above-average rainfall conditions.



**Figure 3: Monthly Rainfall and CRD**



## 1.4 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 373 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 increasing at most bores in 2024 and correlates with above average rainfall through 2024, indicating that rainfall is a key recharge mechanism for the alluvial aquifer.

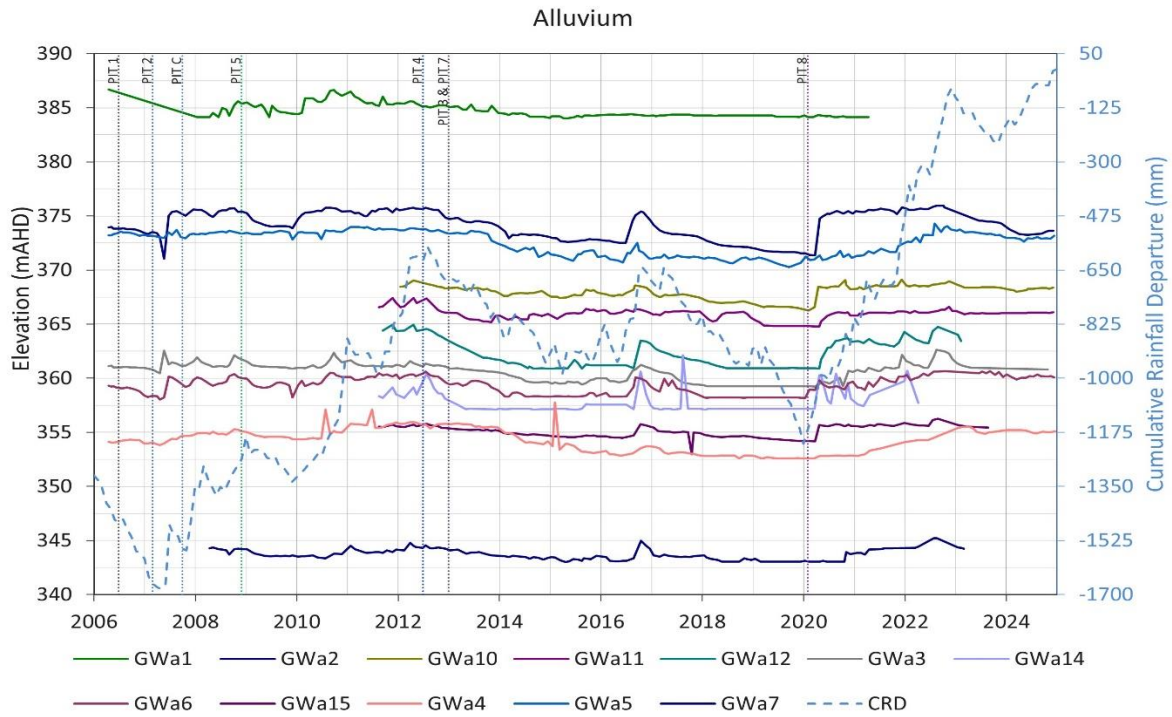
**Figure 5** presents the groundwater hydrographs for all coal measures (Permian aged Illawarra Coal Measures) monitoring bores from the west (higher elevations) to the east (lower elevations), in relation to rainfall residual mass and the commencement of mining in each Pit. The hydrographs show the expected response of drawdown varying with distance from mining activity. In 2024, groundwater levels in coal measures monitoring wells away from active mining may show stable or increasing groundwater levels while locations nearer active mining may show some decline.

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 to the alluvium and possible baseflow to Wilpinjong Creek (**Figure 6**). Drawdown due to WCM operations reverses the historical upward gradient at some monitoring locations, with a downward gradient observed from the alluvium to the underlying coal measures from 2014 to 2023. However, **Figure 6** also shows recovery in Permian strata in response to above average rainfall conditions from 2020 to 2022, with a return to upward gradients from Permian to alluvial strata observed for some of 2023 and 2024.

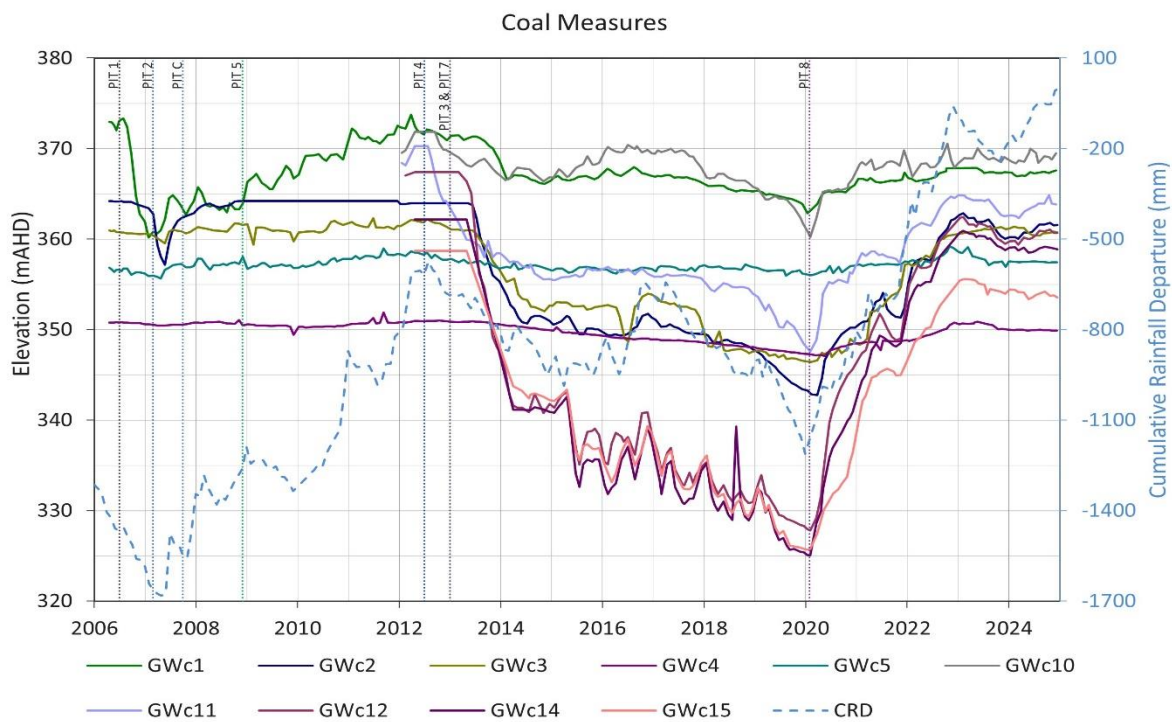




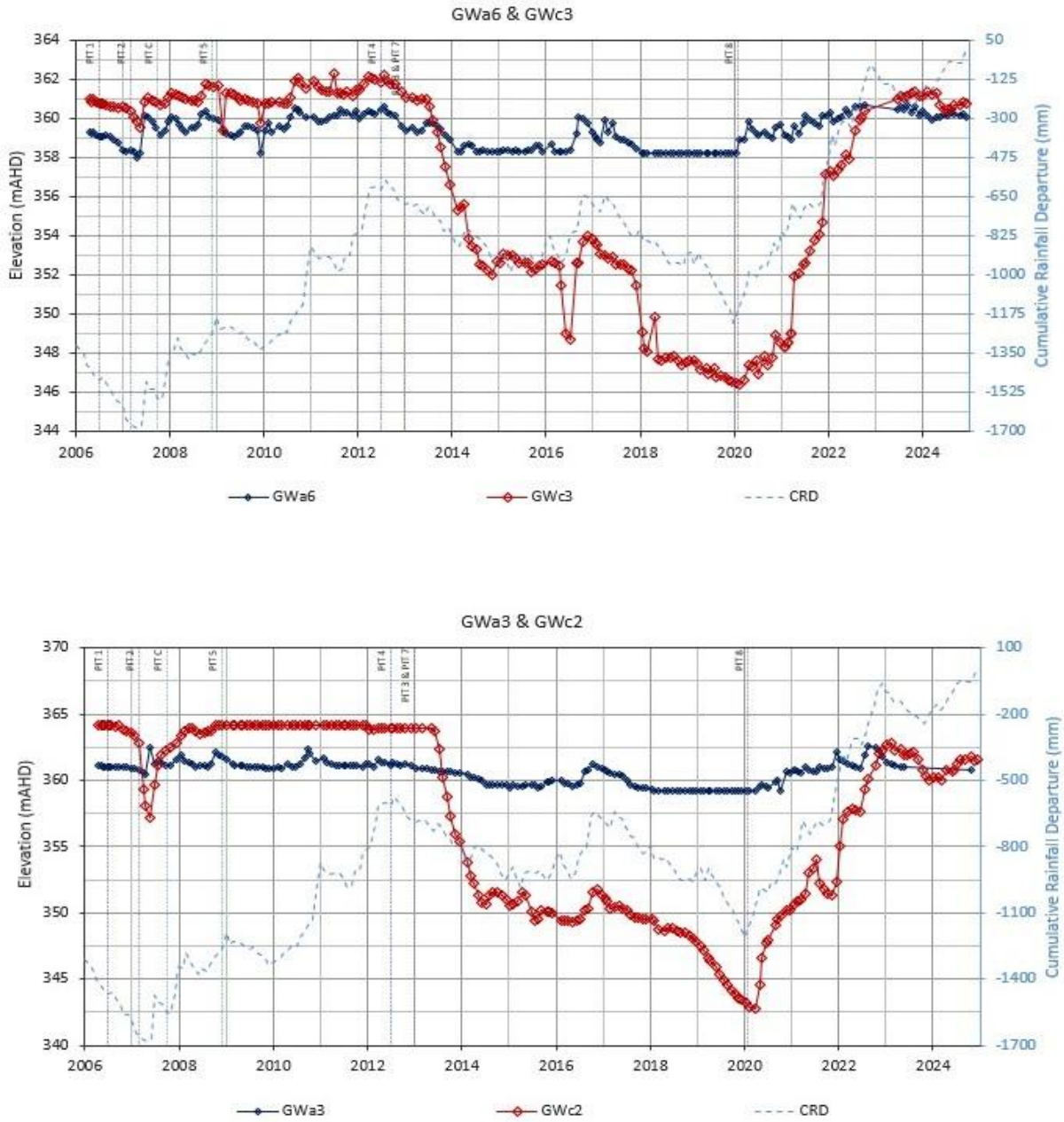
**Figure 4: Transition in Alluvial Bore Groundwater Levels from West to East Along Wilpinjong Creek**



**Figure 5: Coal Measures Bore Groundwater Levels**



**Figure 6: Example Hydrographs showing Vertical Gradient between Permian and Alluvial Strata.**



## 1.5 Groundwater Quality Data

Groundwater electrical conductivity (EC) statistics have been computed for select alluvial and coal measures monitoring bores using a total of 121 measurements from January 2024 until December 2024 (**Table 6**). The lowest mean salinity in the alluvial monitoring bores is 930  $\mu\text{S/cm}$  at GWa2, whereas the highest mean salinity is 9,750  $\mu\text{S/cm}$  at Gwa5. The lowest mean salinity in the coal measures monitoring bores is 1,239  $\mu\text{S/cm}$  at GWc2, whereas the highest mean is 5,446  $\mu\text{S/cm}$  at GWc5. Box and whisker plots of alluvial and coal measures EC observations are also presented in **Table 7**. These plots also 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 the Permian sediments (i.e. an upward gradient is observed) may be concentrated through evapotranspiration or evaporation.

**Table 6: Groundwater Electrical Conductivity Statistics in 2024**

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
<b>GWa1</b>	N/A	N/A	-	-	-	North of Pit 6: Far west
<b>GWa2</b>	930	33	GWc1	2869	501	North of Pit 1
<b>GWa3</b>	1730	0	GWc2	1239	19	North of Pit 4
<b>GWa4</b>	1556	122	-	-	-	North-east of Pit 3
<b>GWa5</b>	9705	1458	-	-	-	South of Pit 4 on Cumbo Ck
<b>GWa6</b>	4910	660	GWc3	3733	266	Northern end of Cumbo Ck
<b>GWa7</b>	N/A	N/A	GWc4	2418	31	North-east of Slate Gully
<b>GWa8</b>	1746	64	GWc5	5446	85	Wollar: SE of Slate Gully

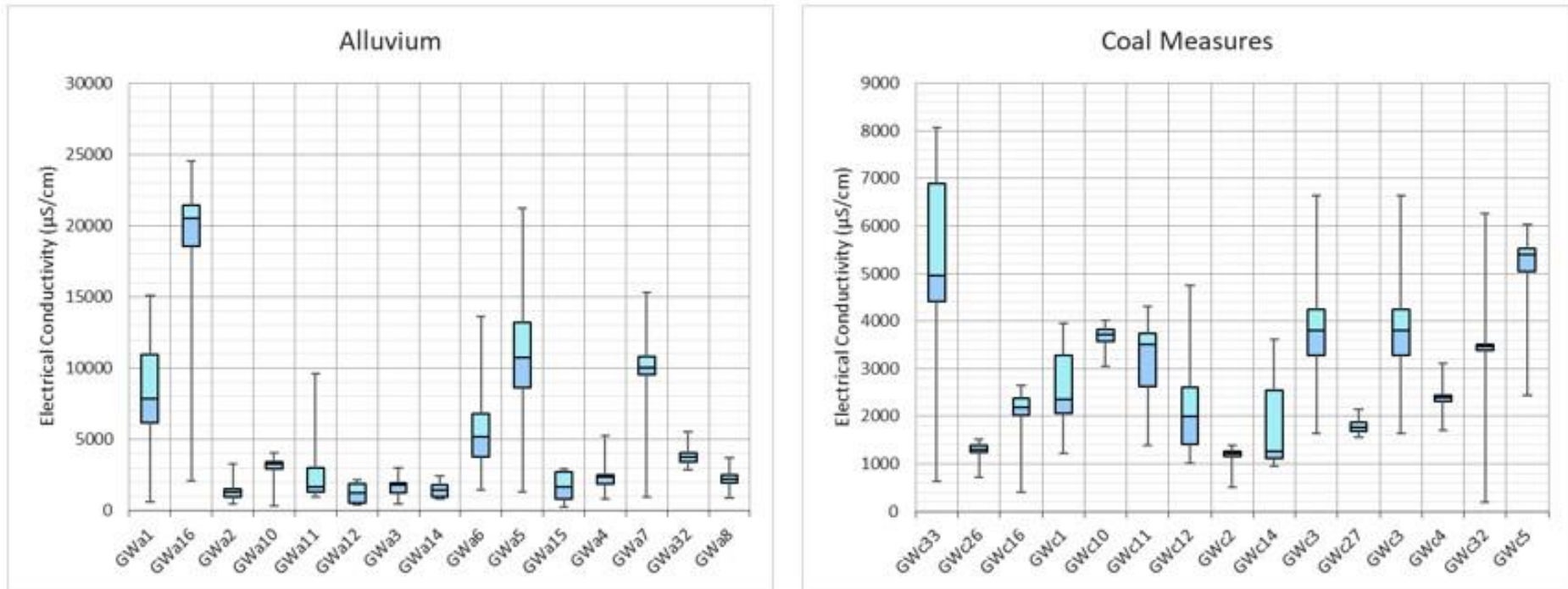
N/A no data/ bore dry

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 measures 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**

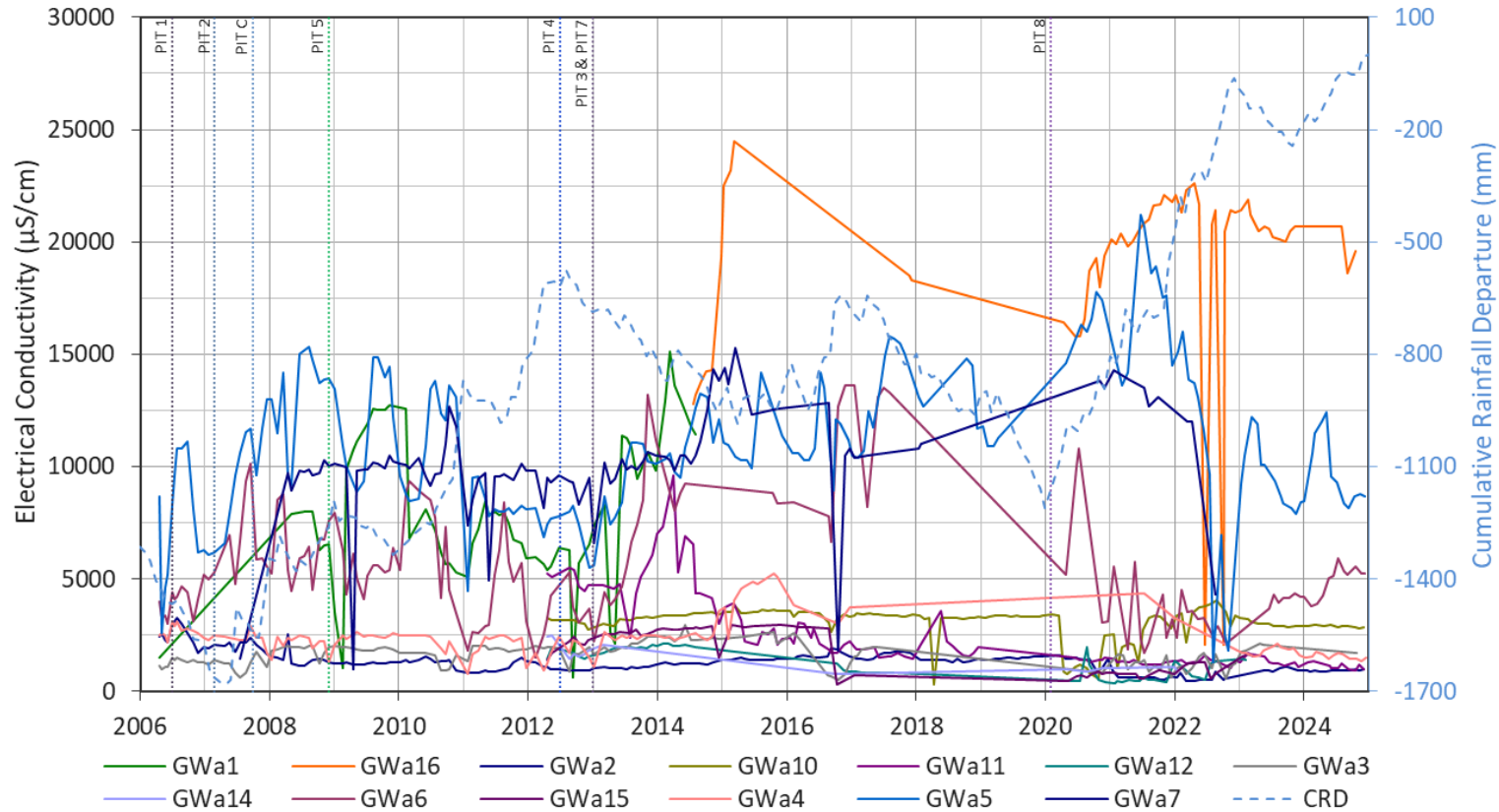
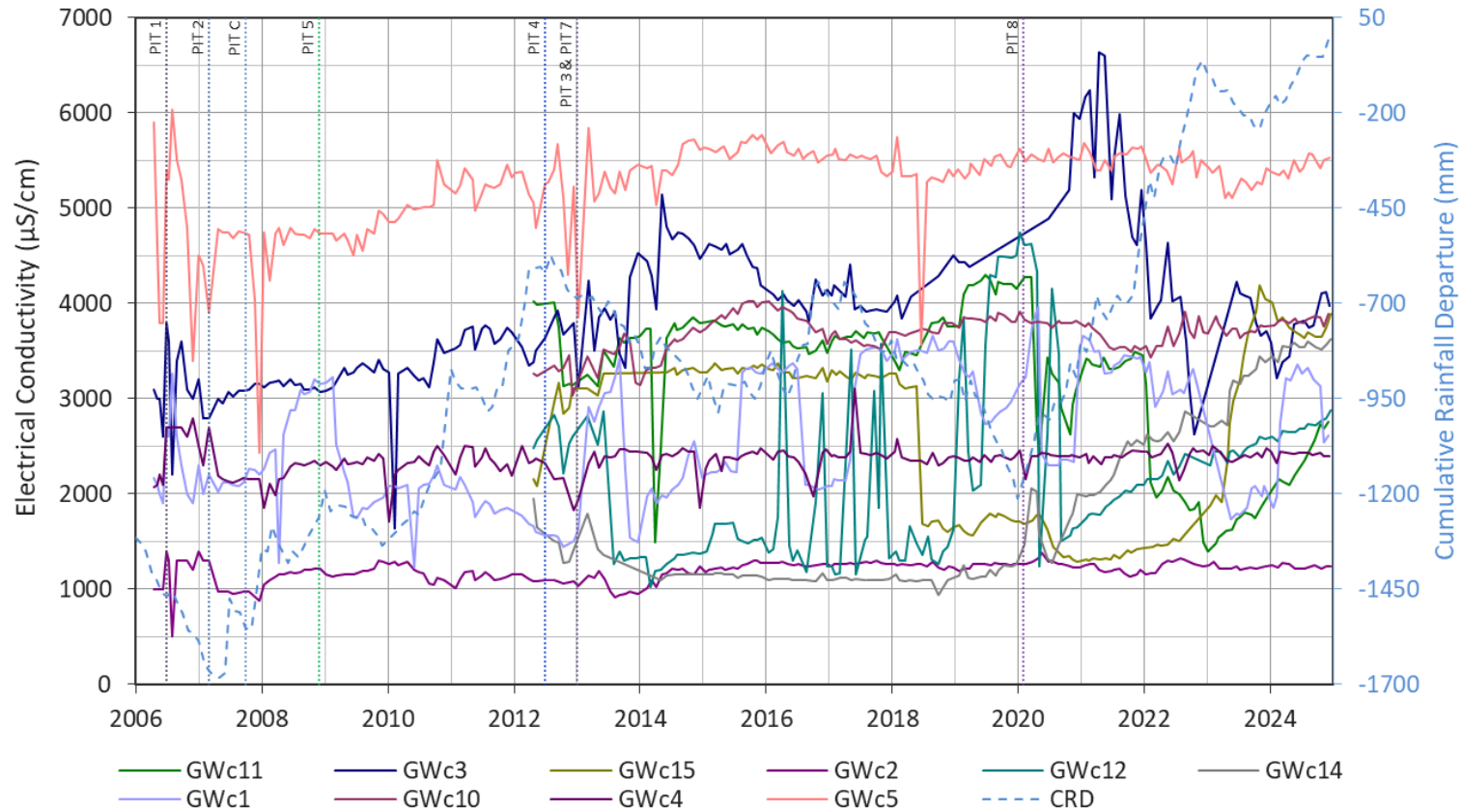


Figure 9: Coal Bore Groundwater Electrical Conductivity along Wilpinjong Creek



## 2.0 Trigger Compliance

The following section addresses the compliance of groundwater level and groundwater quality observations in relation to trigger levels during the 2024 reporting period. **Table 7** 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 7: 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 <sup>1</sup>		12,272	6.5	8
GWa2	Alluvium	372.4	3.8	2,280		
GWa3	Alluvium	Dry <sup>2</sup>		1,970		
GWa4	Alluvium	Dry <sup>2</sup>		2,596		
GWa5	Alluvium	371.4	2.6	13,926		
GWa6	Alluvium	N/A <sup>#</sup>		6,720		
GWa7	Alluvium	No Trigger <sup>1</sup>		10,126		
GWa8	Alluvium	Dry <sup>2</sup>		2,898		
GWa10	Alluvium	366.1	4.5	N/A <sup>#</sup>	N/A <sup>#</sup>	N/A <sup>#</sup>
GWa11	Alluvium	Dry <sup>2</sup>				
GWa12	Alluvium	361.3	4.3			
GWa14	Alluvium	Dry <sup>2</sup>				
GWa15	Alluvium	Dry <sup>2</sup>				
GWc1	Coal	N/A <sup>#</sup>		2,844	6.5	8
GWc2	Coal			1,290		
GWc3	Coal			3,304		
GWc4	Coal			2,412 (2,440) <sup>3</sup>		
GWc5	Coal			4,798 (5,560) <sup>3</sup>		

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

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

<sup>2</sup> 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.

<sup>3</sup> Revised groundwater quality triggers GWc4 and GWc5 have been included in an updated version of the GWMP (Version 6 – submitted September 2024). Historical trigger exceedances at GWc4 and GWc5 are most likely representative of natural variation in EC (independent of mining). The trigger levels were to be updated based on the 80<sup>th</sup> percentile EC for the entire monitoring record (up to 2023).



## 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 1 m 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 7**). 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 2024 period, with each bore 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 8** presents trigger level exceedances for the 2024 AR monitoring period.

**Table 8: Groundwater Trigger Level Exceedances in 2024**

Bore	Trigger Level Exceedance in 2024 Observations			
	Minimum RWL (mAHD)	EC	pH min	pH max
GWa1 <sup>^</sup>	N/A <sup>#</sup>	nd* Dry through 2023 and 2024		
GWa2	N	N	N	N
GWa3	Y (bore dry from June 2023 to Dec 2024 except Oct '24)	nd* Dry through 2024		
GWa4	N	N	N	N
GWa5	N	N	N	N
GWa6	N	N	N	N
GWa7	N/A <sup>#</sup>	nd* Dry through 2023 and 2024		
GWa8	N	N	N	N
GWa10	N	N/A <sup>#</sup>	N/A <sup>#</sup>	N/A <sup>#</sup>





Bore	Trigger Level Exceedance in 2024 Observations			
	Minimum RWL (mAHD)	EC	pH min	pH max
GWa11	N			
GWa12	Y (bore dry Jan-Dec 2024)			
GWa14^	Y (bore dry in 2023 and 2024)			
GWa15	Y (bore dry in 2023 and 2024)			
GWc1	N/A#	Y (Trigger exceedance April to Oct 2024)	N	N
GWc2		N	N	N
GWc3		Y (Trigger exceedance Jan to Dec 2024)	N	N
GWc4		Y (Trigger exceedance Feb to August 2024)	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 2024 AR monitoring period (**Table 8**), 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, GWa11, GWa12, GWa14 and GWa15 exceeded groundwater level triggers in 2024.

#### 2.2.1.1 GWa3

GWa3 was reported as dry throughout 2024 except for the October 24, 2024, observation which reported a depth to water of 4.05 mbtoc (metres below top of casing) (360.81 mAHD). The consecutive dry observations from June 2023 to September 2024 are an exceedance of the minimum groundwater level trigger.

The following points provide a brief discussion of the exceedance at GWa3:

- The final depth to water observation before GWa3 was reported dry in June 2023 was 3.9 mbtoc, while previous measured total depths of the well were 5.65 mbtoc. This indicated that well integrity may have been compromised and dry observations may not be representative of actual groundwater conditions.
- A downhole camera survey was completed on October 17, 2024, which measured a total depth of 4.96 mbtoc (~0.5 m shallower than previously measured) and identified



roots and coarse gravel within the screened interval of the well. GWa3 was then developed/ purged, which removed some of the gravel material and resulted in a post-development total depth of 5.15 mbtoc.

- The field report on this site investigation (SLR, 2024c) found that GWa3 did not meet minimum construction requirements for the following reasons:
  - GWa3 has manually cut screens which may allow sediment into the well and are wide enough for roots to grow into the well.
  - Development was not able to clear the well to its previously measured total depth.
- GWa3 was observed as dry in November and December 2024 observations but field notes that some water was present in the bore, but that this was insufficient to collect a representative sample.

Due to the construction of GWa3 with manually slotted screens, GWa3 should be considered for replacement and/ or decommissioning in 2025. It is recommended that the value of alluvial monitoring at the GWa3 location be assessed as part of a broader review of the groundwater monitoring network.

Prior to potential replacement/ decommissioning, observations in 2025 should record total well depth and depth to water on occasions where water is measured in a well but there is insufficient water to collect a sample. Alternate methodologies could be considered for sampling locations where there is consistently insufficient water to sample with the current methodology.

### 2.2.1.2 GWa12

GWa12 was reported as dry throughout 2024. The consecutive dry observations from March 2023 to December 2024 are an exceedance of the minimum groundwater level trigger.

The following points provide a brief discussion of the exceedance at GWa12:

- The final depth to water observation before GWa12 was reported dry in March 2023 was 3.3 mbtoc, while previous measured total depths of the well were 5.85 mbtoc. This indicated that well integrity may have been compromised and dry observations may not be representative of actual groundwater conditions.
- A downhole camera survey was completed on October 17, 2024, which measured a total depth of 3.72 mbtoc (~1.1 m shallower than previously measured) and noted a bailer was stuck in the well. This bailer was recovered and GWa12 was then developed. The total depth of GWa12 post development was 5.5 mbtoc with a depth to water of 4.48 mbtoc.
- The field report on this site investigation (SLR, 2024c) found that GWa12 did not meet minimum construction requirements as it has manually cut screens which may allow sediment into the well and are wide enough for roots to grow into the well.

Due to GWa12 being constructed with manually slotted screens, GWa12 should be considered for replacement and/ or decommissioning in 2025. It is recommended that the value of alluvial monitoring at the GWa12 location be assessed as part of a broader review of the groundwater monitoring network.

Prior to potential replacement/ decommissioning, observations in 2025 should record total well depth and depth to water on occasions where water is measured in a well but there is insufficient water to collect a sample. Alternate methodologies could be considered for sampling locations where there is consistently insufficient water to sample with the current methodology.



### 2.2.1.3 GWa14

GWa14 was reported as dry throughout 2024. The consecutive dry observations from May 2022 to December 2024 are an exceedance of the minimum groundwater level trigger.

The following points provide a brief discussion of the exceedance at GWa14:

- The final depth to water observation before GWa14 was reported dry in March 2023 was 4.42 mbtoc, while previous measured total depths of the well were 4.96 mbtoc. This indicated that well integrity may have been compromised and dry observations may not be representative of actual groundwater conditions.
- Dry observations from 2022 to 2024 were not consistent with observations in 2021 and early 2022 which showed some response to above average rainfall events. It is noted that other nearby alluvial/ shallow bores (e.g. GWa3 – See **Appendix B**) also recovered to a greater extent in response to above average rainfall from 2020 to 2022 while there has been limited response at GWa14.
- A downhole camera survey was completed on October 17, 2024, which measured a total depth of 4.8 mbtoc (close to the previously measured total depth), but noted a bailer was stuck in the well. This bailer was unable to be recovered and GWa14 was subsequently attempted to be developed, with the total depth post development depth 4.85 mbtoc, indicating some removal of silt from the base of the well but not the stuck bailer.
- The field report on this site investigation (SLR, 2024c) found that GWa14 did not meet minimum construction requirements as it has manually cut screens which may allow sediment into the well and are wide enough for roots to grow into the well. The bailer found in the well was also unable to be removed, limiting the ability to develop the well and complete future sampling.

GWa14 should be considered for replacement and/ or decommissioning in 2025. It is recommended that the value of alluvial monitoring at the GWa14 location be assessed as part of a broader review of the groundwater monitoring network.

Prior to potential replacement/ decommissioning, observations in 2025 should record total well depth and depth to water on occasions when water is measured in GWa14. This information may be useful to help understand local aquifer saturation. Water quality sampling should not be attempted while the bailer remains stuck in the well as the data collected may be compromised.

### 2.2.1.4 GWa15

GWa15 was reported as dry throughout 2024. The consecutive dry observations from August to December 2024 are an exceedance of the minimum groundwater level trigger.

The following points provide a brief discussion of the exceedance at GWa15:

- The final depth to water observation before GWa15 was reported dry in September 2023 was 2.8 mbtoc, while previous measured total depths of the well were 4.07 mbtoc. This indicated that well integrity may have been compromised and dry observations may not be representative of actual groundwater conditions.
- A downhole camera survey was completed on October 17, 2024, which measured a total depth of 3.89 mbtoc (close to the previously measured total depth), but noted two bailers were stuck in the well. These bailers were unable to be recovered, and the development hose was unable to reach the base of the well. No sediment was able to be removed from the base of GWa15.



- The field report on this site investigation (SLR, 2024c) found that GWA15 did not meet minimum construction requirements as it has manually cut screens which may allow sediment into the well and found that roots were growing into the well through the screens. The bailers found in the well were also unable to be removed, limiting the ability to develop the well and complete future sampling.

GWA15 should be considered for replacement and/ or decommissioning in 2025. It is recommended that the value of alluvial monitoring at the GWA15 location be assessed as part of a broader review of the groundwater monitoring network.

Prior to potential replacement/ decommissioning, observations in 2025 should record total well depth and depth to water on occasions when water is measured in GWA15. This information may be useful to help understand local aquifer saturation. Water quality sampling should not be attempted while the bailer remains stuck in the well as the data collected may be compromised.

## 2.3 EC Trigger Exceedances

The following section discusses the EC trigger exceedances summarised in **Table 8** based on the time series plots in **Appendix B**.

### 2.3.1 Alluvial Bores

No exceedances of the EC trigger value were observed at coal monitoring bores during the 2024 AR monitoring period.

### 2.3.2 Coal Measures Bores

Exceedances of the EC trigger value at coal monitoring bores in 2024 occurred at GWc1, GWc3, GWc4, and GWc5 (**Appendix B** and **Table 8**). The trigger exceedances for EC observed at GWc1, GWc3, GWc4 and GWc5 appear to be occurring independently of climatic and groundwater level influences.

#### 2.3.2.1 GWc1

EC at GWc1 has exceeded the trigger values from April 2024 until October 2024. GWc1 has periodically exceeded its trigger value in 2008-9, 2013, 2015-16, 2017-19, early 2020 and throughout 2021. The obvious feature of the EC data for GWc1 are the sudden step increases and decreases of around 700  $\mu\text{S}/\text{cm}$  which result in fluctuations above and below the trigger value. There is no obvious pattern of elevated EC in relation to CRD with elevated EC occurring during above average, below average, and average rainfall conditions. However, the pattern of fluctuation suggests a definite step change in hydraulic conditions that occurs and then reverses. The following points provide potential mechanisms for the observed step changes in EC at GWc1 that have been discussed in previous data reviews (SLR, 2023c):

- Occasional influxes of groundwater from the overlying alluvium, which has lower EC and higher head than the coal measures at this location (GWA2) may drive the observed changes in EC.
- Periodic lateral flow from backfilled WCM open cut mining areas could also drive the observed step changes in EC. EC observed within spoil monitoring bore GWf3 is approximately 3,500-4,500  $\mu\text{S}/\text{cm}$ , which is similar to the EC observed at GWc1 when it is exceeding the trigger level. GWf3 is within backfilled Pit 5 and not directly adjacent to GWc1 but serves as a useful proxy for groundwater quality within spoil that may be adjacent to GWc1.



- Downhole camera inspection completed in 2020 also identified a large sump in GWc1, ~15 m, below the screened interval (22-28 mbtoc). A sump of this length may limit the ability to adequately purge GWc1 prior to sampling, and decrease confidence that observations are representative of formation/ aquifer groundwater.

GWc1 was replaced in November 2024 (see **Section 1.1**), future monitoring results will be compared against historical data and trigger levels at GWc1.

### 2.3.2.2 GWc3

EC measurements exceeded the trigger value (3,304  $\mu\text{S}/\text{cm}$ ) in all 2024 observations except for February. EC has been exceeding the defined trigger level at GWc3 for most observations since 2013.

The following points discuss of the EC exceedance at GWc3:

- Depressurisation at GWc3 associated with Pit 3, 4 and 7 mining resulted in a reversal of the upward gradient between Cumbo Creek alluvium (monitored by GWA6) and underlying coal measures. This may have resulted in more saline groundwater from the alluvium reporting to the coal measures from 2013-2022 due to the downwards hydraulic gradient.
- Based on elevation there is potential for hydraulic connection between the Pit 4 and/or Pit 3 void and GWc3. At times, EC in Pit 2 (used a proxy for Pit 3 and Pit 4 water) has been similar to GWc3, at other times it has not. The potential hydraulic connection is not completely understood and will require further investigation that also considers the influence from Cumbo Creek surface water and alluvial groundwater.
- A downhole camera inspection identified a ~5 m sump below the screened interval of GWc3 (4.8-11.1 mbtoc). A sump of this length may limit the ability to adequately purge GWc1 prior to sampling, and decrease confidence that observations are representative of formation/ aquifer groundwater.

GWc3 was replaced in November 2024 (see **Section 1.1**). Future monitoring results from this location will be compared against historical data and trigger levels at GWc3 to support the evaluation of potential connection between the stored water in Pit 3 and/or Pit 4 and the adjacent Permian and alluvial aquifers.

### 2.3.2.3 GWc4

EC observations at GWc4 were above the trigger level (2,412  $\mu\text{S}/\text{cm}$ ) in January and from March to August 2024 with a maximum EC of 2,450  $\mu\text{S}/\text{cm}$ . The six consecutive observations above the trigger level constitute a trigger exceedance. The following points discuss the EC exceedance at GWc4:

- EC observations in 2024 range from 2,330  $\mu\text{S}/\text{cm}$  to 2,450  $\mu\text{S}/\text{cm}$  which is within the approximate range of baseline EC (2006-2009), between 1,900  $\mu\text{S}/\text{cm}$  and 2,800  $\mu\text{S}/\text{cm}$ .
- The SLR (2023) trigger investigation found no change in EC trends attributable to mining related drawdown (observed at GWc4 from 2013-2020), or during the subsequent groundwater level recovery associated with above average rainfall from 2020-2022. The observations in 2024 are consistent with historical observations and similarly do not show a change in EC trends attributable to Wilpinjong mining.
- As no meaningful change in EC was identified at GWc4 due to Wilpinjong mining, SLR (2023) recommended that the EC trigger level be updated to 2,440  $\mu\text{S}/\text{cm}$



based on the 80<sup>th</sup> percentile of all EC observations to the end of 2023. This updated trigger level was incorporated into a revised version of the GWMP (V6, submitted September 2024) that is currently awaiting approval.

It is noted that the revised trigger level of 2,440  $\mu\text{S}/\text{cm}$  would have had two observations above the trigger level in 2024 (January and late February – 2,450  $\mu\text{S}/\text{cm}$ ) but would not have reported an exceedance. This updated trigger may be a better indicator of changes to EC at GWc4 that could be related to Wilpinjong mining.

#### 2.3.2.4 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 observations at GWc5 were above the trigger level (4,798  $\mu\text{S}/\text{cm}$ ) for all 2024 observations. EC observations have been above the trigger level in nearly all observations since 2013.

The following points discuss the EC exceedance at GWc5:

- EC observations in 2024 range from 5,310  $\mu\text{S}/\text{cm}$  to 5,580  $\mu\text{S}/\text{cm}$  which is broadly consistent with EC observations from 2013-2023.
- SLR (2023) investigated relationships between EC variation at GWc5, the timing of mining operations and climatic variations, and found that no direct relationship could be established, and there is no evidence of WCM mining influencing groundwater level or quality at GWc5.
- SLR (2023) found that the observed EC is likely to be representative of normal conditions at this site and recommended that the trigger level be revised to include all data until 2023. This value is 5,560  $\mu\text{S}/\text{cm}$  which is 762  $\mu\text{S}/\text{cm}$  higher than the current trigger level (4,798  $\mu\text{S}/\text{cm}$ ). This updated trigger level was incorporated into a revised version of the GWMP (V6, submitted September 2024) that is currently awaiting approval.

It is noted that the revised trigger level of 5,560  $\mu\text{S}/\text{cm}$  would have had a single value above the trigger level in 2024 (August – 5,580  $\mu\text{S}/\text{cm}$ ) but would not have reported an exceedance. This updated trigger may be a better indicator of changes to EC at GWc4 that could be related to Wilpinjong mining.

## 2.4 pH Trigger Exceedances

No exceedances of pH trigger levels were observed at alluvial or coal measures monitoring bores during the 2024 AR monitoring period.



### 3.0 Metal and Major Ion Concentrations

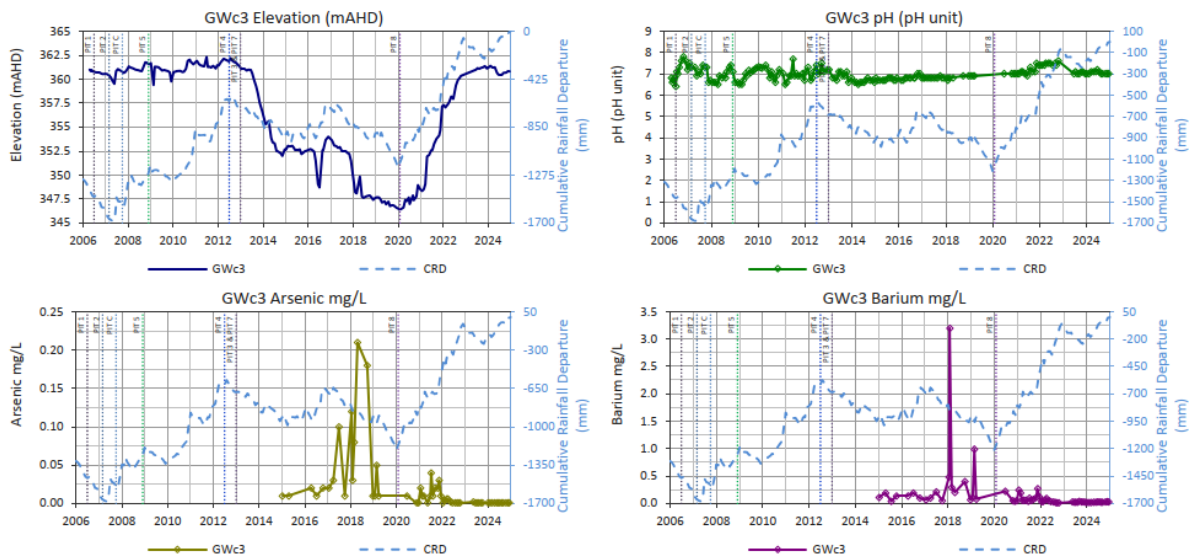
For the 2024 annual review, the following groundwater quality time-series graphs are presented in **Appendix C**. These charts demonstrate compliance with the GWMP (Peabody, 2017) requirement to collect monthly and event-based metals monitoring data and demonstrate the volume of chemistry data collected and trends over time:

- Major ions and analytes: TDS, Sodium (Na), Potassium (K), Magnesium (Mg), Calcium (Ca), Chloride (Cl), Carbonate (HCO<sub>3</sub>), Bicarbonate (CaCO<sub>3</sub>), Sulfate (SO<sub>4</sub>).
- 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 current 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 late 2023 and is currently undergoing independent peer review support proposed changes and extensions of mining operations. It is anticipated that this model will be used for the 2025 Annual Groundwater Monitoring Report.

### 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 Updates (2023-2025)

The updated groundwater model incorporates the main features from the previous groundwater model (SLR, 2020a) while incorporating the following changes:

- Extension of the model boundary to the east in the direction of the potential future extensions to limit impacts of the model boundary conditions on potential drawdown predictions.
- Refined the numerical model mesh (grid) in the area of potential future extensions within Exploration Licence (EL) 9399.
- Updated the geological model layers in the area of potential future extensions, based on a revised site geological model provided by WCPL.





- Extension of the calibration period until December 2023 With mining progression updated to reflect approved as-mined conditions to the end of 2023 (approved under SSD-6764).

### 4.3 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 2024 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 late 2023. The updated model is intended to be used for future reviews.

#### 4.3.1 Predictions are 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 the above average rainfall conditions not being captured in the model (which was developed in early 2020).

An updated groundwater model was commenced in late 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. 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.

##### 4.3.1.1 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. GWa5 was replaced in November 2024 by a monitoring well targeting similar lithology to GWa5 that has a contemporary geology and bore construction log. This well may help understand and evaluate 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.

#### 4.3.2 Predictions at Coal Measures Bores

Figure D.10 to Figure D.19 compare modelled and observed groundwater levels at coal measures 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 measures 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**), with water storages being included in the updated 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 for these bores and the simulated groundwater levels match the observed levels prior to the extraction of Pit 4 in 2013. 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 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. When annualised from a daily inflow value of 1.9 ML/day, the SLR (2025) water balance model estimate for the 2023-2024 water year is about 694 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 9** presents the relevant entitlement volume for the consolidated licence, the estimated inflow or ‘take’ for 2023-24 and compares these water balance model estimates to numerical model predictions. The SLR (2020a) annualised inflow estimate (550 ML/yr) is within the allocated licence volume for the 2023-24 water year.

**Table 9: Summary of Annual Volume of Inferred Maximum Groundwater Take**

Water Access License	Limit [ML/a]	2022-2023		2023-2024	
		WBM Inflow (SLR, 2024)	Modelled inflow (SLR, 2020a)	WBM Inflow (SLR, 2025)	Modelled inflow (SLR, 2020a)
Pits	3,121 ML/a (WAL 41862)	913	660	694	550
Dewatering Bores		0		0	
<b>TOTAL</b>		913	660	694	550

**Figure 11** shows the inflow estimates from the SLR (2020a) groundwater model. Inflow in 2023 and 2024 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 (SLR, 202a) and the water balance assessment (SLR, 2025) are well below the licenced allocation of 3,121 ML/a.

### 5.2 Alluvial Groundwater Take

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.

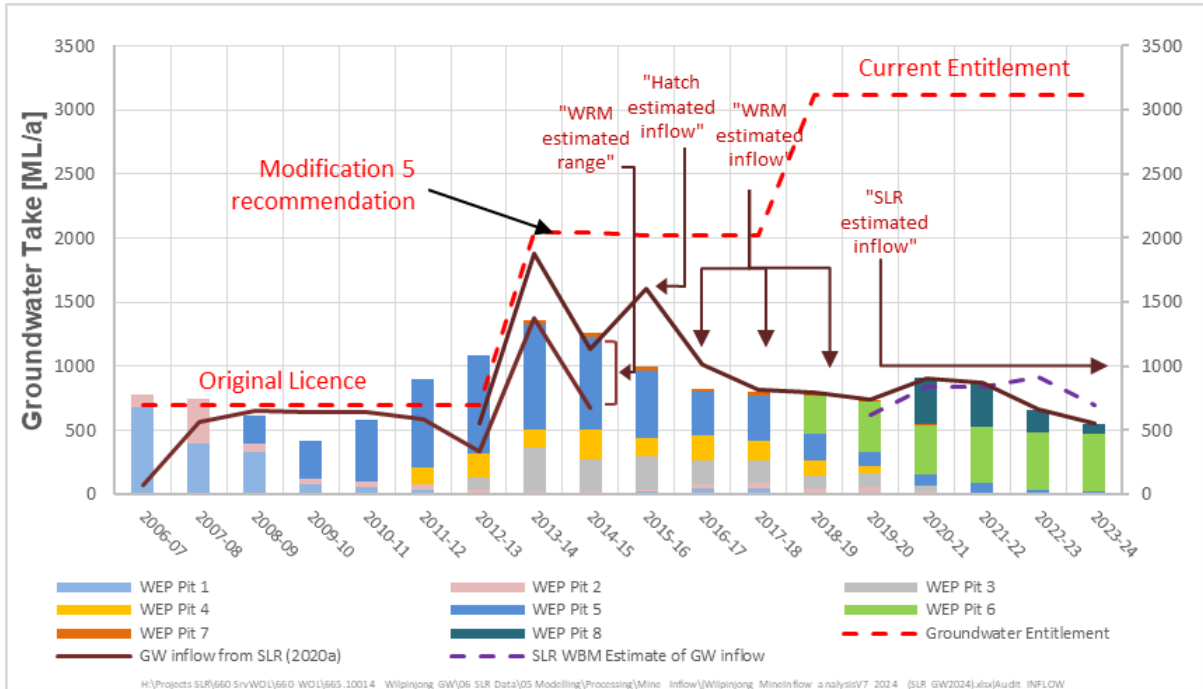
The SLR model (2020a) has predicted the likely alluvial take during the 2023-2024 water year, as shown in **Figure 12** for both Wilpinjong Creek alluvium and Cumbo Creek alluvium. The predicted loss from Wollar Creek is negligible.

For the 2023-2024 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 172ML/year. WCM holds an allocation of 474 ML for the Wollar Creek Water Source

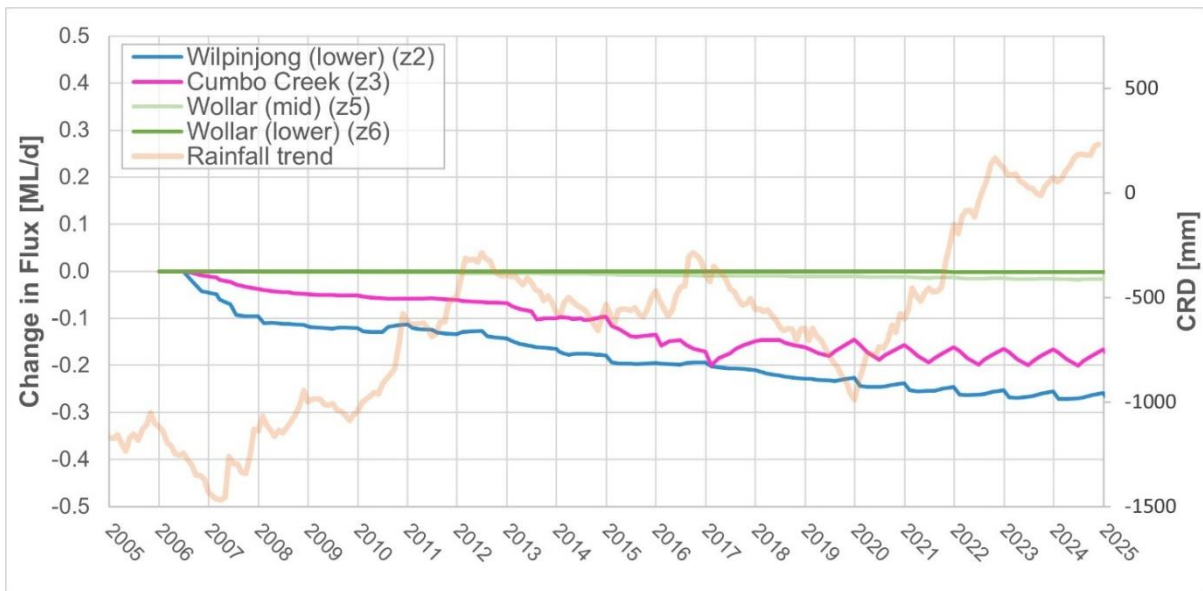


under the Water Sharing Plan for the Hunter Unregulated and Alluvial Sources, 2009. This estimated take is within and compliant with the licence volume held by WCM.

**Figure 11: Comparison of Predicted Inflow (SLR, 2020a) against Entitlement**



**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 2023-24 water year, or the 2024 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 2023-24 water year and 2024 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 2023-2024 water year, and 2024 reporting period is shown in **Table 10**.

**Table 10: Water Supply Borefield - Cease to Pump Trigger Level Exceedances**

Production Bore	Monitoring Bore	Cease-to-pump trigger level (mAHD)	Lowest observed water level 2023-2024 (mAHD)	Trigger Exceedance (Yes/No)
GWs10	GWc10	346	368.5	No
GWs11	GWc11	348.5	362.6	No
GWs12	GWc12	332.5	359.5	No
GWs14	GWc14	319.5	359.1	No
GWs15	GWc15	314.5	353.9	No

There were no breaches of the cease-to-pump trigger levels during 2024.



## 7.0 Recommendations

Following the 2024 annual review of groundwater data and in line with recommendations from previous Annual Reviews and associated trigger investigations, the following recommendations are made:

- Monitoring at the same frequency and for the same analytes should be undertaken at new and replacement groundwater monitoring locations (**Section 1.1**). These locations should be included in the next updated to the GWMP and considered for trigger level development where relevant. Bores that were replaced as part of 2024 works should be scheduled for decommissioning.
- GWa3, GWa12, GWa14 and GWa15 should be considered for replacement after downhole camera inspections found that these locations had manually slotted screens, allowing for root growth and siltation within each well. Obstructions in GWa14 and GWa15 (bailers) were not able to be cleared. A wholistic review of the monitoring network considering active, historical and future Wilpinjong operations is recommended prior to replacement. Some of these locations may be suitable for decommissioning without replacement.
- Groundwater observations in 2025 should record total well depth and depth to water on occasions where water is measured in a well but there is insufficient water to collect a sample. Alternate methodologies could be considered for sampling locations where there is consistently insufficient water to sample with the current methodology.



## 8.0 References

- AGE (2005) Wilpinjong Coal Project Groundwater Impact Assessment. May 2005.
- ANZECC, ARMCANZ (2000) Australian and New Zealand Guidelines for Fresh and Marine Water Quality, Paper 4 National Water Quality Management Strategy. Australian and New Zealand Environment and Conservation Council, Agriculture and Resource Management Council of Australia and New Zealand, Canberra. Vol. 1, pp. 4.2-15
- ANZG (2018) Australian and New Zealand Guidelines for Fresh and Marine Water Quality - 2018 (Update to ANZECC, ARMANZ (2000)). Australian and New Zealand Environment and Conservation Council, Agriculture and Resource Management Council of Australia and New Zealand, Canberra.
- HydroSimulations (2013) Wilpinjong Coal Mine Modification - Groundwater Assessment. Report HC2013/11 for Wilpinjong Coal Pty Ltd. July 2013.
- HydroSimulations (2015a) Review of Hydrogeological Data for Wilpinjong Licensing Audit. Report HS2015/38 for Wilpinjong Coal Pty Ltd. October 2015.
- HydroSimulations (2015b) Wilpinjong Extension Project - Groundwater Assessment. Report HS2015/42 for Wilpinjong Coal Pty Ltd. November 2015.
- HydroSimulations (2018) Wilpinjong Annual Review Groundwater Analysis. Report HS2018/07 for Wilpinjong Coal Pty. Ltd. March 2018.
- Peabody (2016) Wilpinjong Coal Groundwater Monitoring Program. Document No. WA-ENV-MNP-0006 May 2016.
- Peabody (2017) Wilpinjong Coal Groundwater Management Plan. Document No. WI-ENV-MNP-0041 August 2017.
- SLR (2020a) Wilpinjong Coal Mine Groundwater Model Update Report, prepared for Wilpinjong Coal Pty Ltd, Report no. 665.10014-R01-v0.1
- SLR (2020b) Wilpinjong Annual Review Groundwater Analysis, prepared for Wilpinjong Coal Pty. Ltd. March 2020, Report no. 665.10014.00001-R01-v0.1
- SLR (2021a) Wilpinjong Water Balance Update 2021 - Model Update and Calibration Report March 2021
- SLR (2021b) Wilpinjong Annual Review Groundwater Analysis, prepared for Wilpinjong Coal Pty. Ltd. March 2021, Report no. 665.10014.00105-R01-v2.0
- SLR (2021c) Periodic Groundwater Review – September 2021 prepared for Wilpinjong Coal Pty. Ltd. September 2021, Memo no. 665.10014.00805-M01-v1.0
- SLR (2021d) Groundwater Recharge Investigation prepared for Wilpinjong Coal Pty. Ltd. September 2021, Memo no. 665.10014.01005-M02-v1.0
- SLR (2022) Wilpinjong Annual Review Groundwater Analysis, prepared for Wilpinjong Coal Pty. Ltd. March 2022, Report no. 665.10014.00105-R01-v2.0
- SLR (2023a) Wilpinjong Annual Review Groundwater Analysis, prepared for Wilpinjong Coal Pty. Ltd. March 2023, Report no. 665.10008.01815-R01-v3.0
- SLR (2023b) Wilpinjong Coal Mine Bore Installation Prioritisation, prepared for Wilpinjong Coal Pty. Ltd. June 2023, Report no. 665.10008.01905-R01-v1.0
- SLR (2023c) Groundwater Sampling Study, prepared for Wilpinjong Coal Pty. Ltd. June 2023, Report no. 665.10008.01905-R02-v2.0



SLR (2023d) EC Trigger Investigation of GWc1, GWc3, GWc4 and GWc5, prepared for Wilpinjong Coal Pty. Ltd. December 2023, Report no. 665.10014.01515

SLR (2024a) Wilpinjong Water Balance Update 2023 - Model Update and Calibration Report March 2024

SLR (2024b) Wilpinjong Annual Review Groundwater Analysis, prepared for Wilpinjong Coal Pty. Ltd. March 2023, Report no. 665.10008.02411-R01

SLR (2024c) DHC and Development of Bores GWa3, GWa12, GWa14 and GWa15 Field Factual Report. For Wilpinjong Coal Pty Ltd. Tech Memo no. 610.032223.00002

SLR (2025) Wilpinjong Water Balance Update 2024 - Model Update and Calibration Report March 2025

WRM Water and Environment (2019) Wilpinjong Mine –2019 site water balance addendum. WRM ref 1052-10-E. October 2019.







# Appendix A Groundwater Level Hydrographs

## Annual Review – Wilpinjong Coal Mine

2024 Groundwater Compliance

Wilpinjong Coal Mine

SLR Project No.: 665.v10014.02417

26 March 2025

Figure A 1:

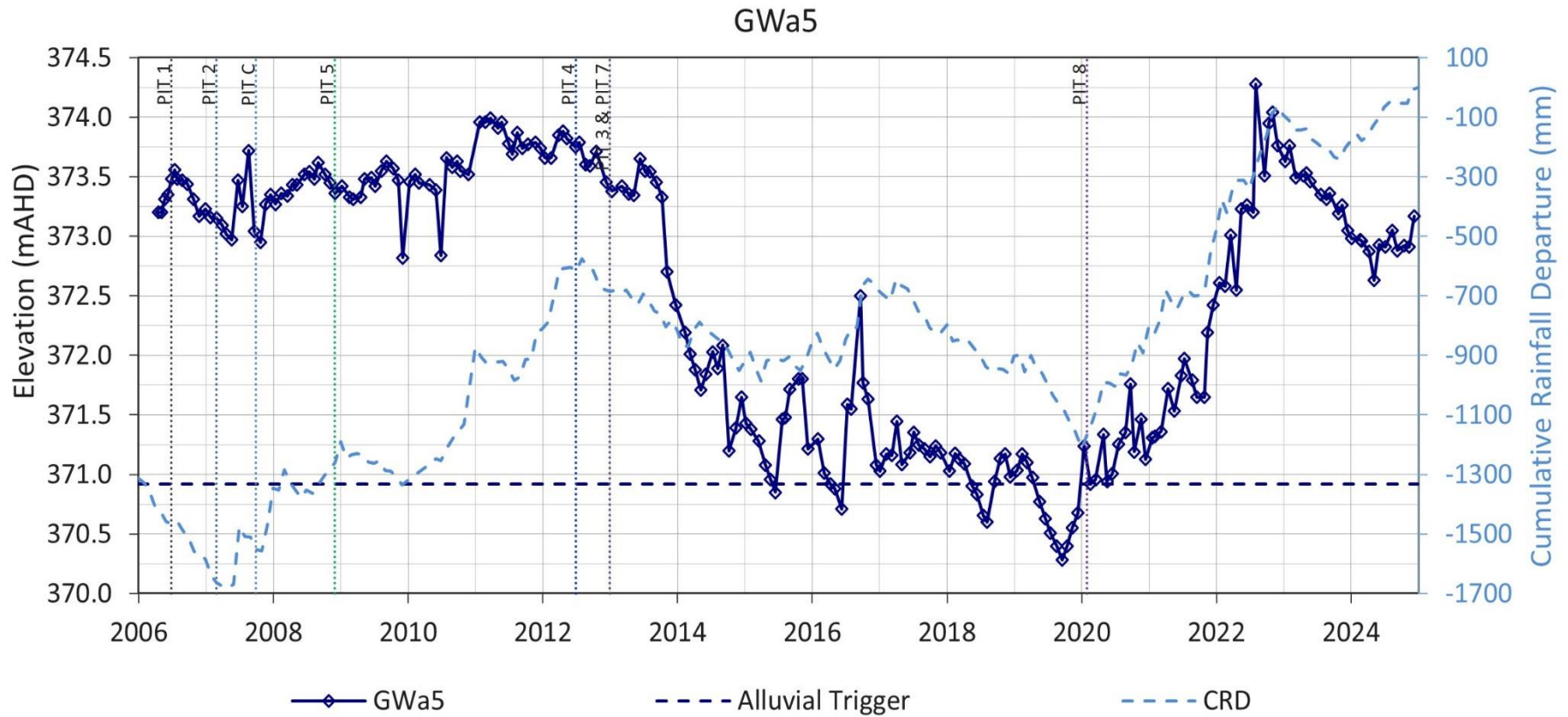


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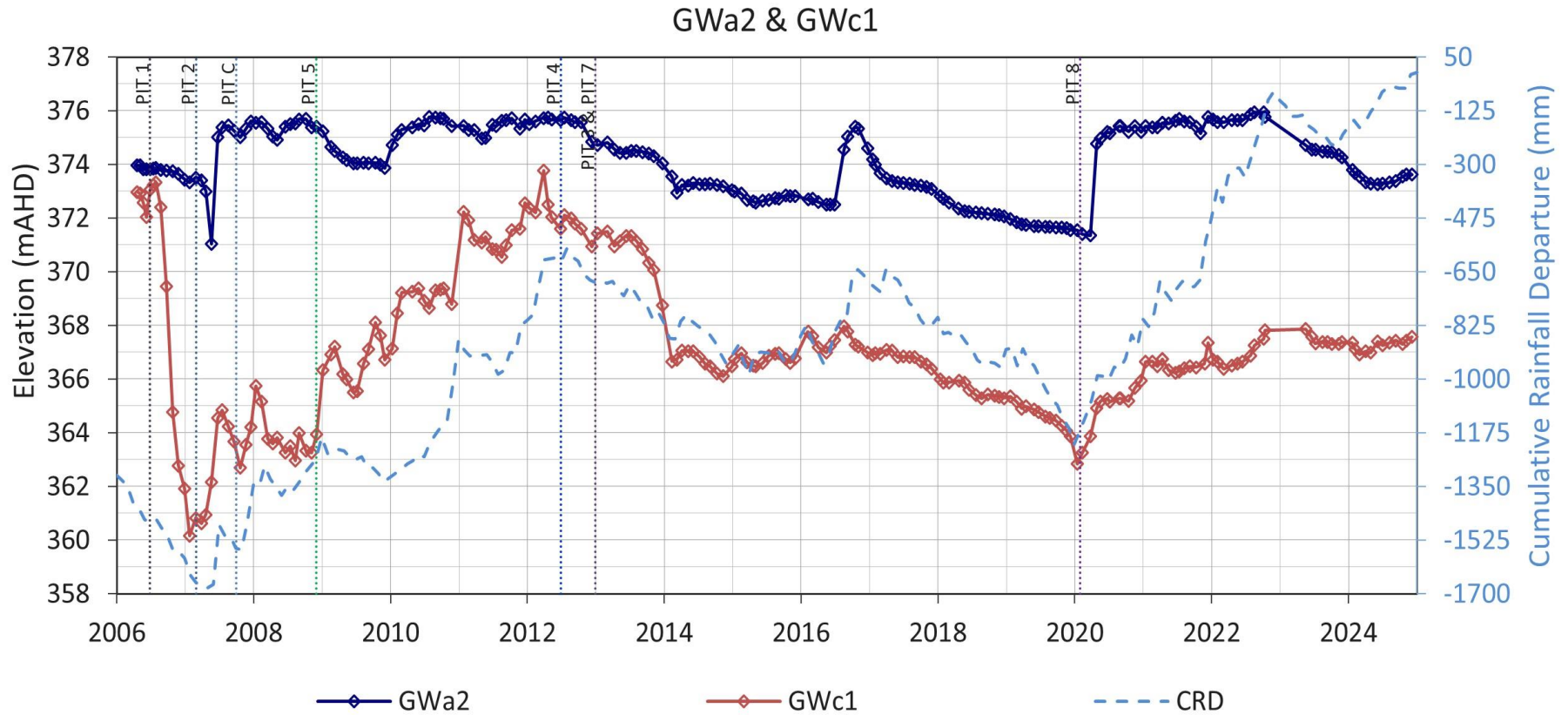


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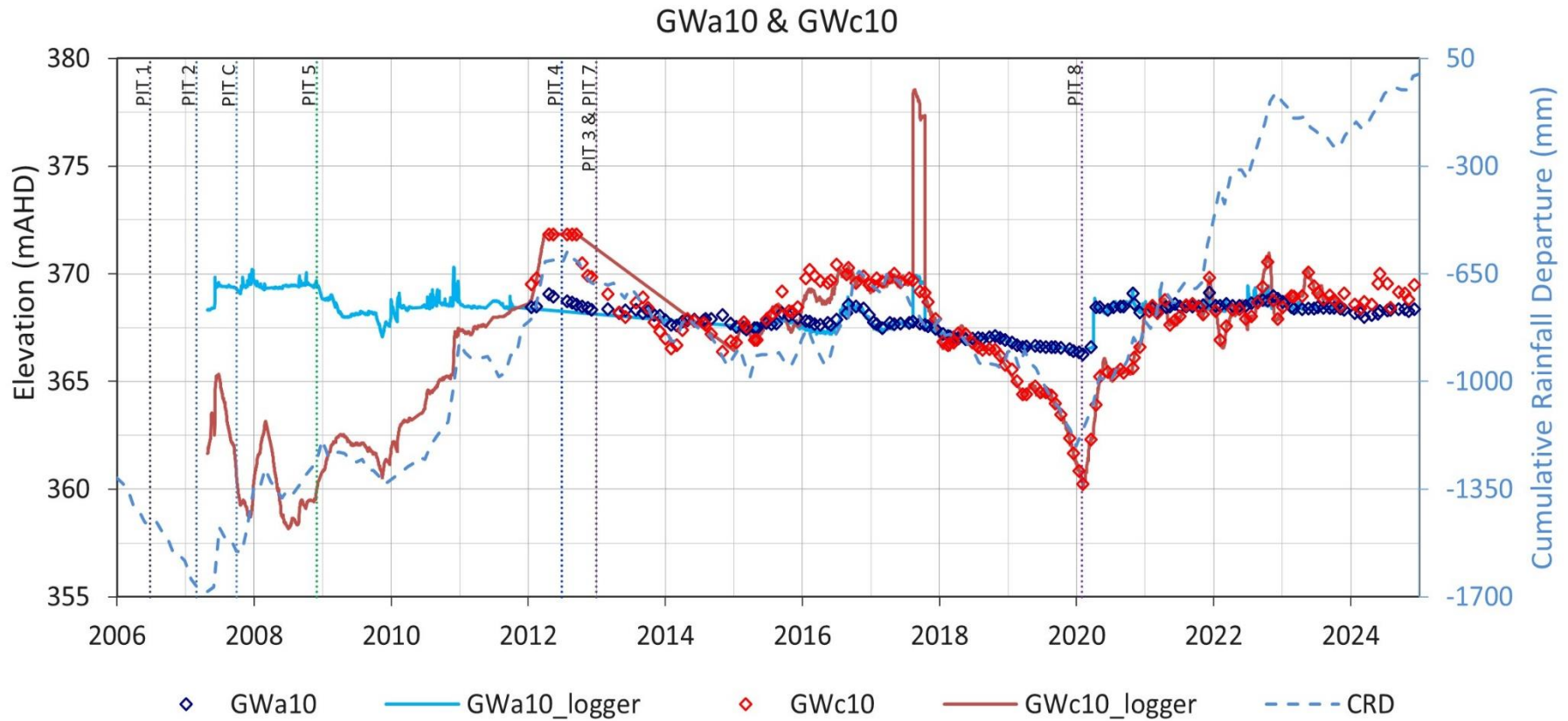


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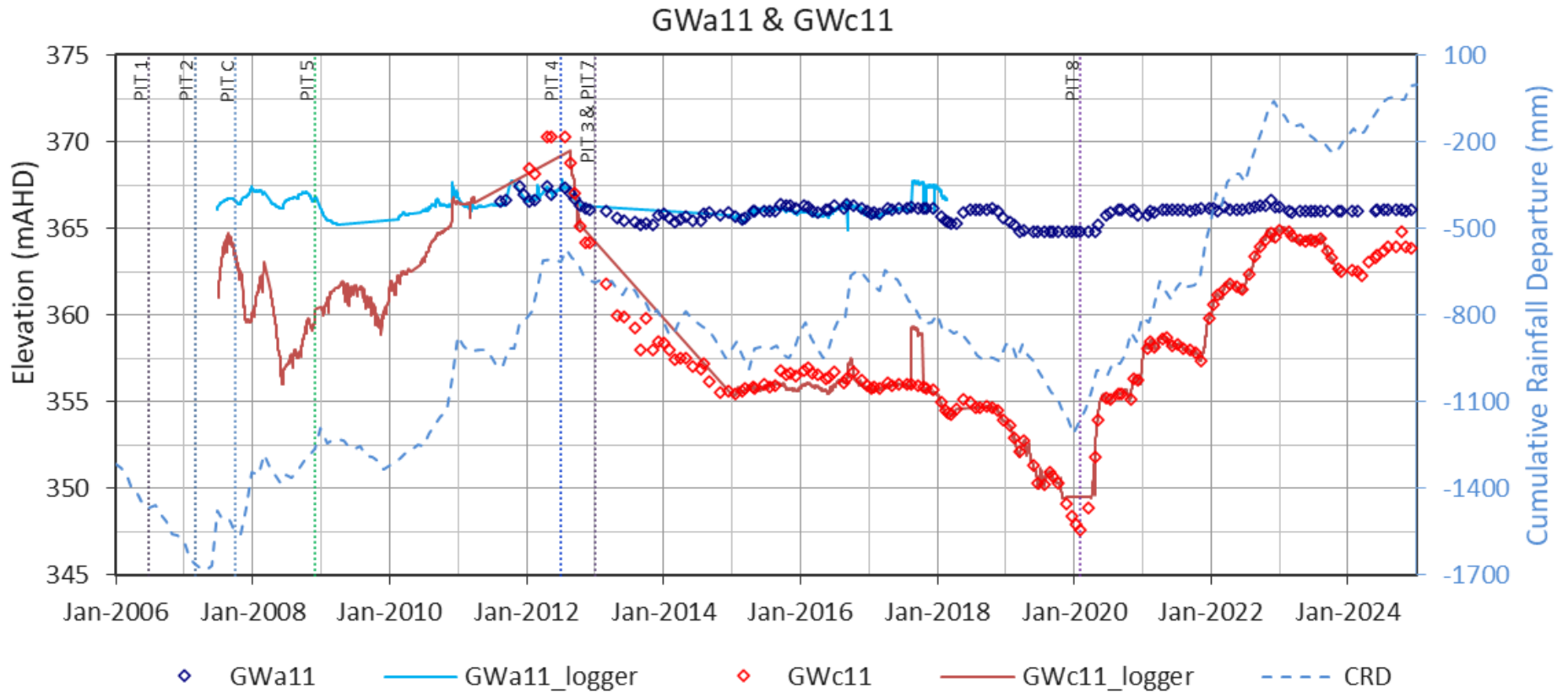


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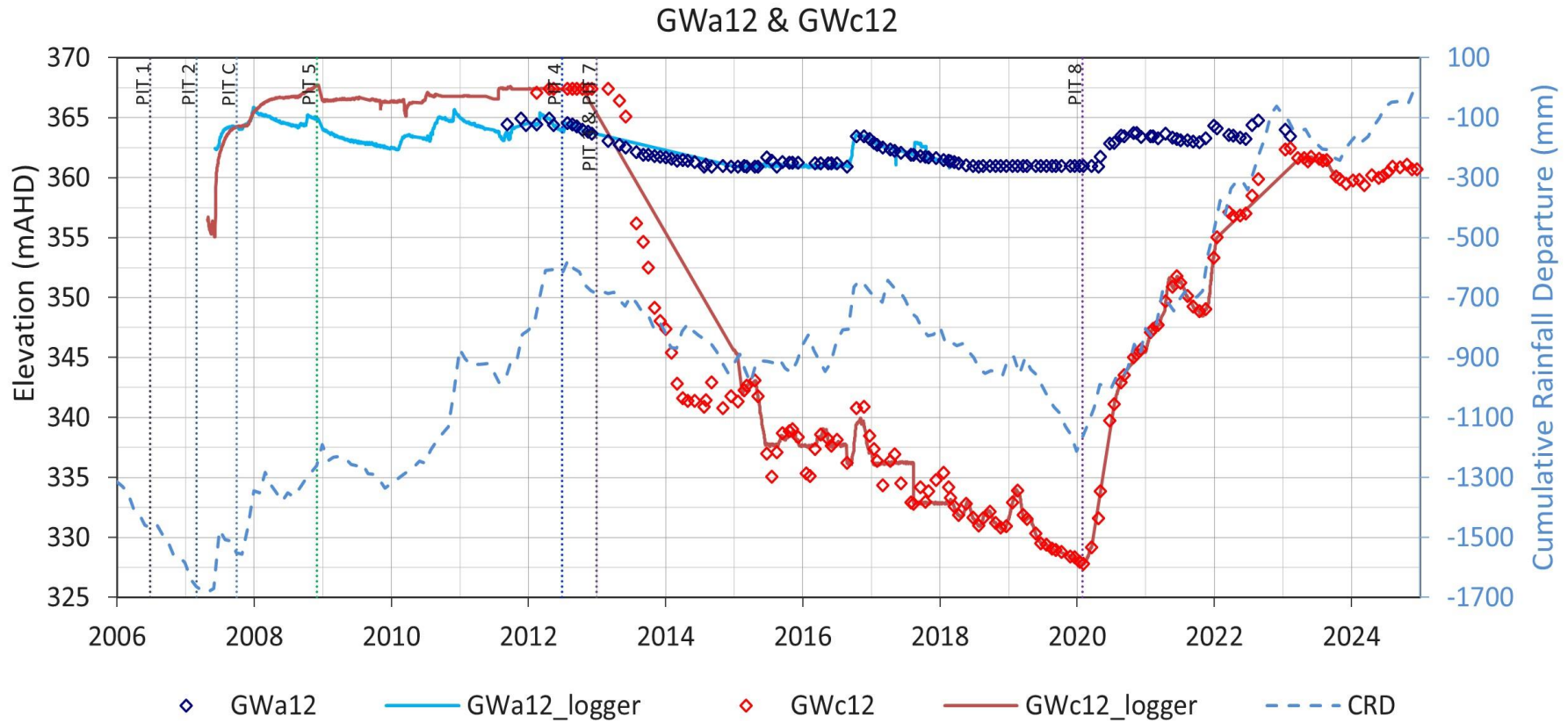


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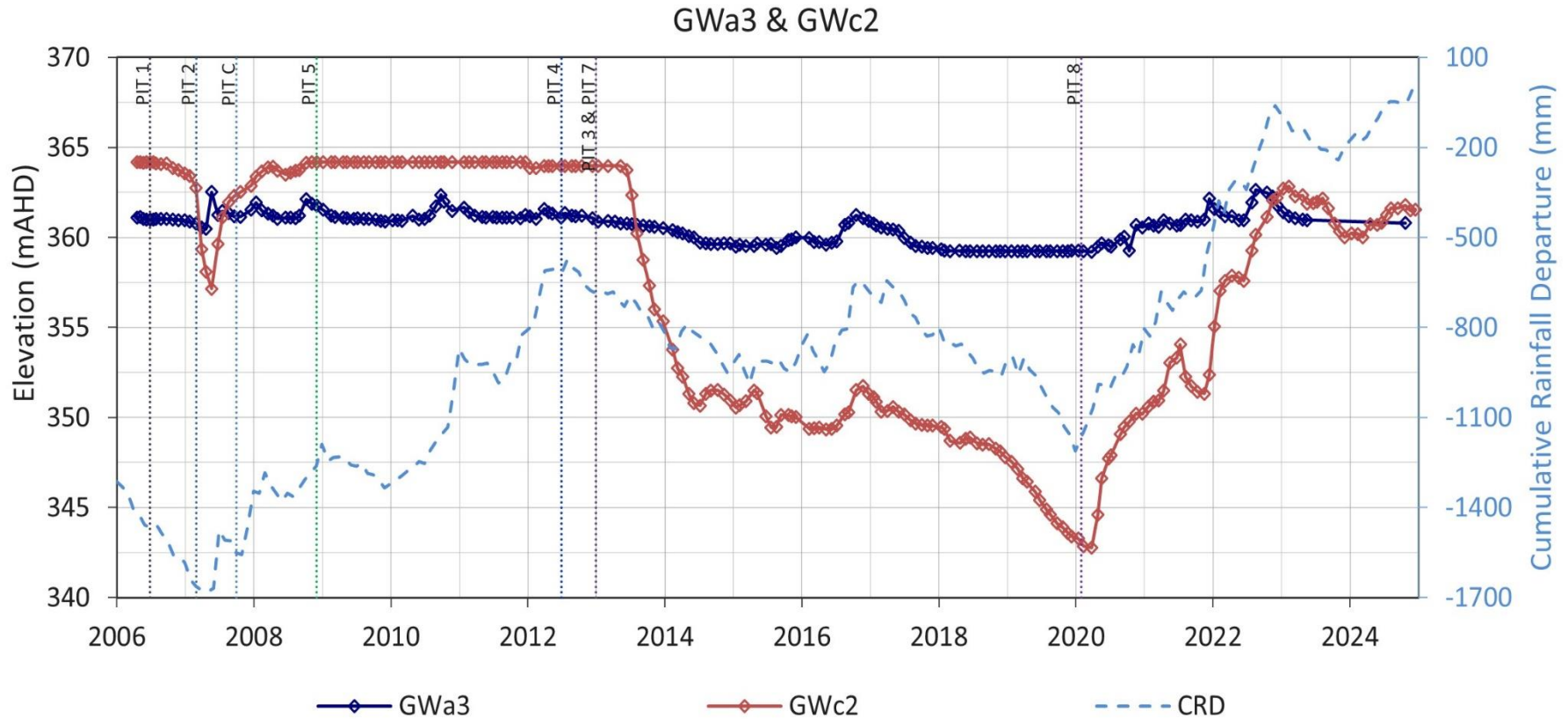


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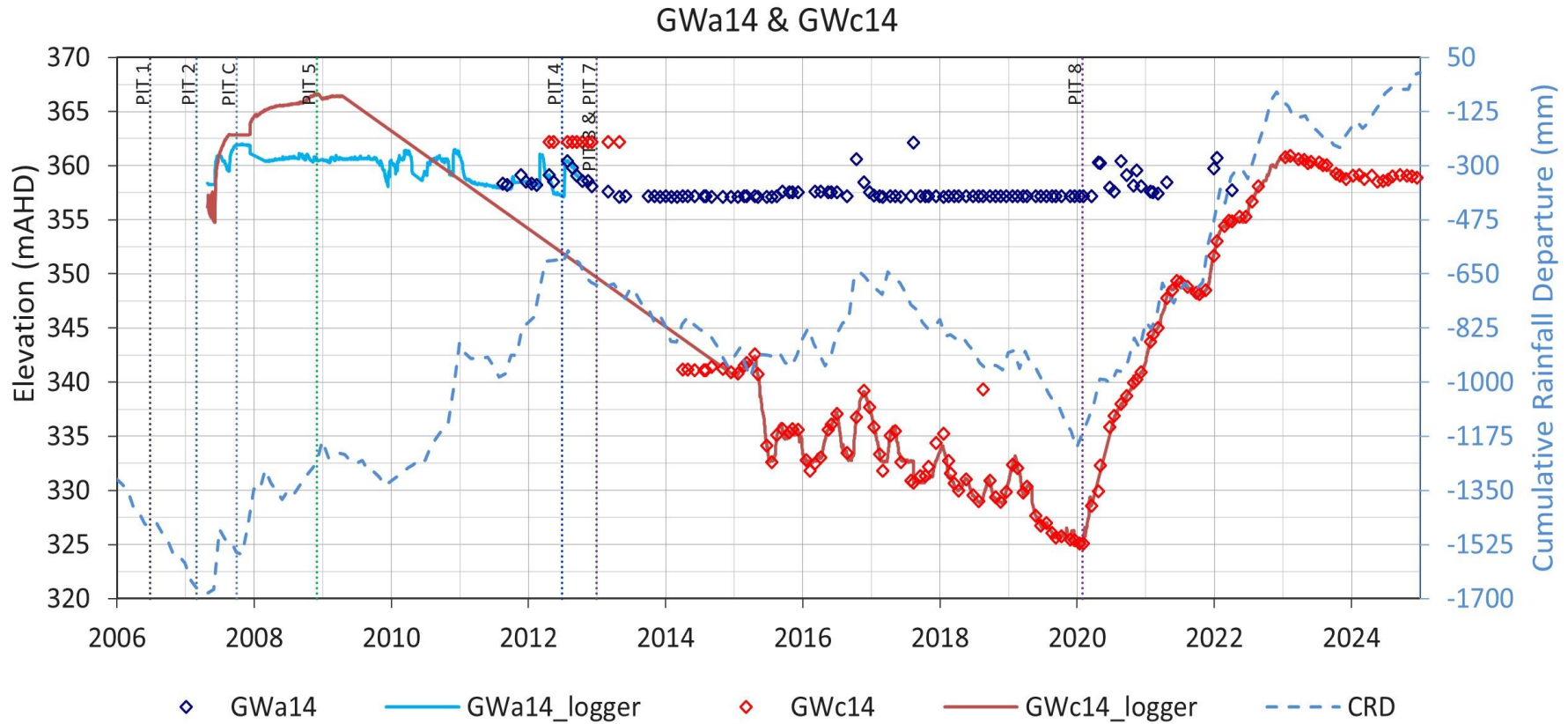




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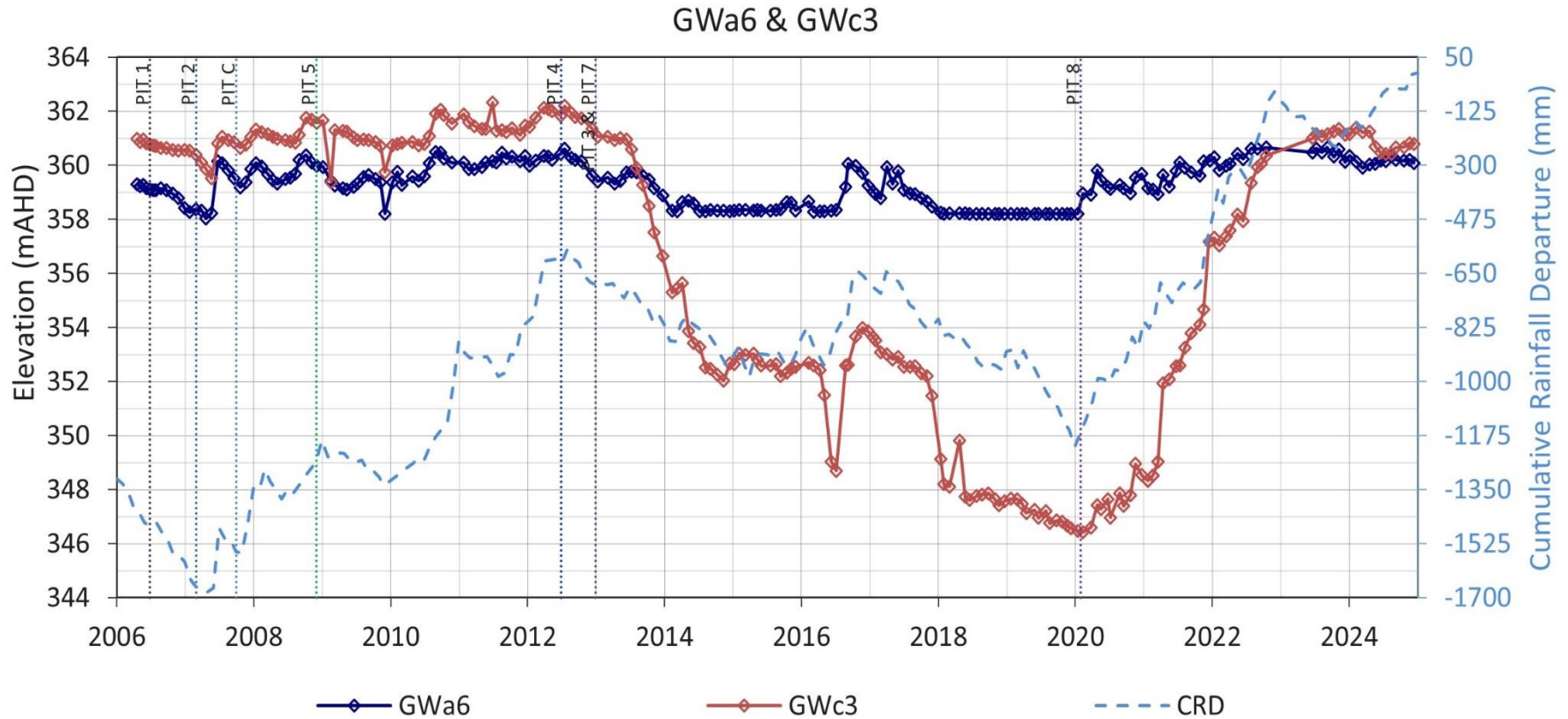


Figure A 9:

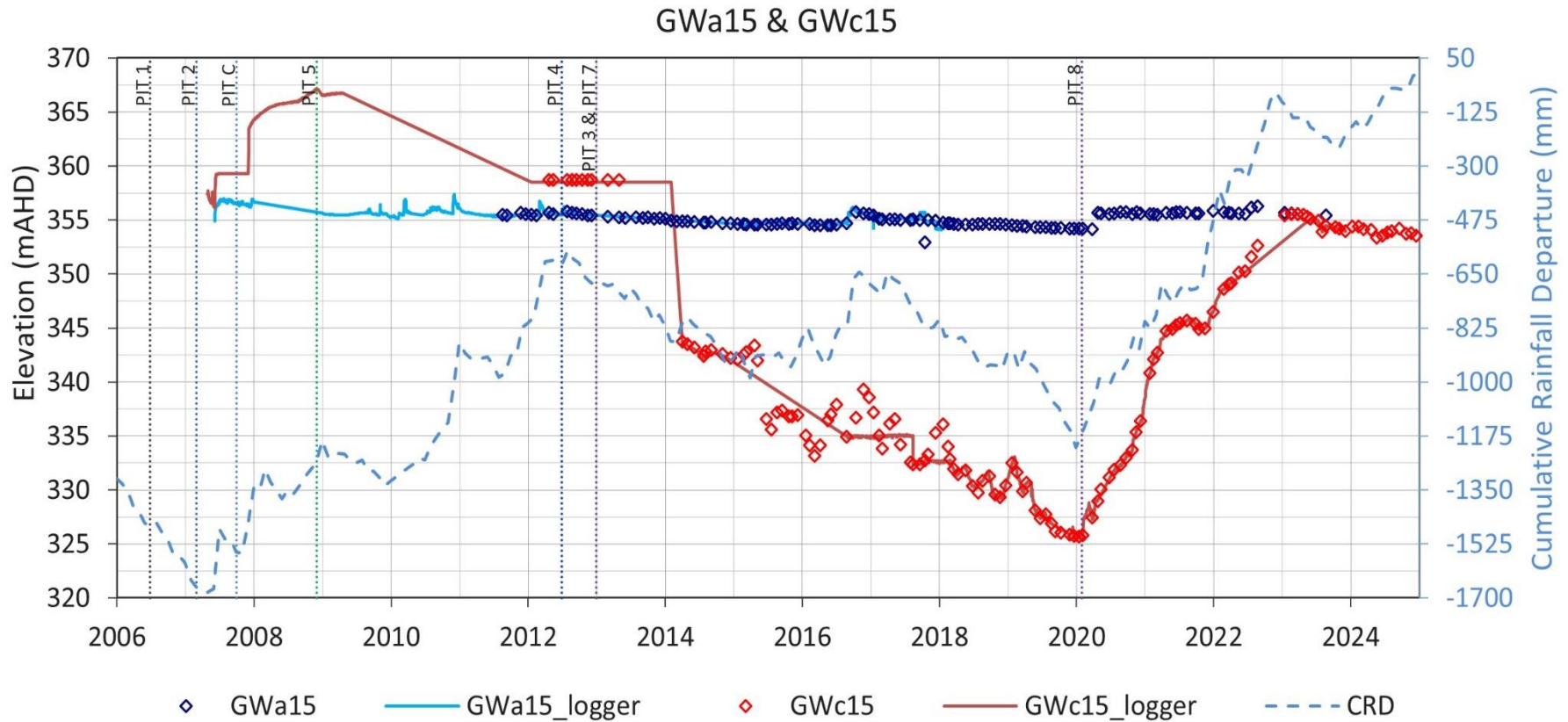


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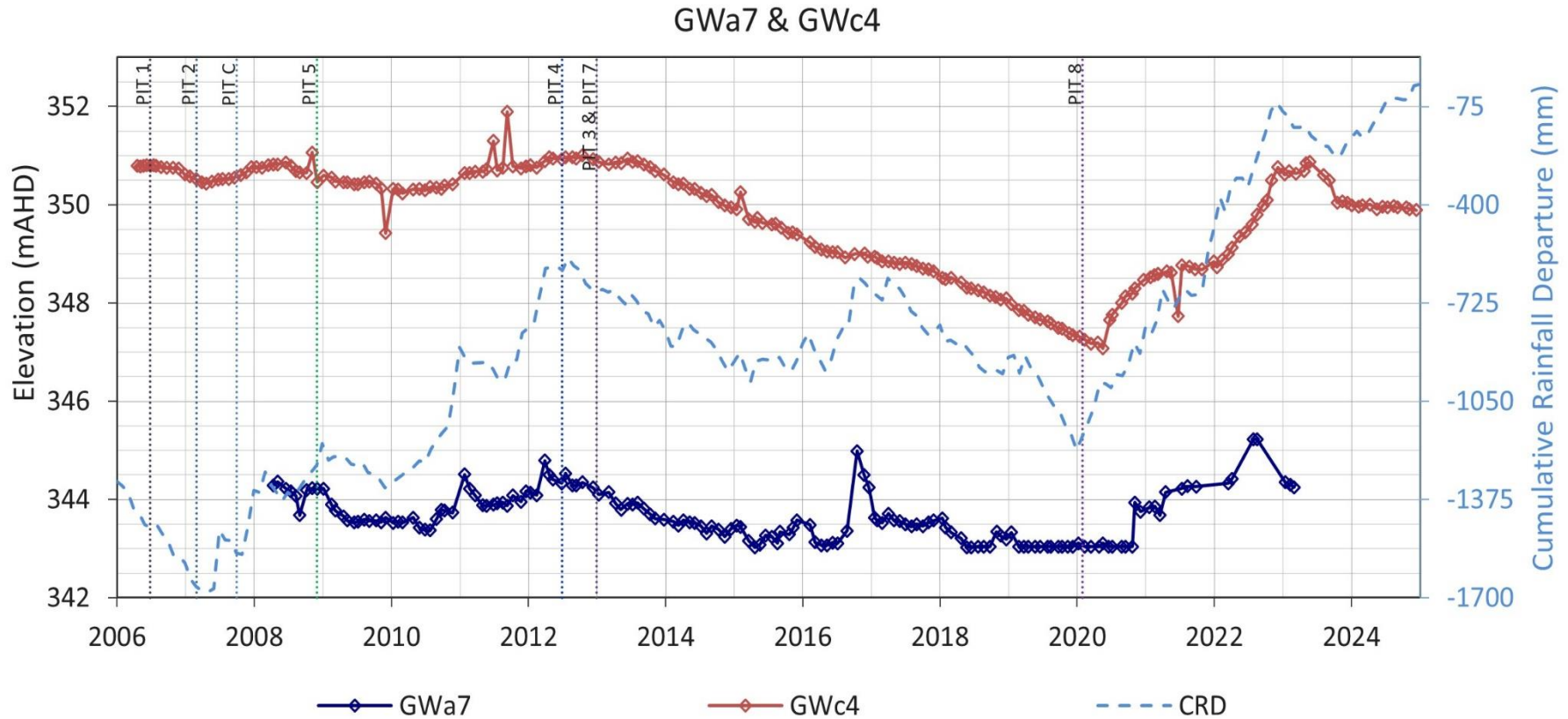
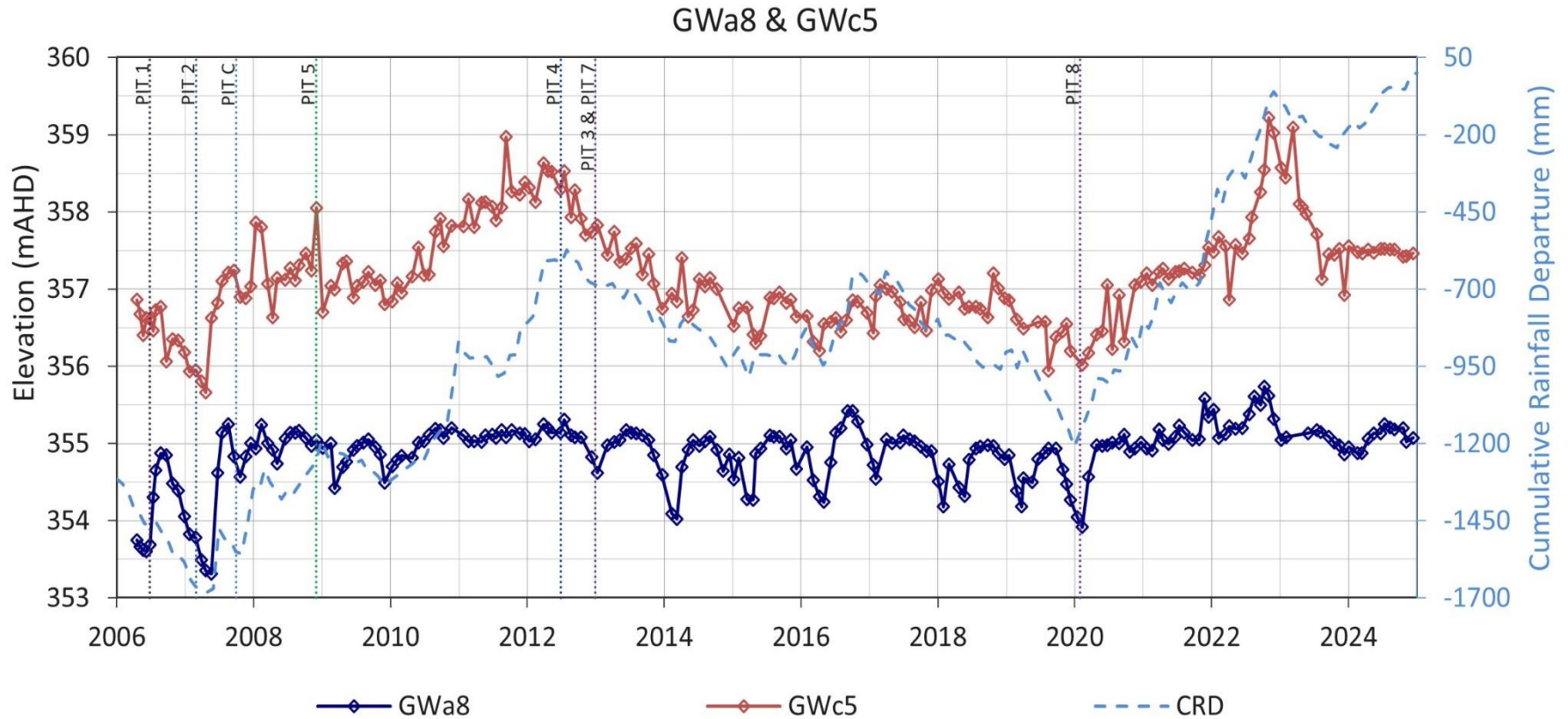


Figure A 11:





# Appendix B Trigger Assessment Charts

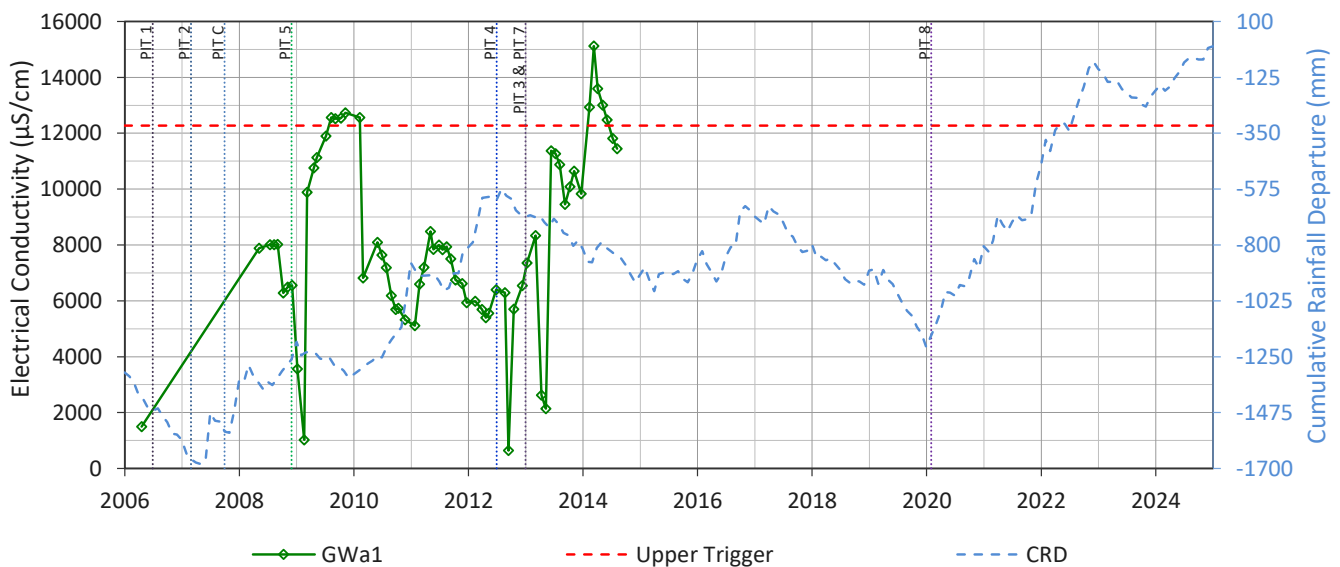
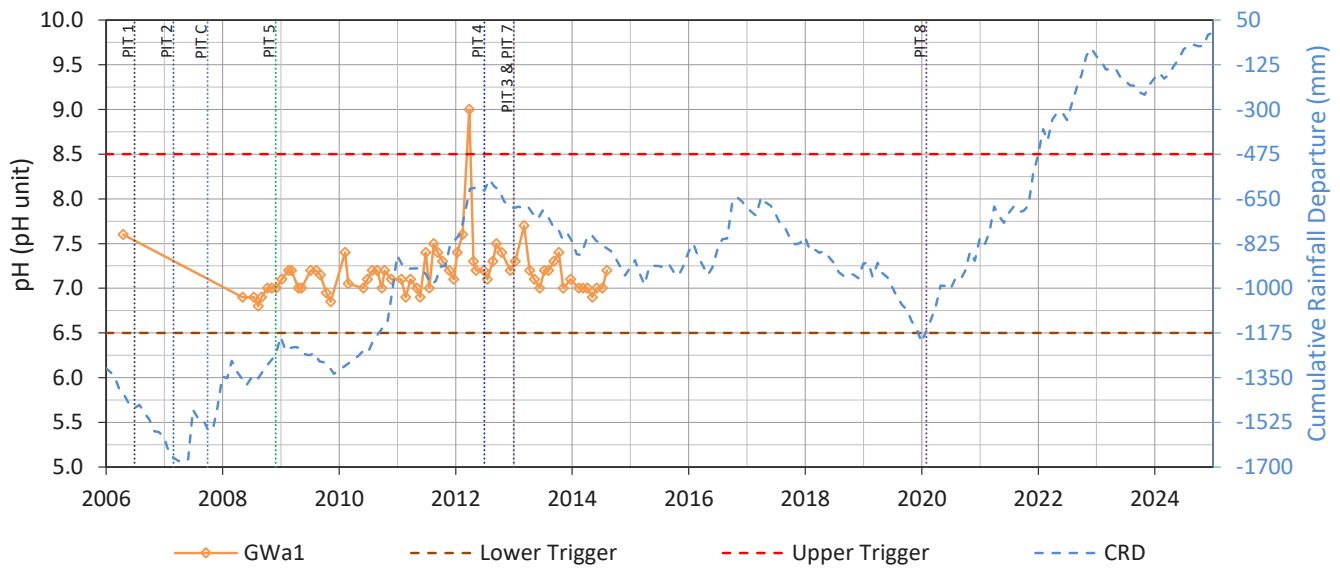
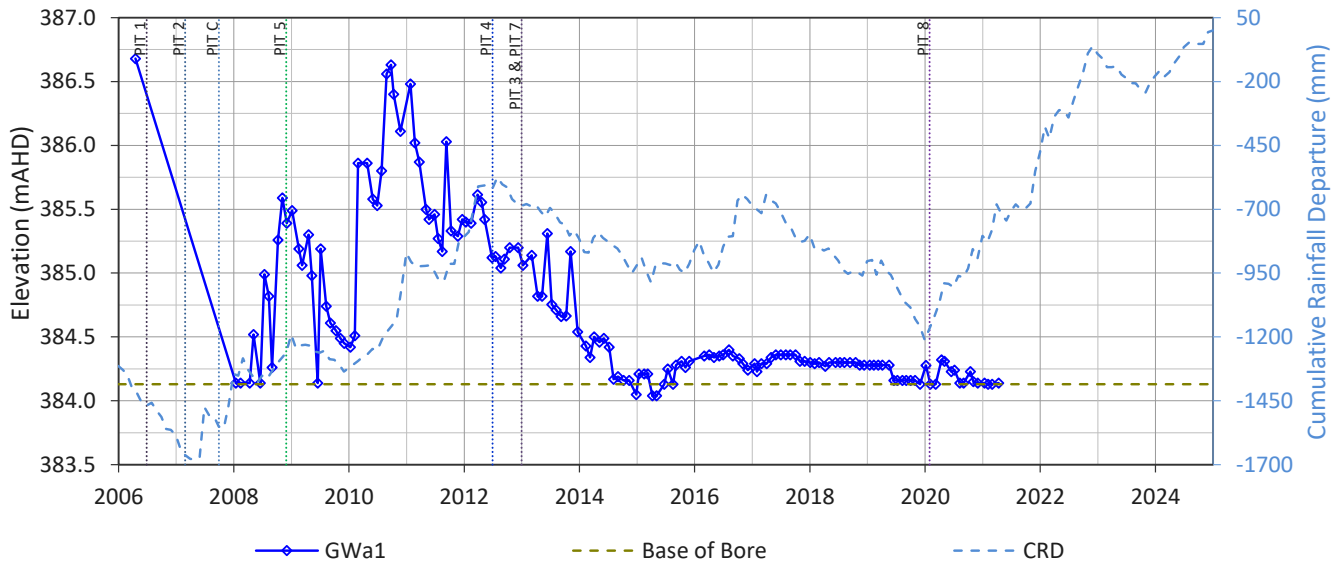
## Annual Review – Wilpinjong Coal Mine Annual Review – Wilpinjong Coal Mine

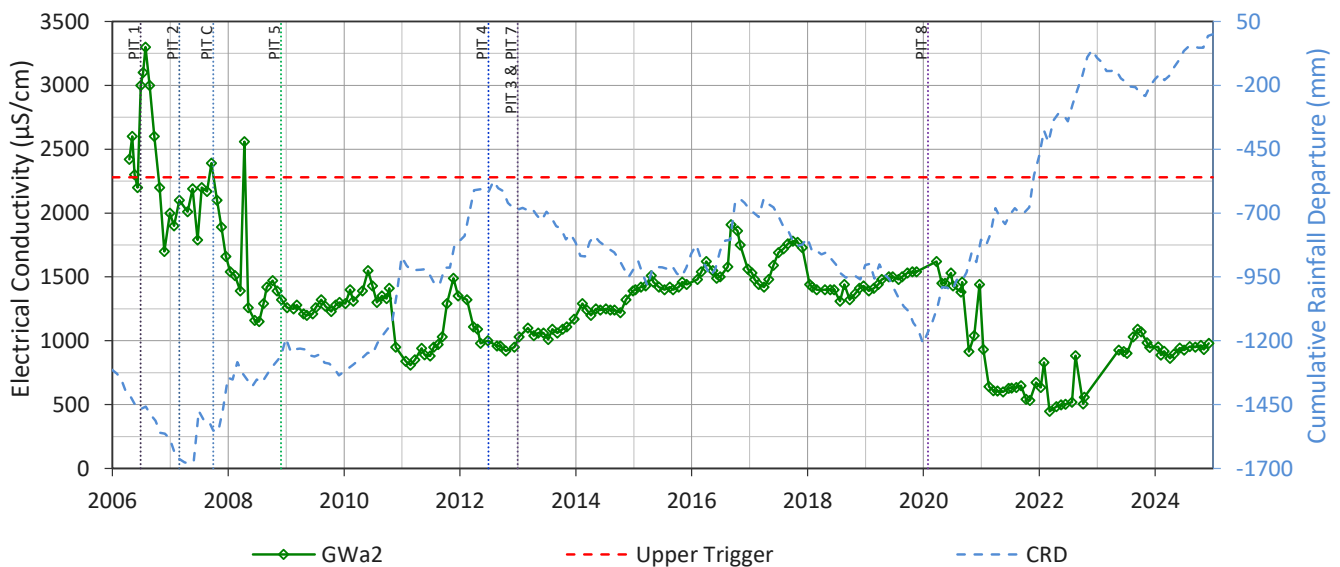
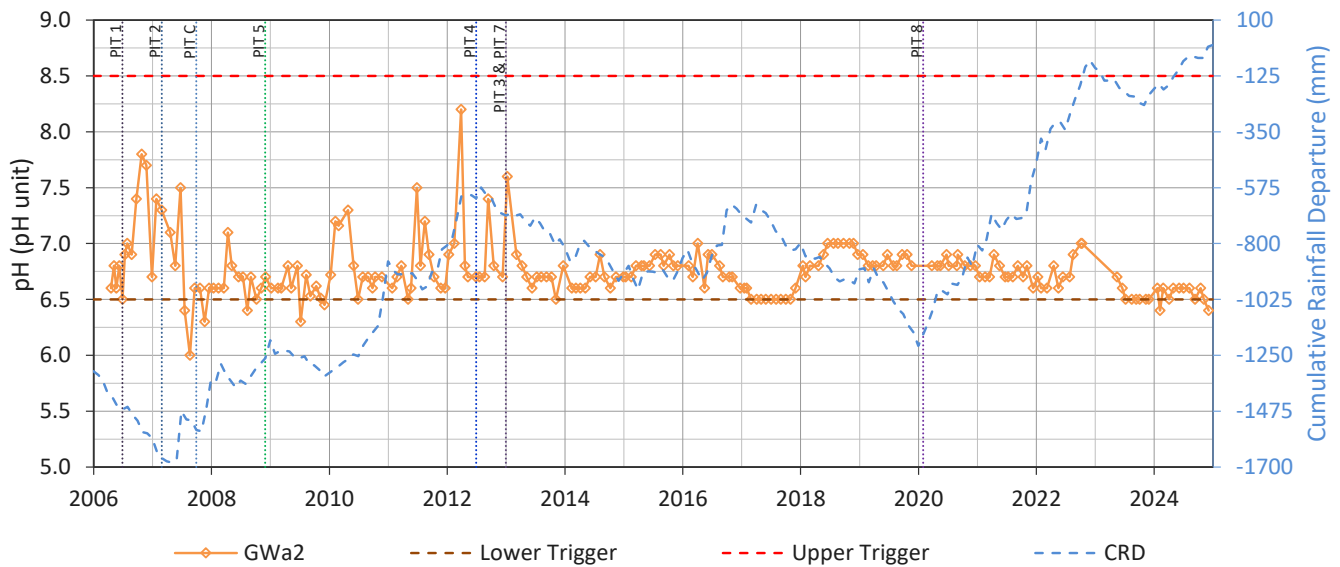
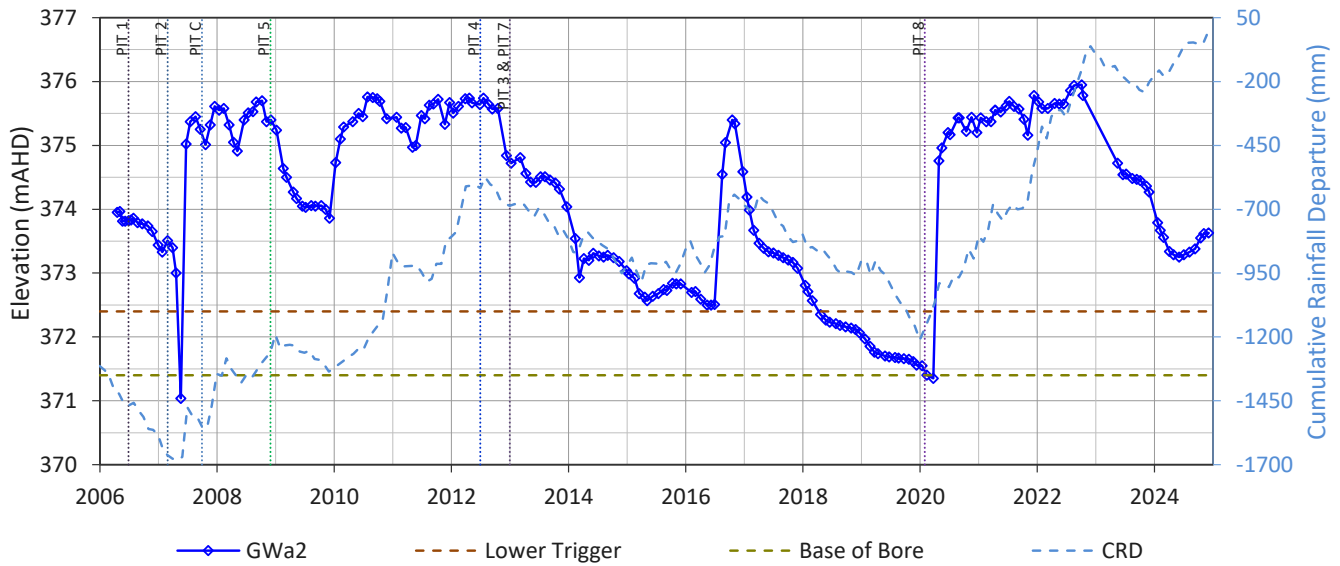
**2024 Groundwater Compliance**

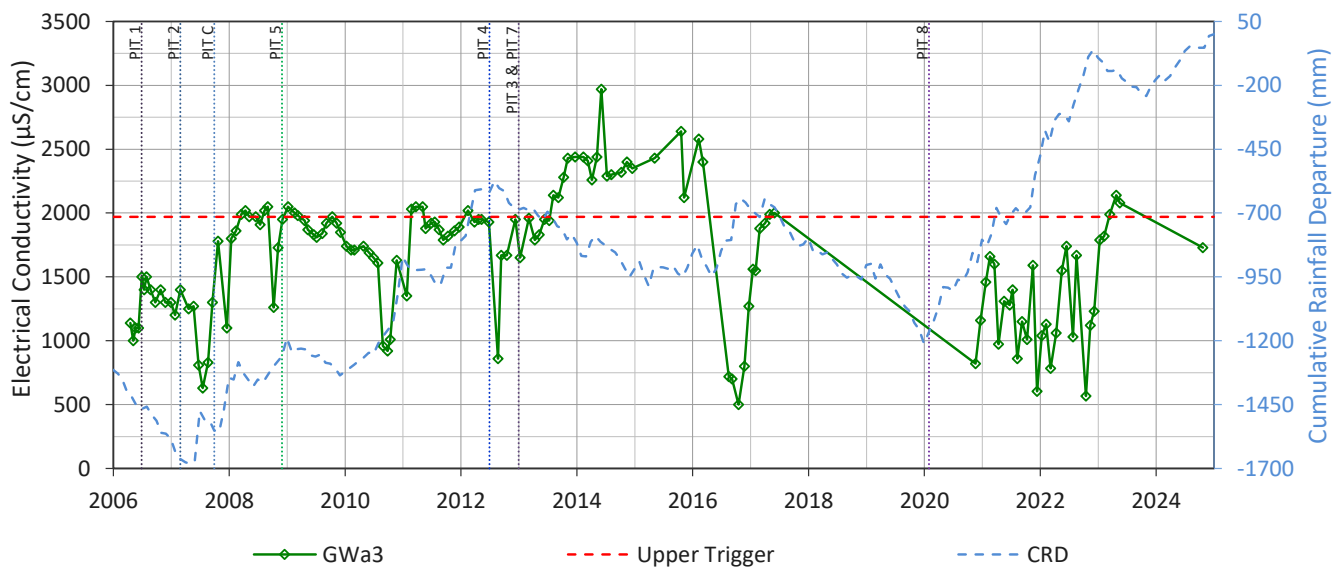
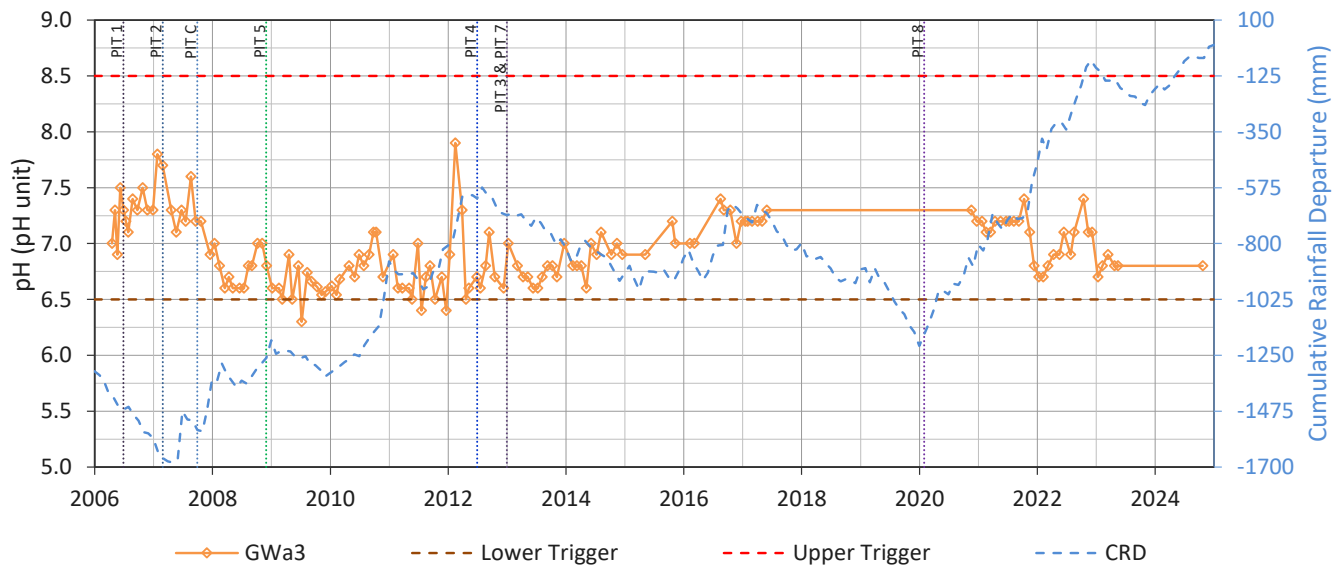
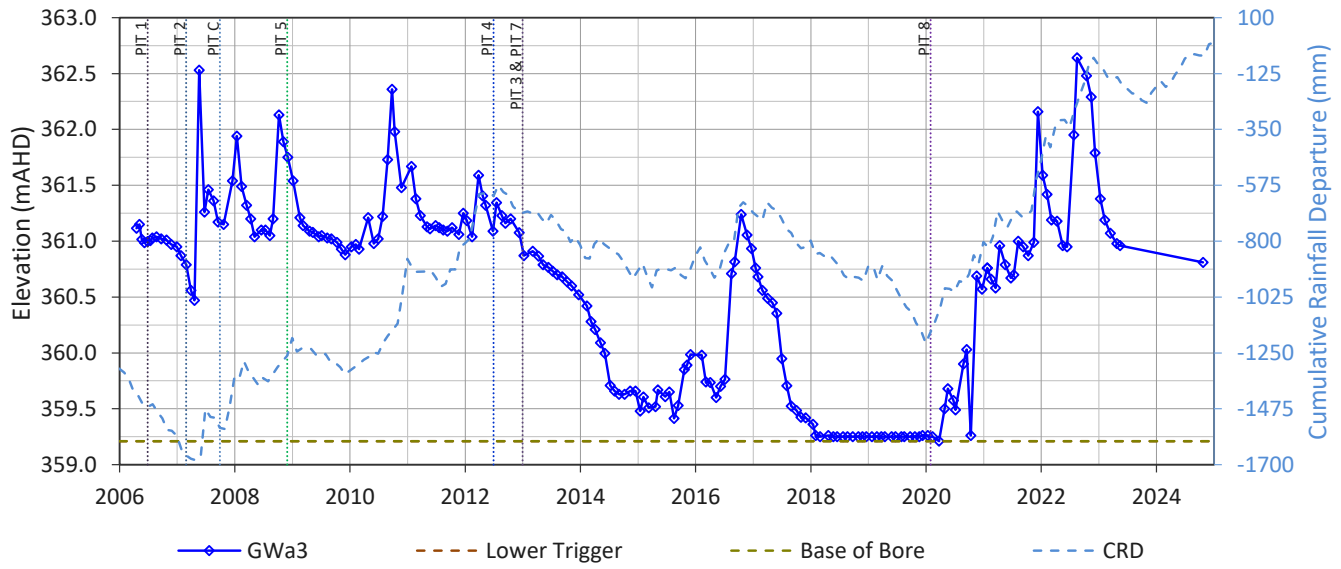
**Wilpinjong Coal Mine**

SLR Project No.: 665.v10014.02417

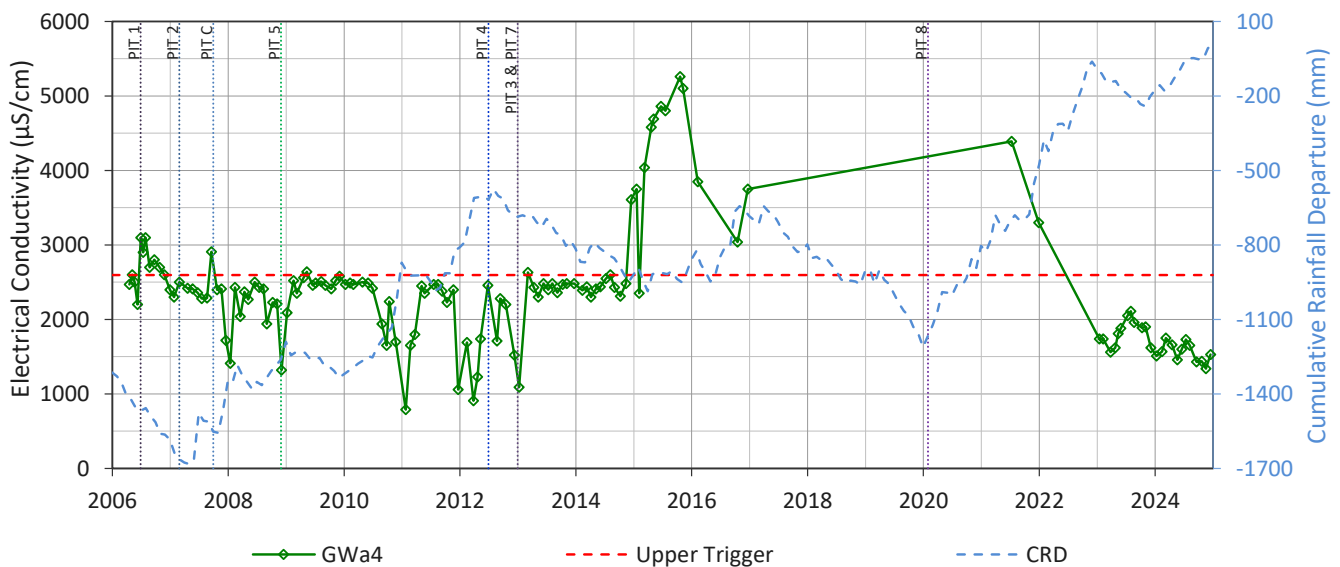
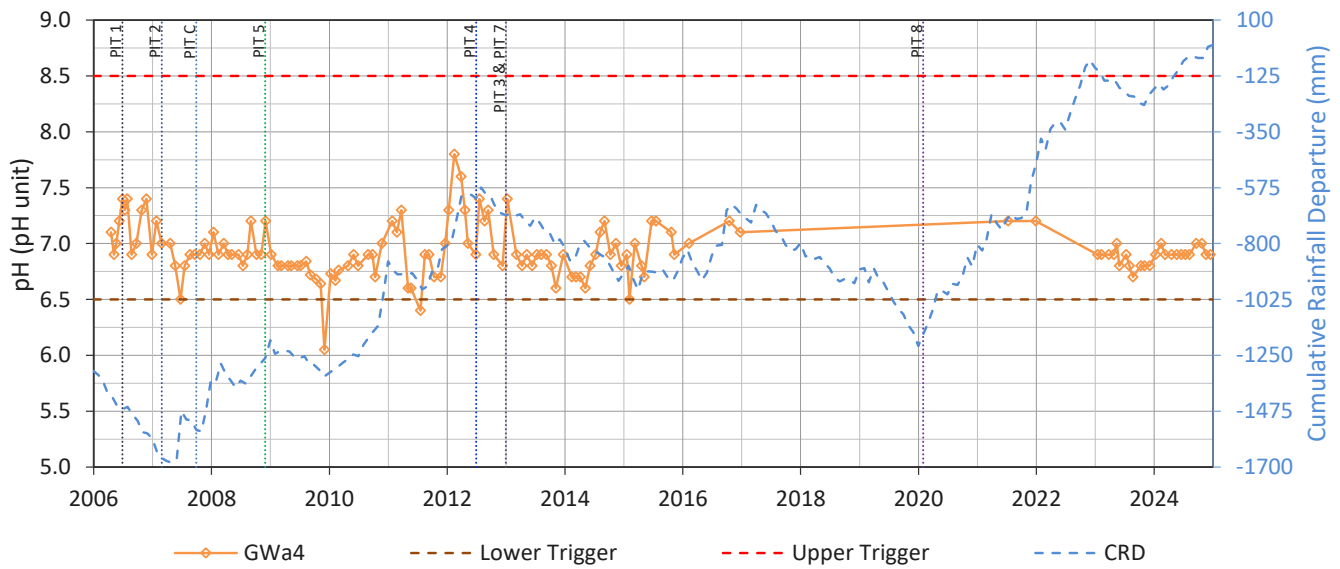
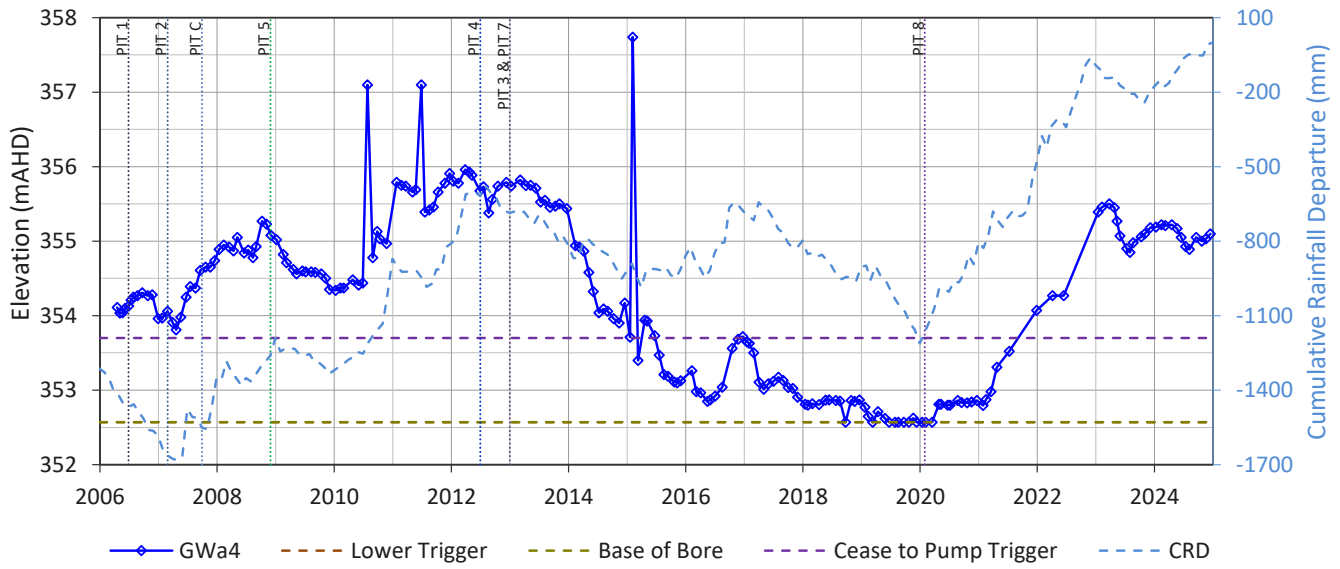
13 February 2025

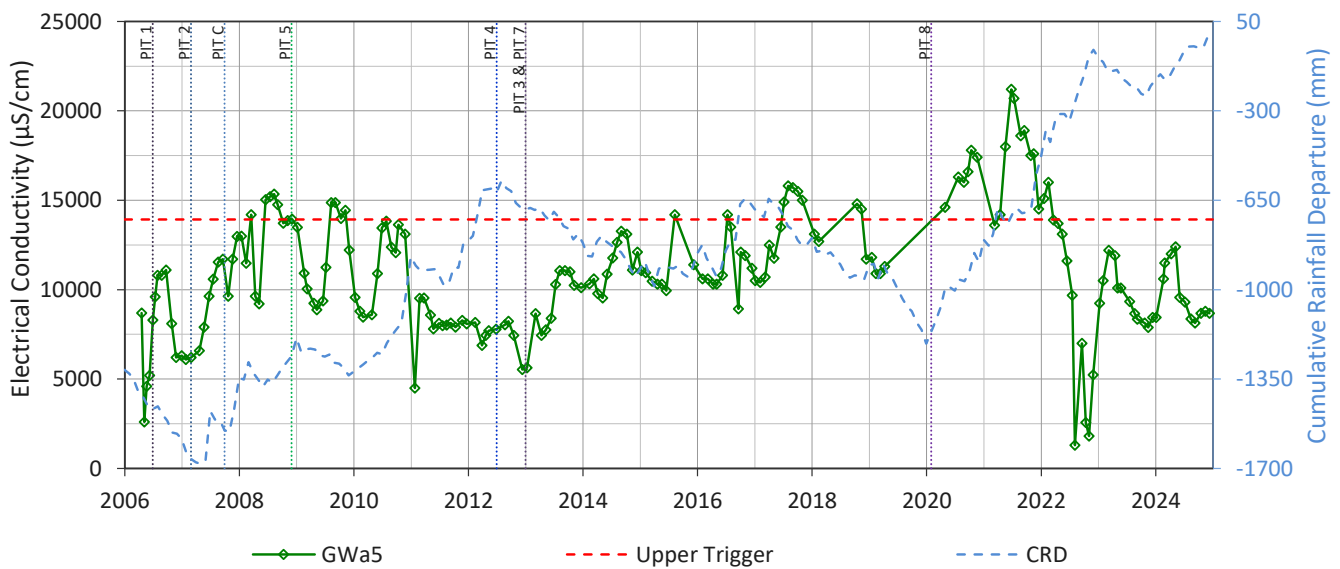
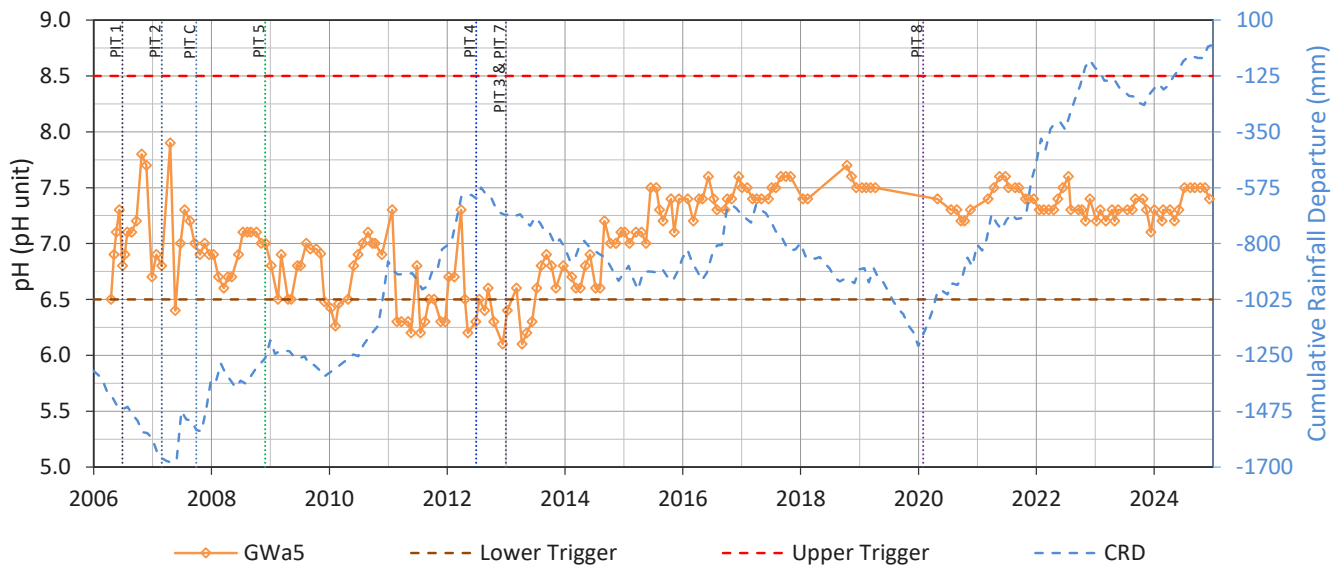
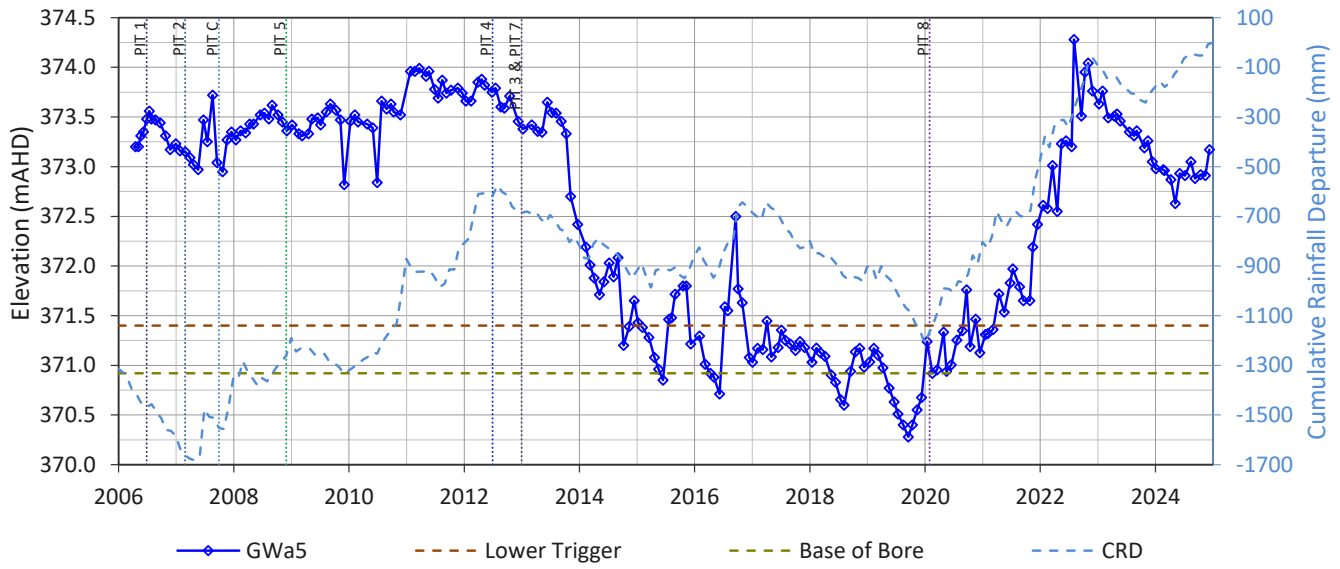


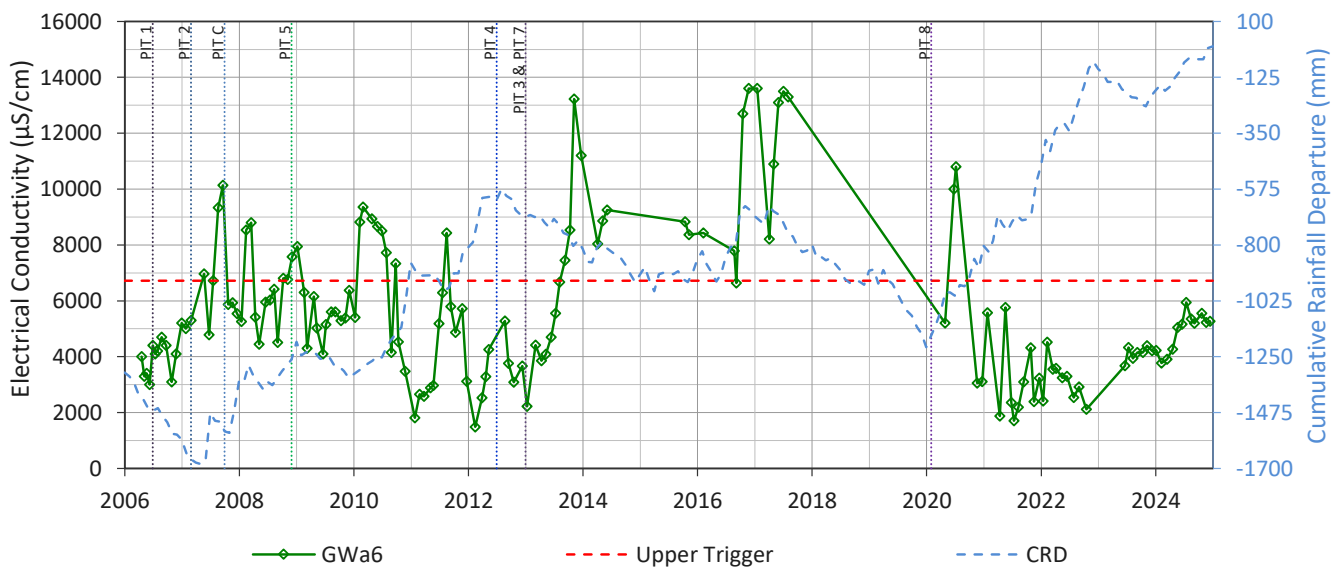
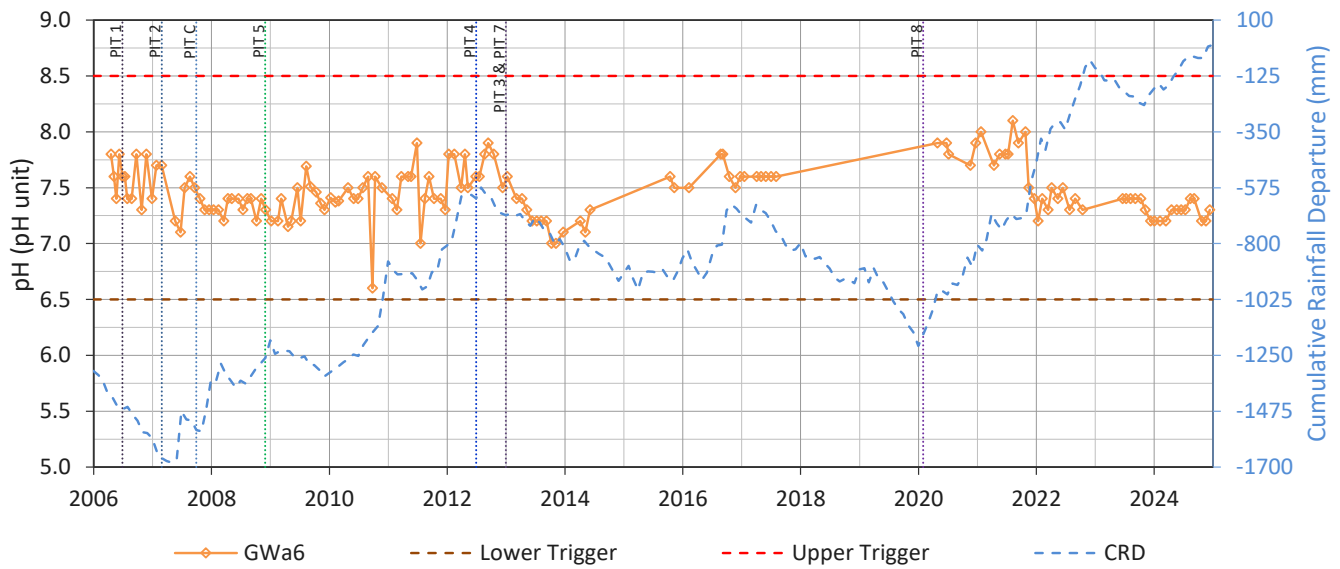
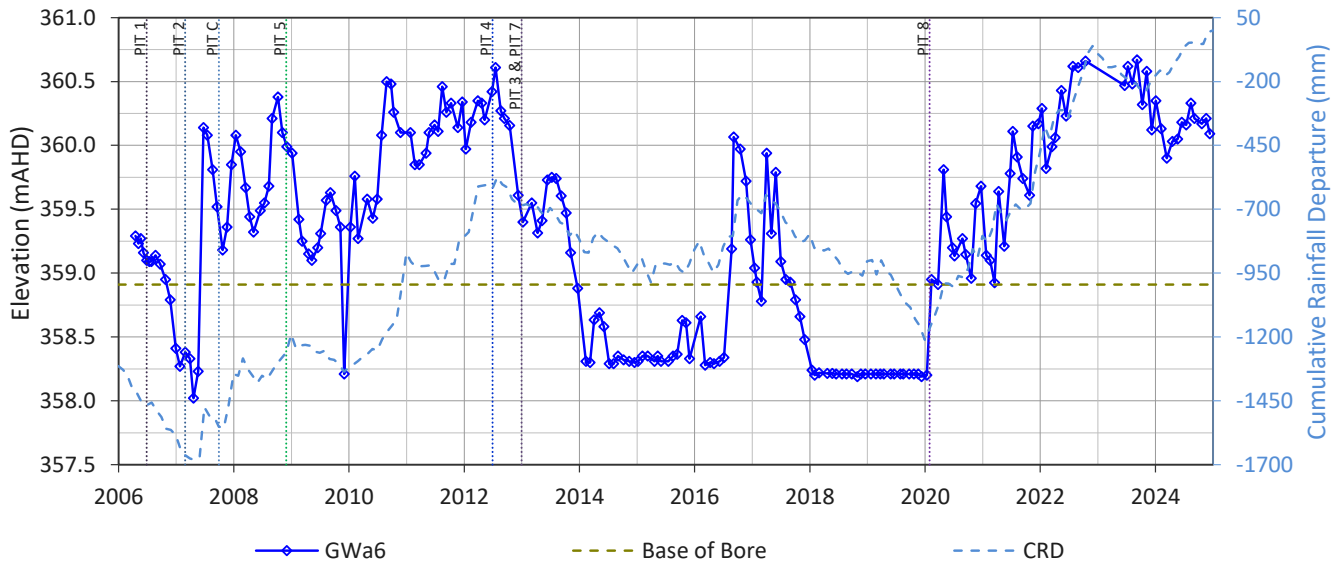


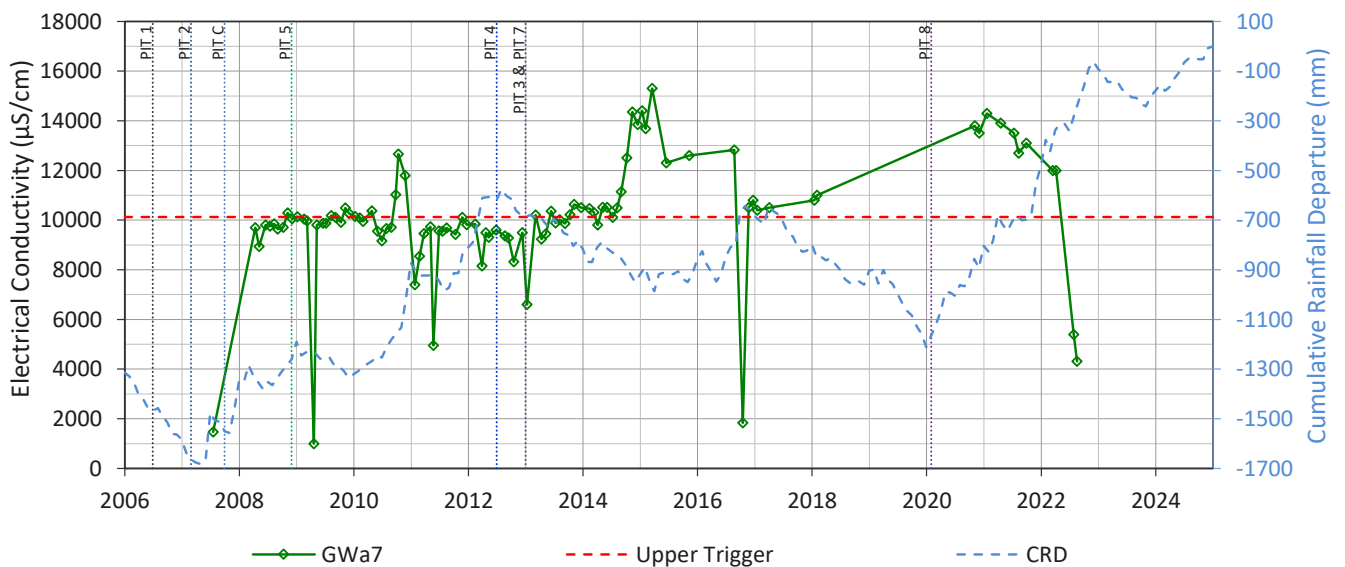
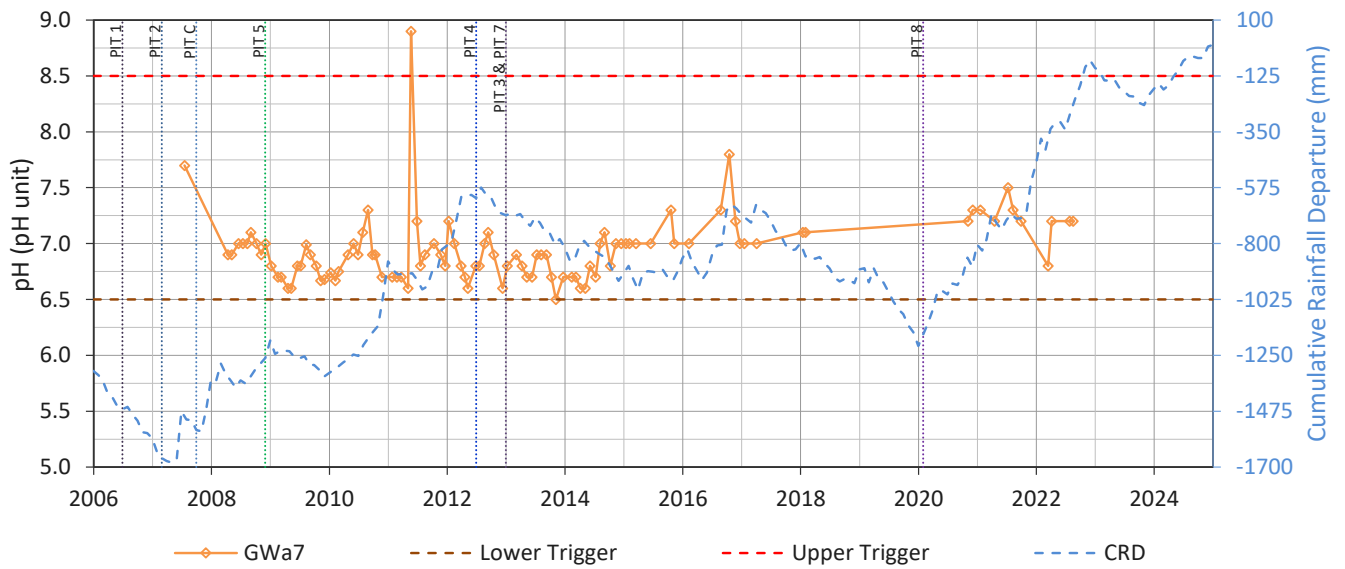
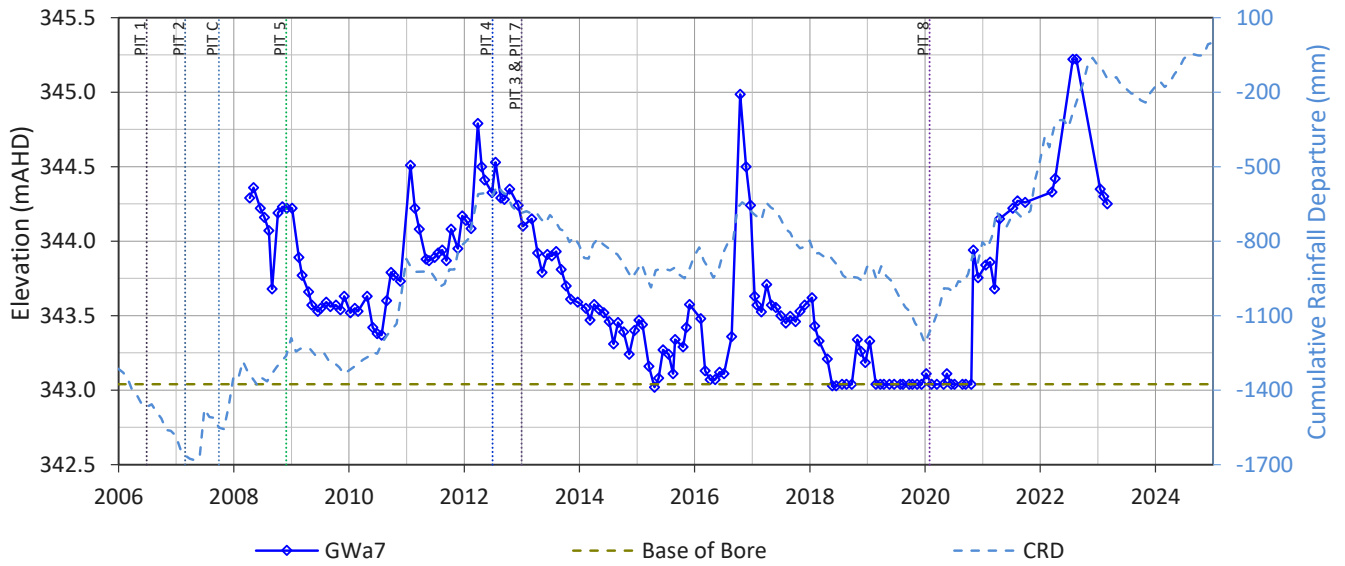


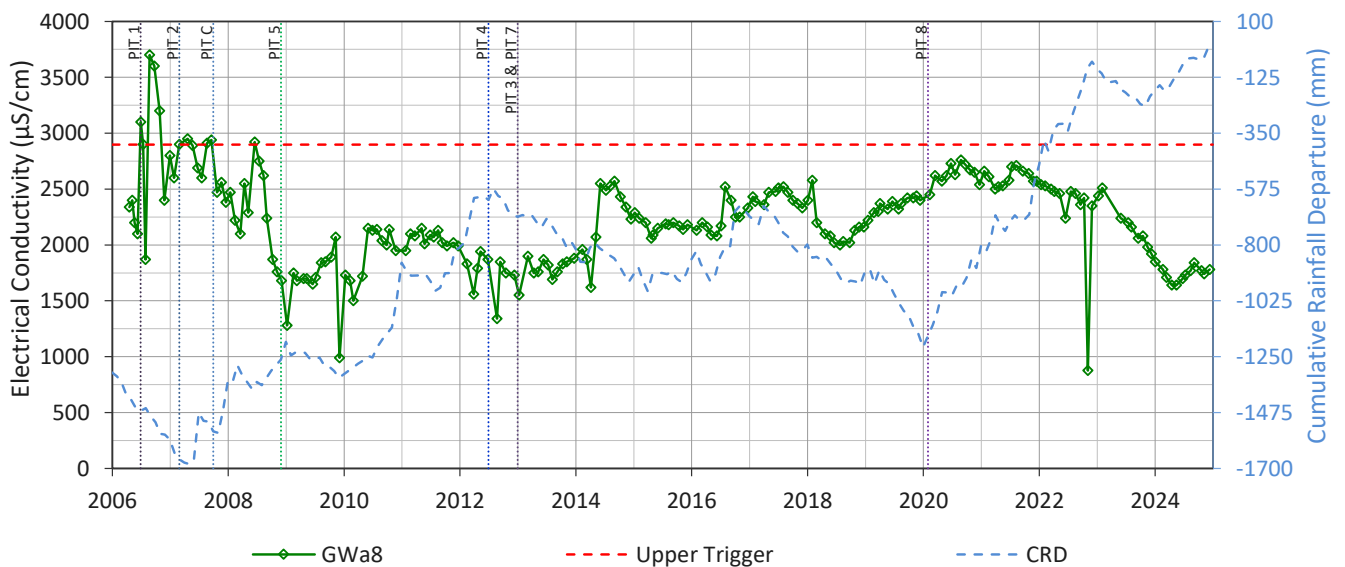
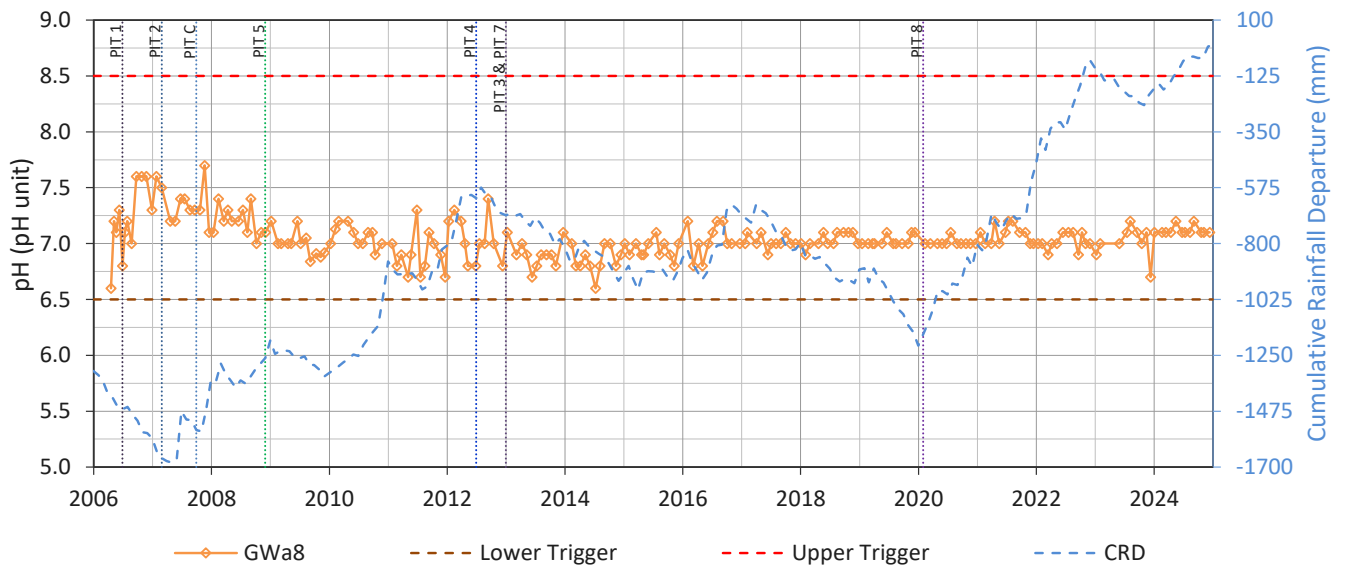
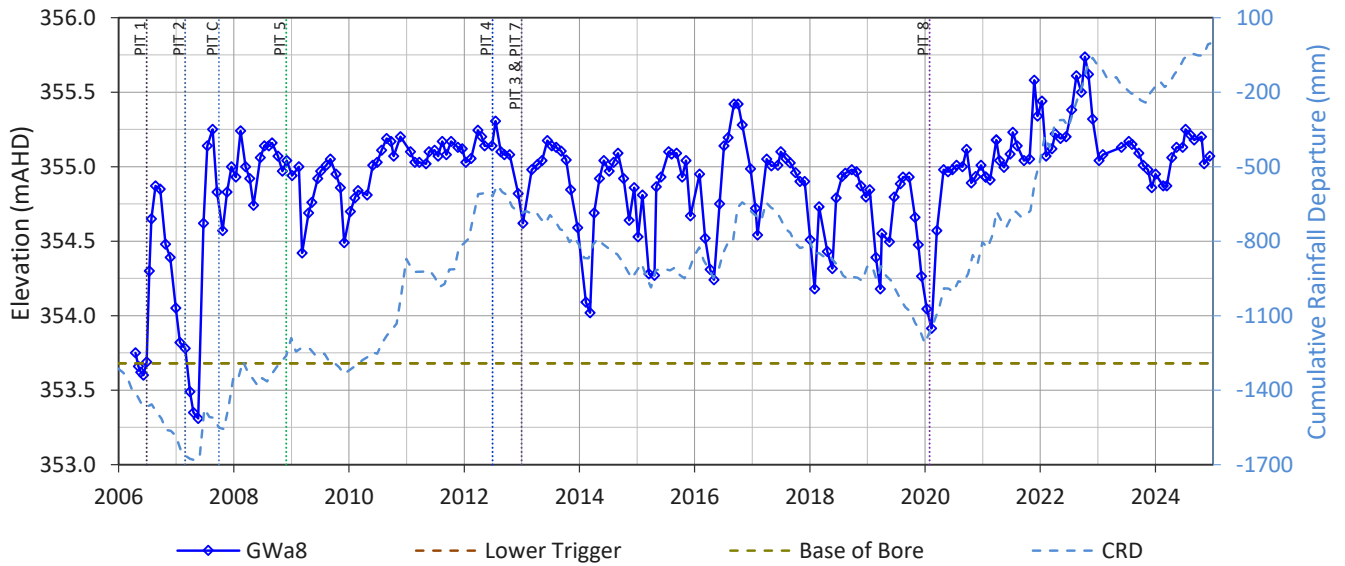


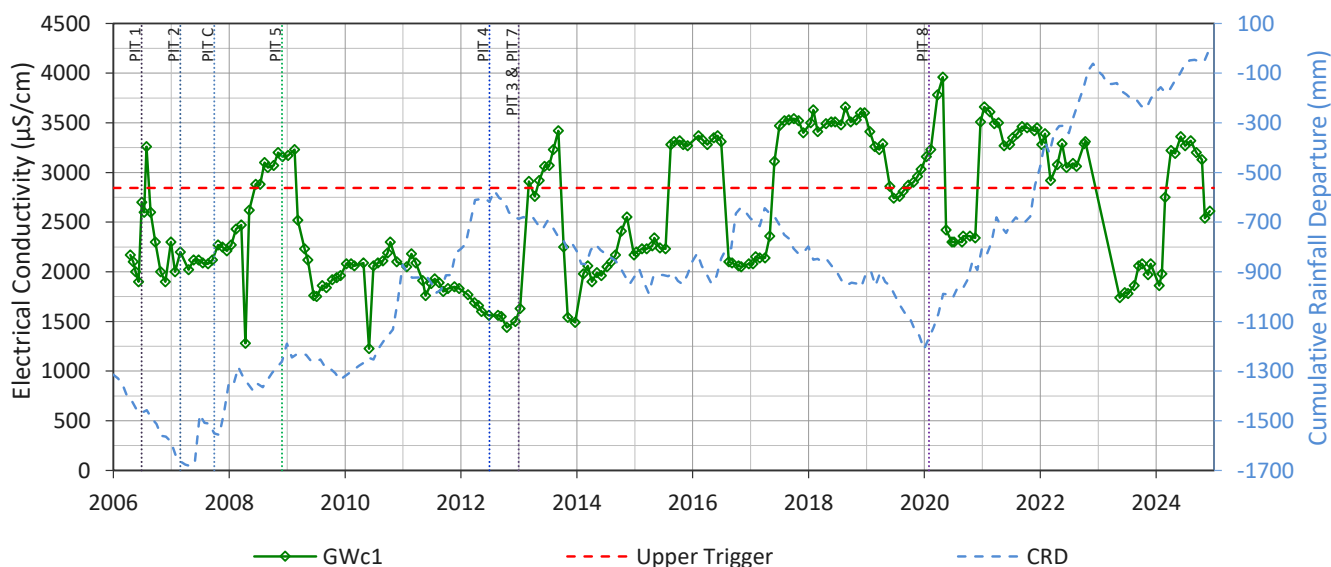
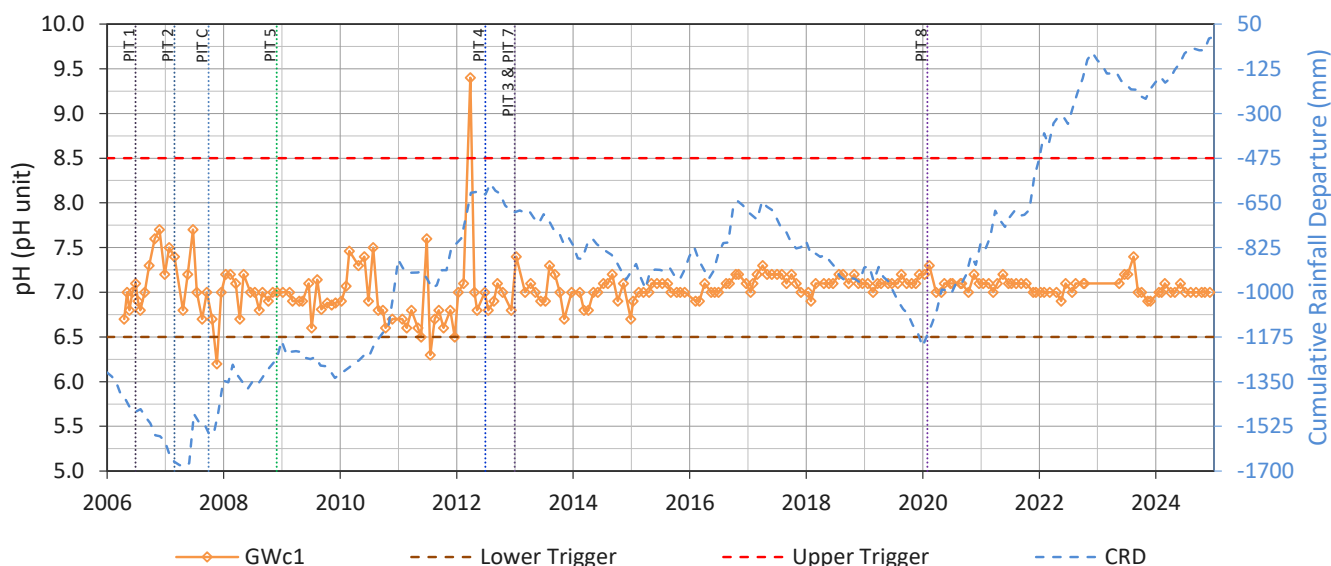
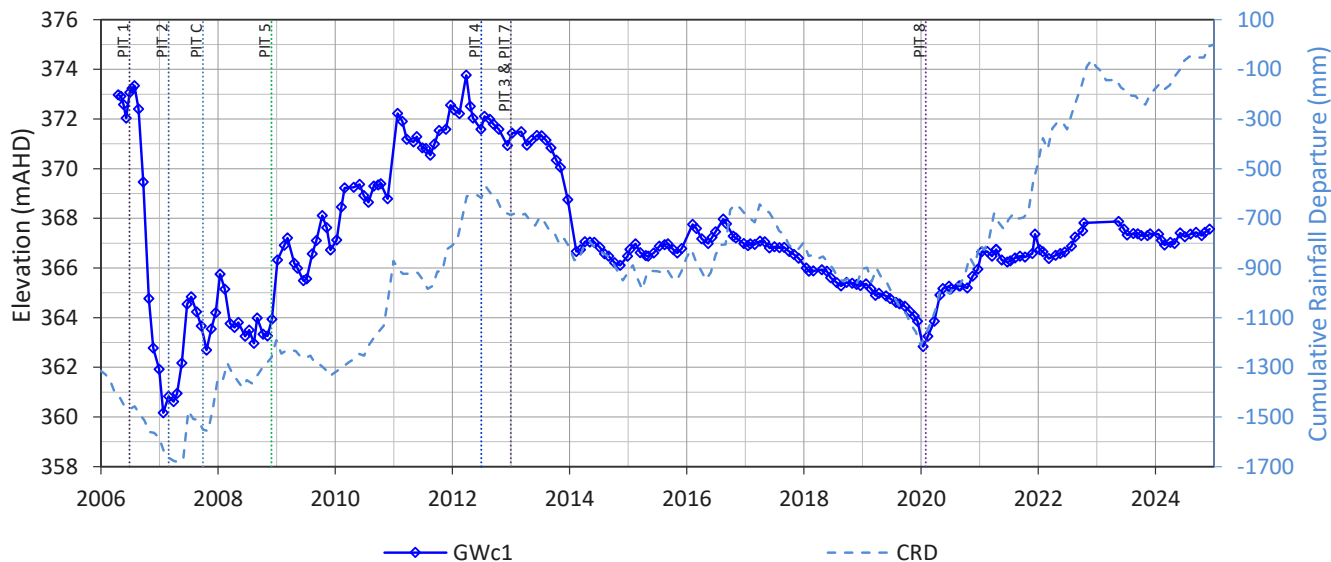


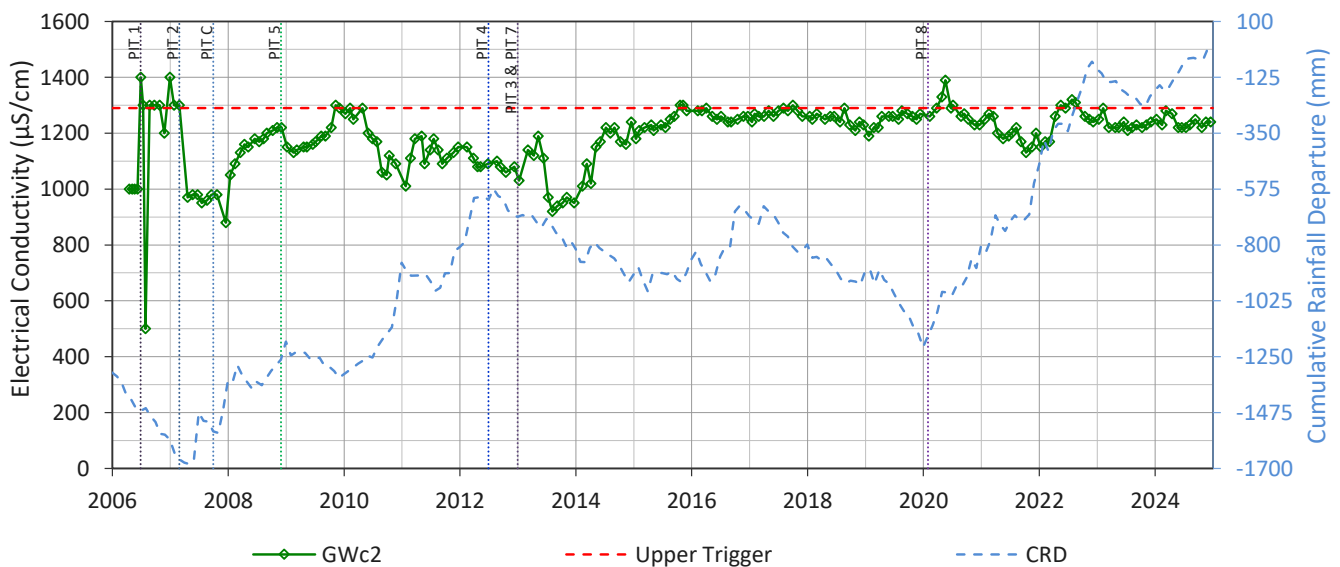
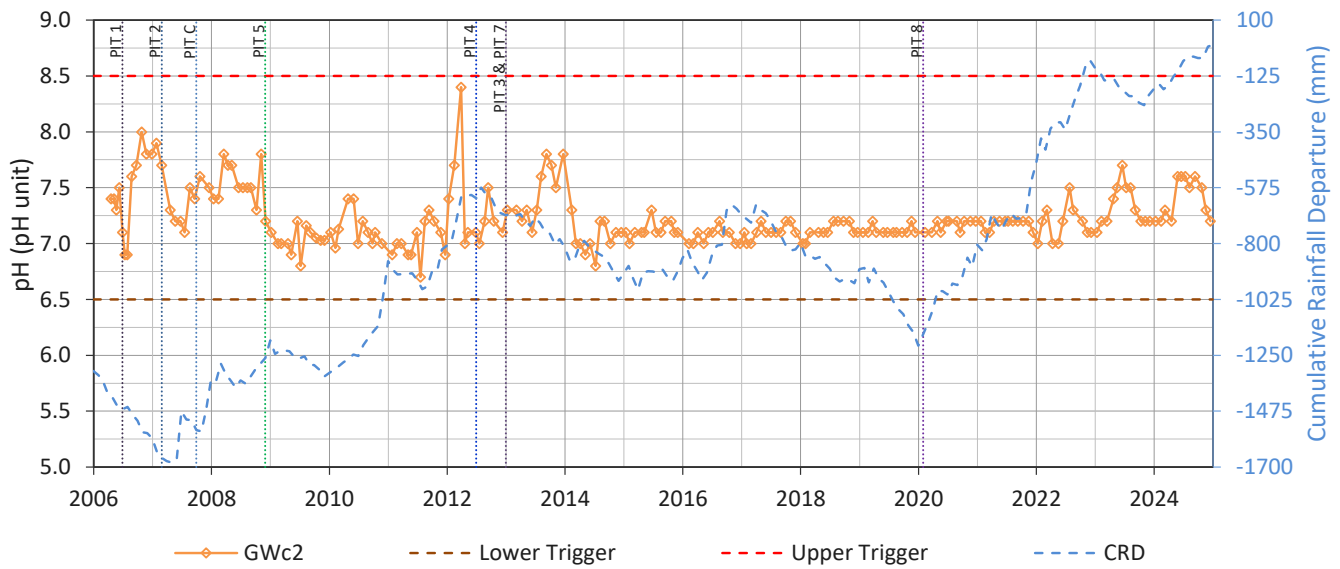
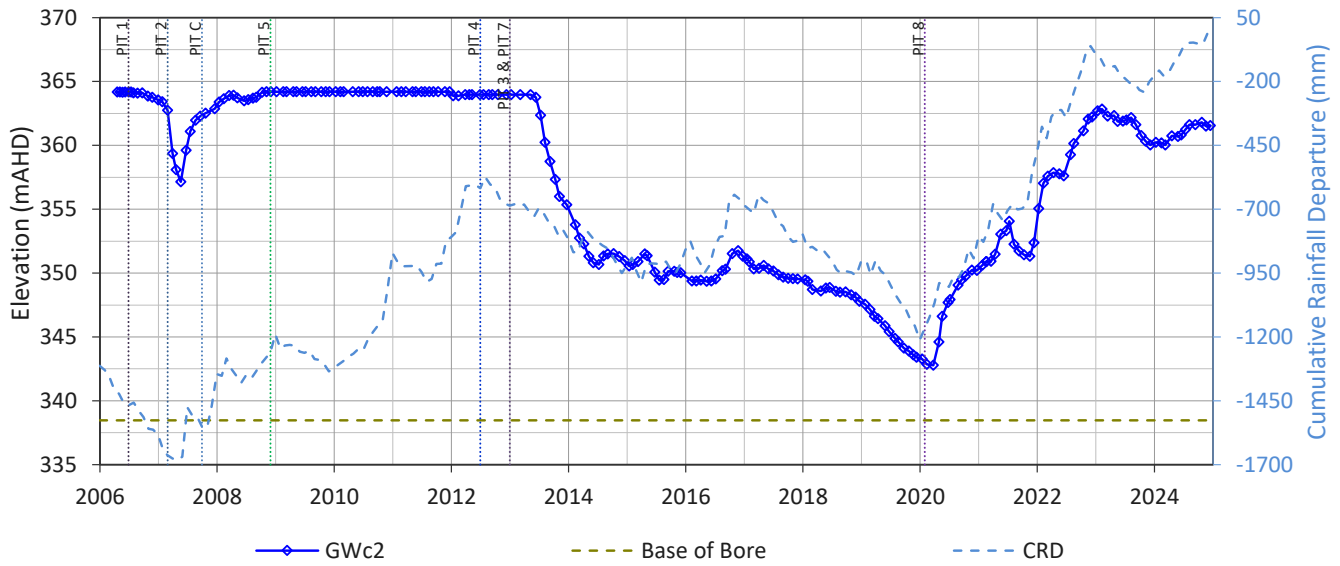


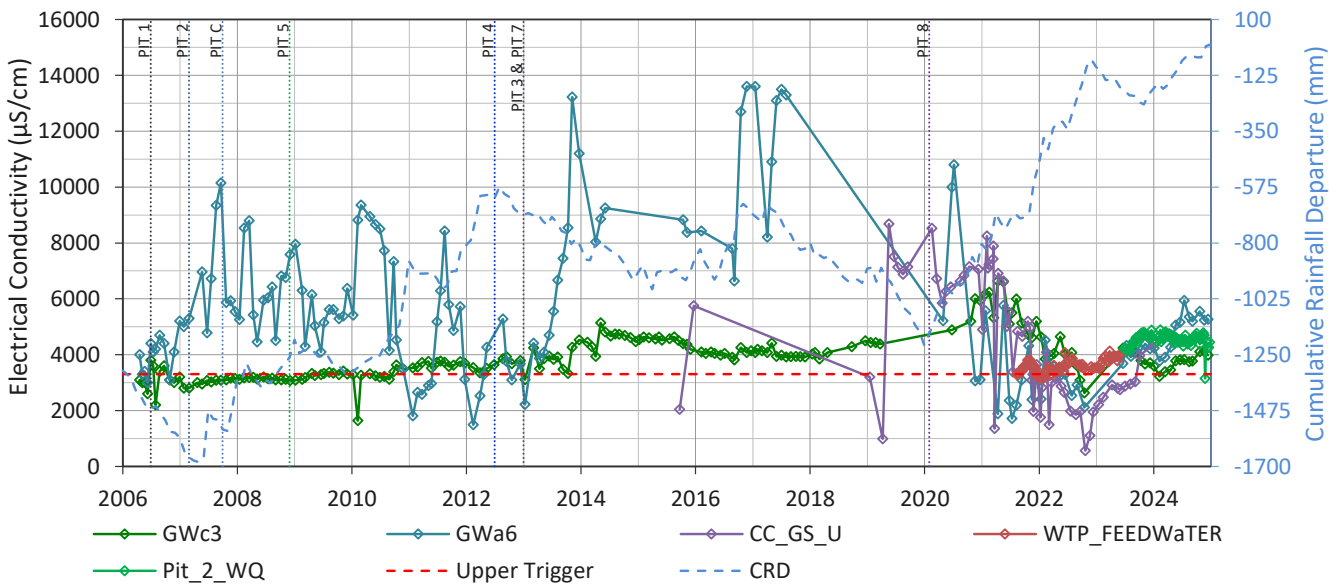
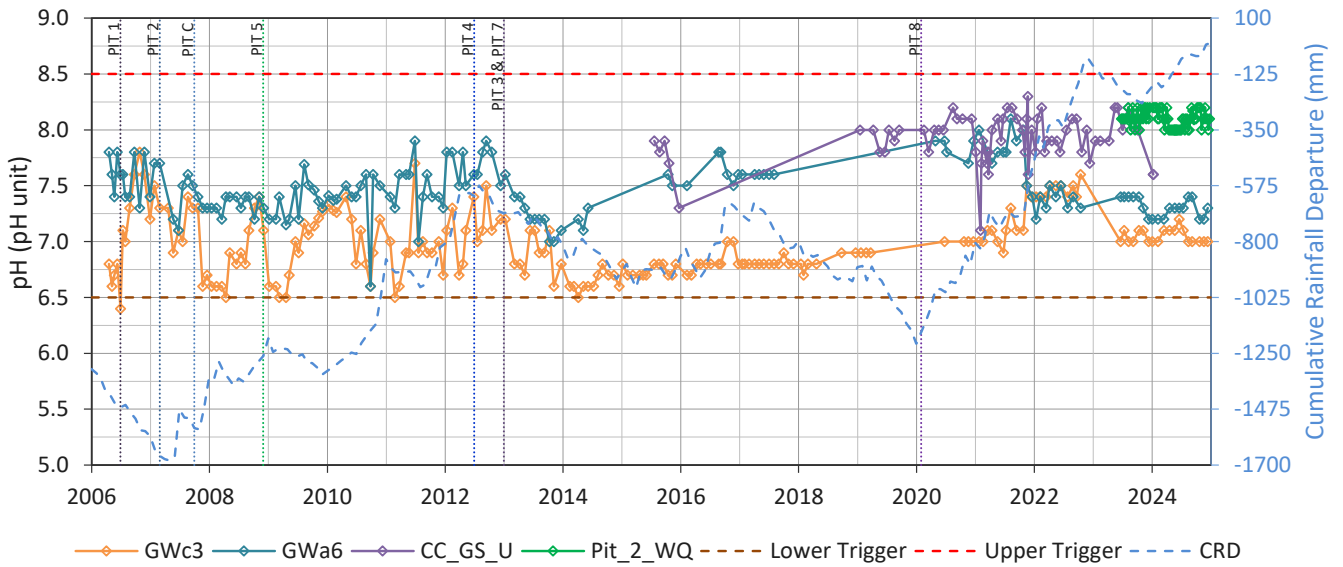
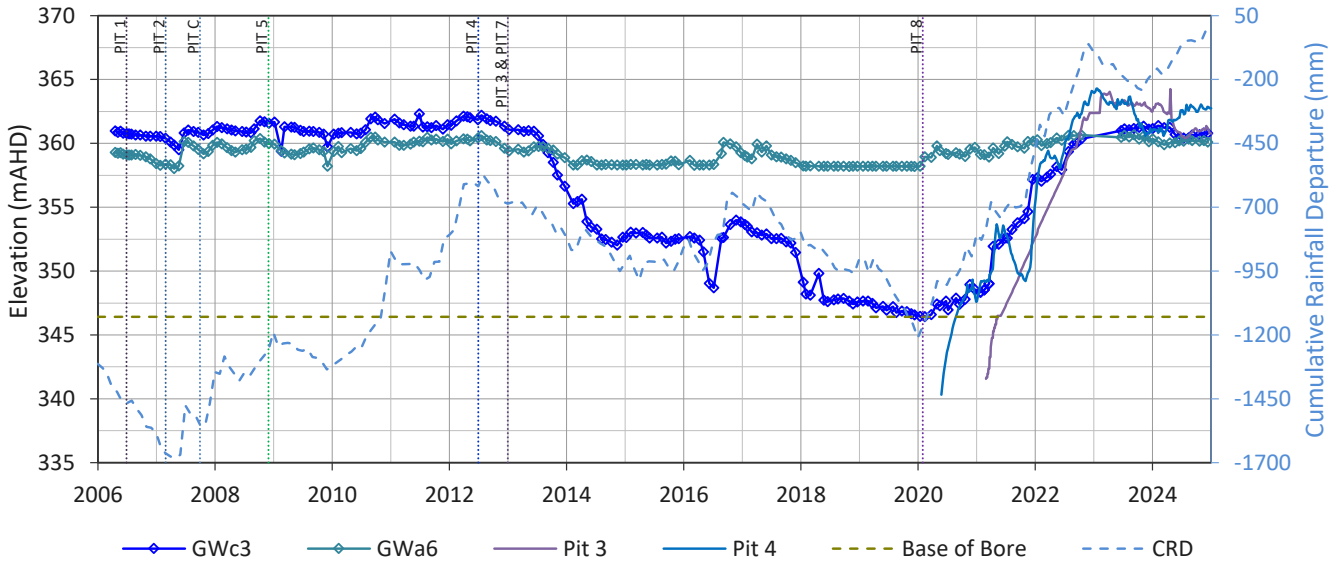




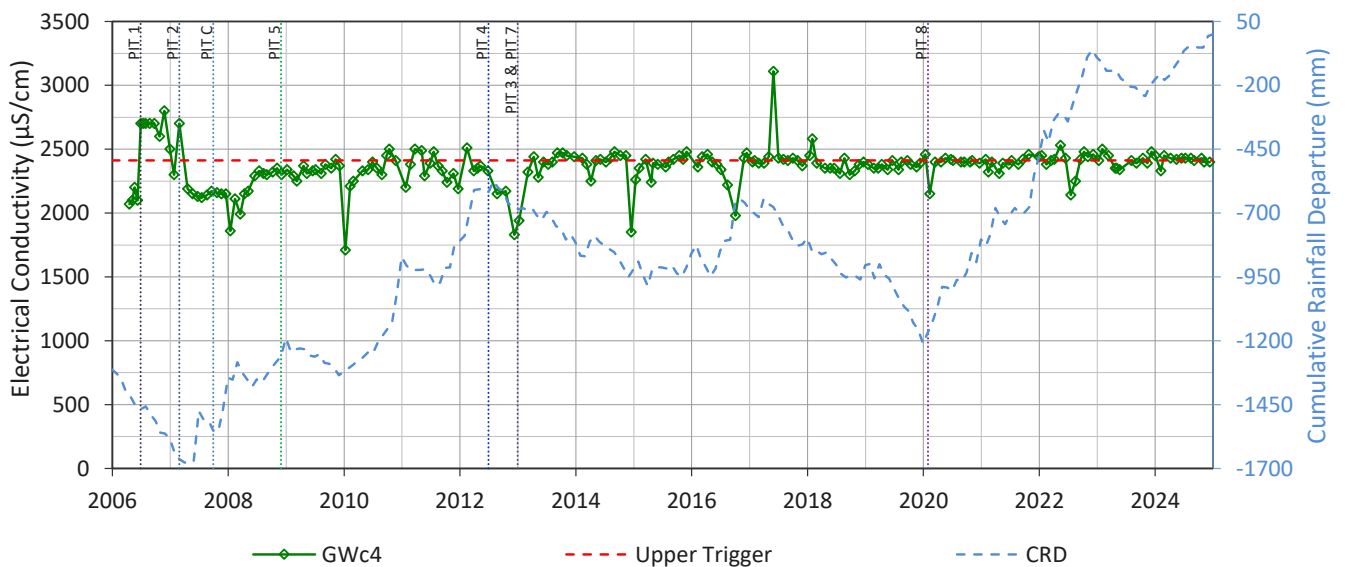
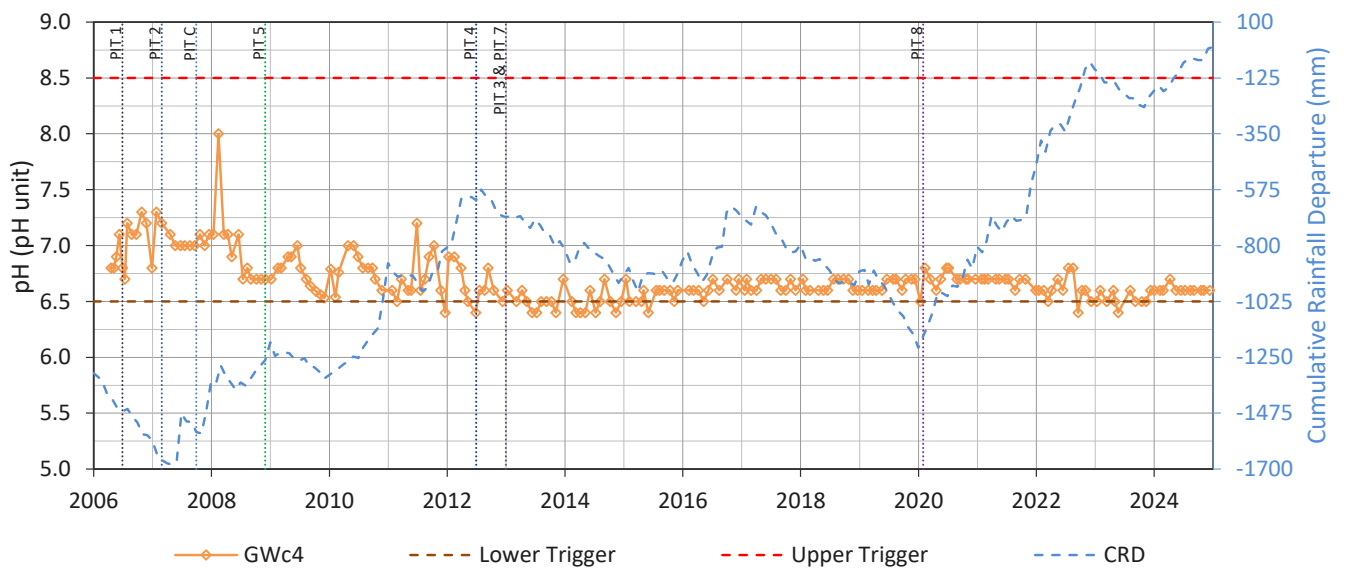
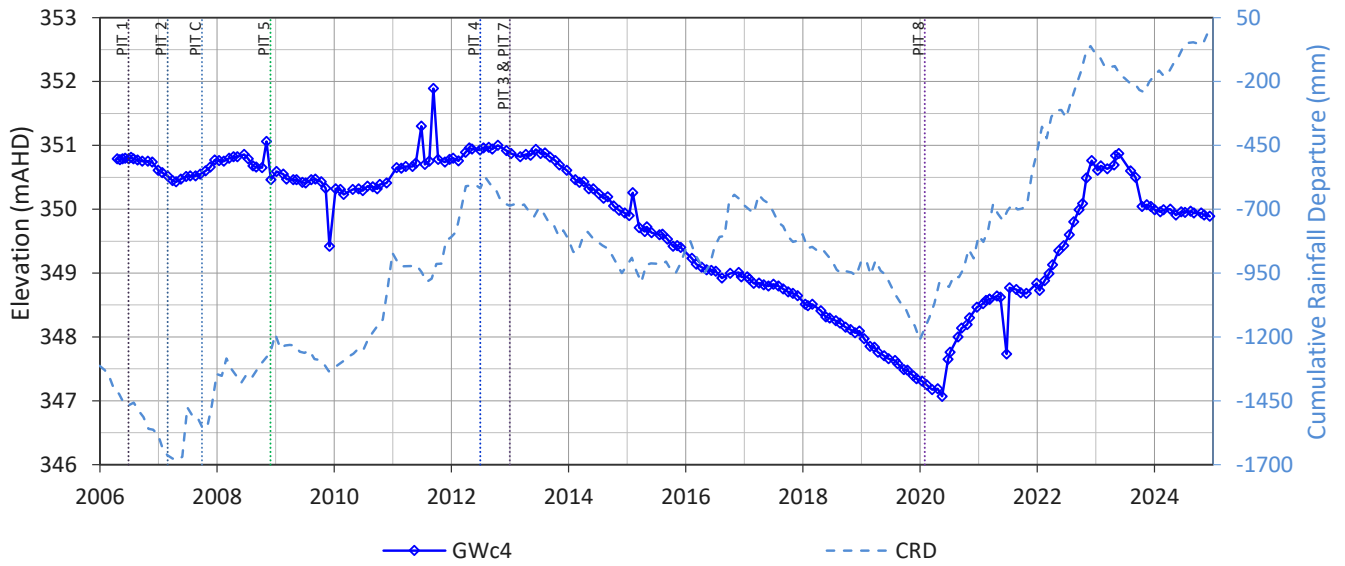


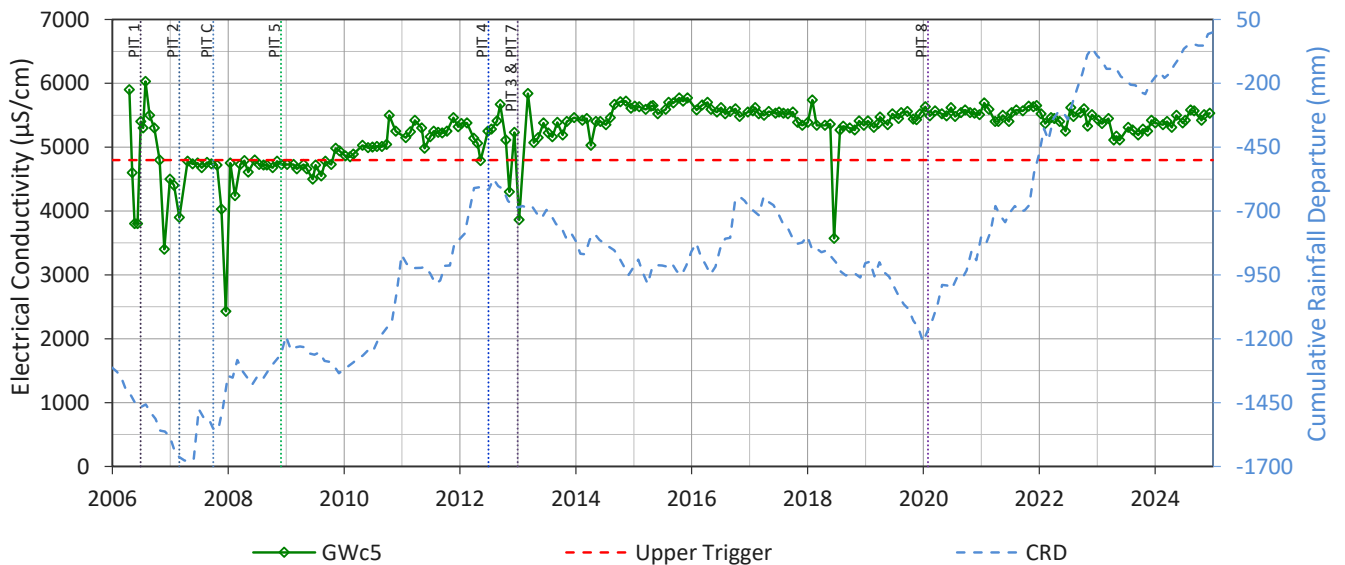
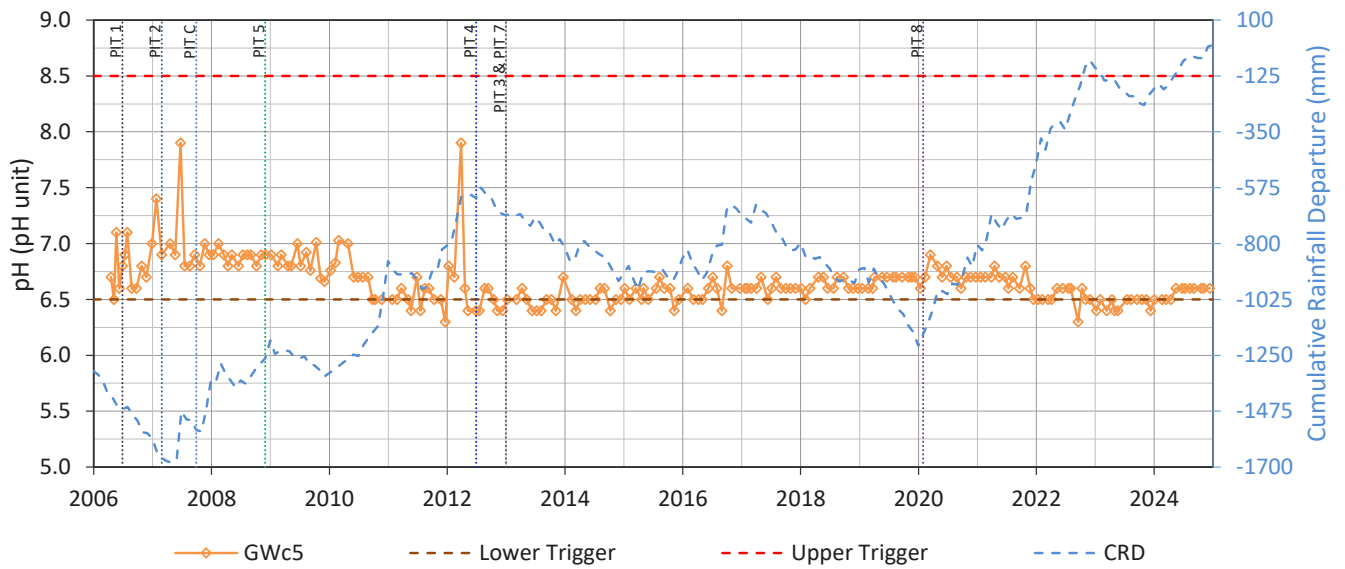
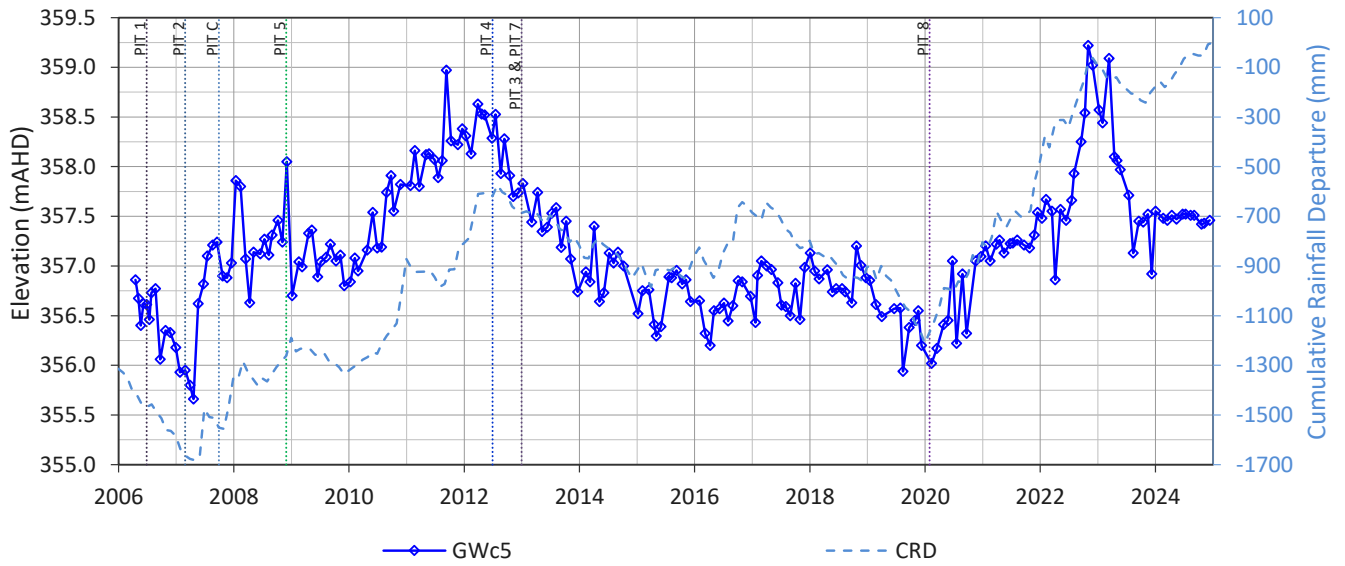


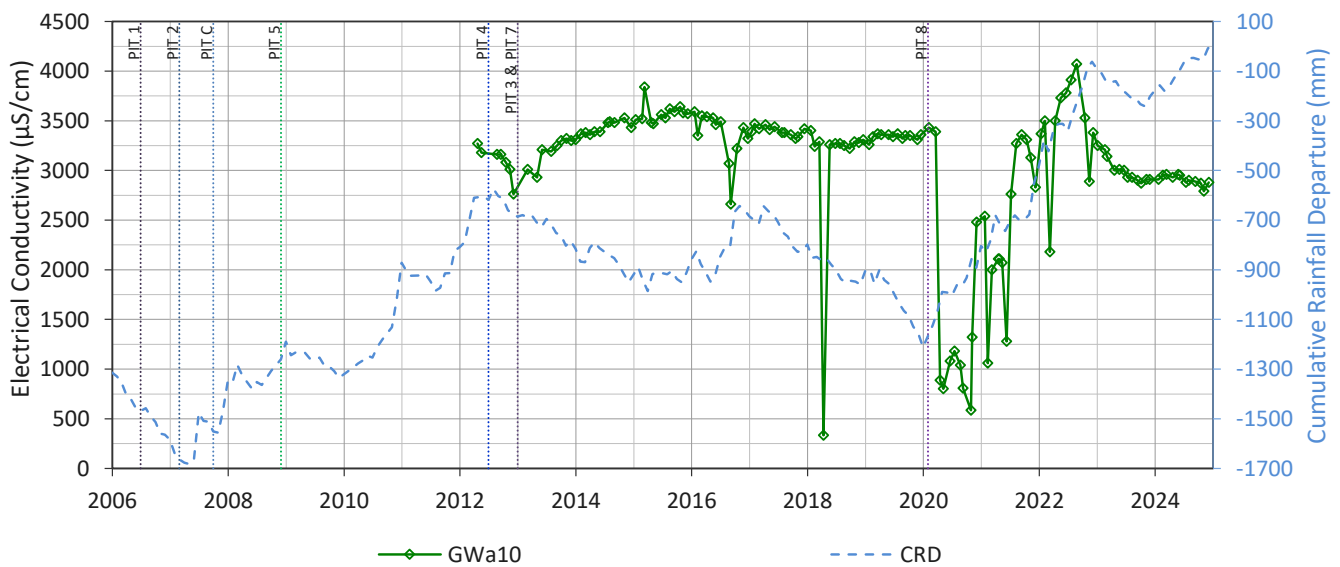
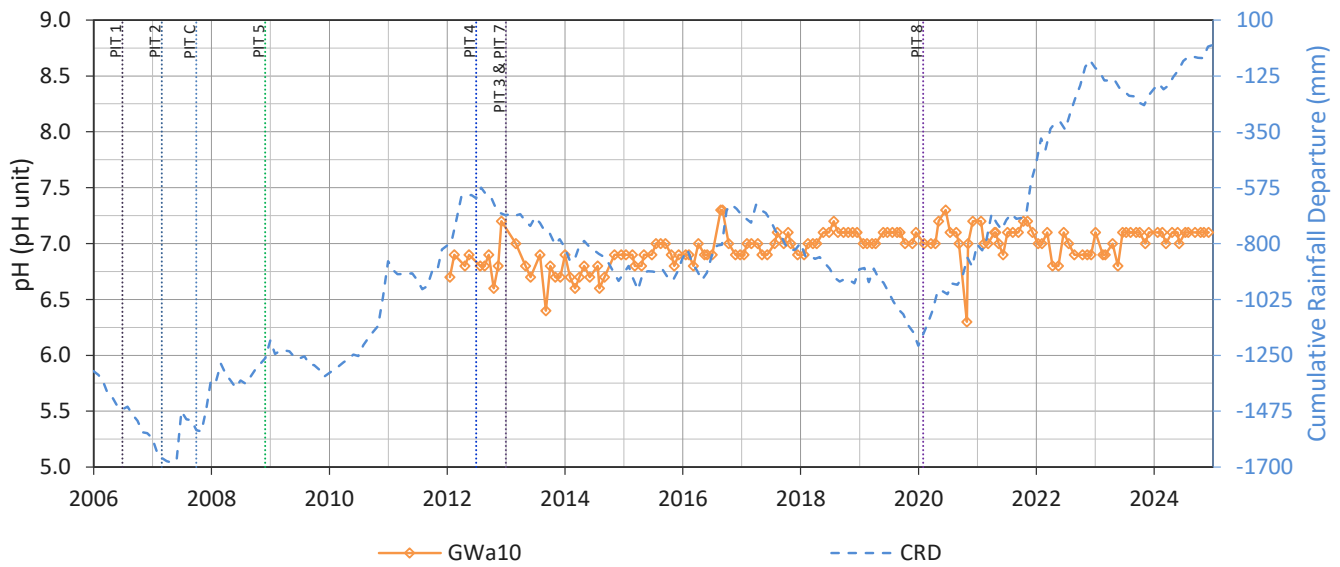
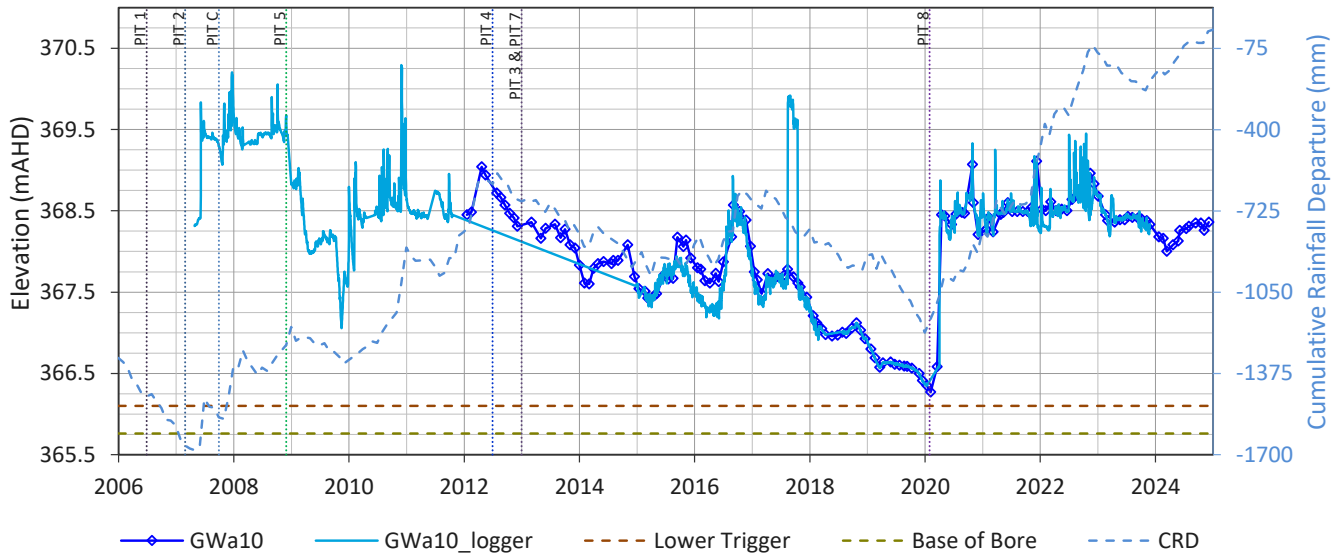


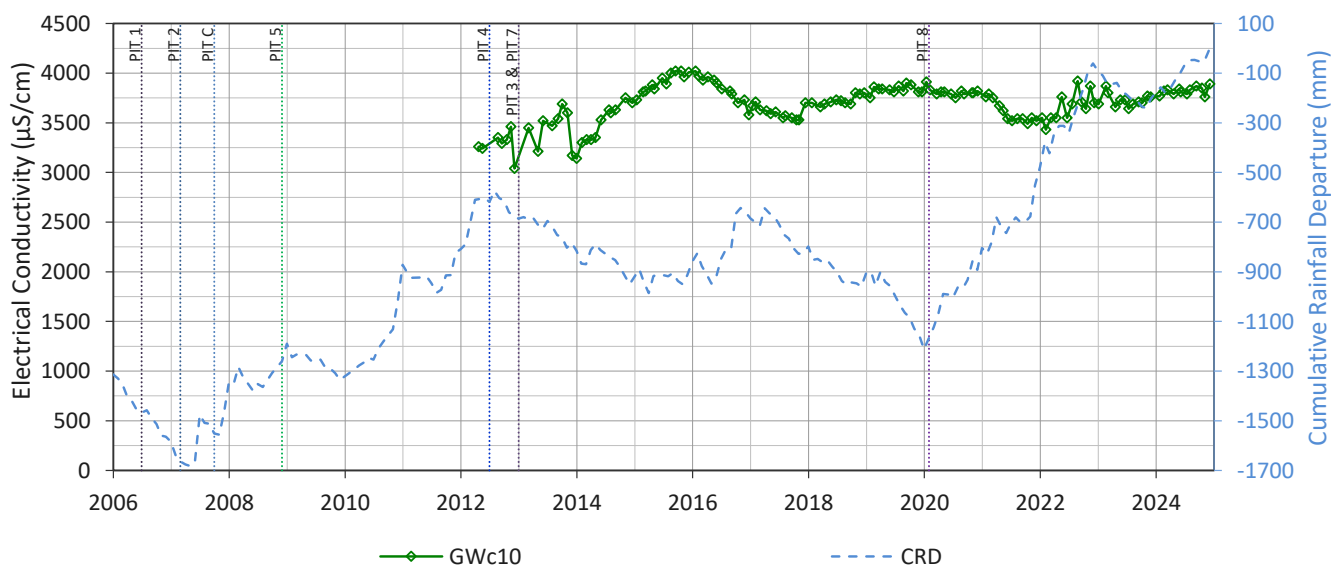
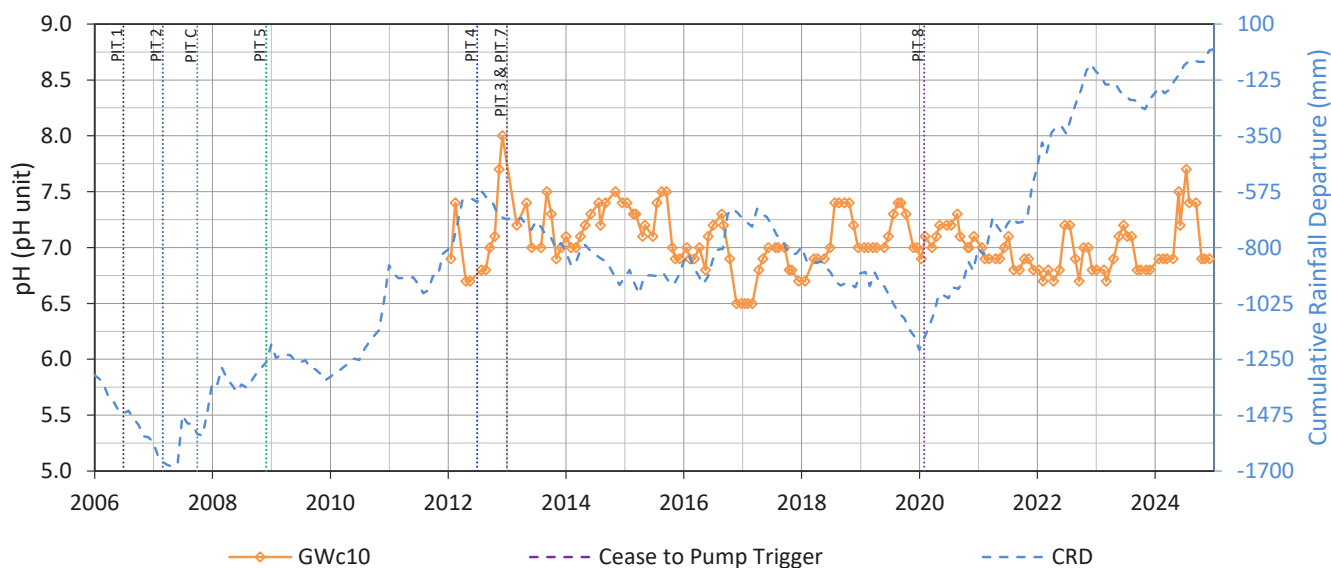
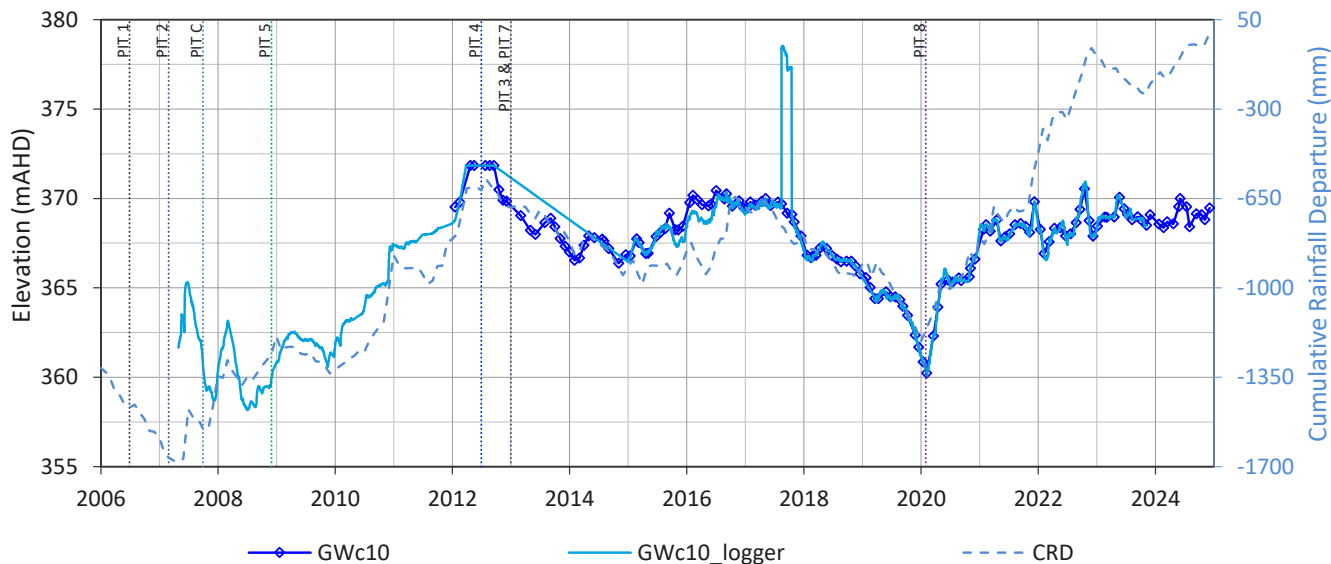


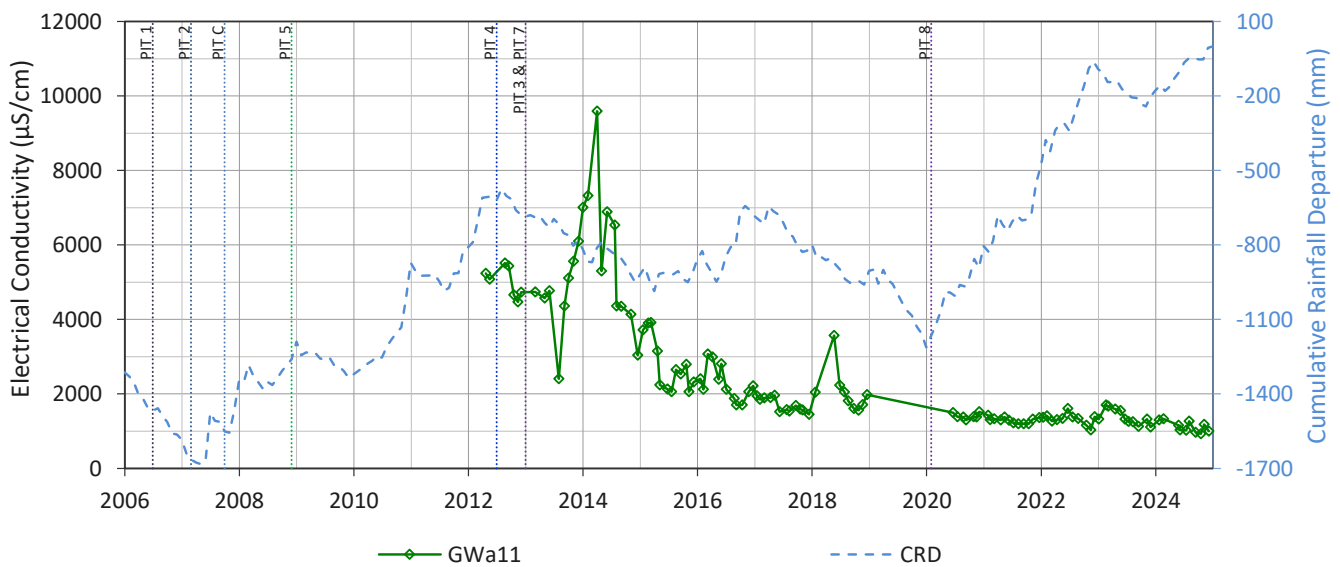
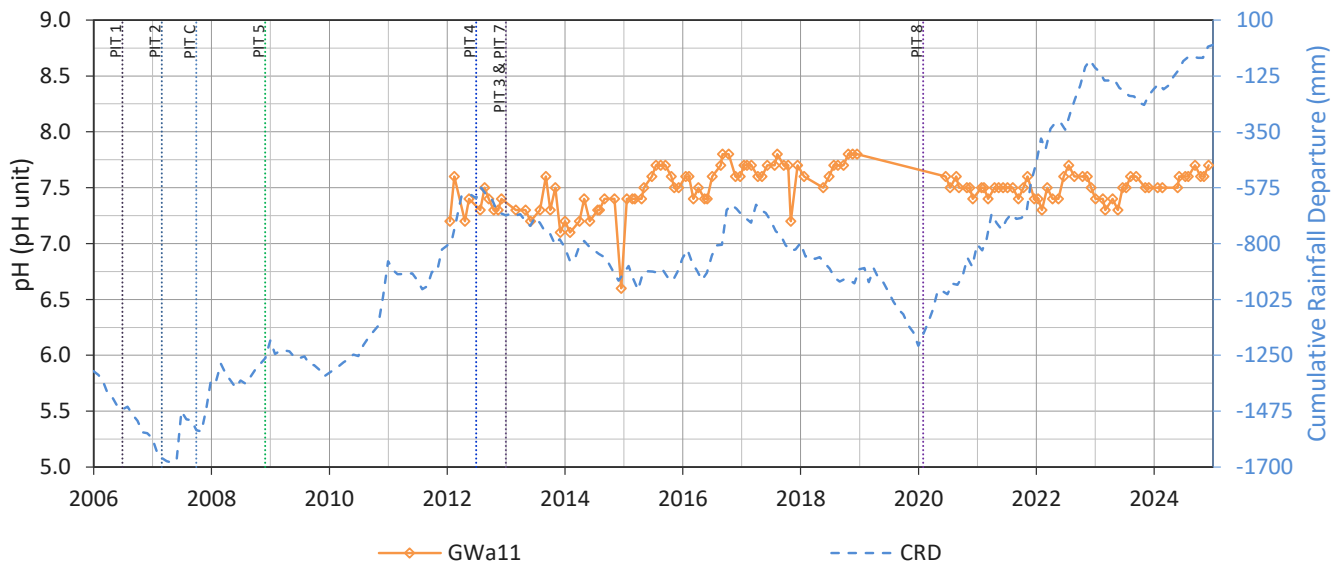
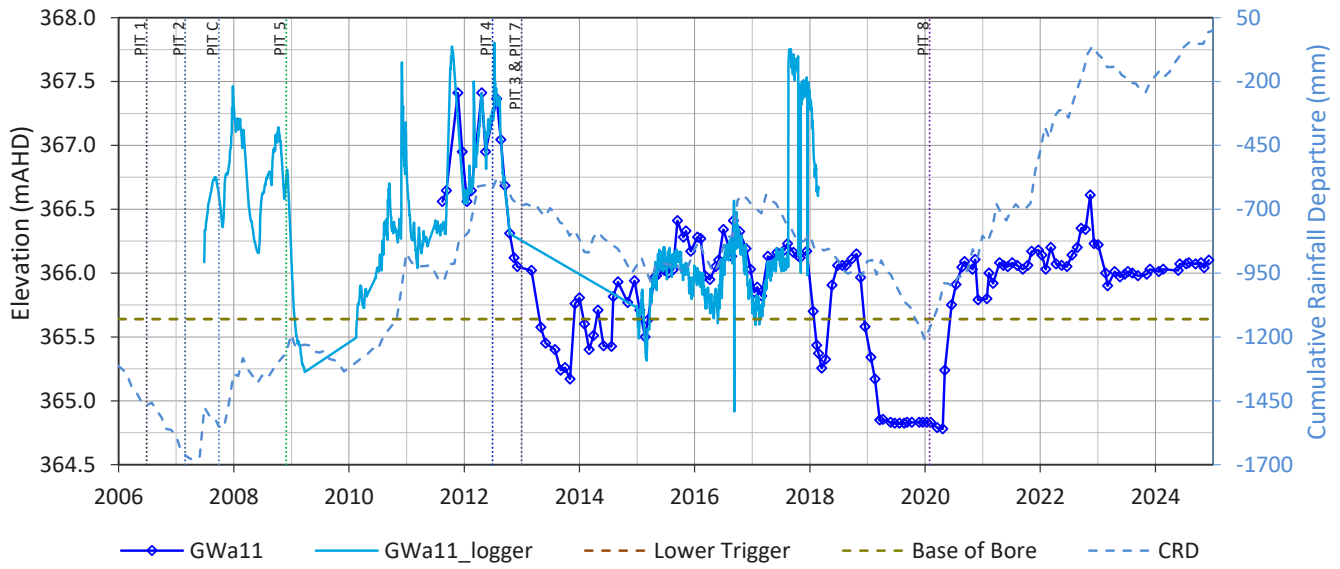


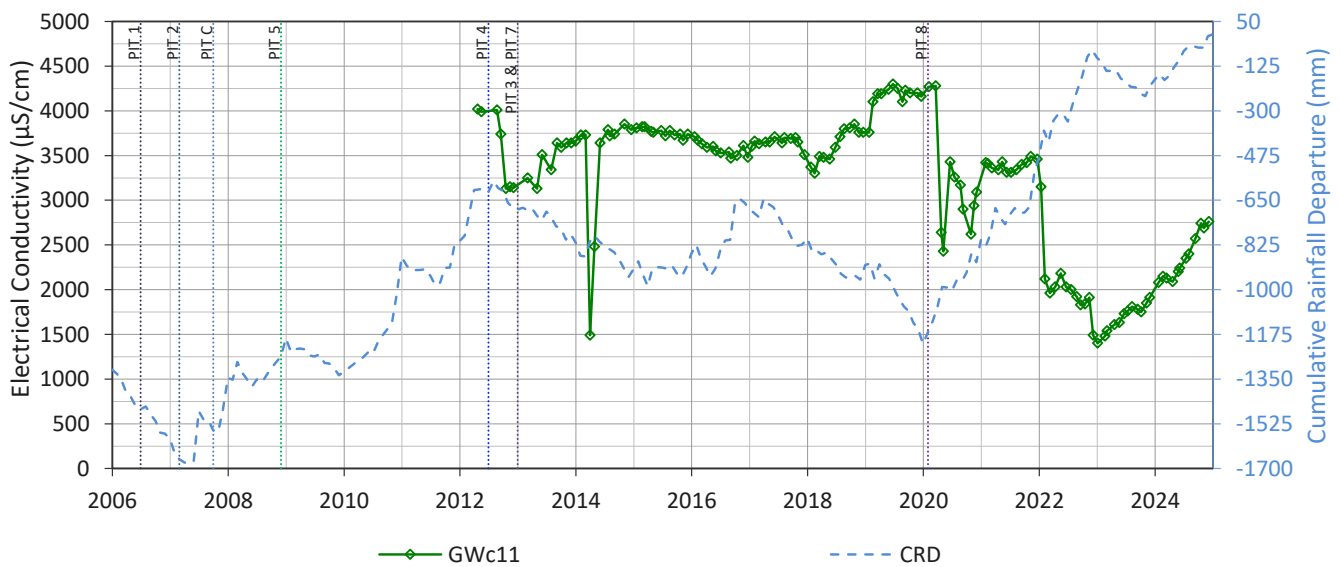
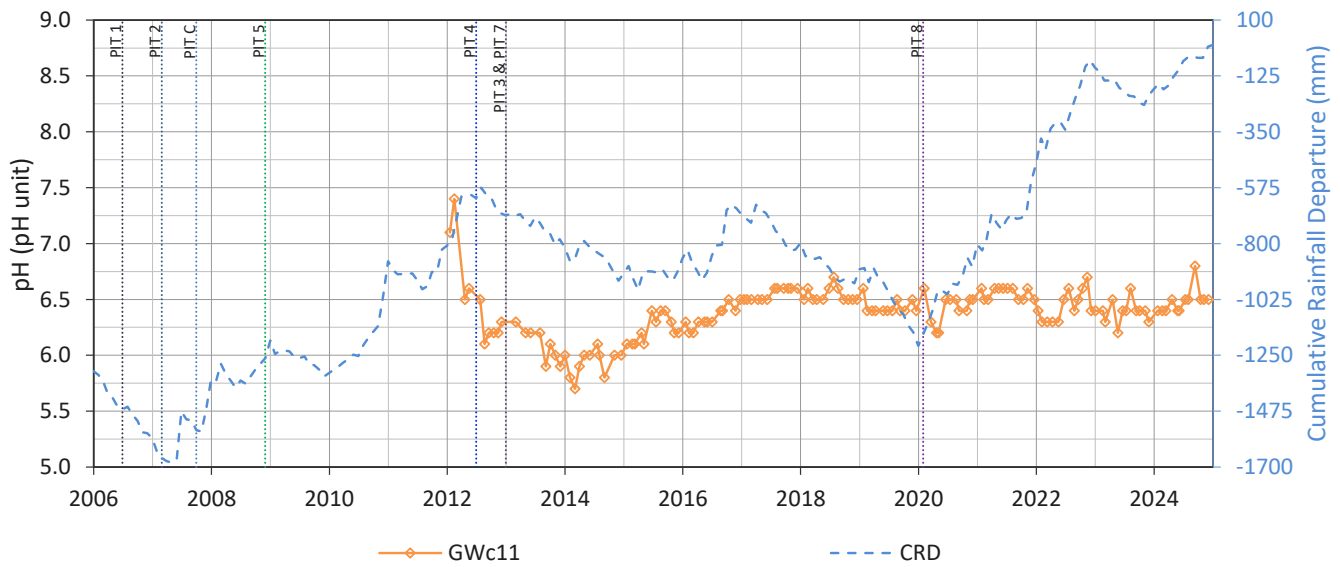
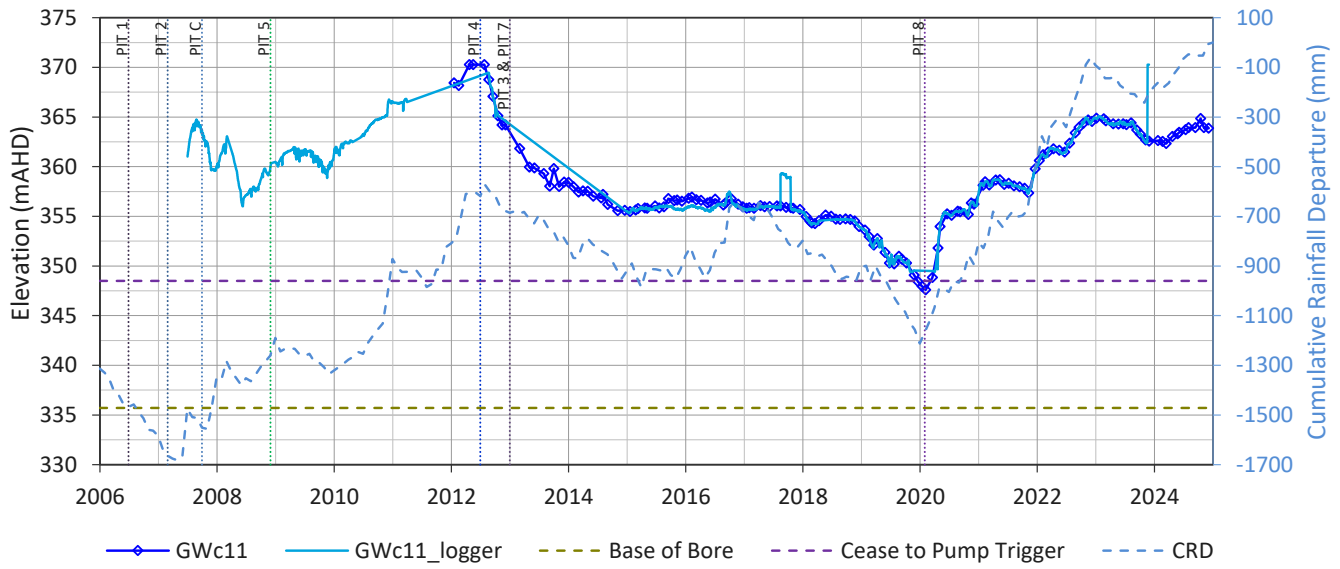


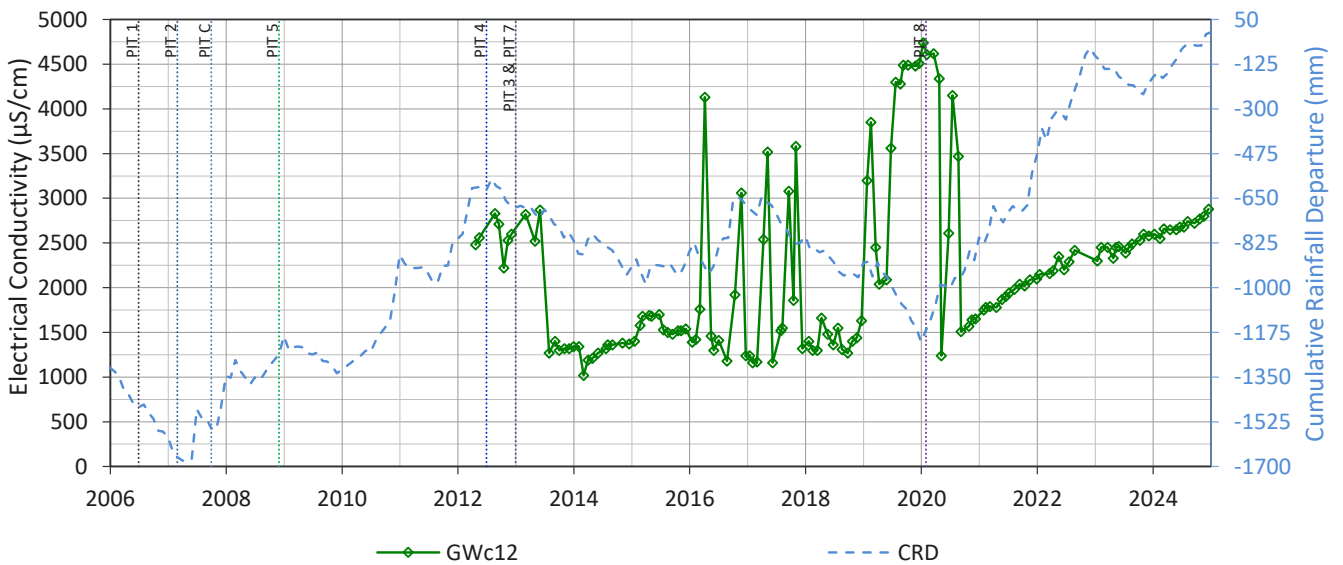
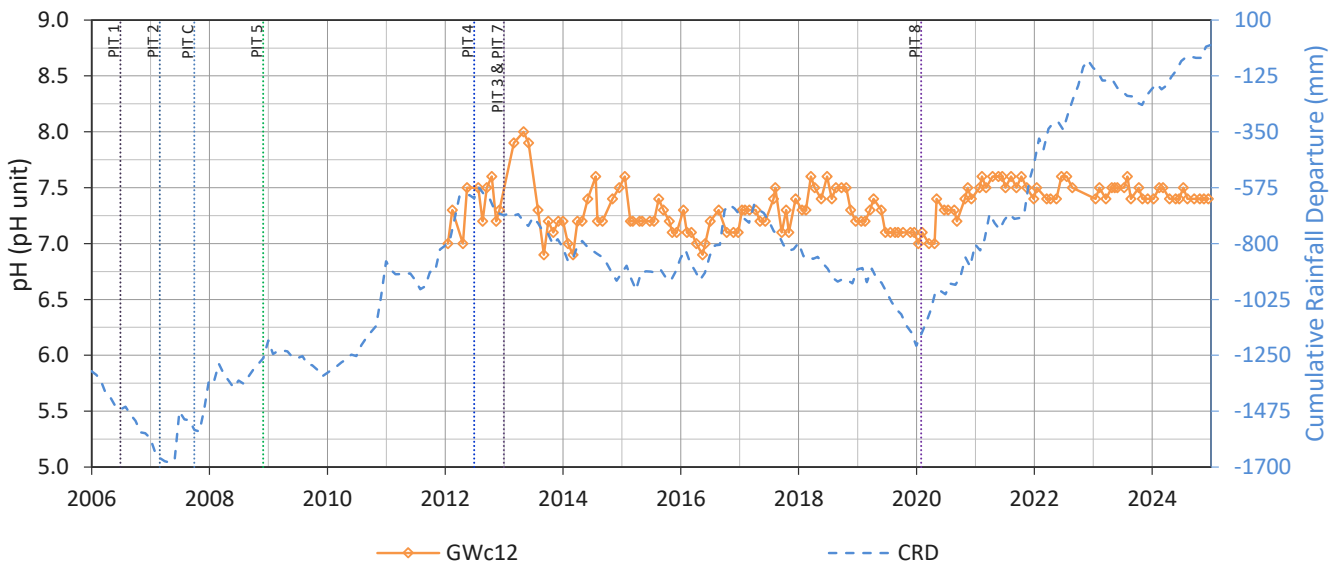
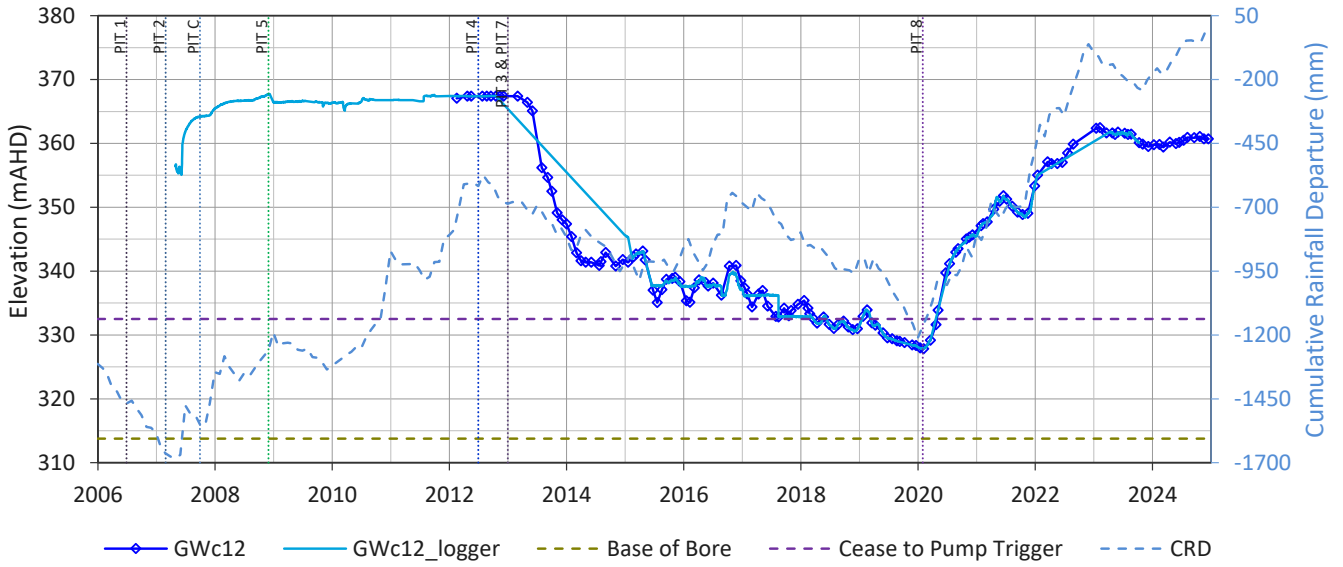


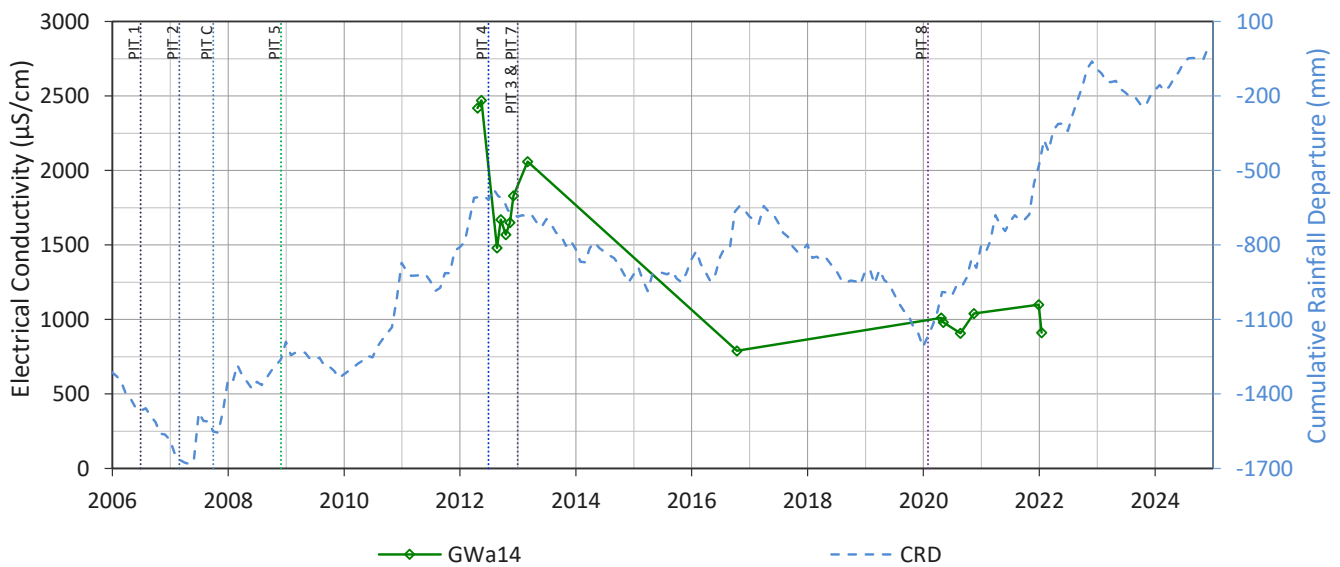
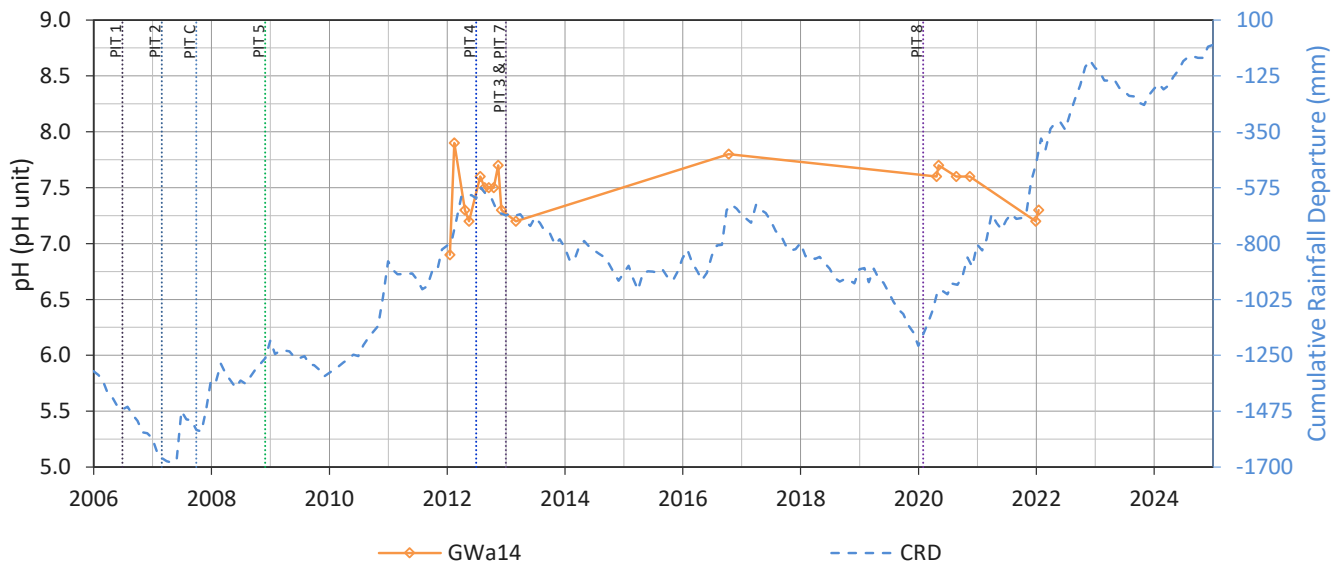
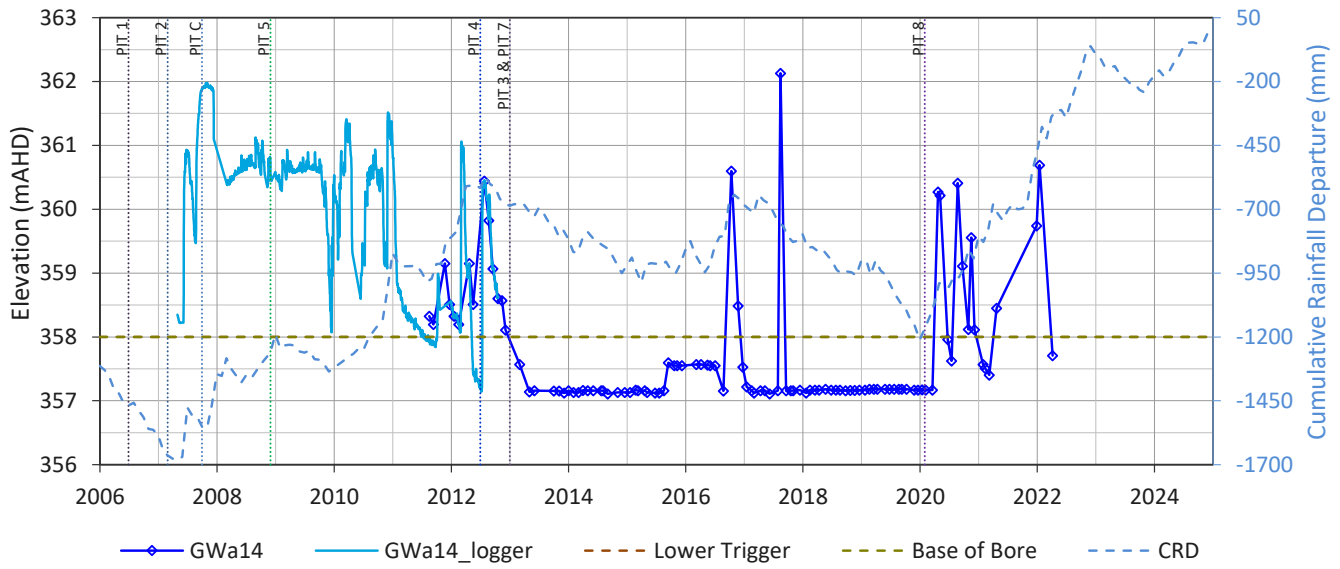




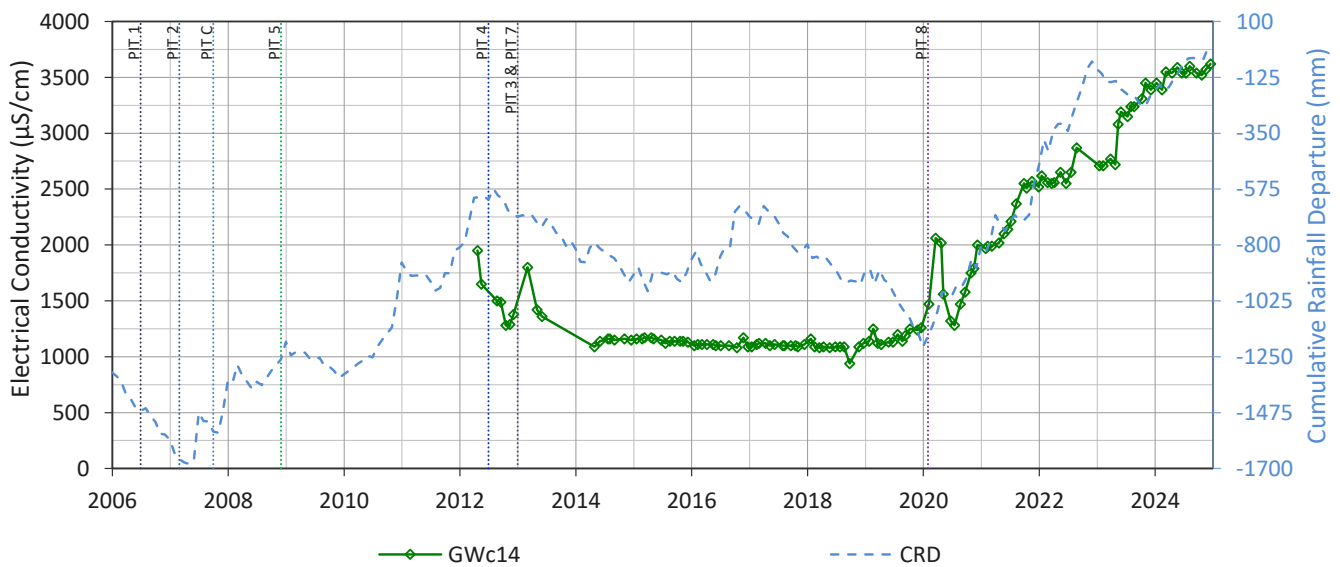
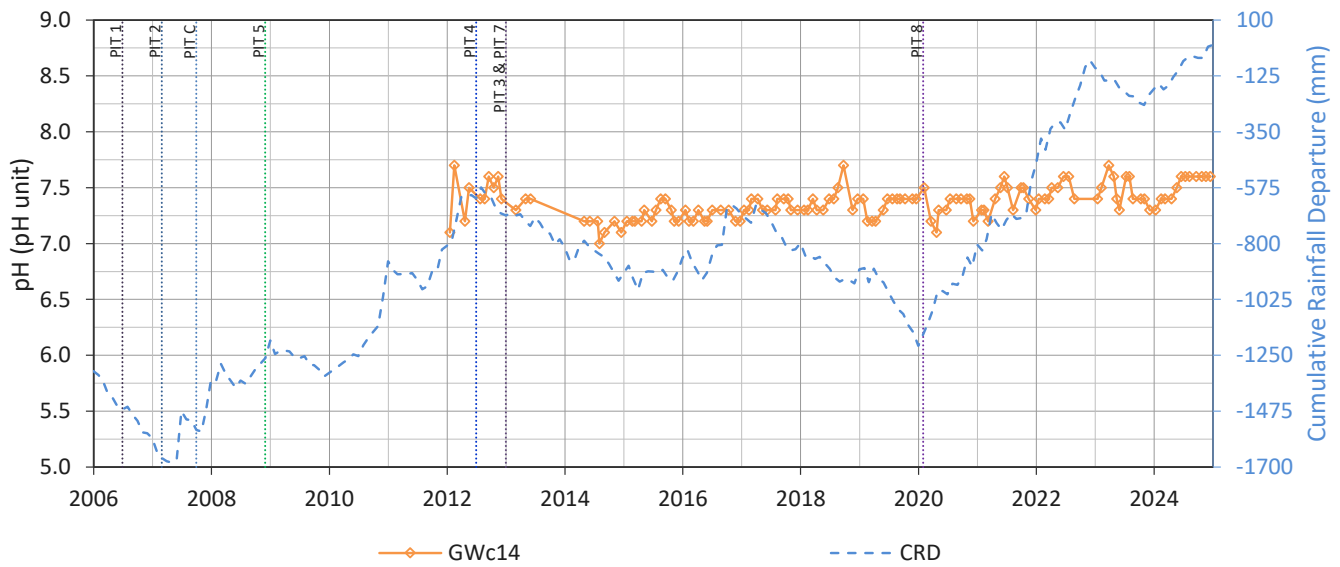
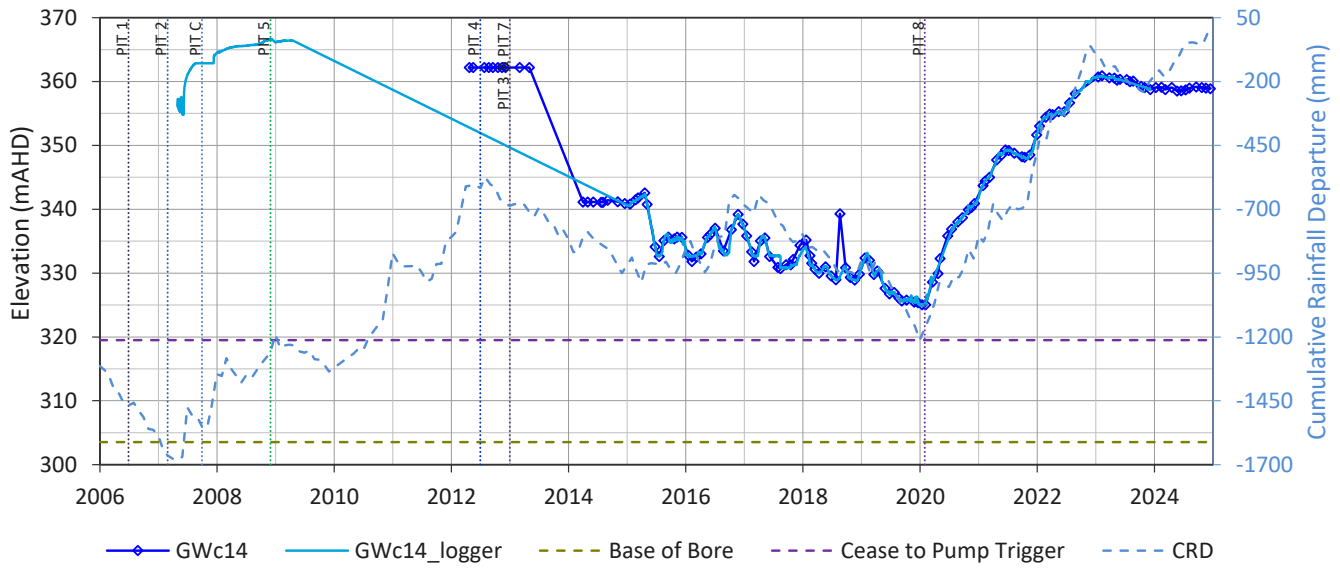


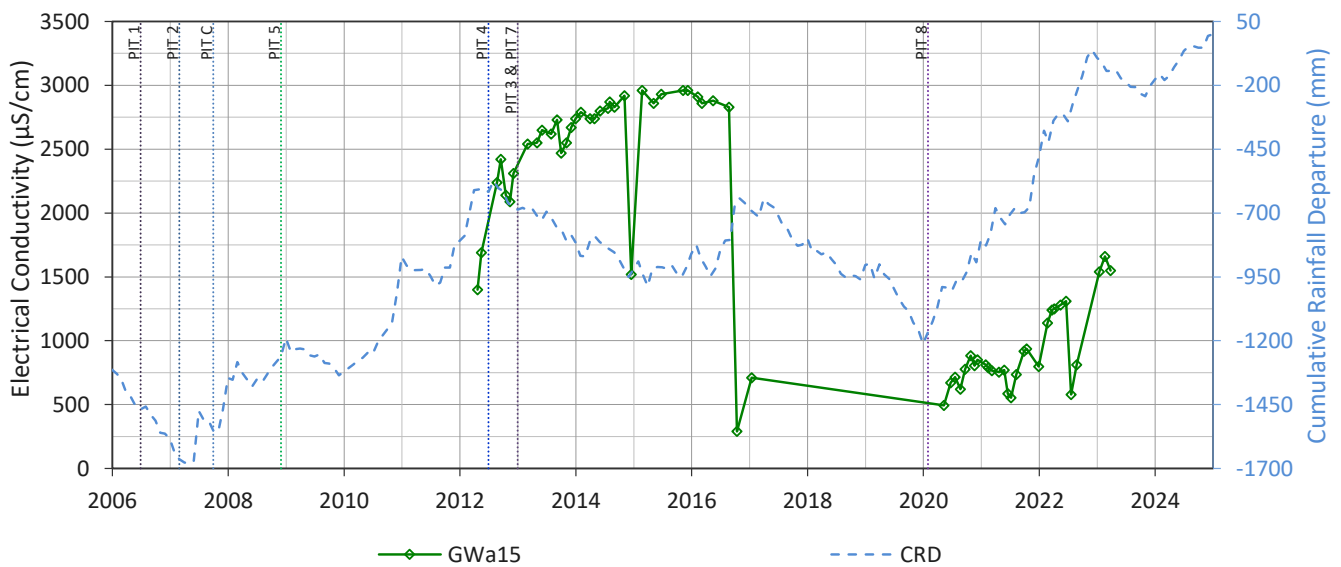
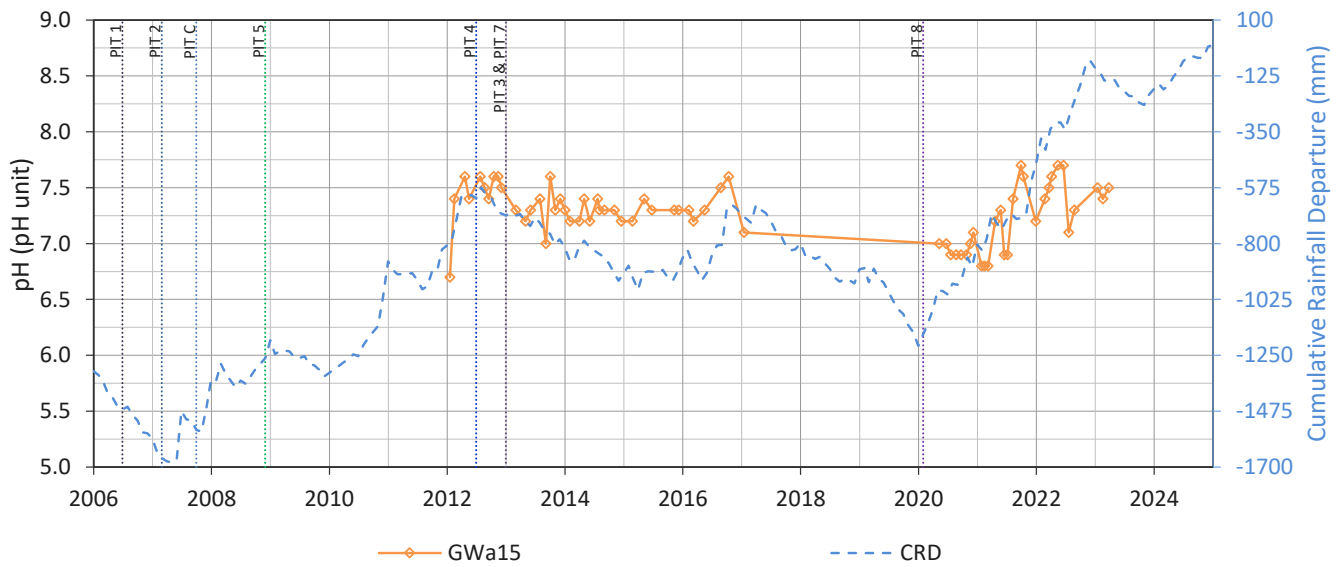
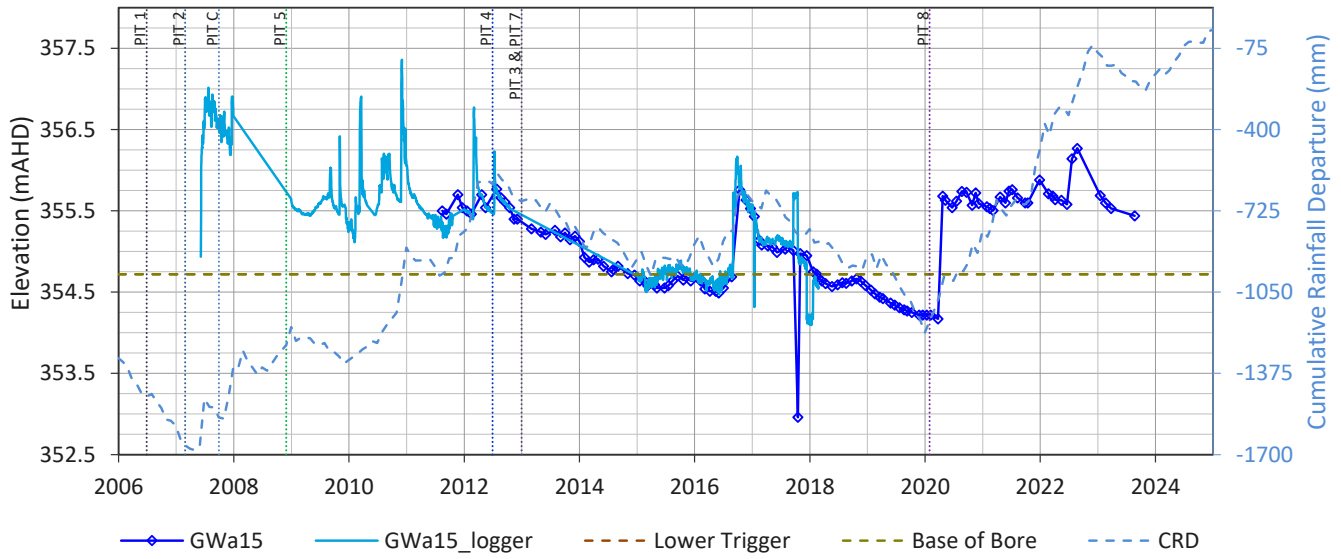


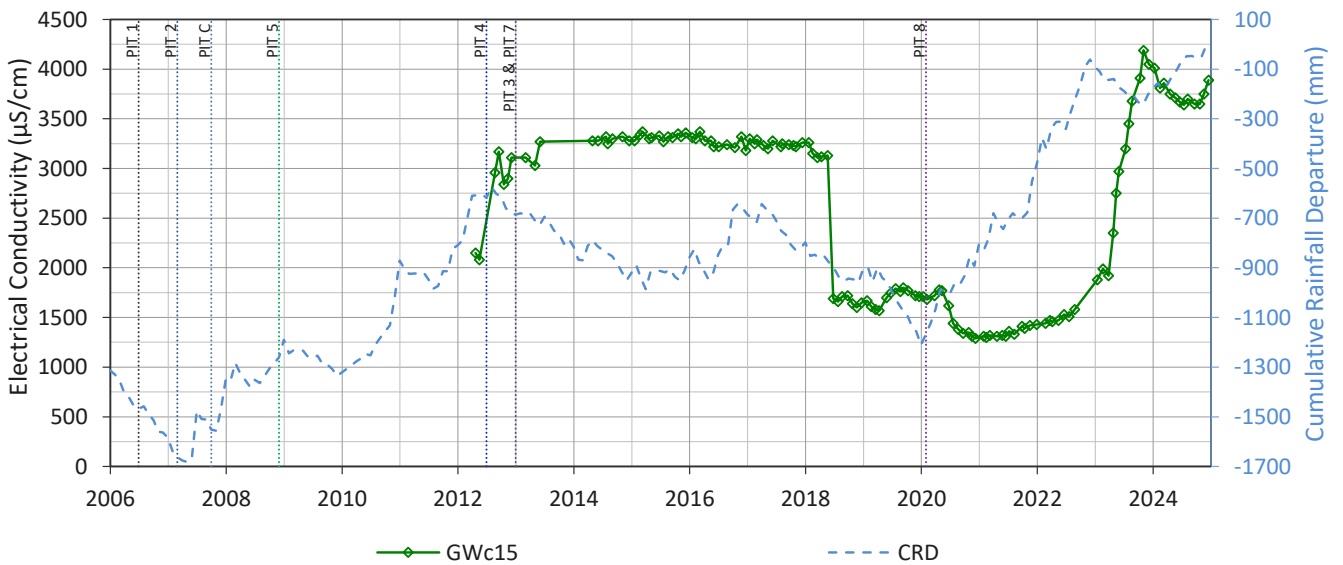
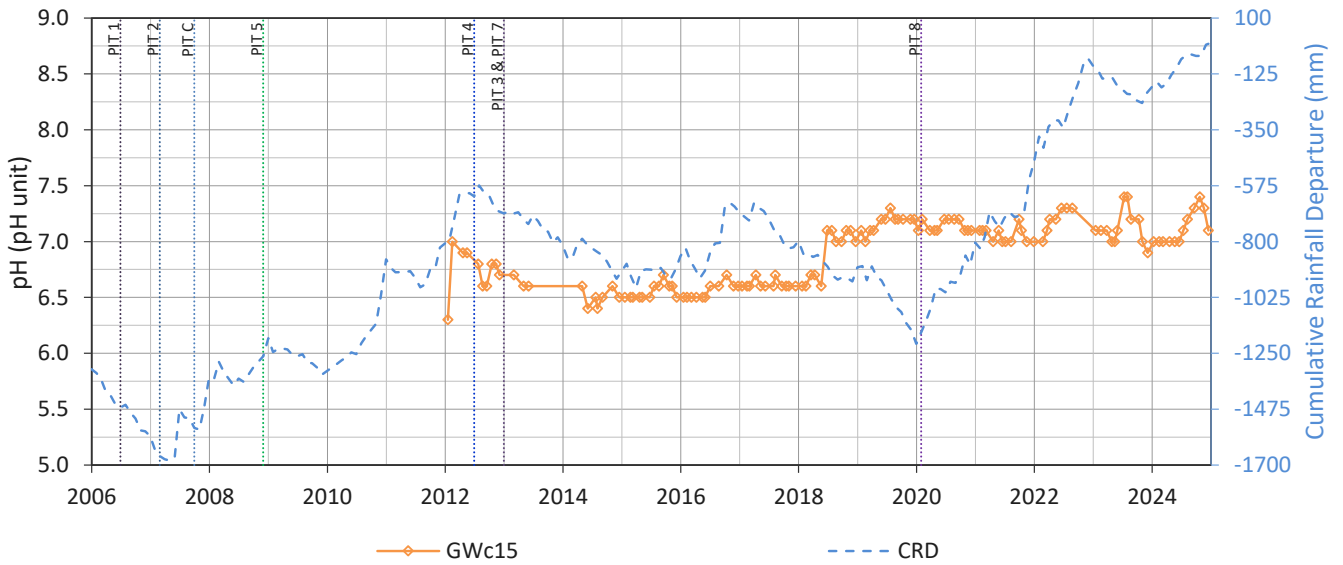
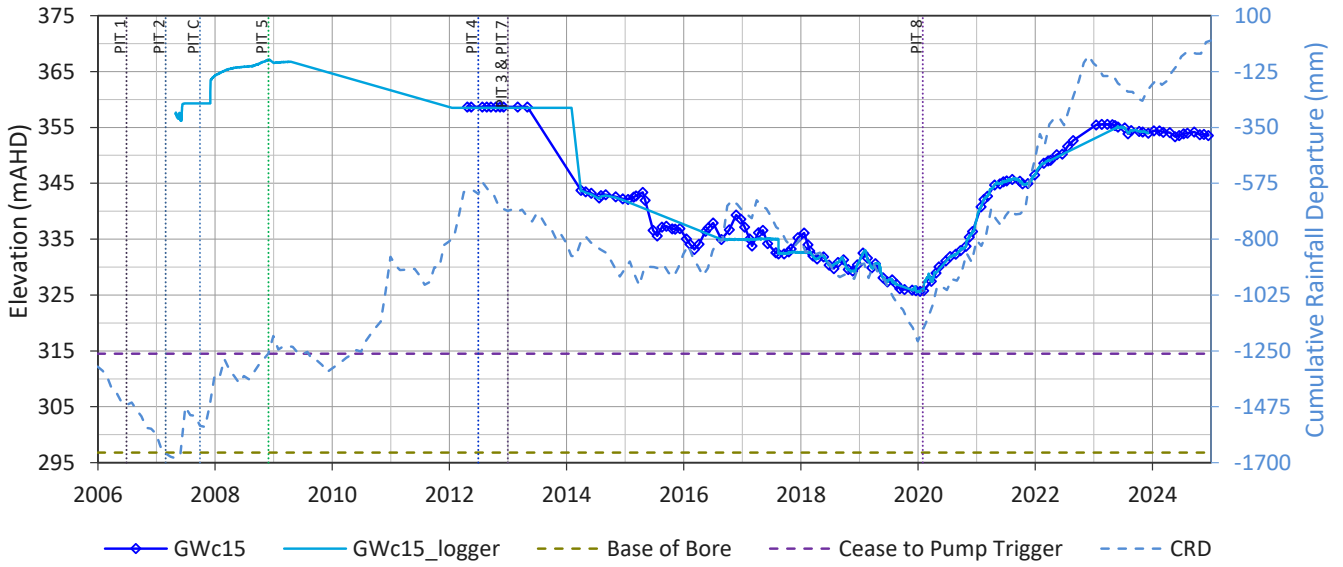


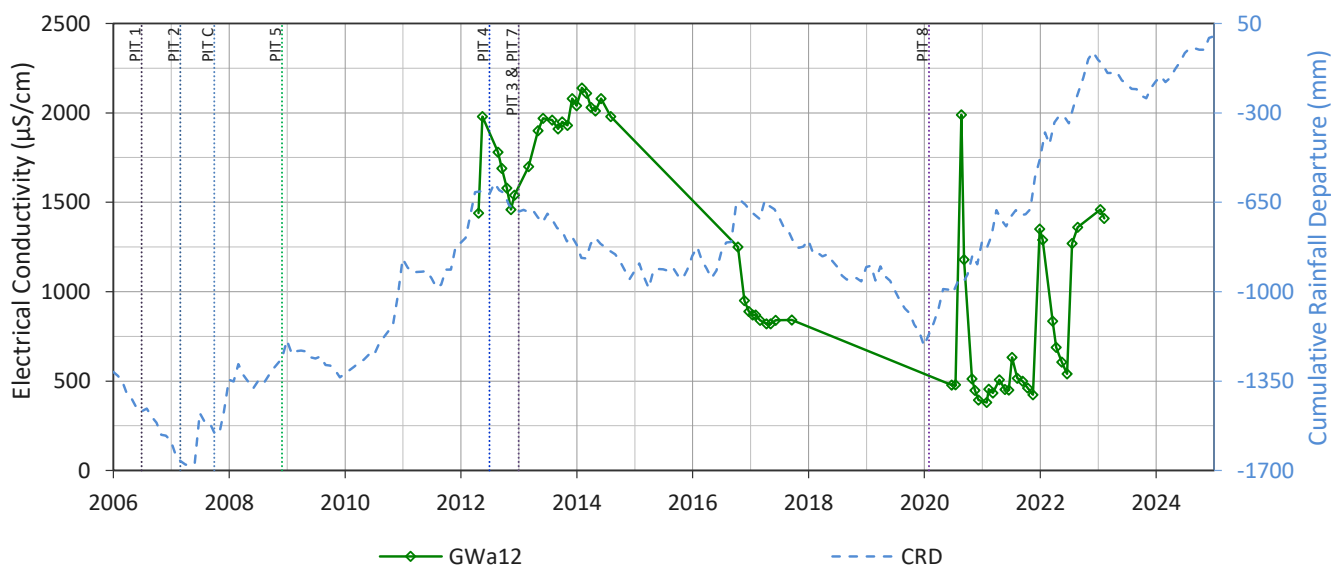
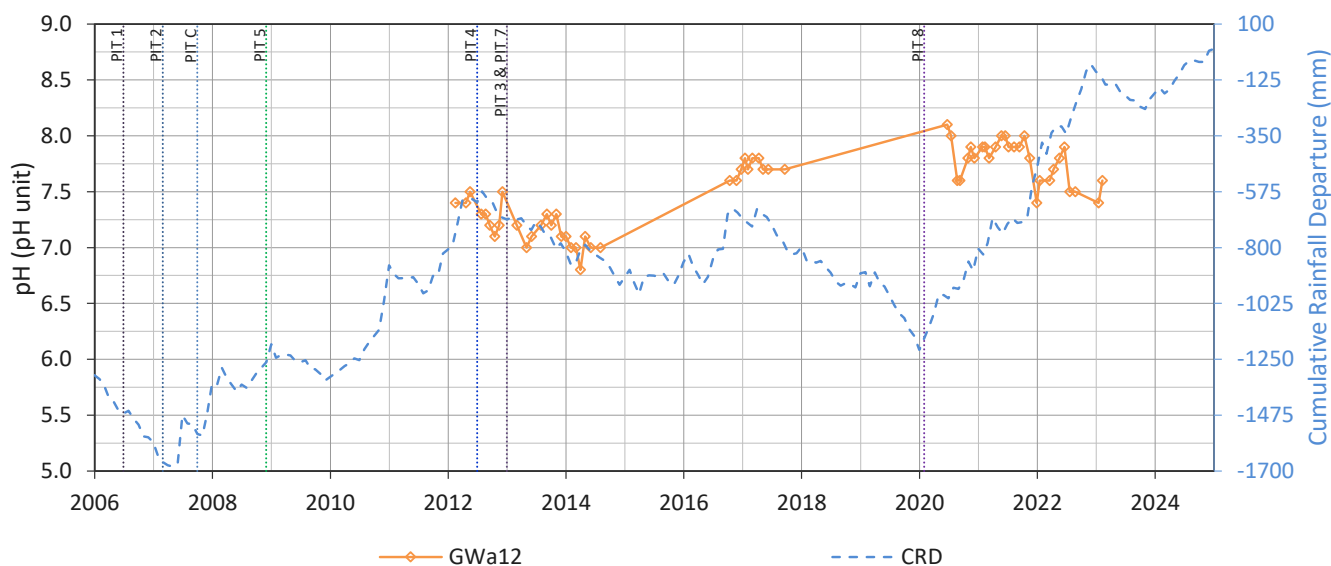
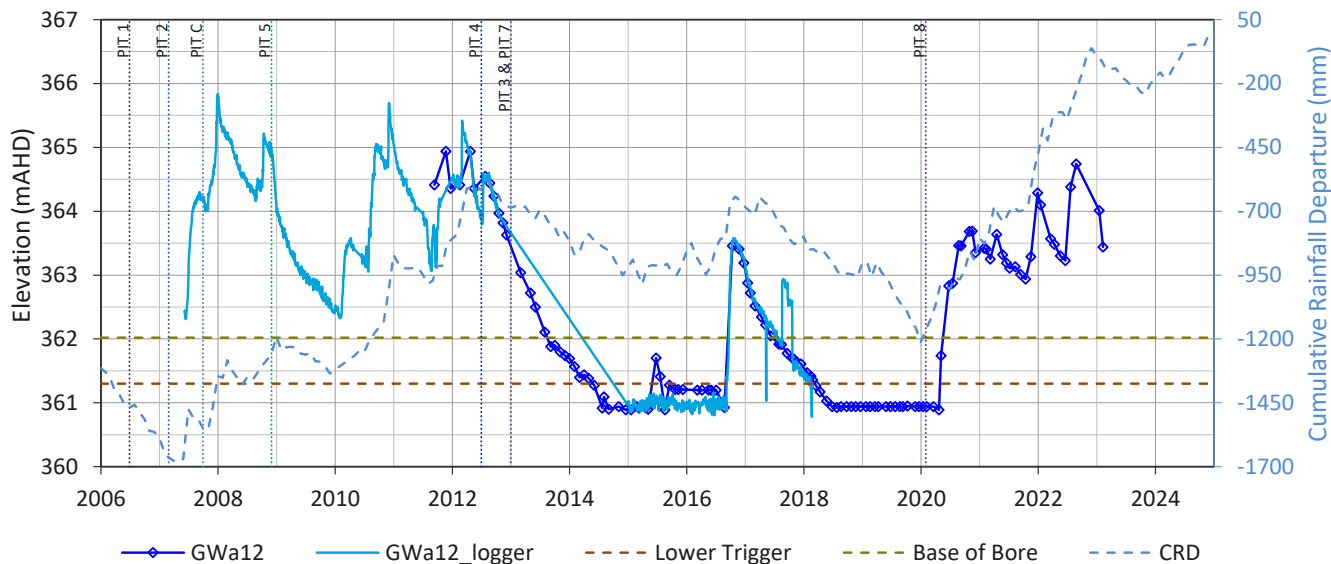


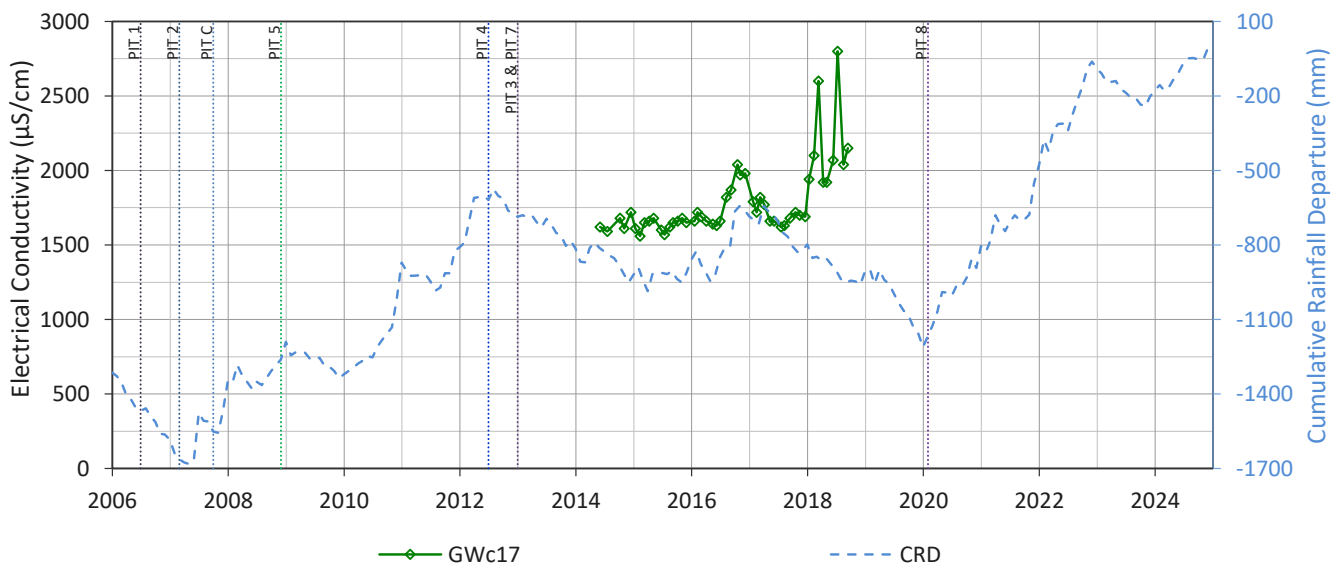
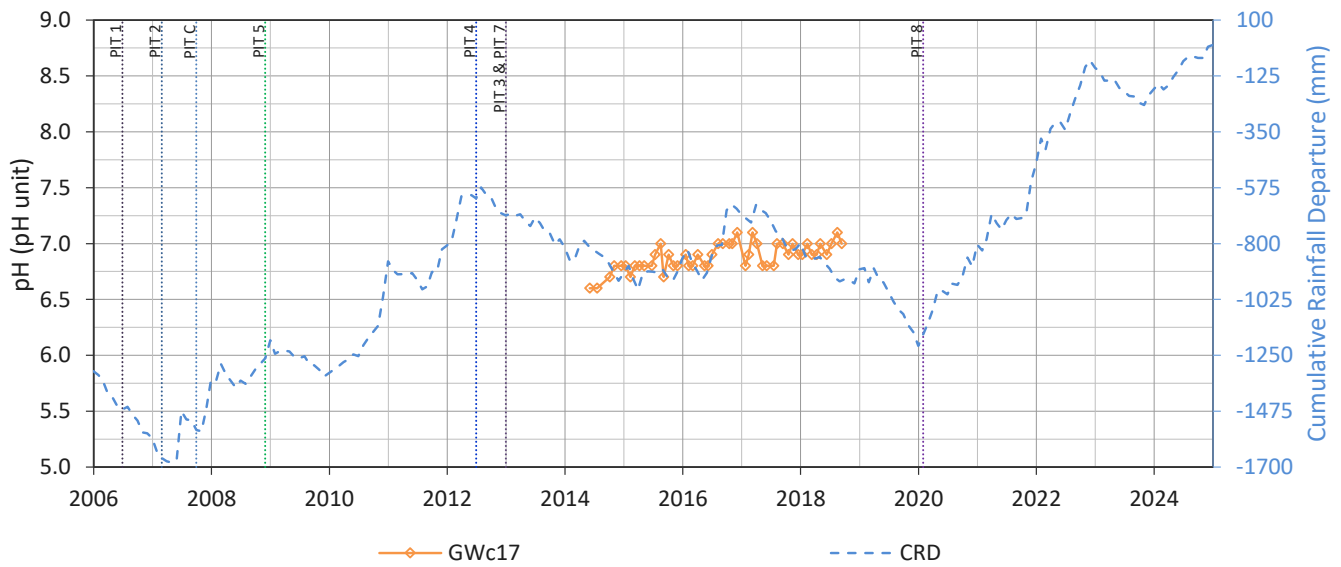
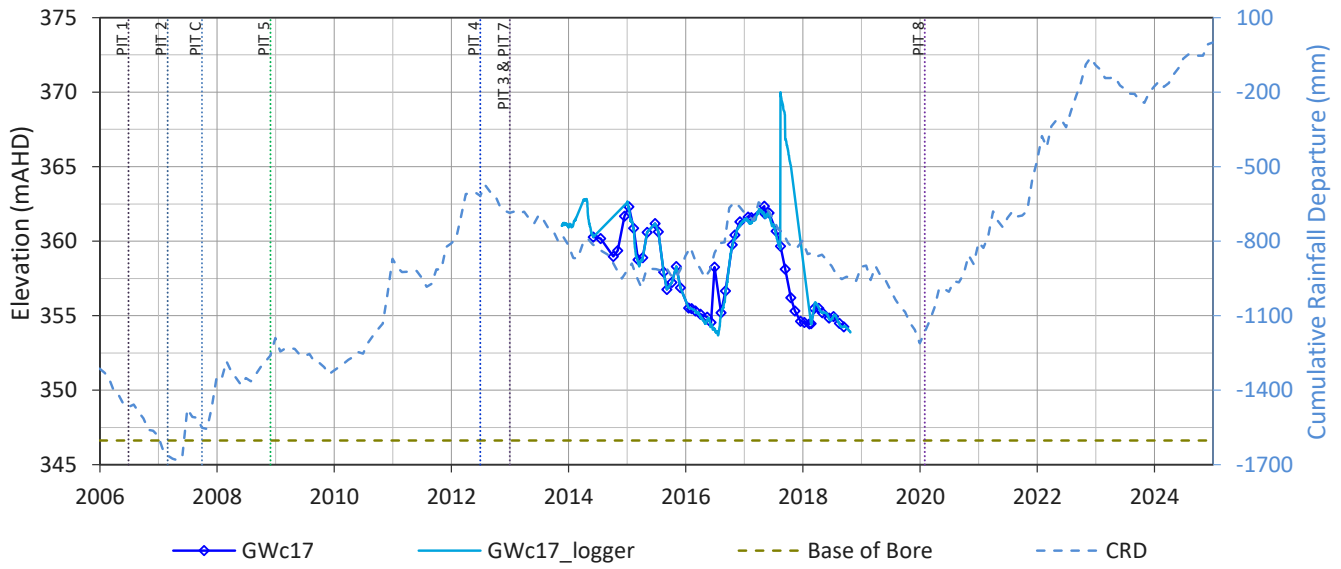


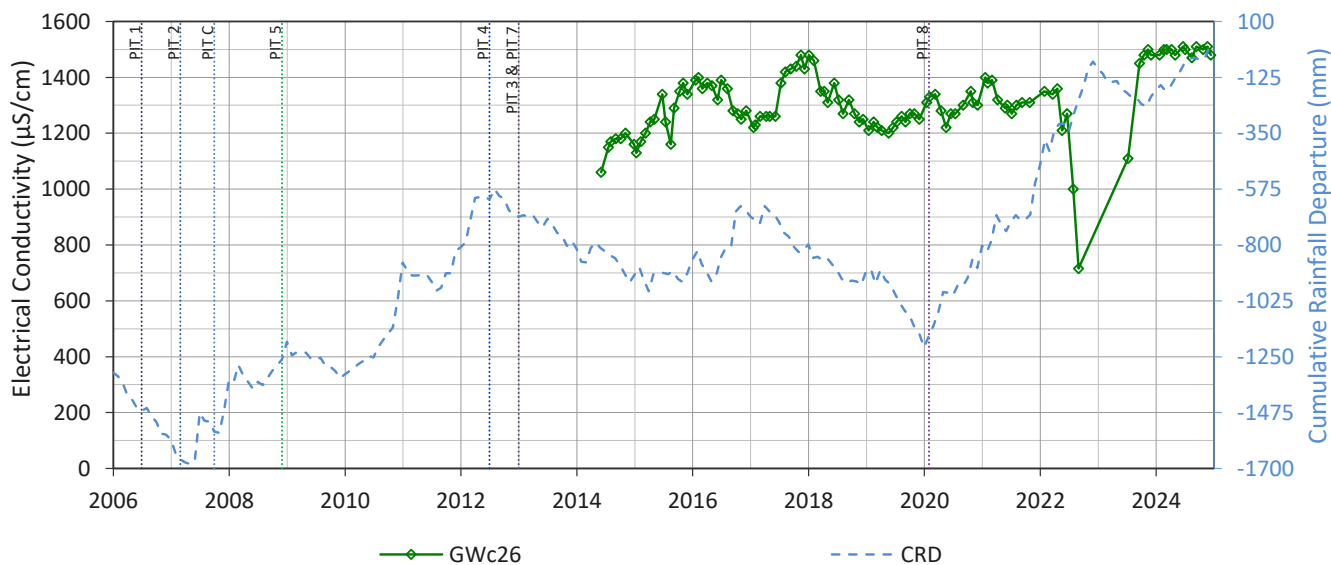
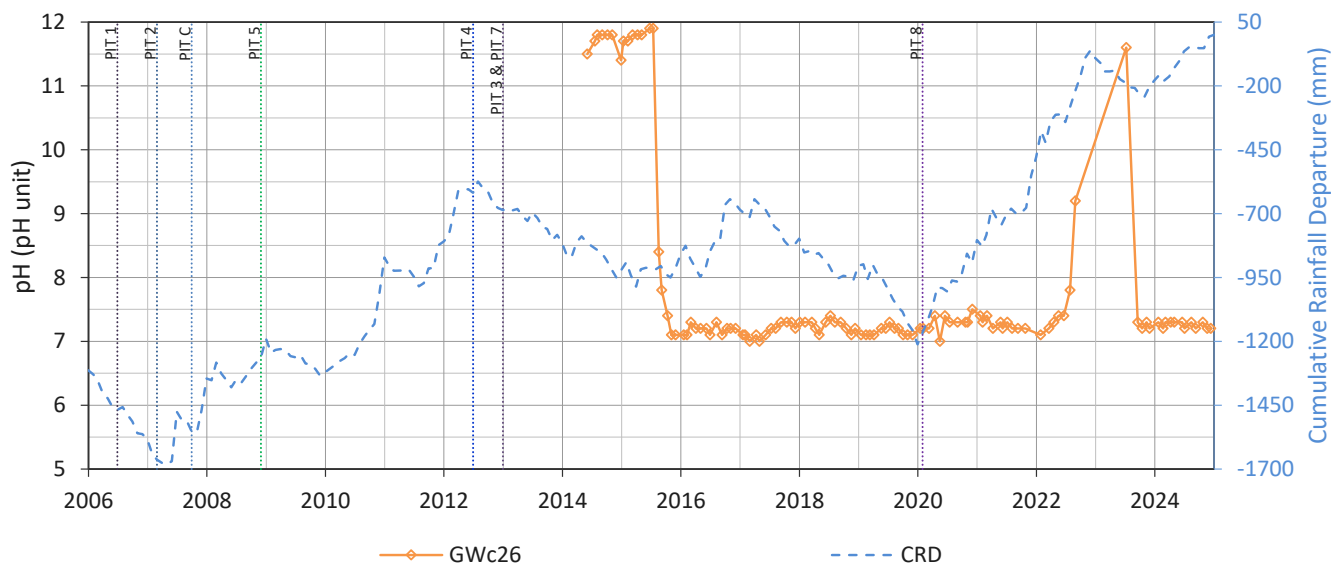
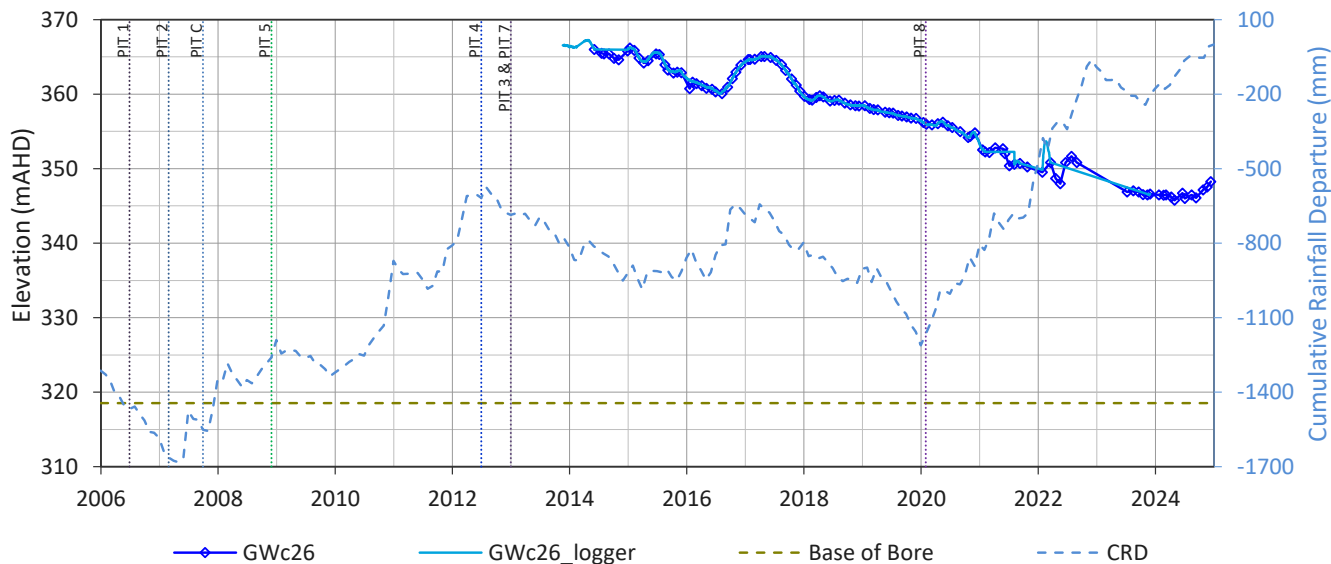


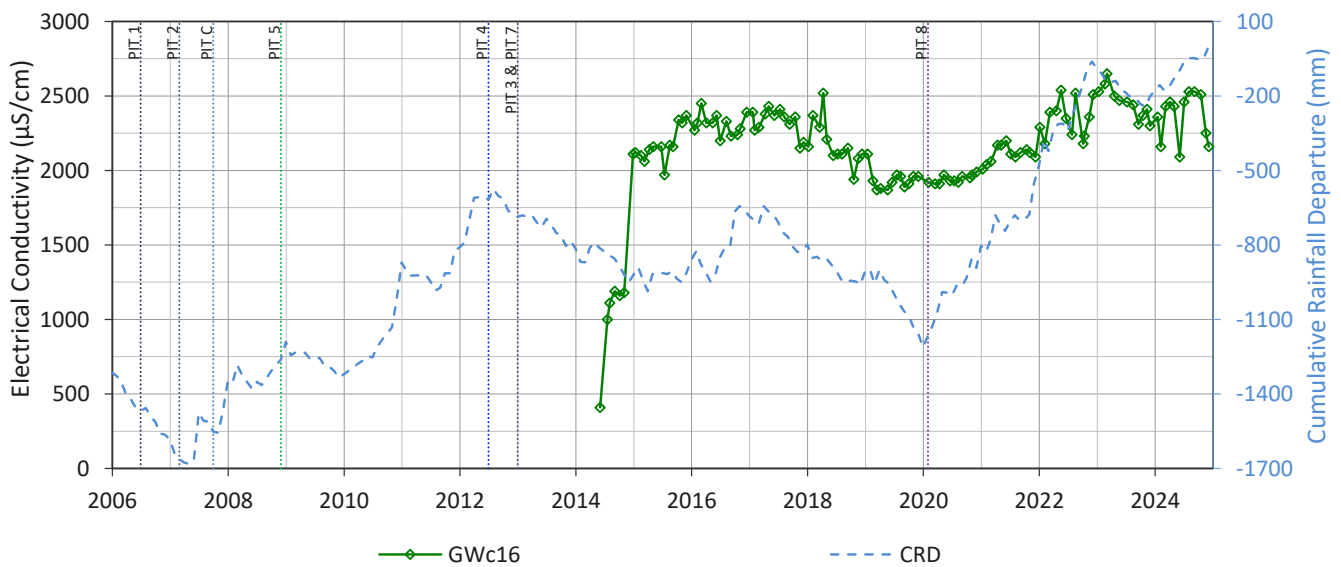
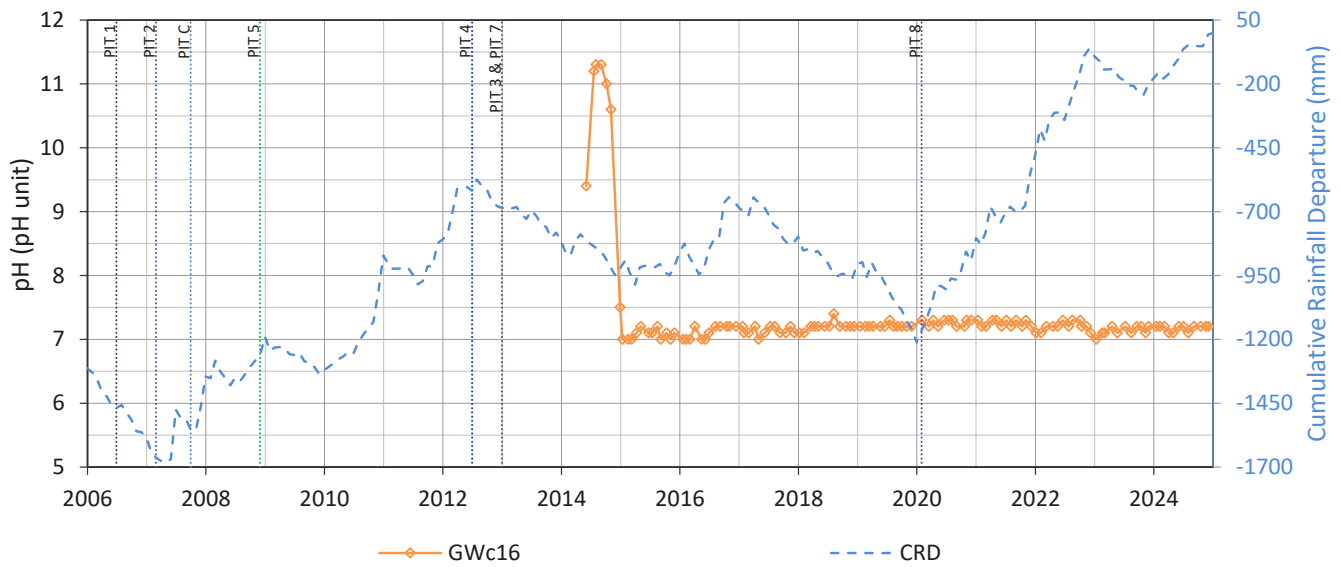
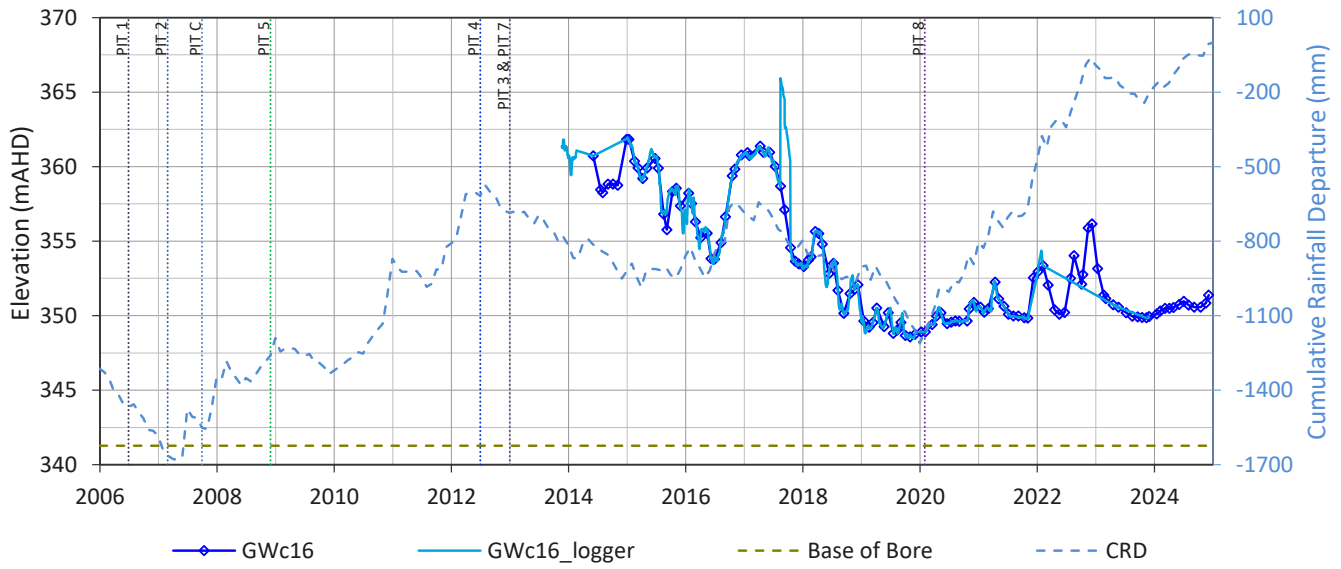


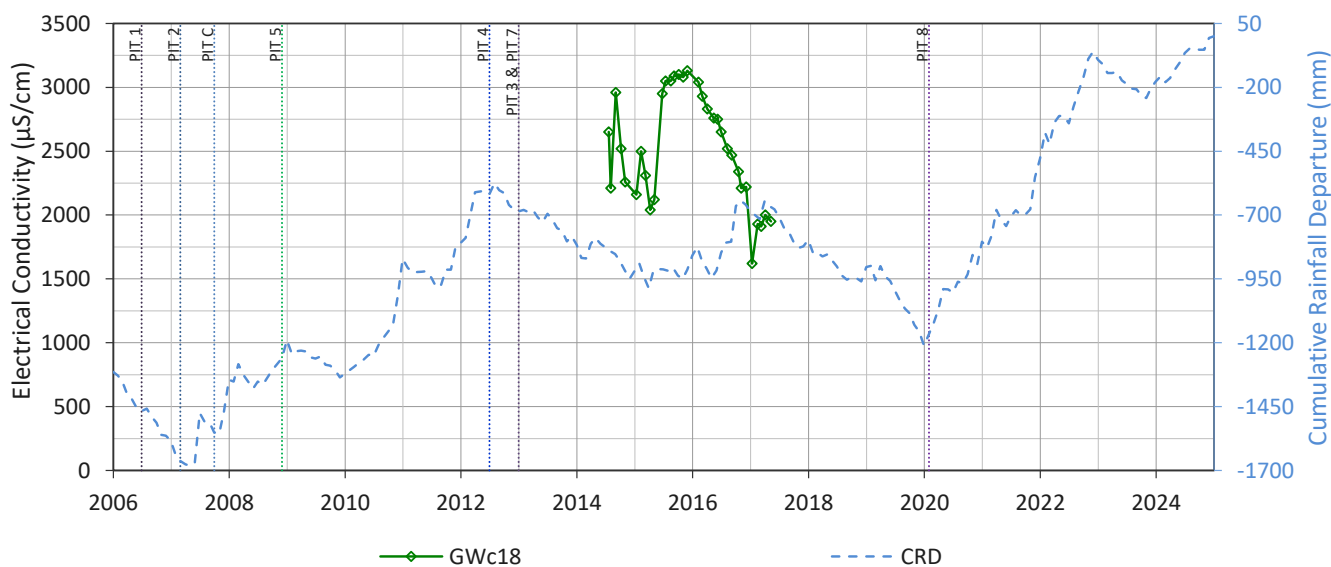
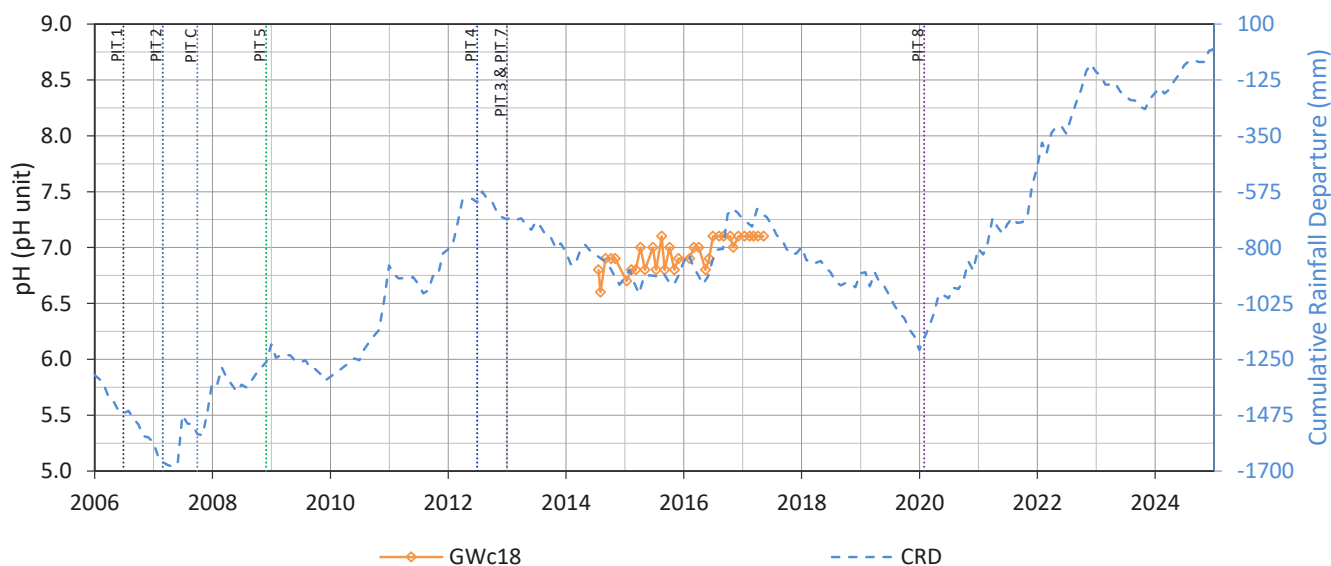
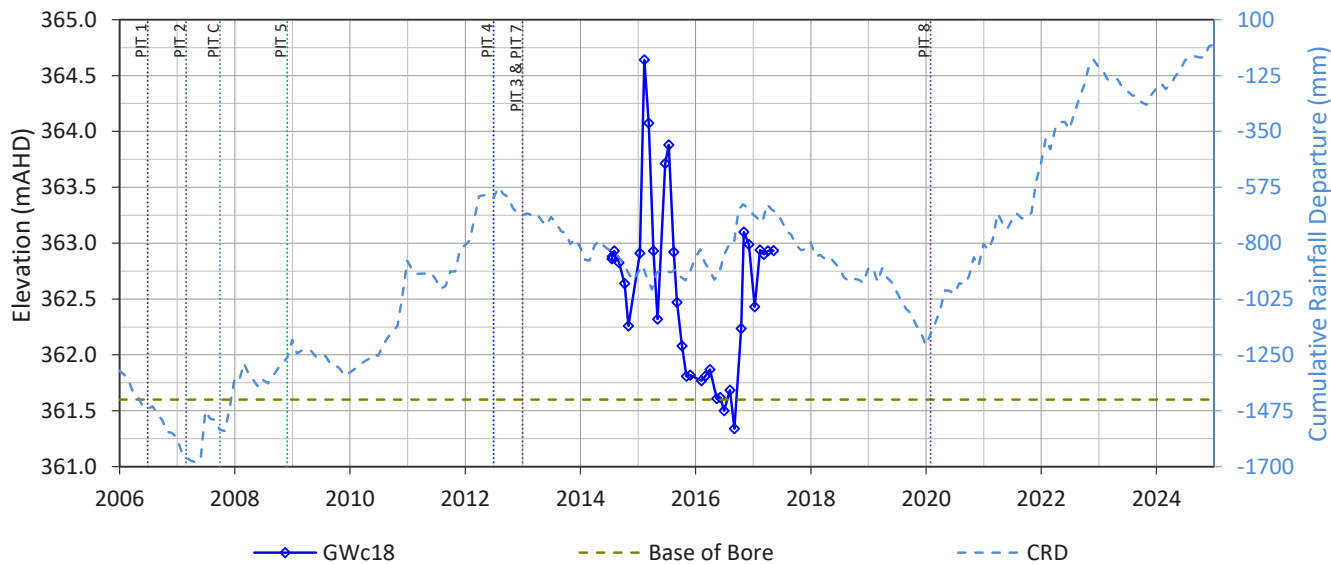




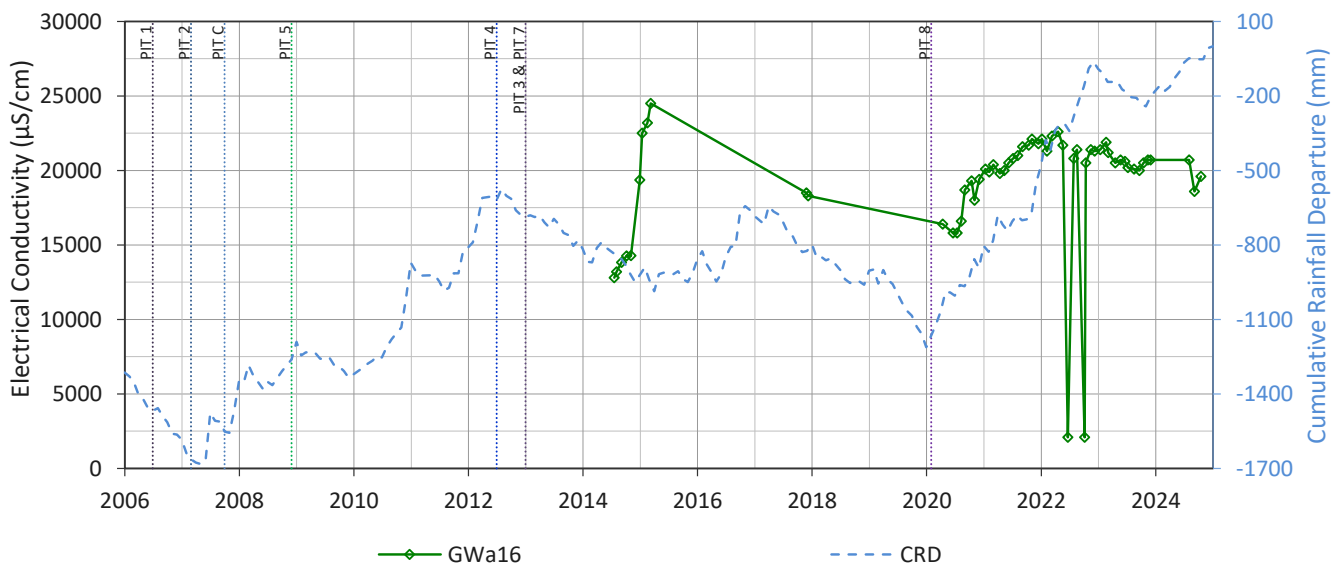
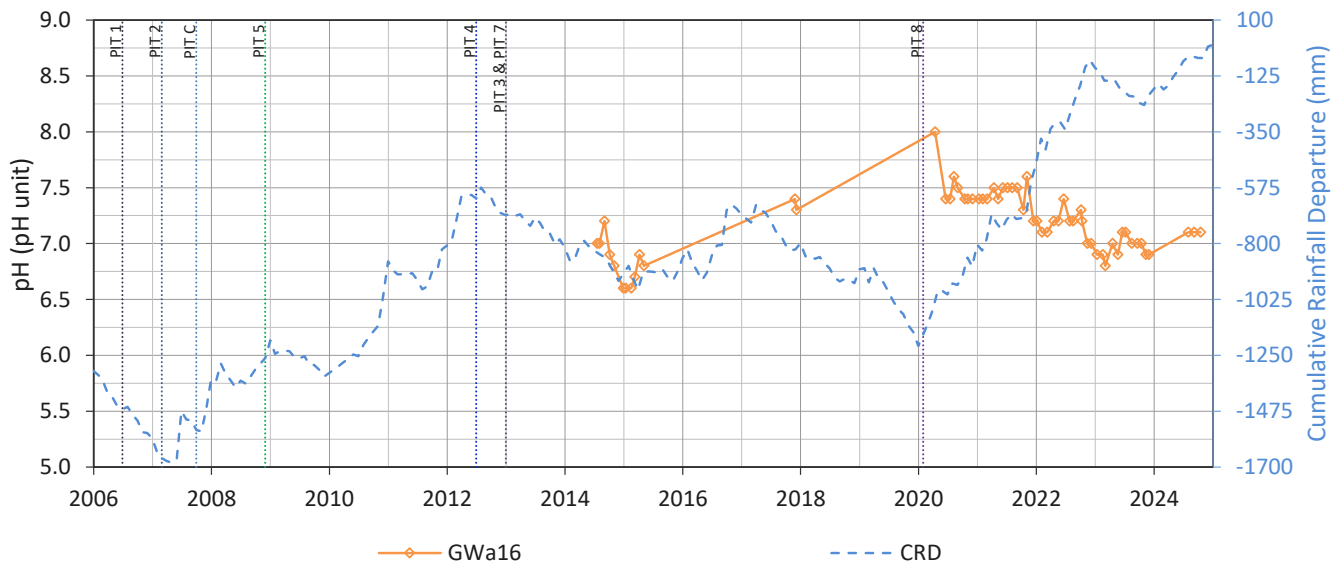
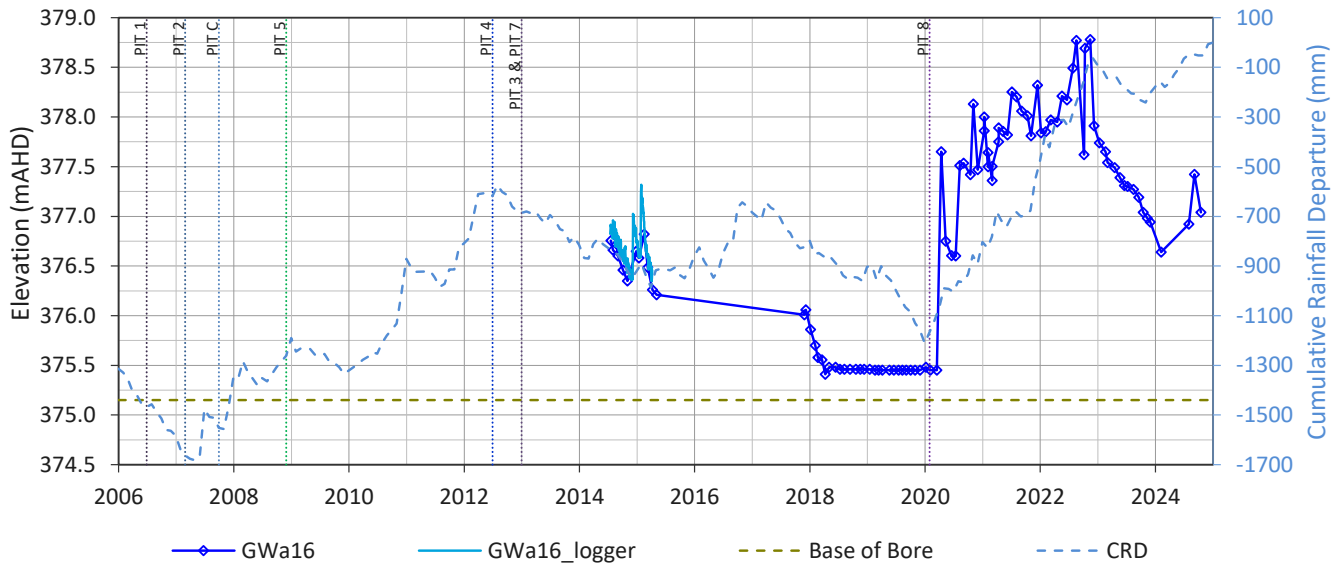


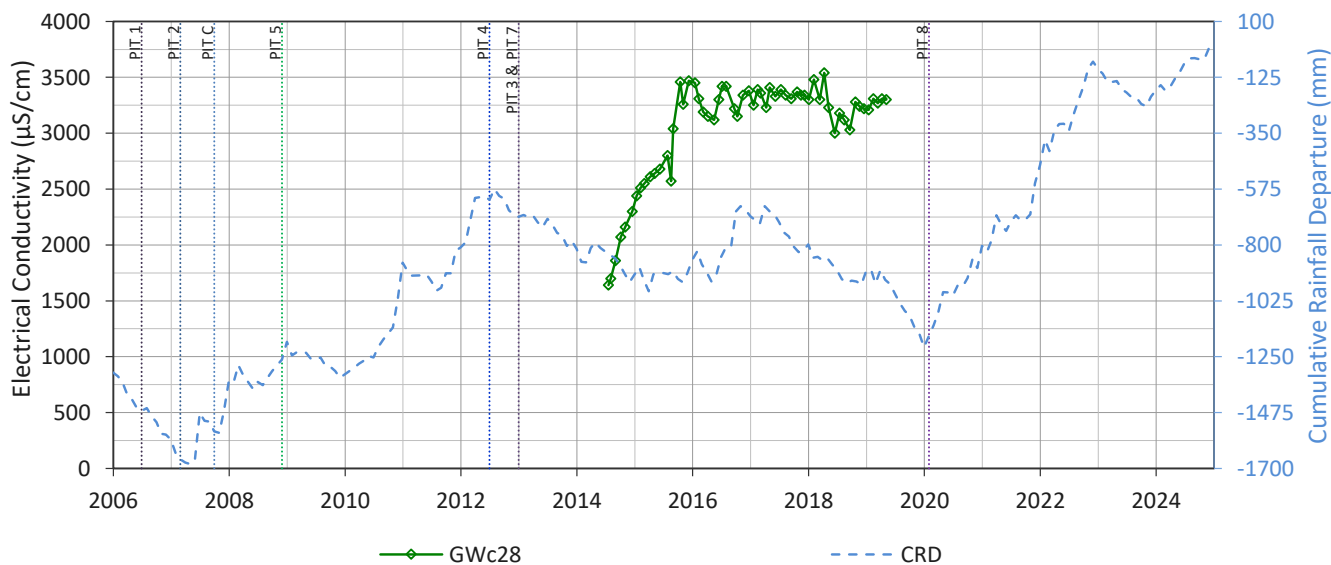
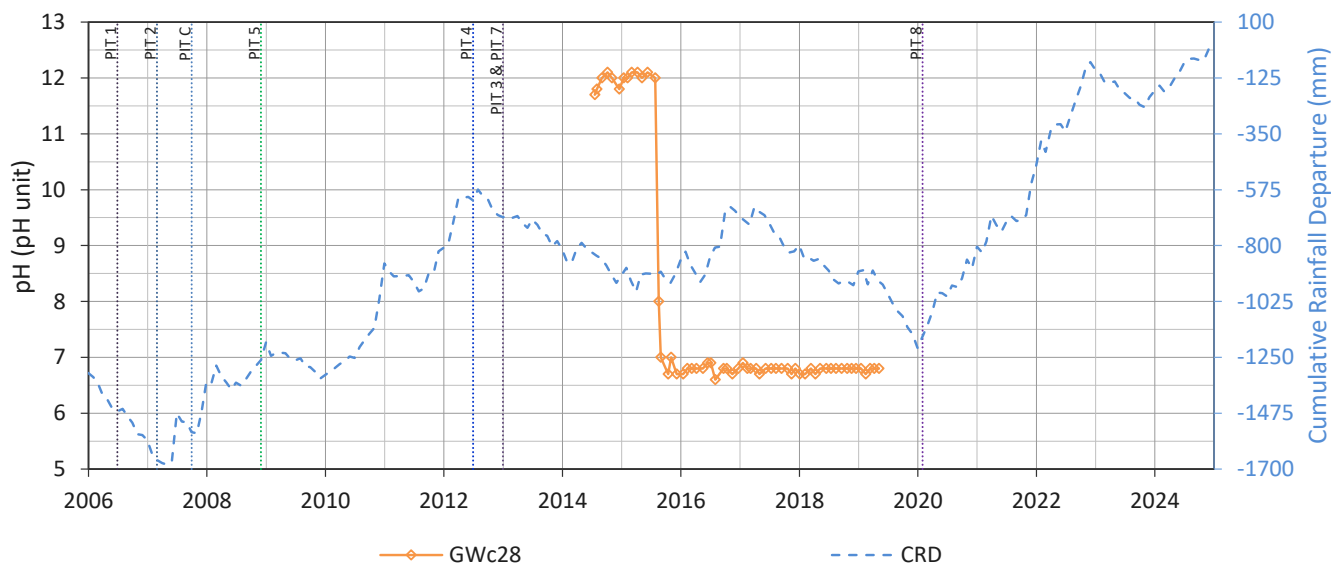
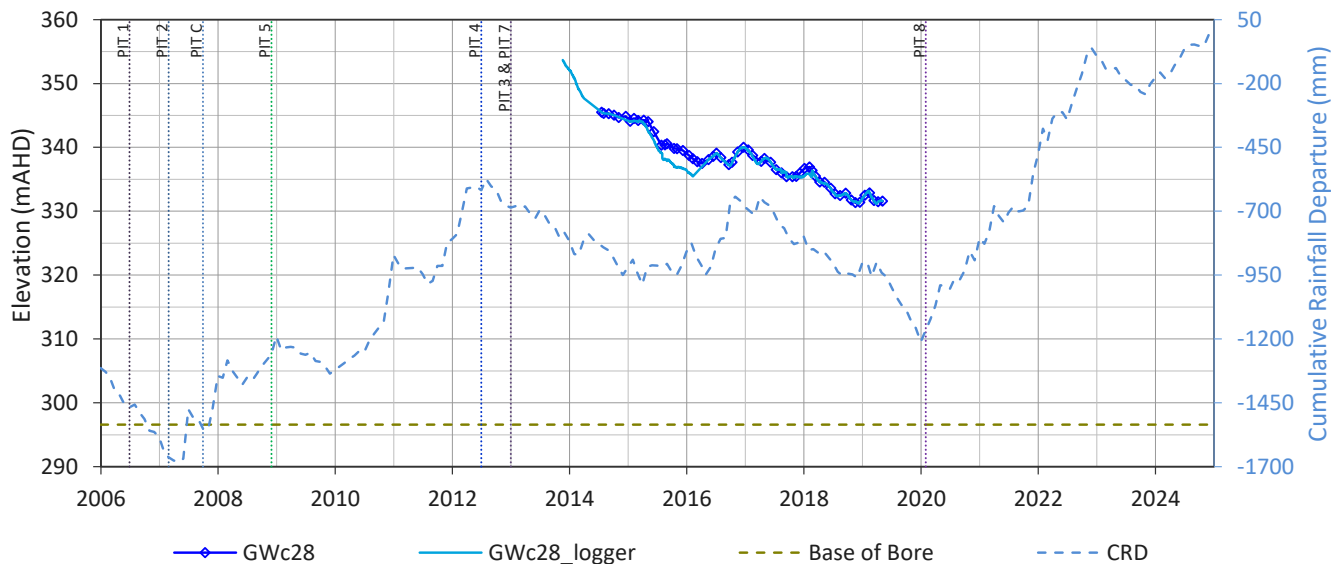


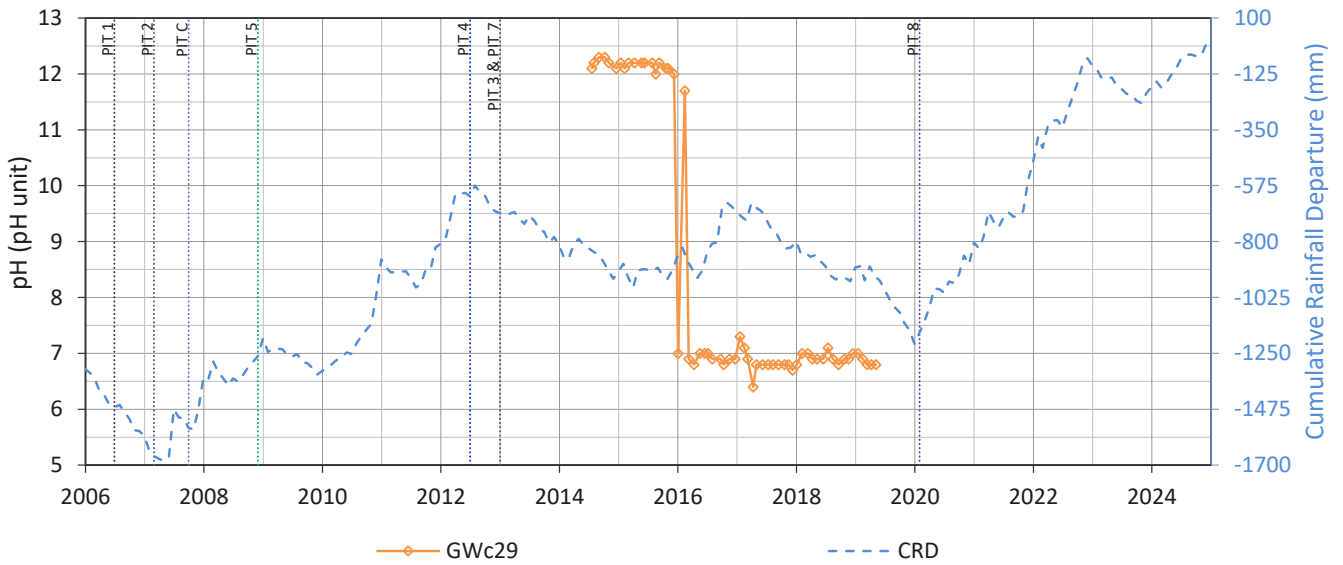
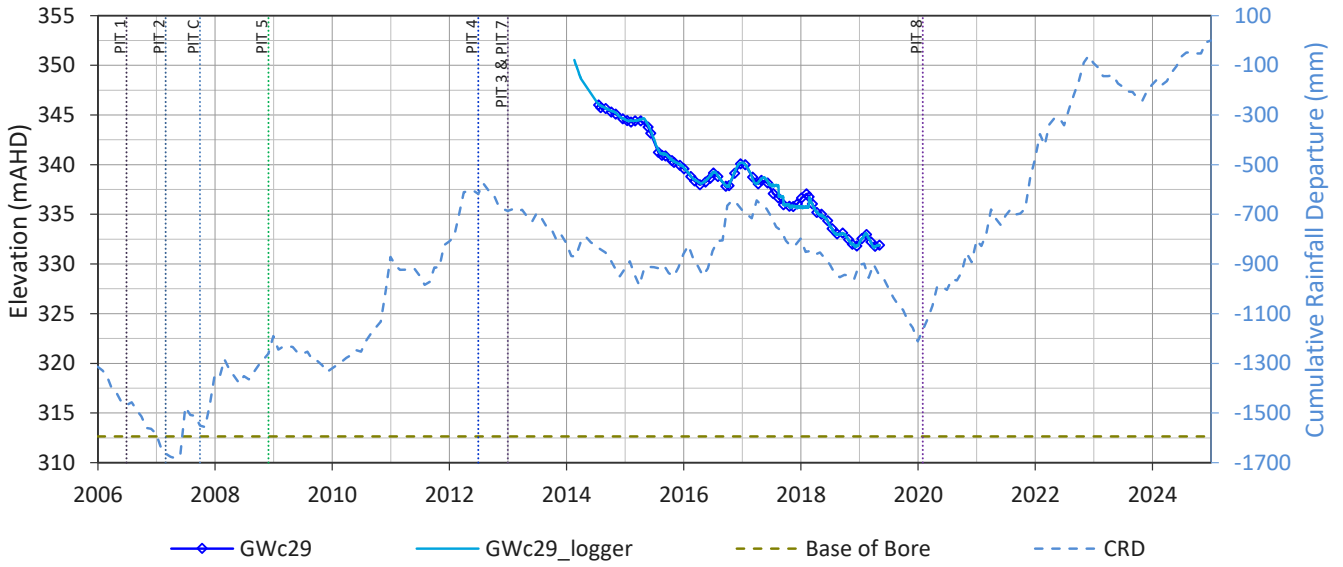


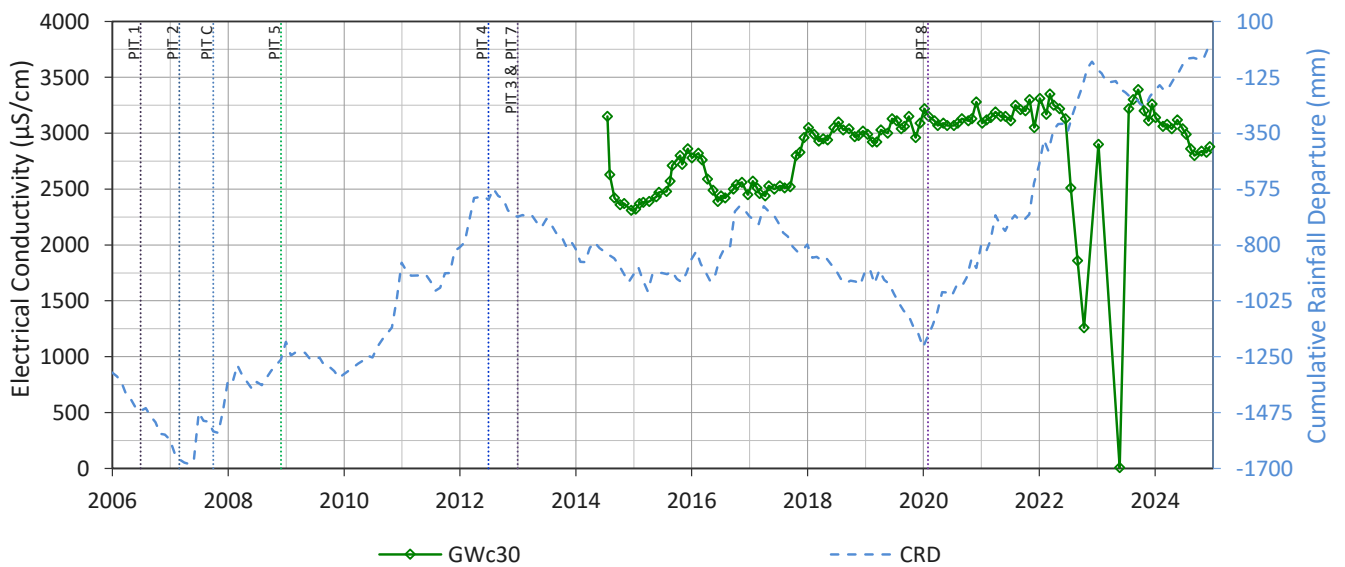
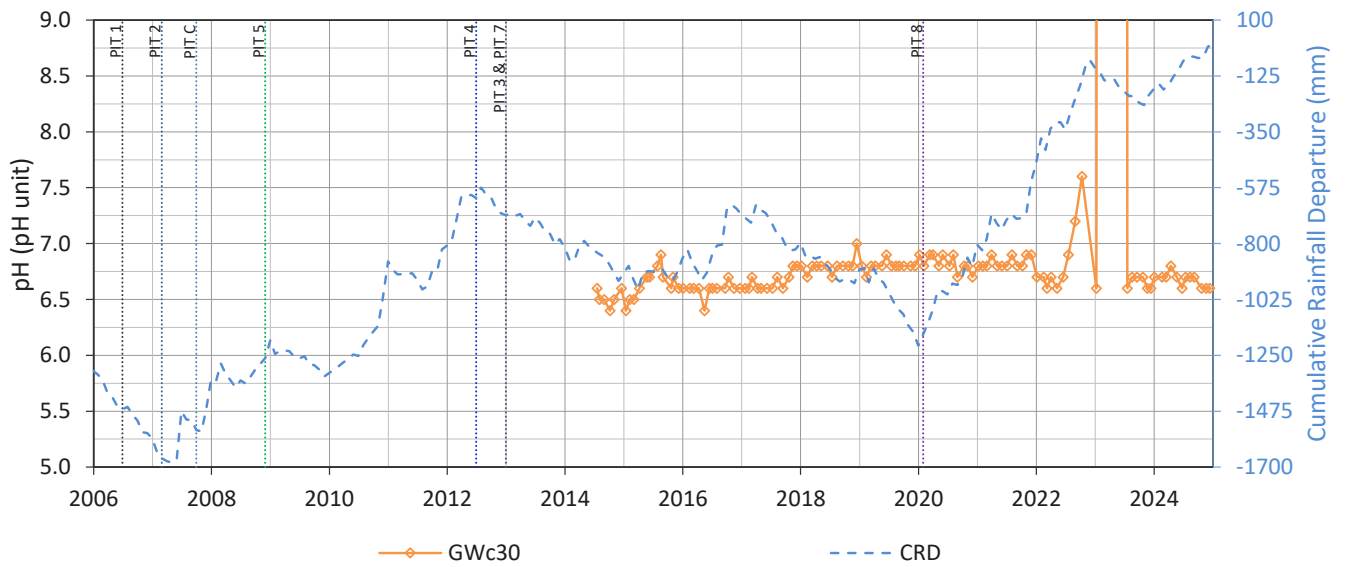
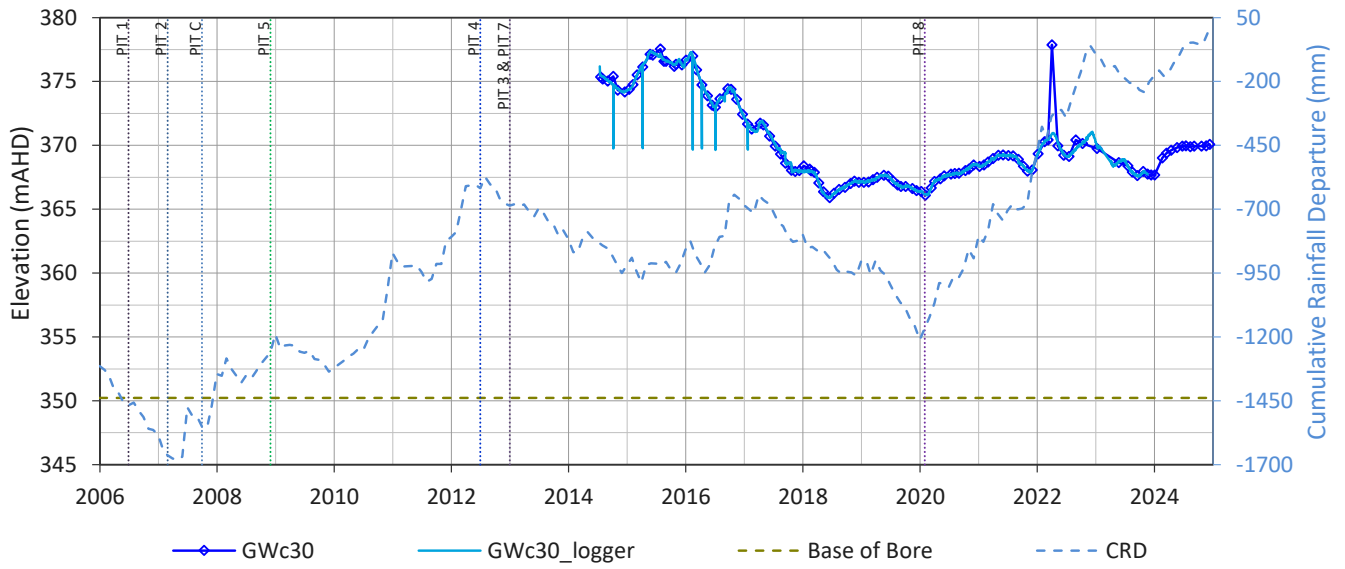


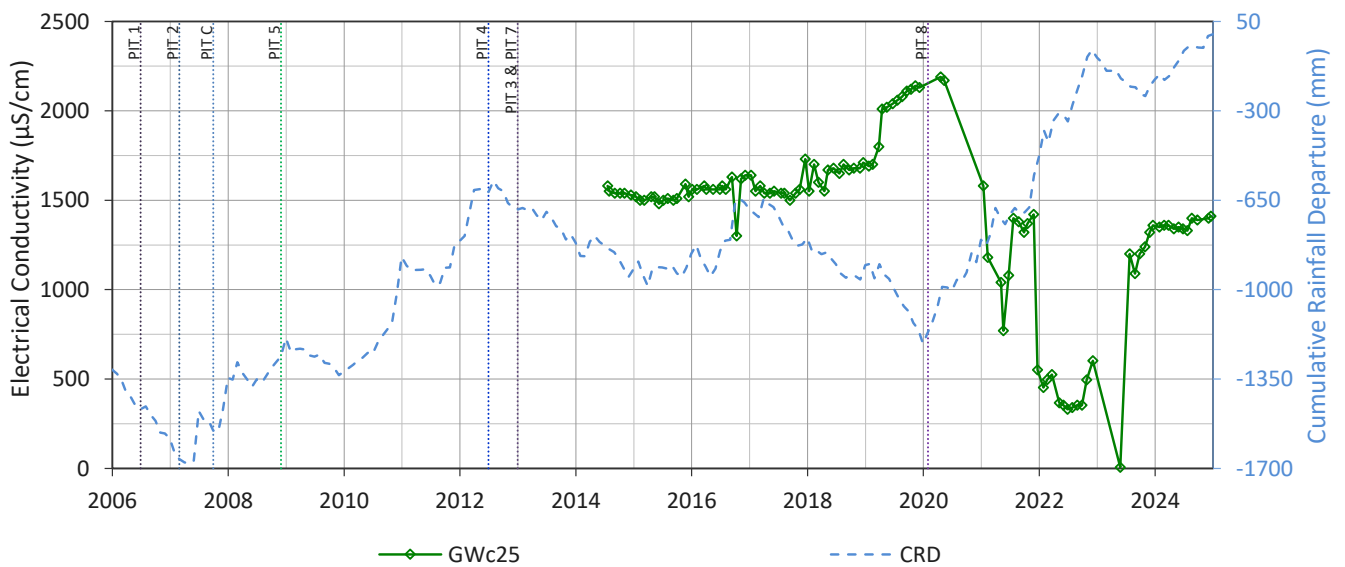
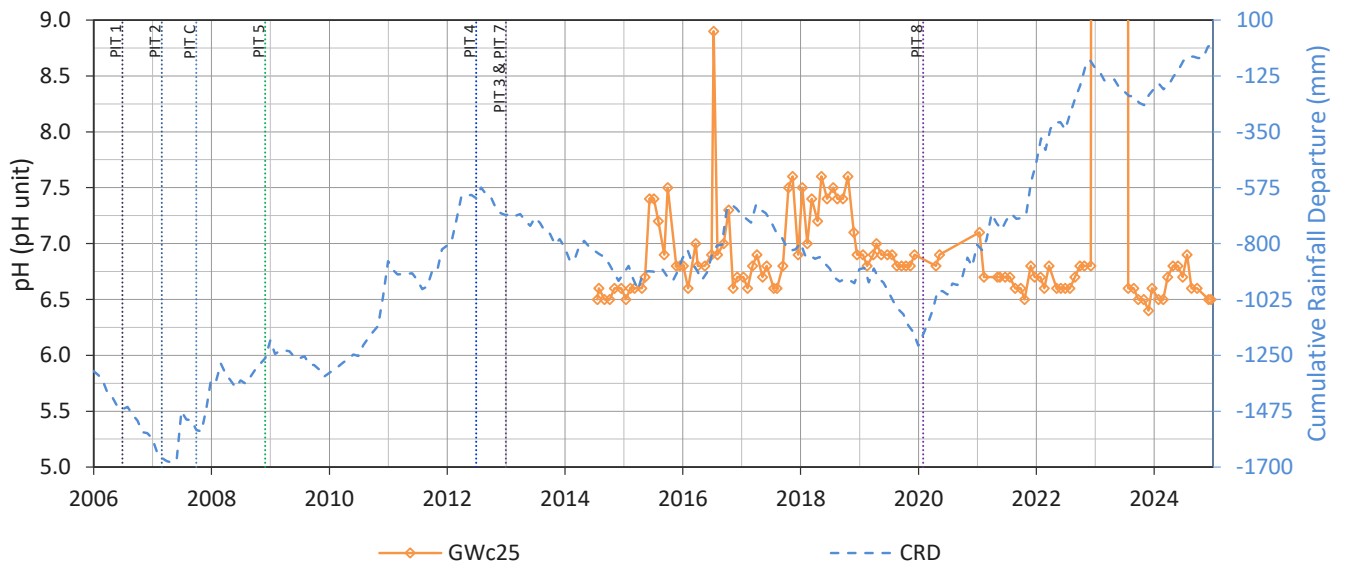
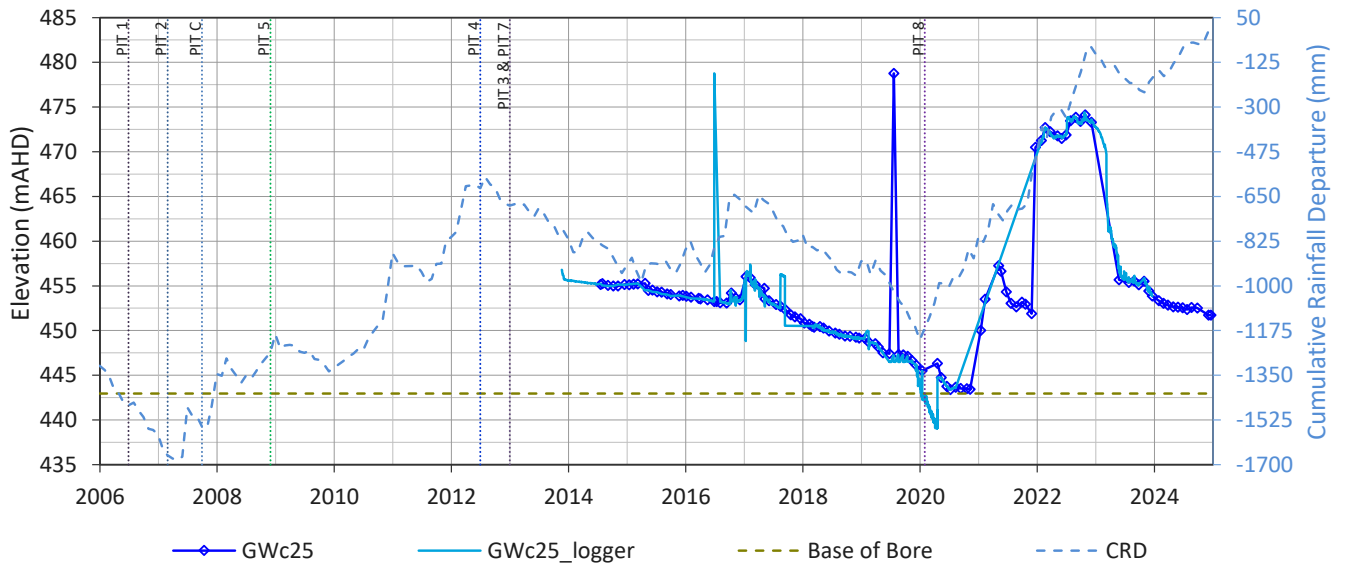


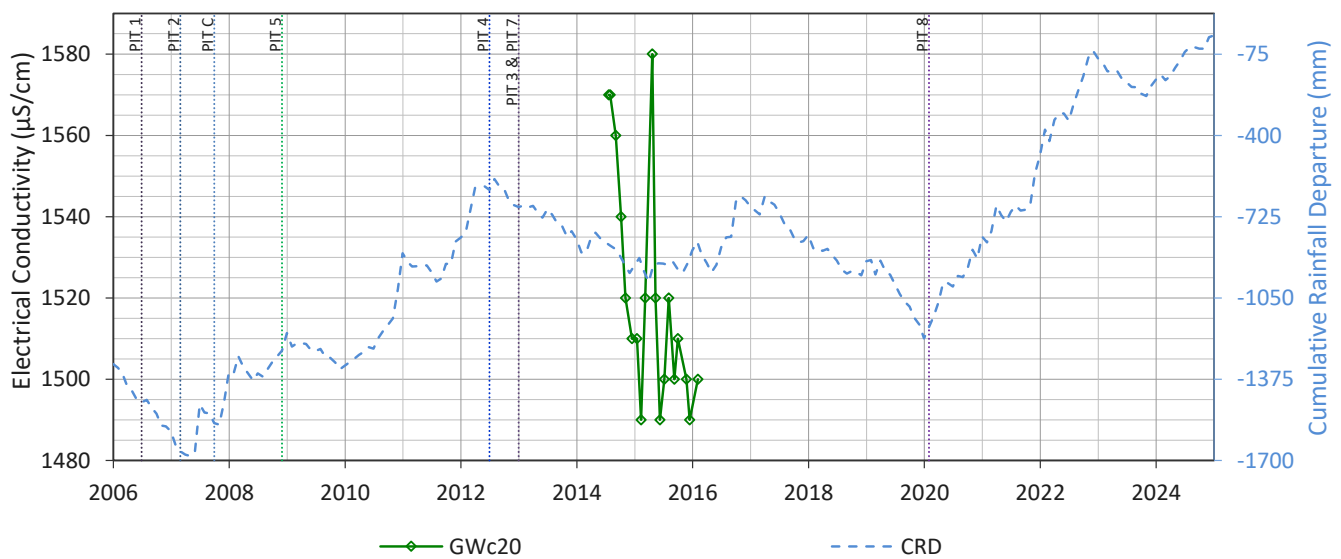
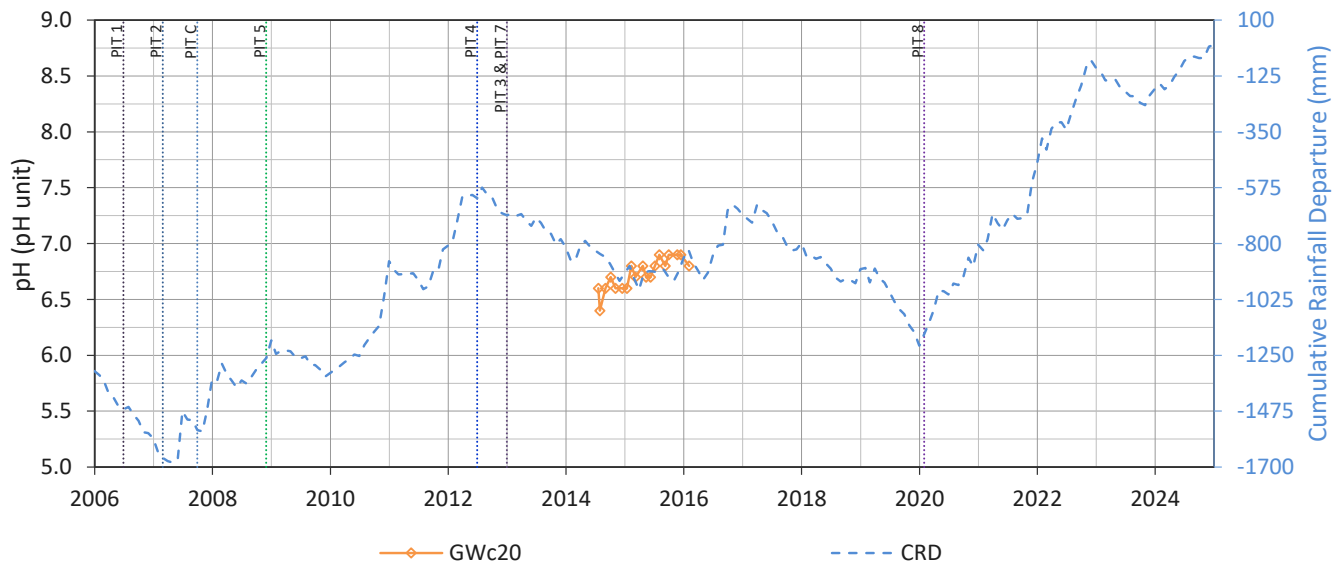
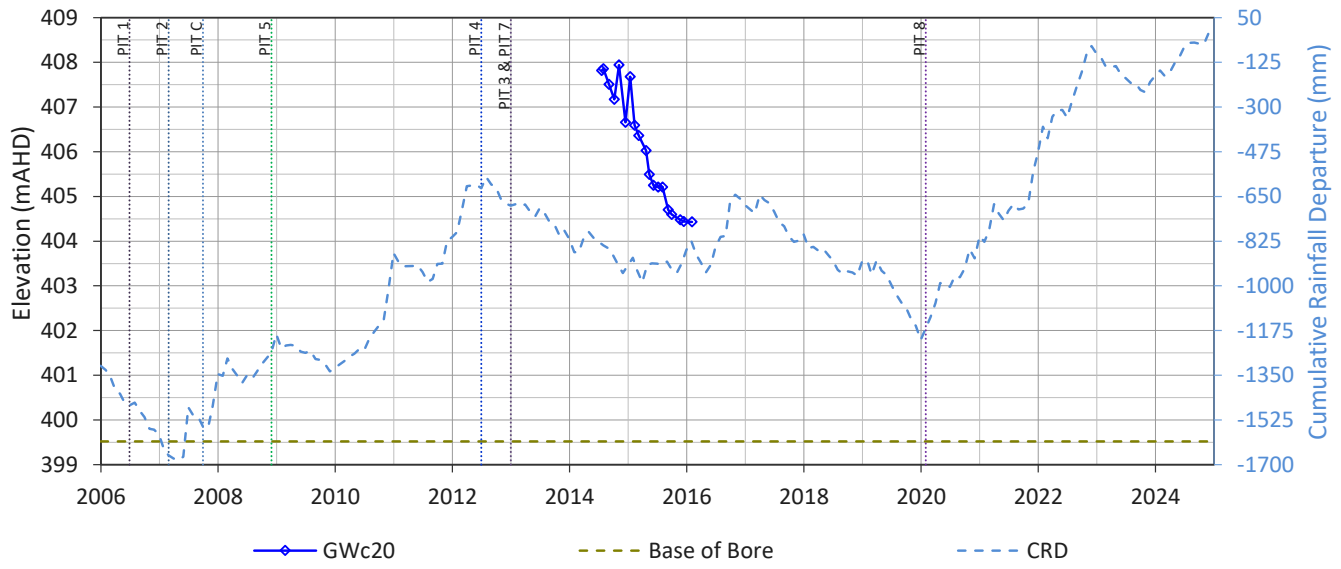


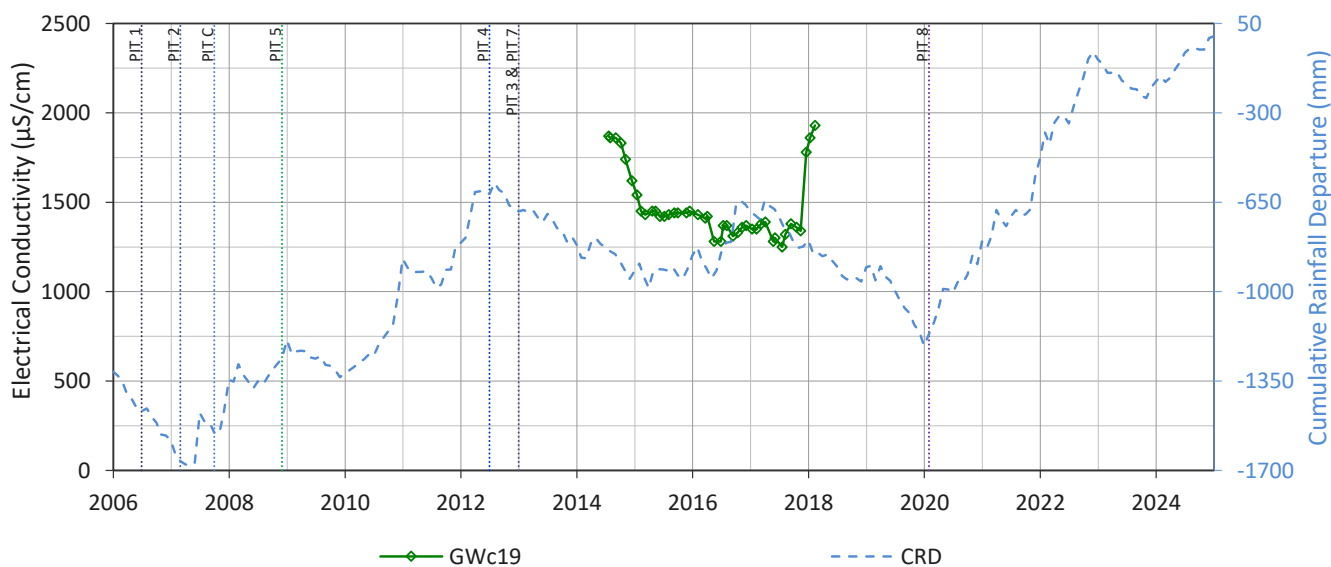
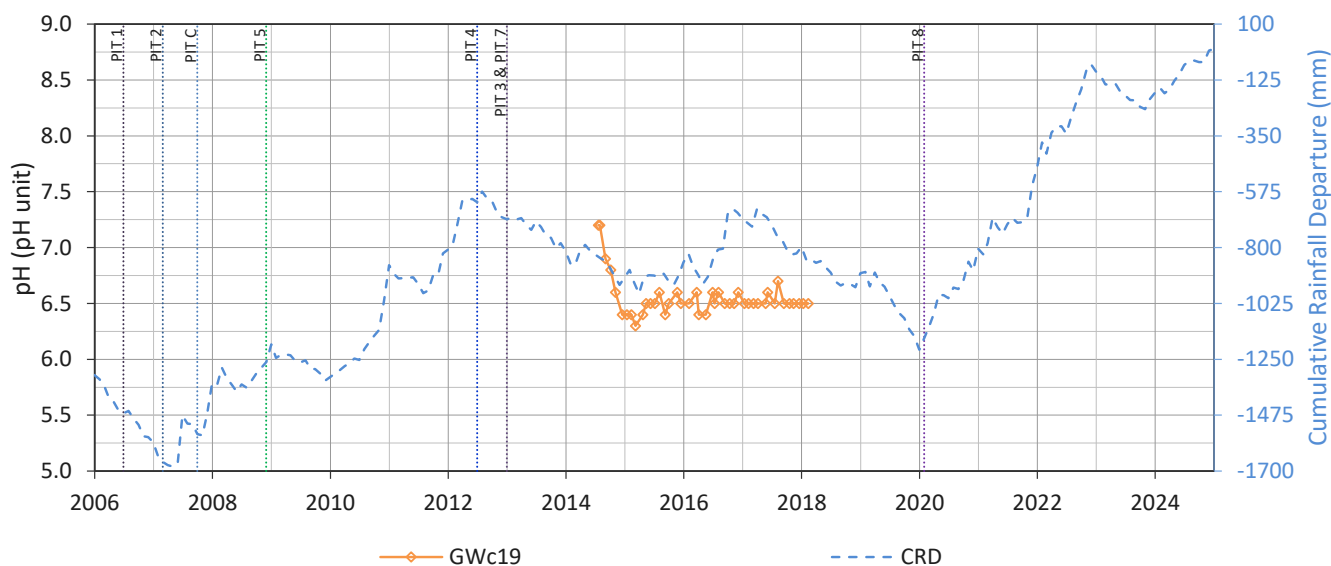
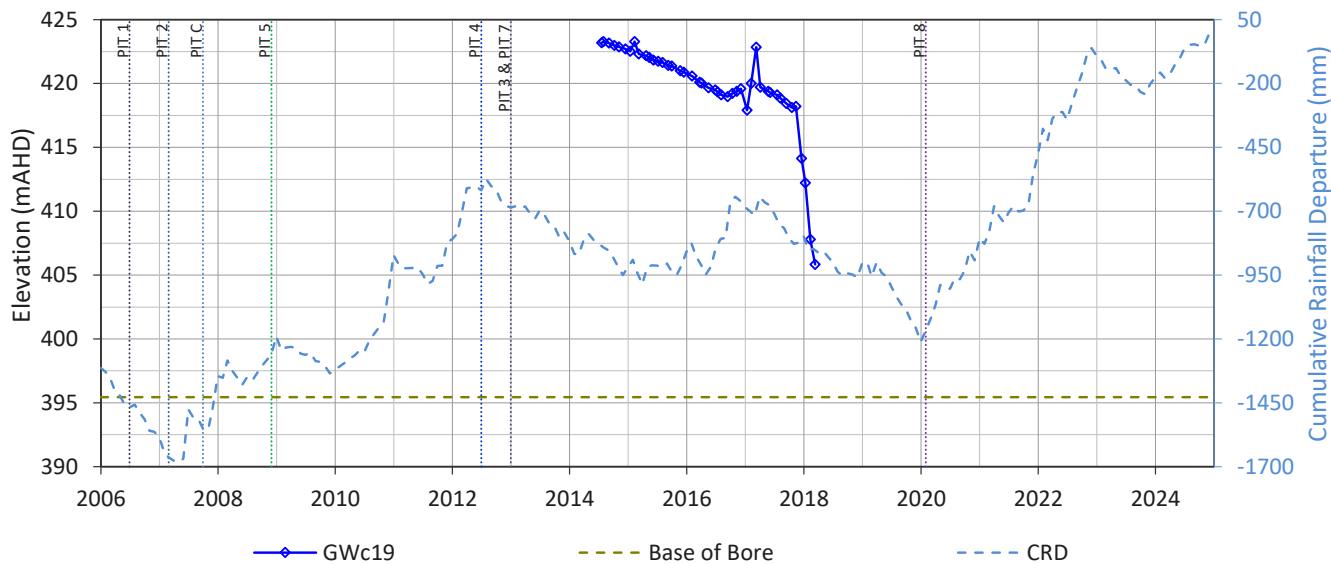


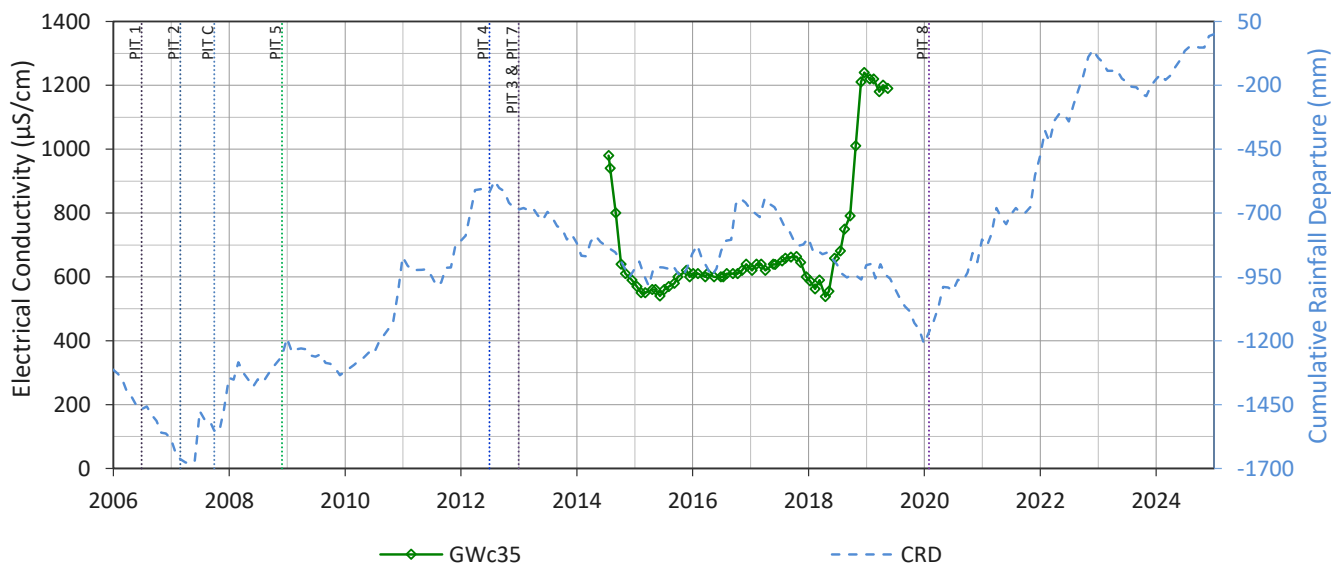
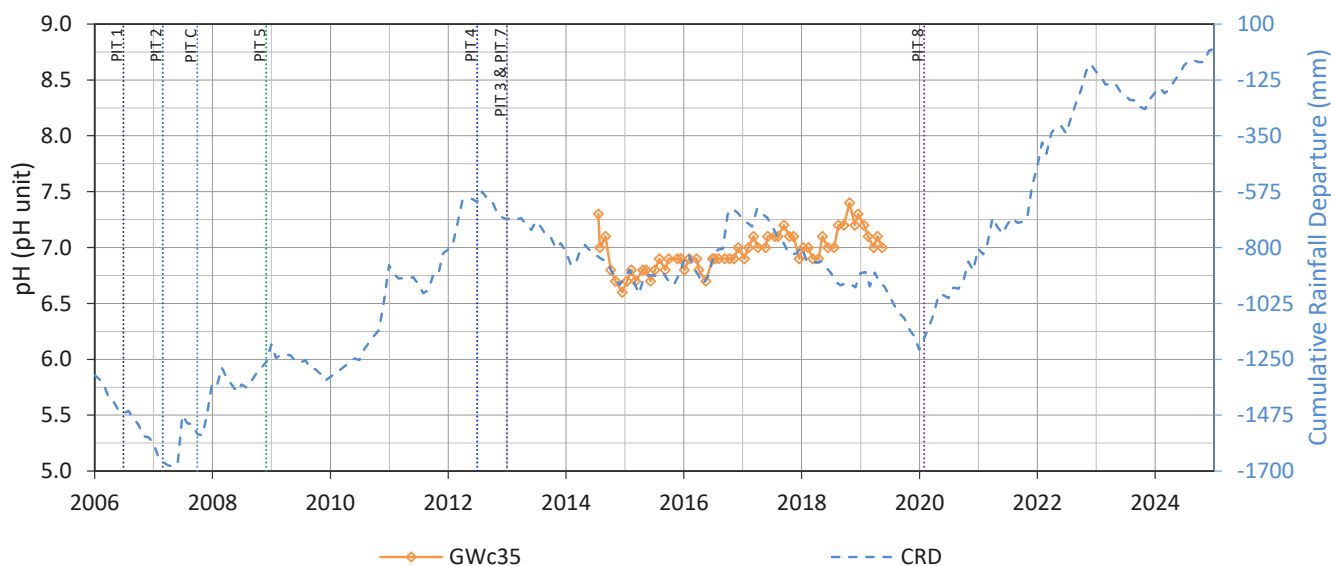
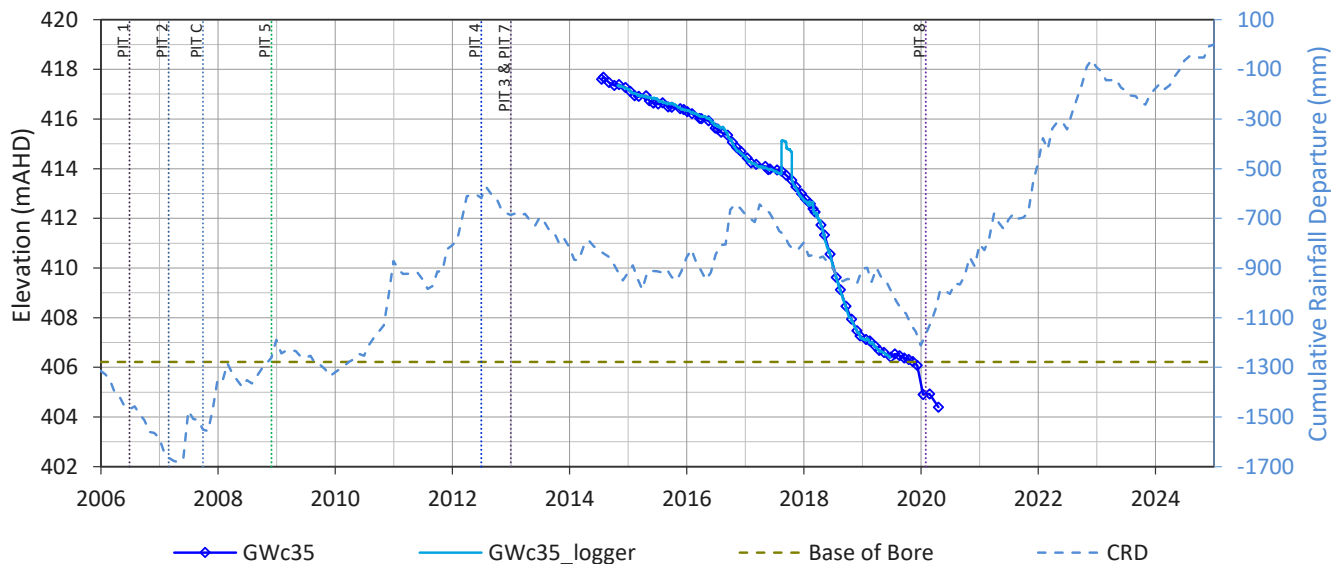




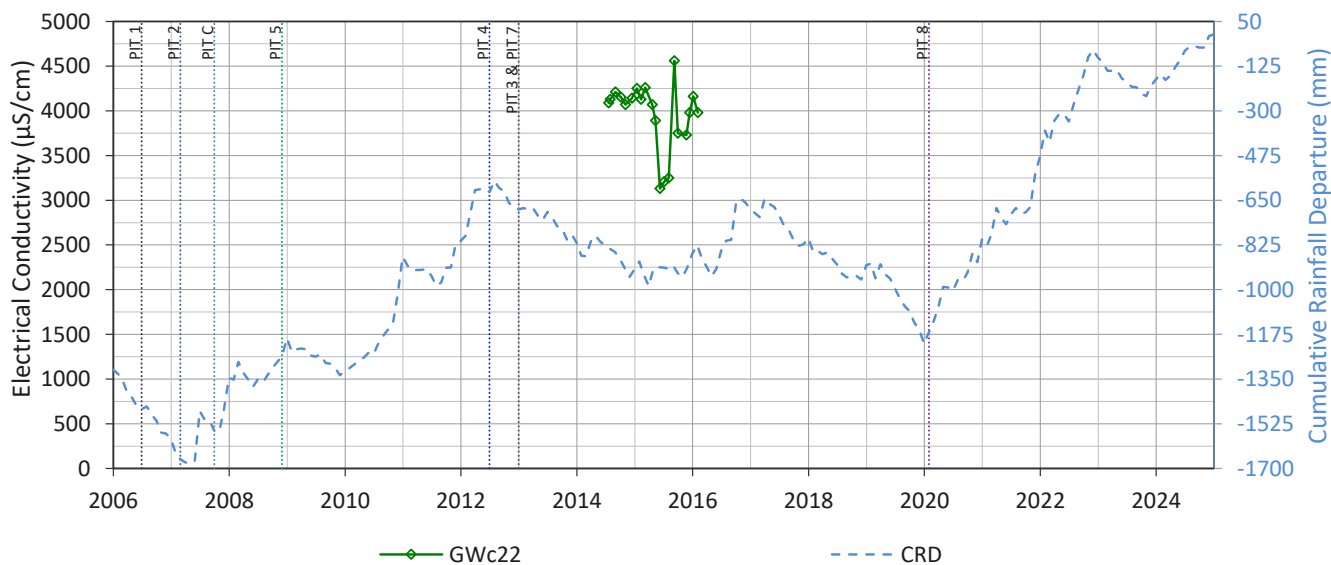
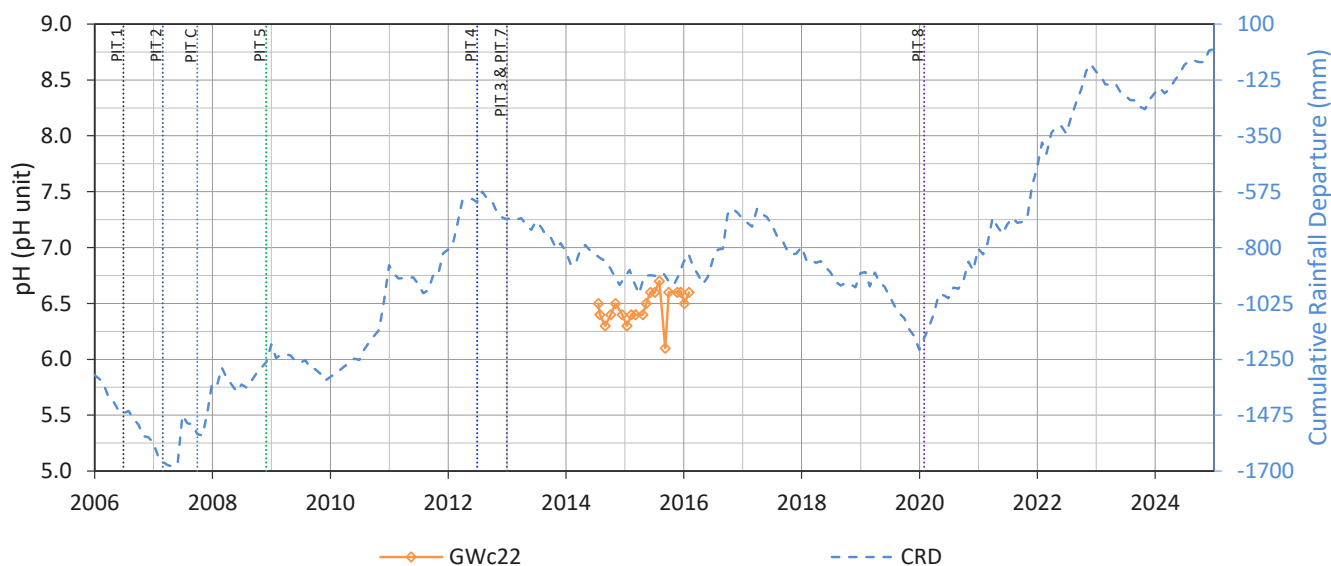
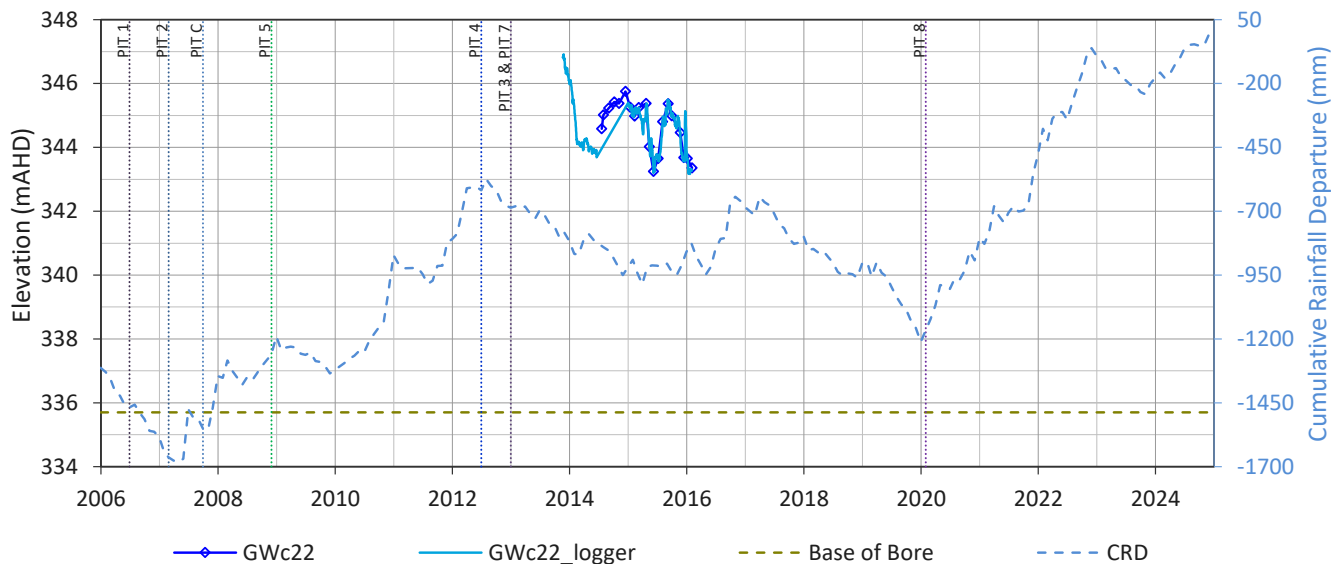


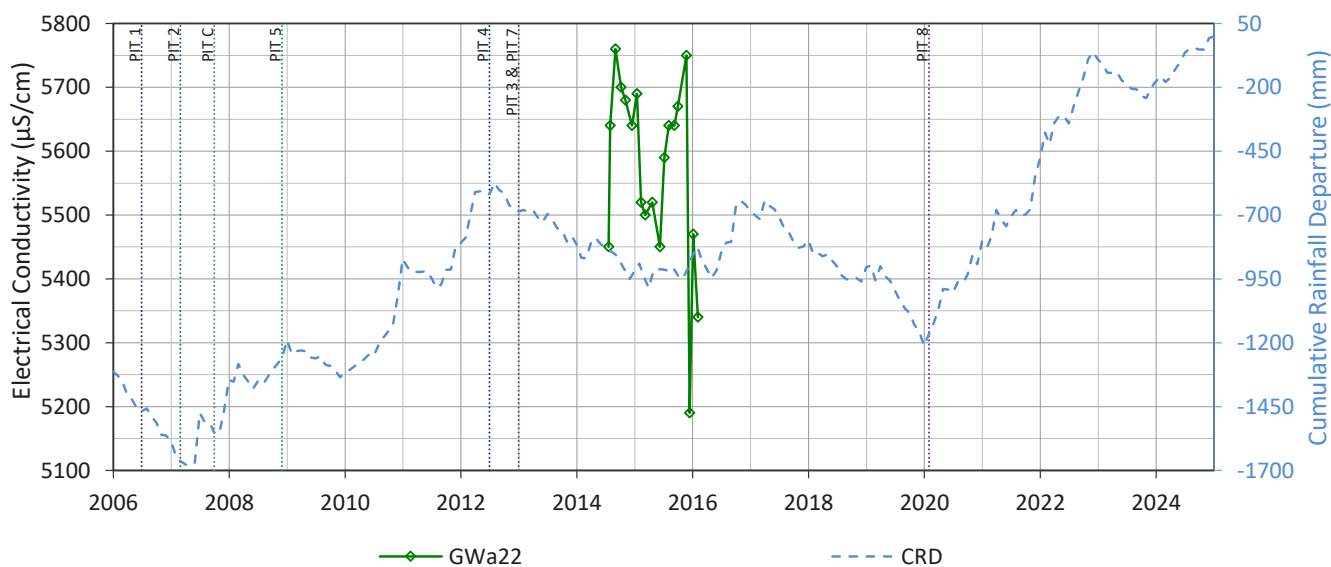
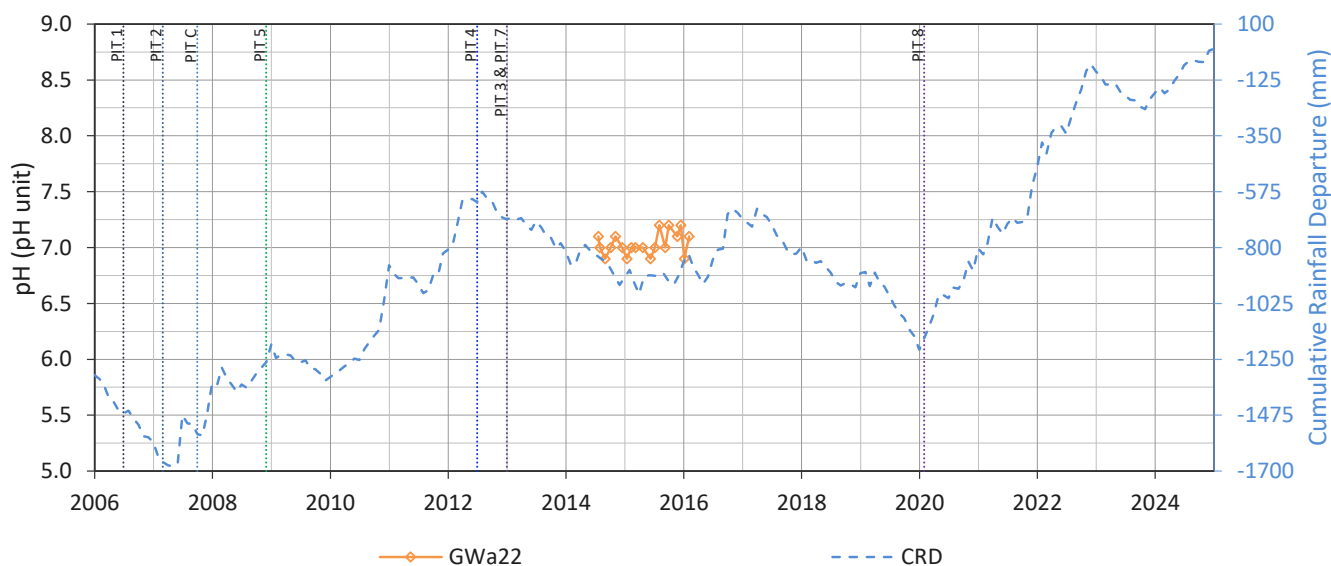
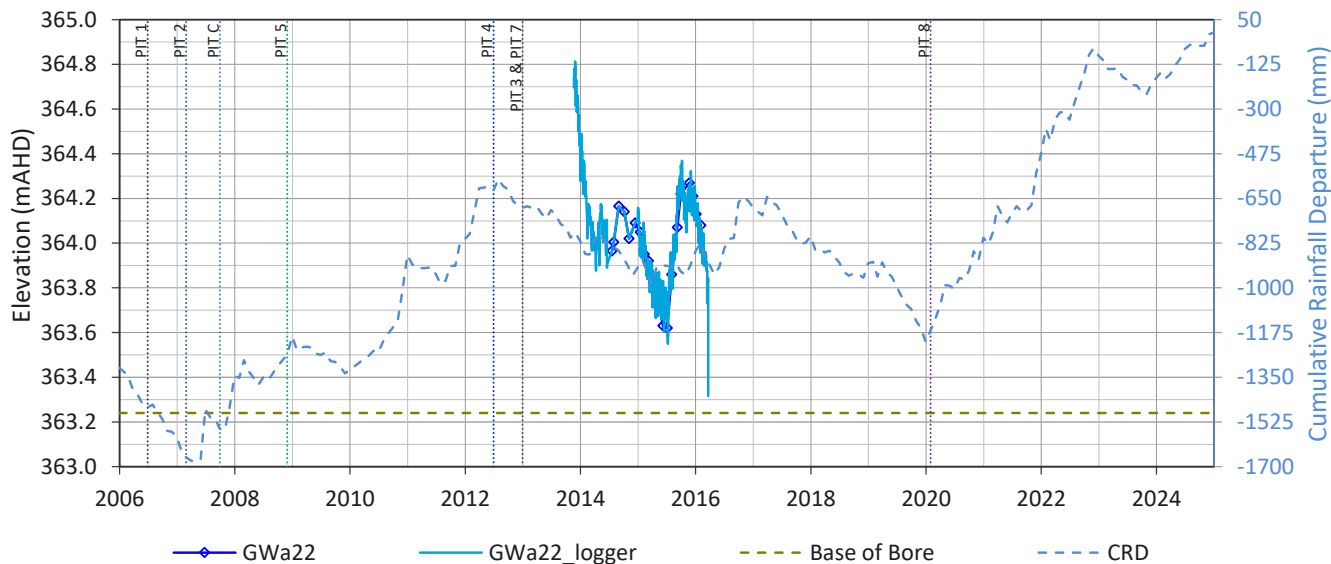


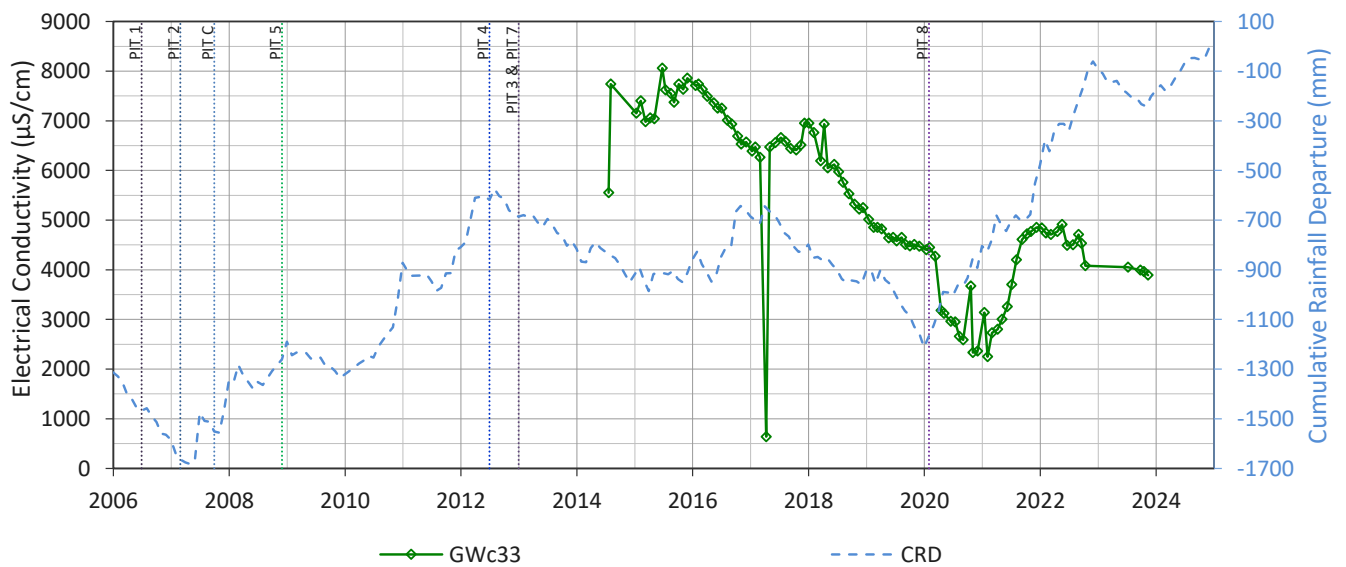
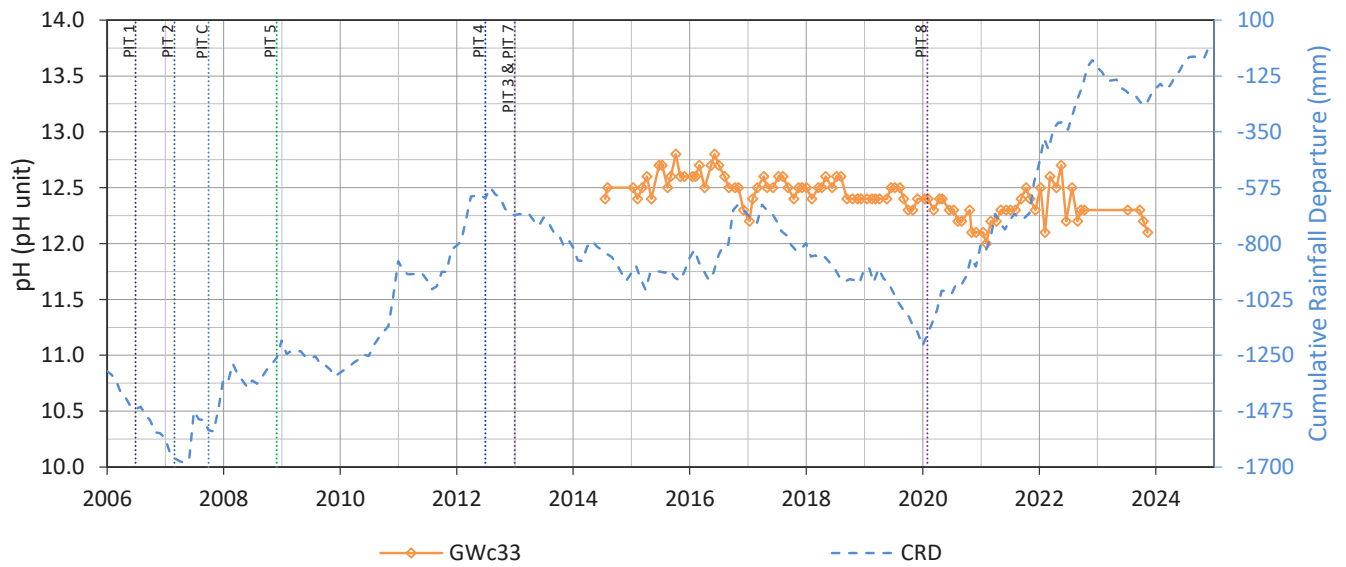
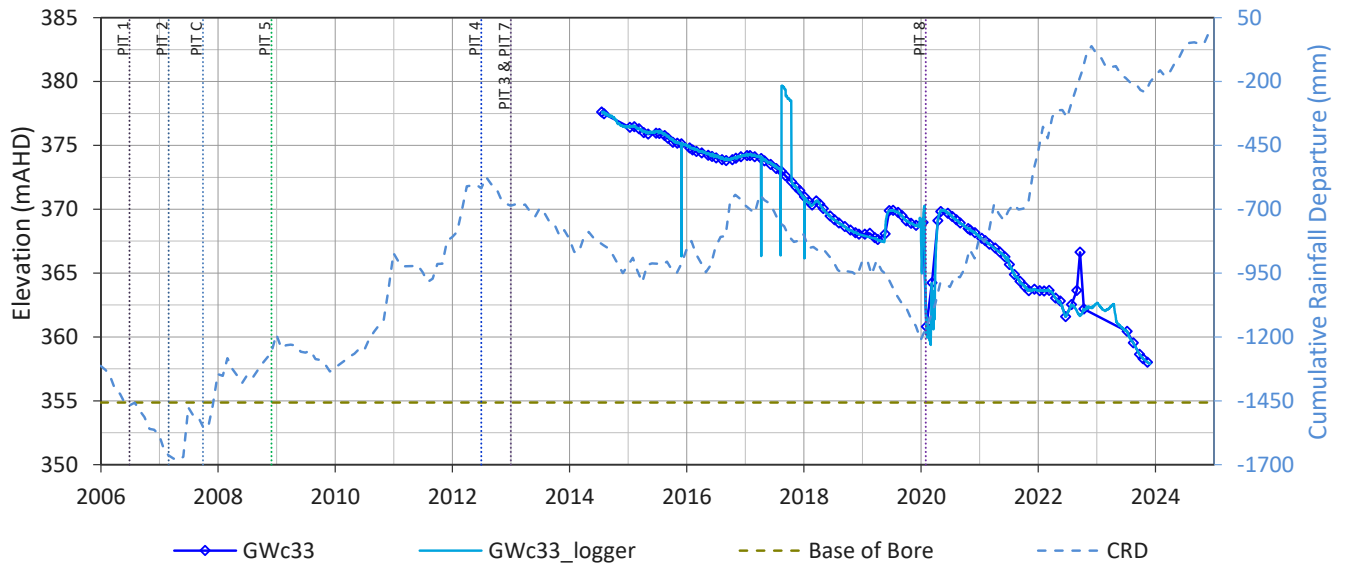


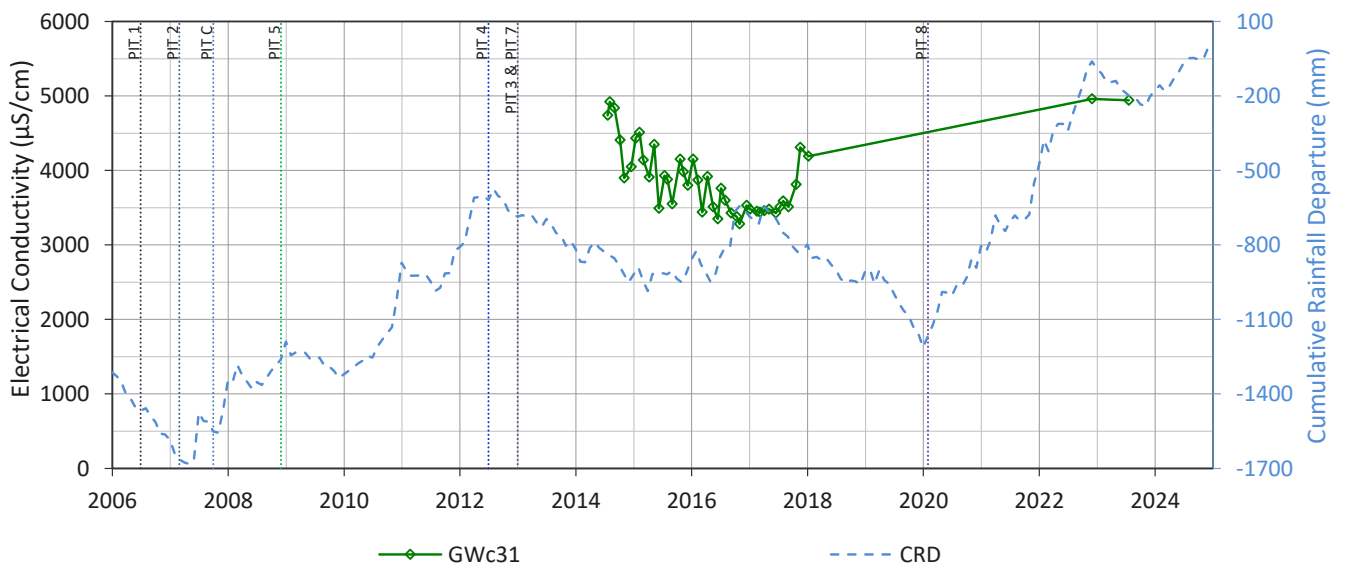
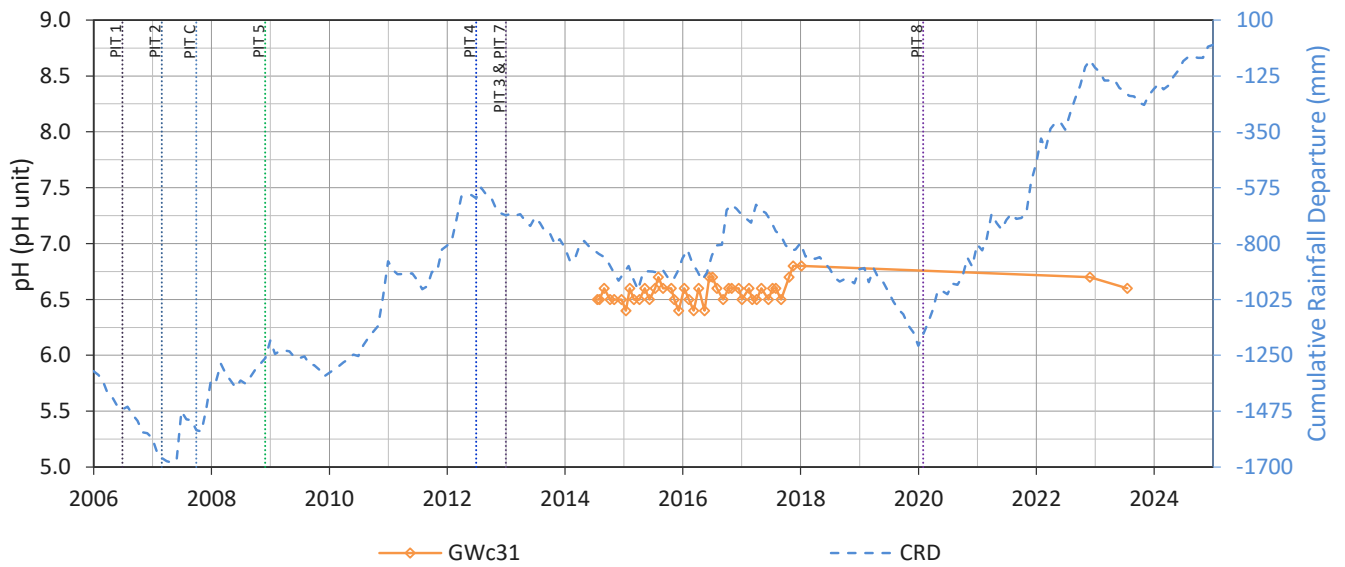
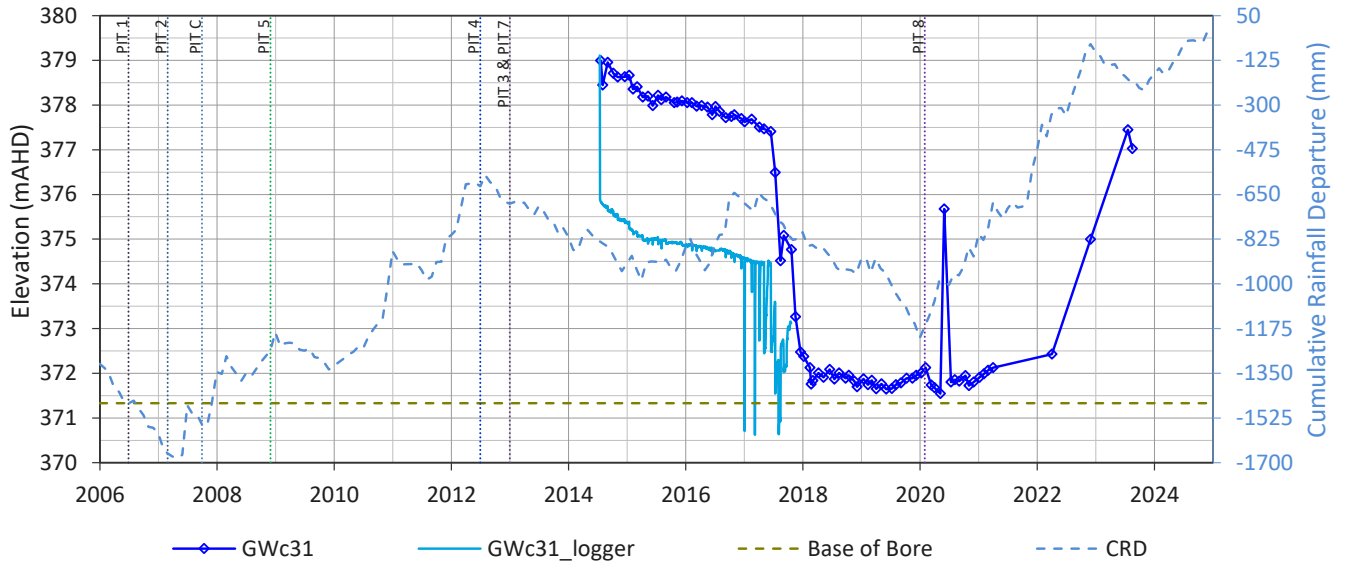


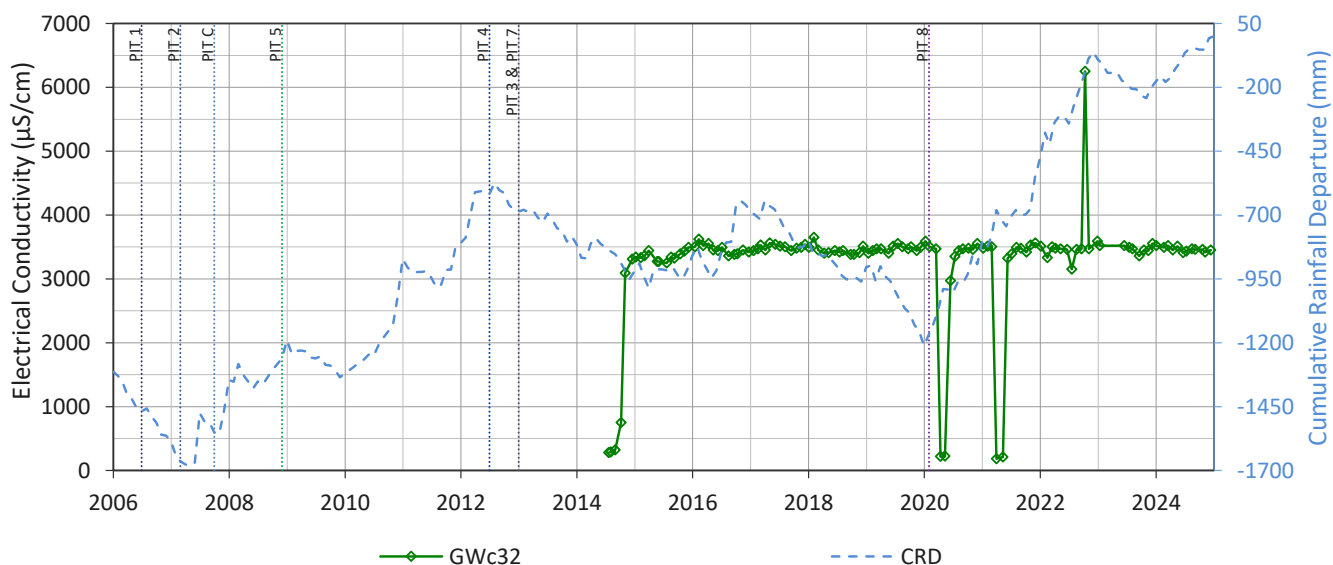
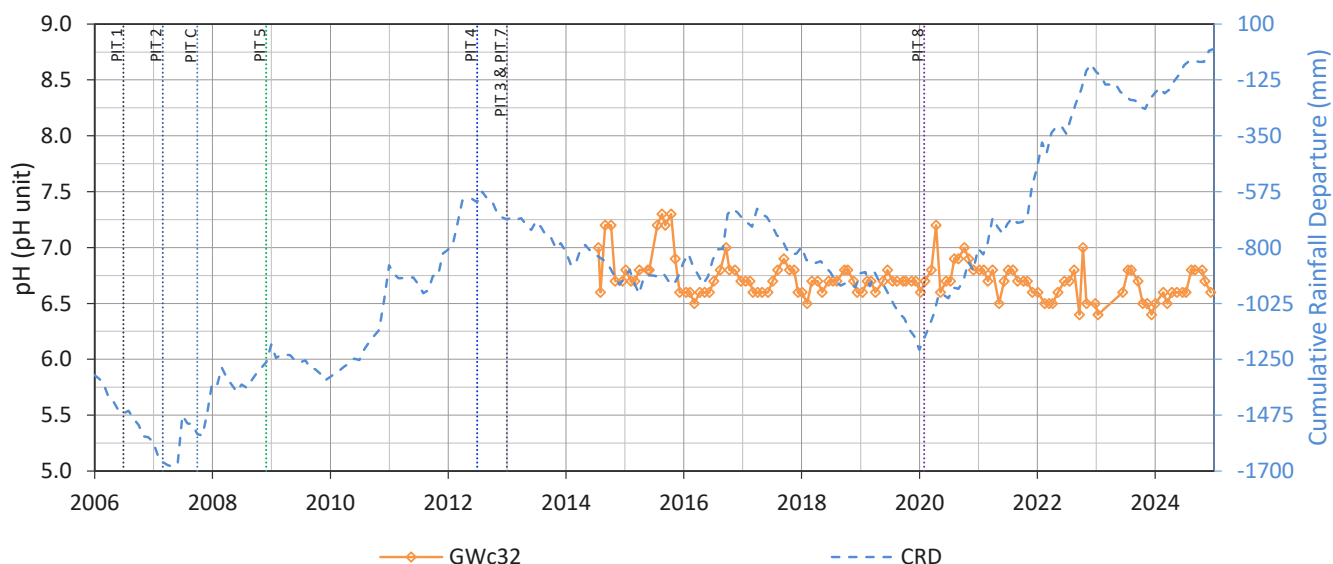
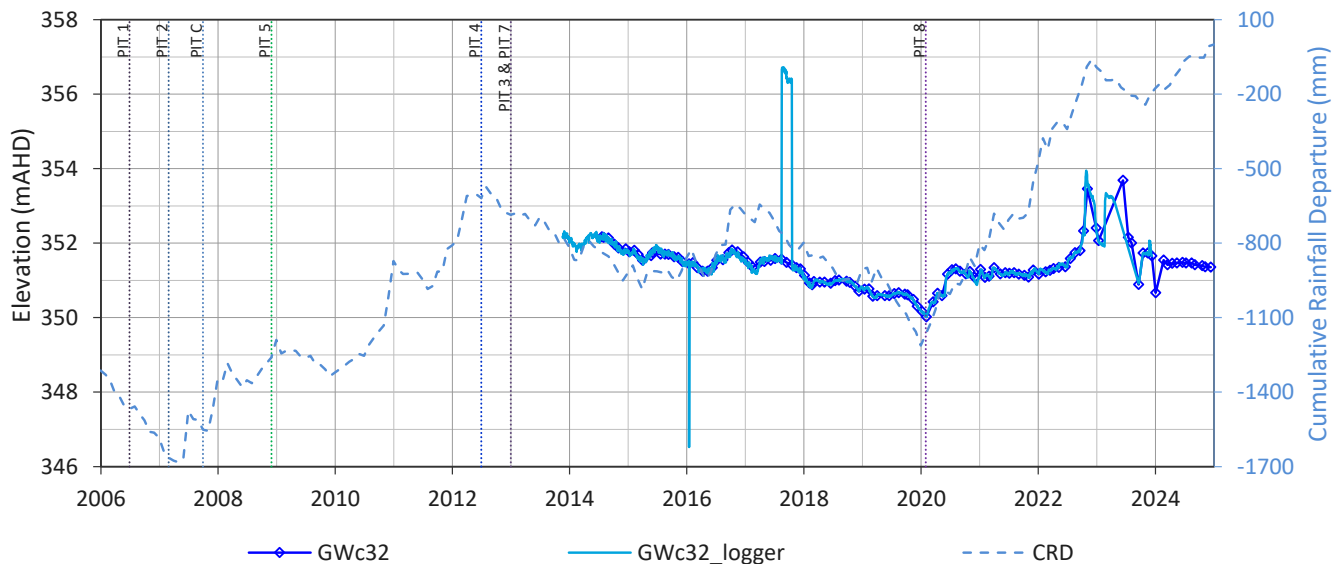


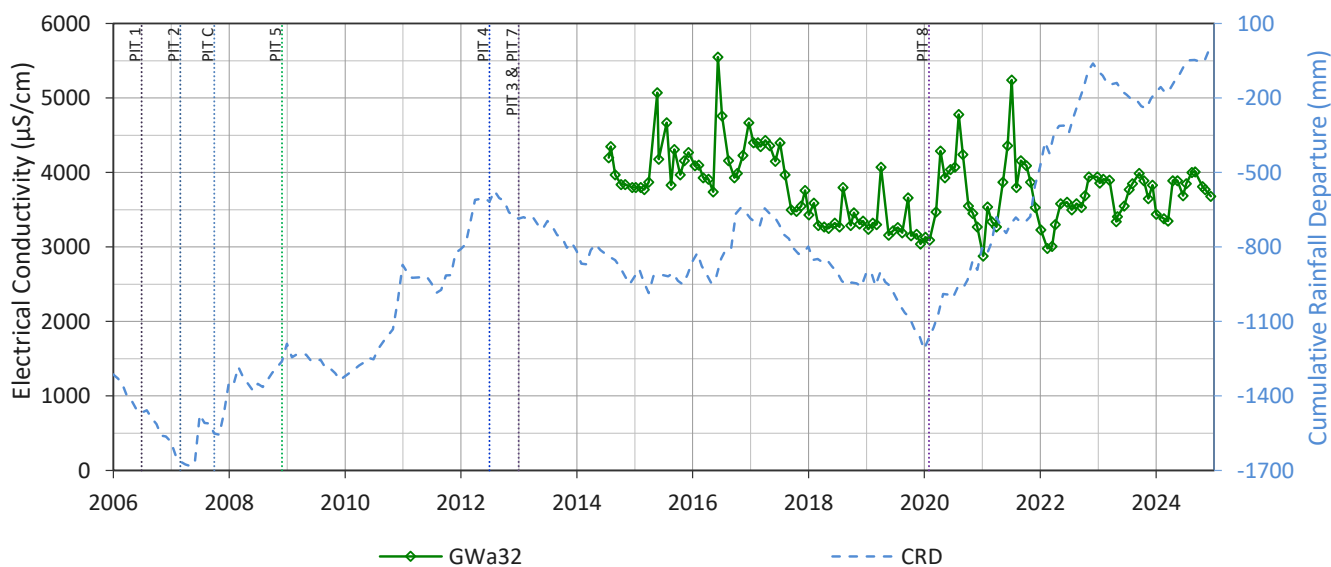
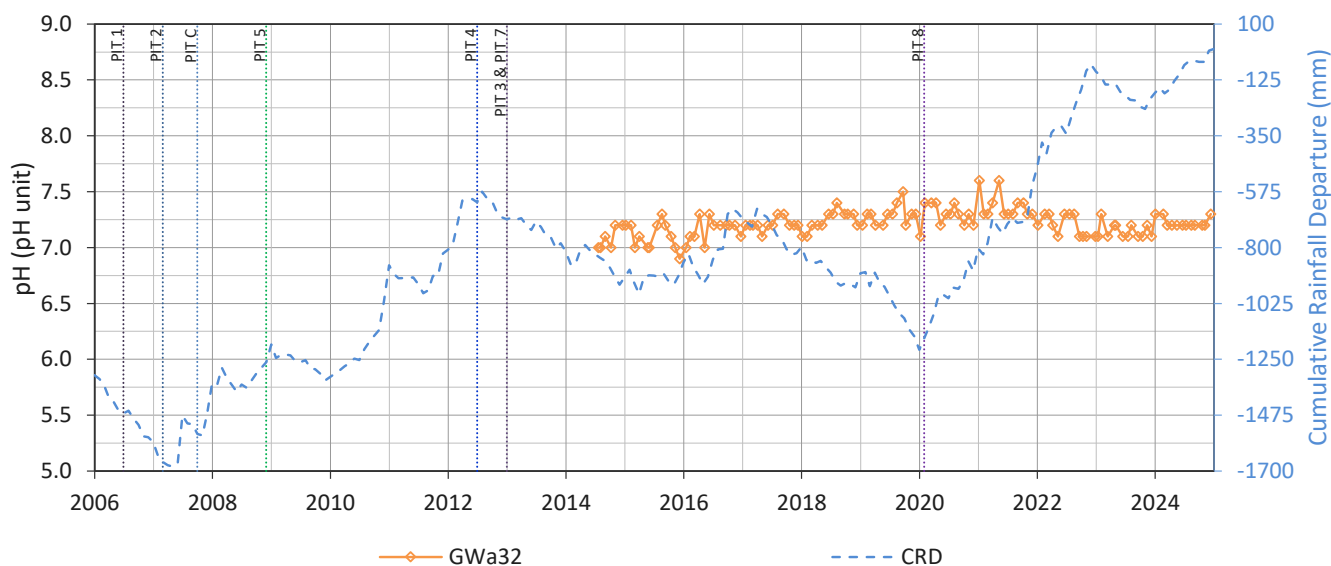
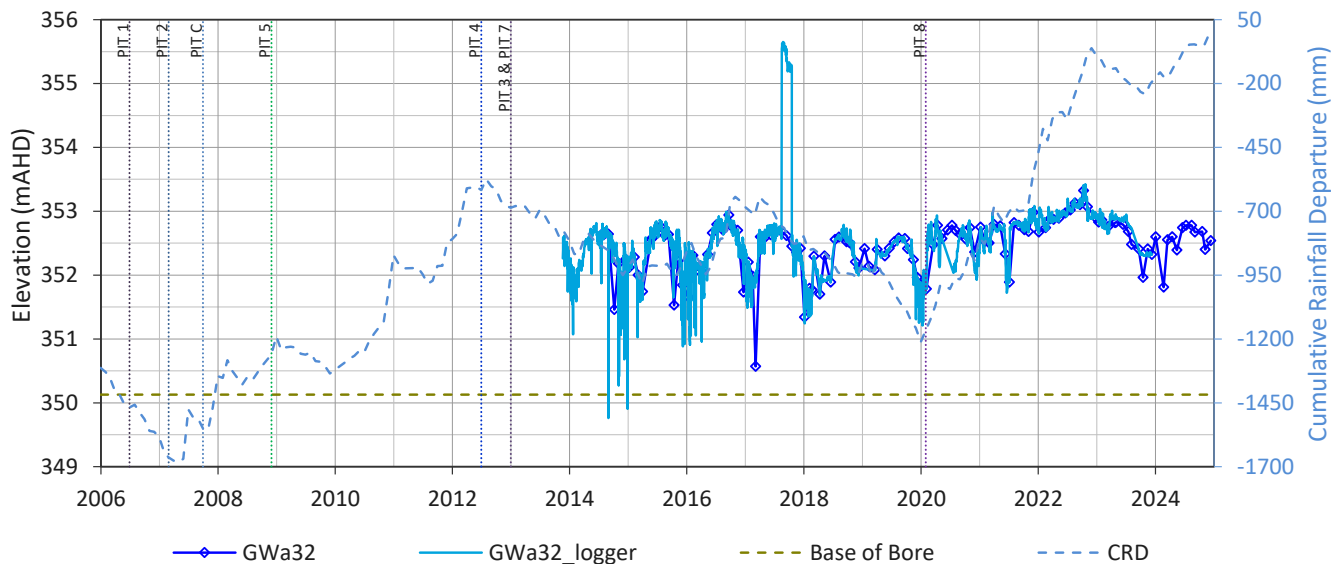


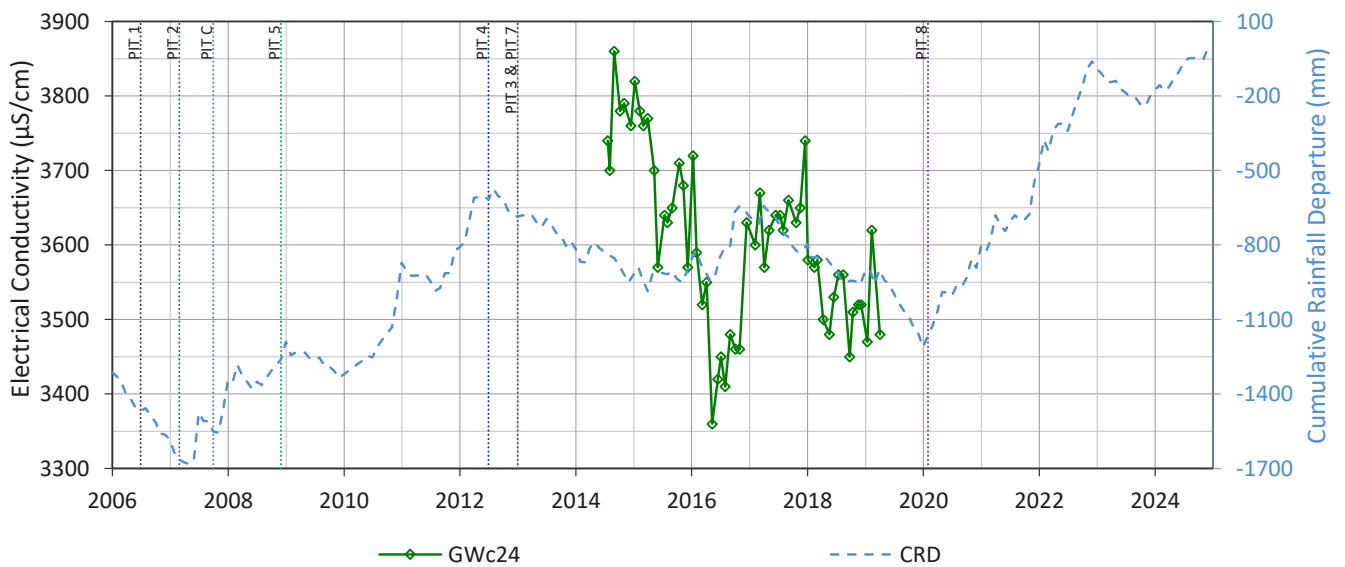
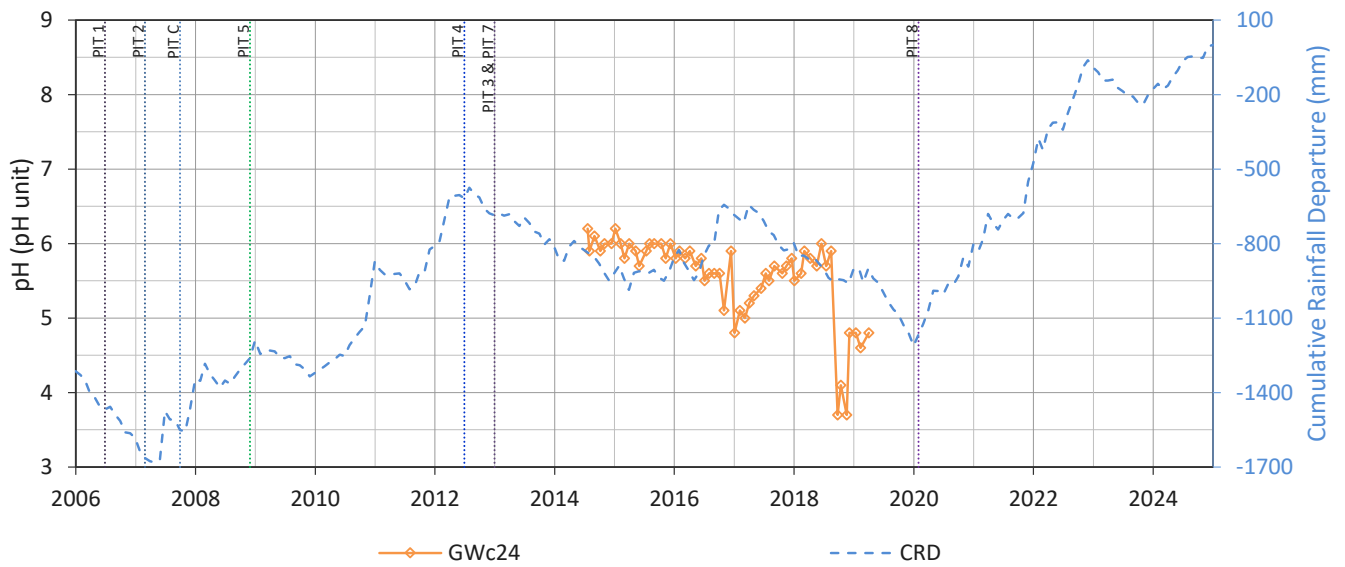
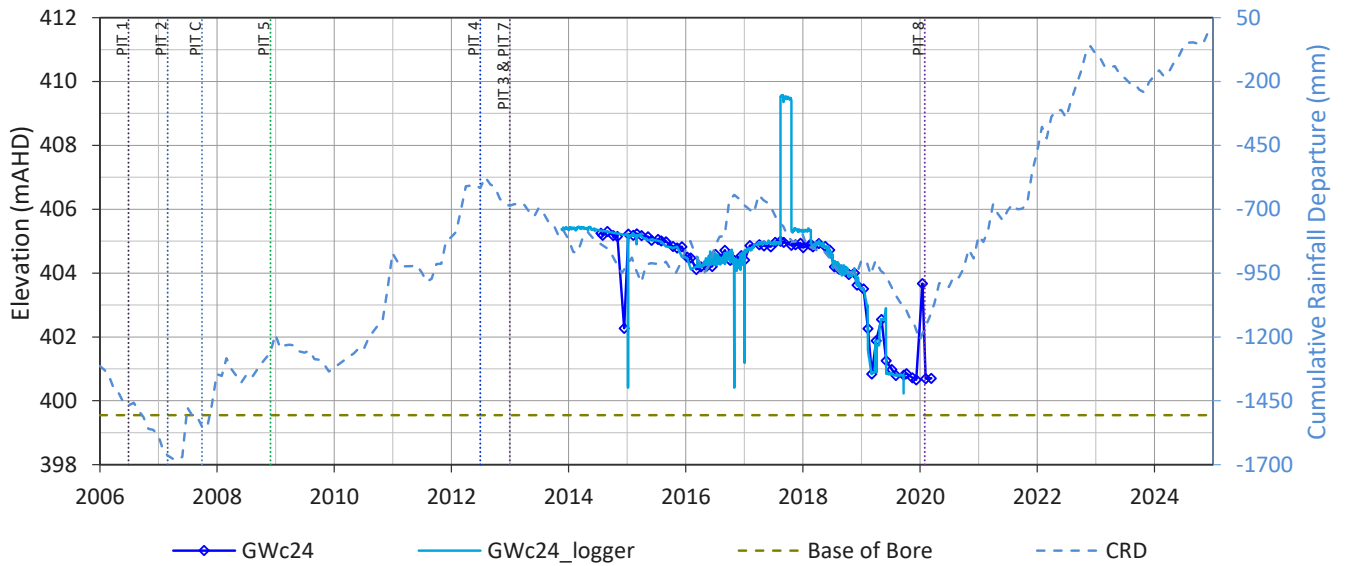


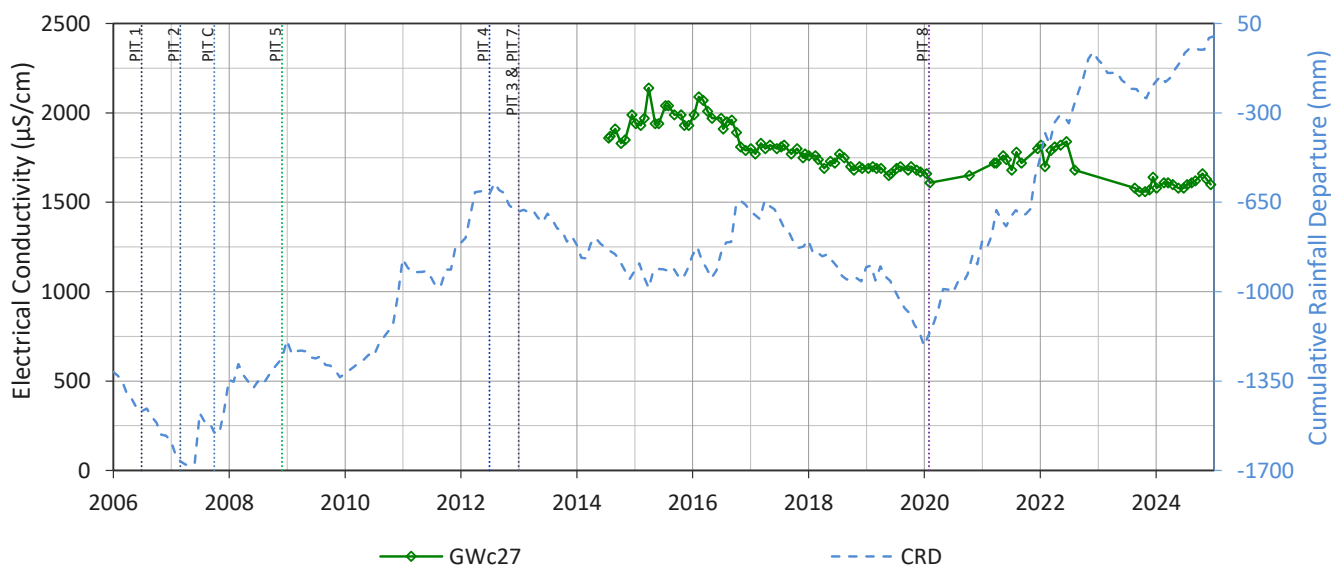
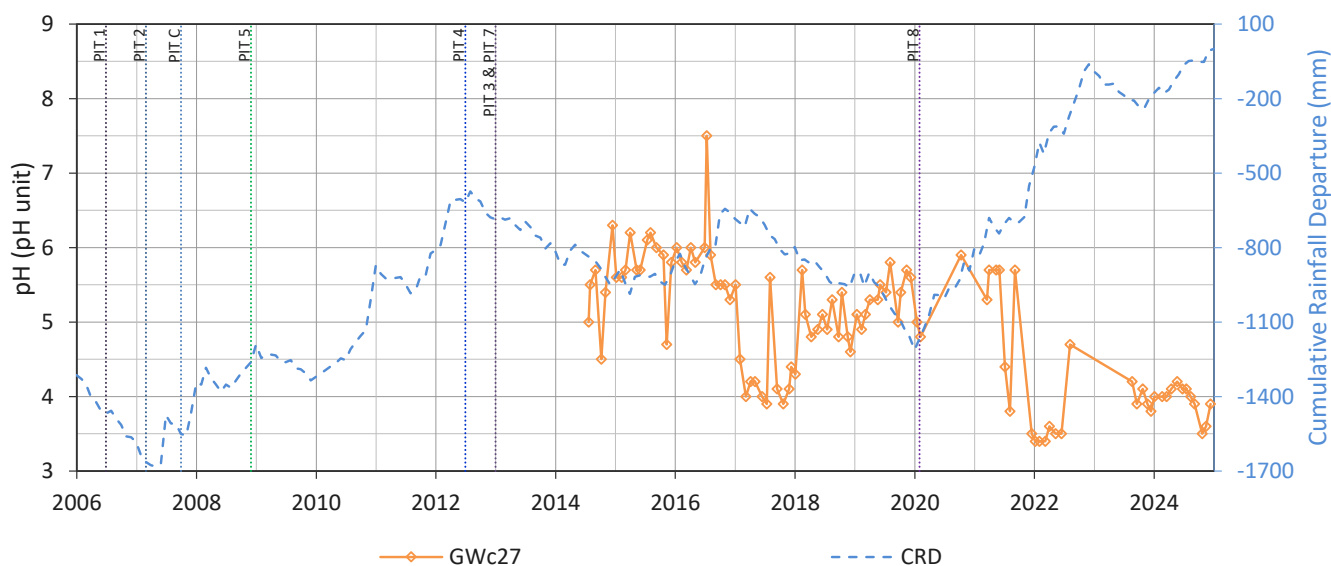
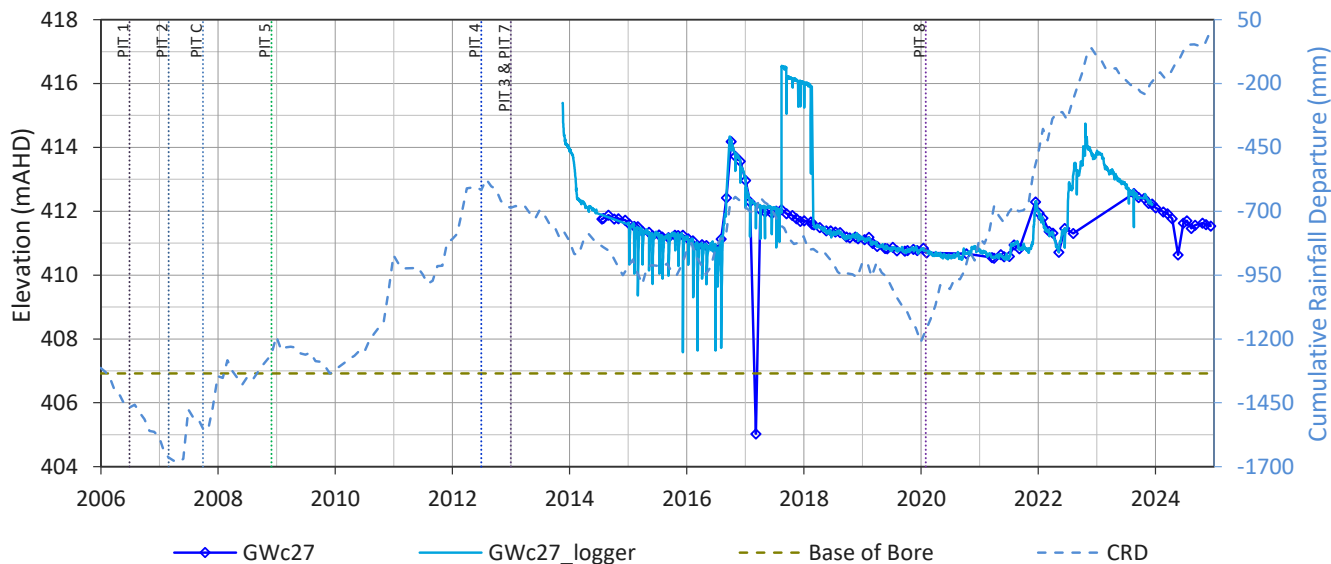




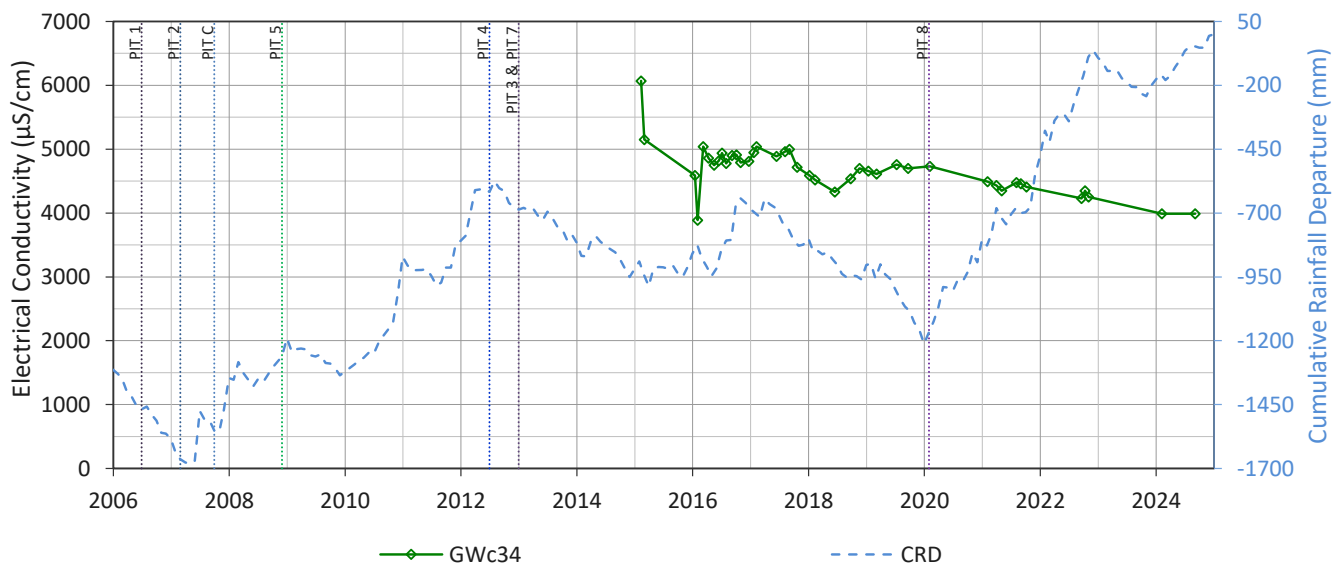
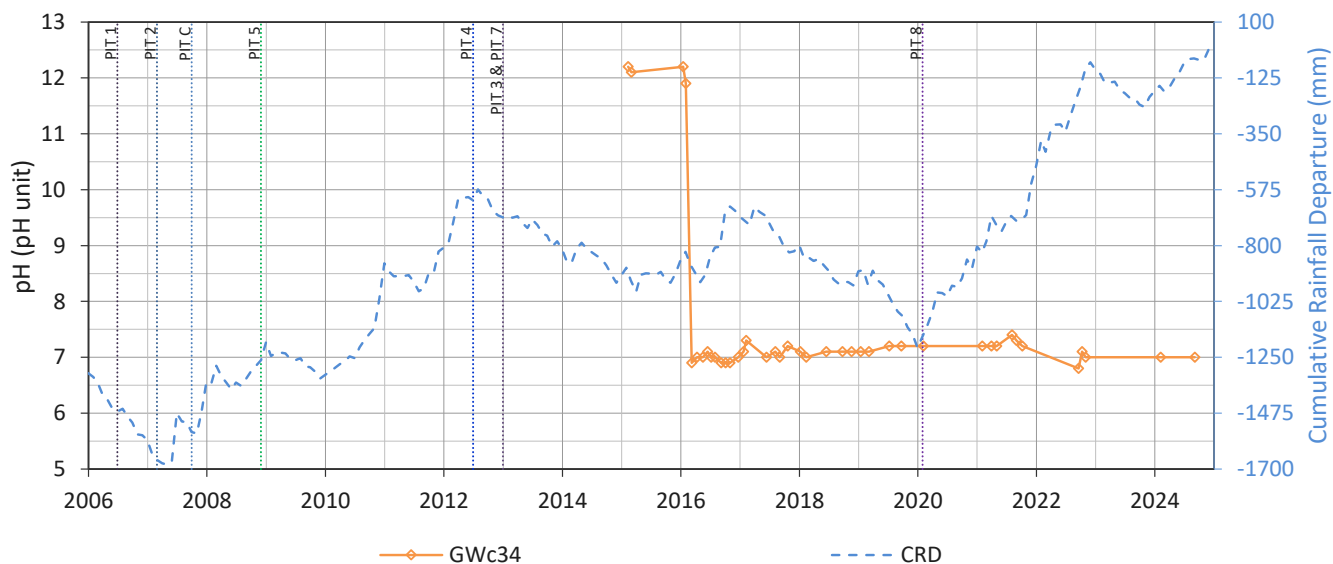
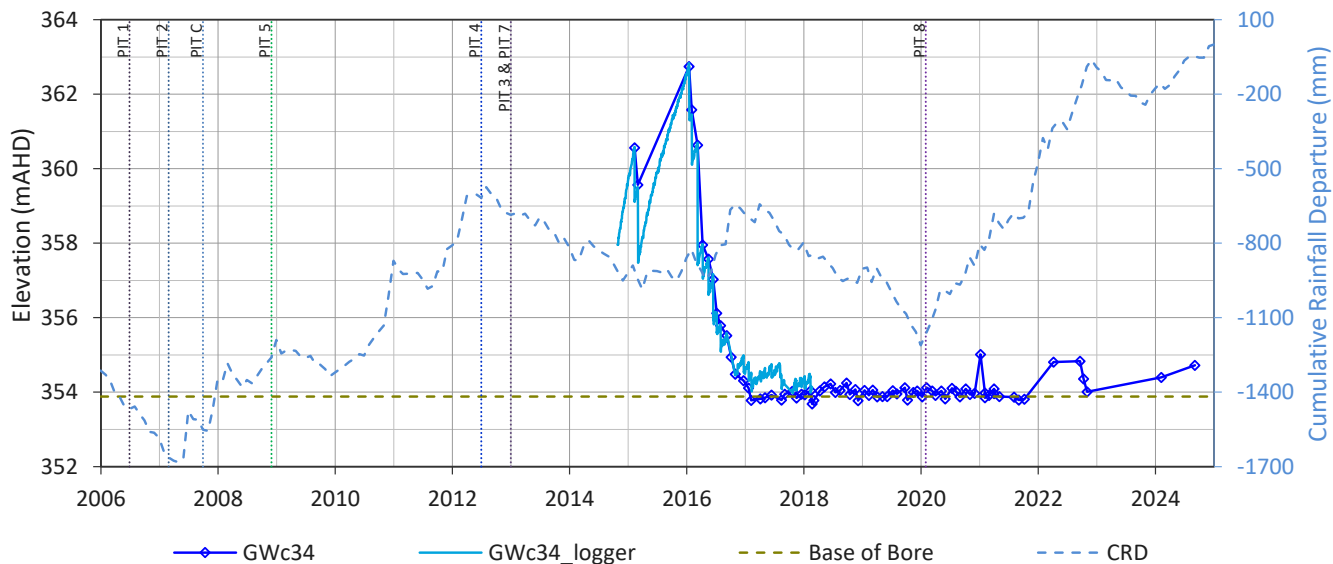


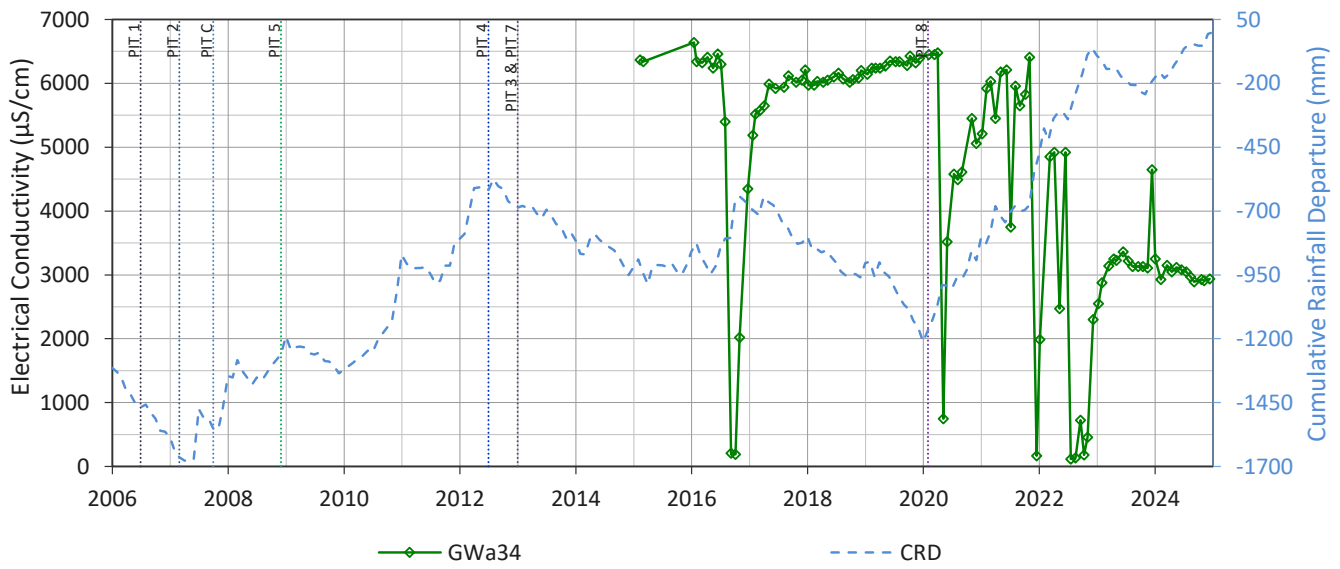
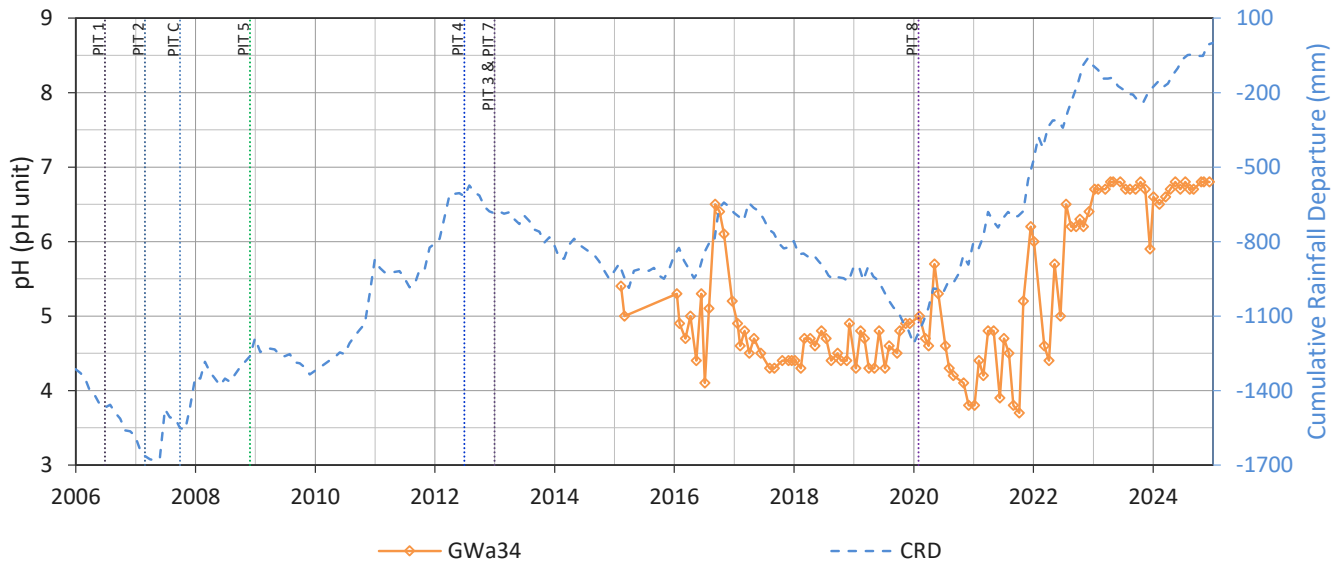
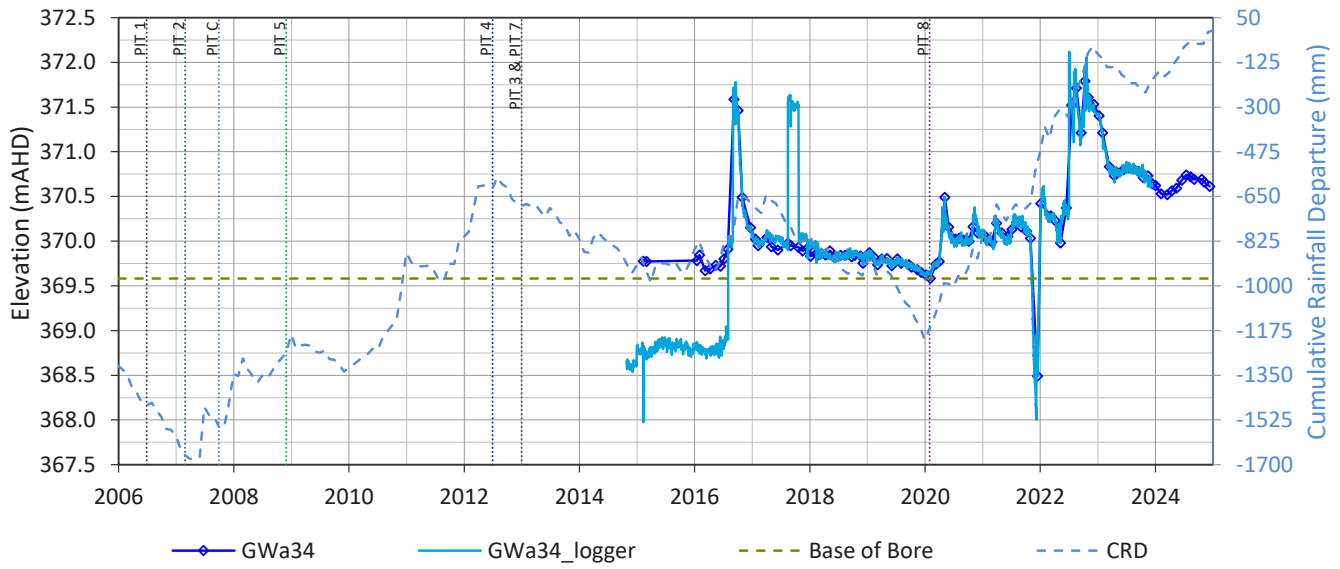


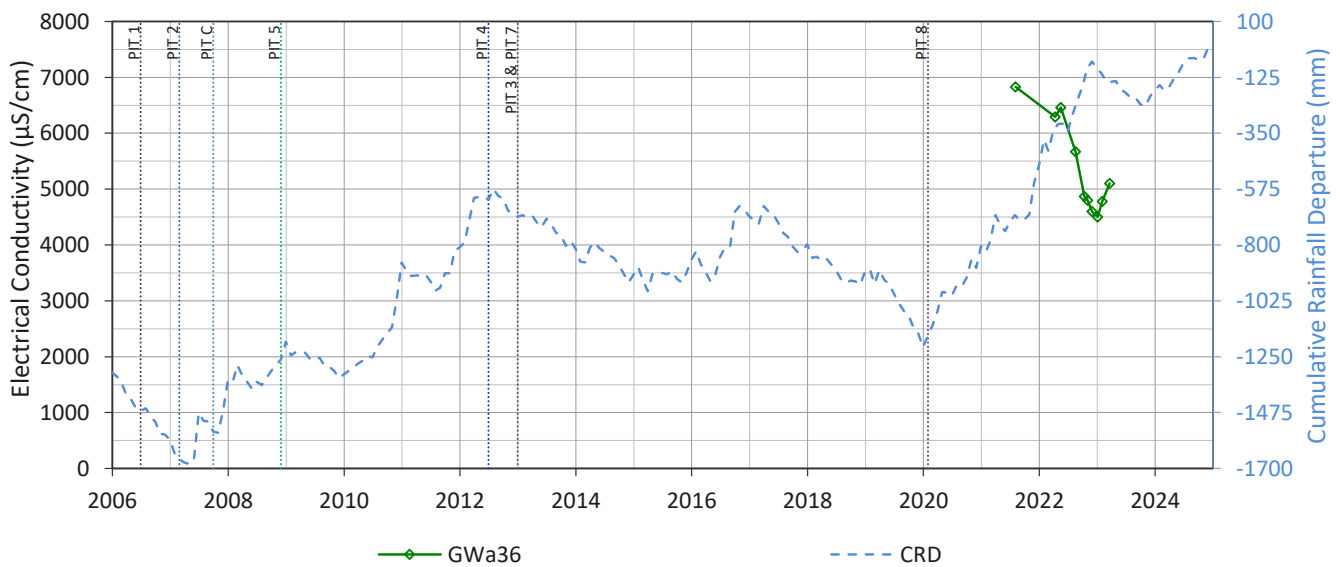
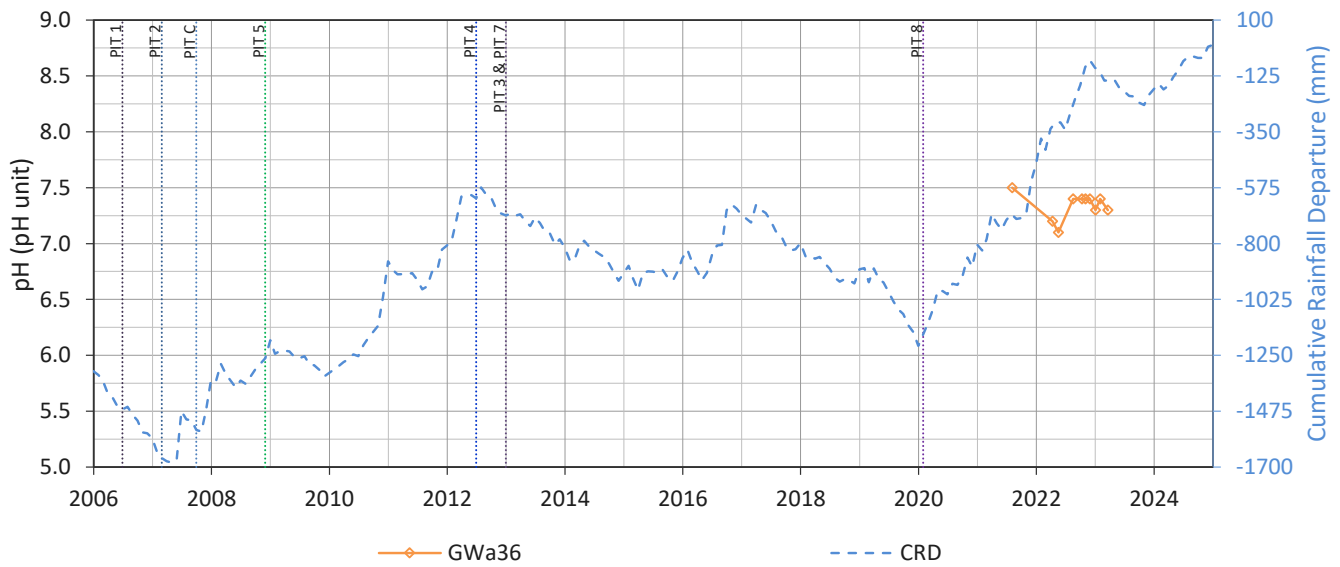
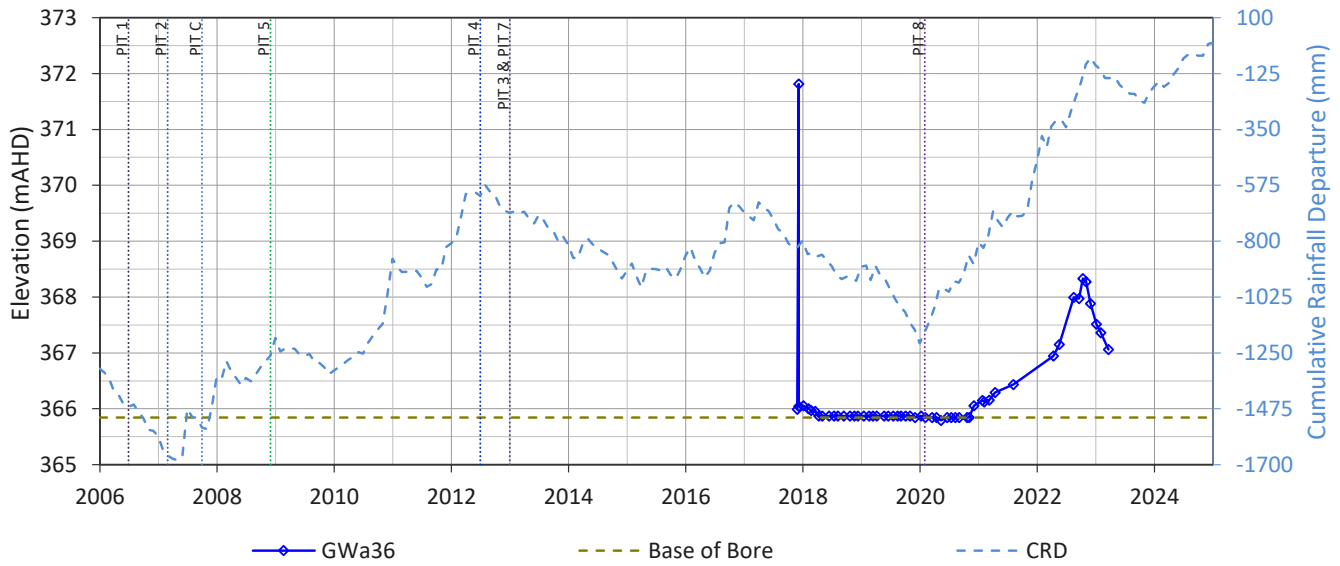


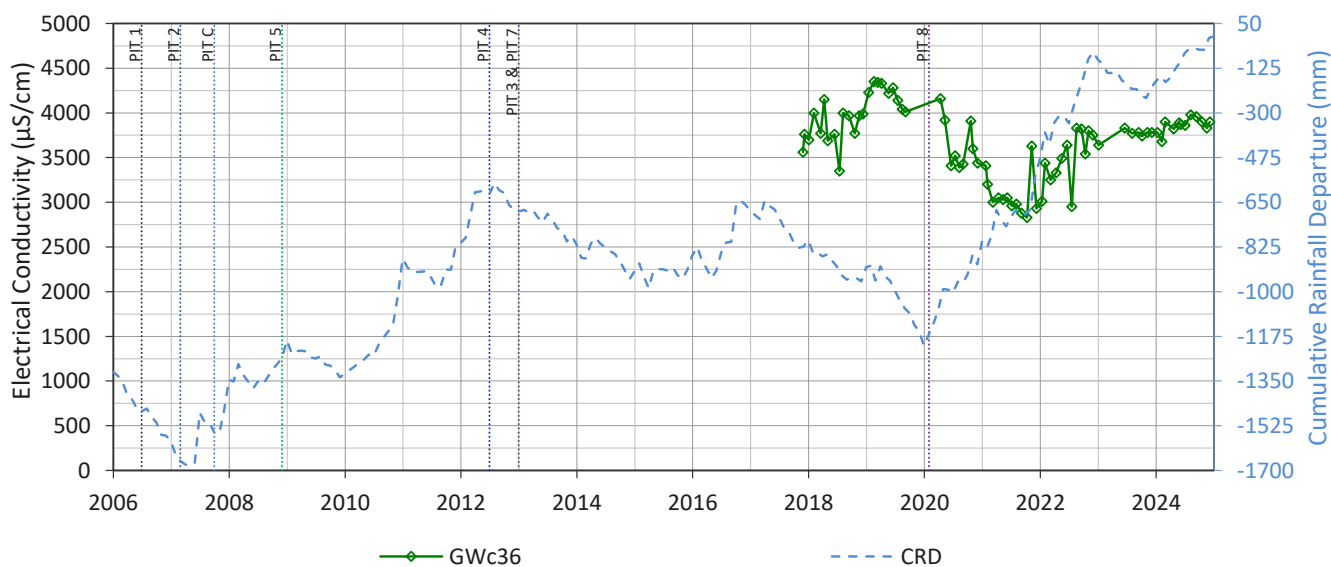
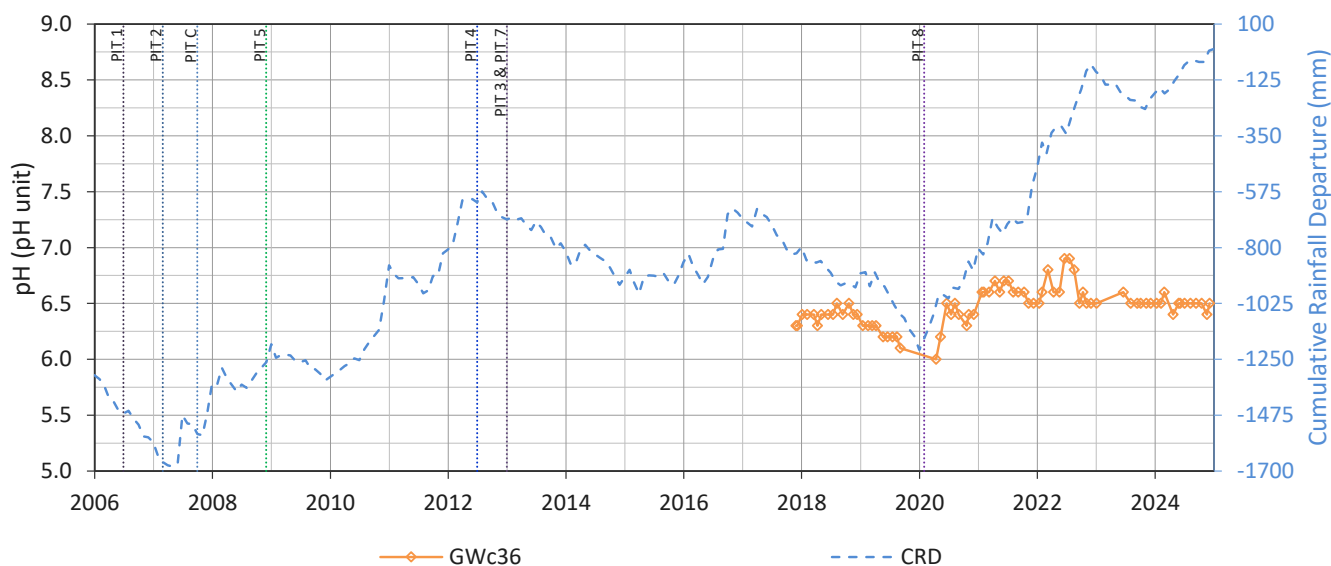
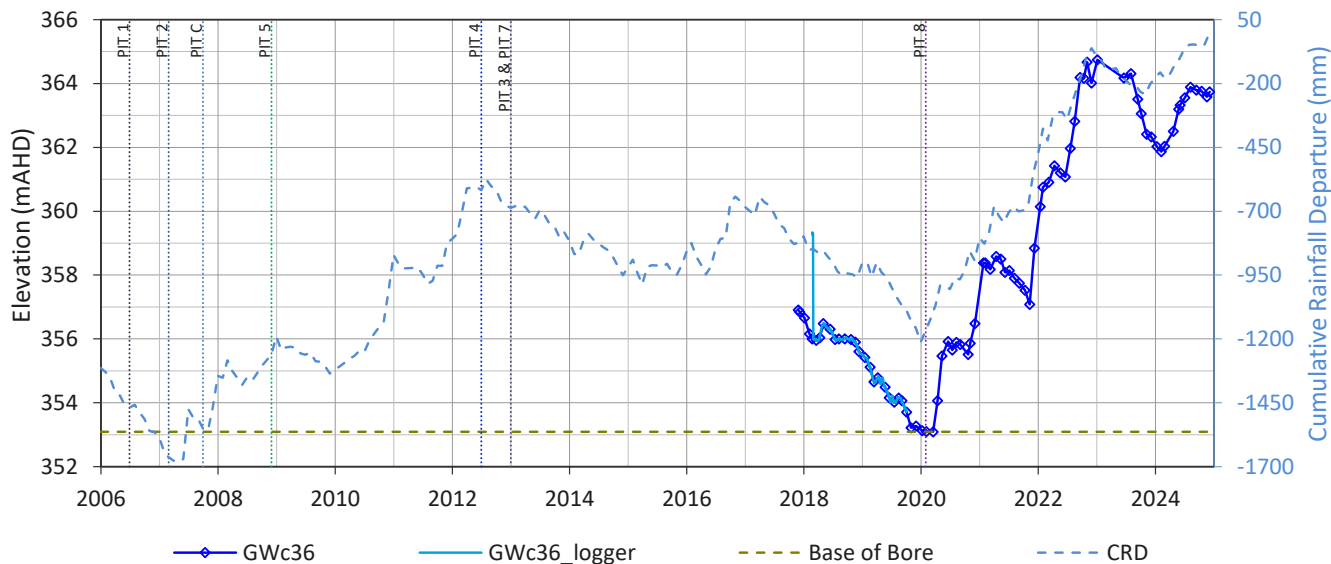


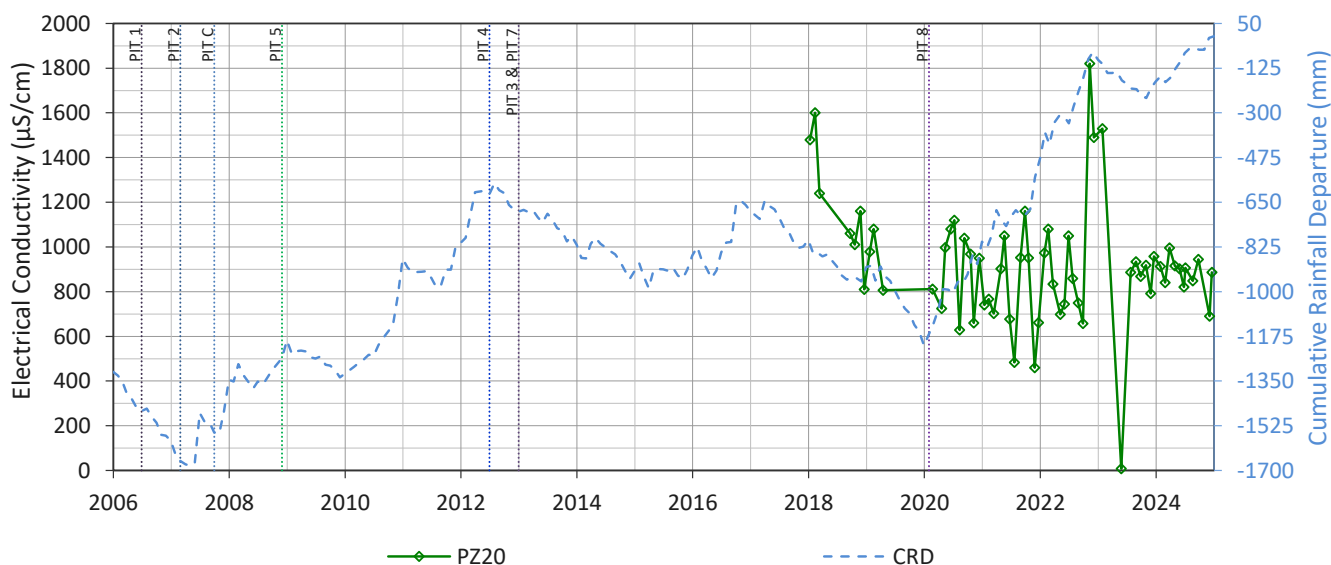
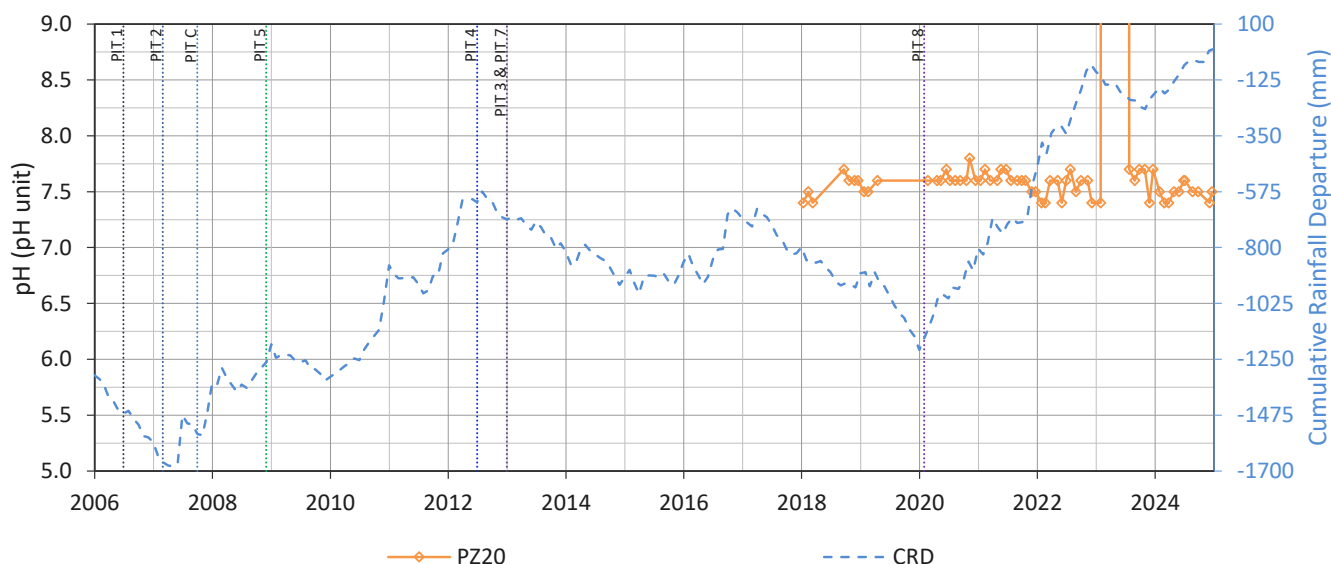
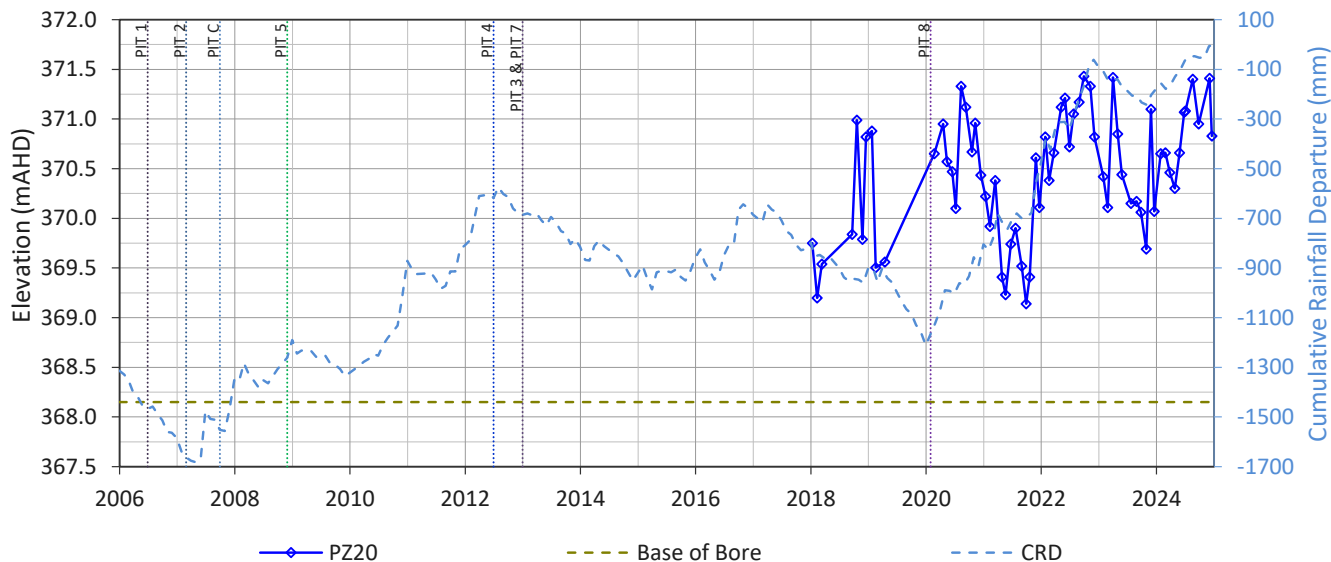


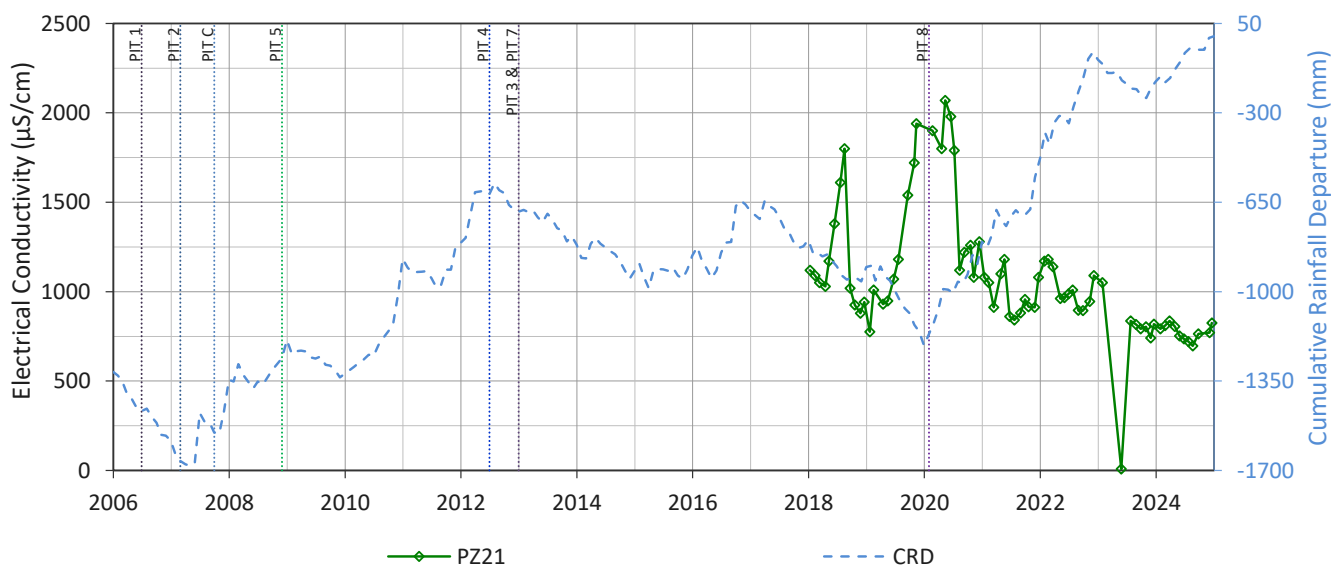
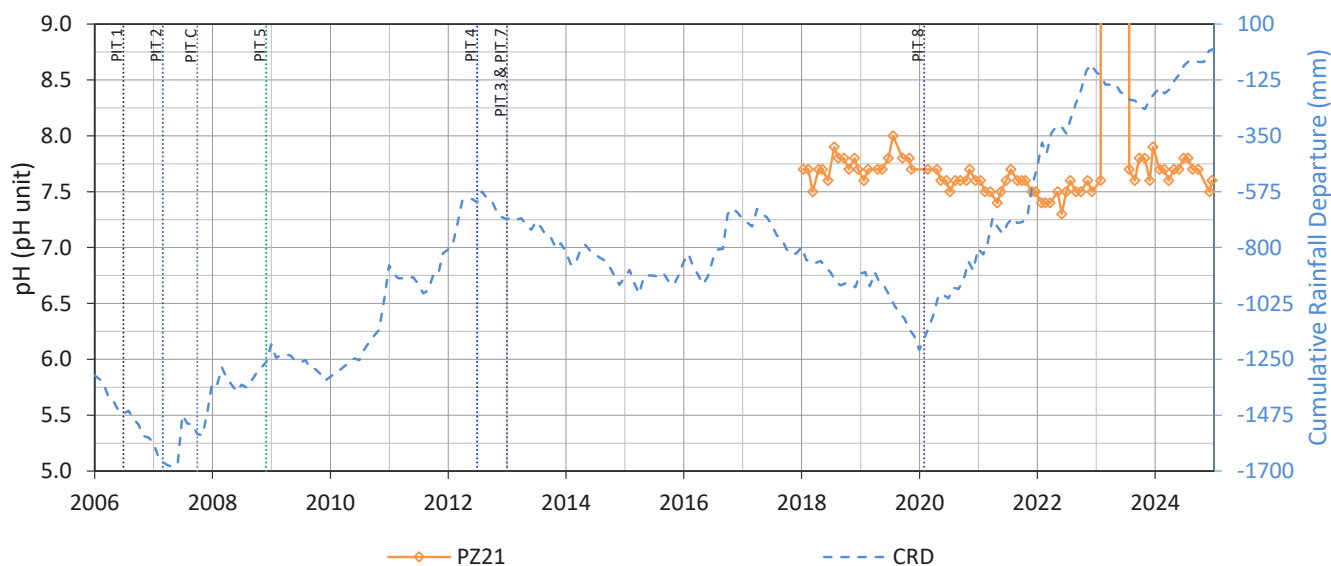
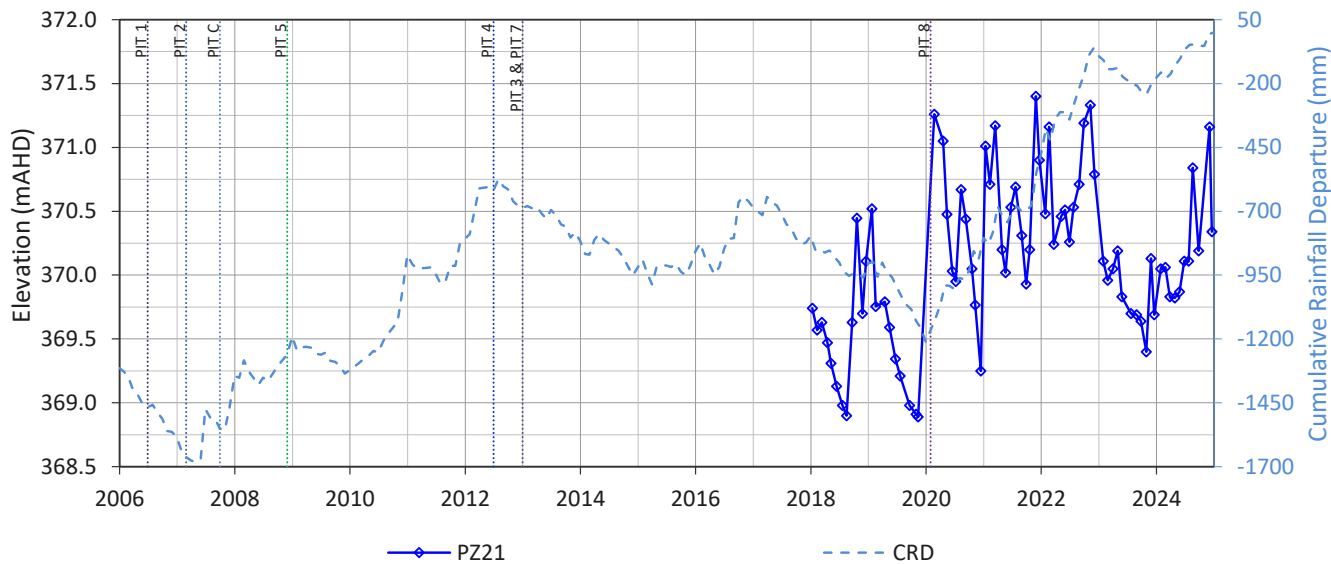


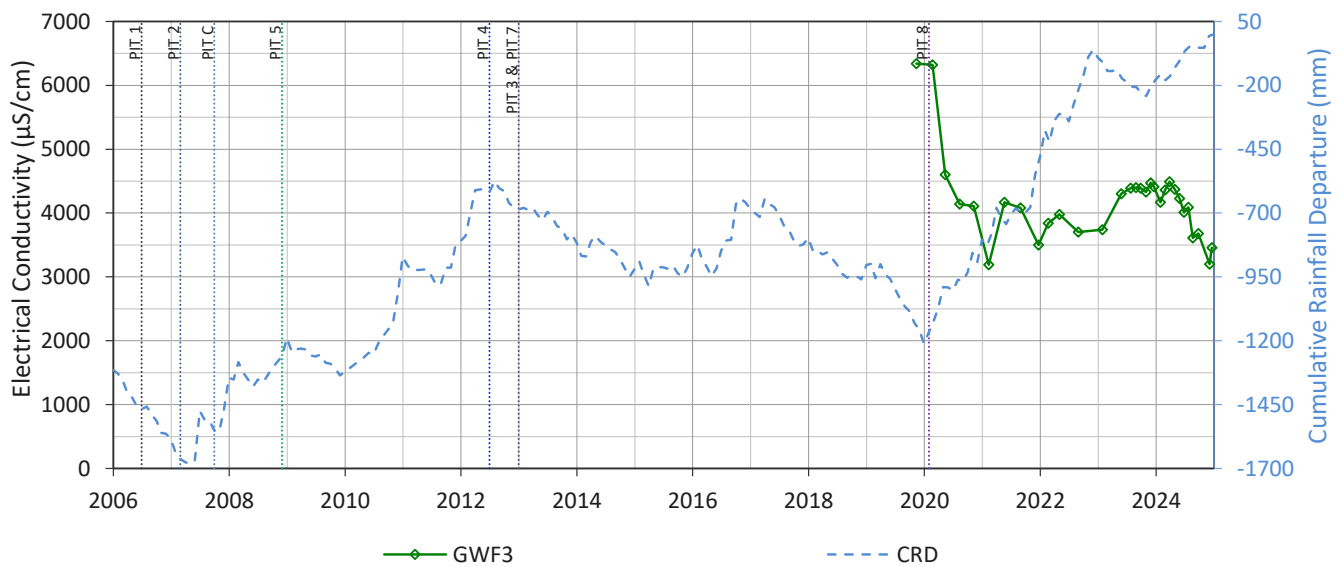
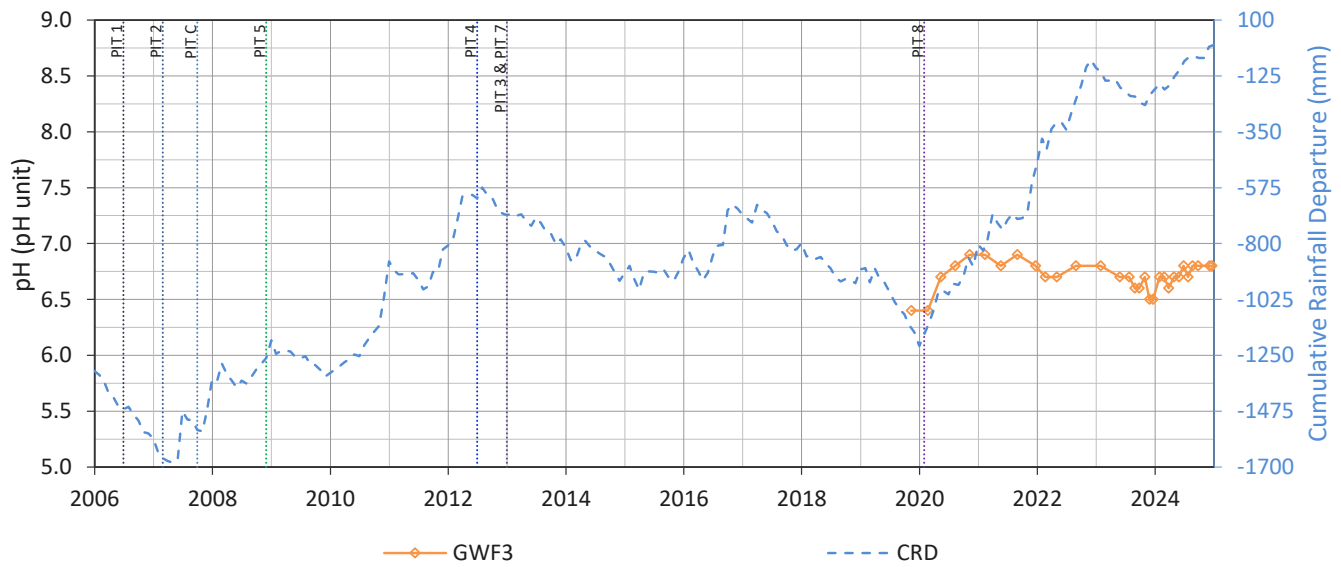
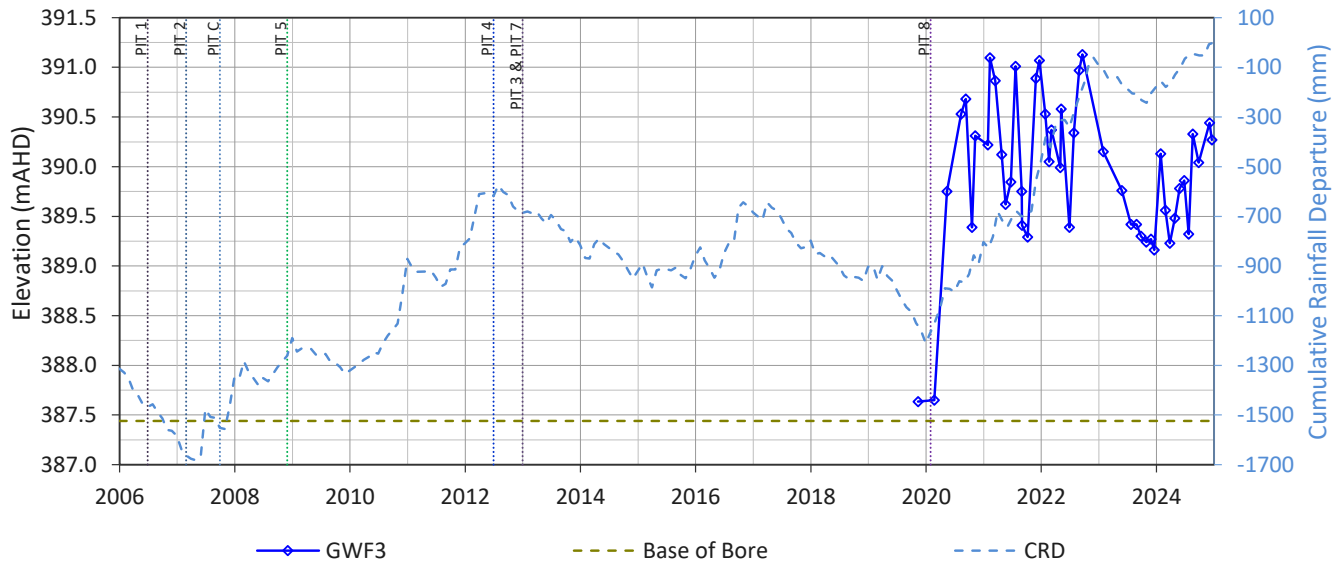


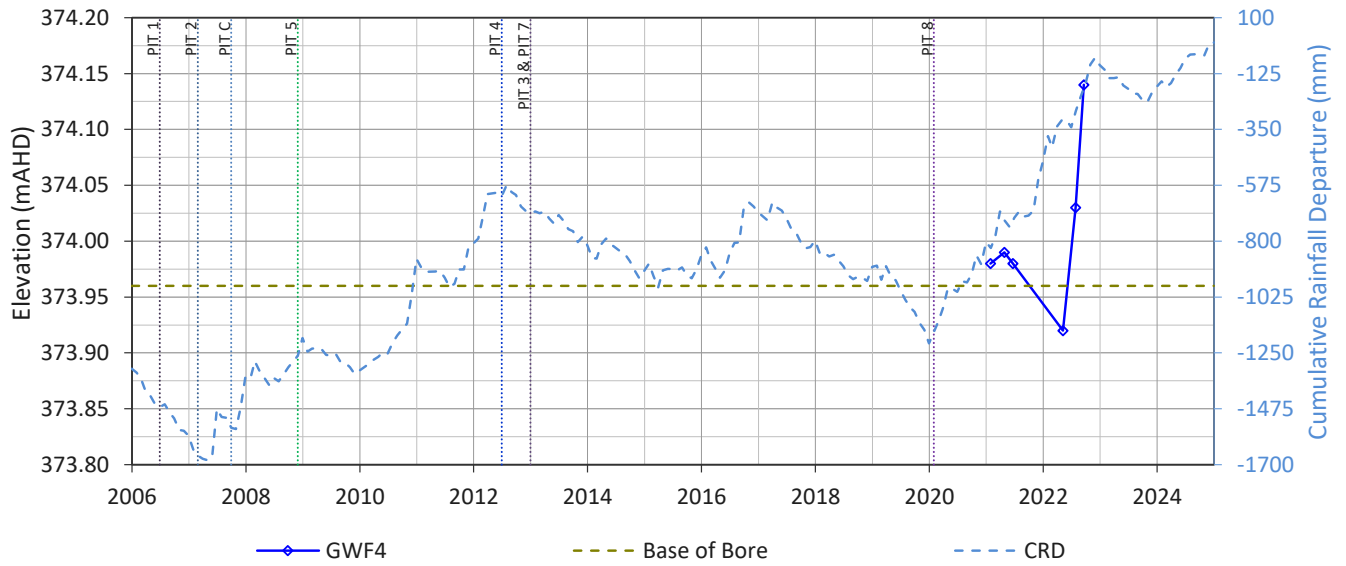












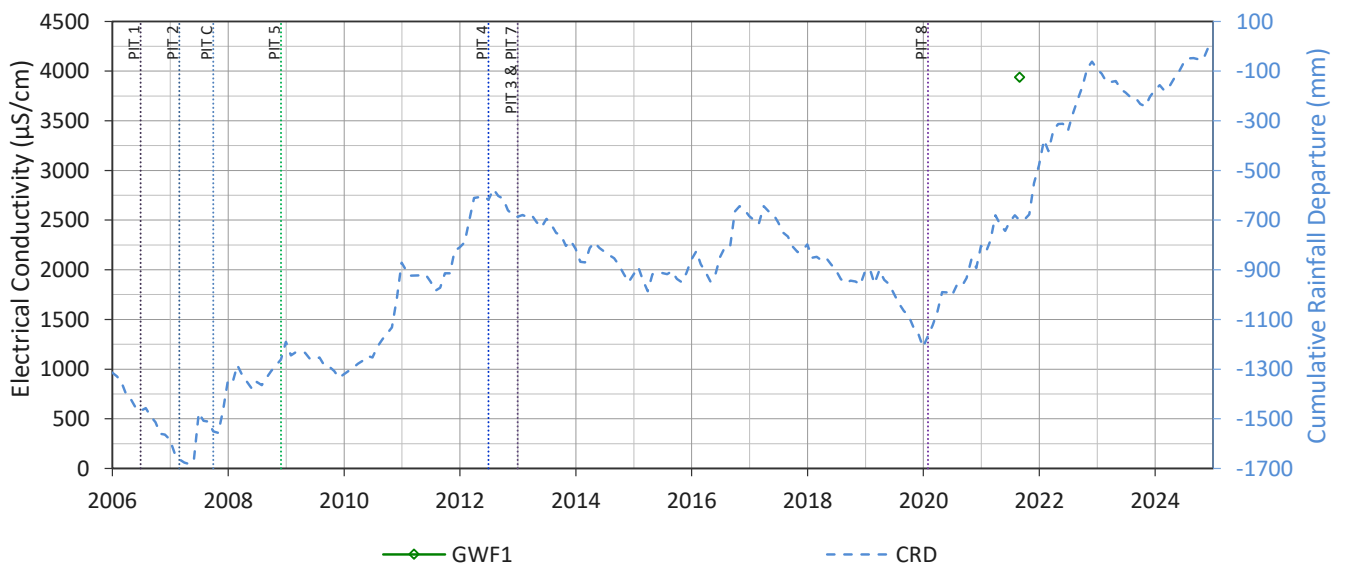
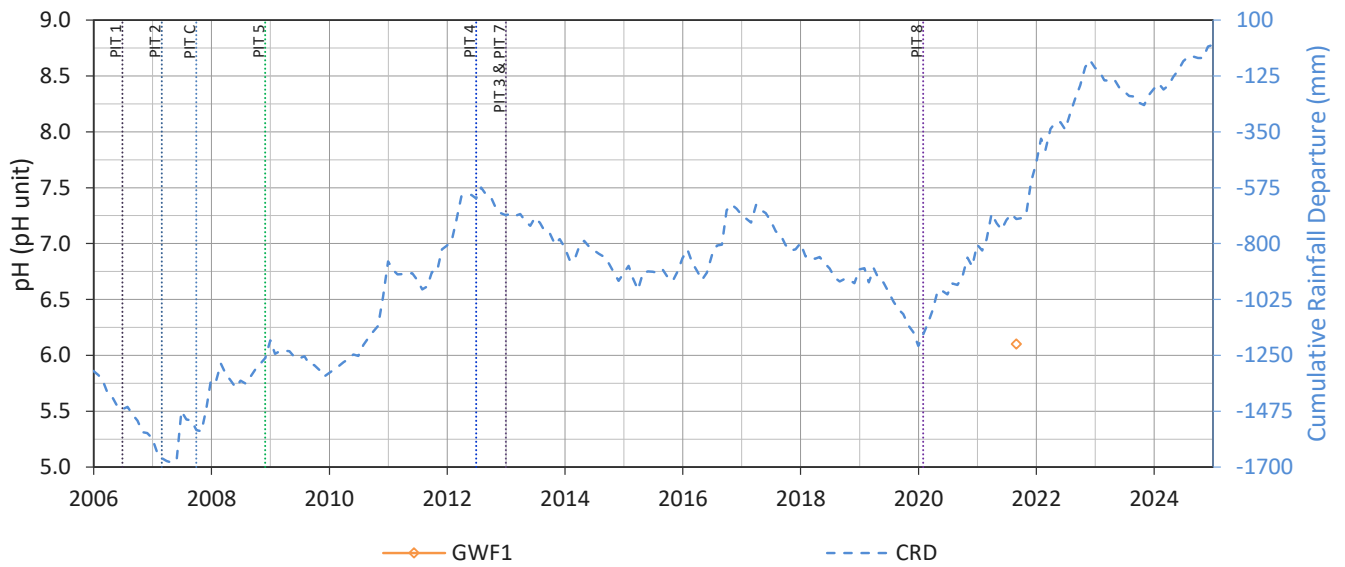
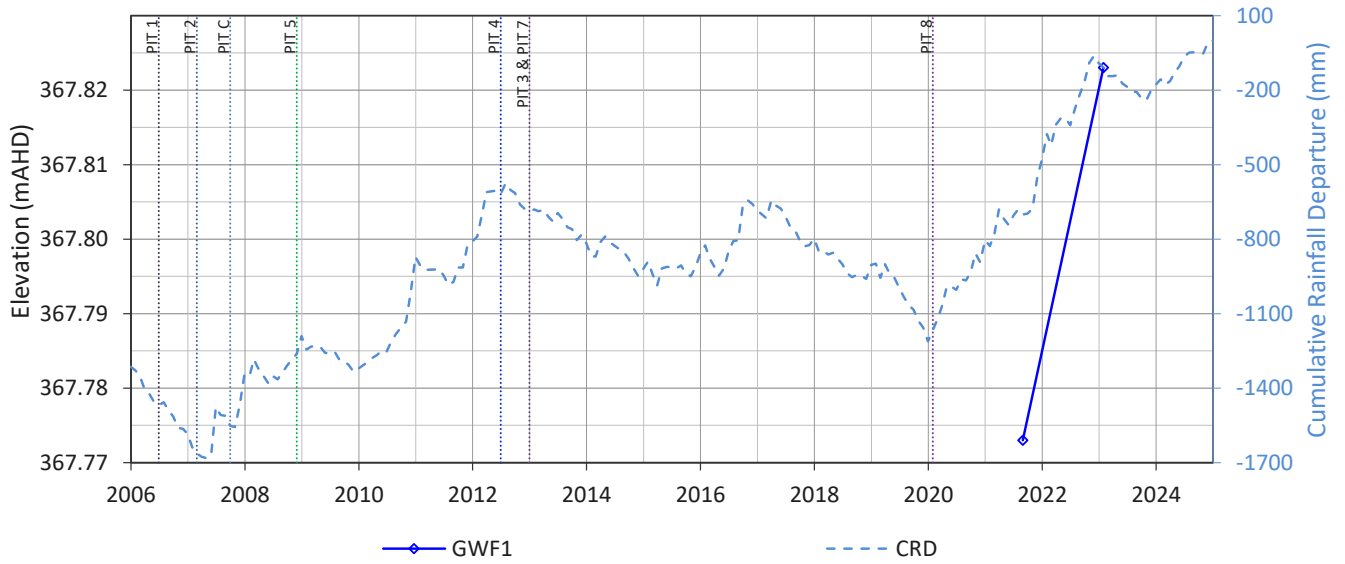
GWF4

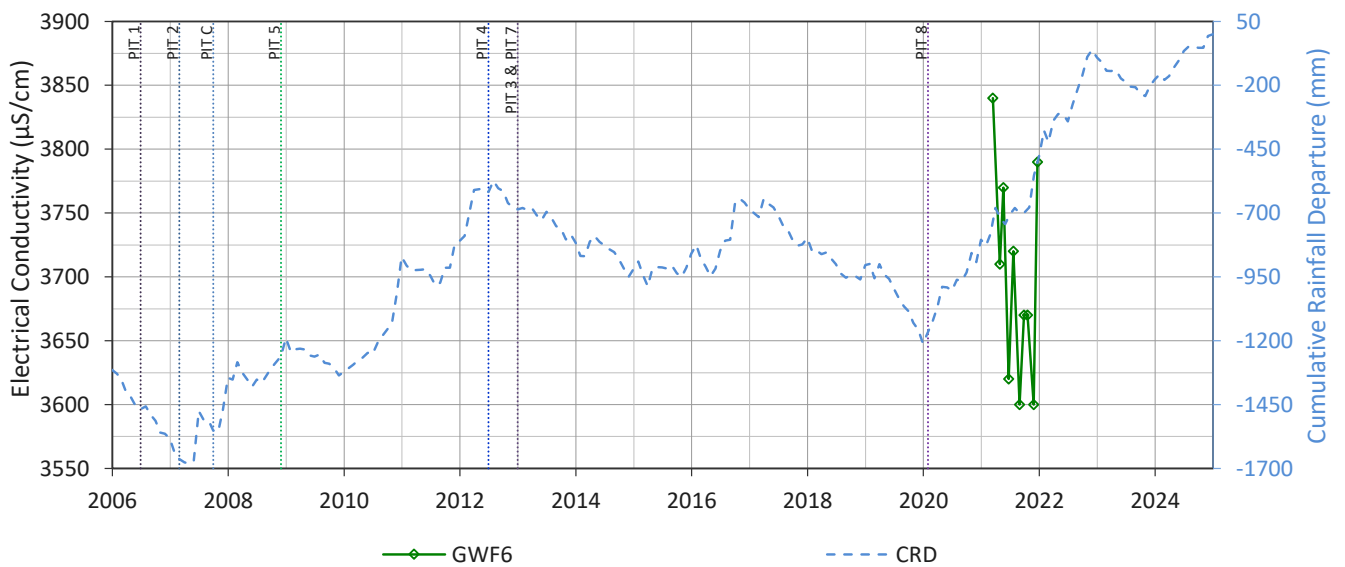
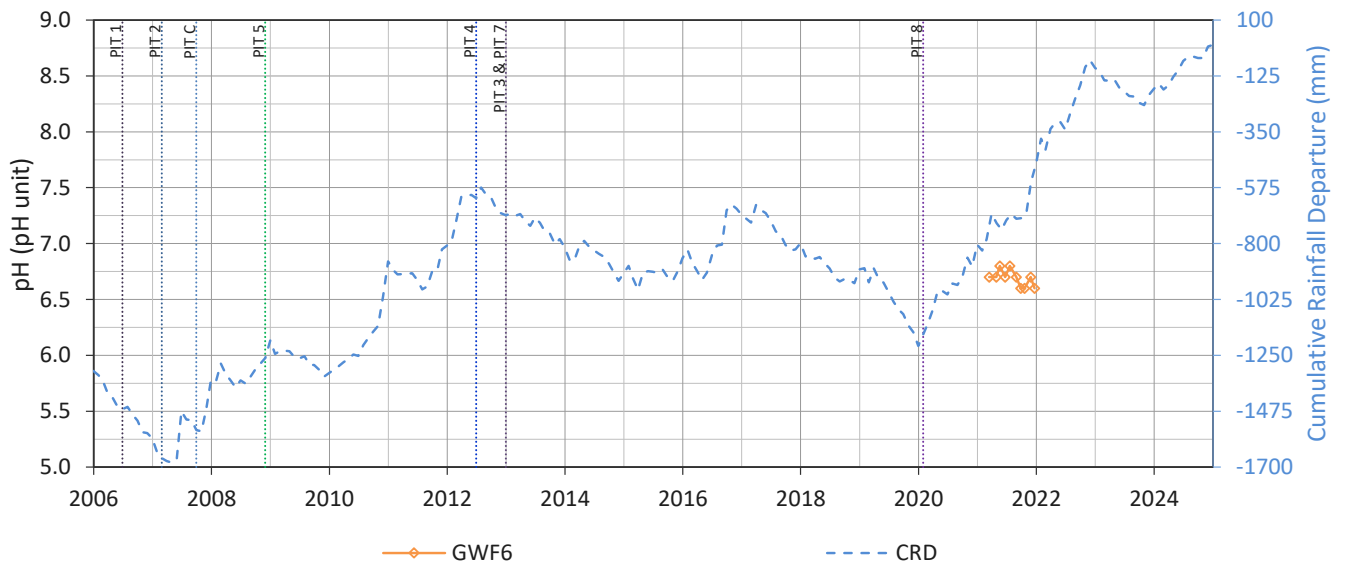
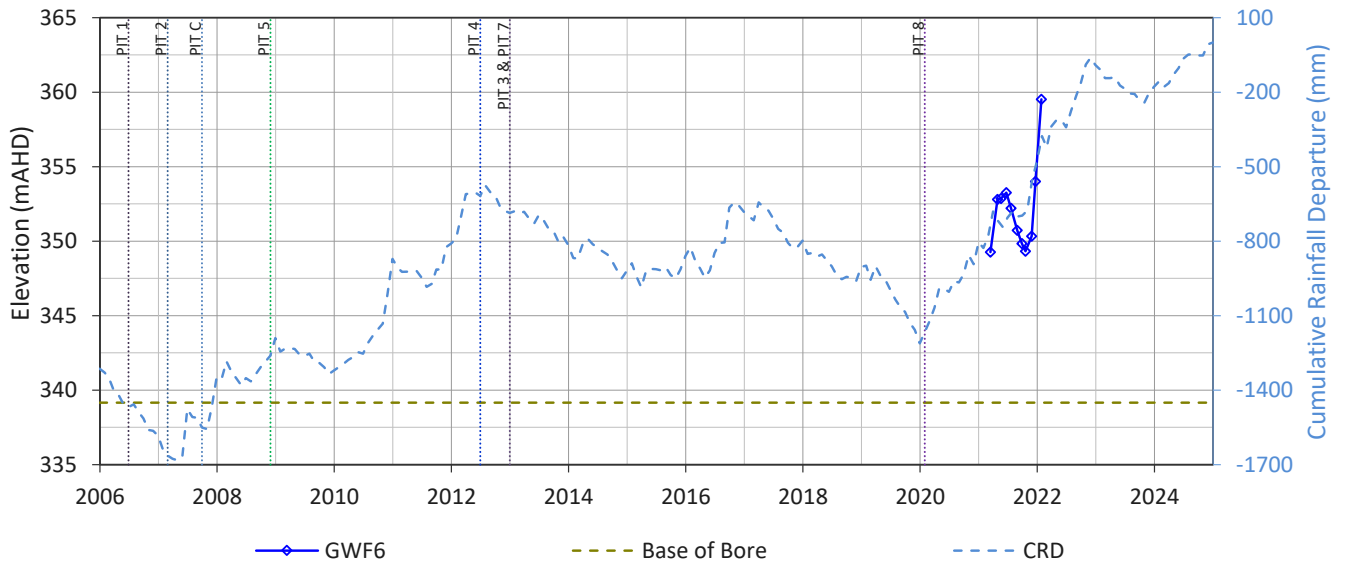
No Data Available for pH (pH unit)

GWF4

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









# Appendix C Metal Species and Major Ion Charts

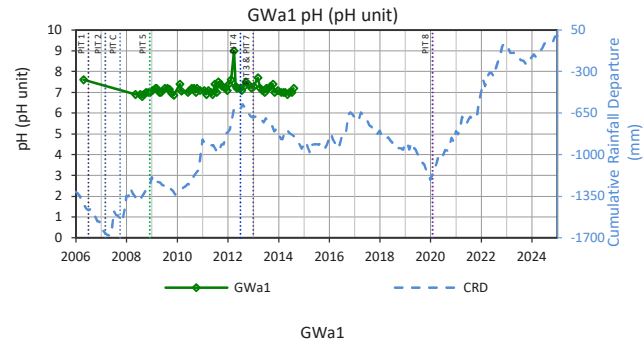
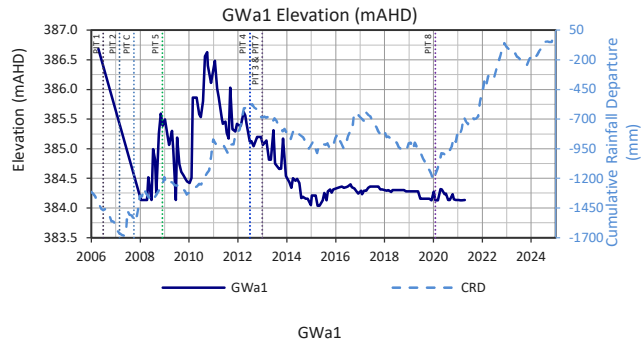
**Annual Review – Wilpinjong Coal Mine Annual Review –  
Wilpinjong Coal Mine**

**2024 Groundwater Compliance**

**Wilpinjong Coal Mine**

SLR Project No.: 665.v10014.02417

13 February 2025



GWA1

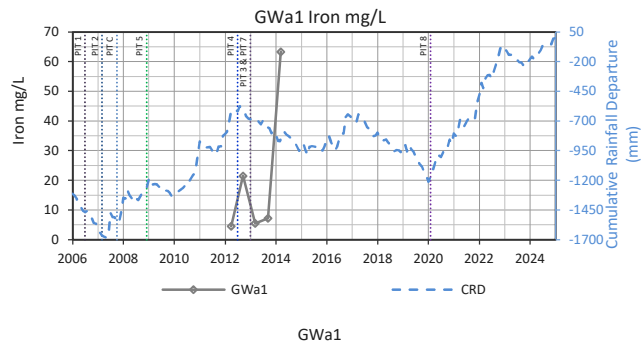
No Data Available for Aluminium mg/L

GWA1

No Data Available for Arsenic mg/L

No Data Available for Barium mg/L

No Data Available for Copper mg/L



GWA1

No Data Available for Lead mg/L

GWA1

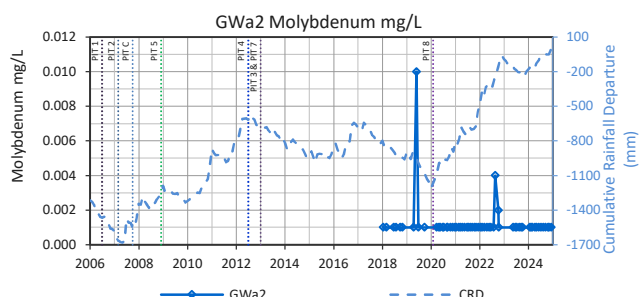
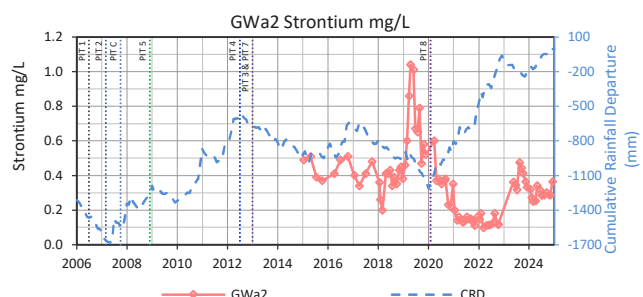
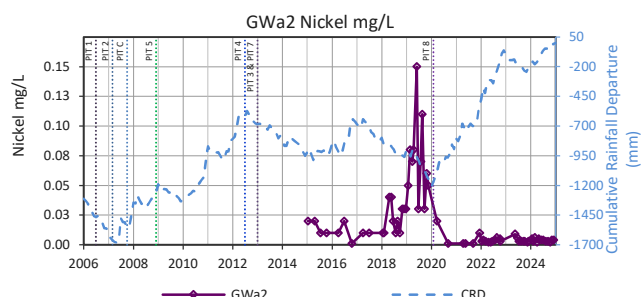
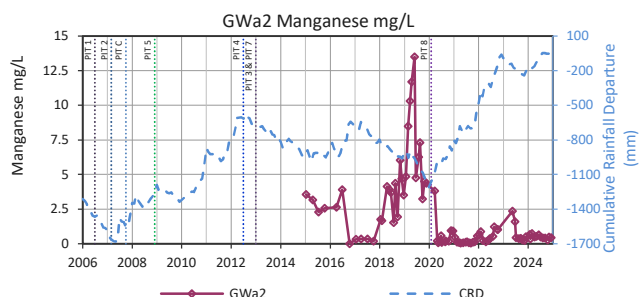
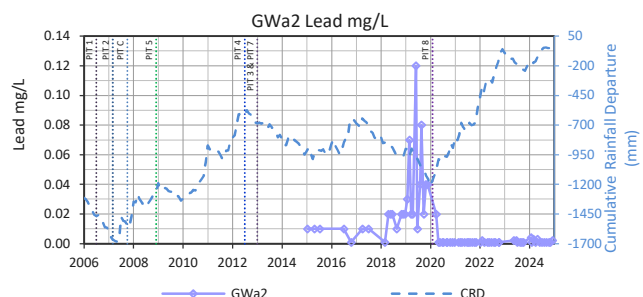
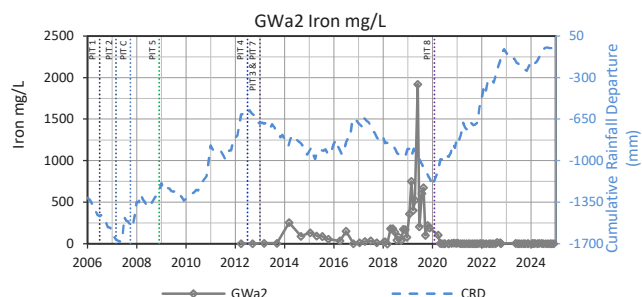
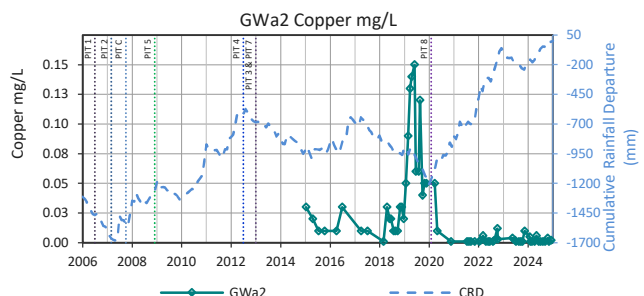
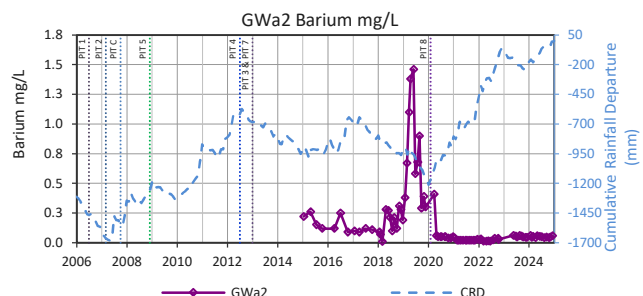
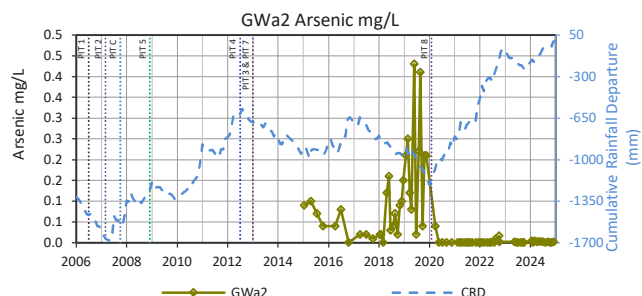
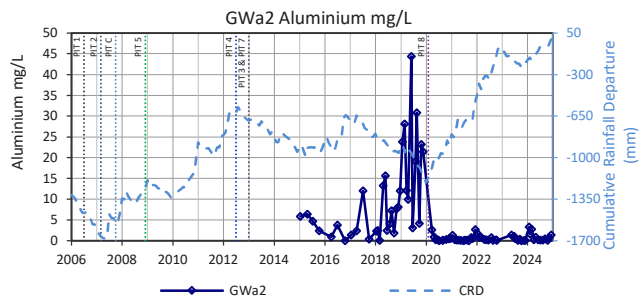
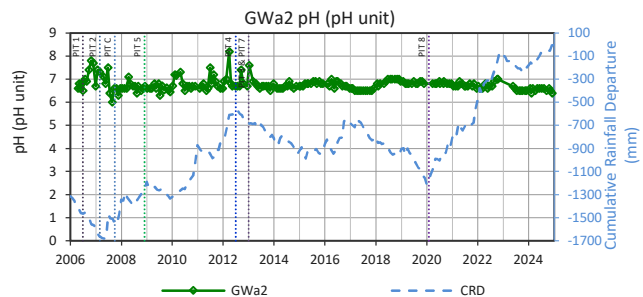
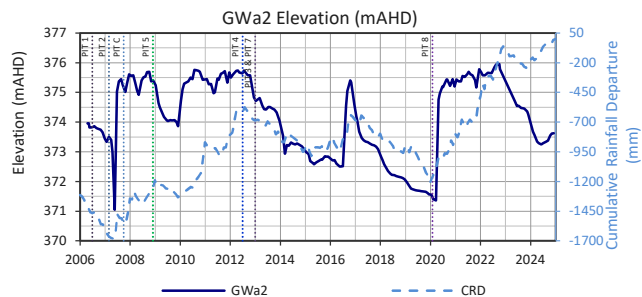
No Data Available for Manganese mg/L

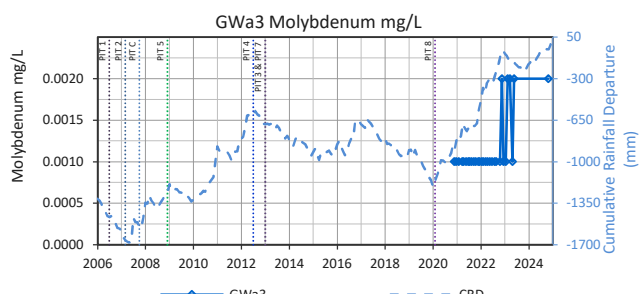
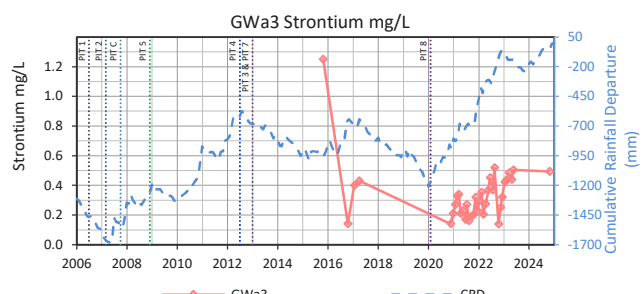
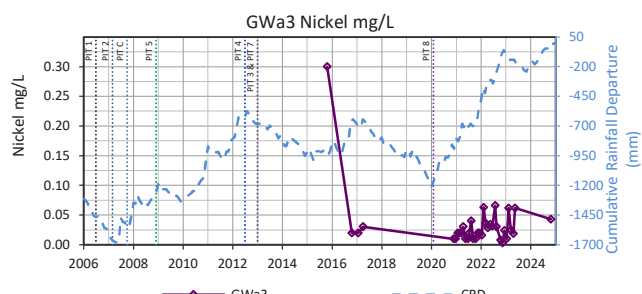
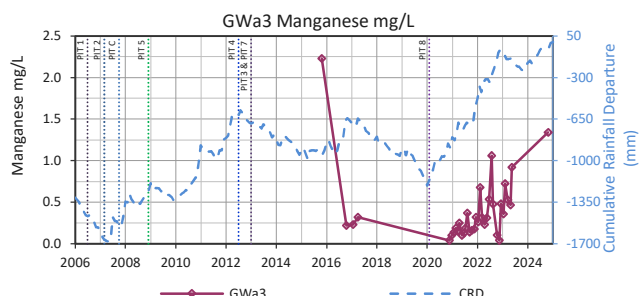
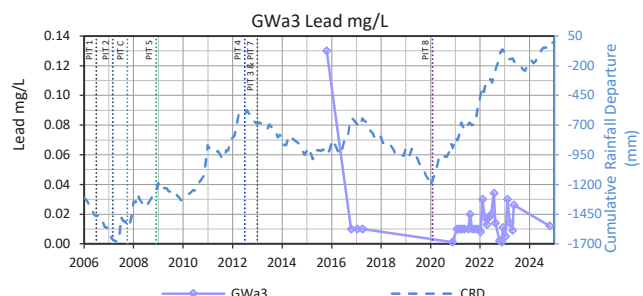
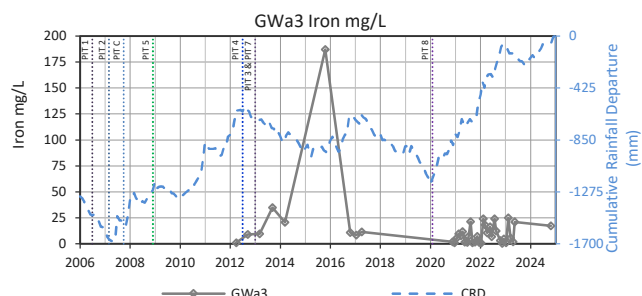
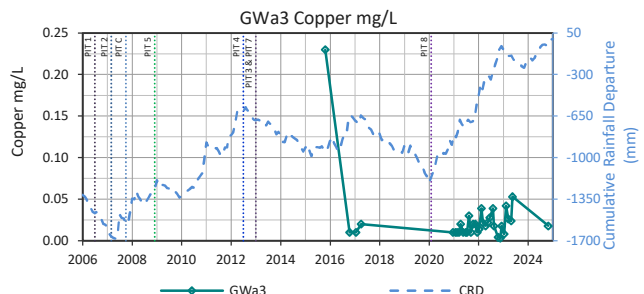
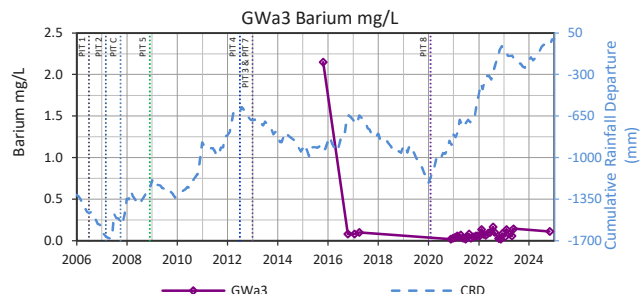
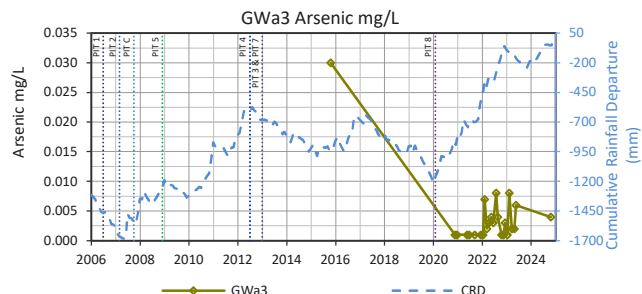
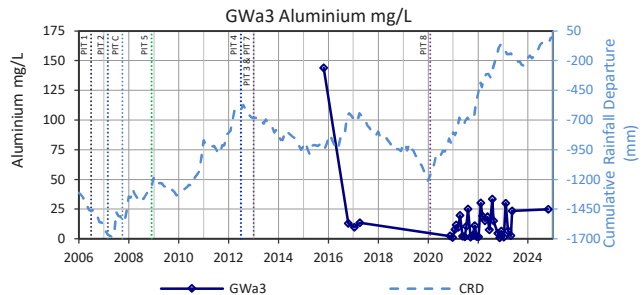
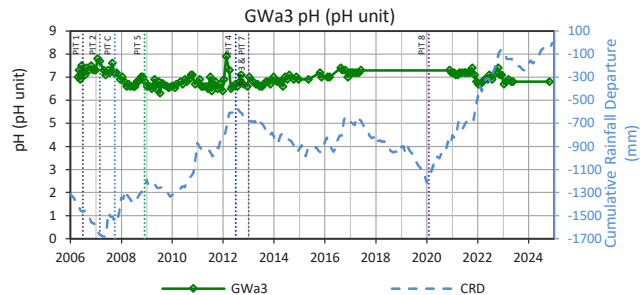
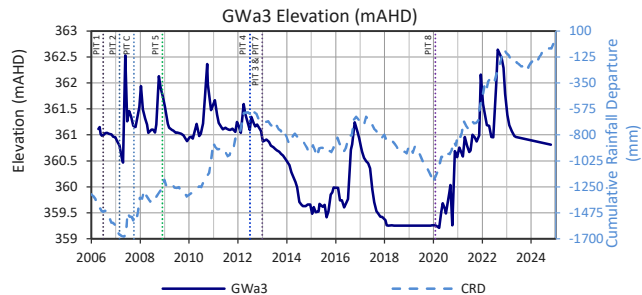
GWA1

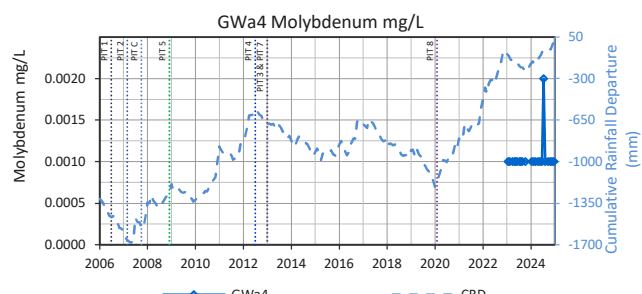
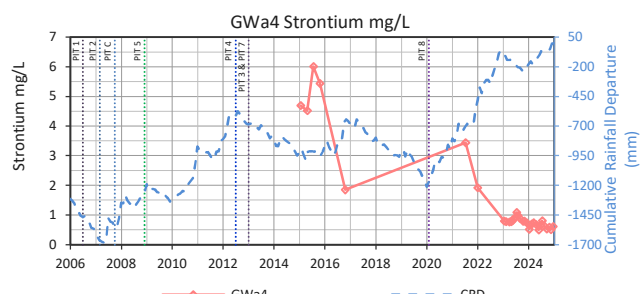
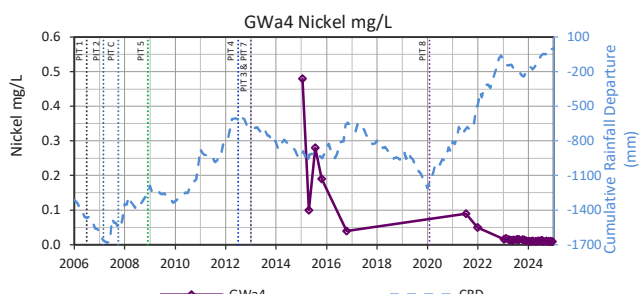
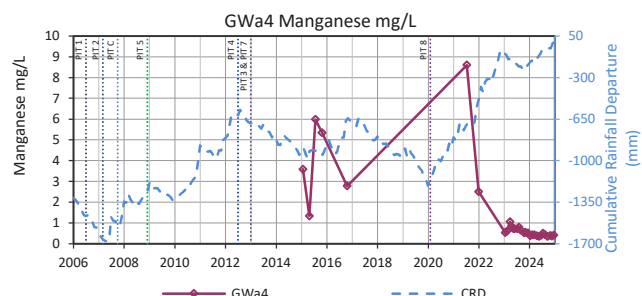
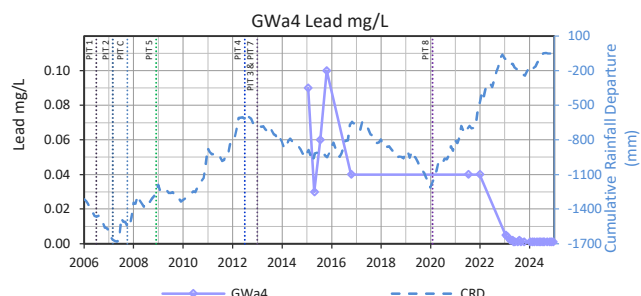
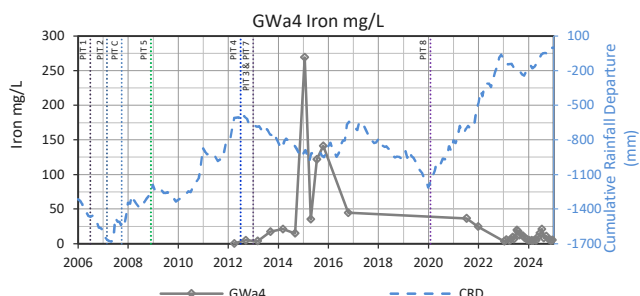
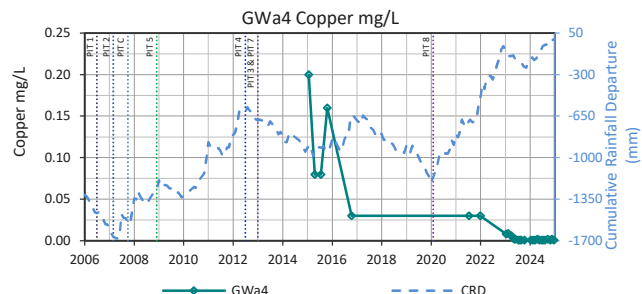
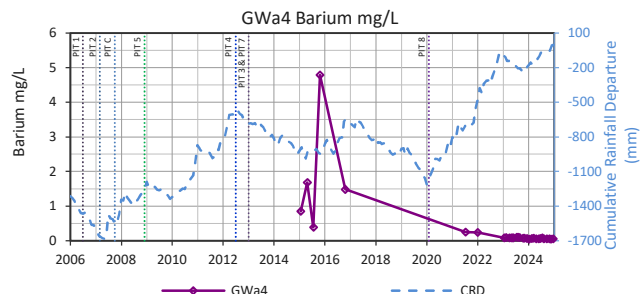
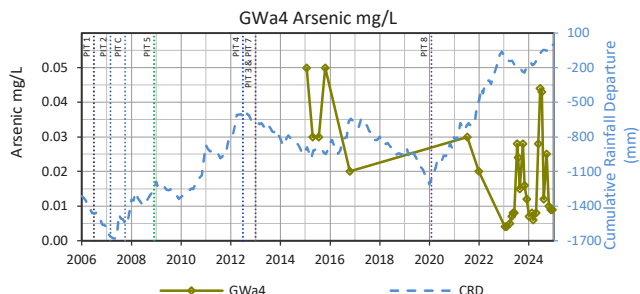
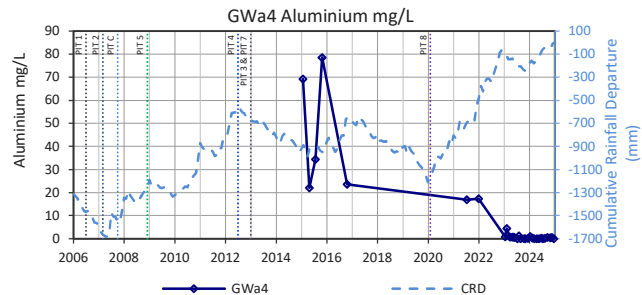
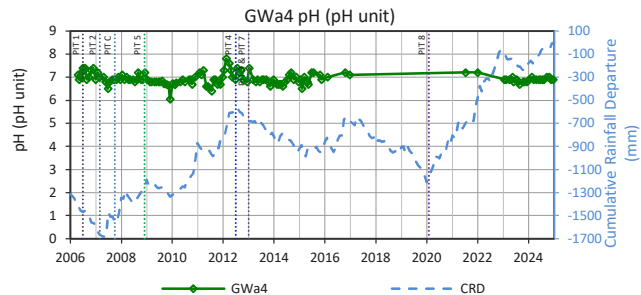
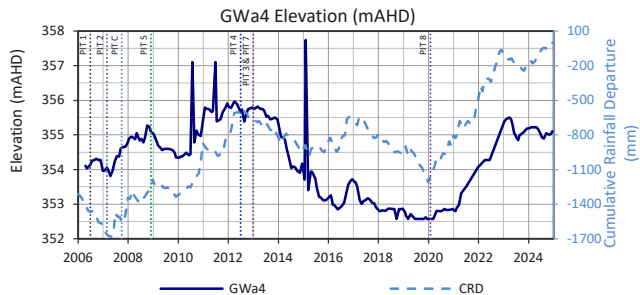
No Data Available for Nickel mg/L

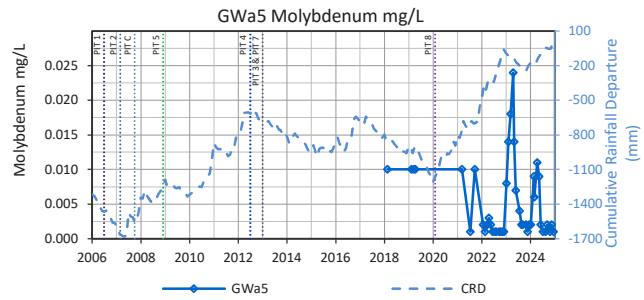
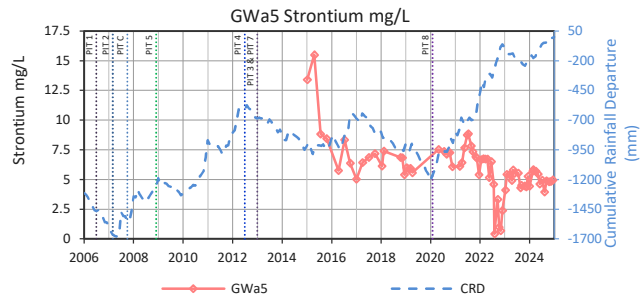
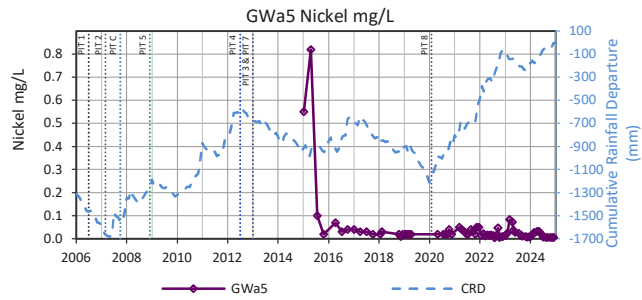
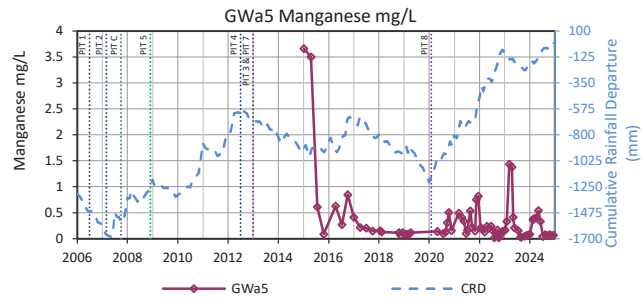
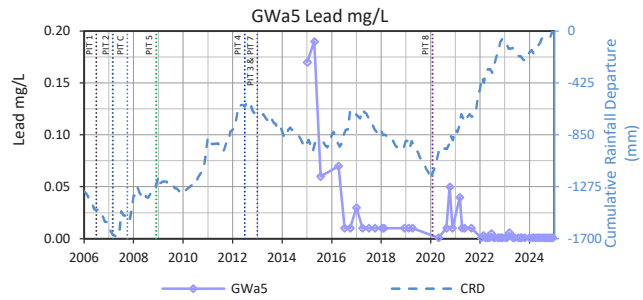
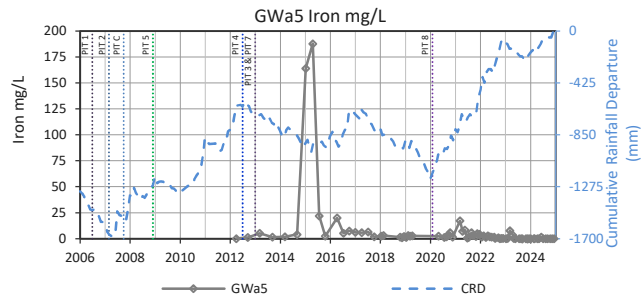
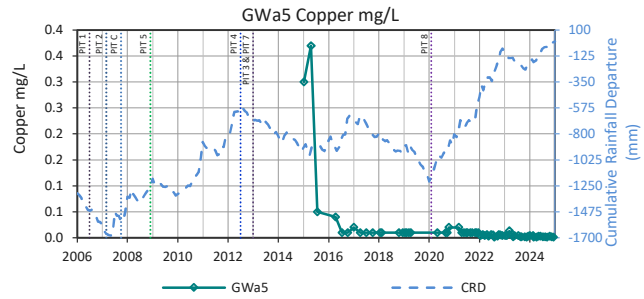
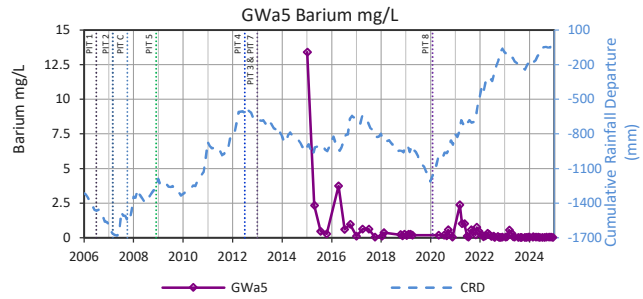
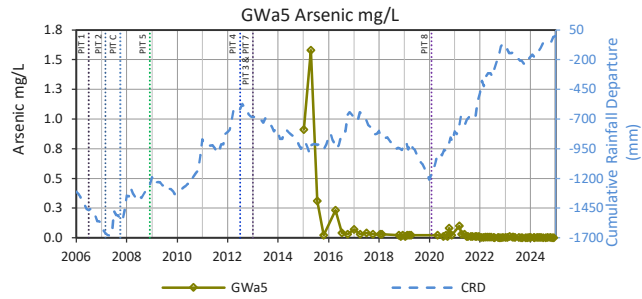
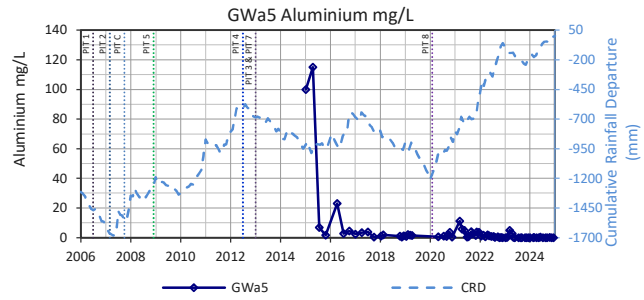
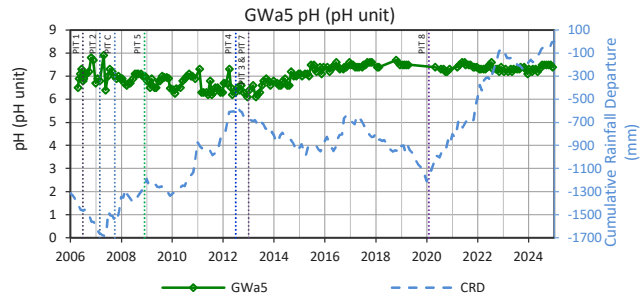
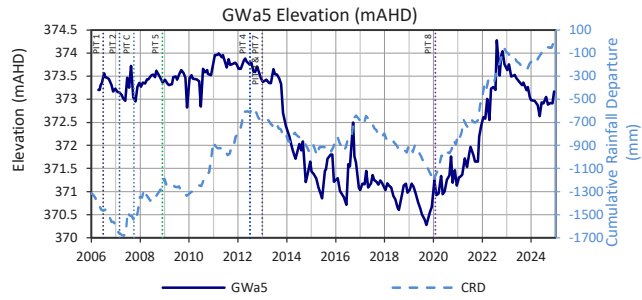
No Data Available for Strontium mg/L

No Data Available for Molybdenum mg/L

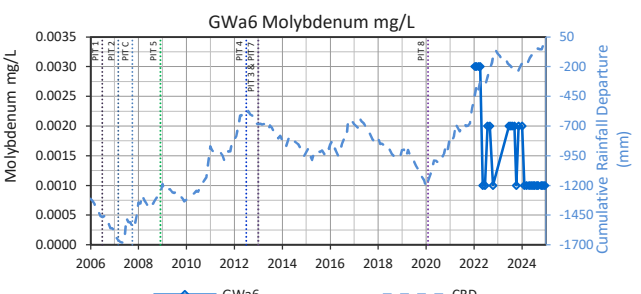
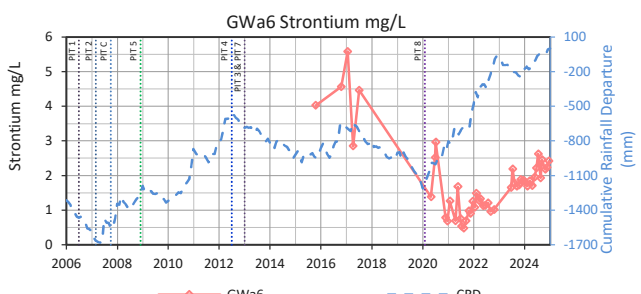
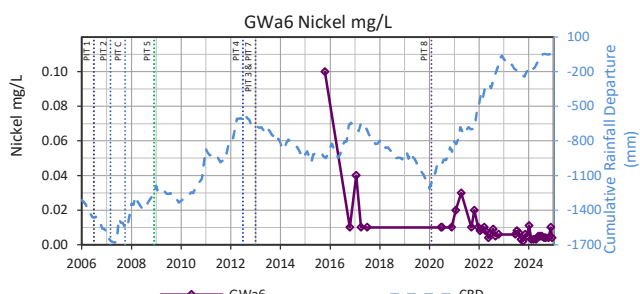
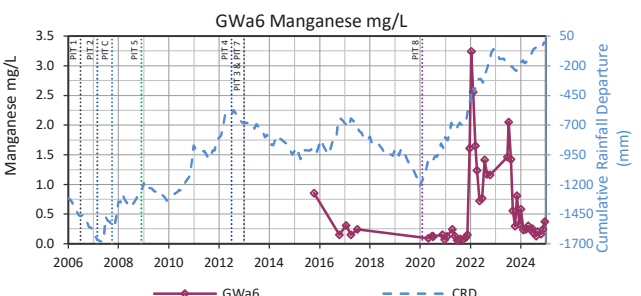
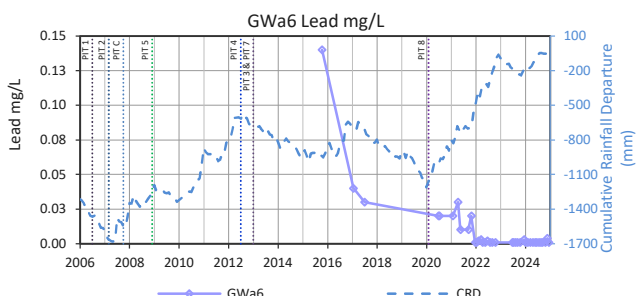
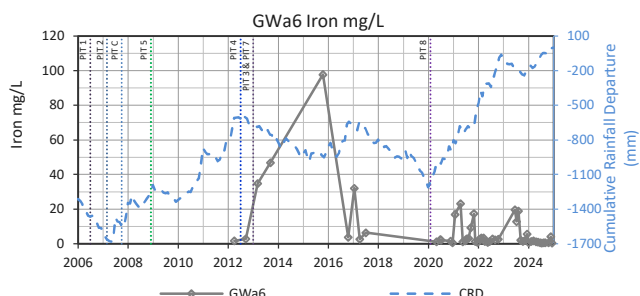
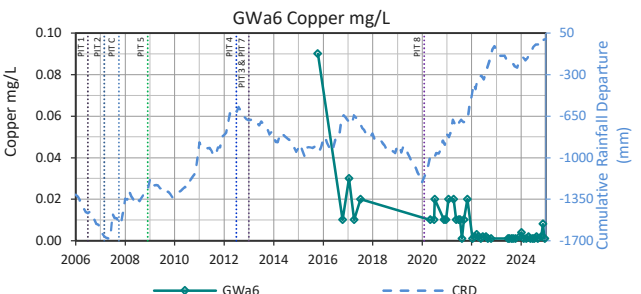
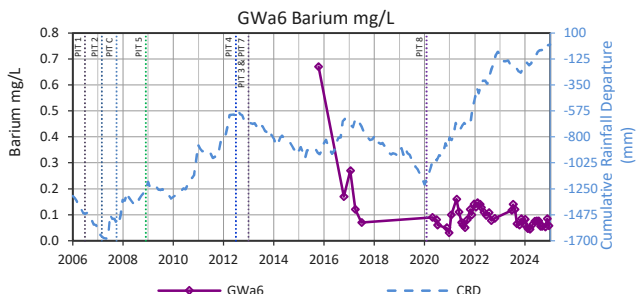
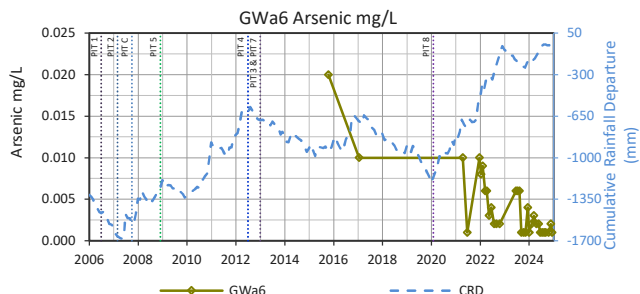
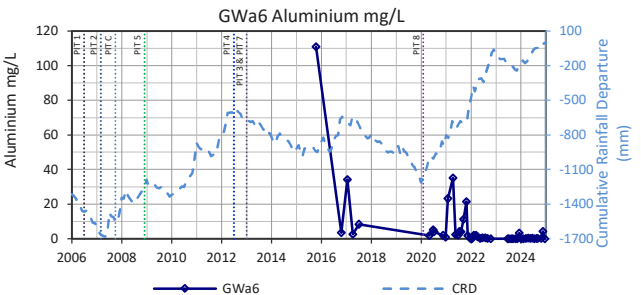
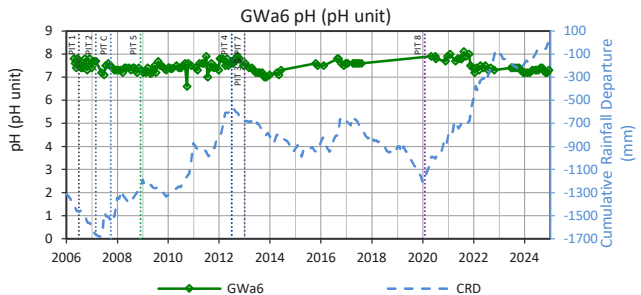
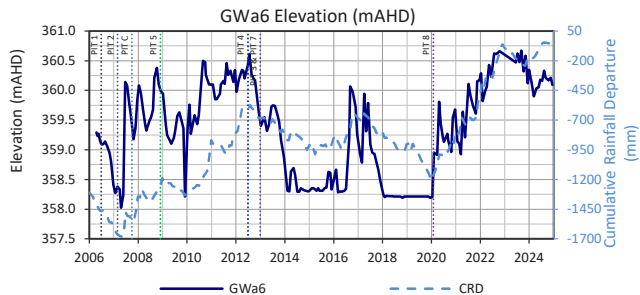


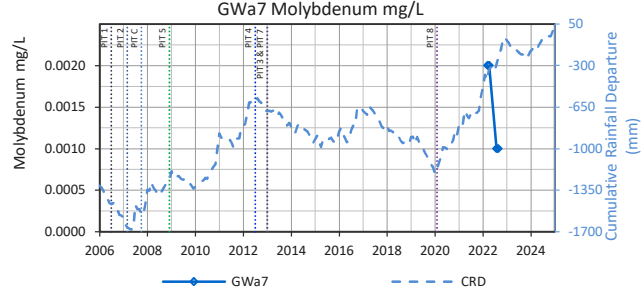
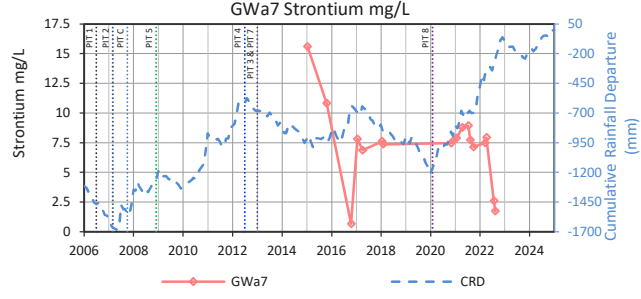
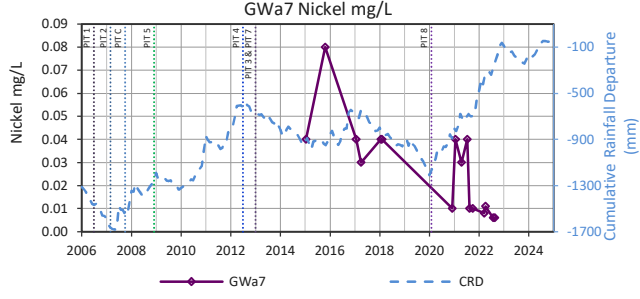
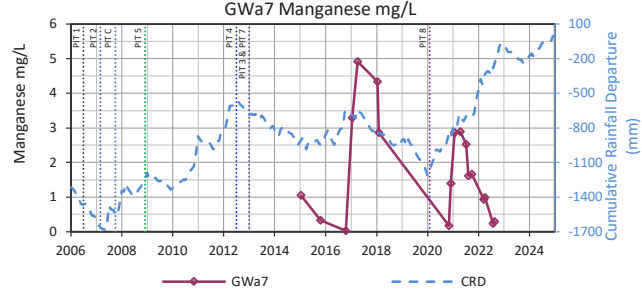
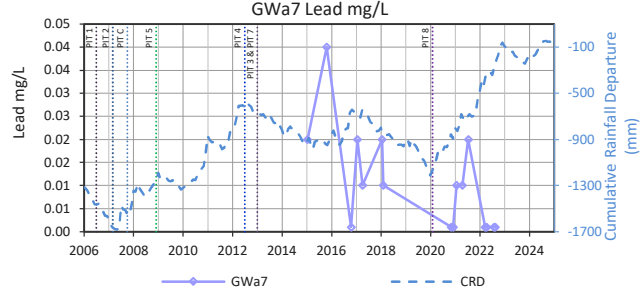
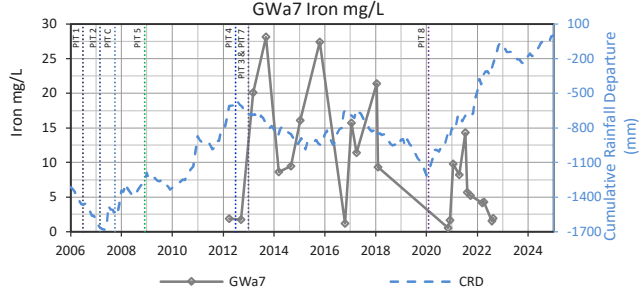
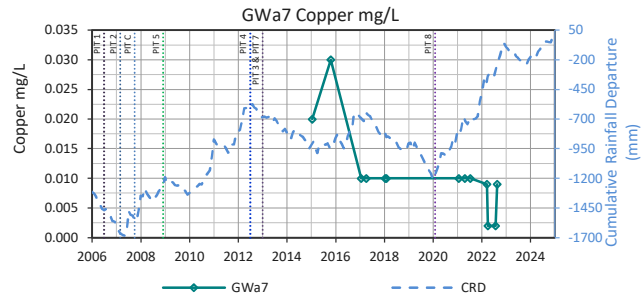
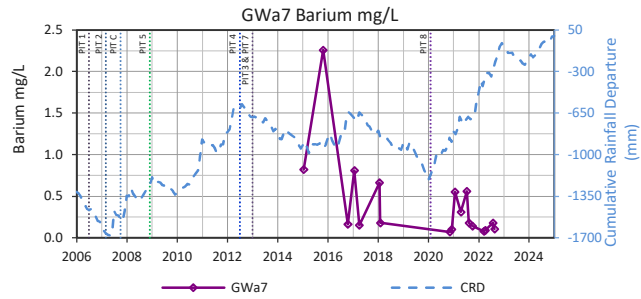
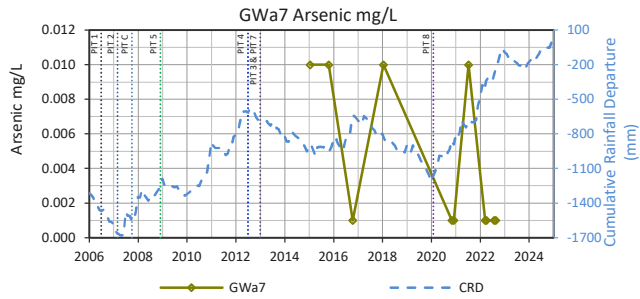
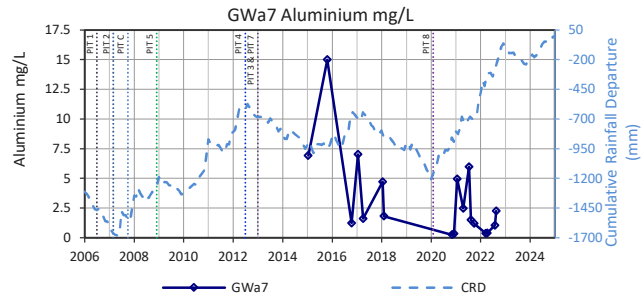
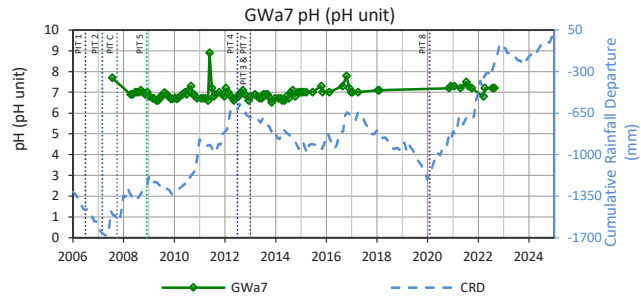
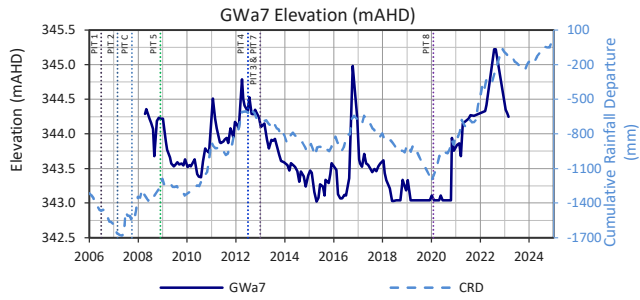


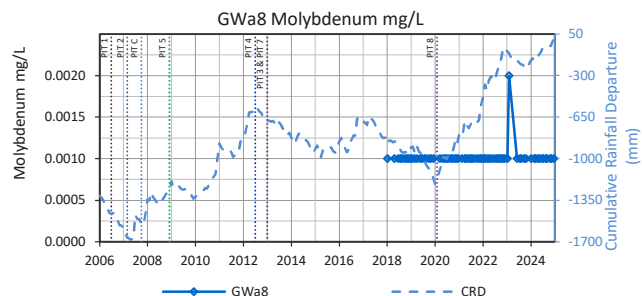
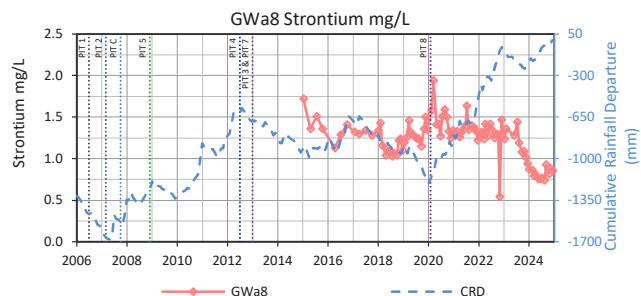
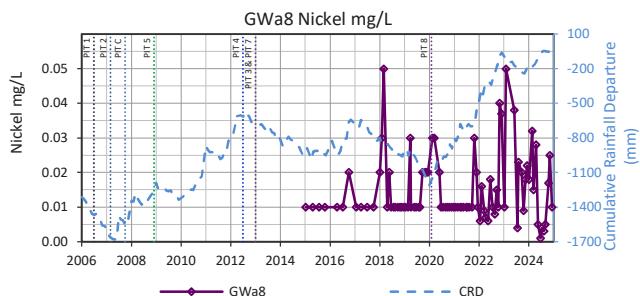
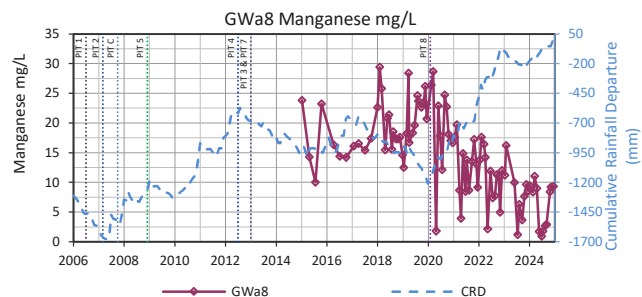
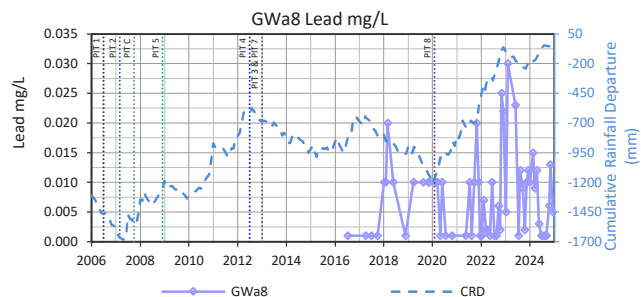
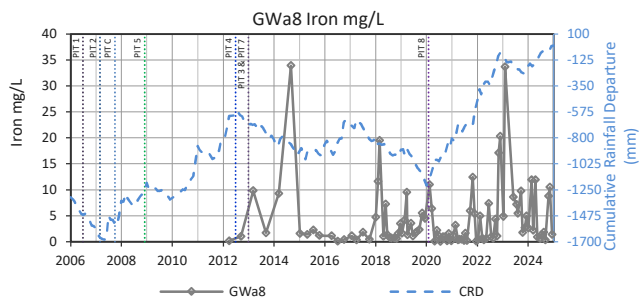
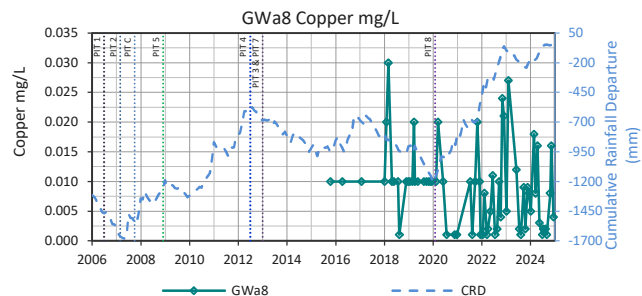
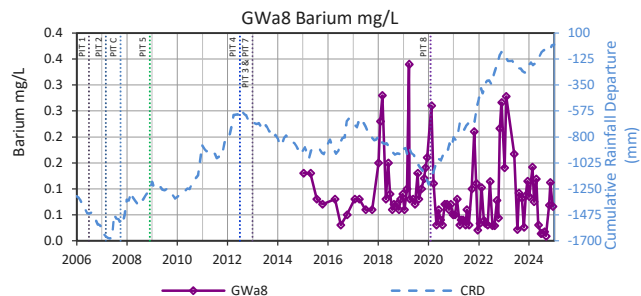
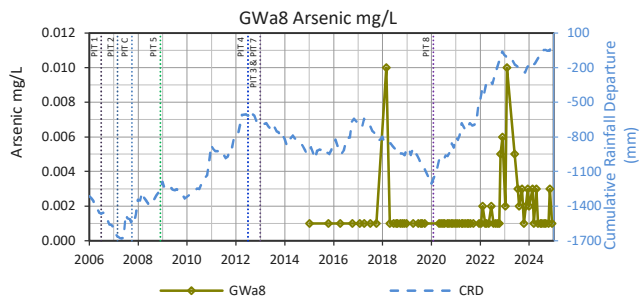
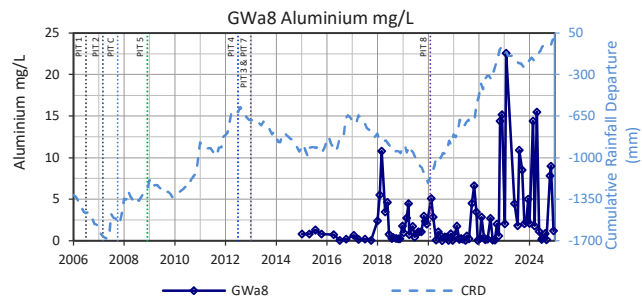
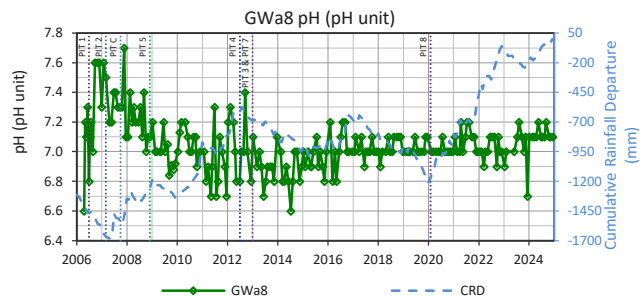
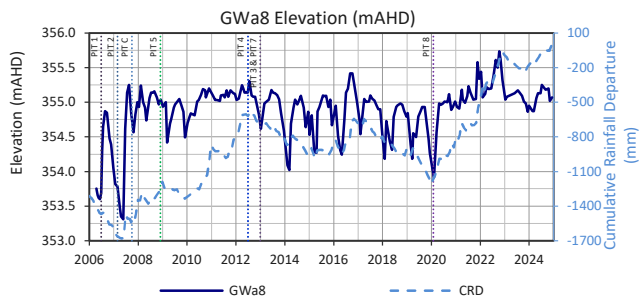


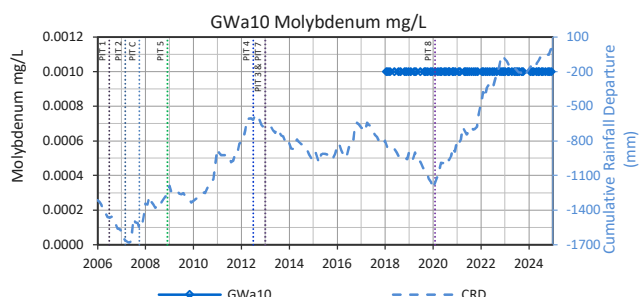
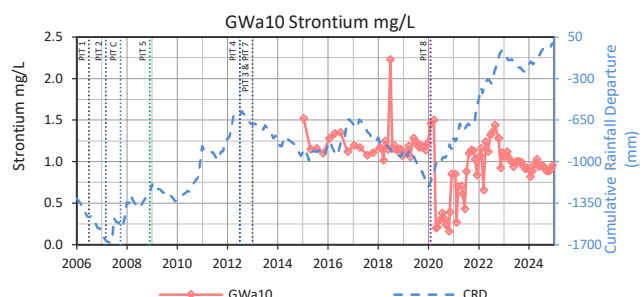
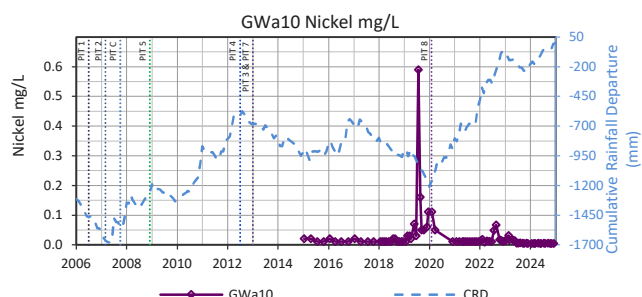
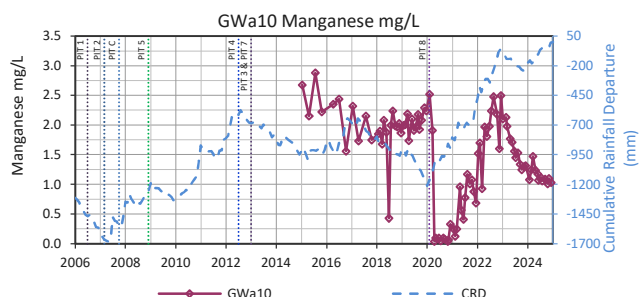
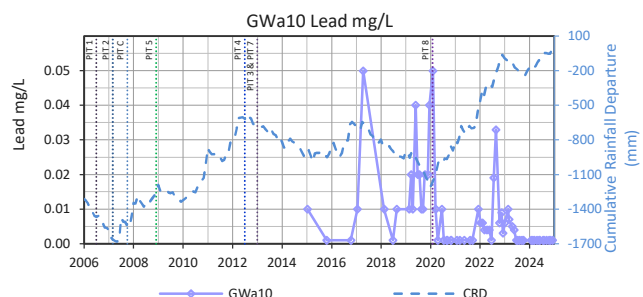
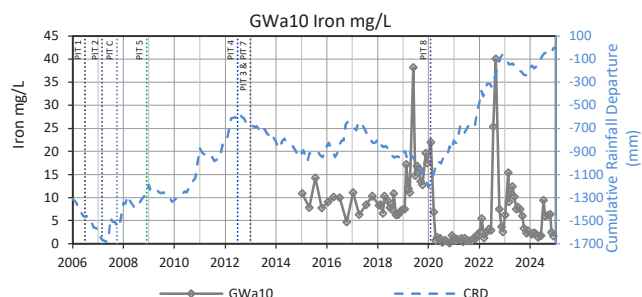
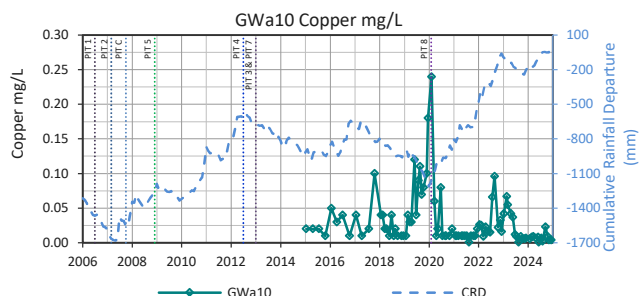
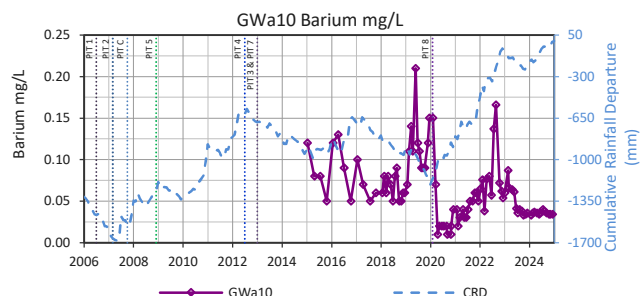
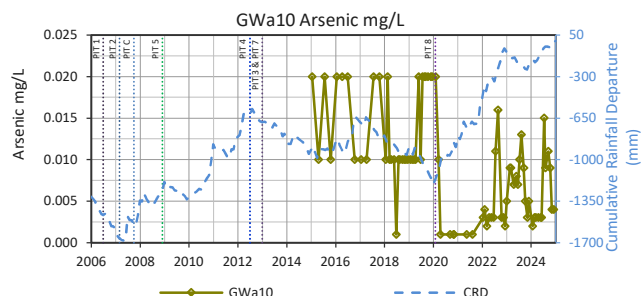
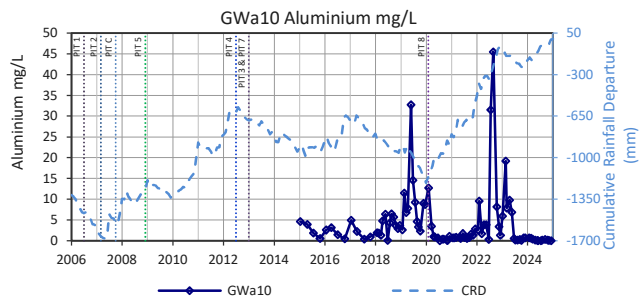
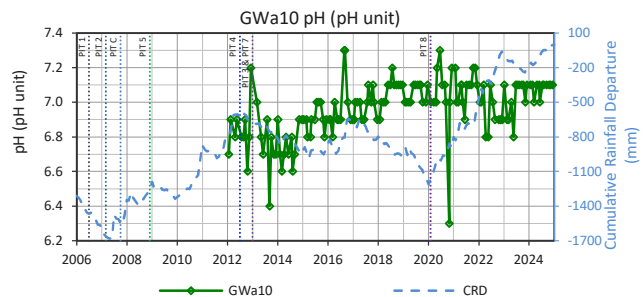
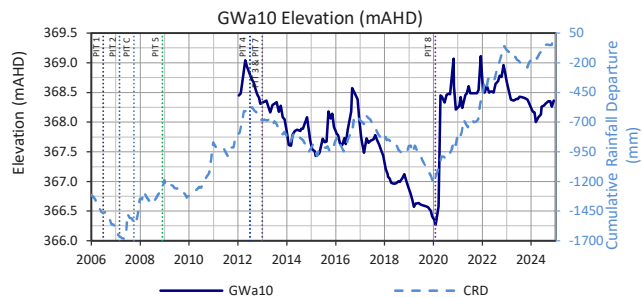


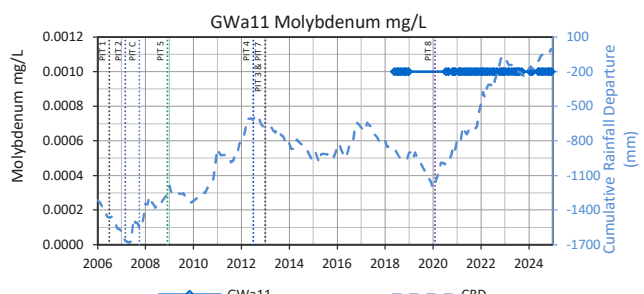
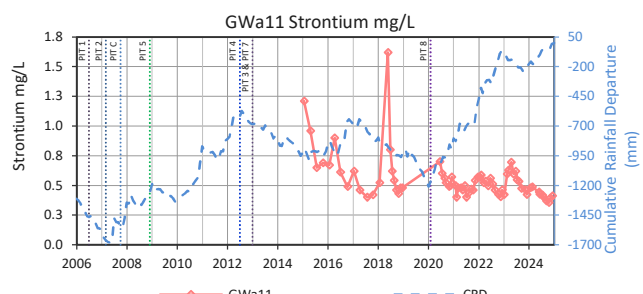
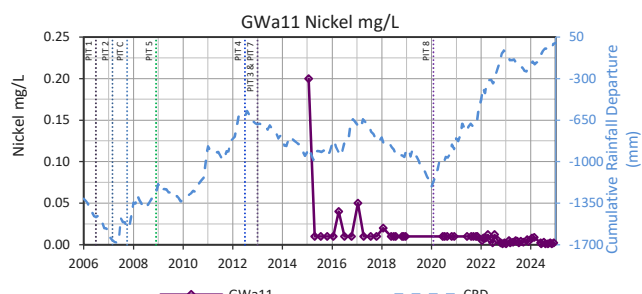
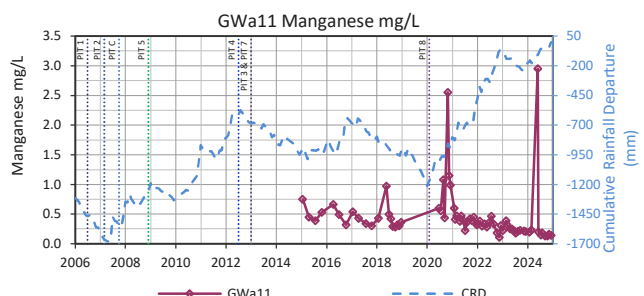
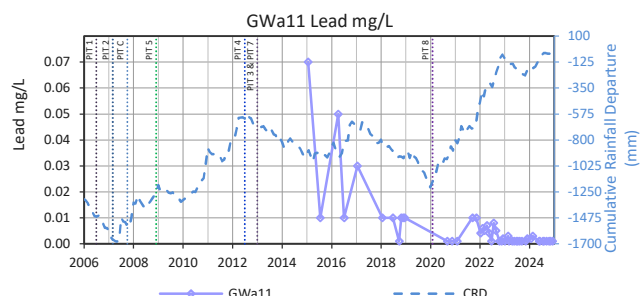
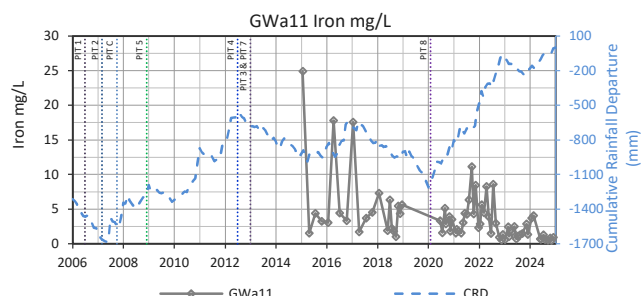
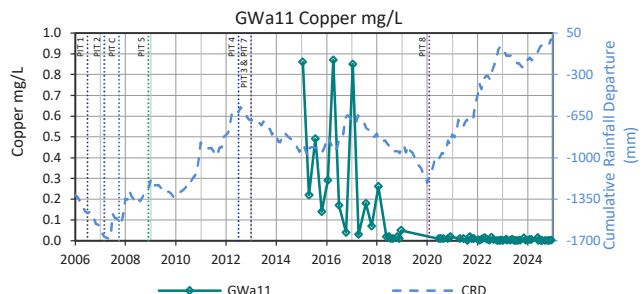
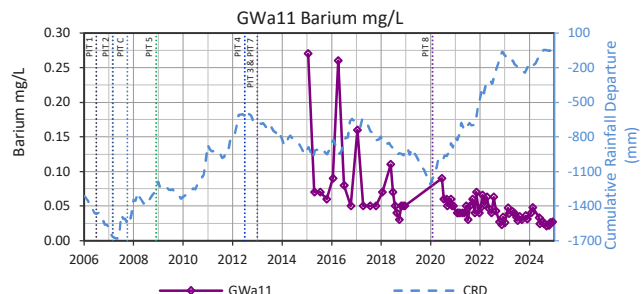
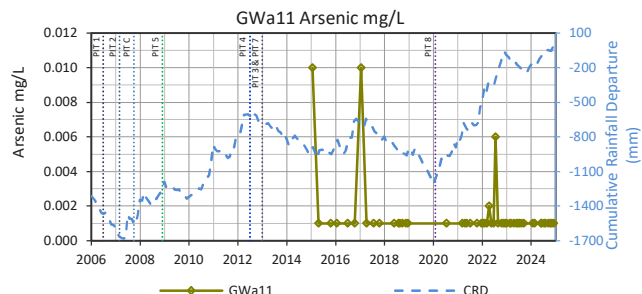
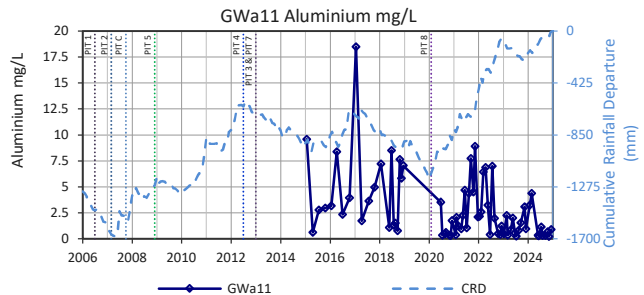
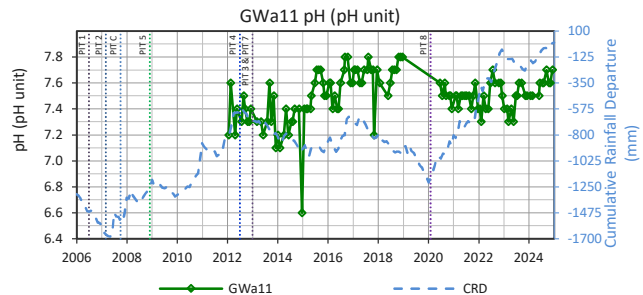
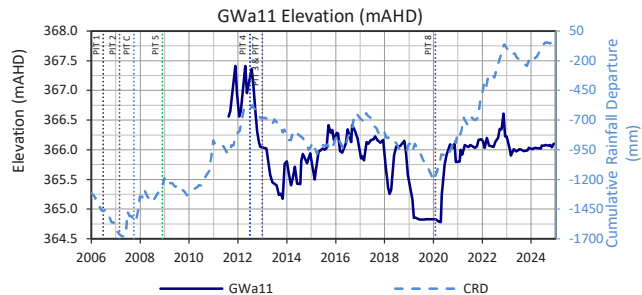


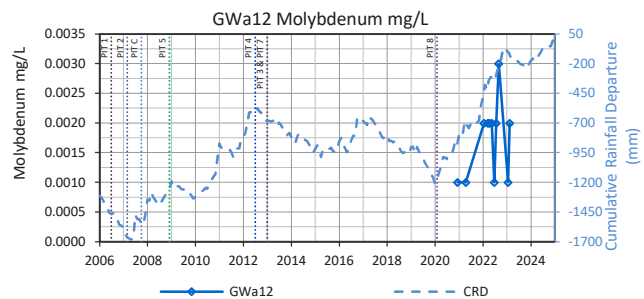
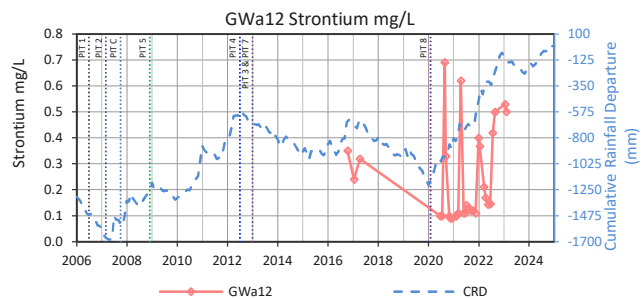
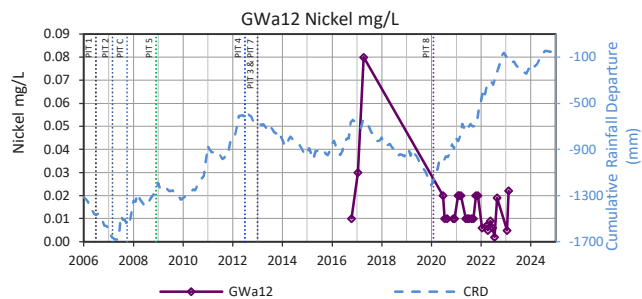
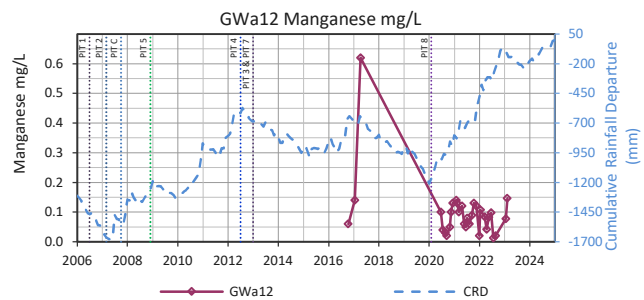
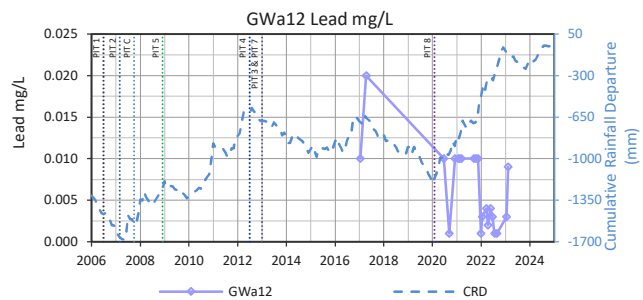
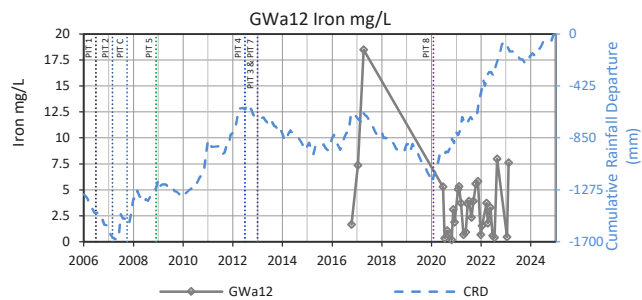
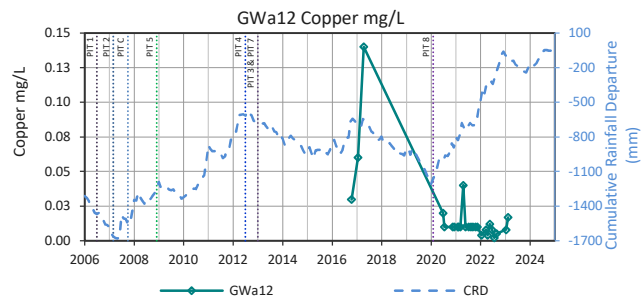
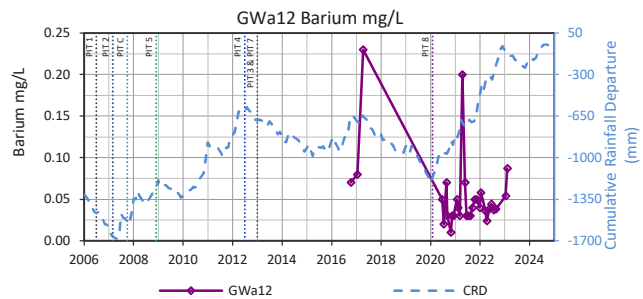
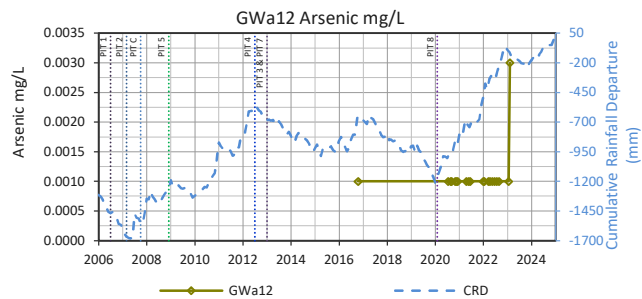
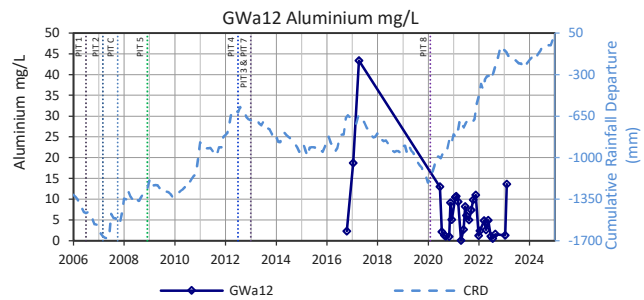
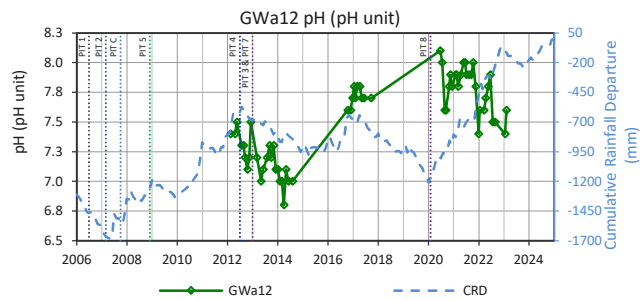
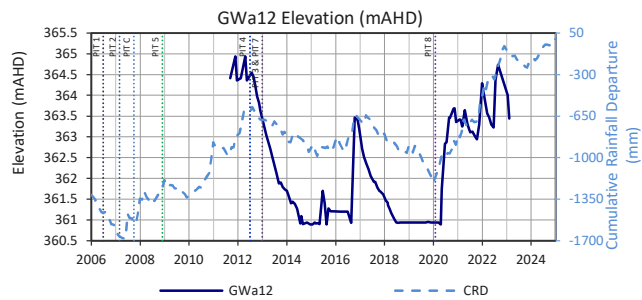


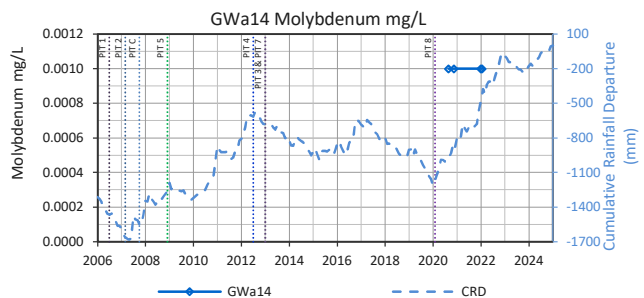
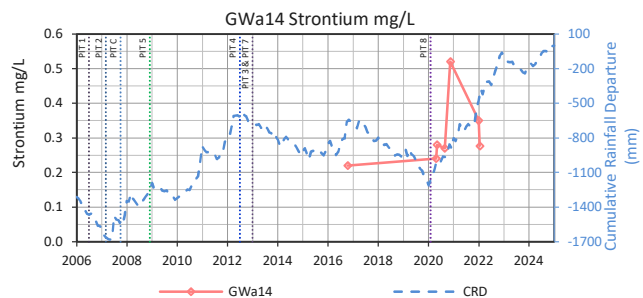
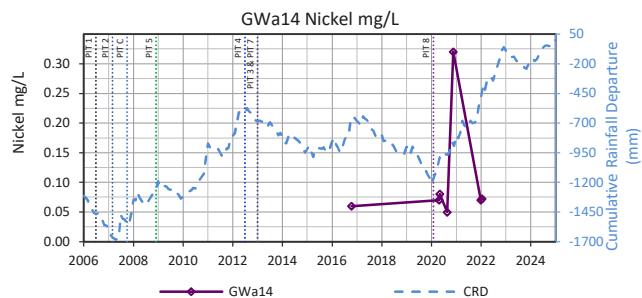
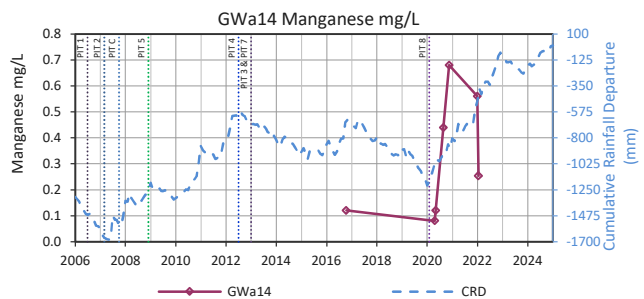
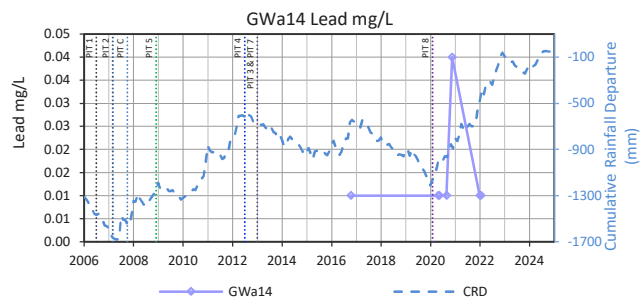
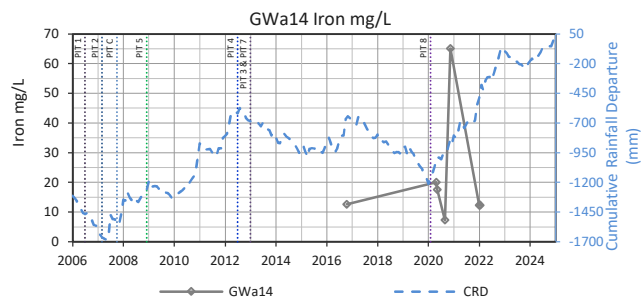
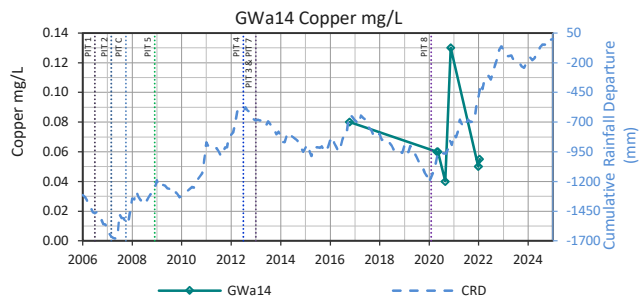
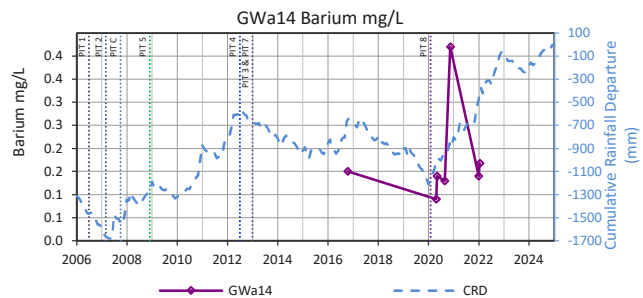
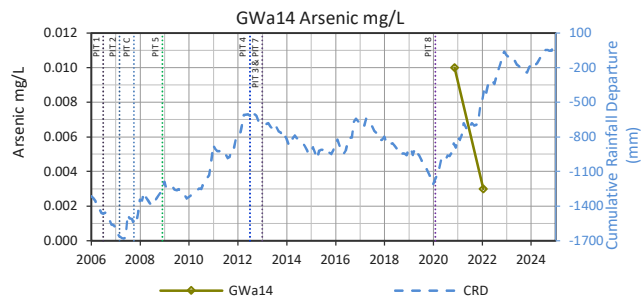
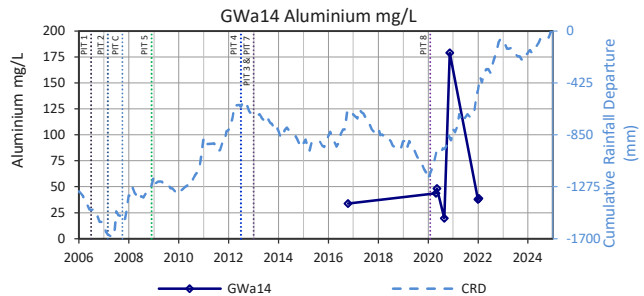
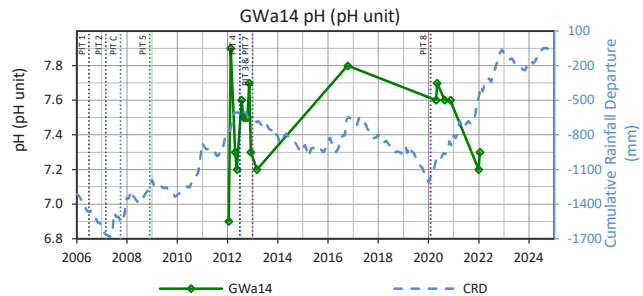
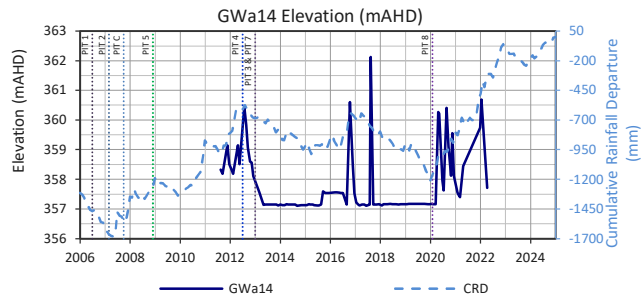


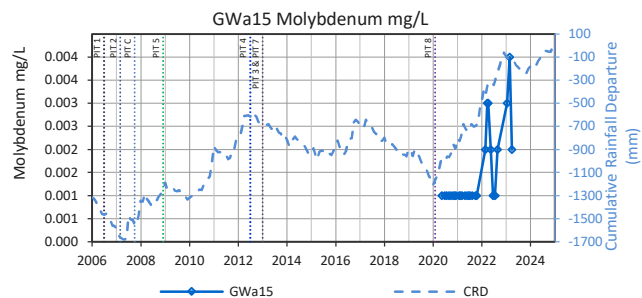
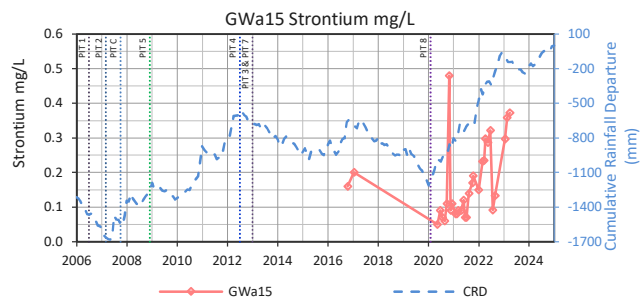
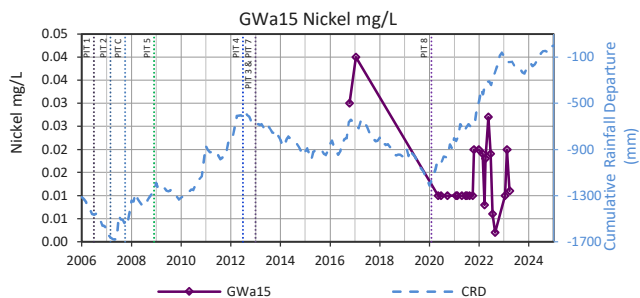
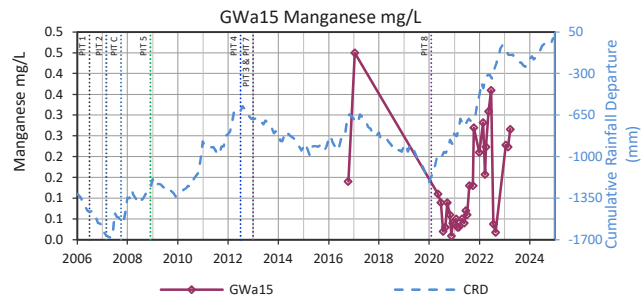
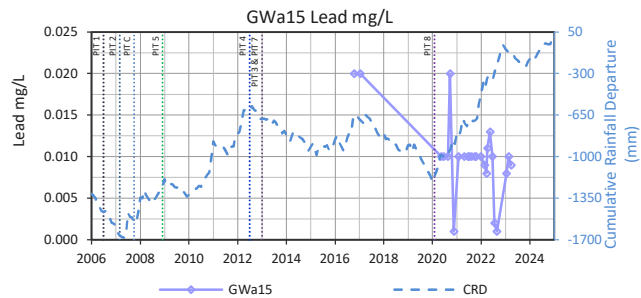
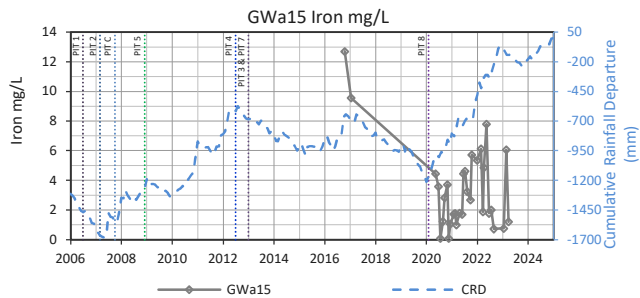
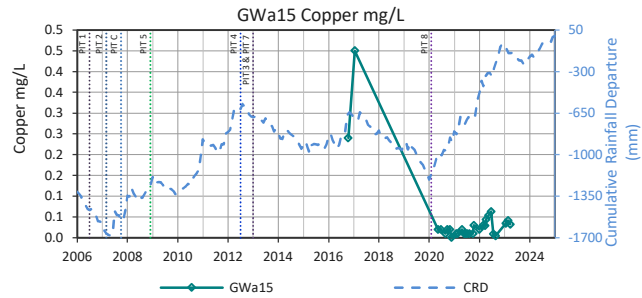
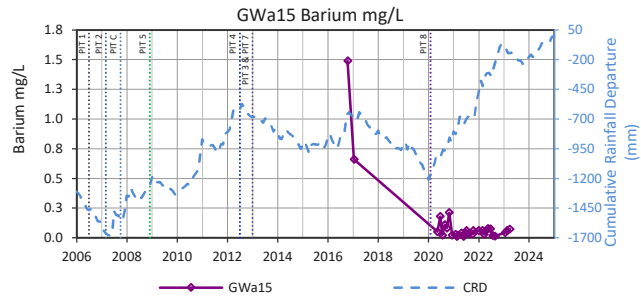
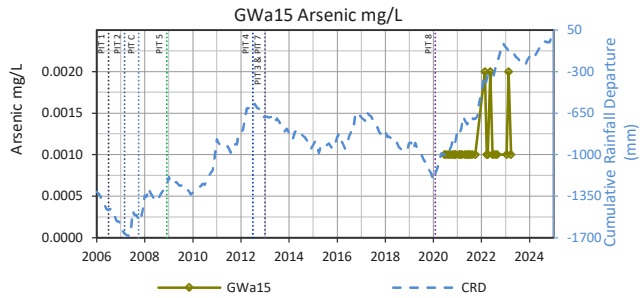
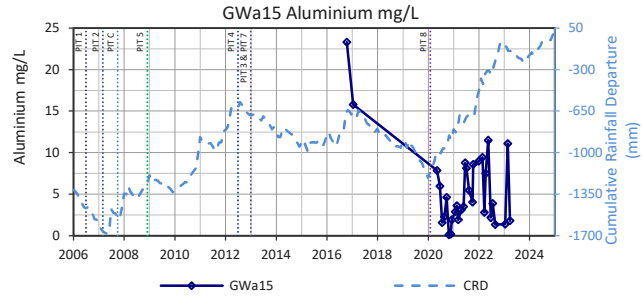
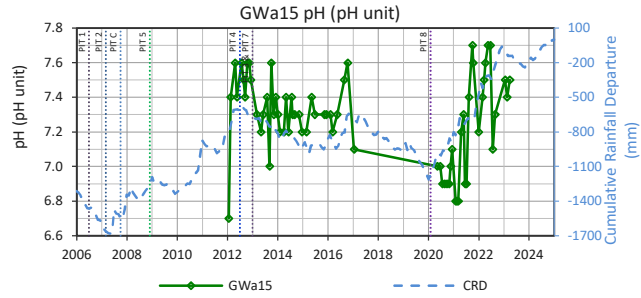
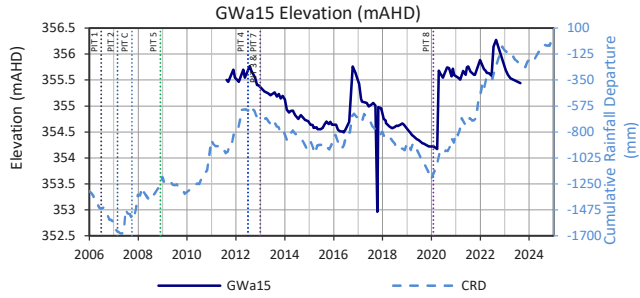




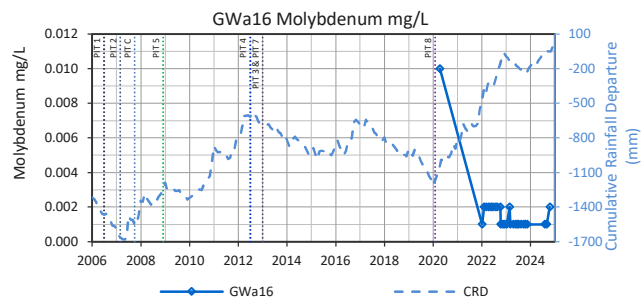
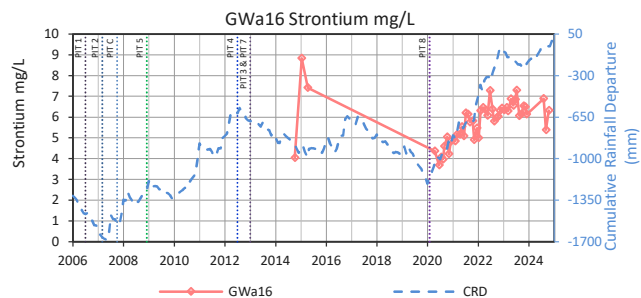
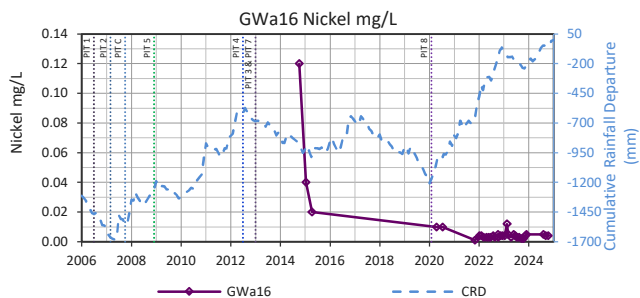
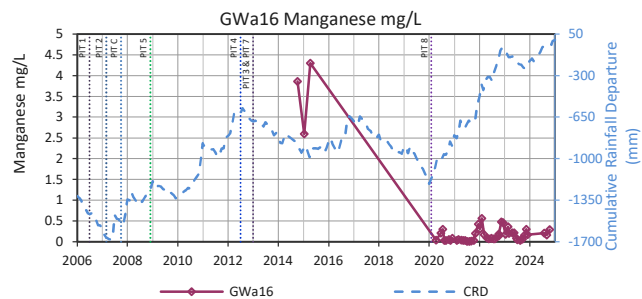
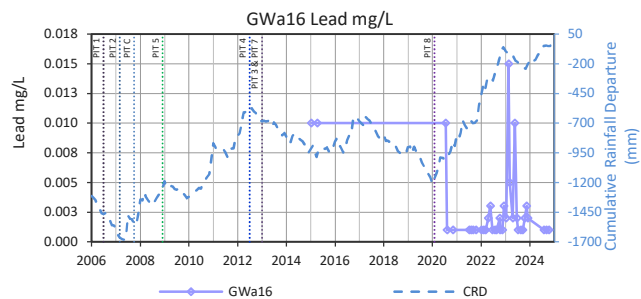
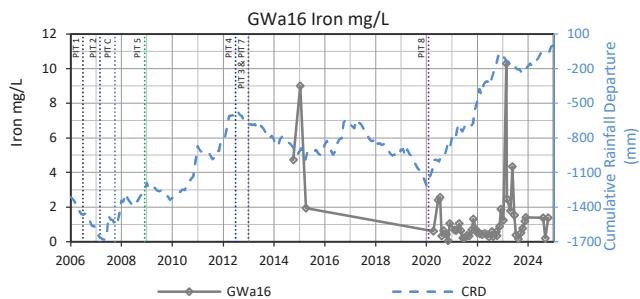
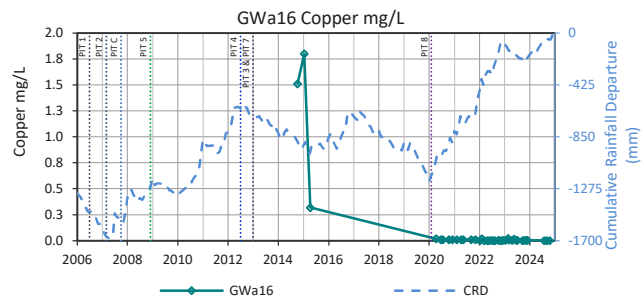
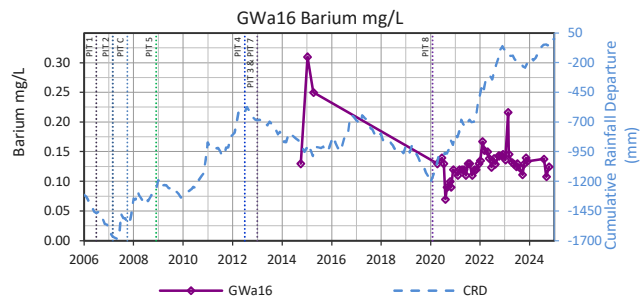
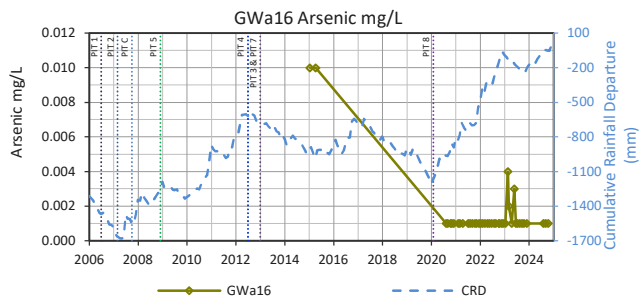
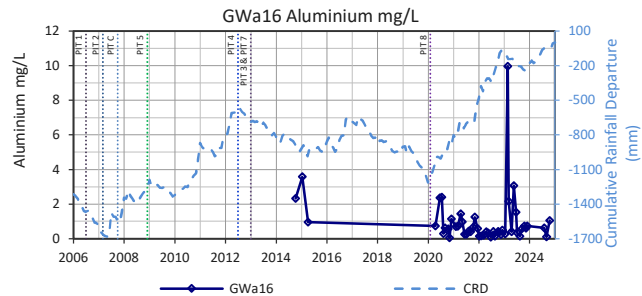
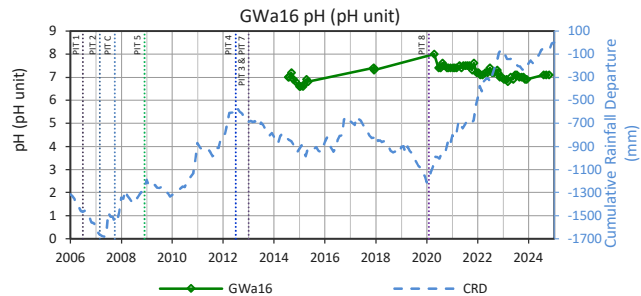
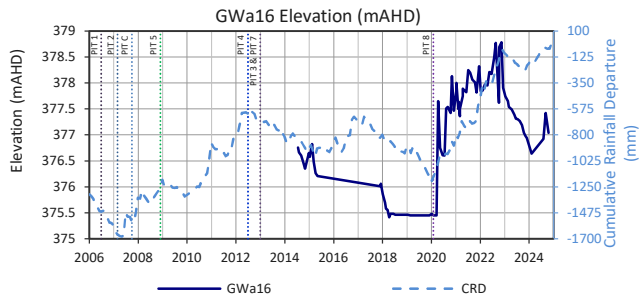


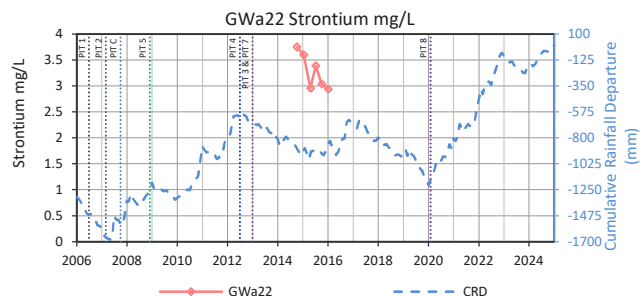
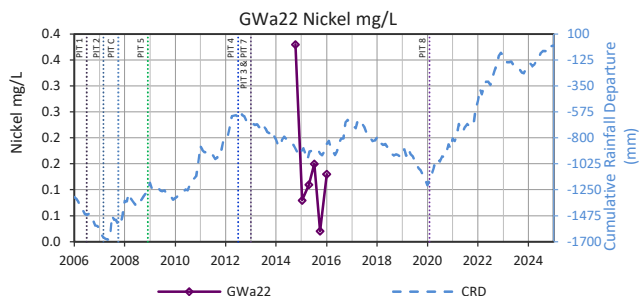
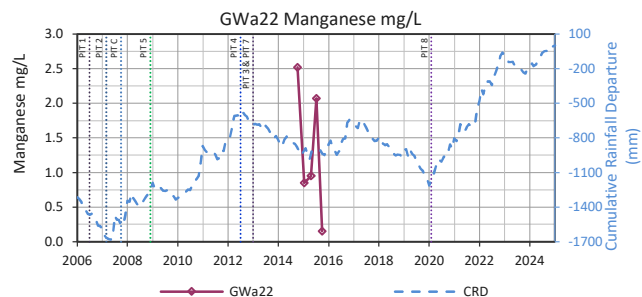
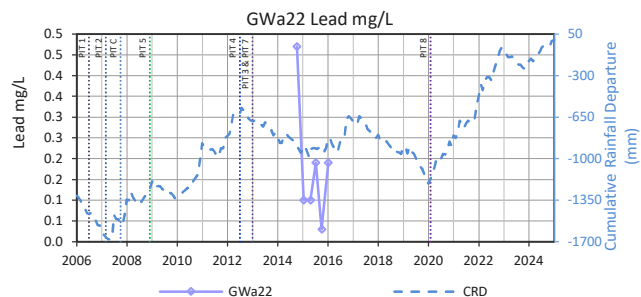
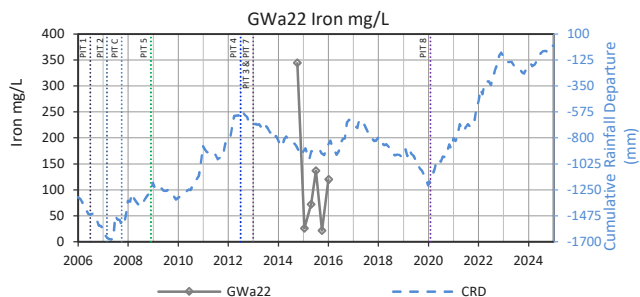
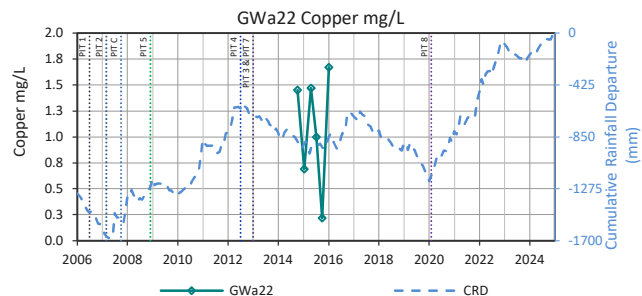
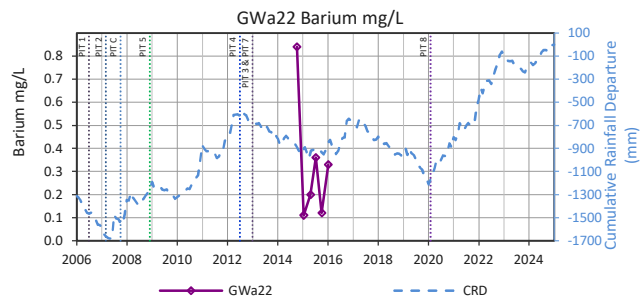
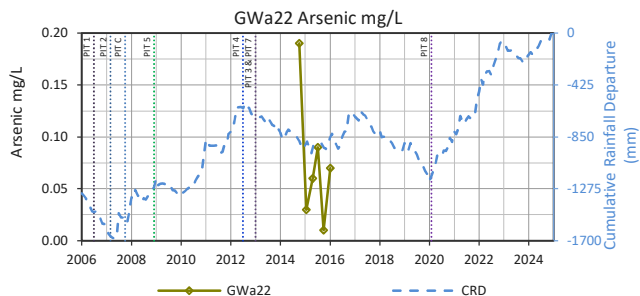
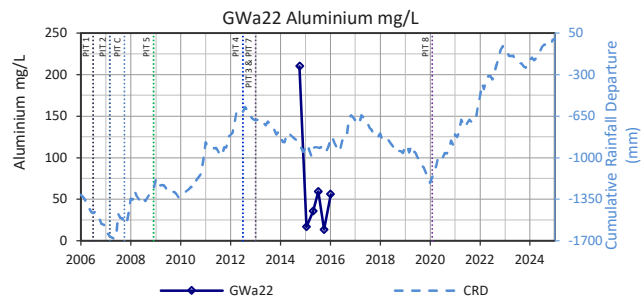
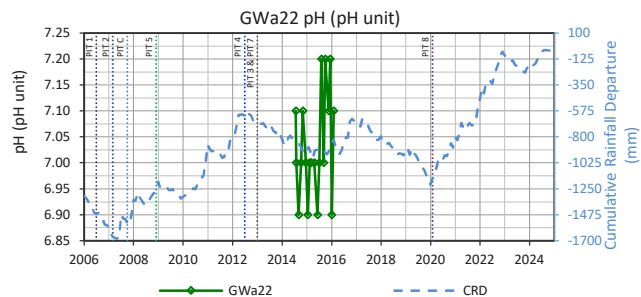
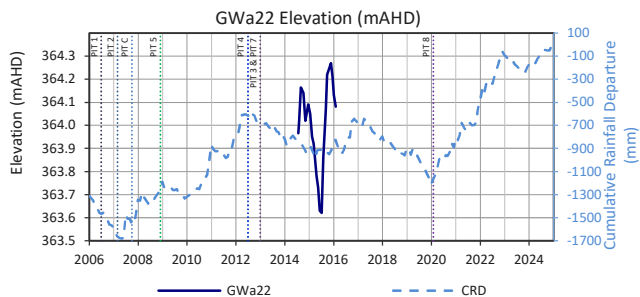






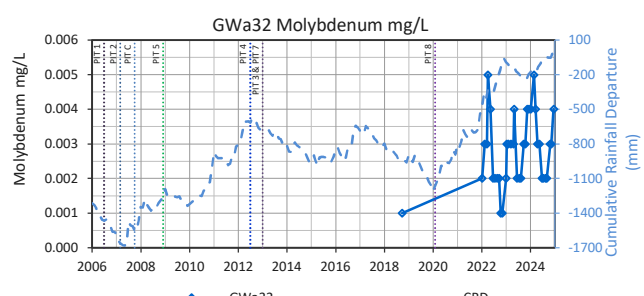
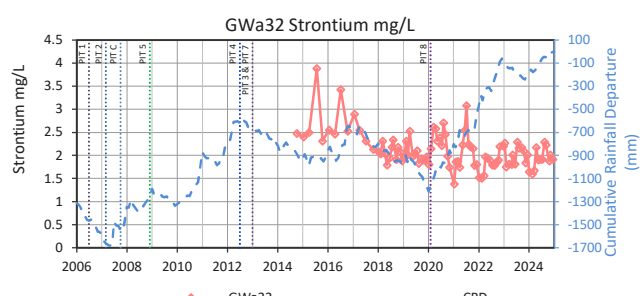
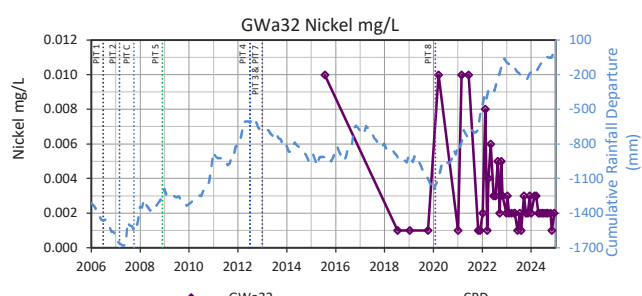
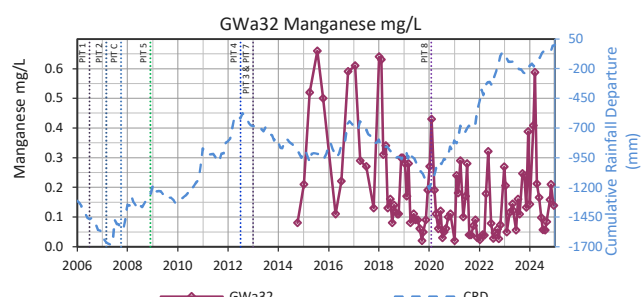
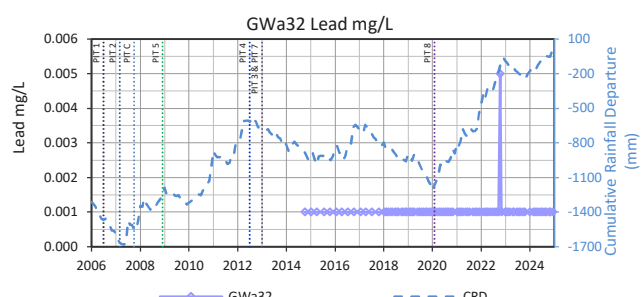
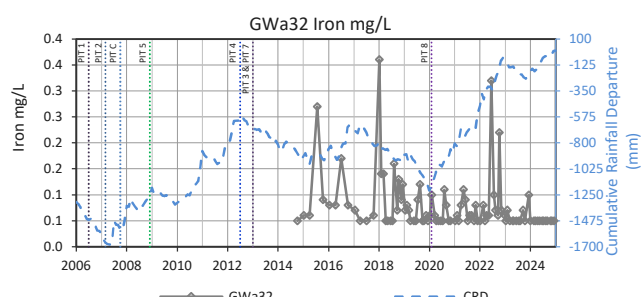
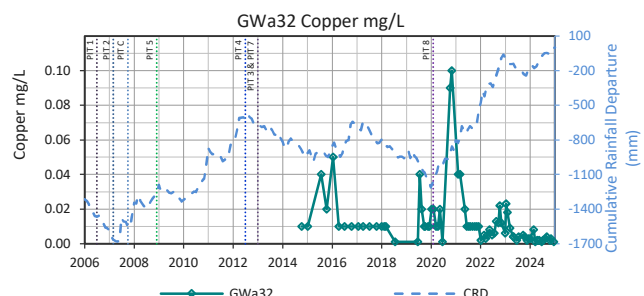
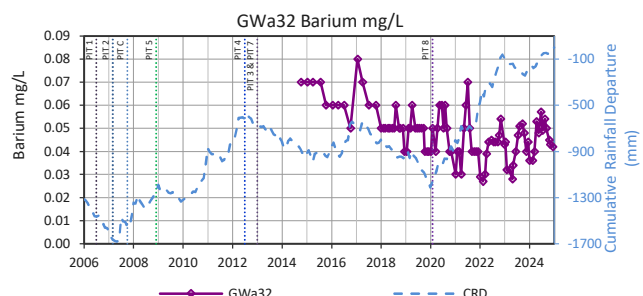
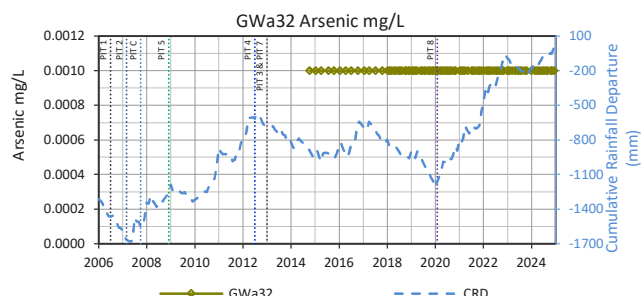
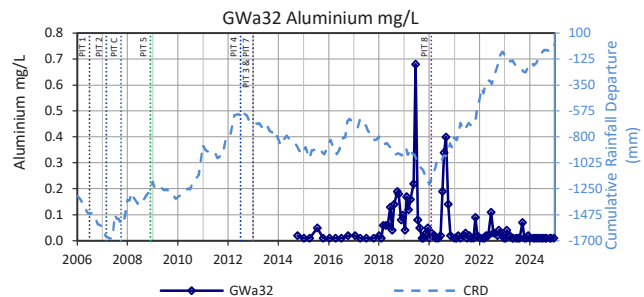
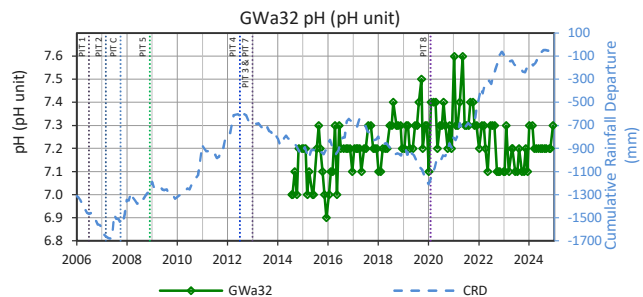
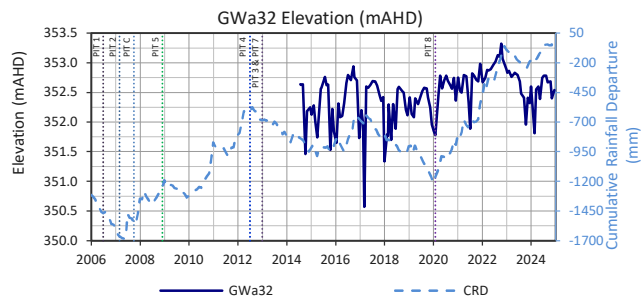


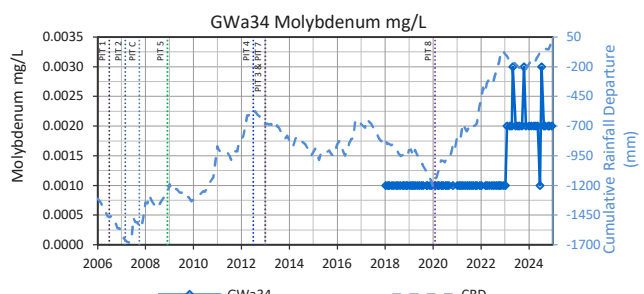
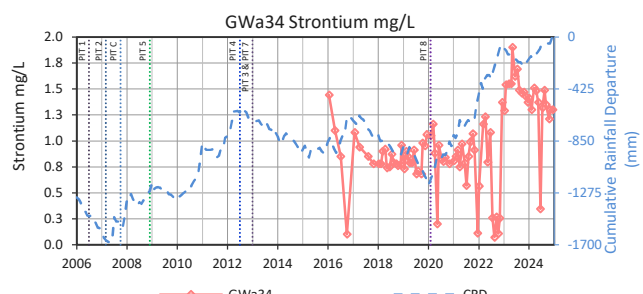
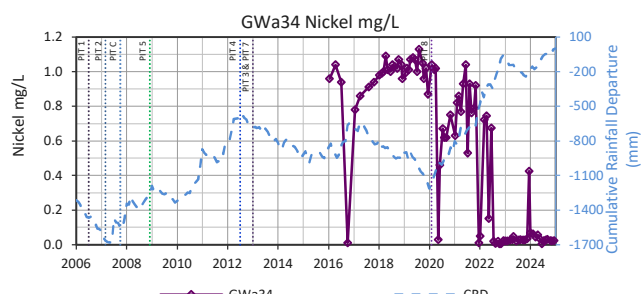
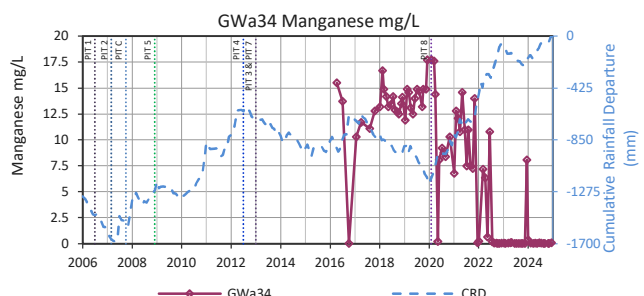
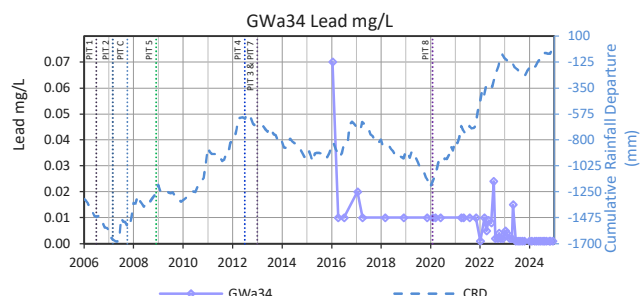
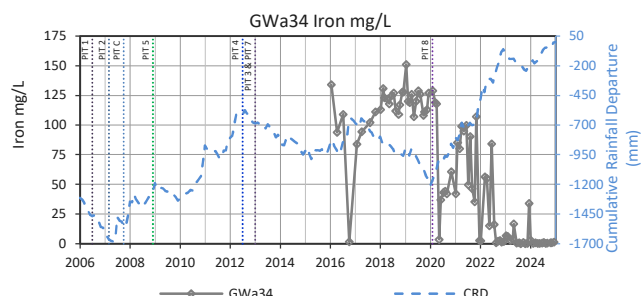
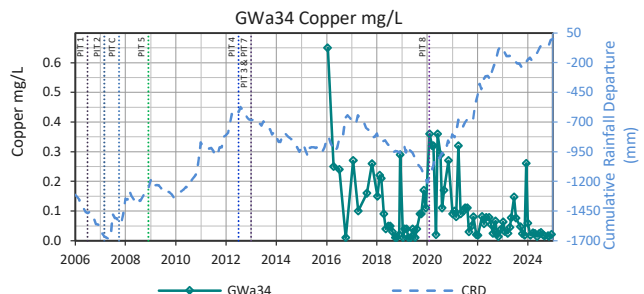
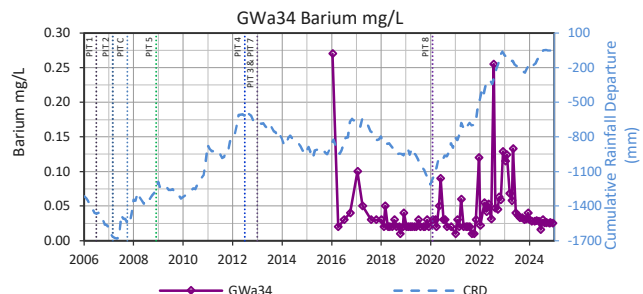
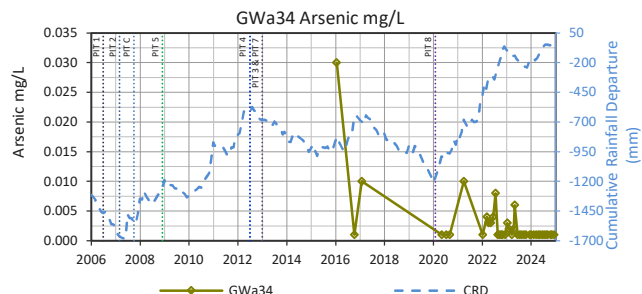
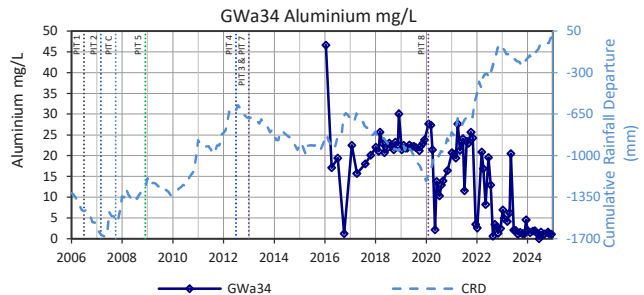
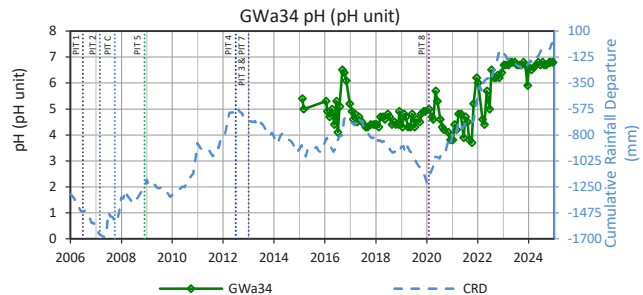
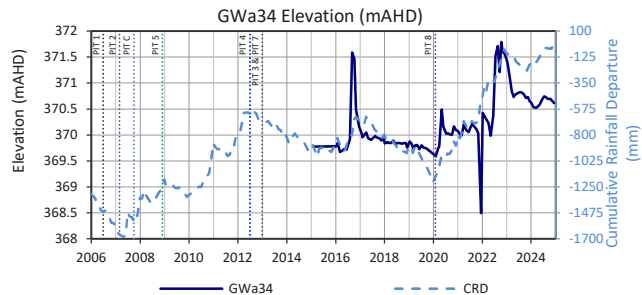


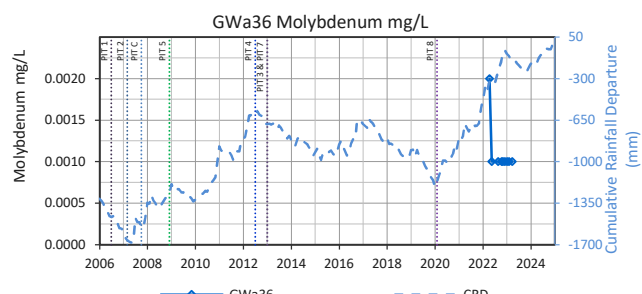
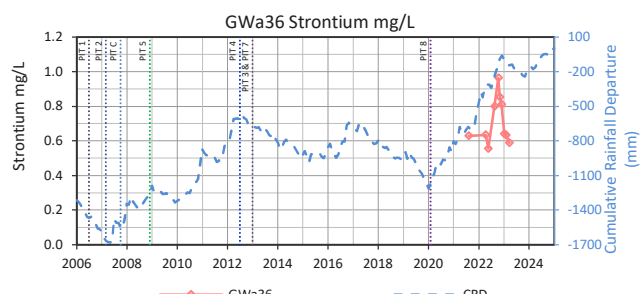
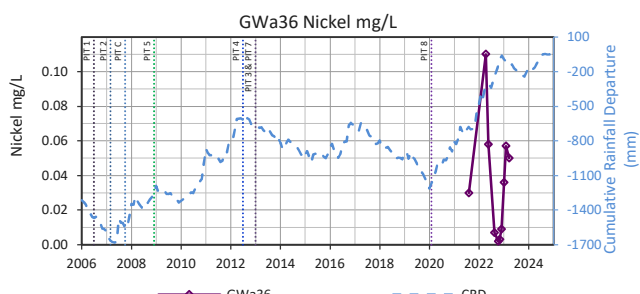
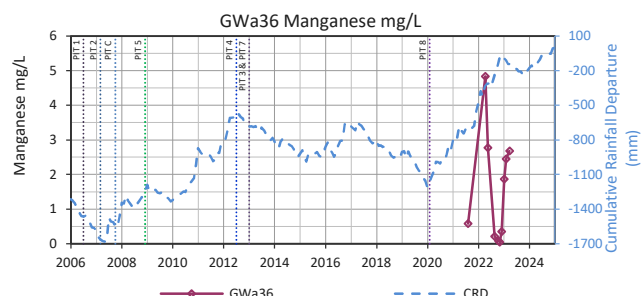
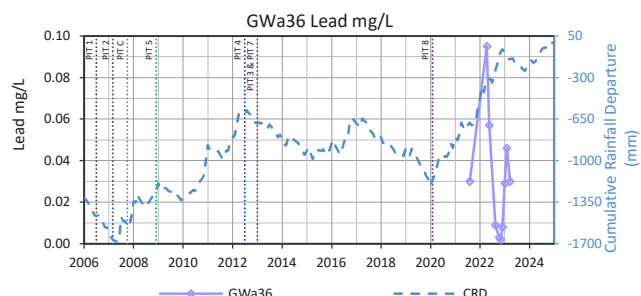
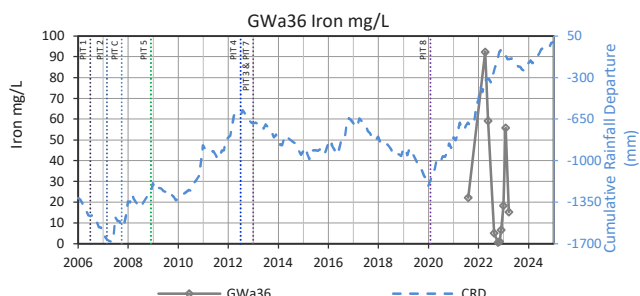
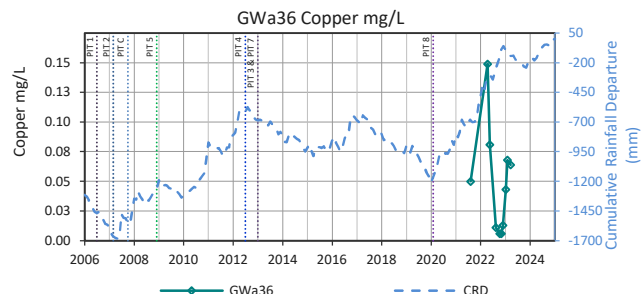
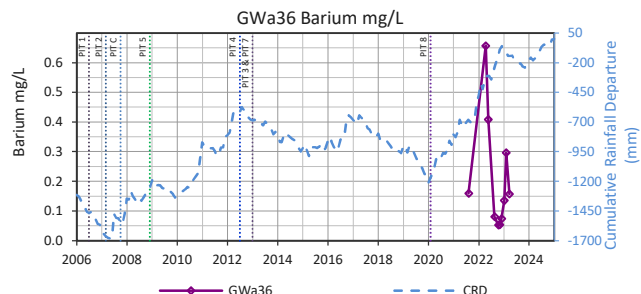
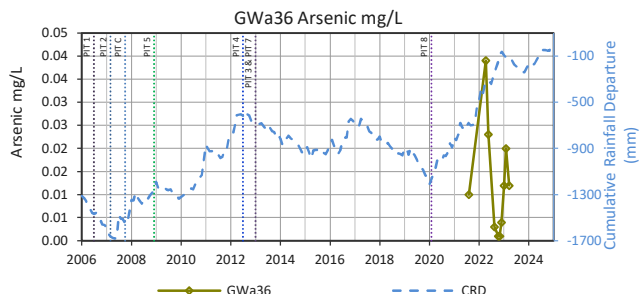
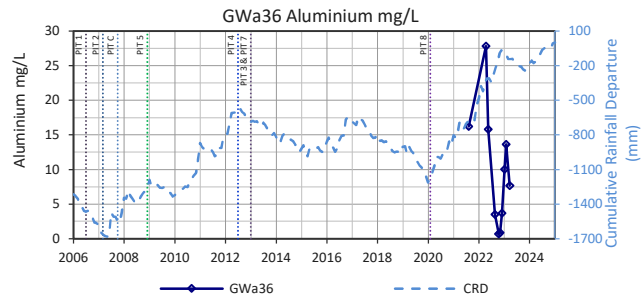
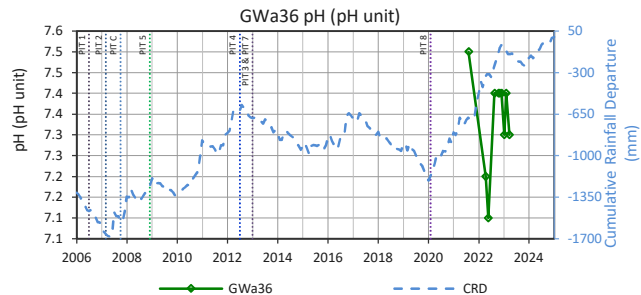
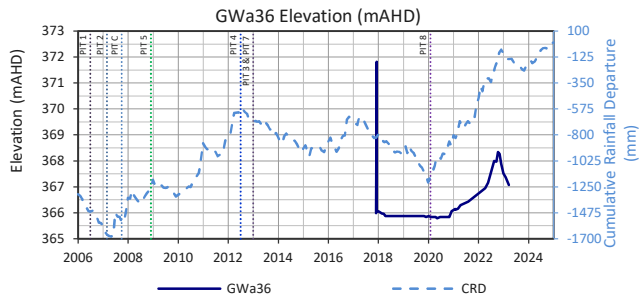


GWA22

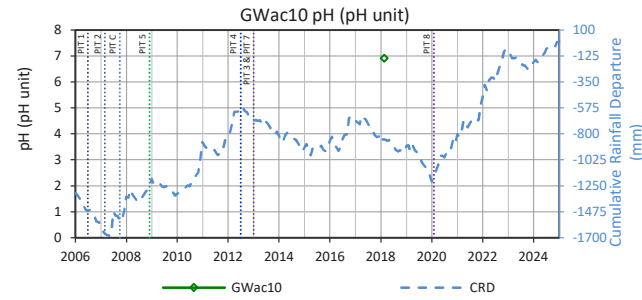
No Data Available for Molybdenum mg/L







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

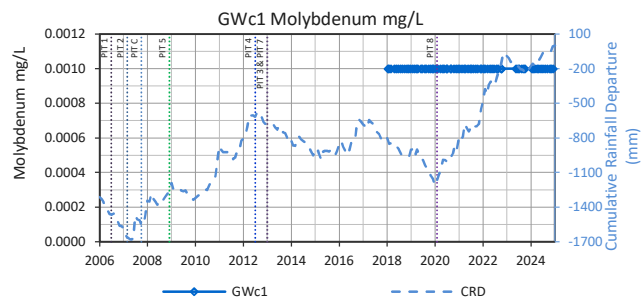
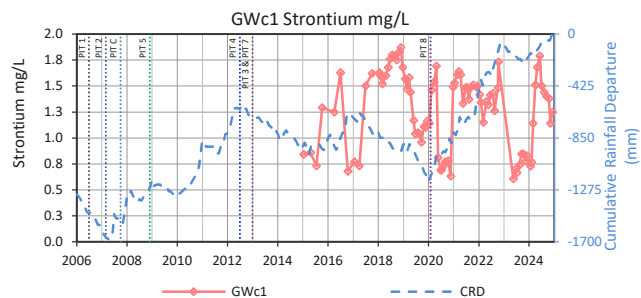
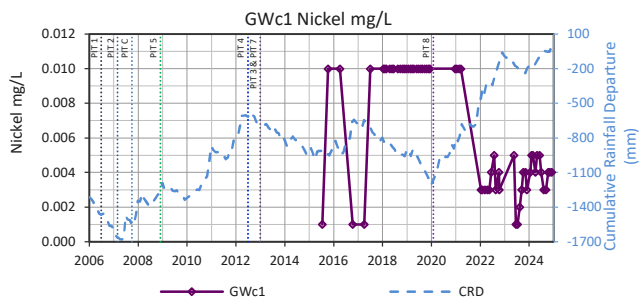
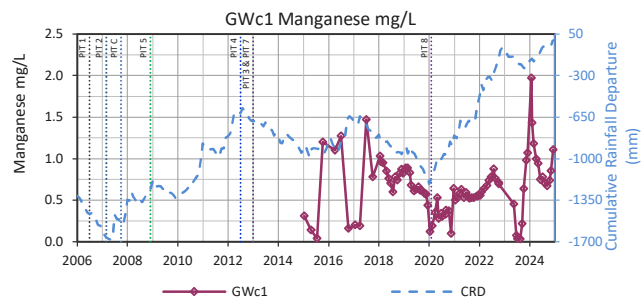
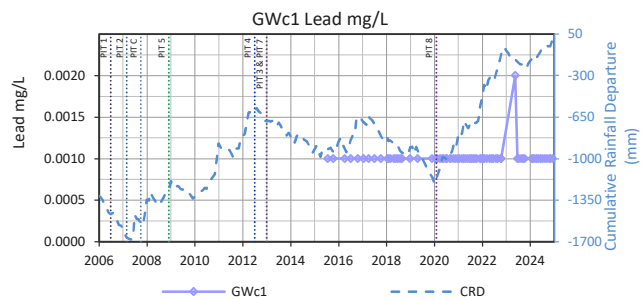
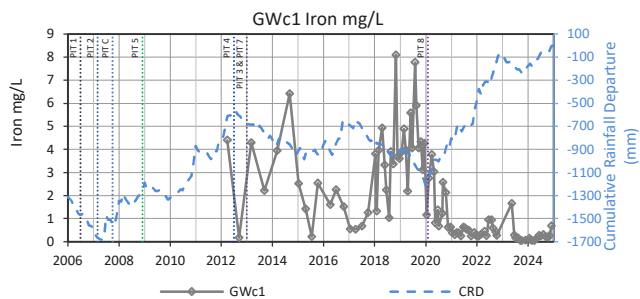
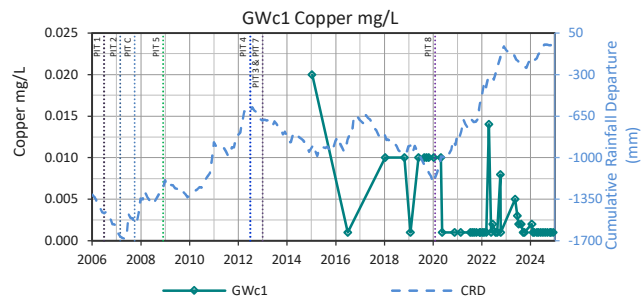
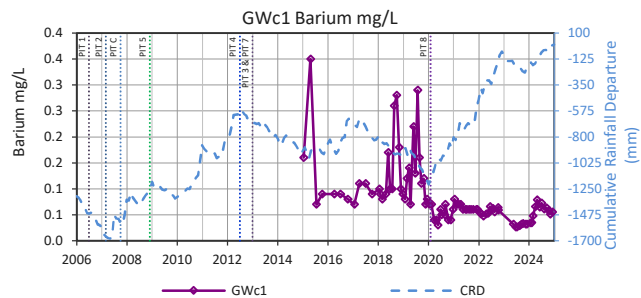
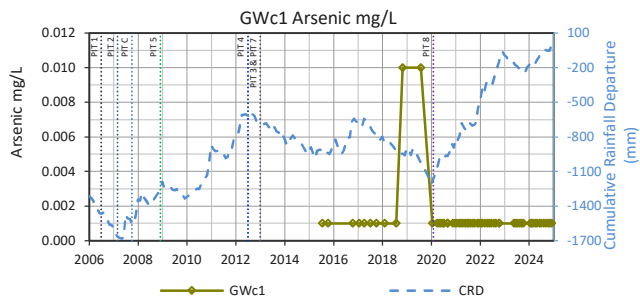
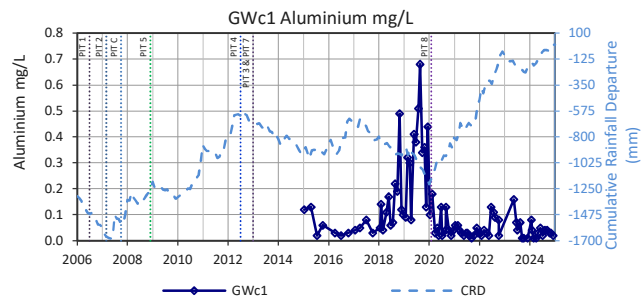
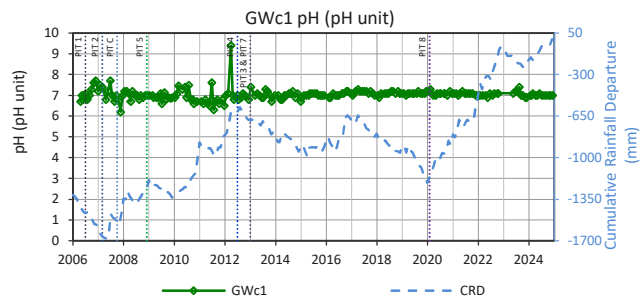
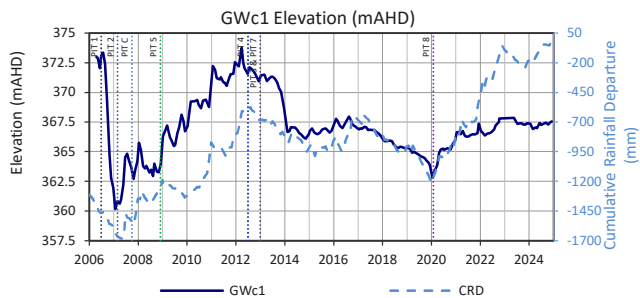
No Data Available for Lead mg/L

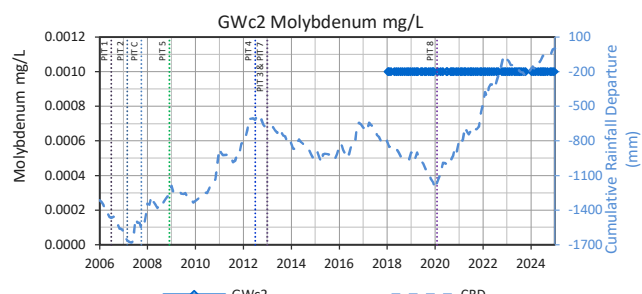
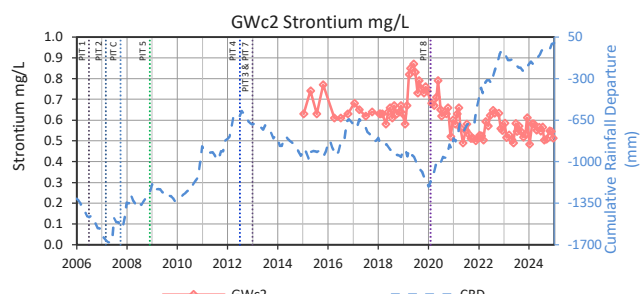
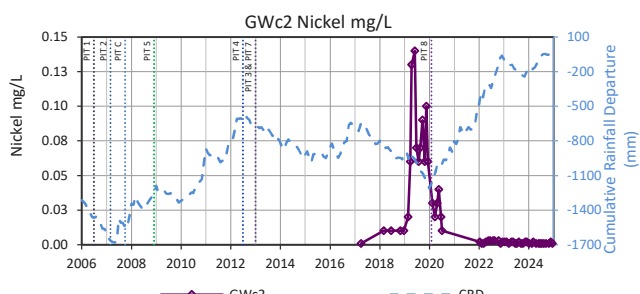
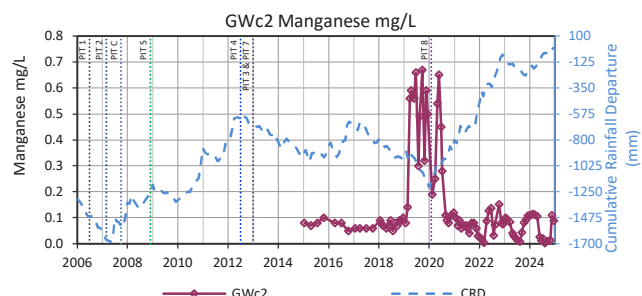
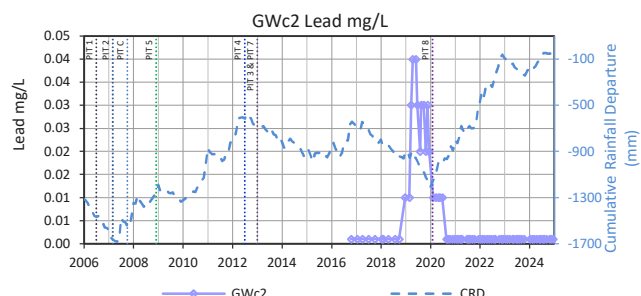
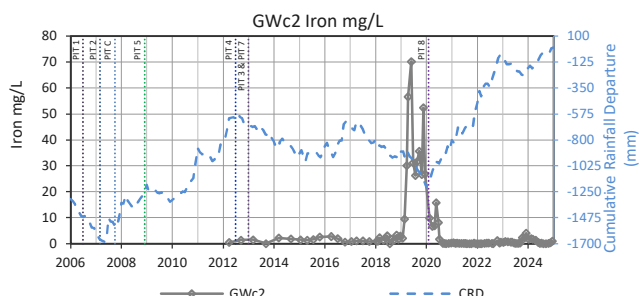
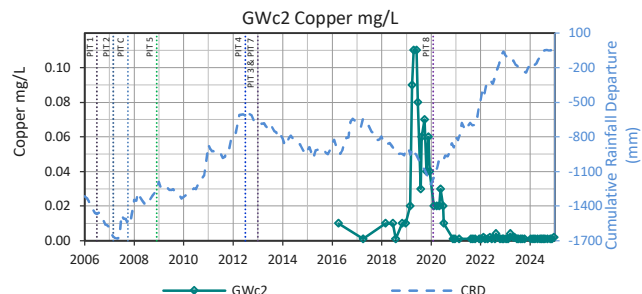
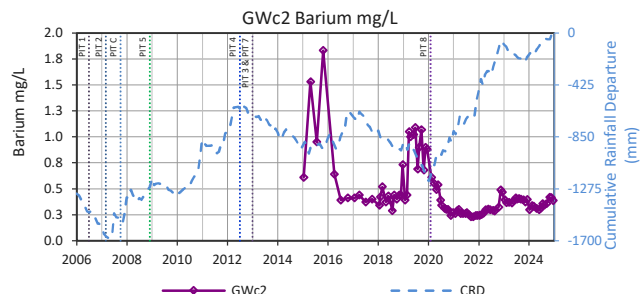
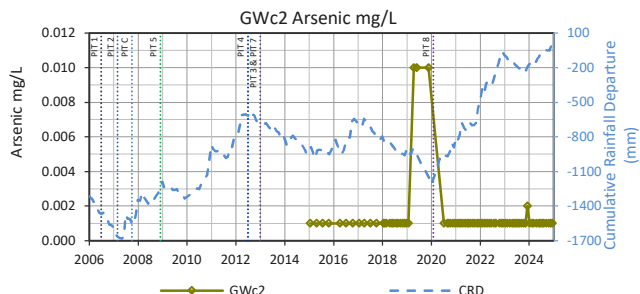
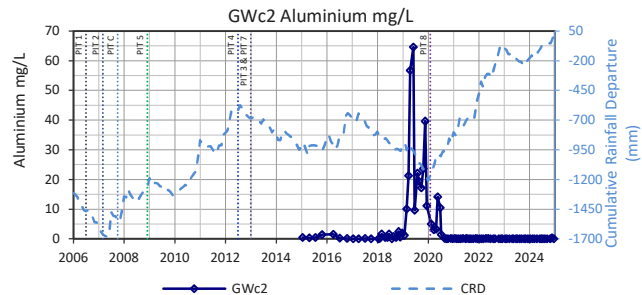
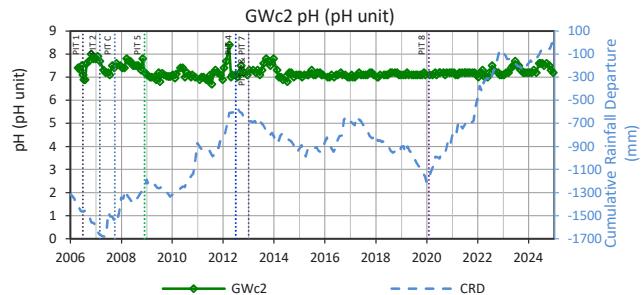
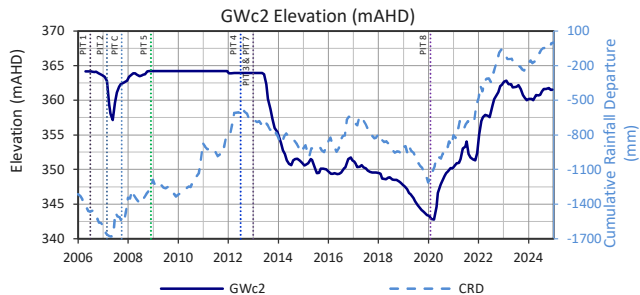
No Data Available for Manganese mg/L

No Data Available for Nickel mg/L

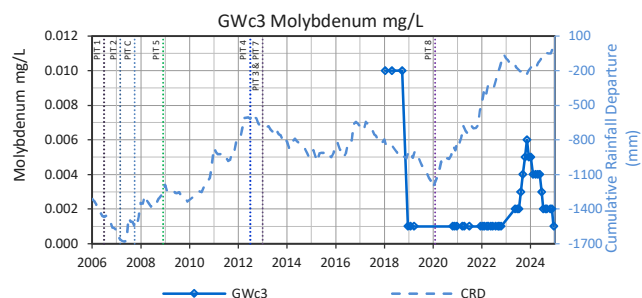
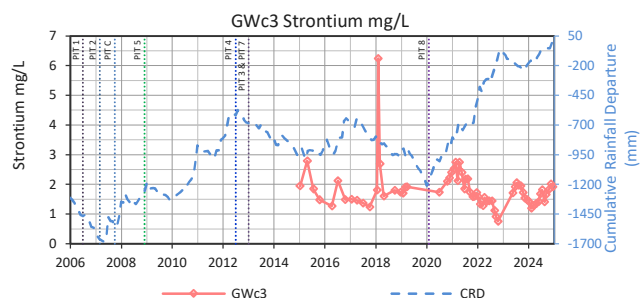
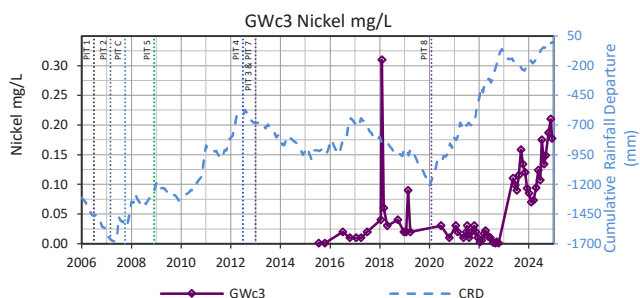
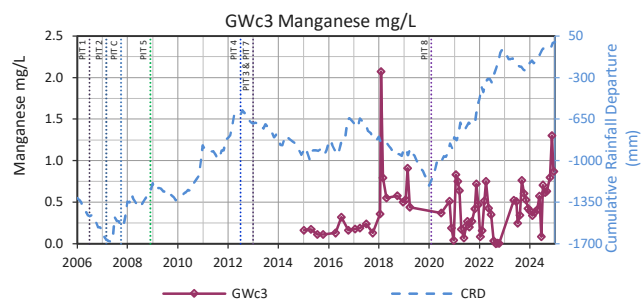
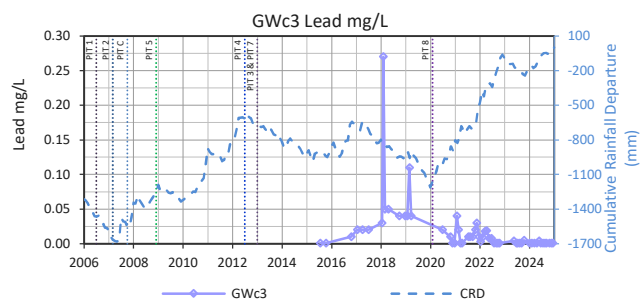
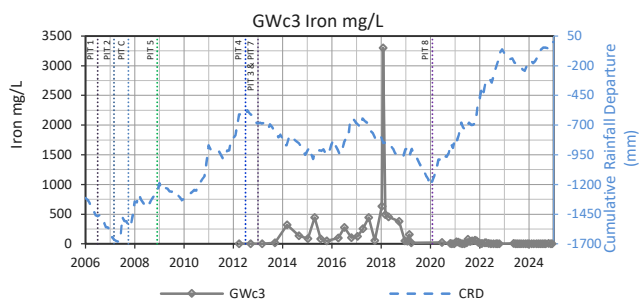
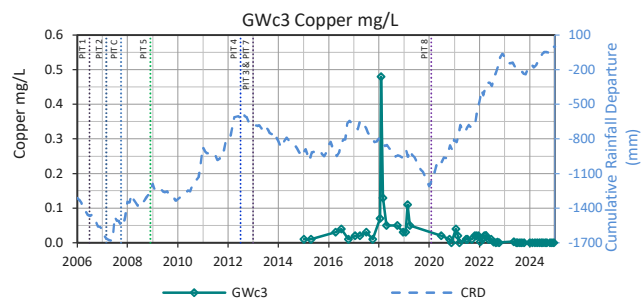
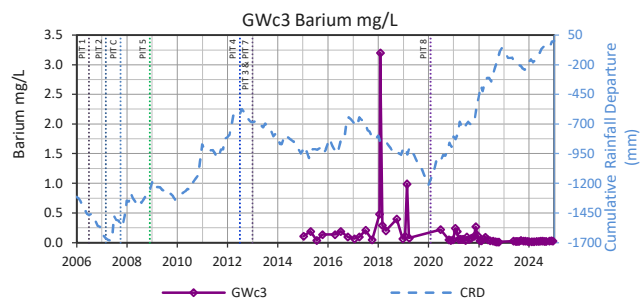
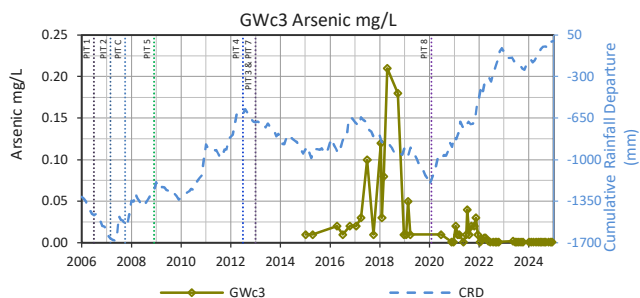
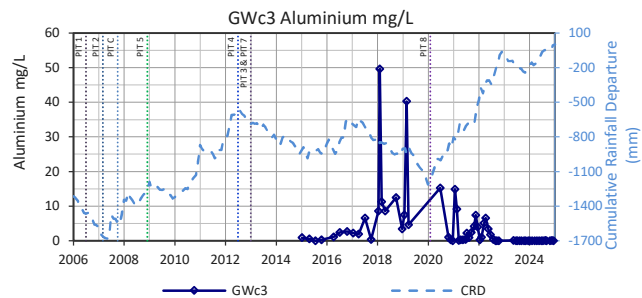
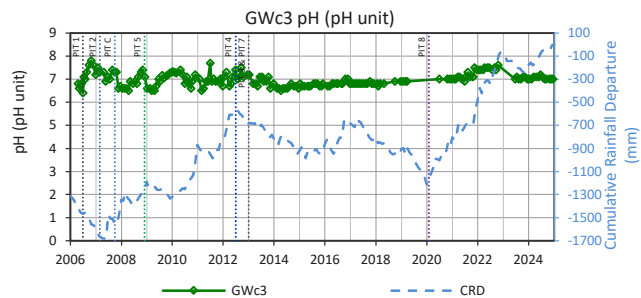
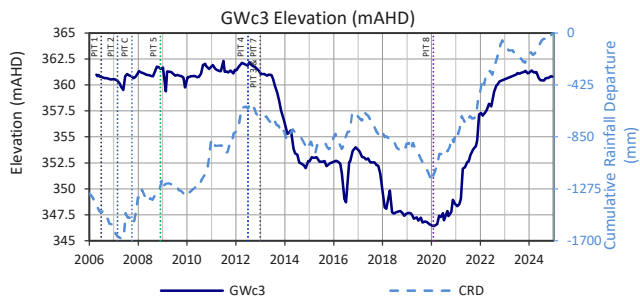
No Data Available for Strontium mg/L

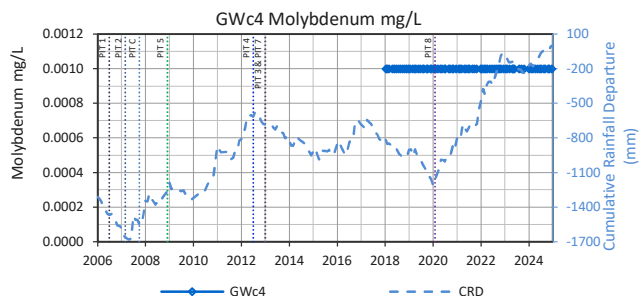
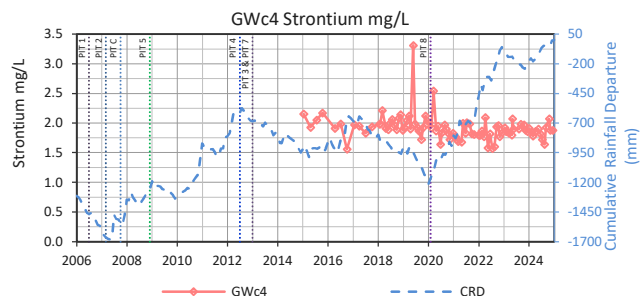
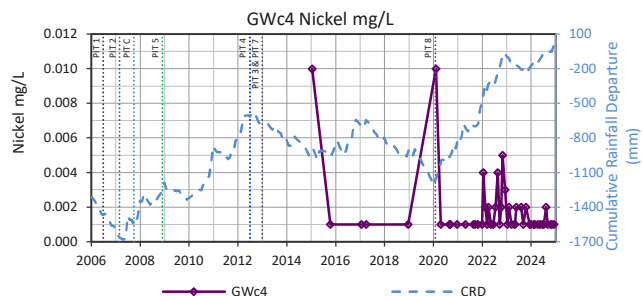
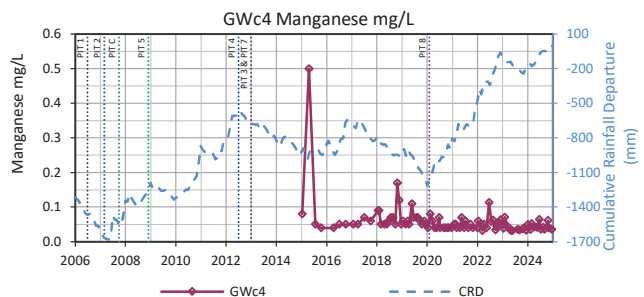
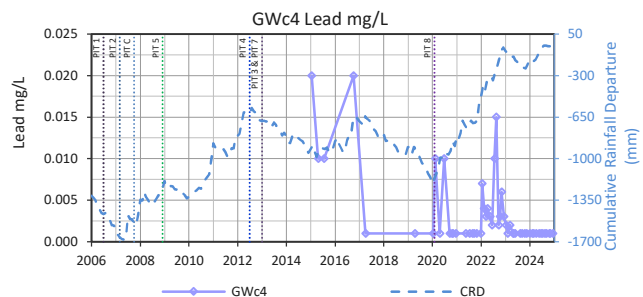
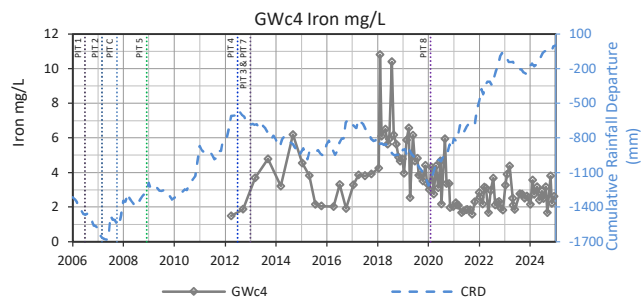
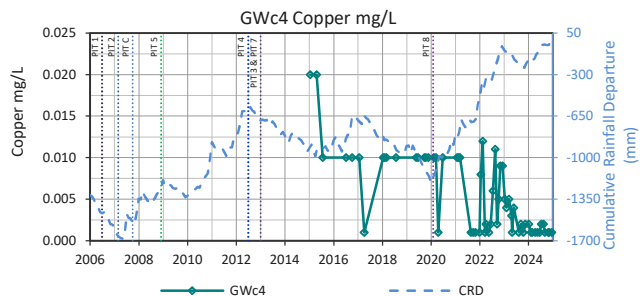
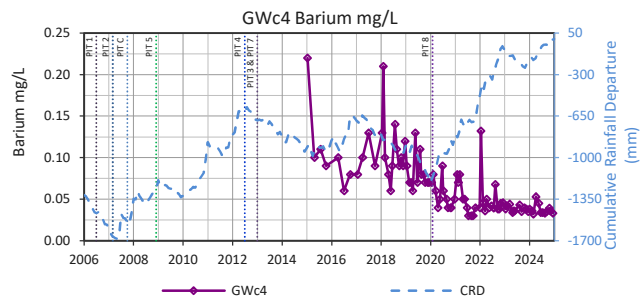
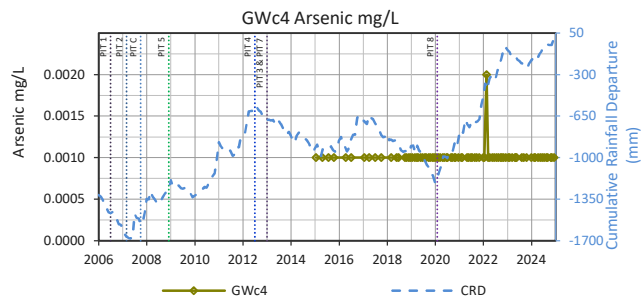
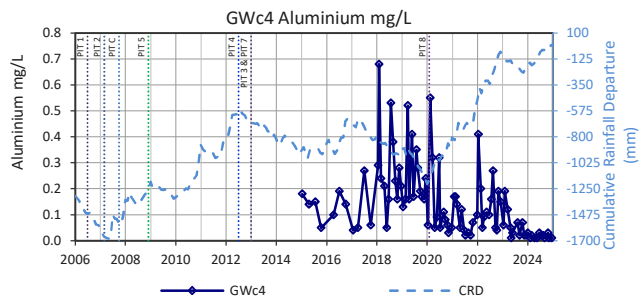
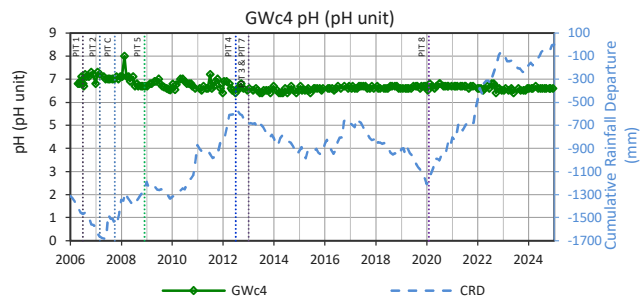
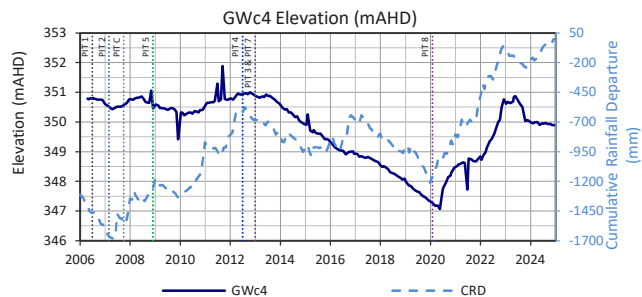
No Data Available for Molybdenum mg/L

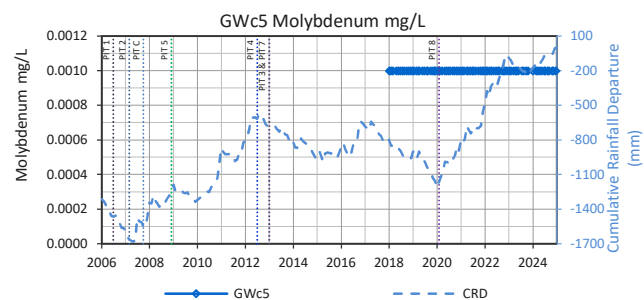
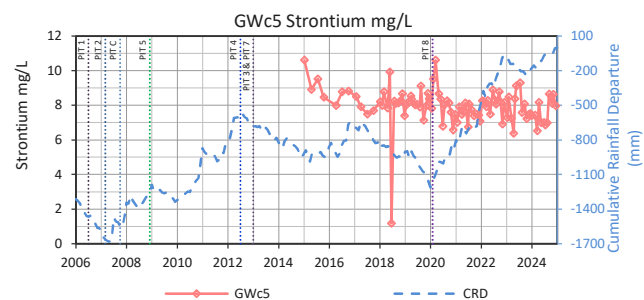
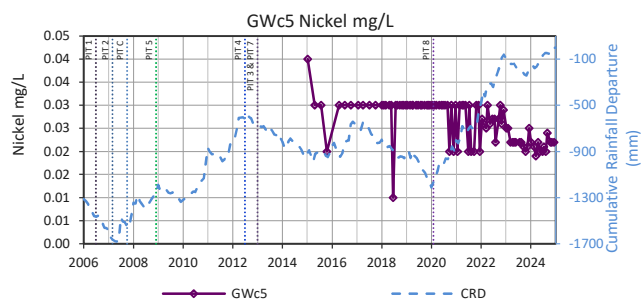
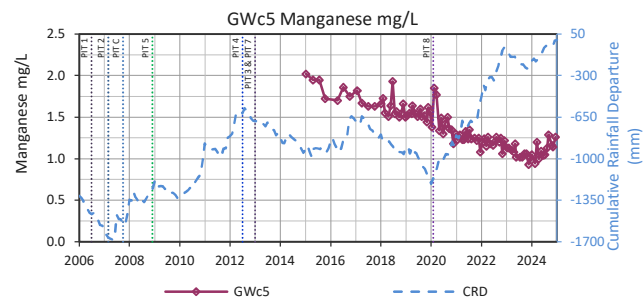
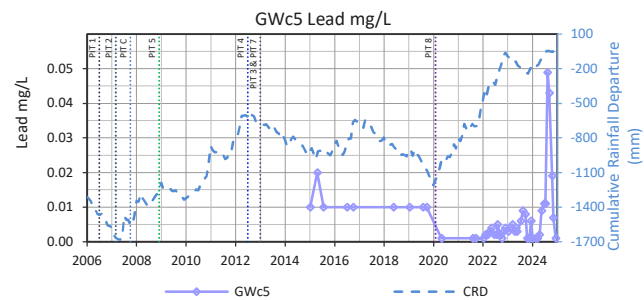
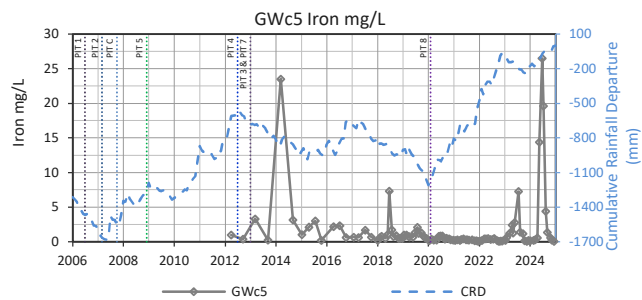
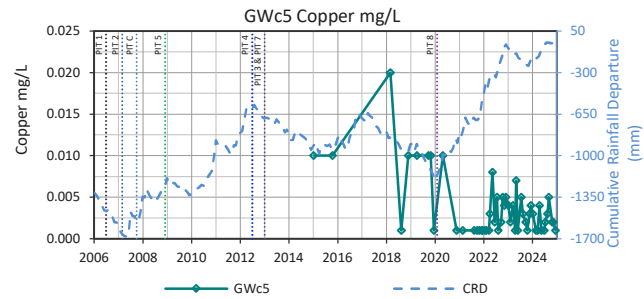
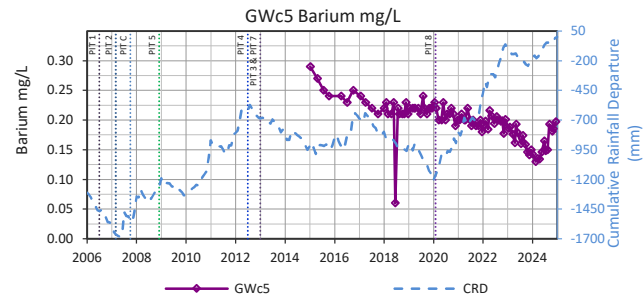
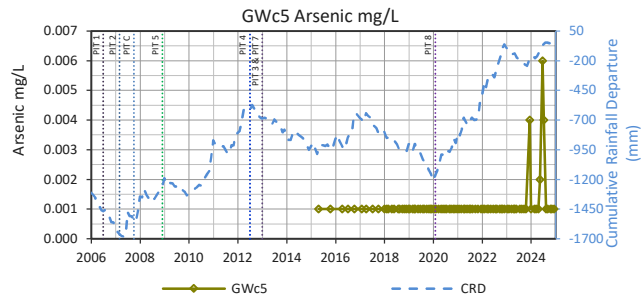
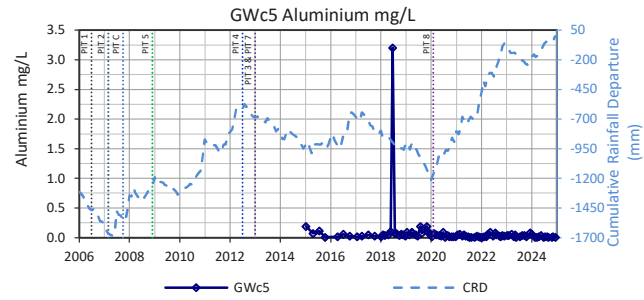
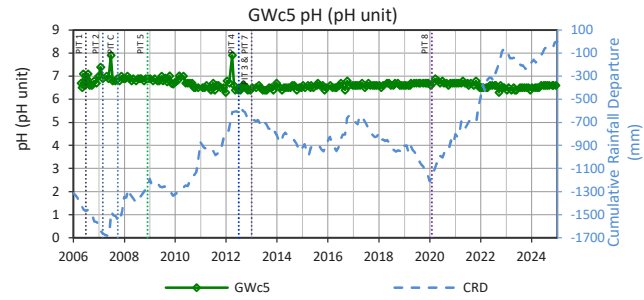
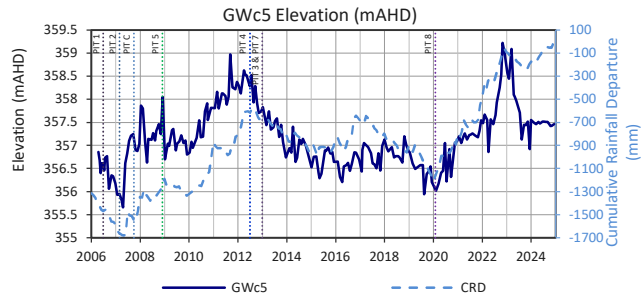


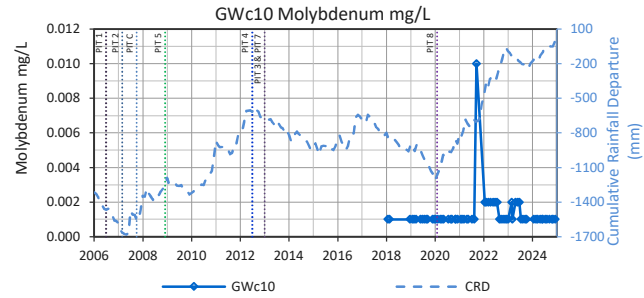
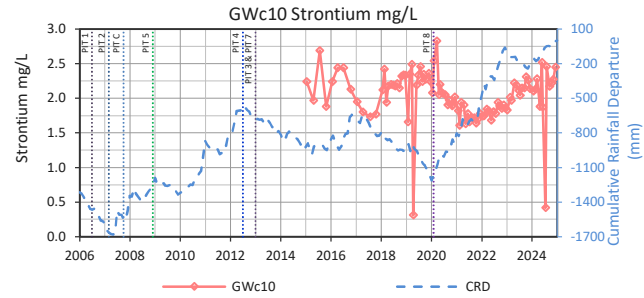
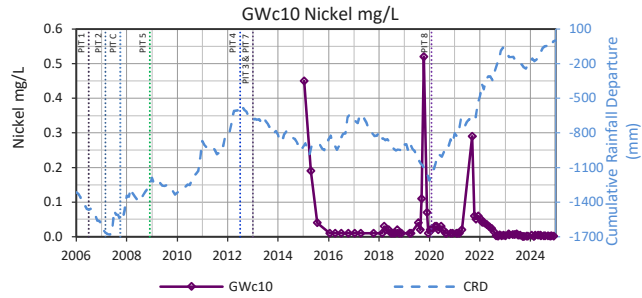
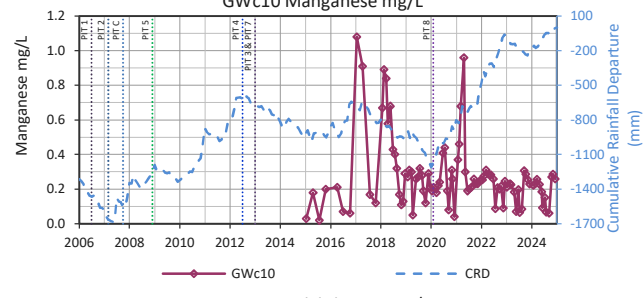
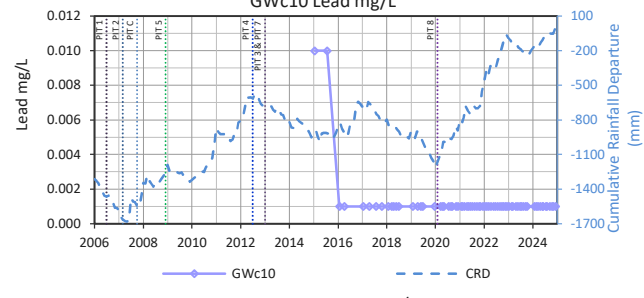
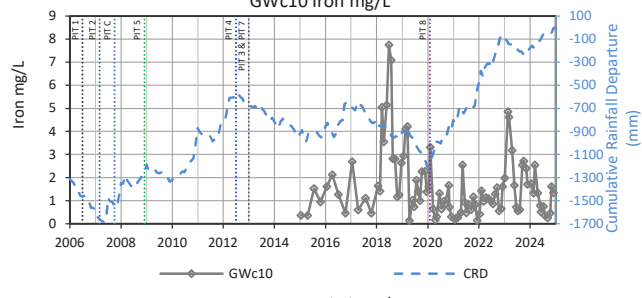
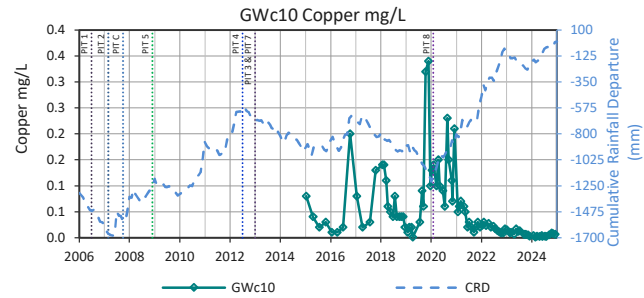
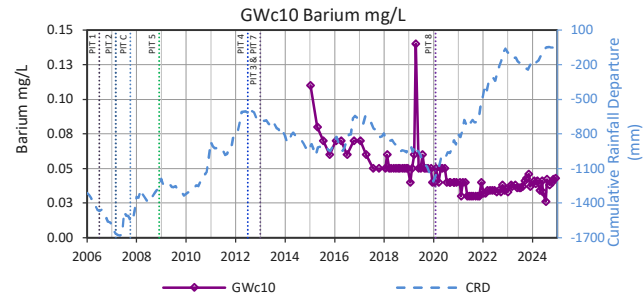
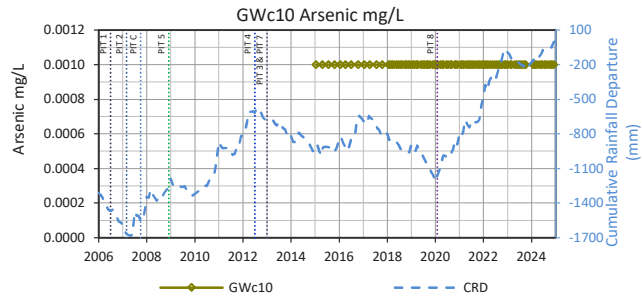
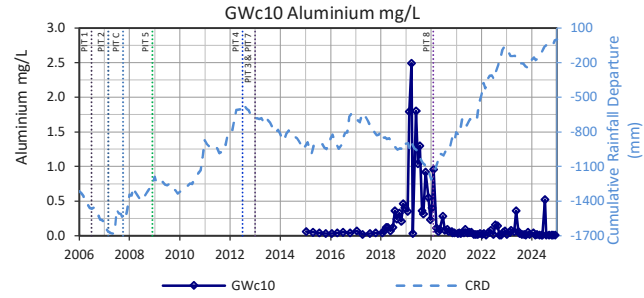
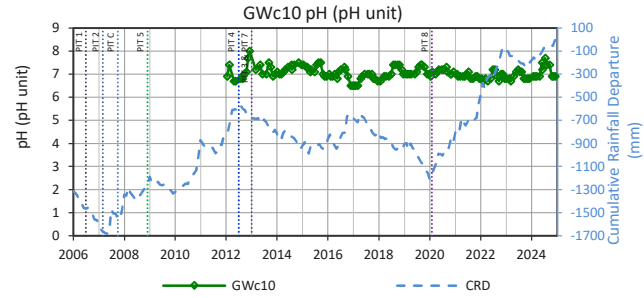
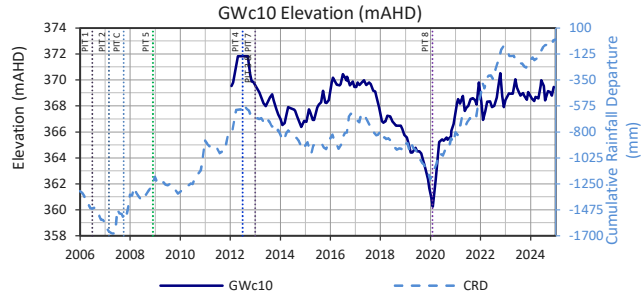


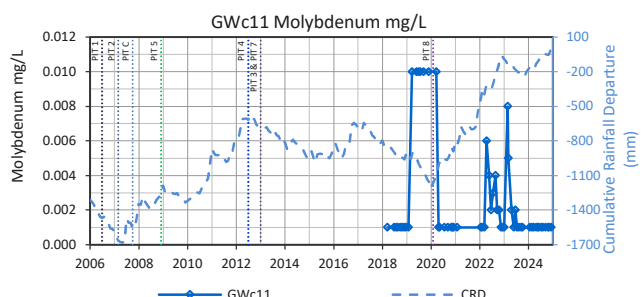
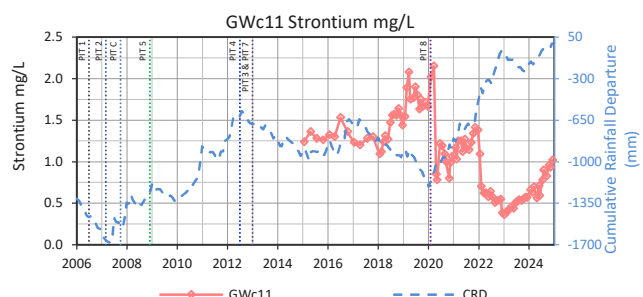
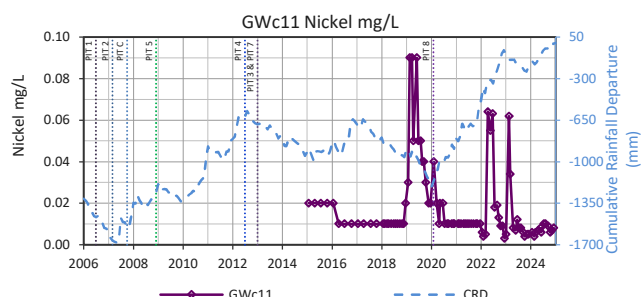
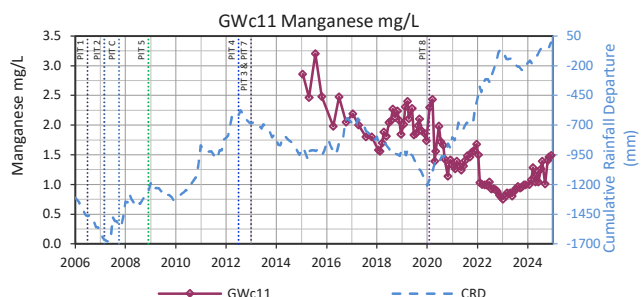
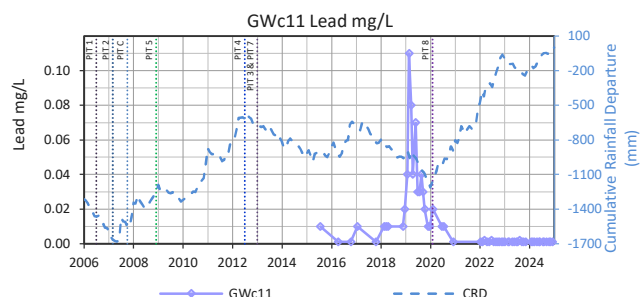
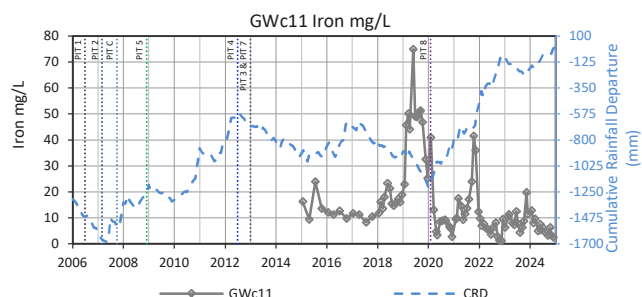
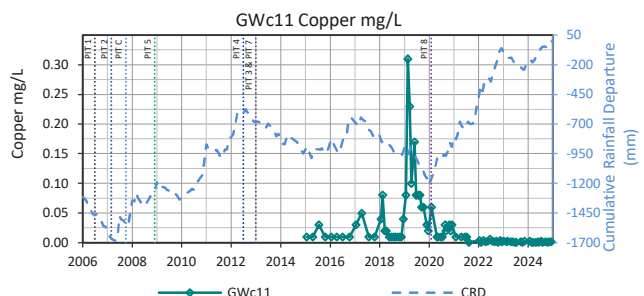
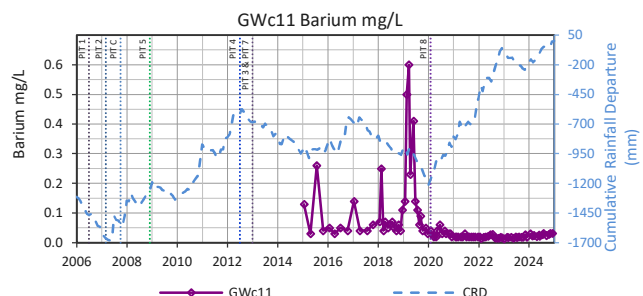
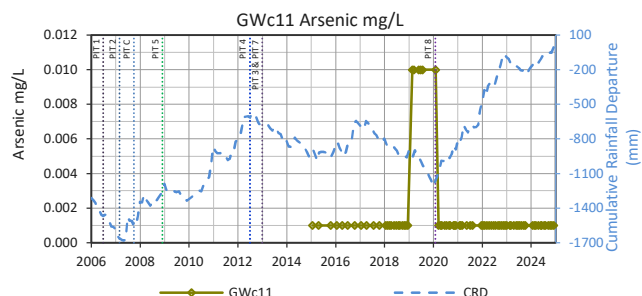
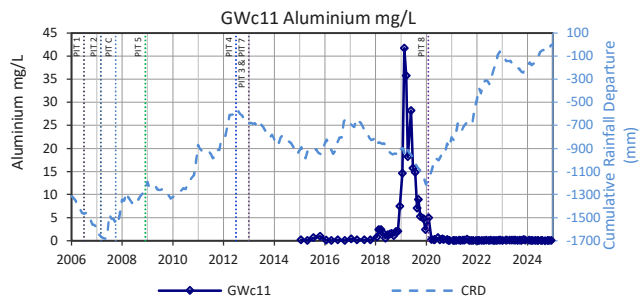
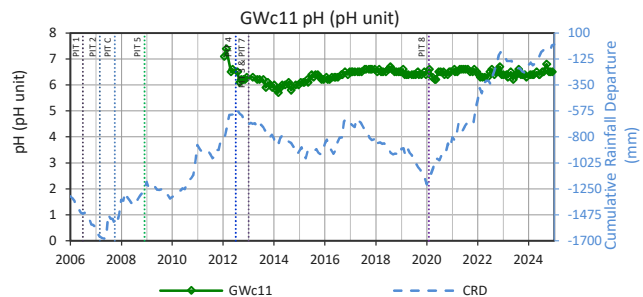
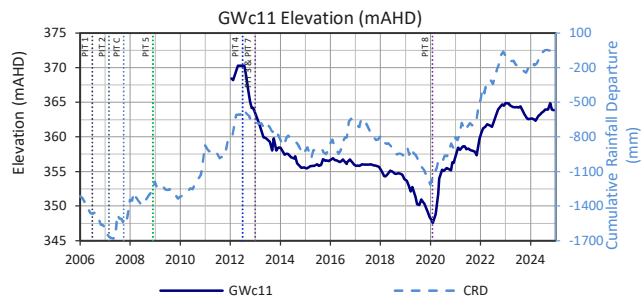


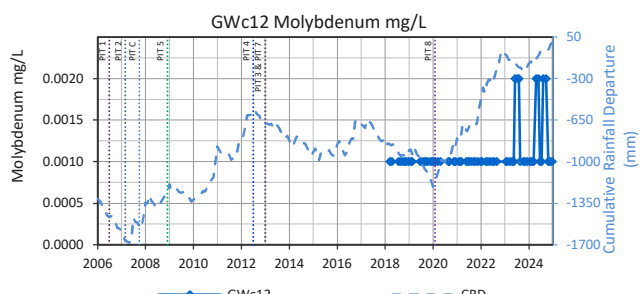
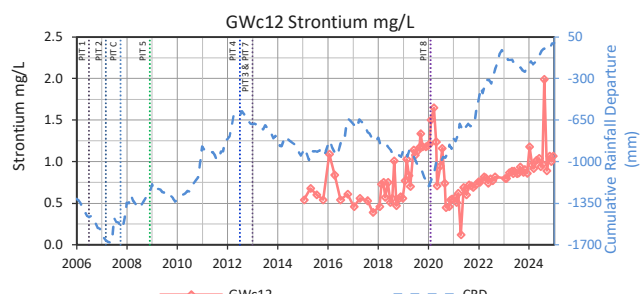
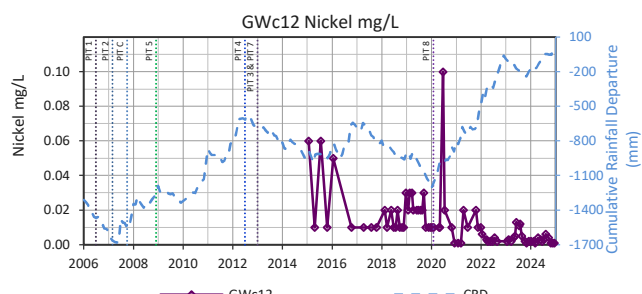
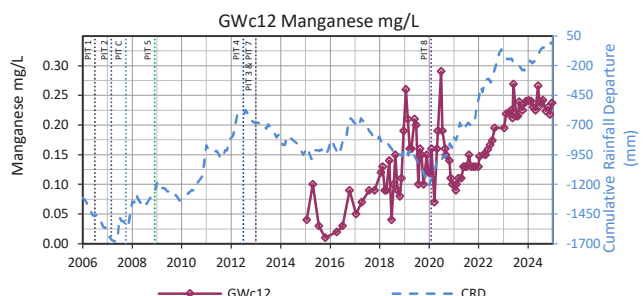
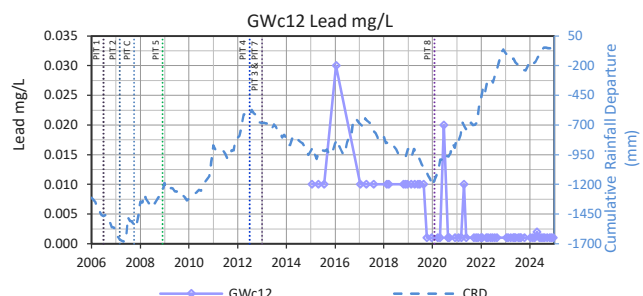
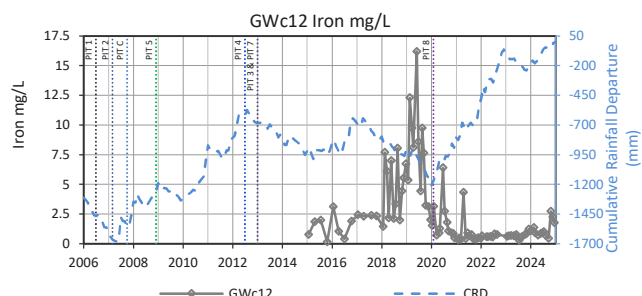
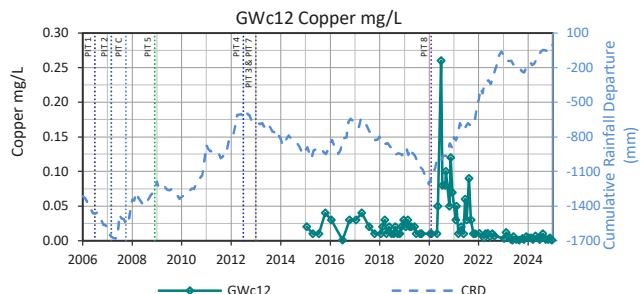
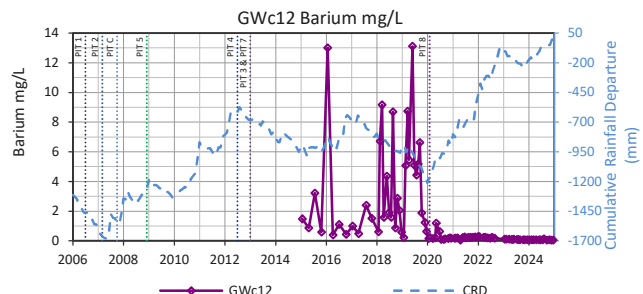
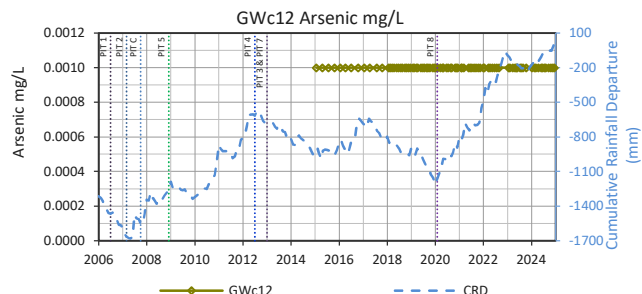
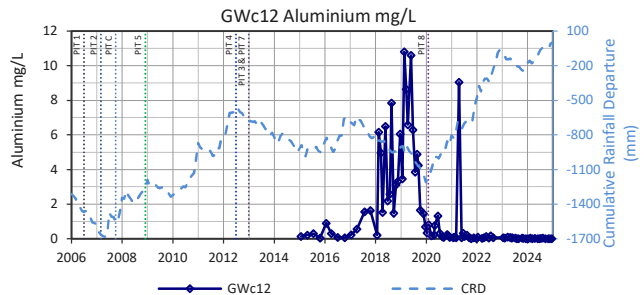
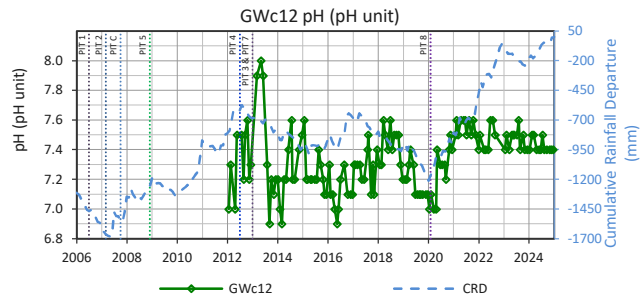
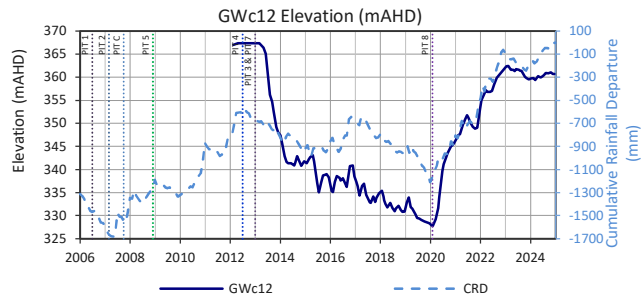


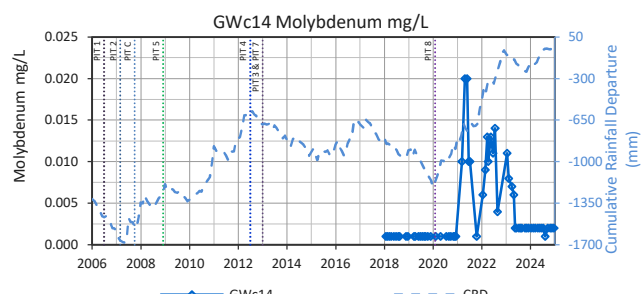
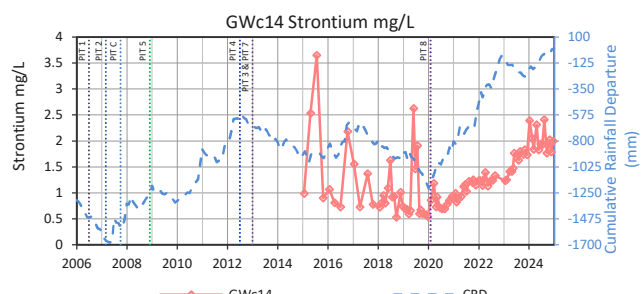
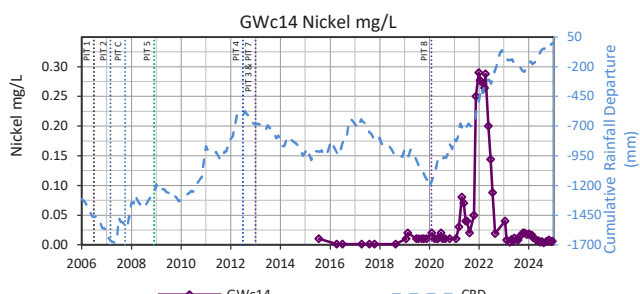
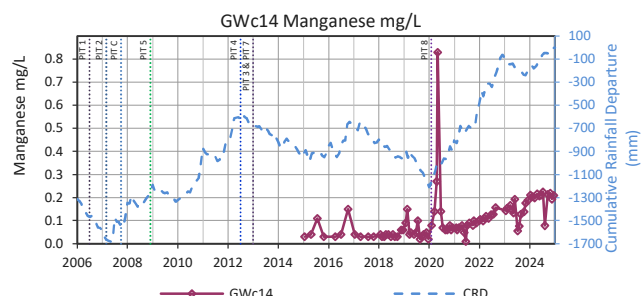
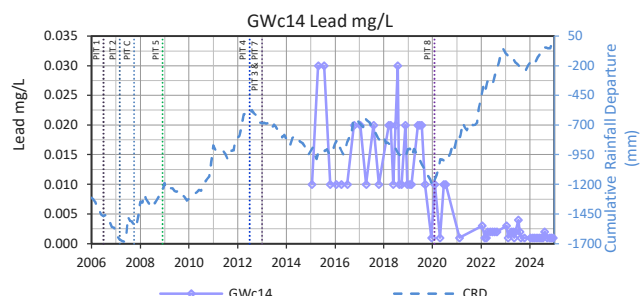
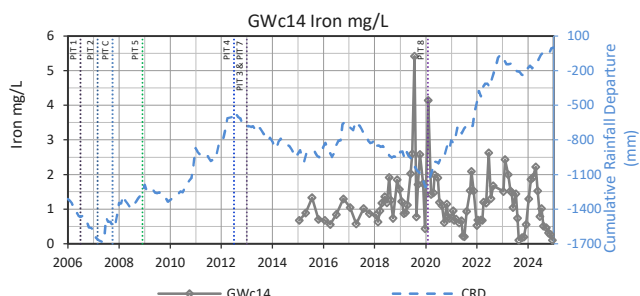
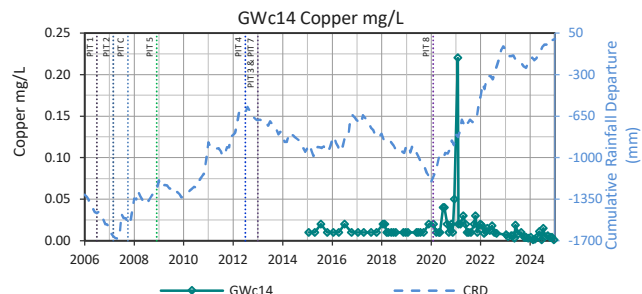
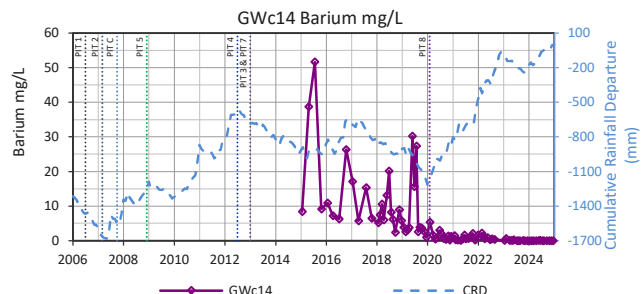
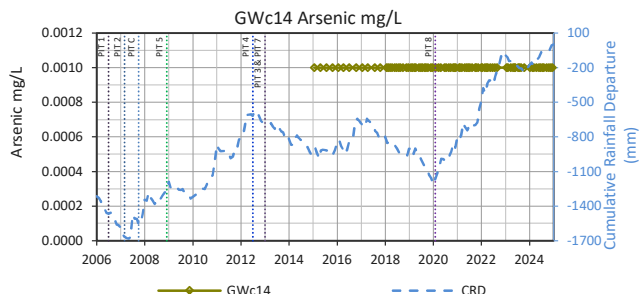
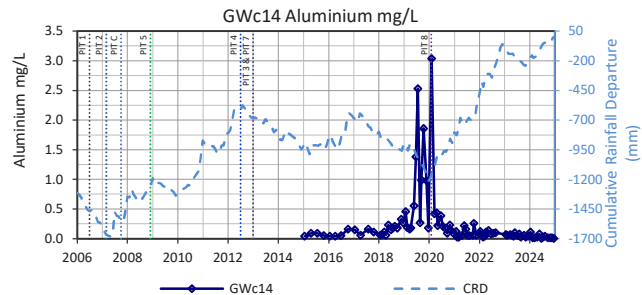
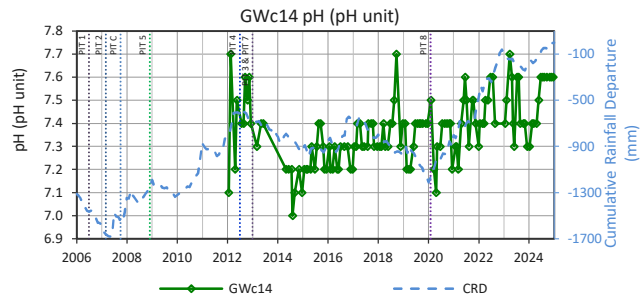
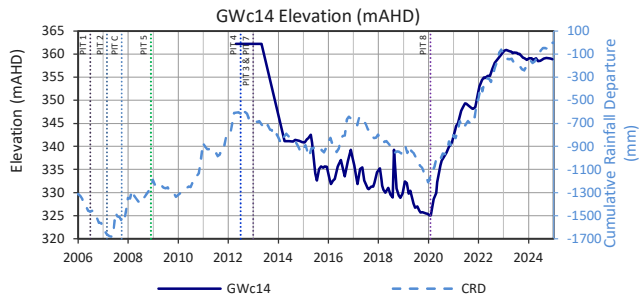


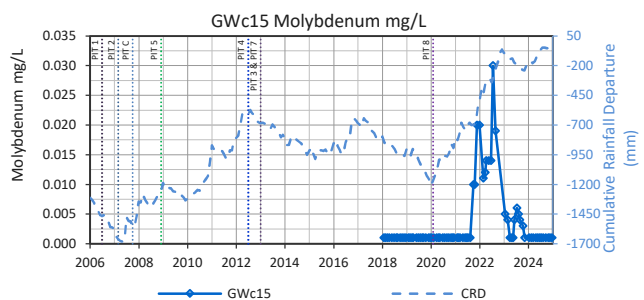
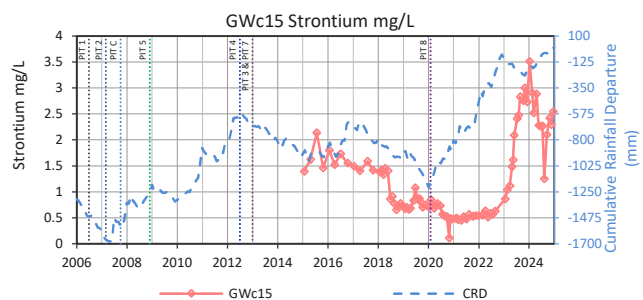
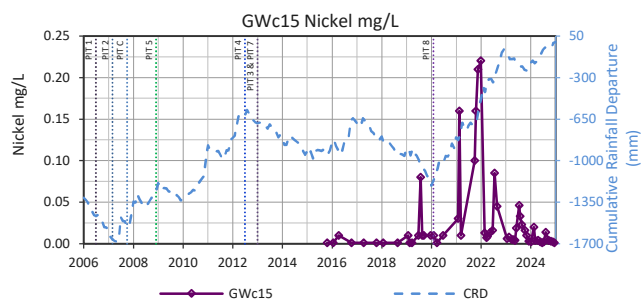
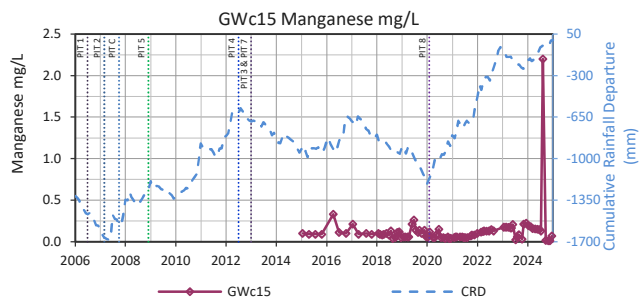
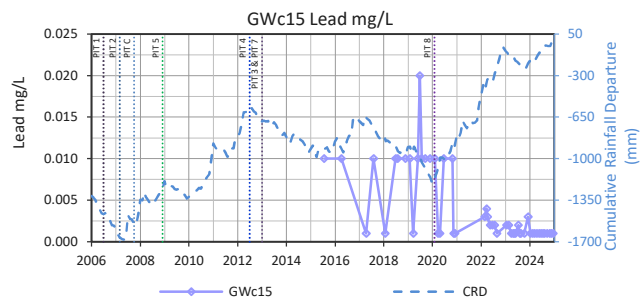
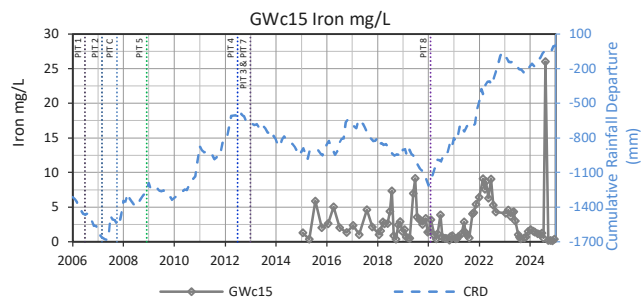
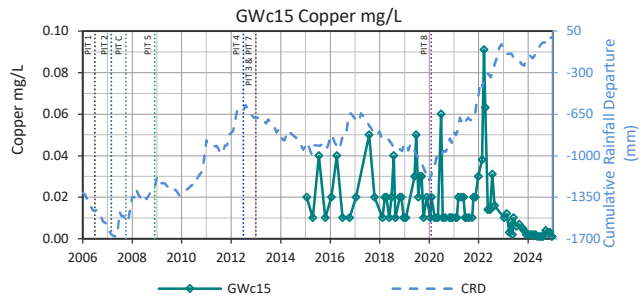
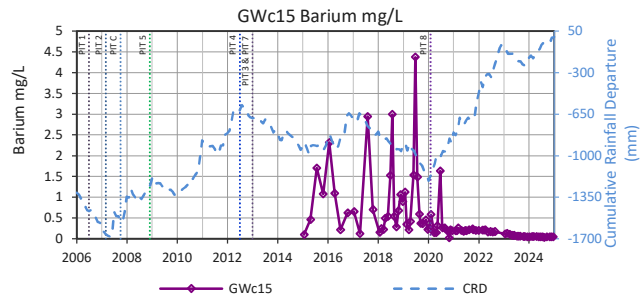
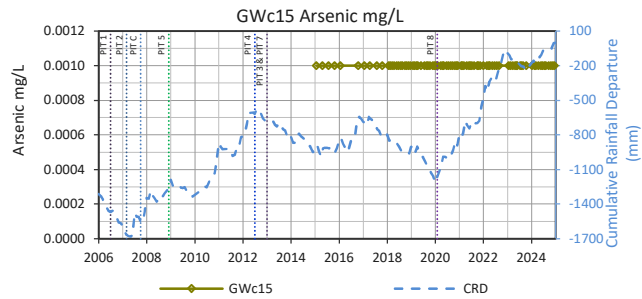
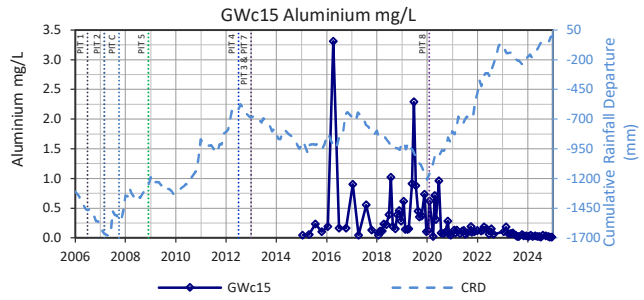
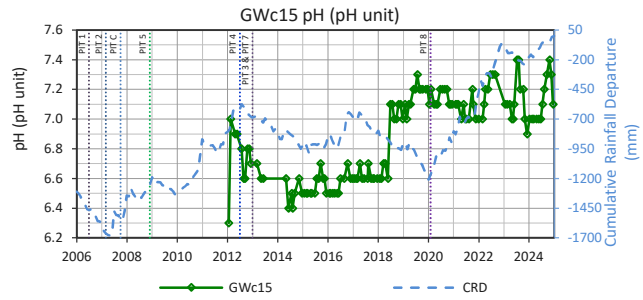
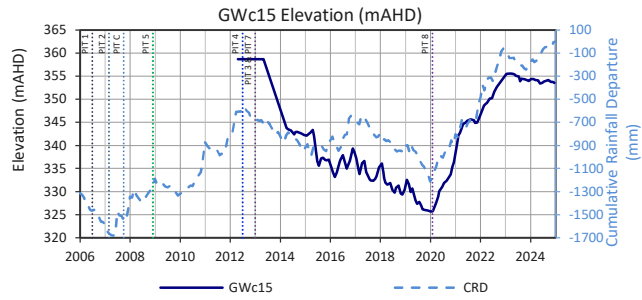




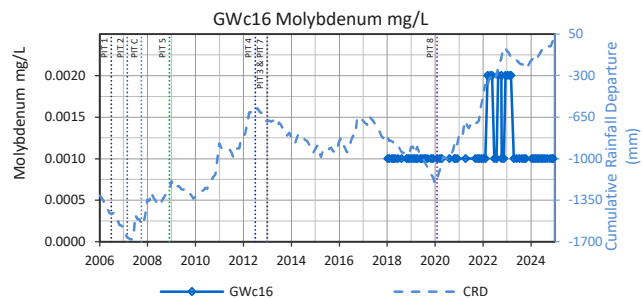
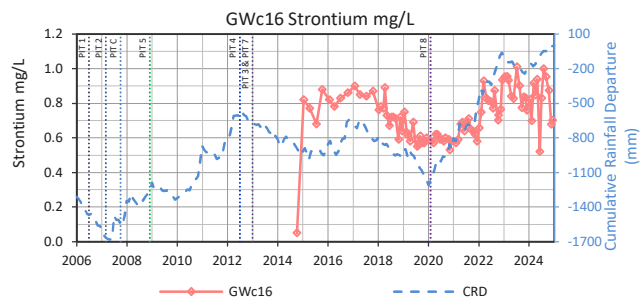
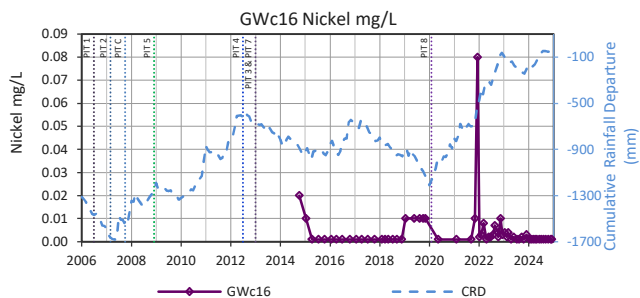
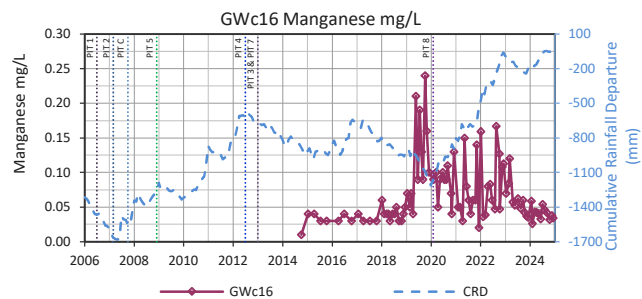
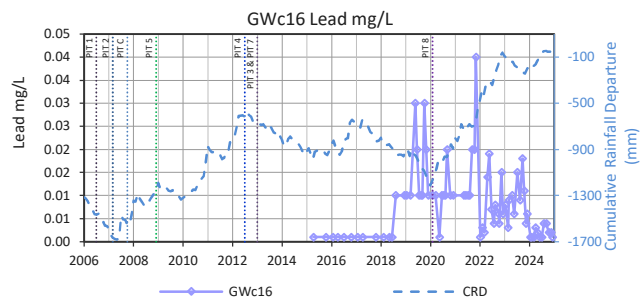
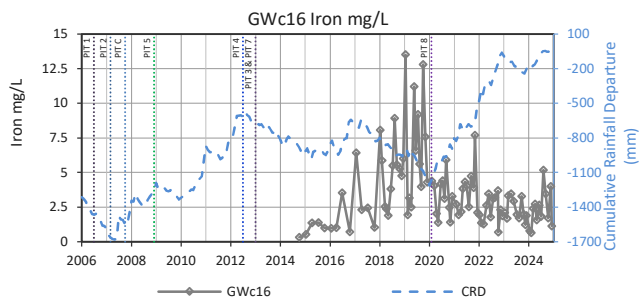
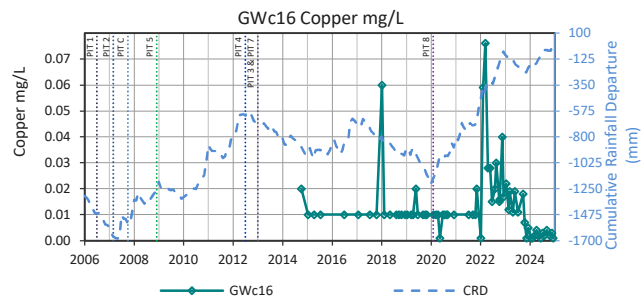
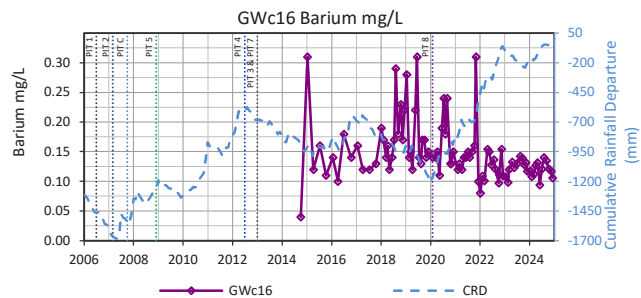
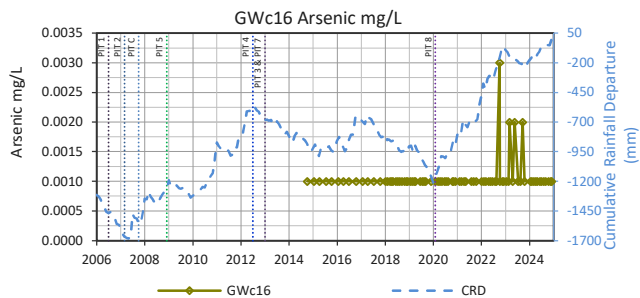
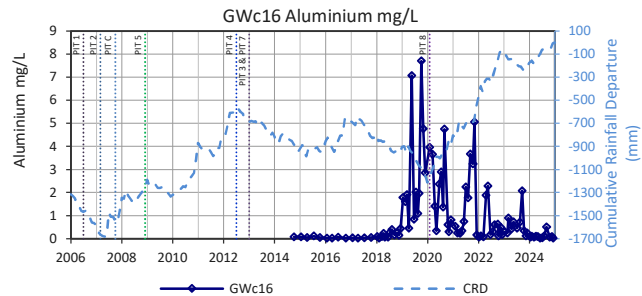
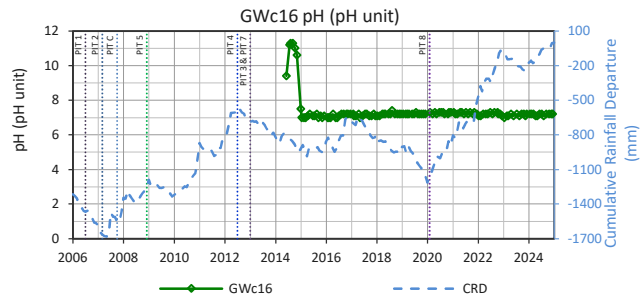
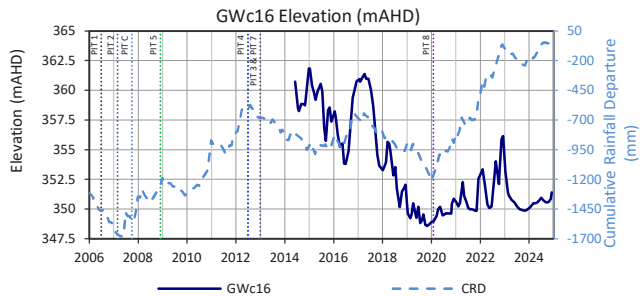


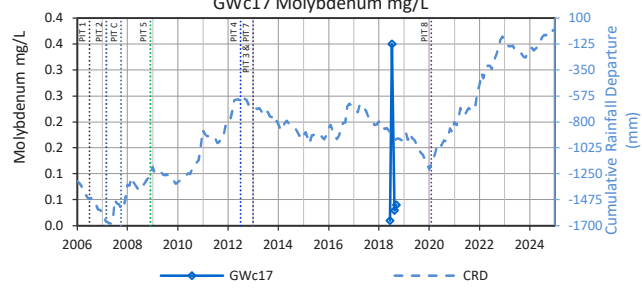
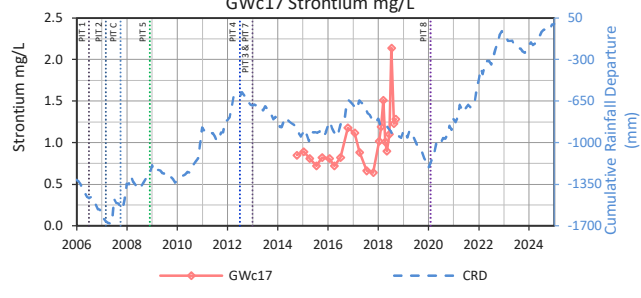
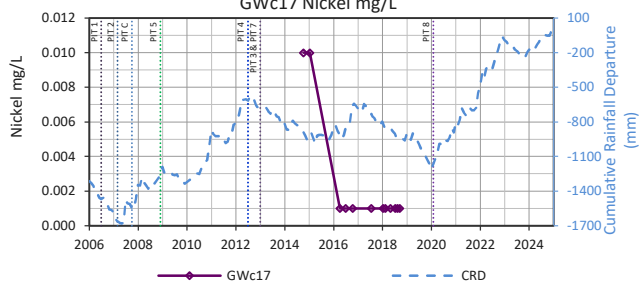
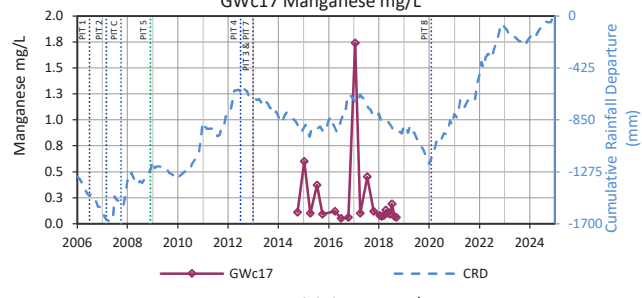
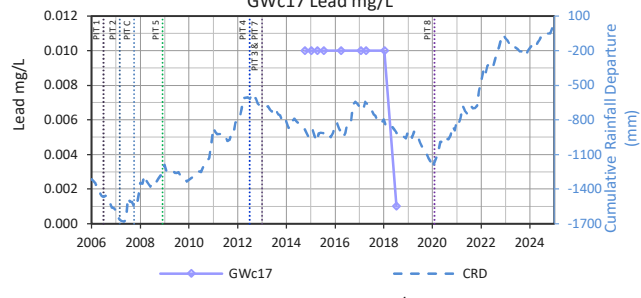
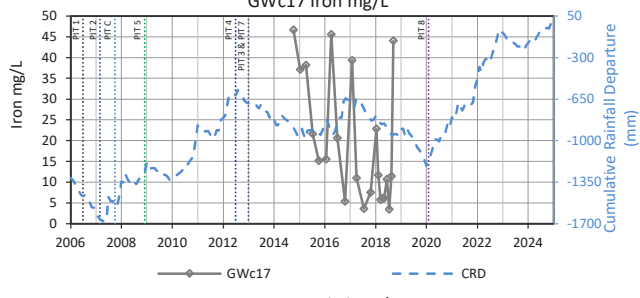
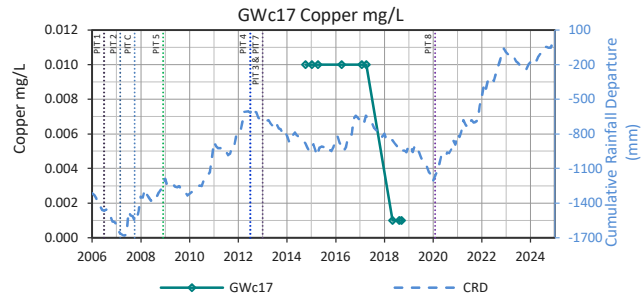
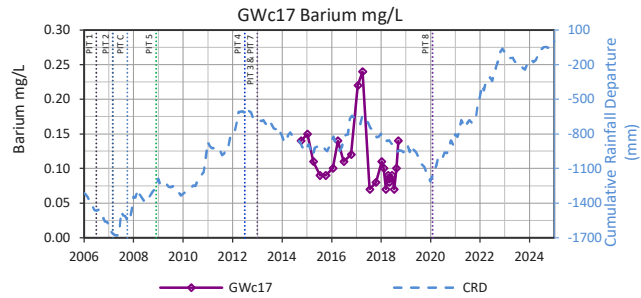
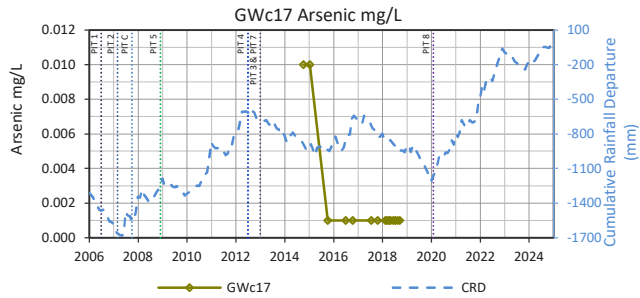
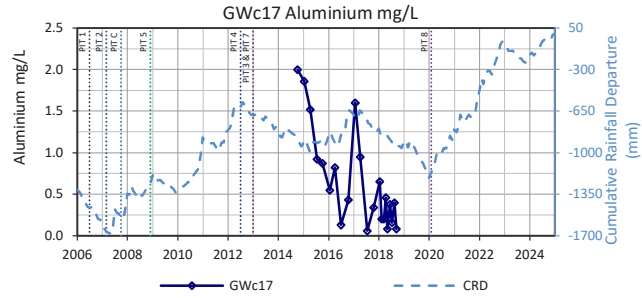
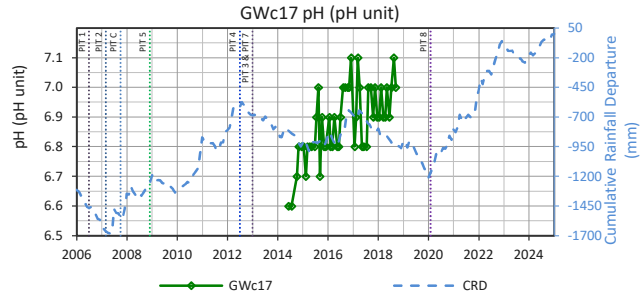
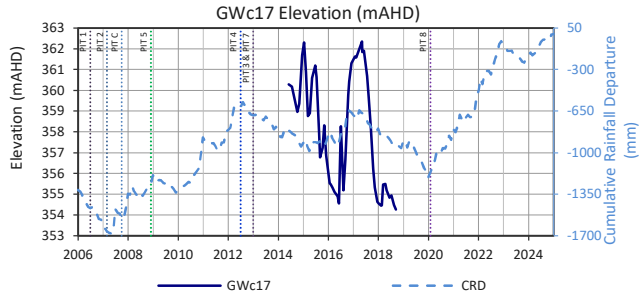


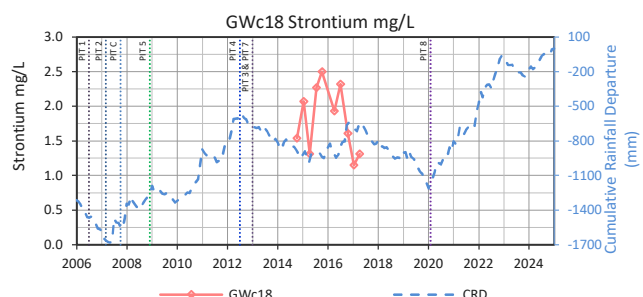
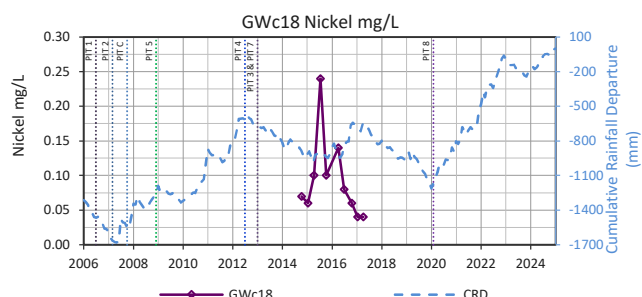
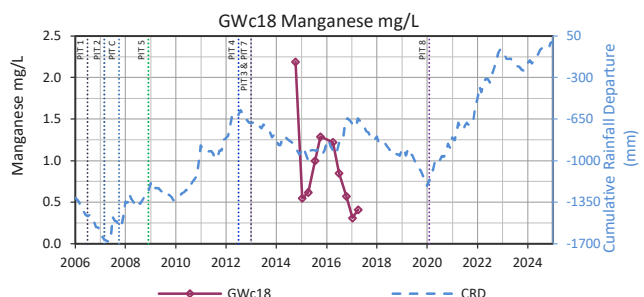
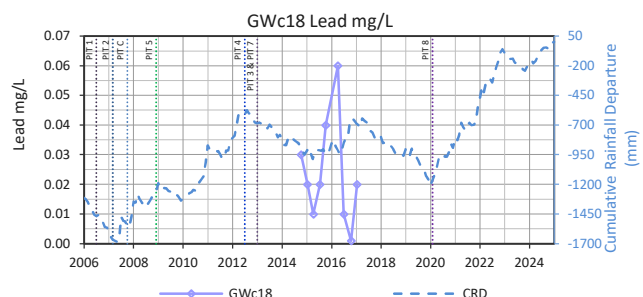
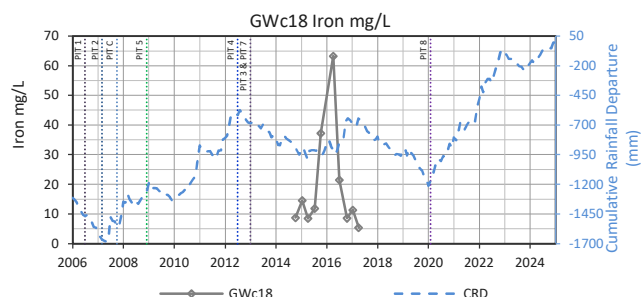
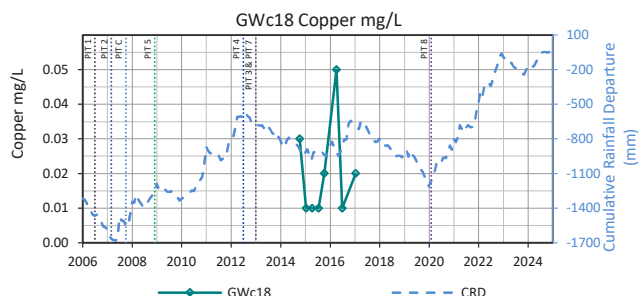
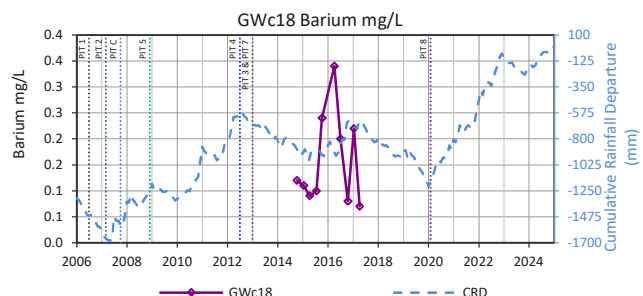
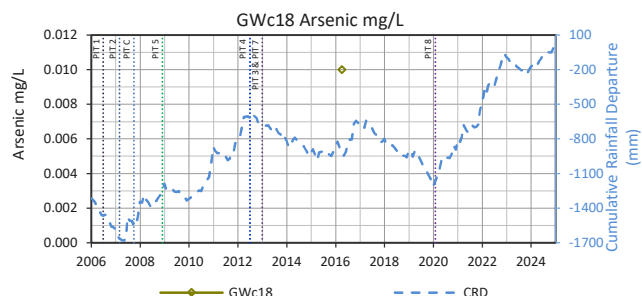
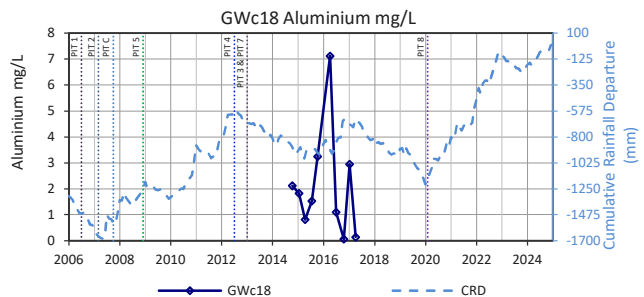
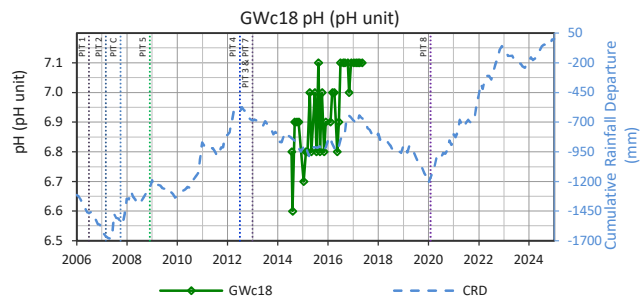
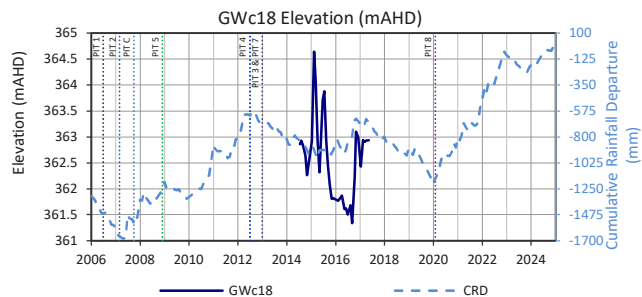






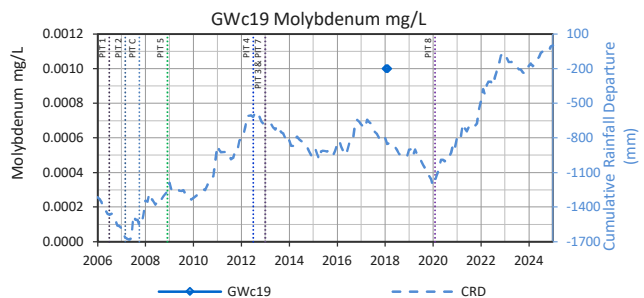
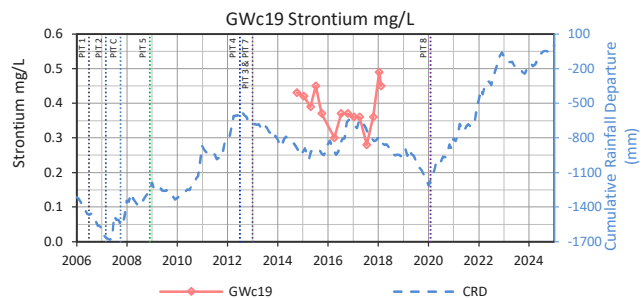
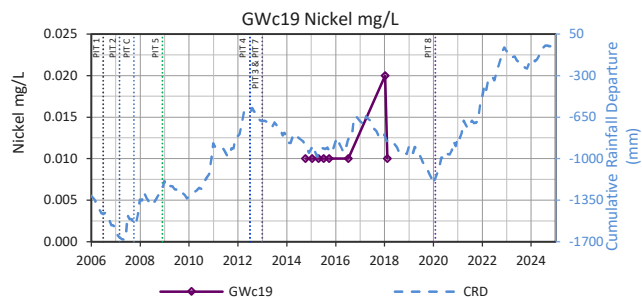
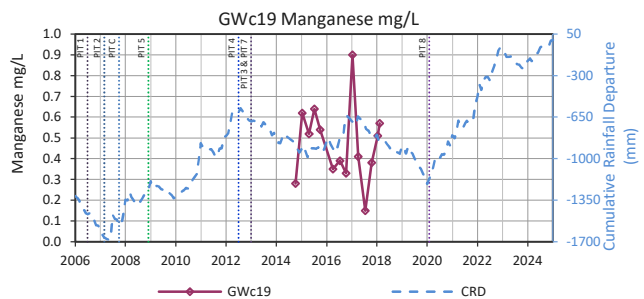
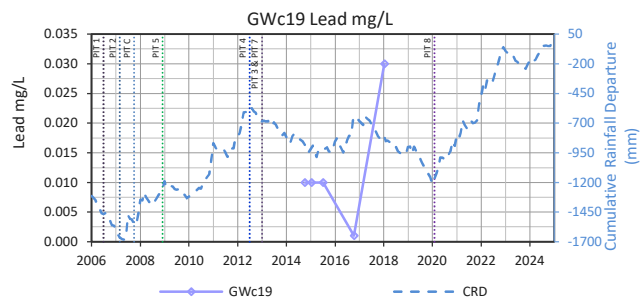
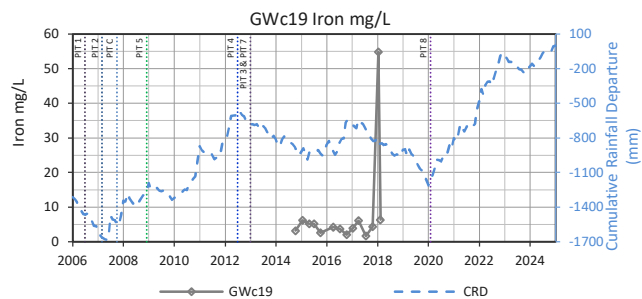
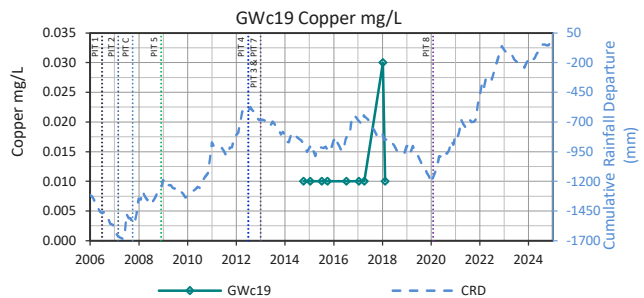
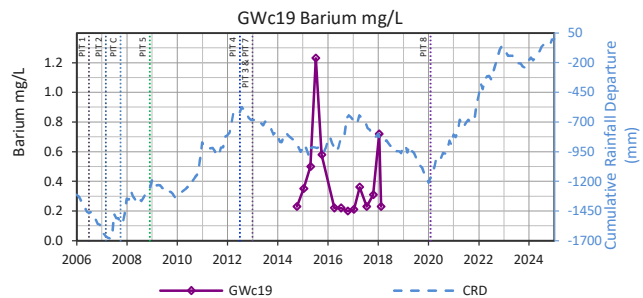
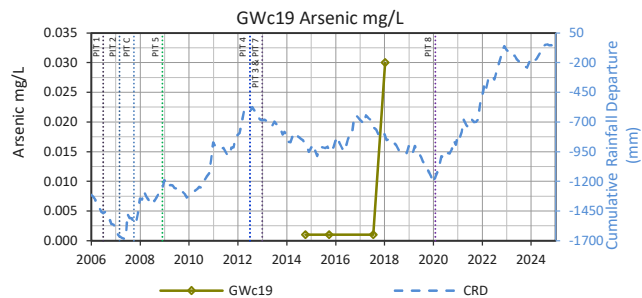
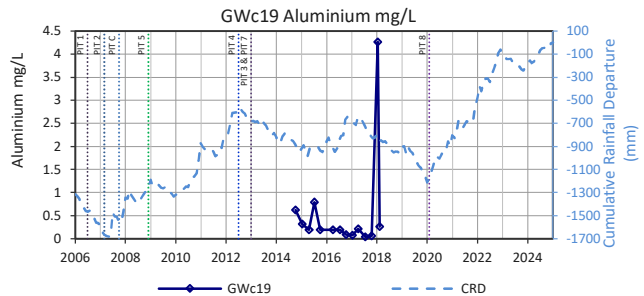
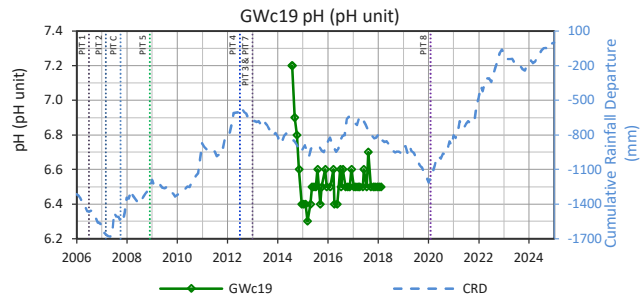
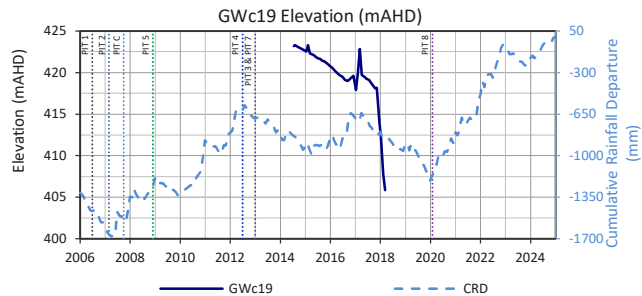


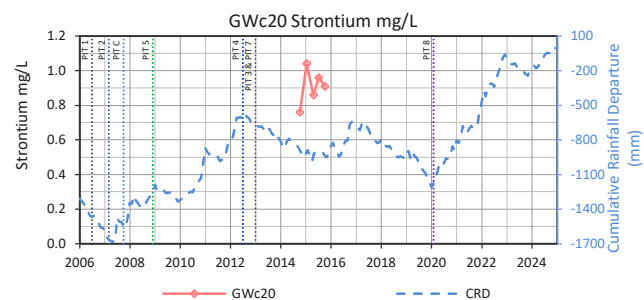
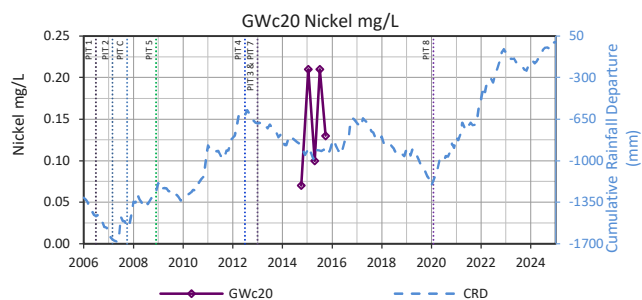
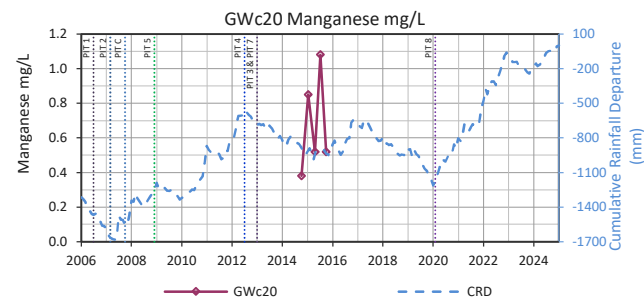
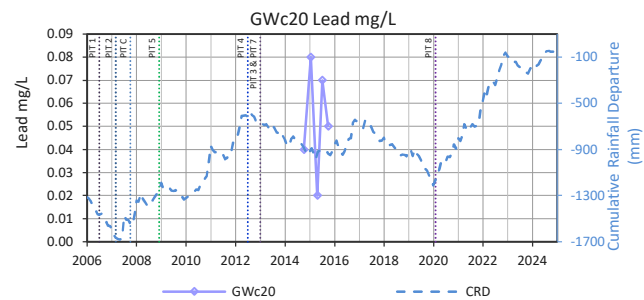
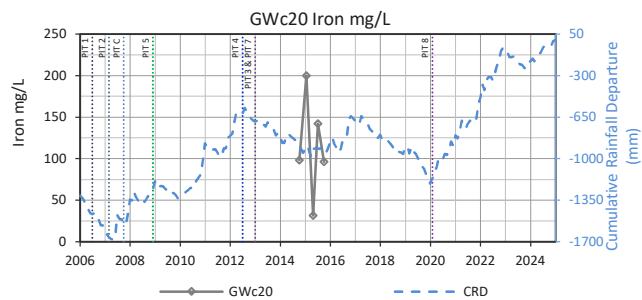
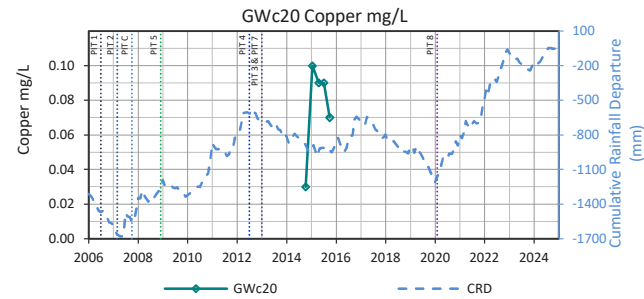
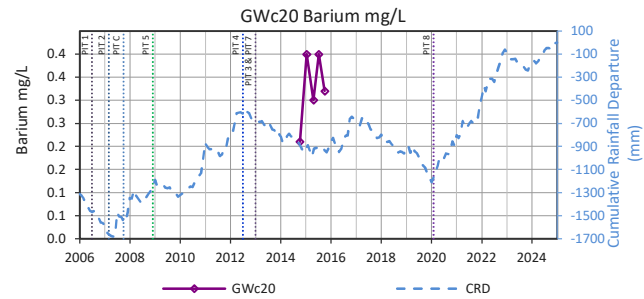
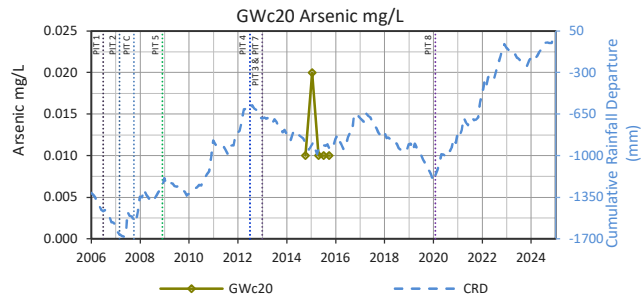
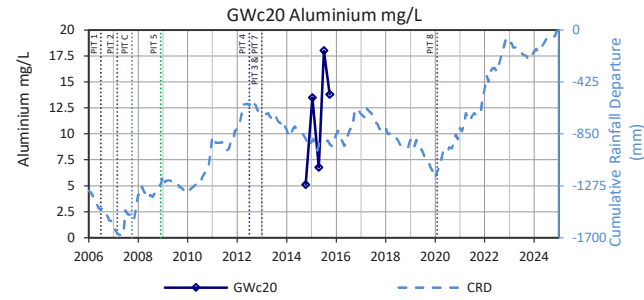
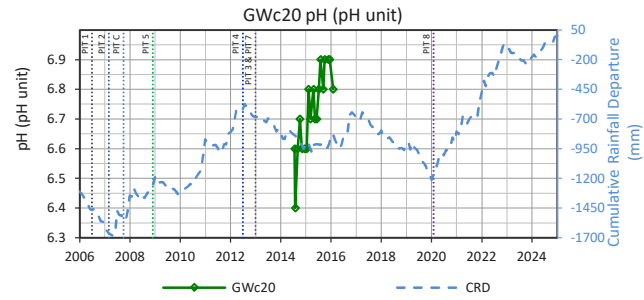
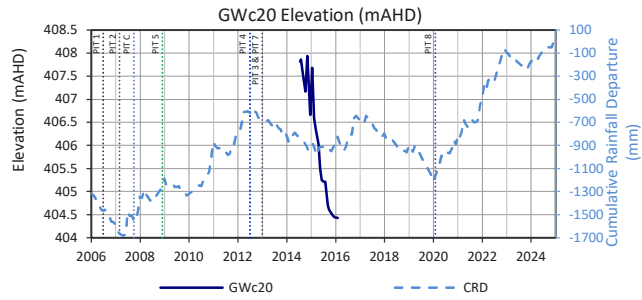




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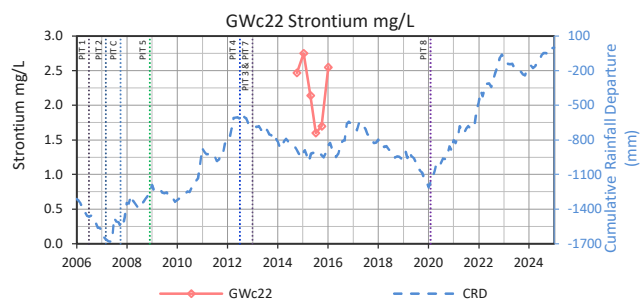
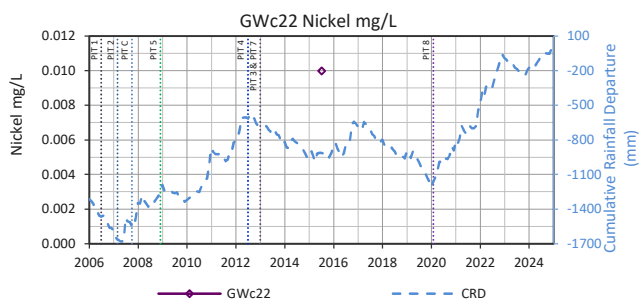
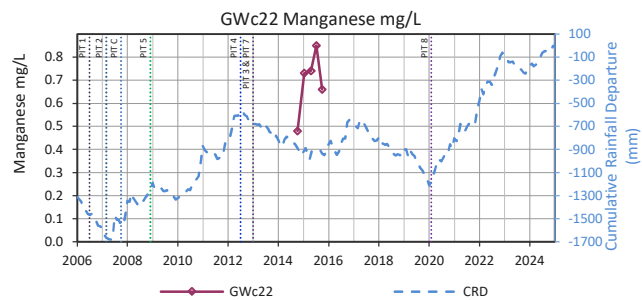
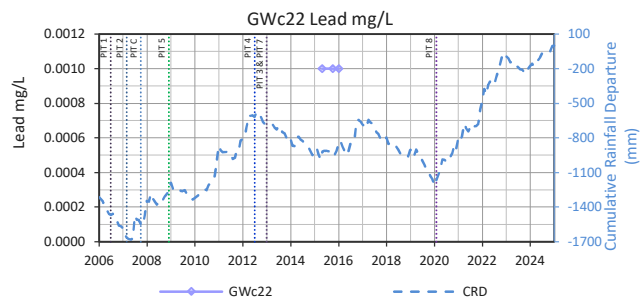
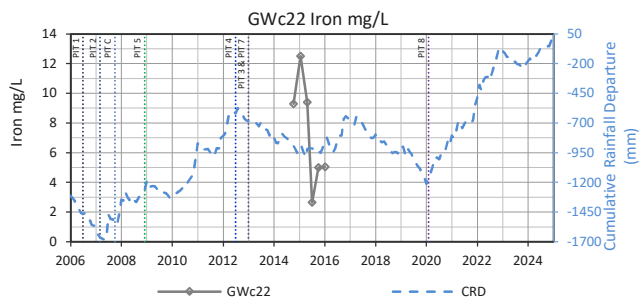
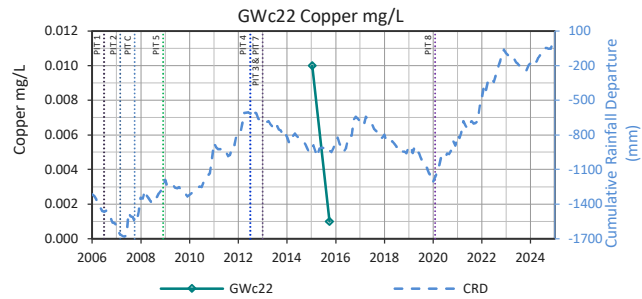
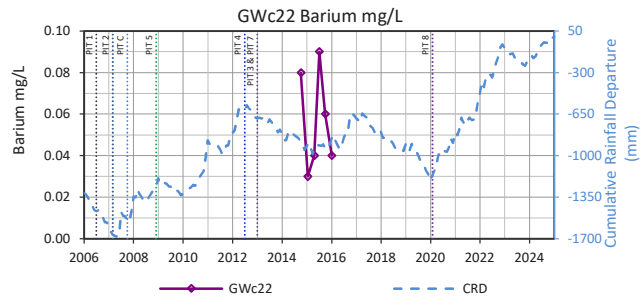
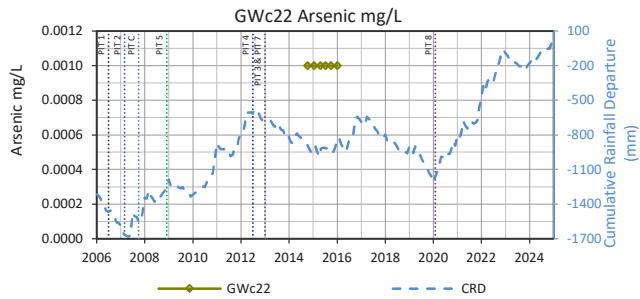
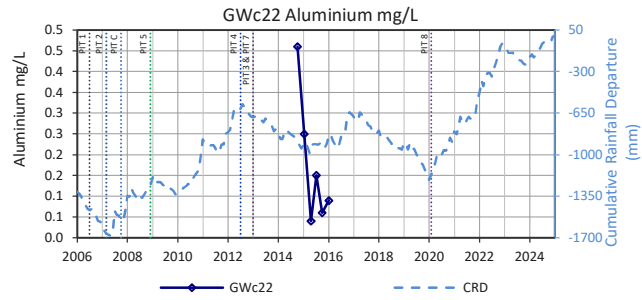
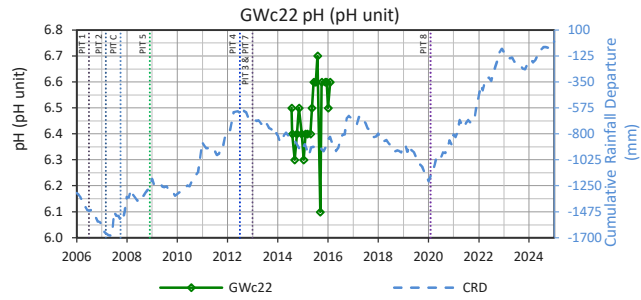
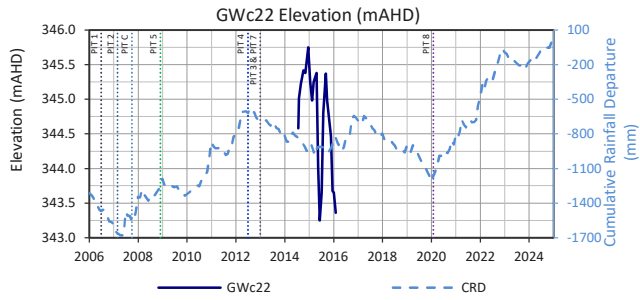
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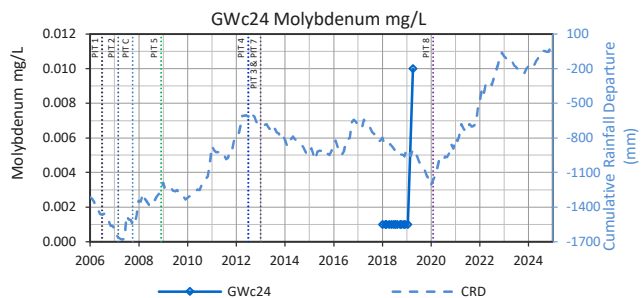
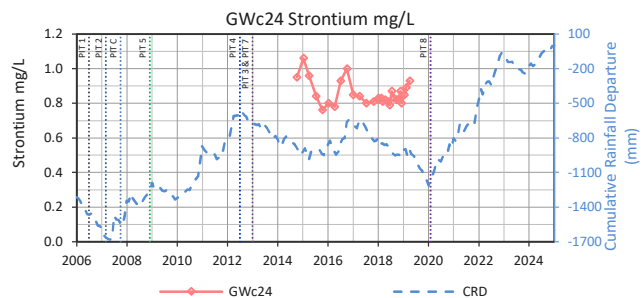
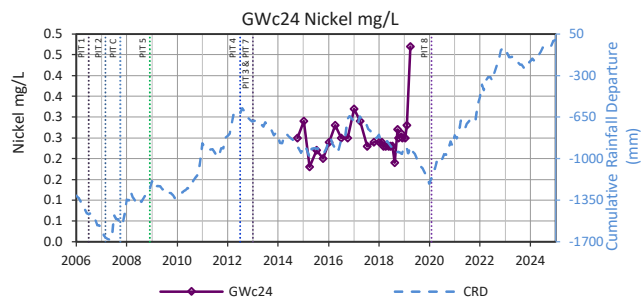
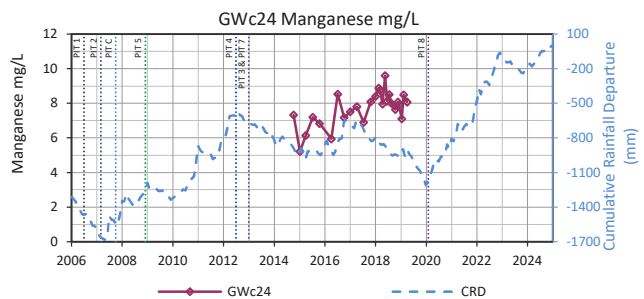
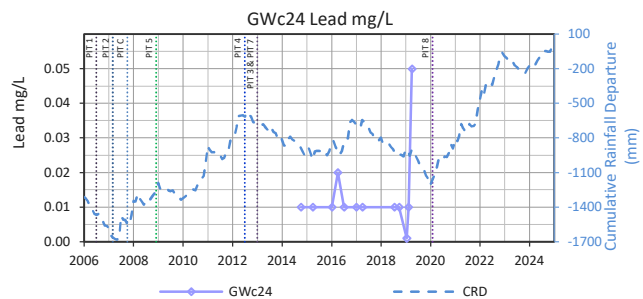
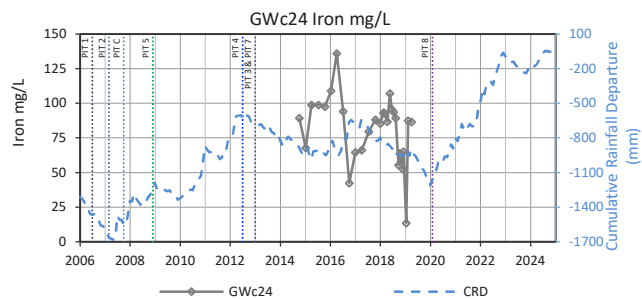
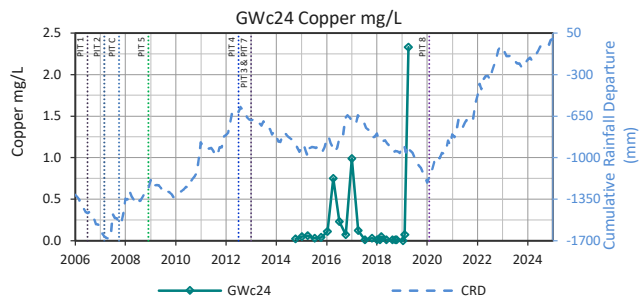
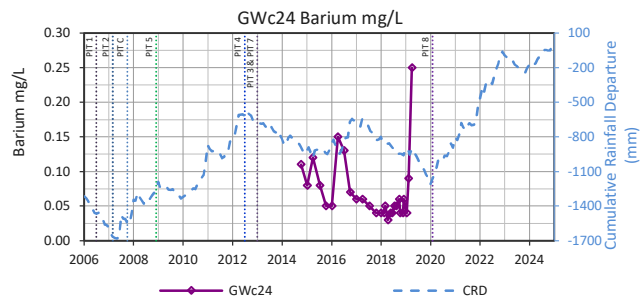
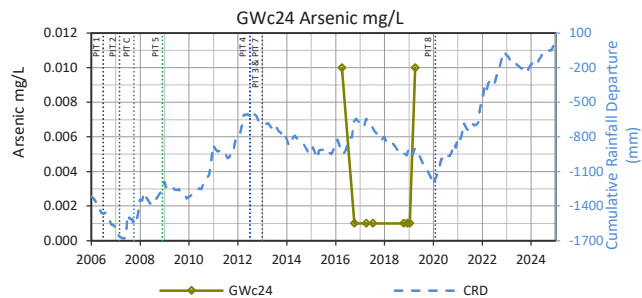
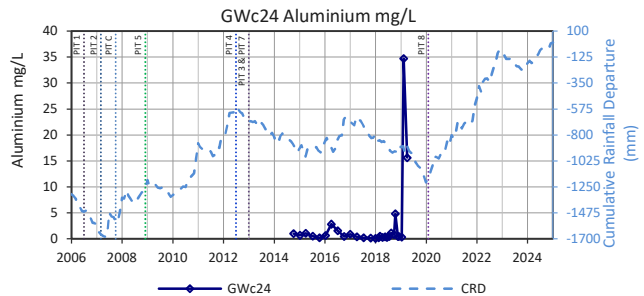
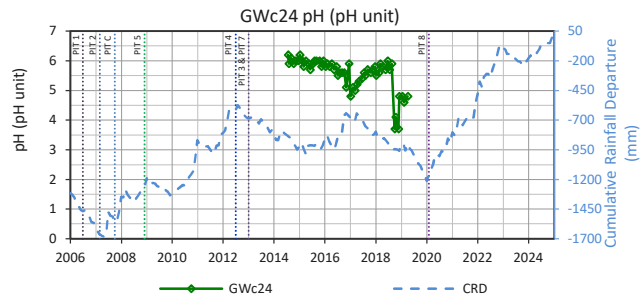
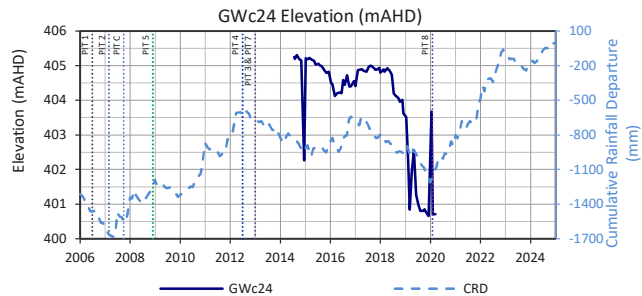


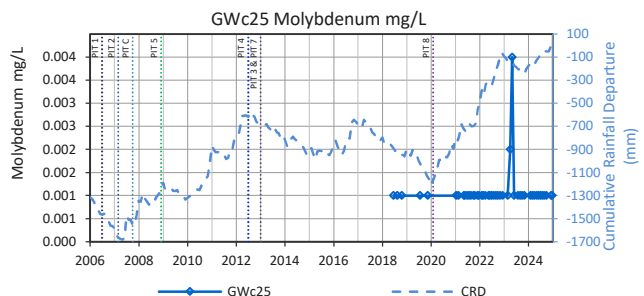
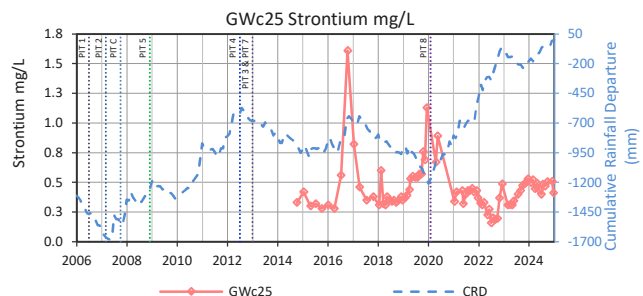
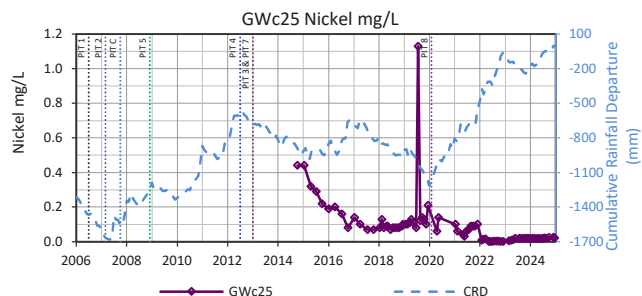
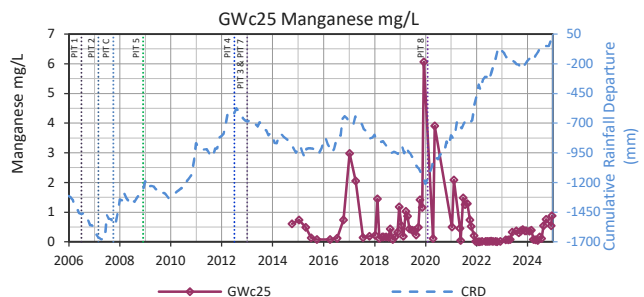
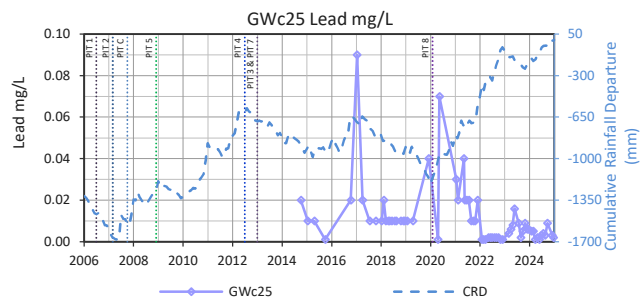
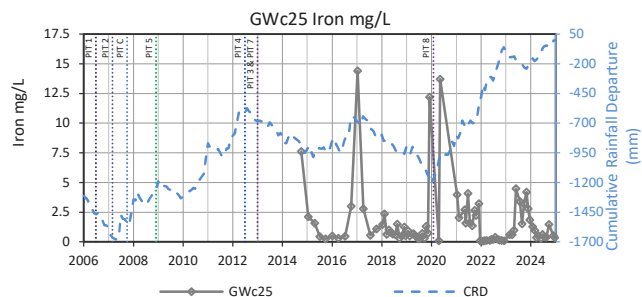
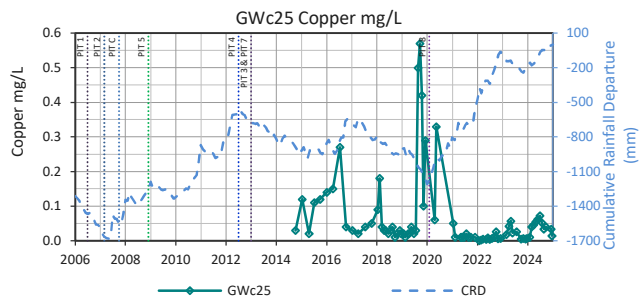
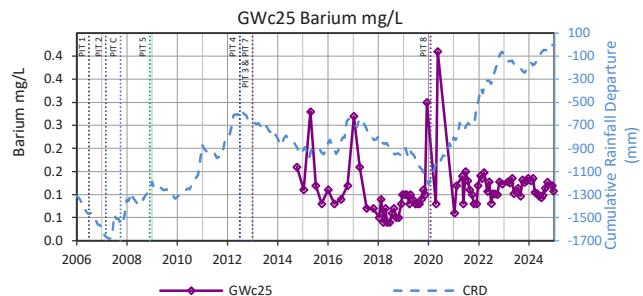
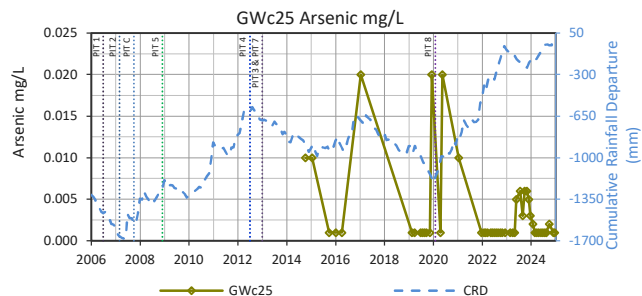
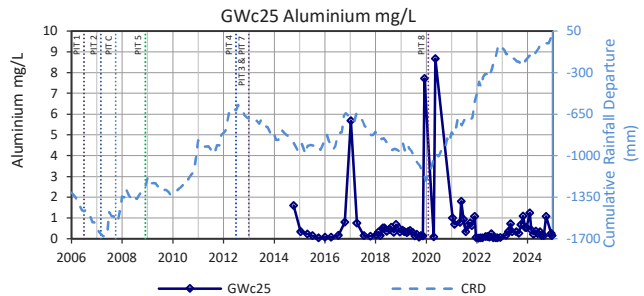
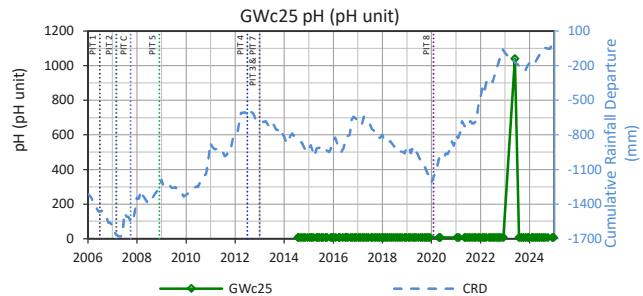
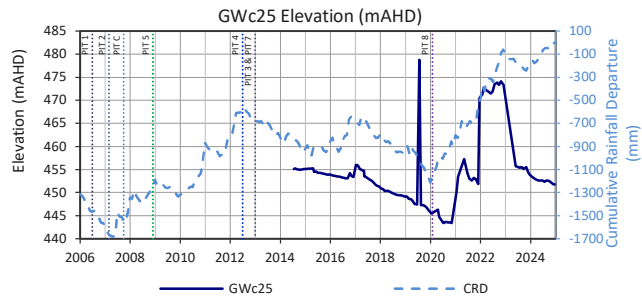
GWc20

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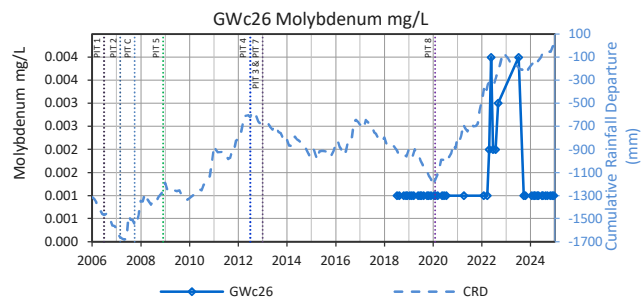
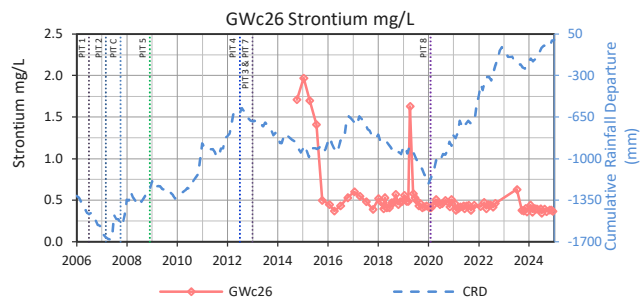
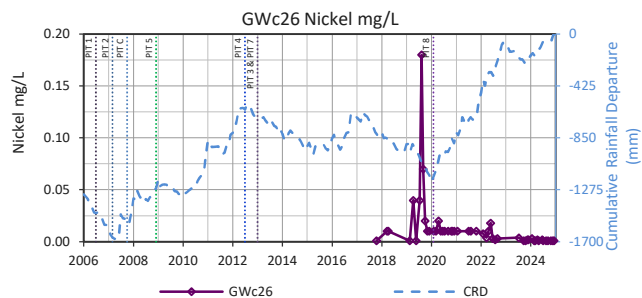
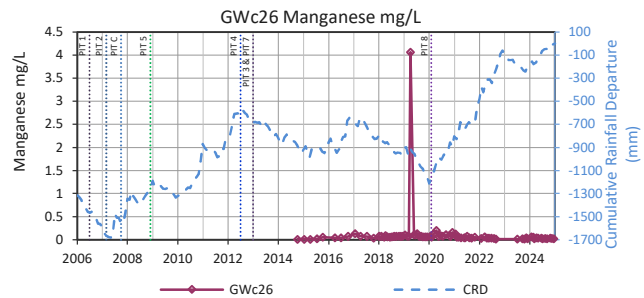
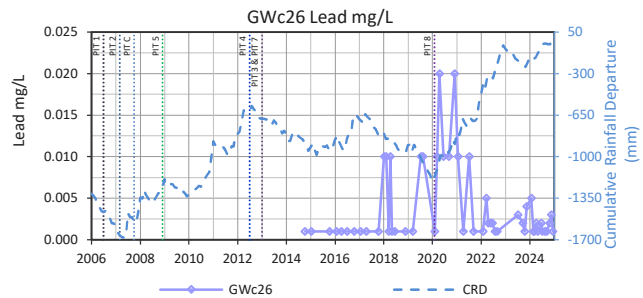
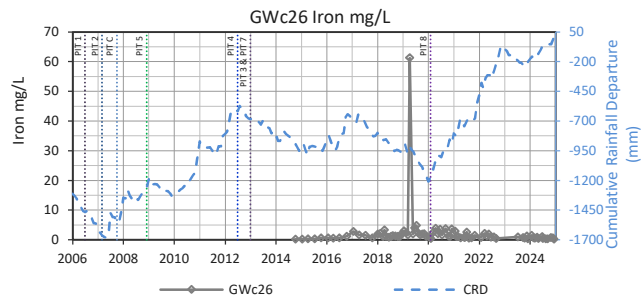
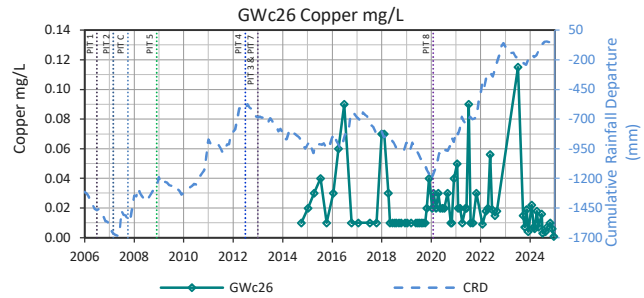
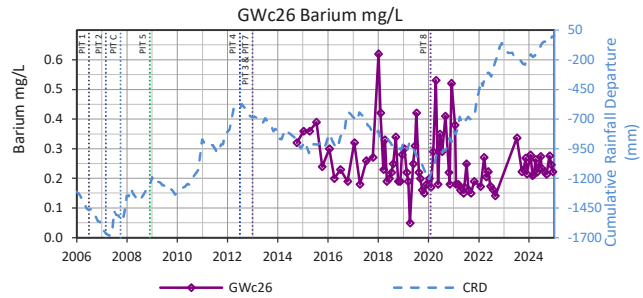
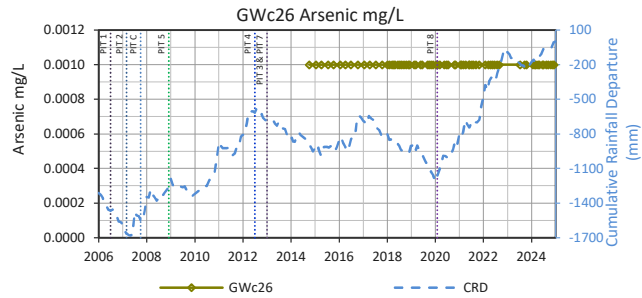
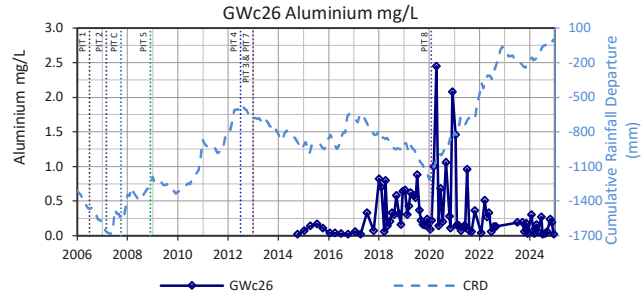
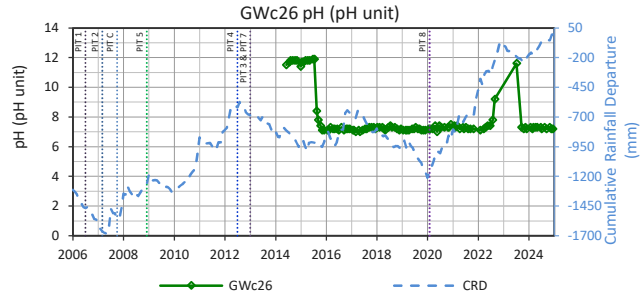
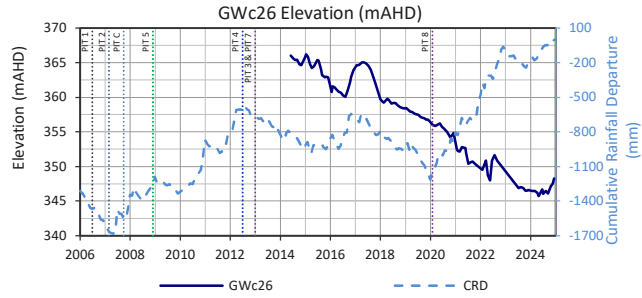


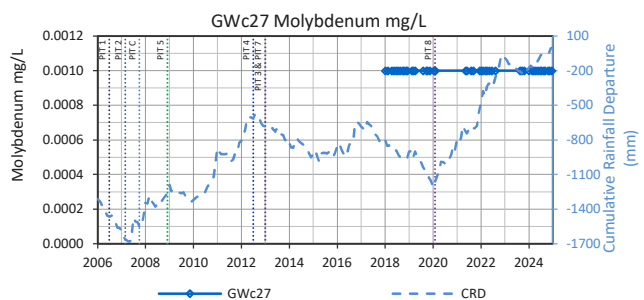
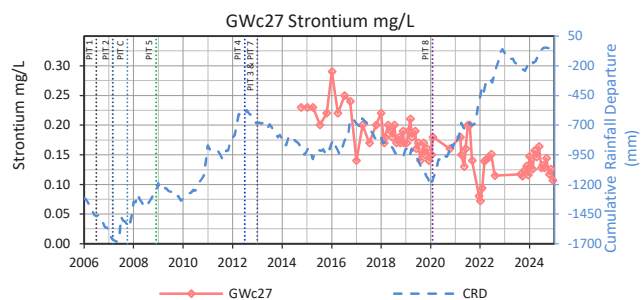
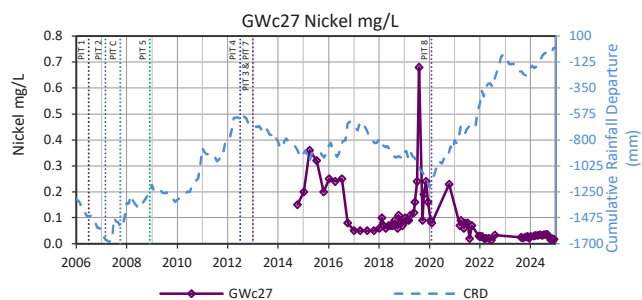
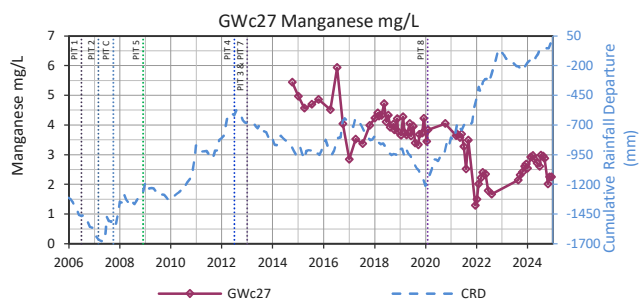
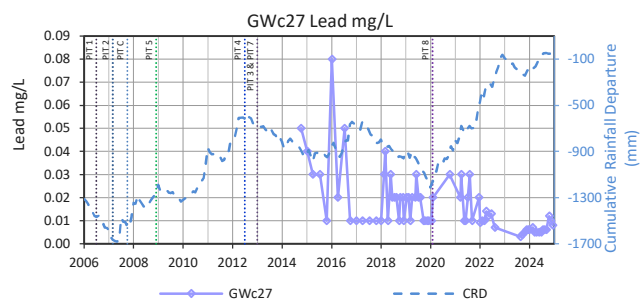
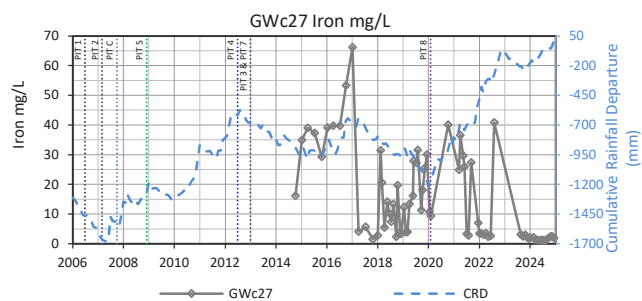
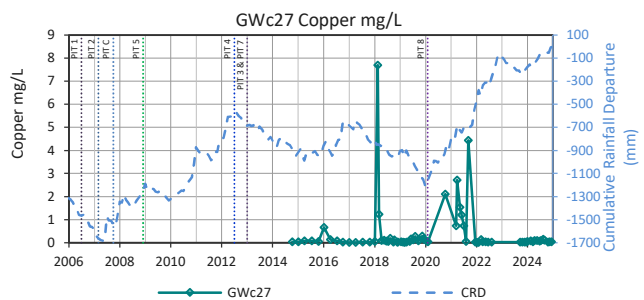
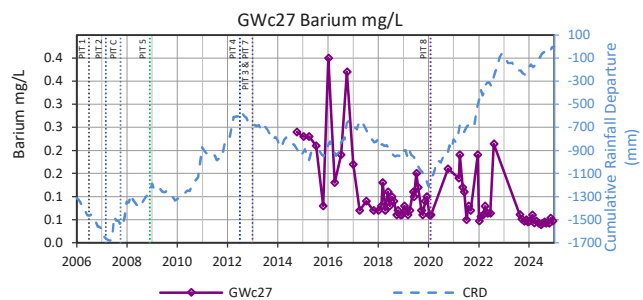
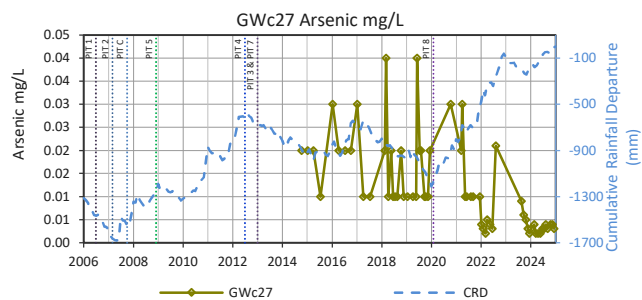
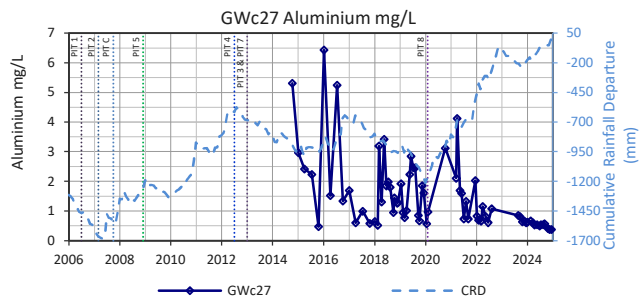
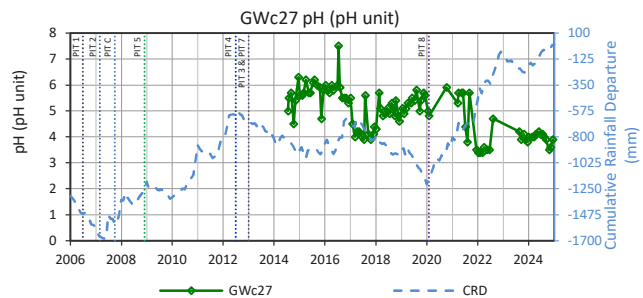
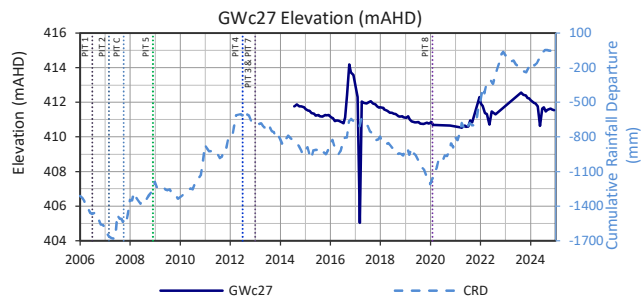
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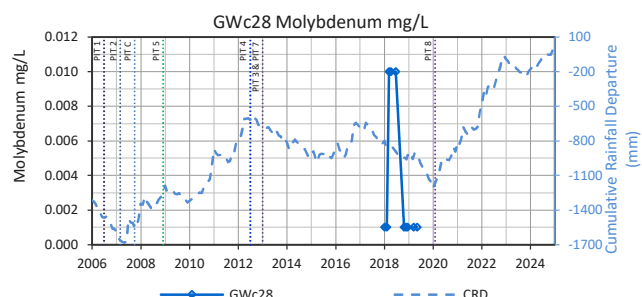
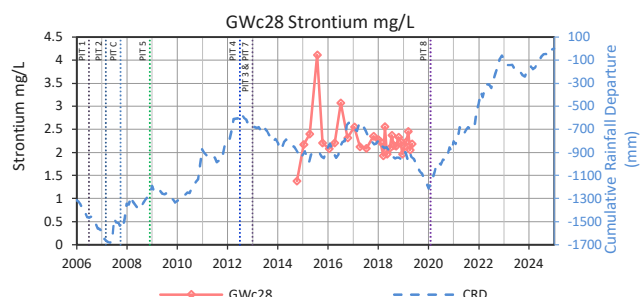
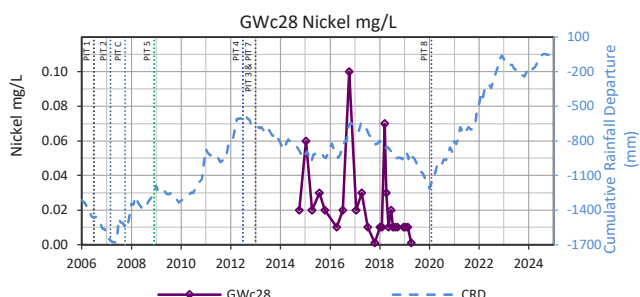
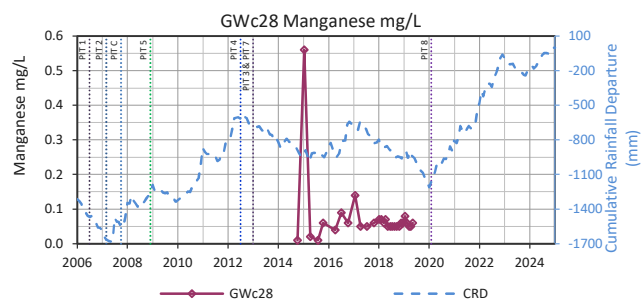
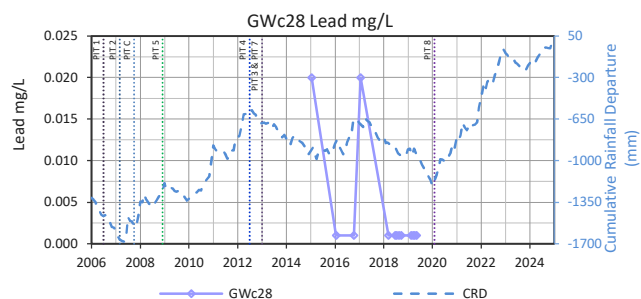
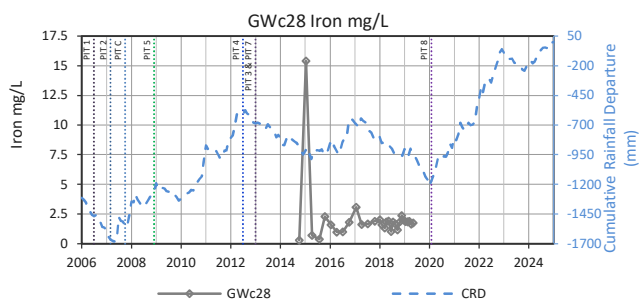
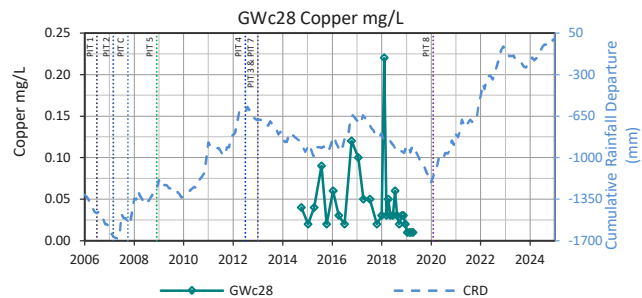
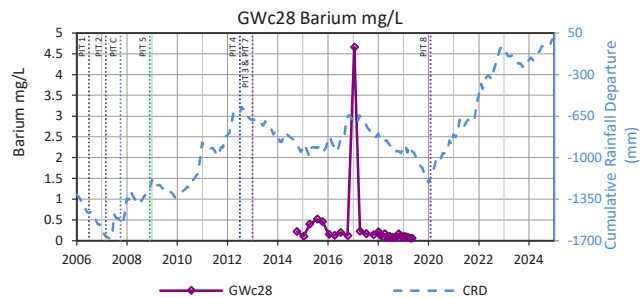
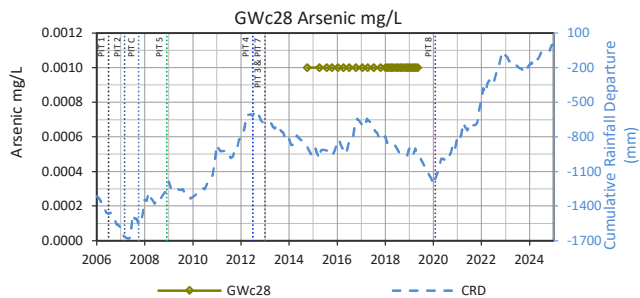
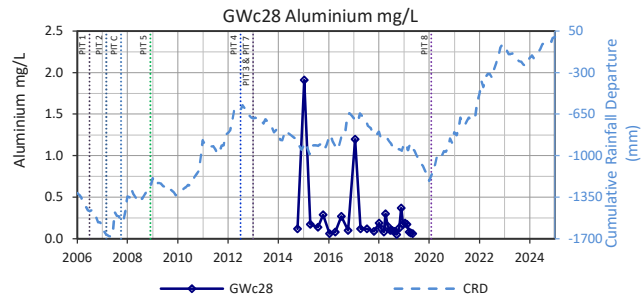
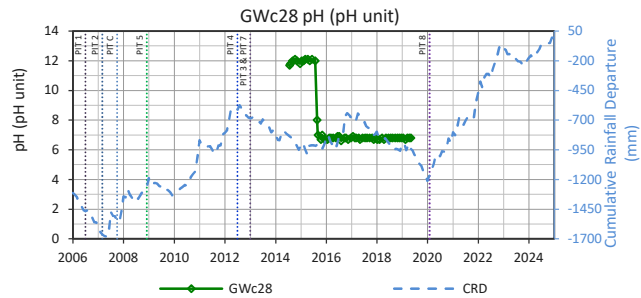
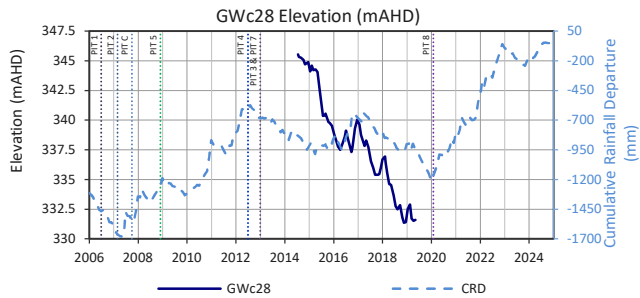


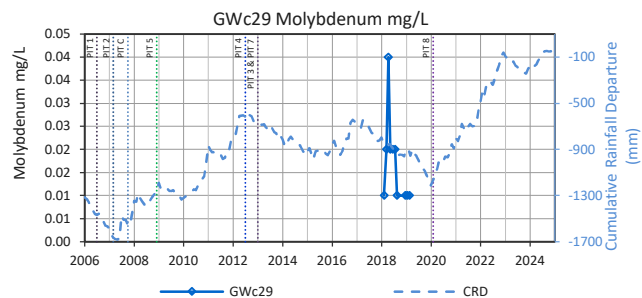
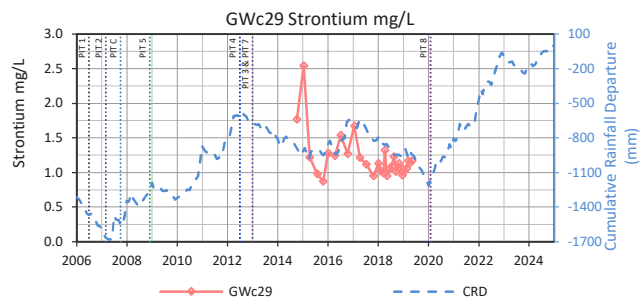
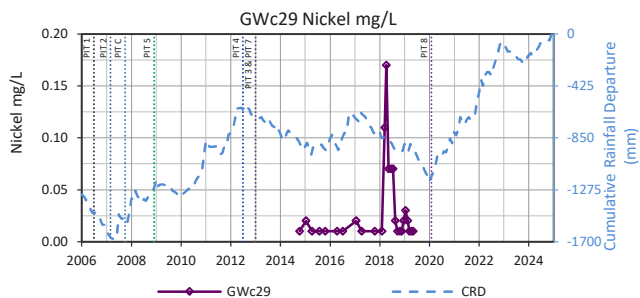
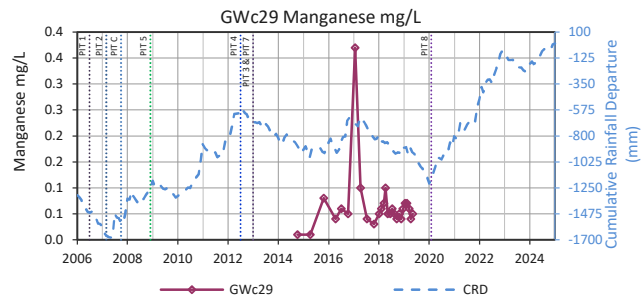
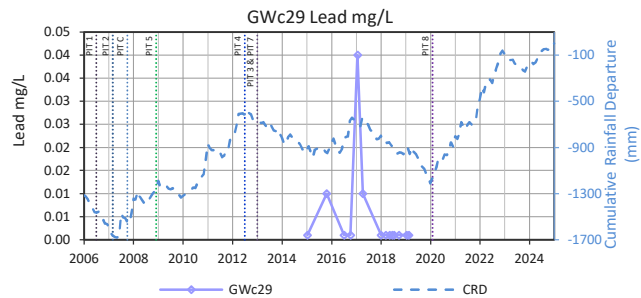
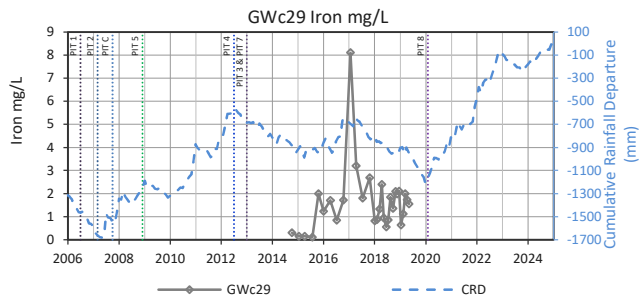
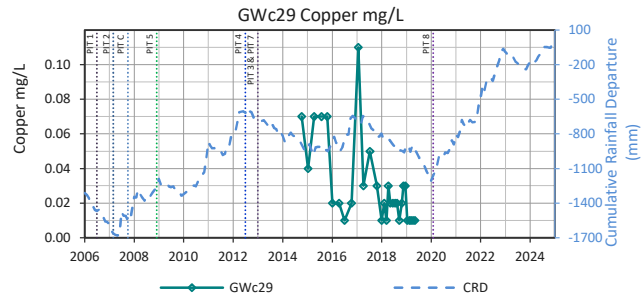
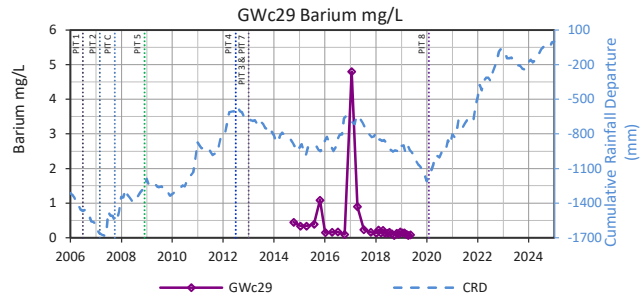
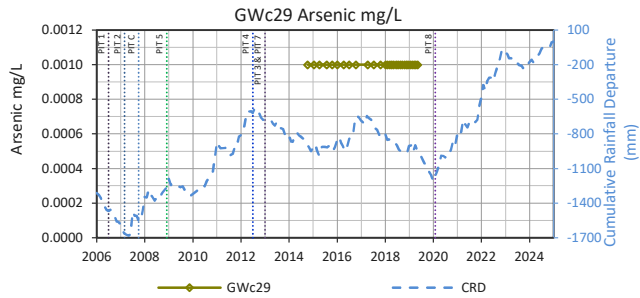
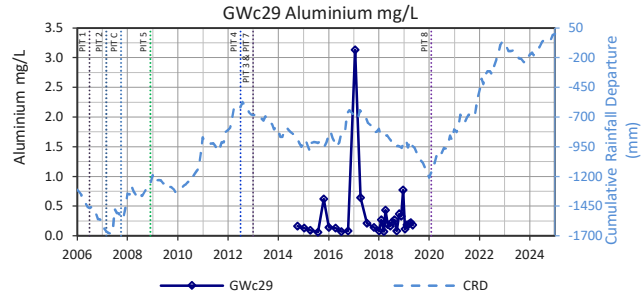
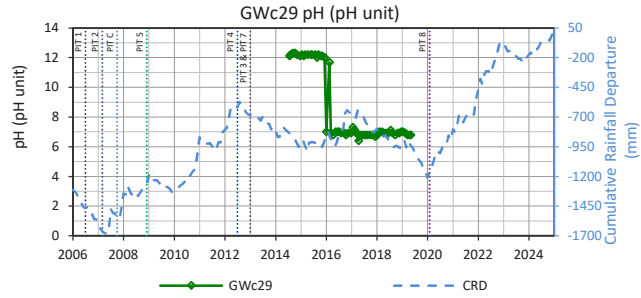
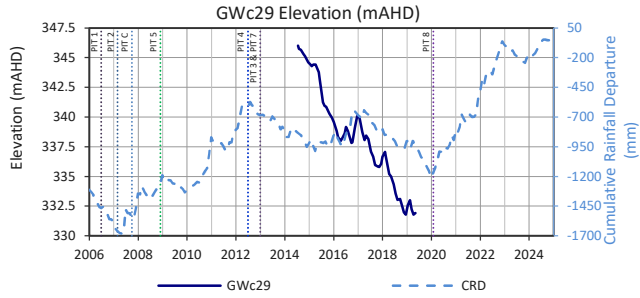


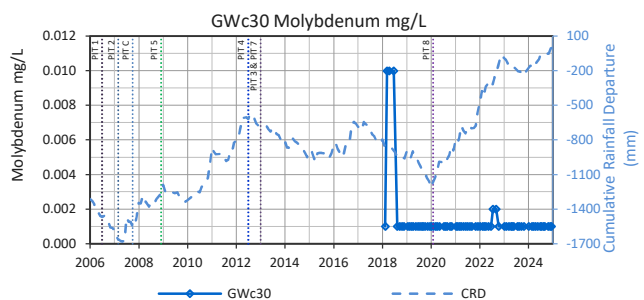
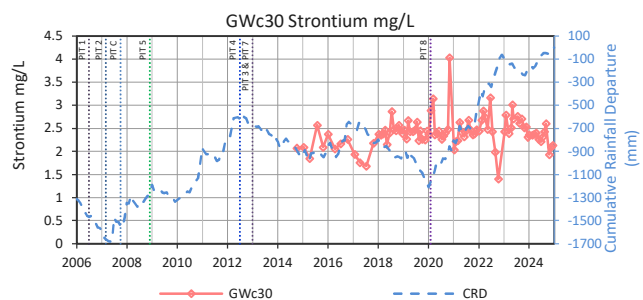
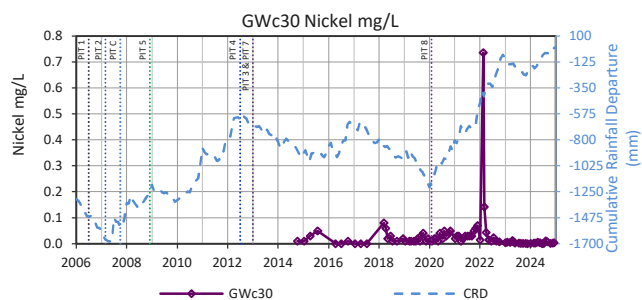
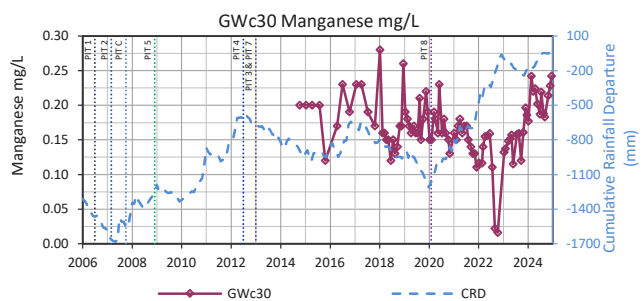
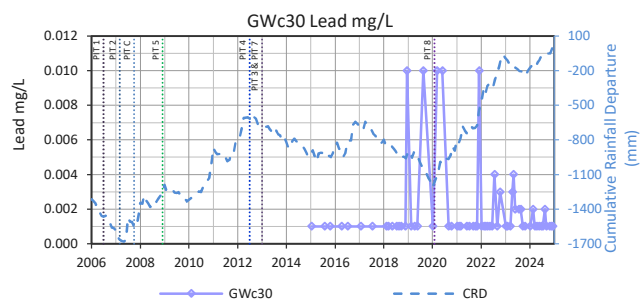
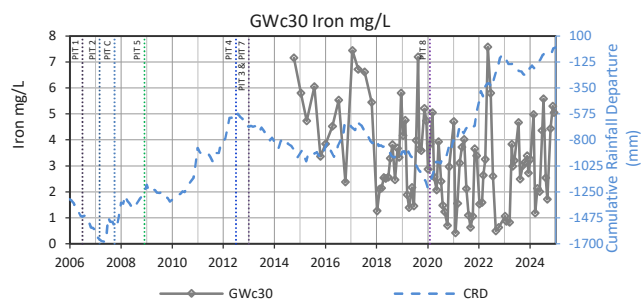
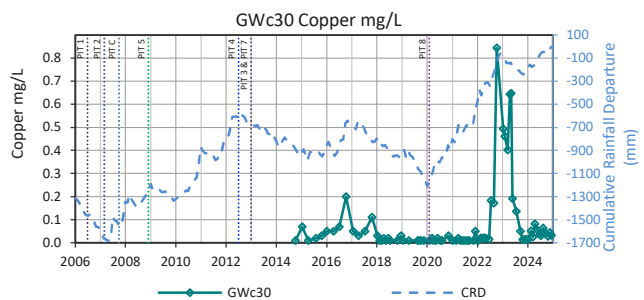
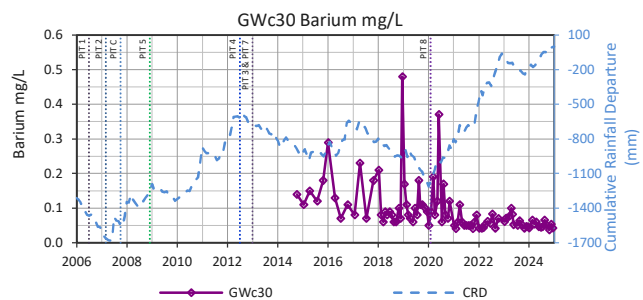
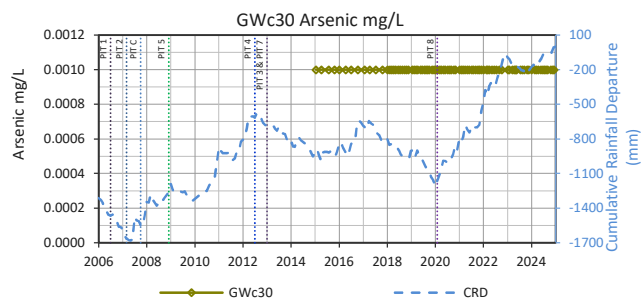
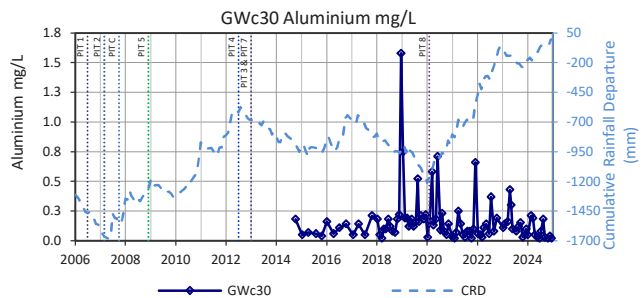
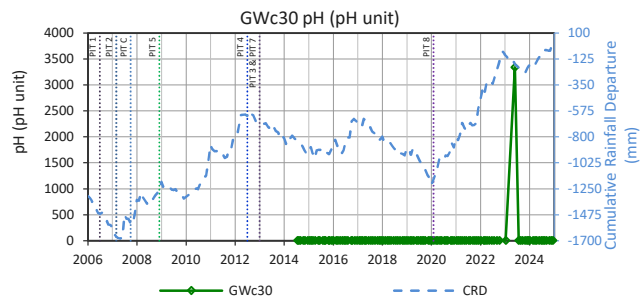
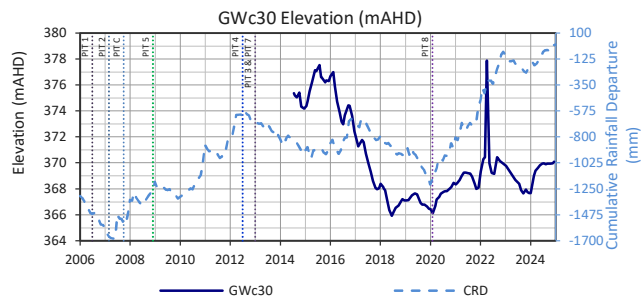


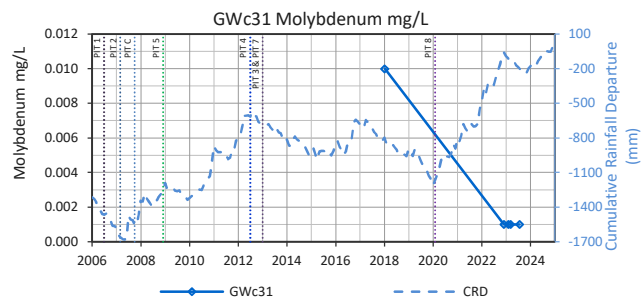
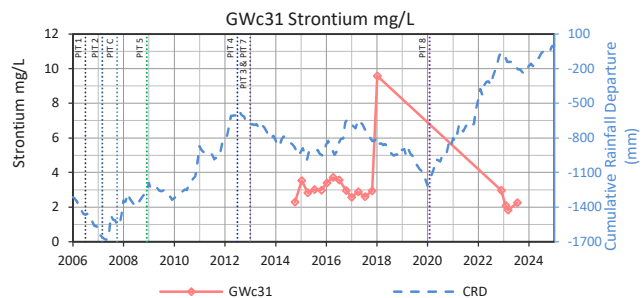
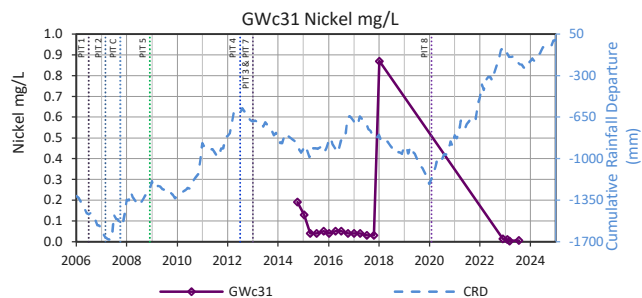
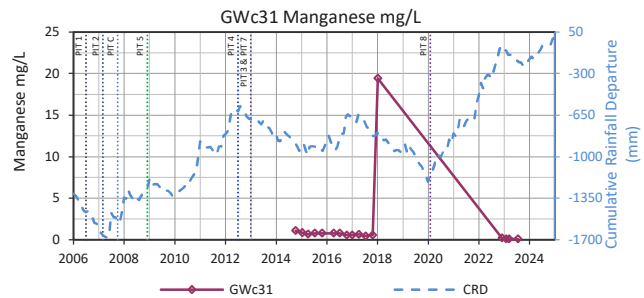
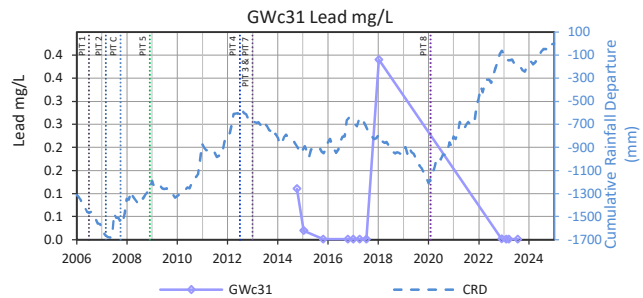
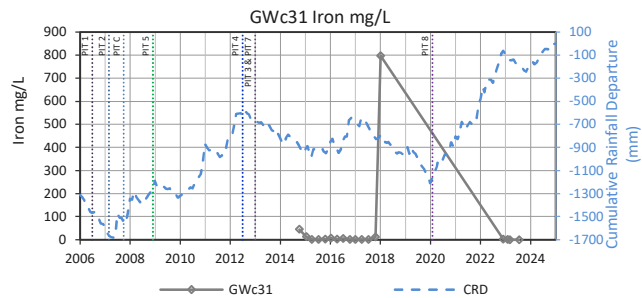
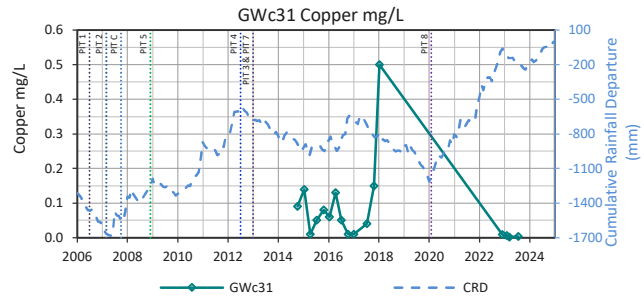
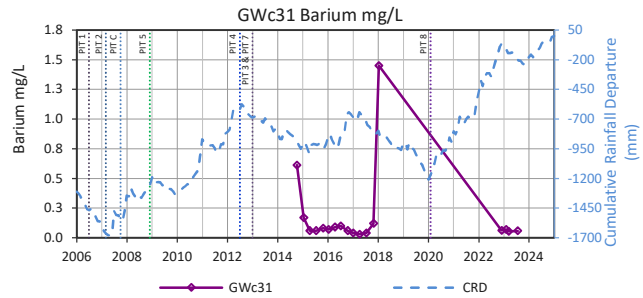
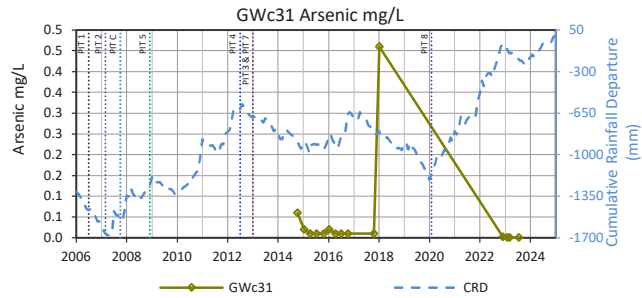
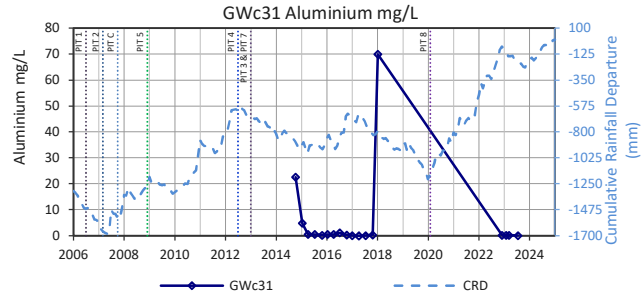
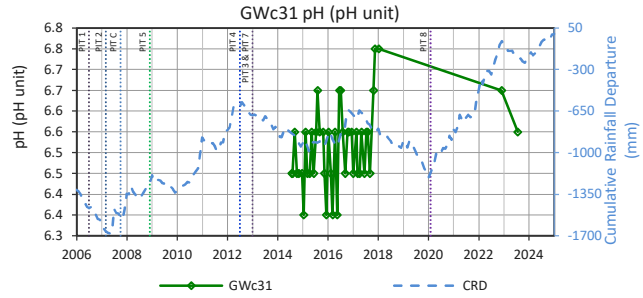
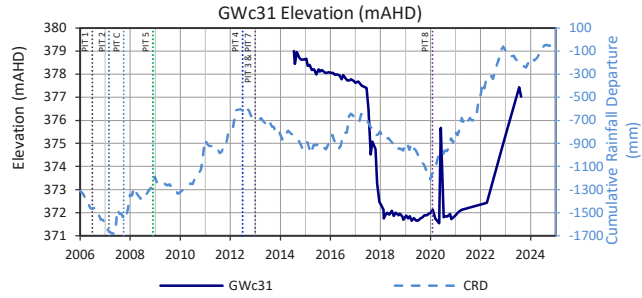


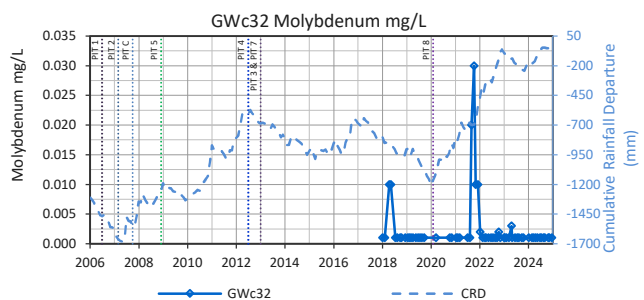
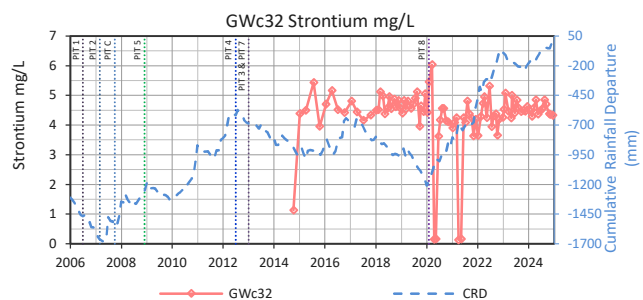
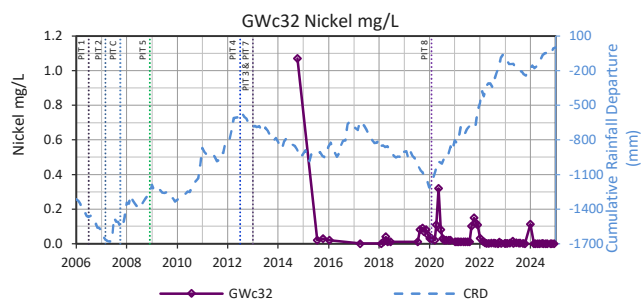
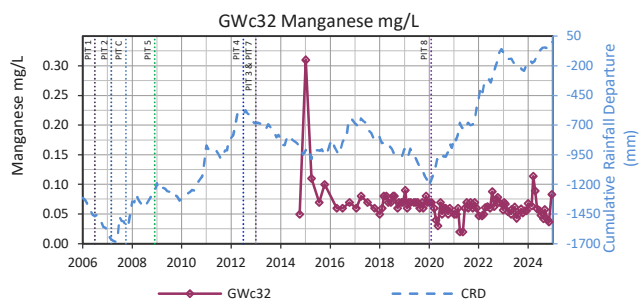
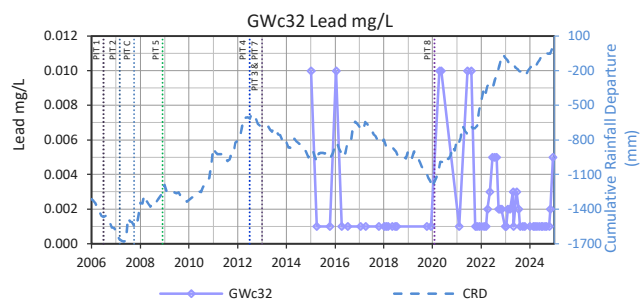
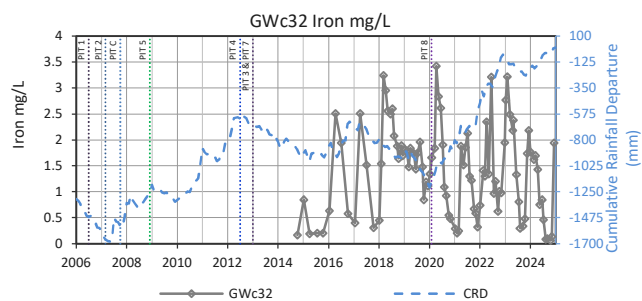
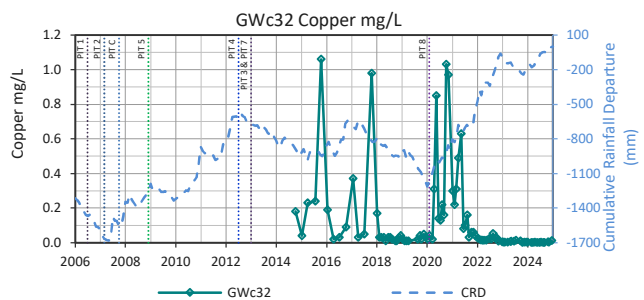
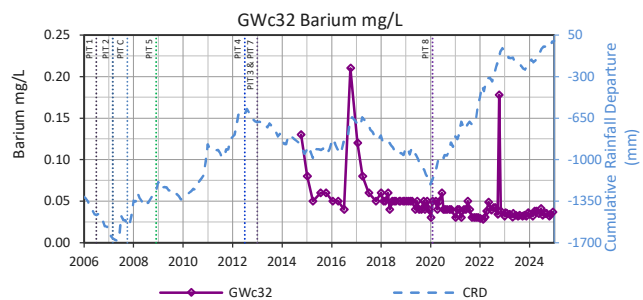
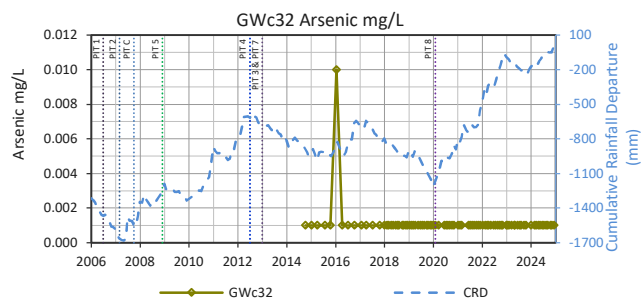
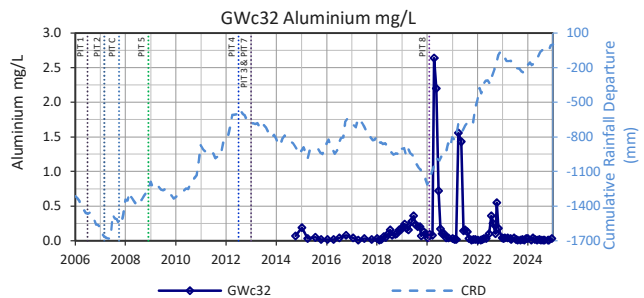
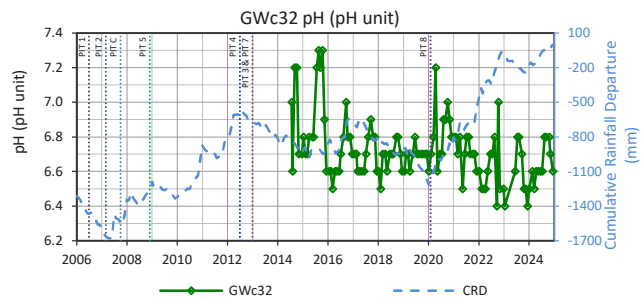
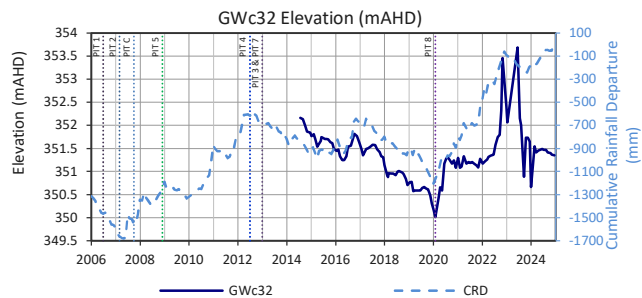


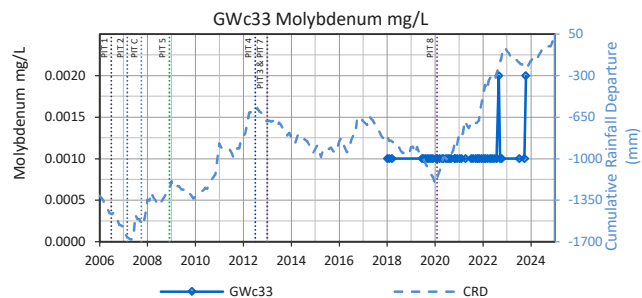
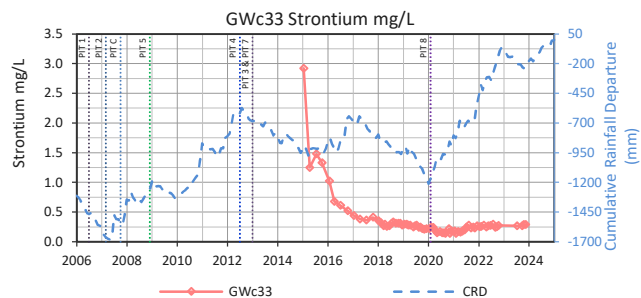
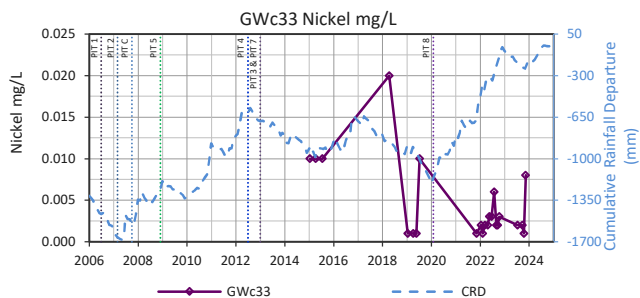
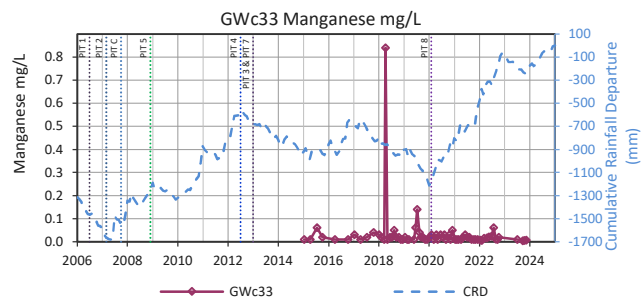
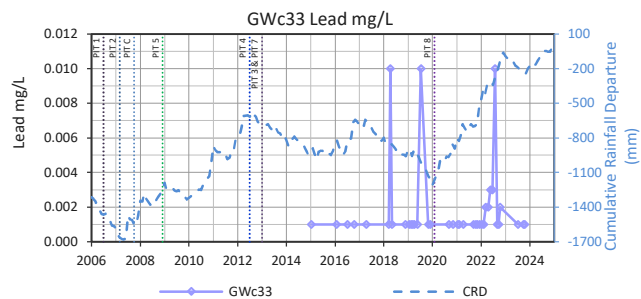
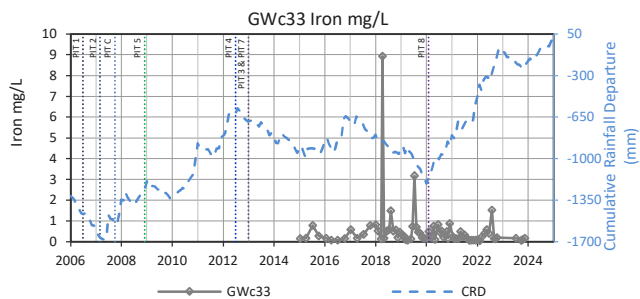
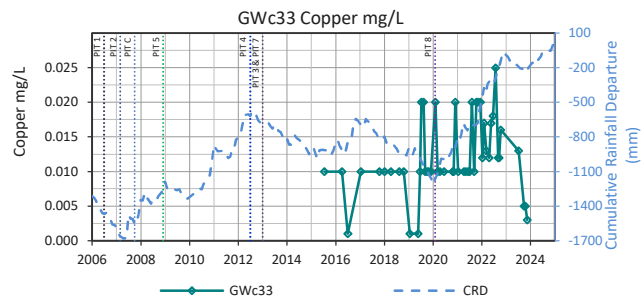
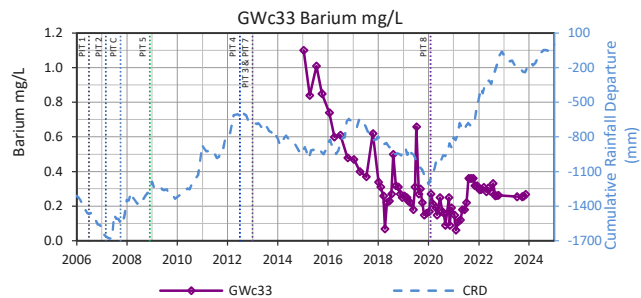
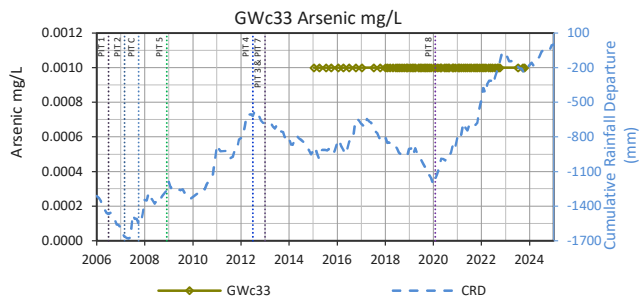
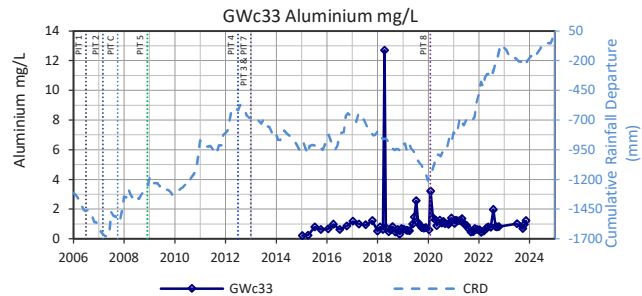
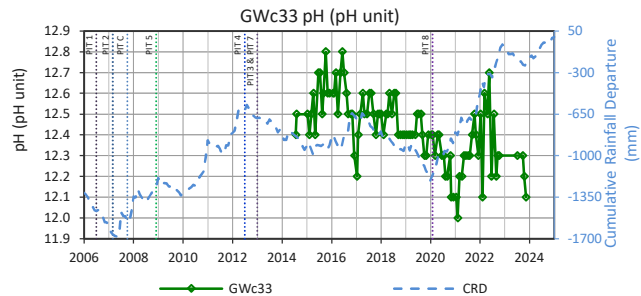
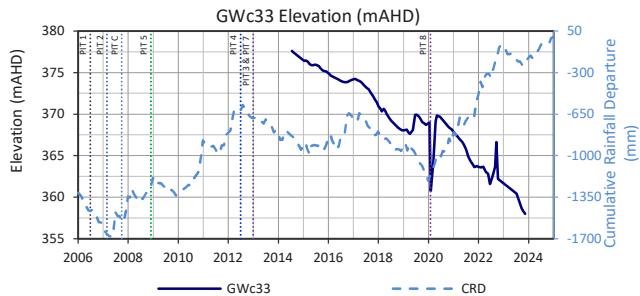




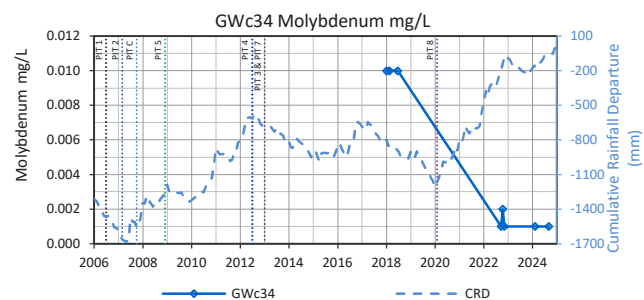
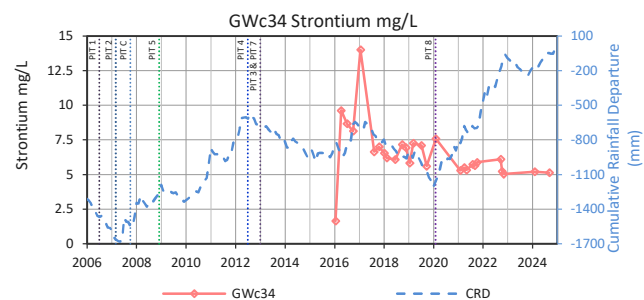
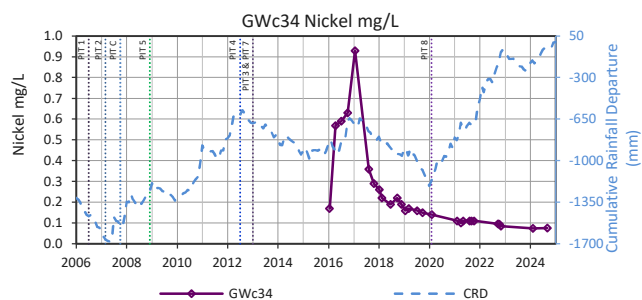
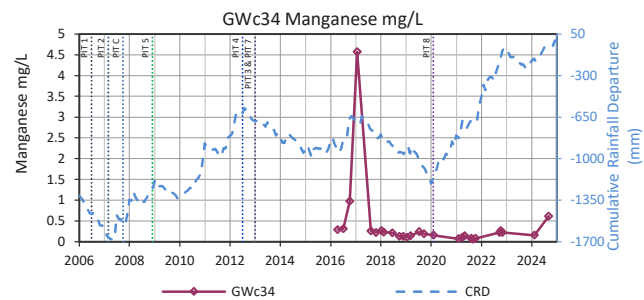
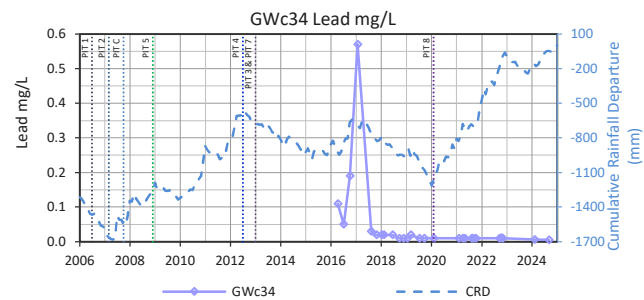
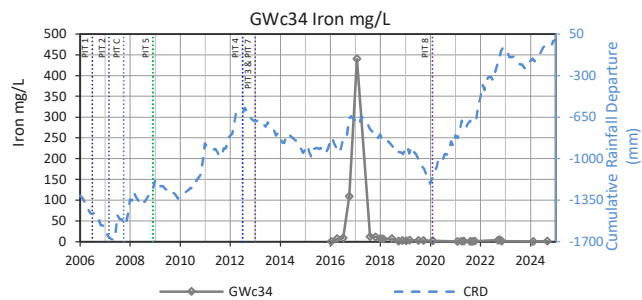
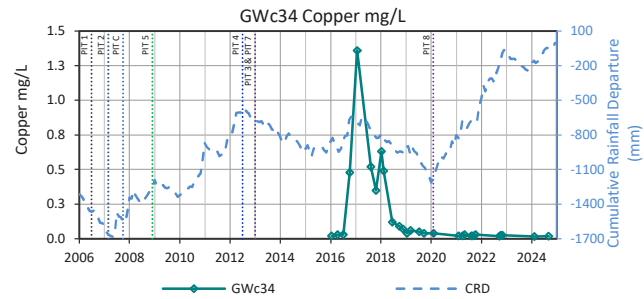
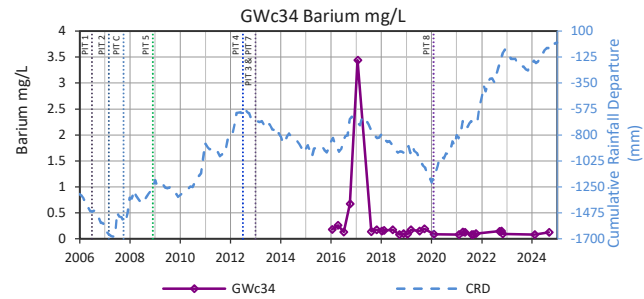
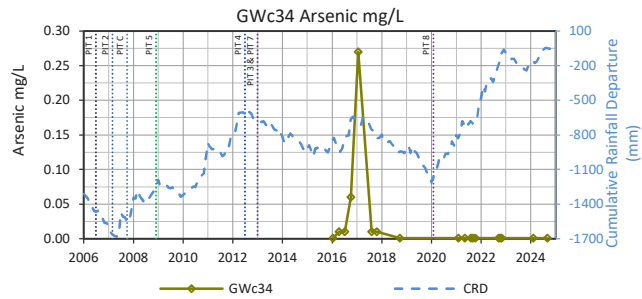
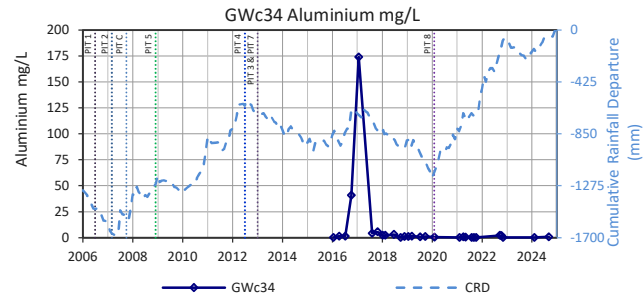
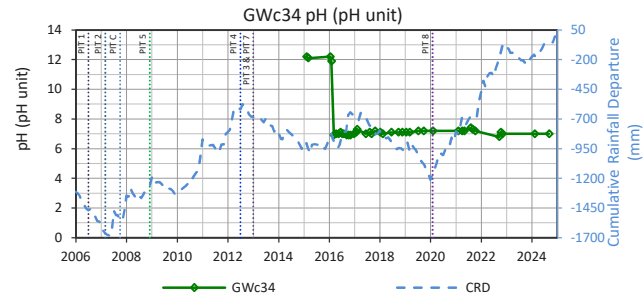
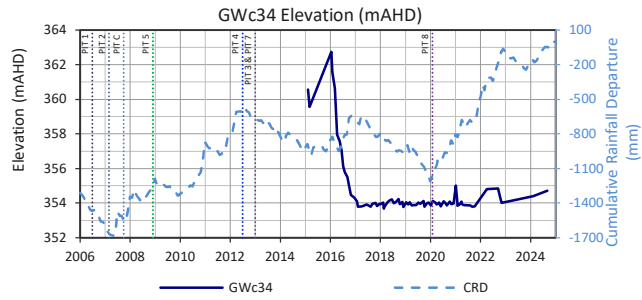


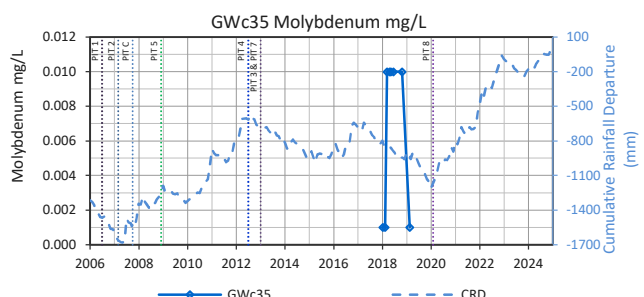
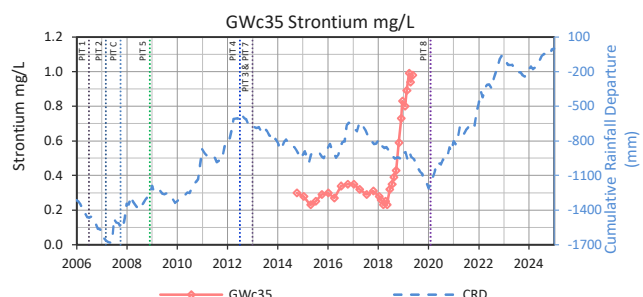
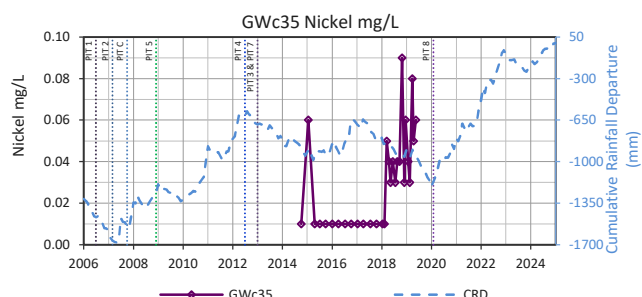
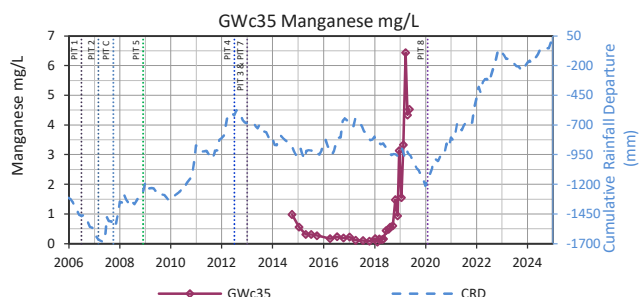
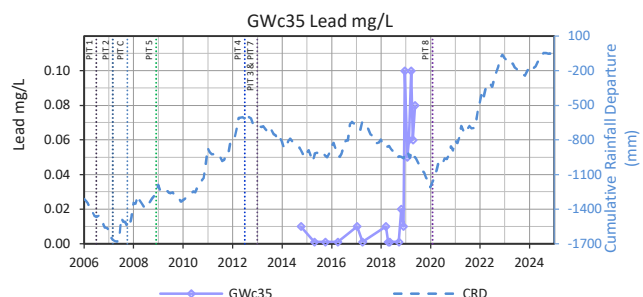
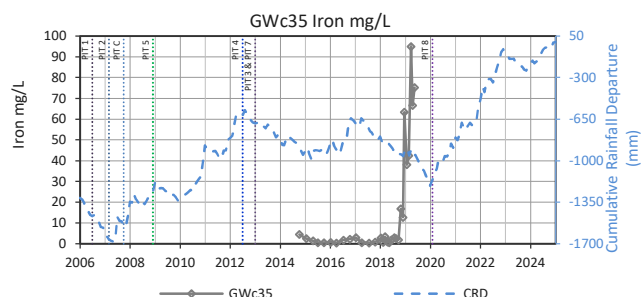
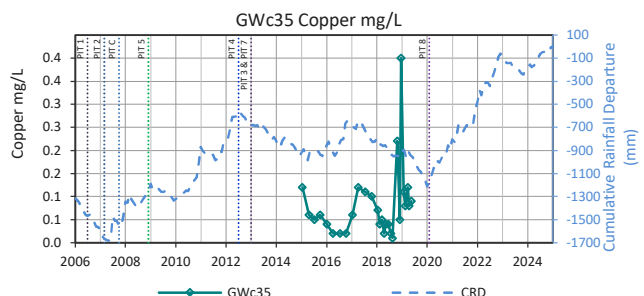
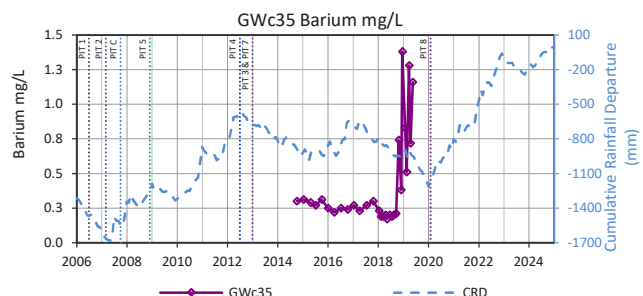
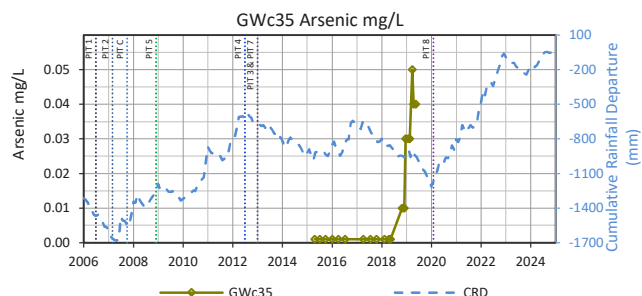
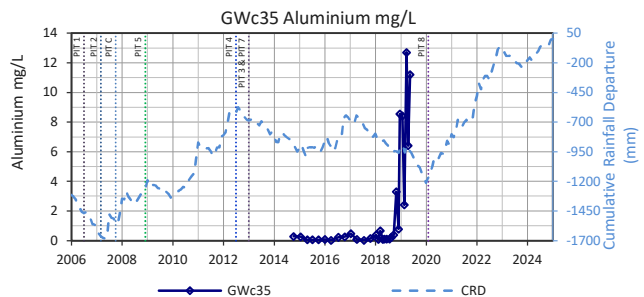
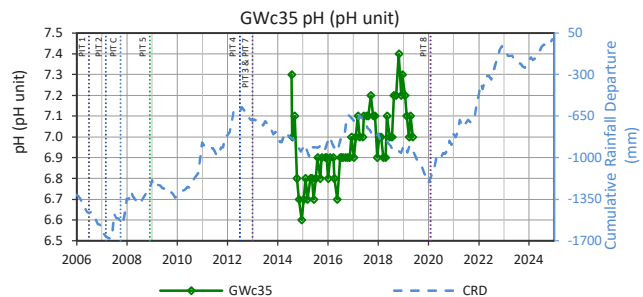
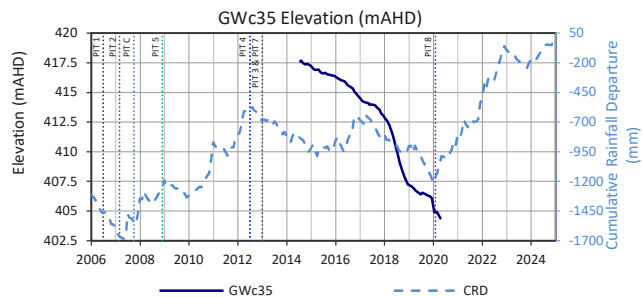


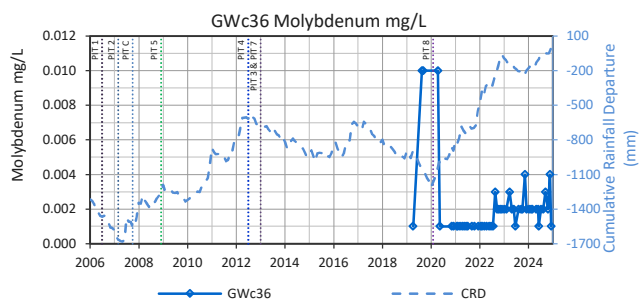
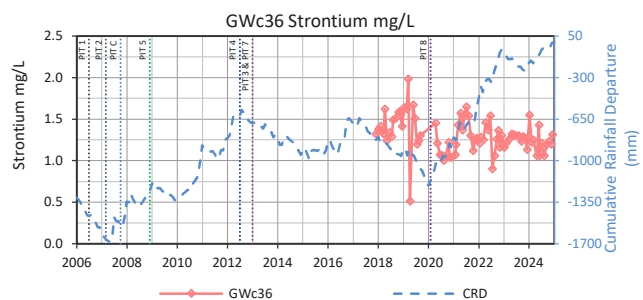
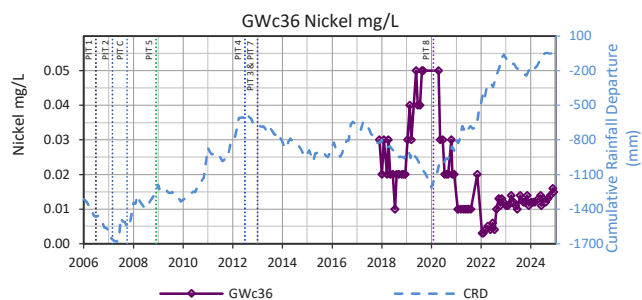
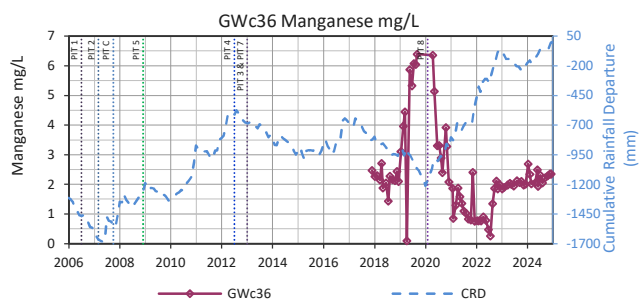
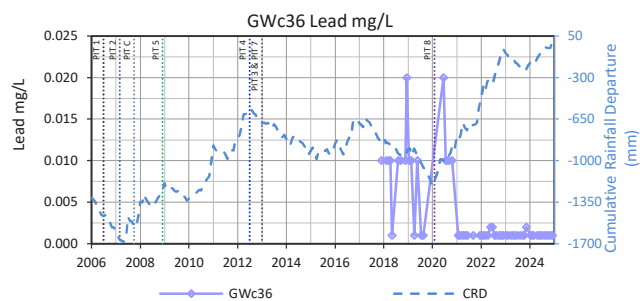
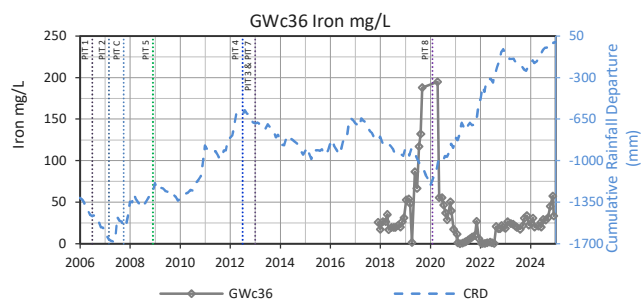
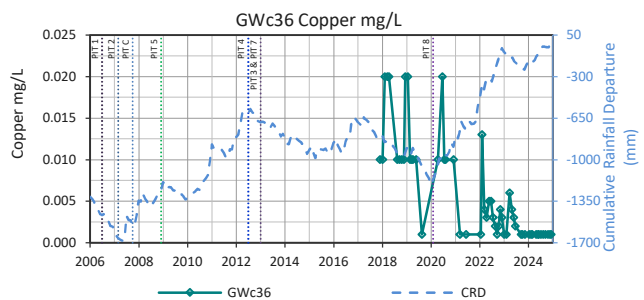
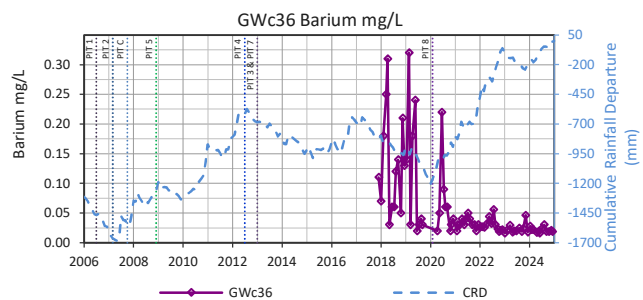
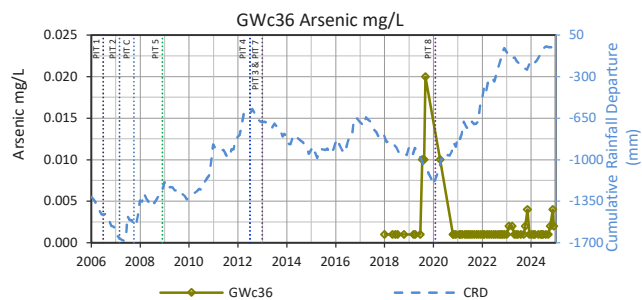
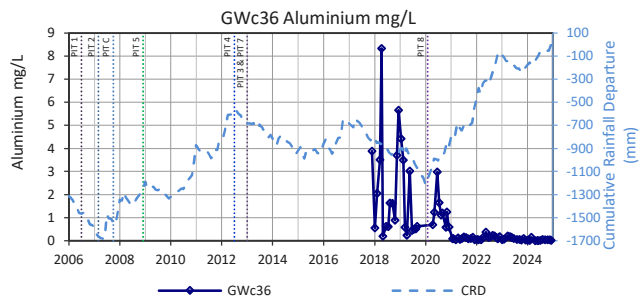
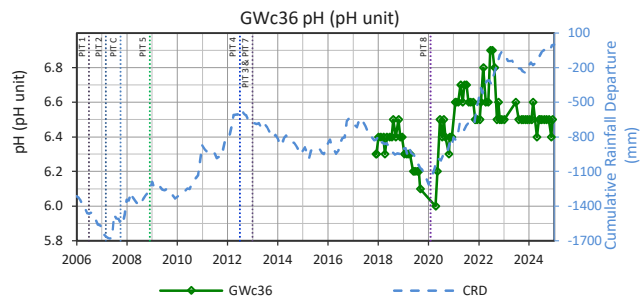
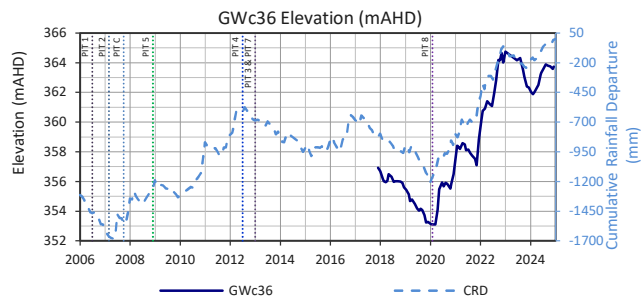


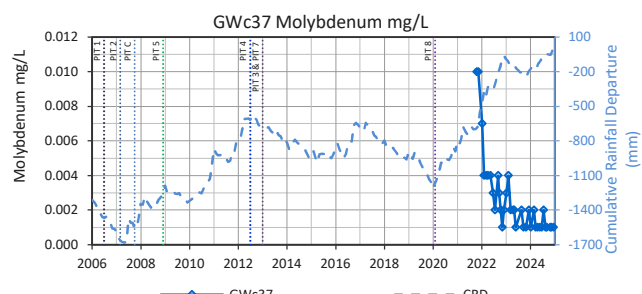
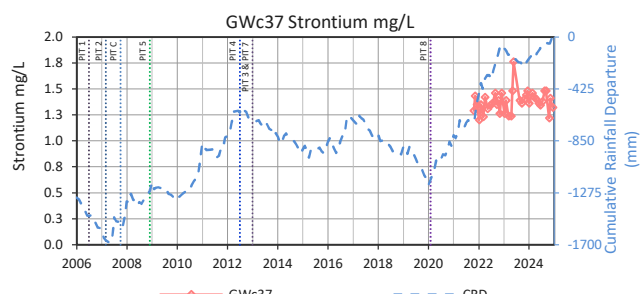
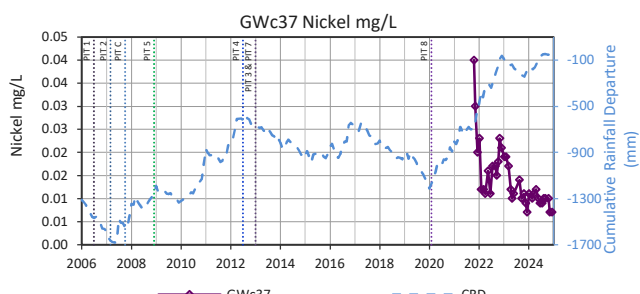
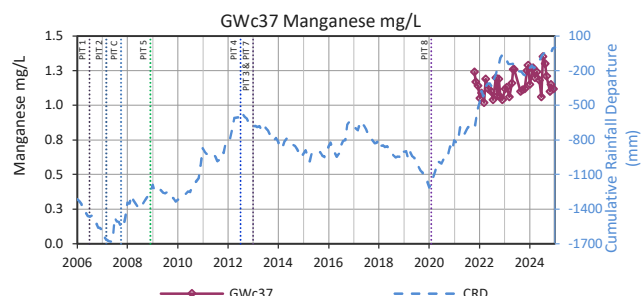
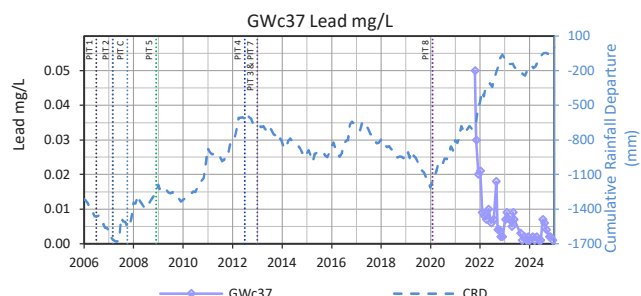
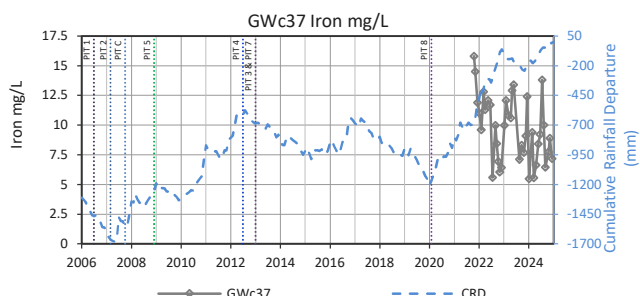
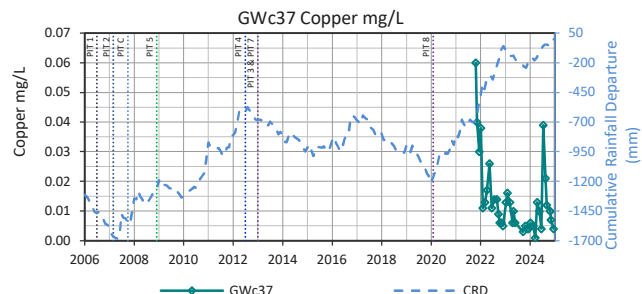
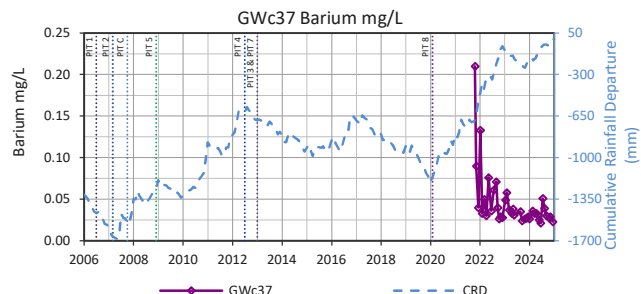
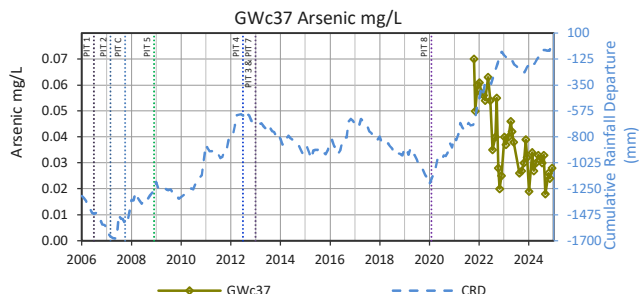
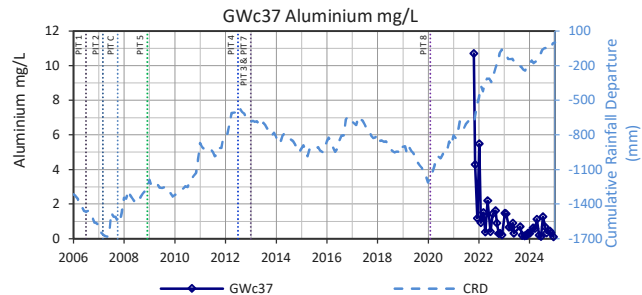
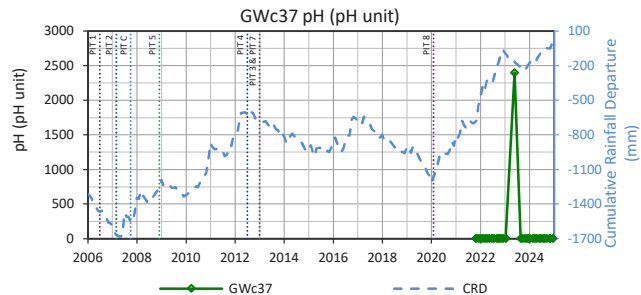
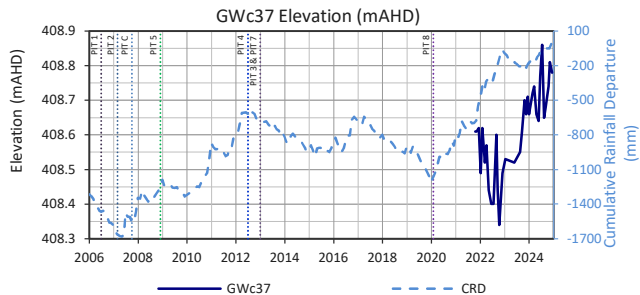


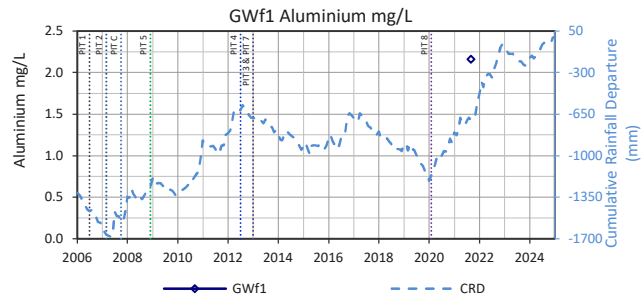
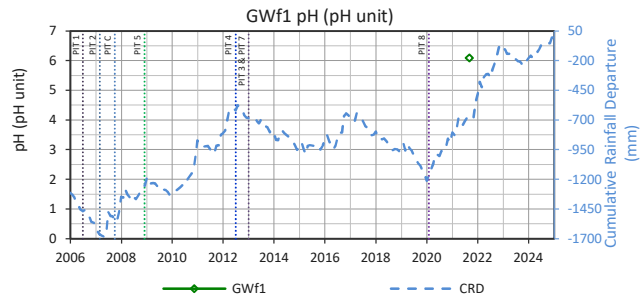
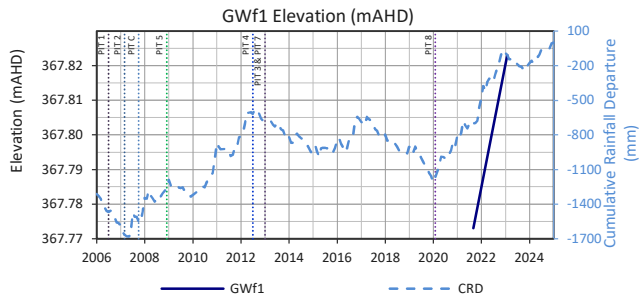






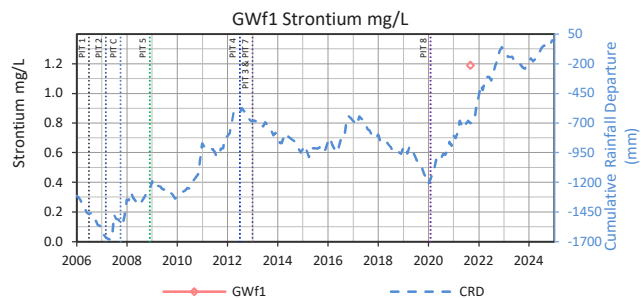
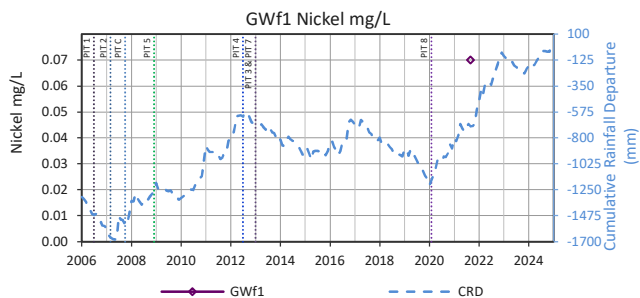
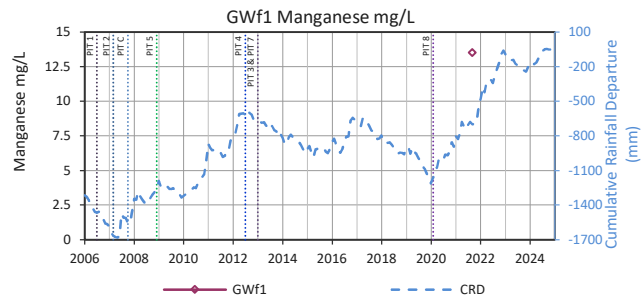
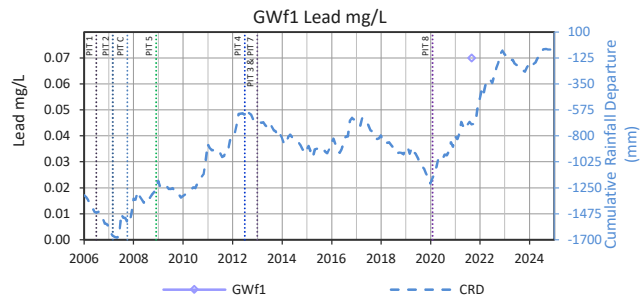
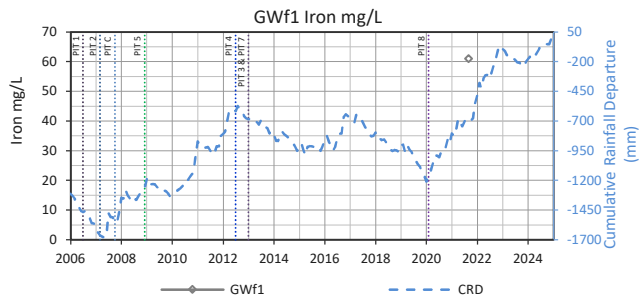
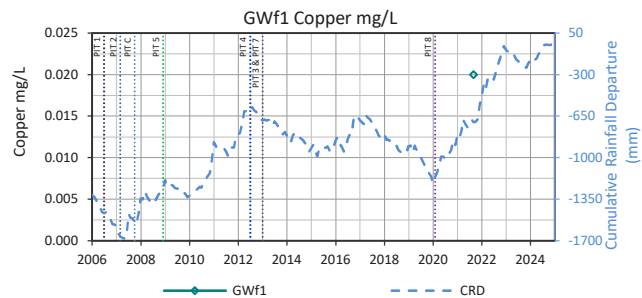
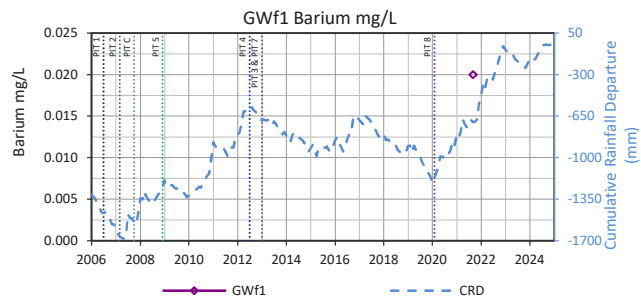






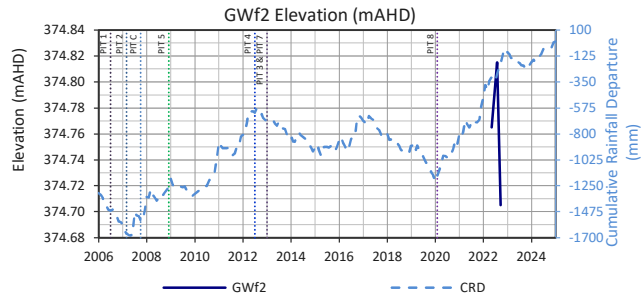
GWf1

No Data Available for Arsenic mg/L



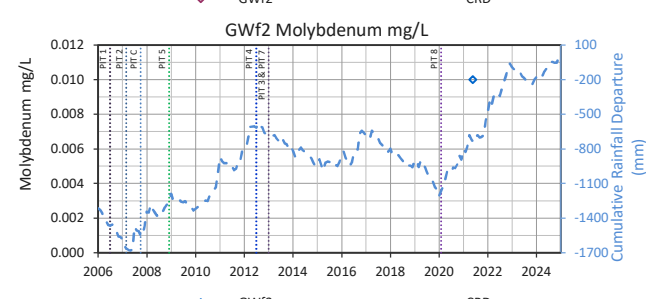
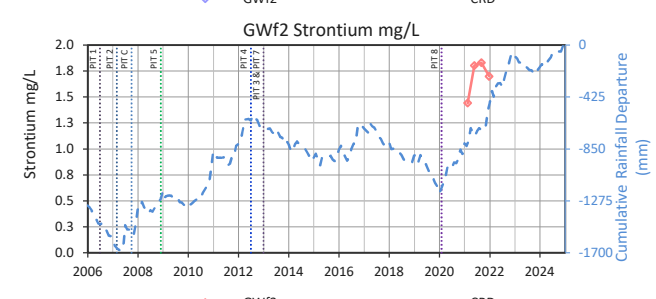
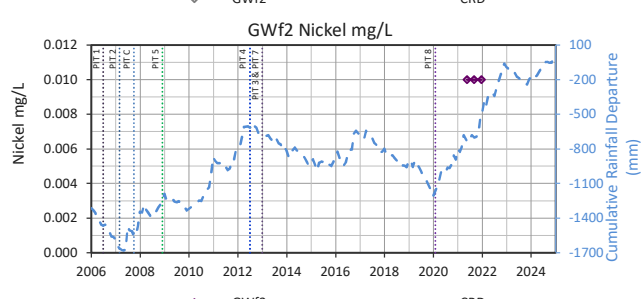
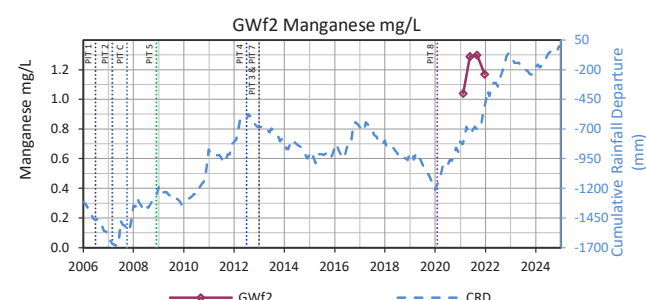
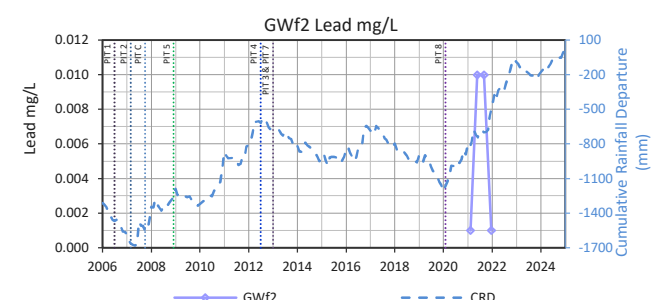
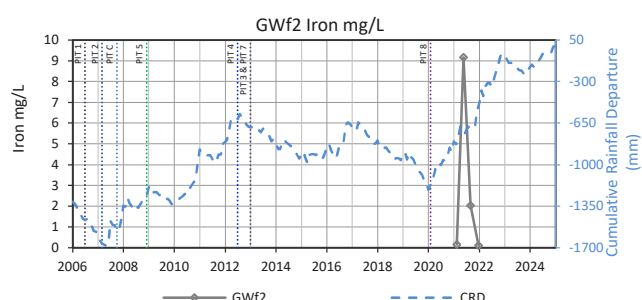
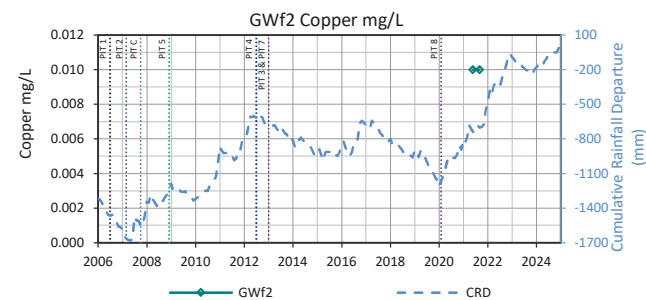
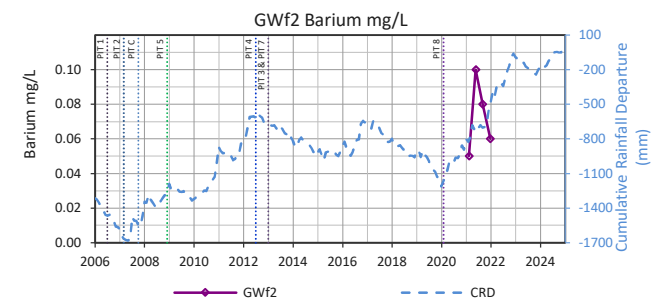
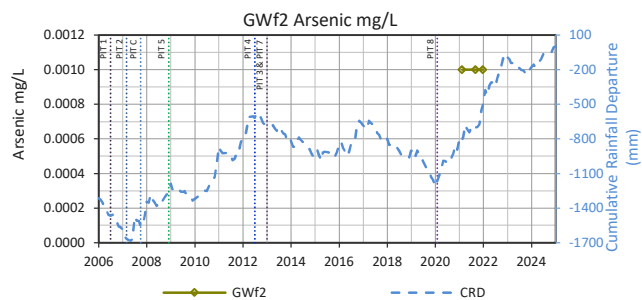
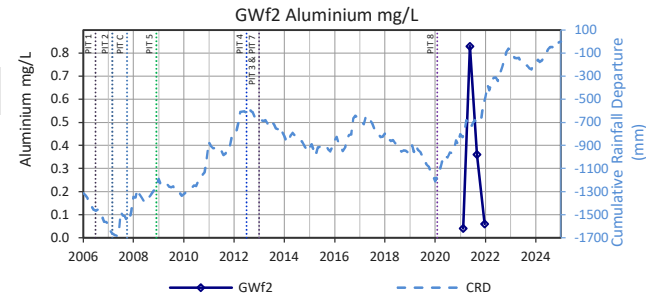
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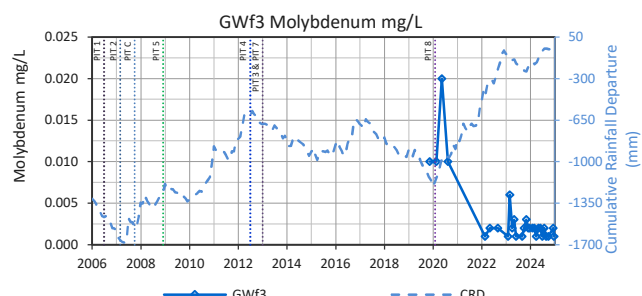
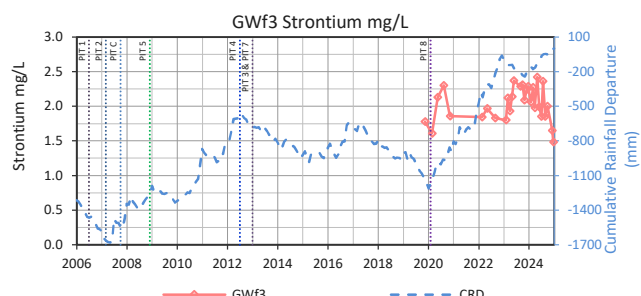
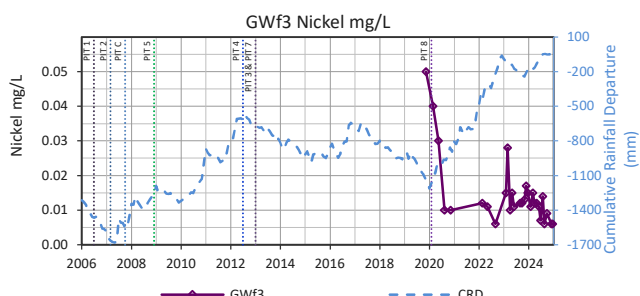
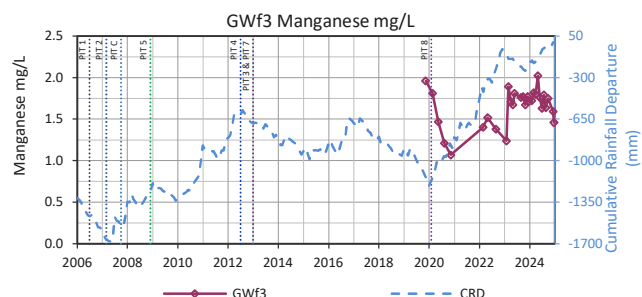
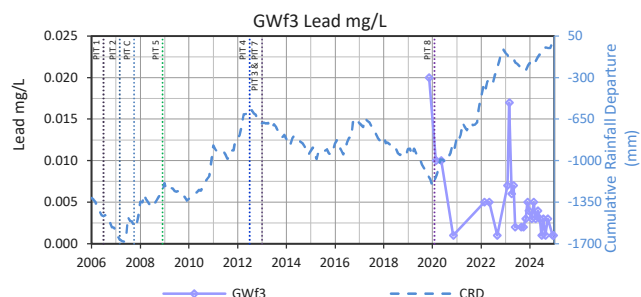
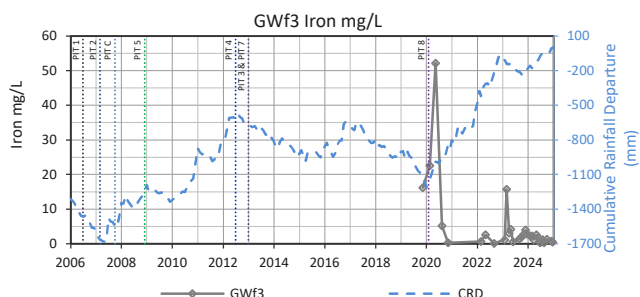
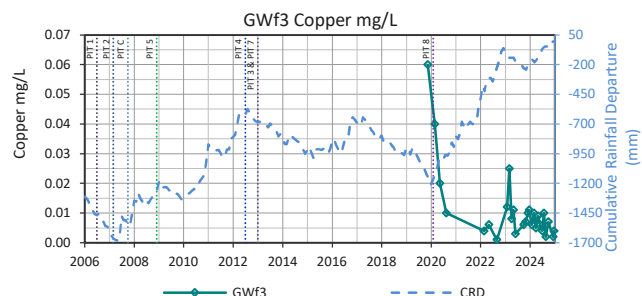
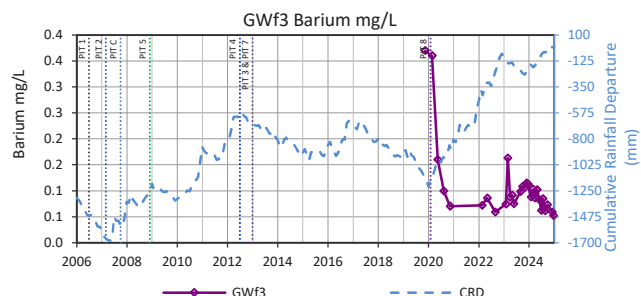
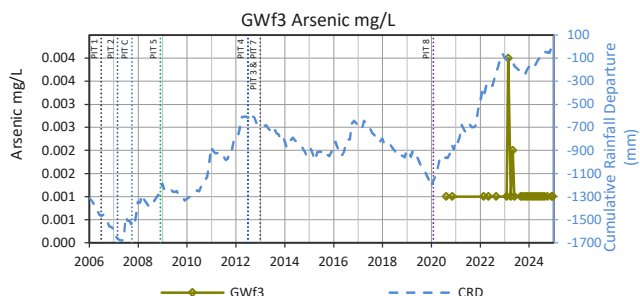
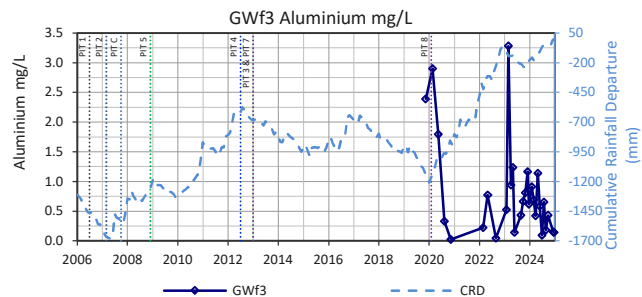
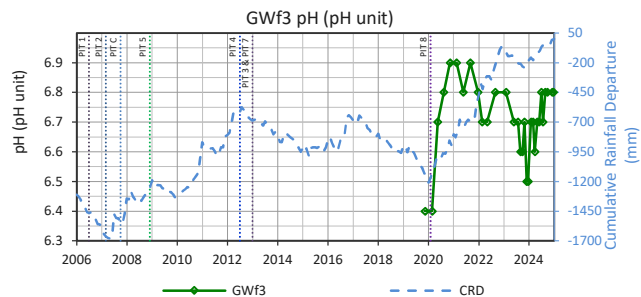
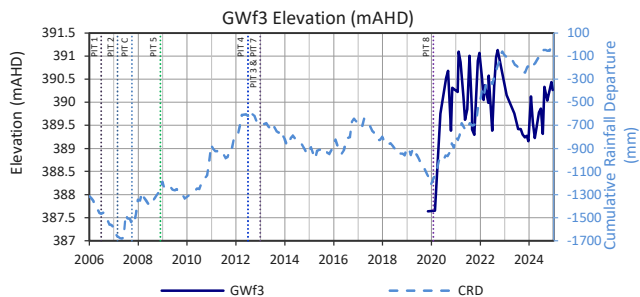
No Data Available for Molybdenum mg/L

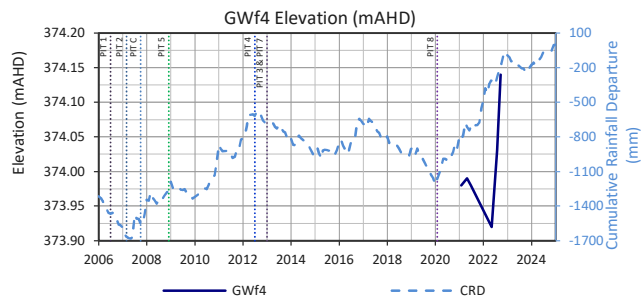


GWf2

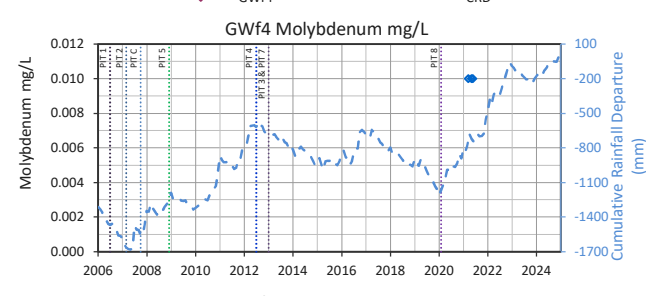
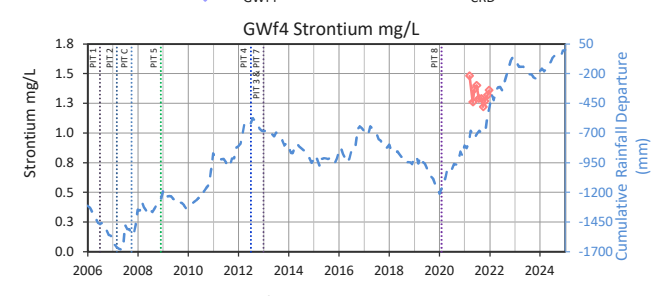
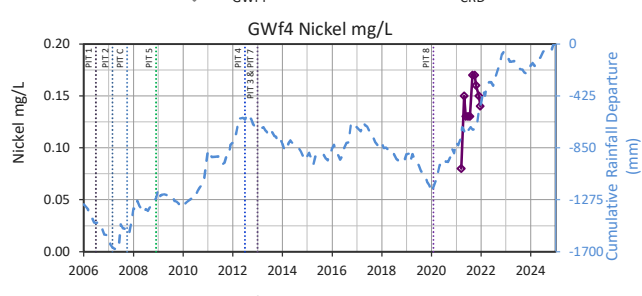
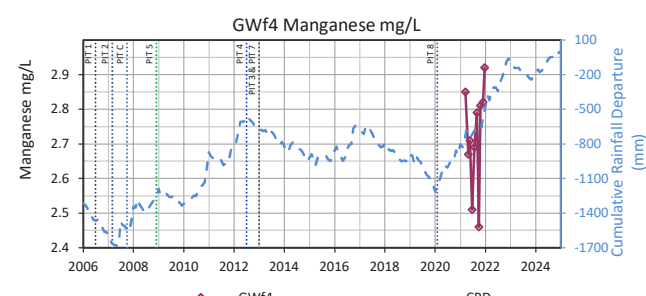
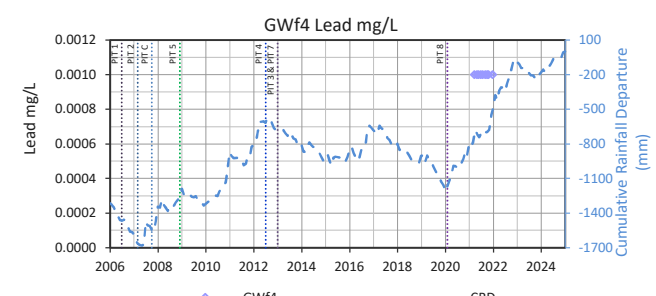
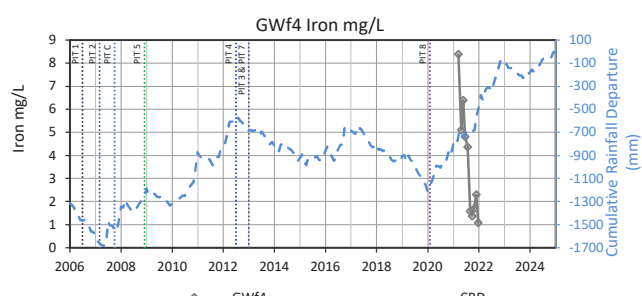
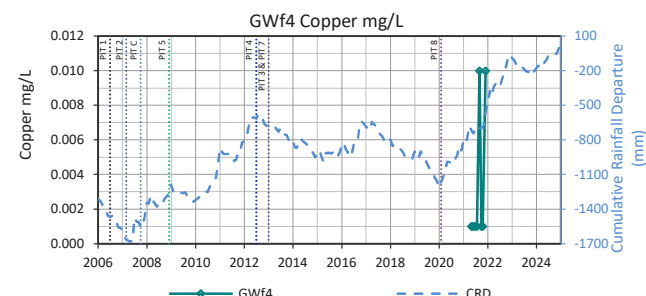
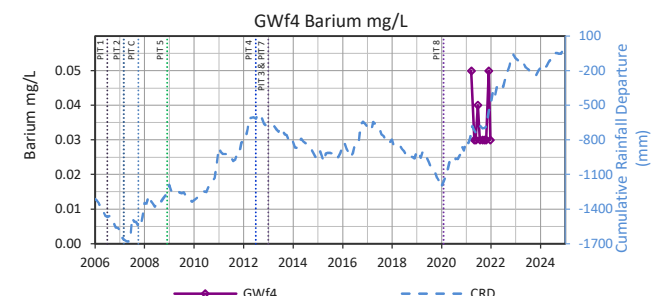
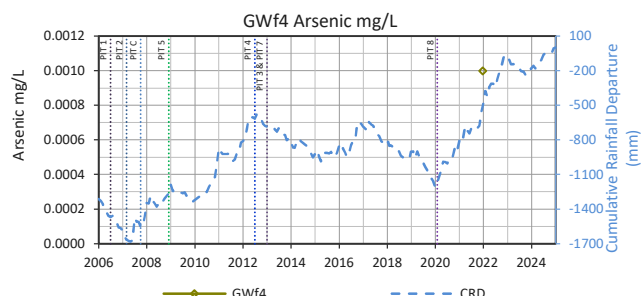
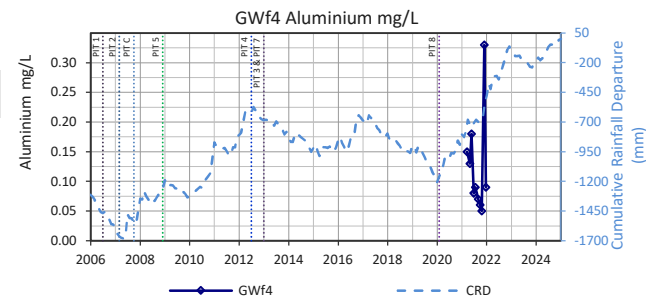
No Data Available for pH (pH unit)



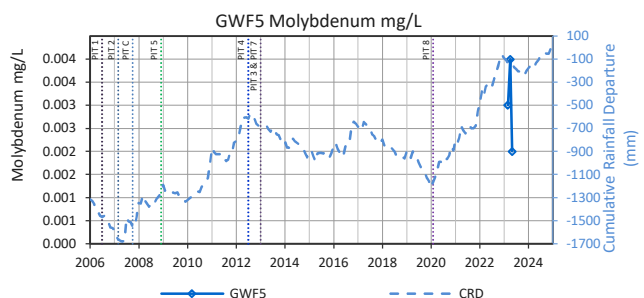
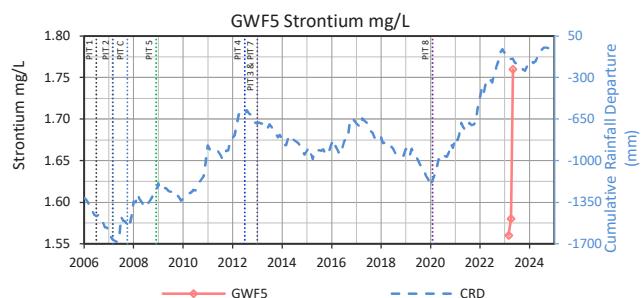
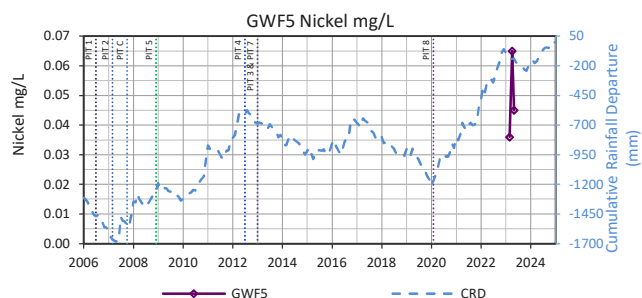
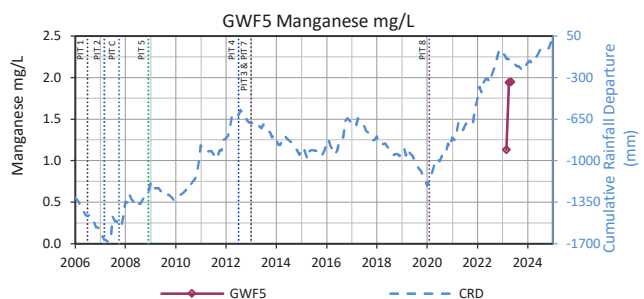
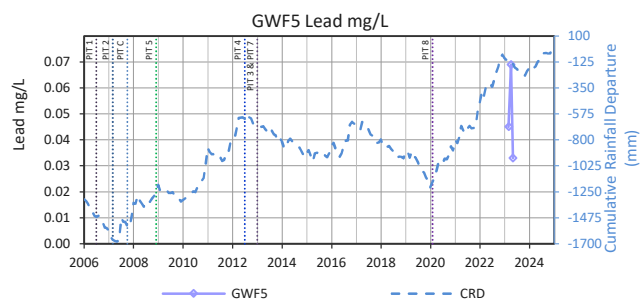
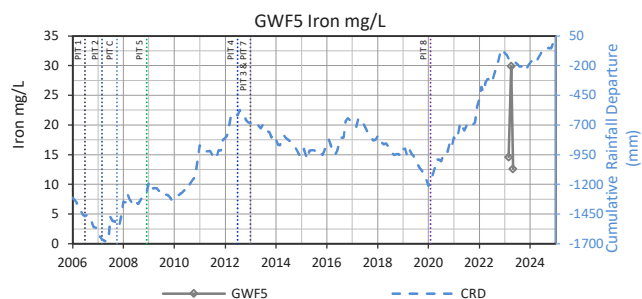
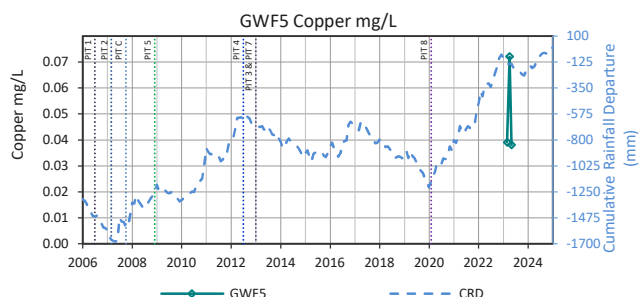
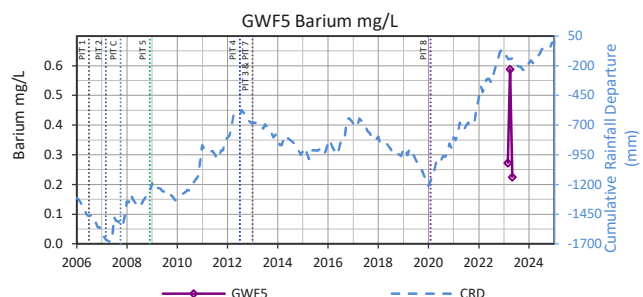
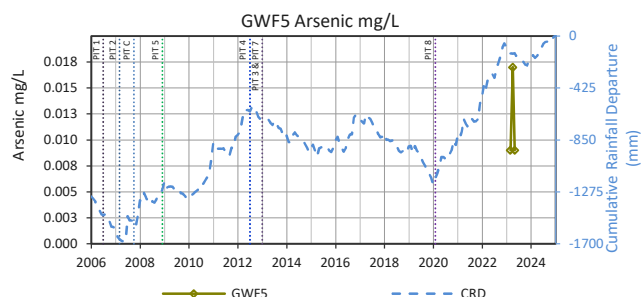
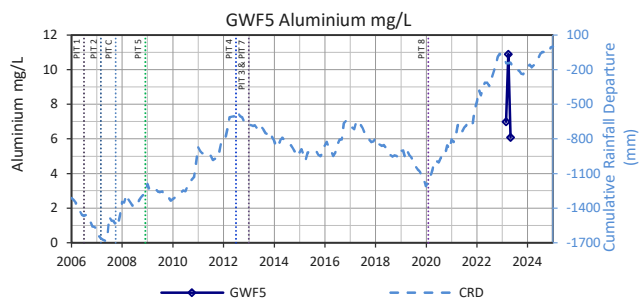
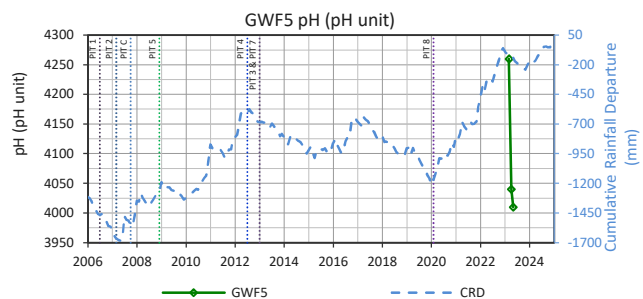
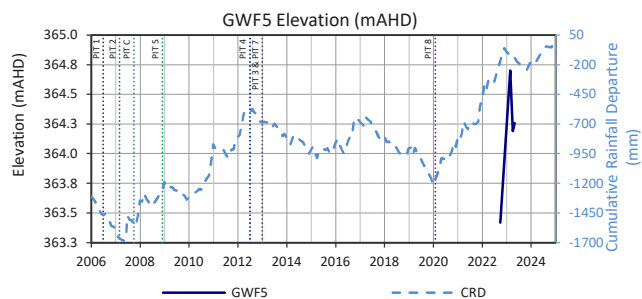


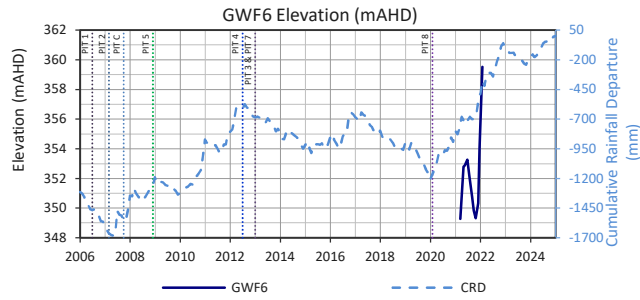


No Data Available for pH (pH unit)

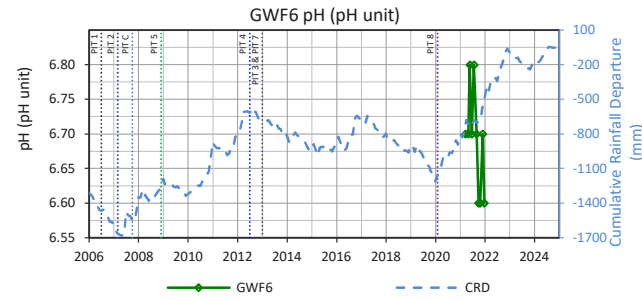








GW6



GW6

GW6

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

GW6

No Data Available for Iron mg/L

GW6

No Data Available for Lead mg/L

No Data Available for Manganese mg/L

GW6

GW6

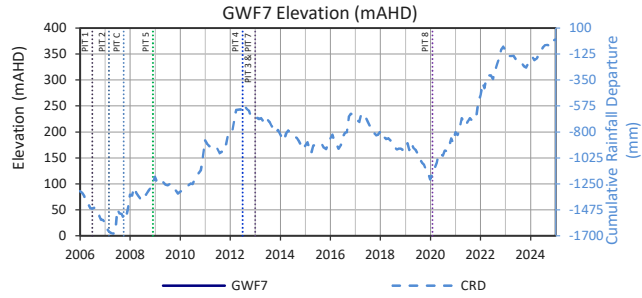
No Data Available for Nickel mg/L

GW6

No Data Available for Strontium mg/L

No Data Available for Molybdenum mg/L

GW6



GWF7

No Data Available for Arsenic mg/L

GWF7

No Data Available for Barium mg/L

GWF7

No Data Available for Copper mg/L

GWF7

No Data Available for Iron mg/L

GWF7

No Data Available for Lead mg/L

GWF7

No Data Available for Manganese mg/L

GWF7

No Data Available for Nickel mg/L

GWF7

No Data Available for Strontium mg/L

GWF7

No Data Available for Molybdenum mg/L

GWF7

No Data Available for pH (pH unit)

GWF7

No Data Available for Aluminium mg/L

PZ13

No Data Available for Elevation (mAHD)

PZ13

No Data Available for pH (pH unit)

PZ13

No Data Available for Aluminium mg/L

PZ13

No Data Available for Arsenic mg/L

PZ13

No Data Available for Barium mg/L

PZ13

No Data Available for Copper mg/L

PZ13

No Data Available for Iron mg/L

PZ13

No Data Available for Lead mg/L

PZ13

No Data Available for Manganese mg/L

PZ13

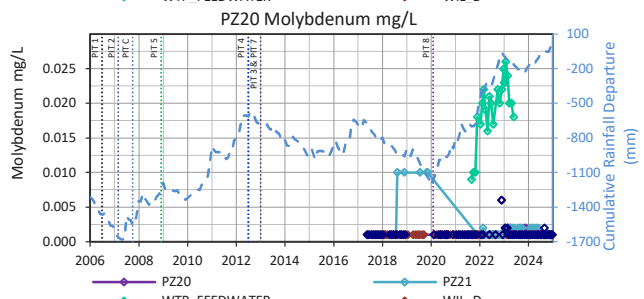
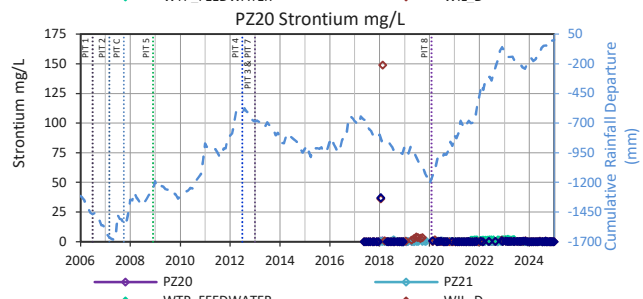
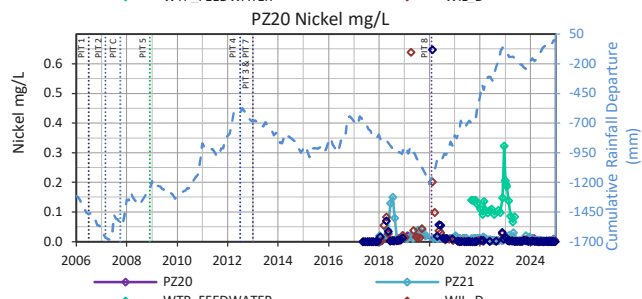
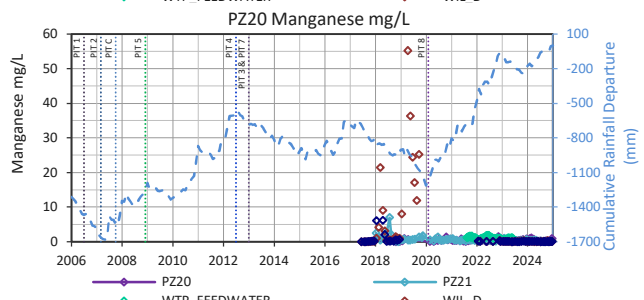
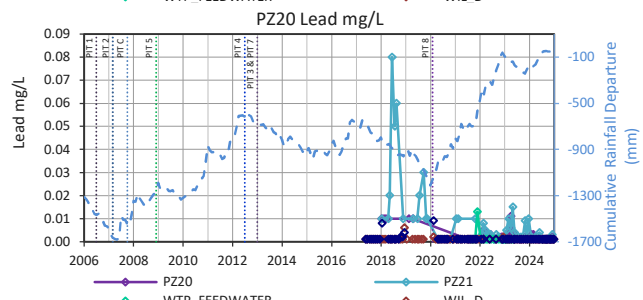
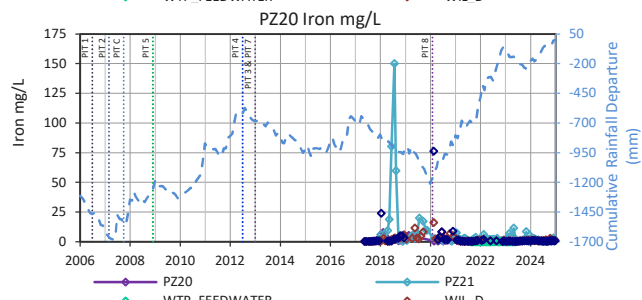
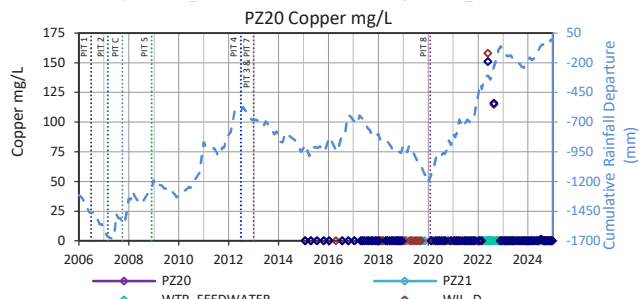
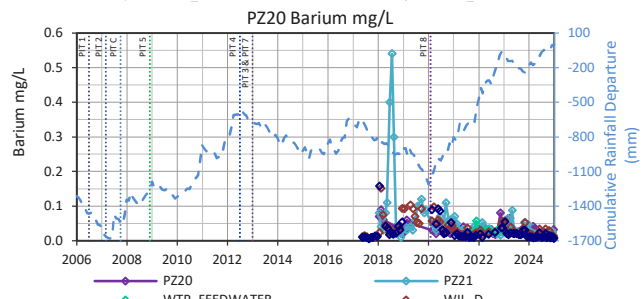
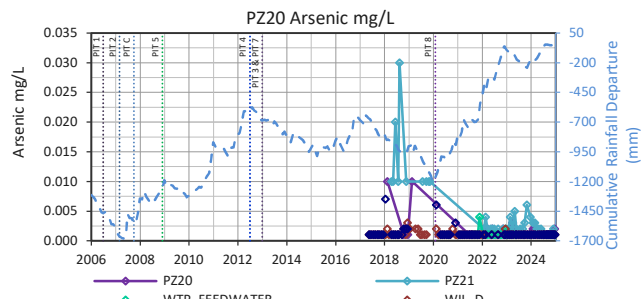
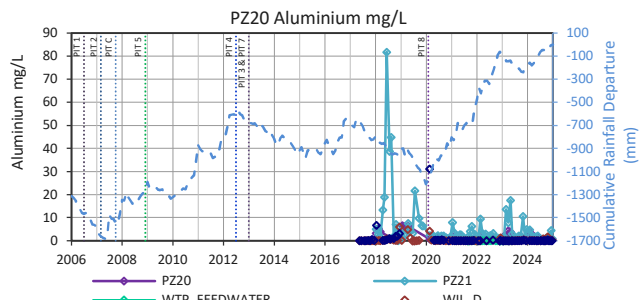
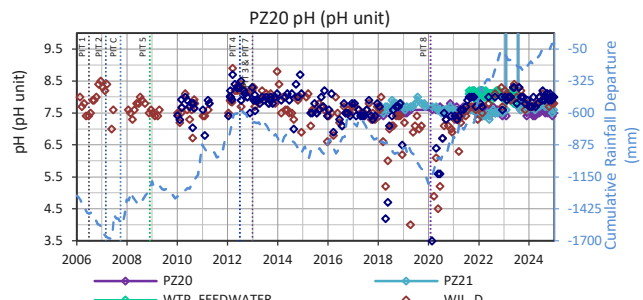
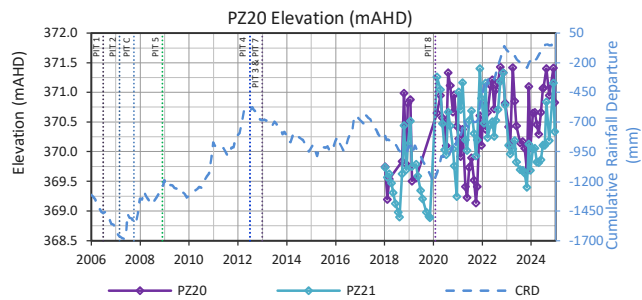
No Data Available for Nickel mg/L

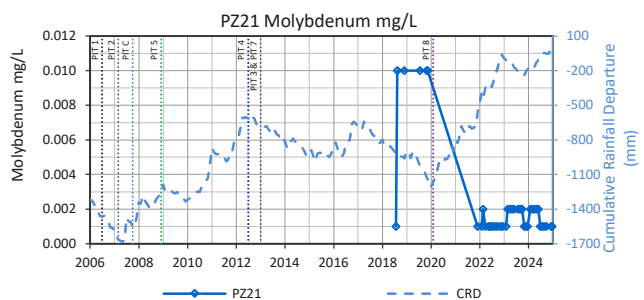
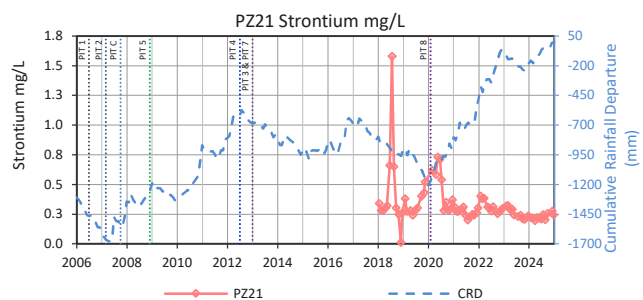
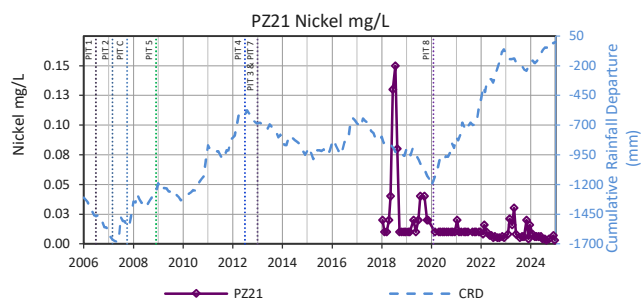
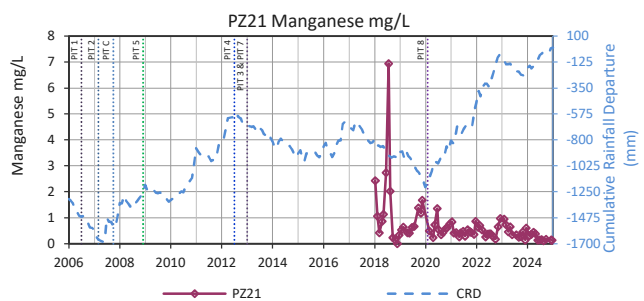
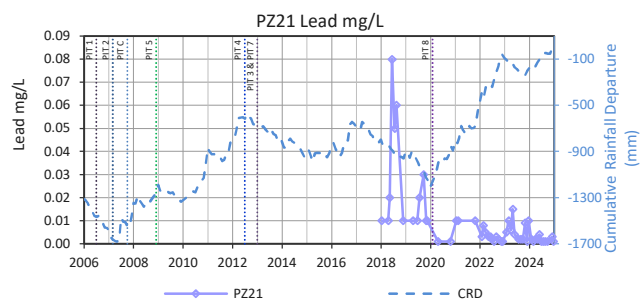
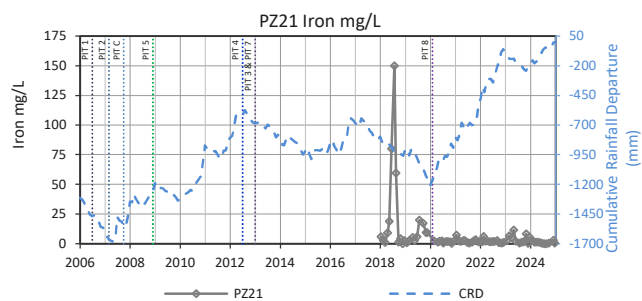
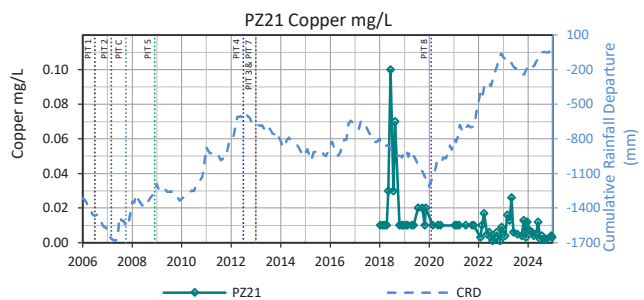
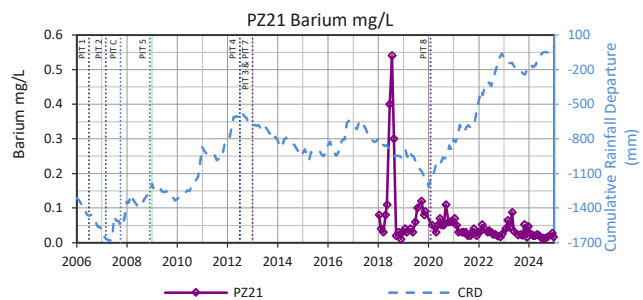
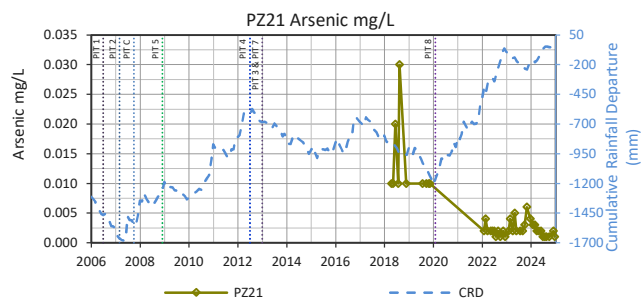
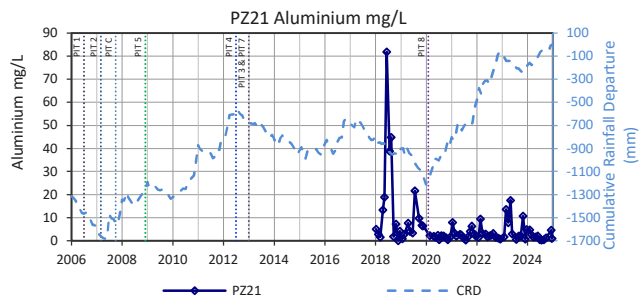
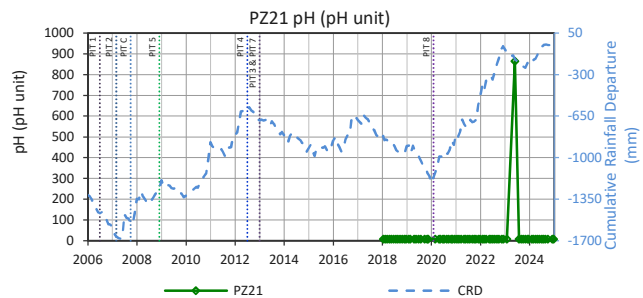
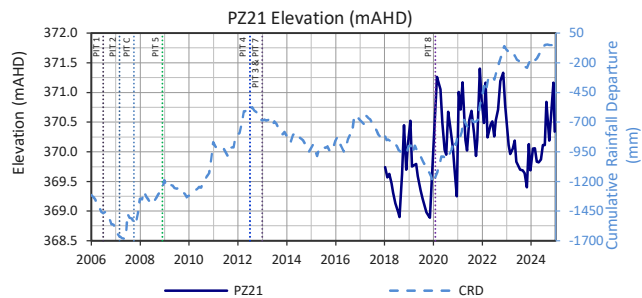
PZ13

No Data Available for Strontium mg/L

PZ13

No Data Available for Molybdenum mg/L





PZ26

No Data Available for Elevation (mAHD)

PZ26

No Data Available for pH (pH unit)

PZ26

No Data Available for Aluminium mg/L

PZ26

No Data Available for Arsenic mg/L

PZ26

No Data Available for Barium mg/L

PZ26

No Data Available for Copper mg/L

PZ26

No Data Available for Iron mg/L

PZ26

No Data Available for Lead mg/L

PZ26

No Data Available for Manganese mg/L

PZ26

No Data Available for Nickel mg/L

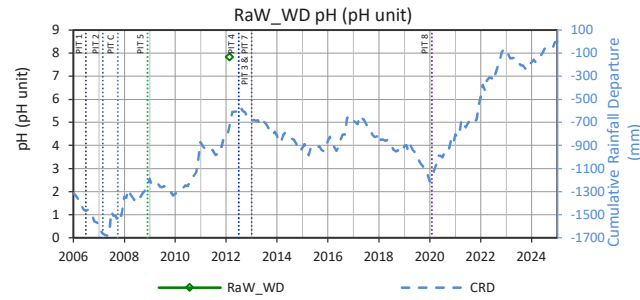
PZ26

No Data Available for Strontium mg/L

PZ26

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

No Data Available for Nickel mg/L

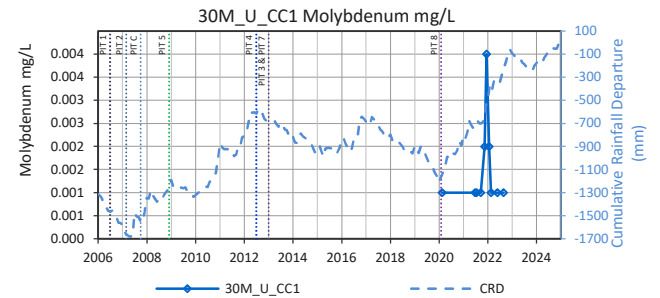
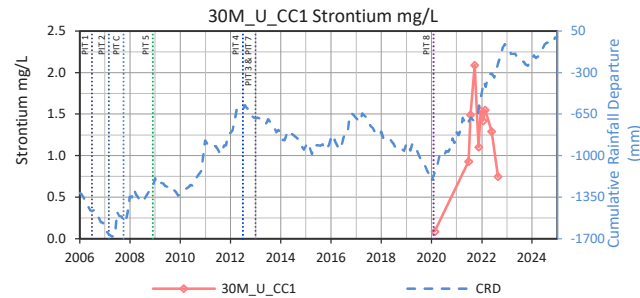
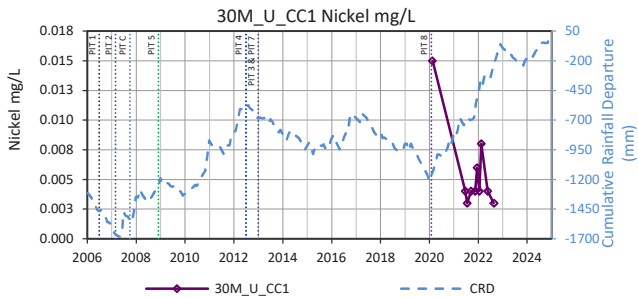
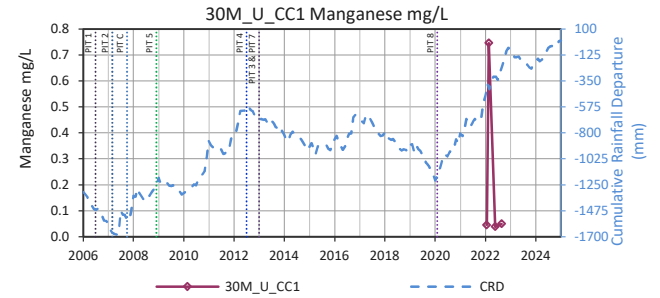
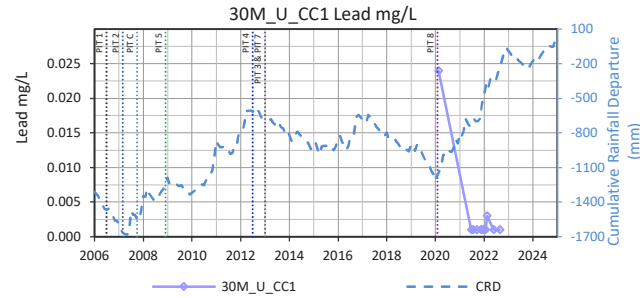
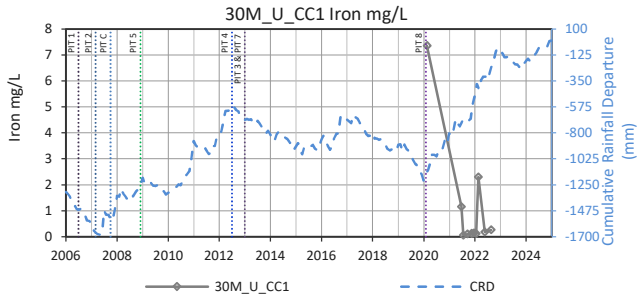
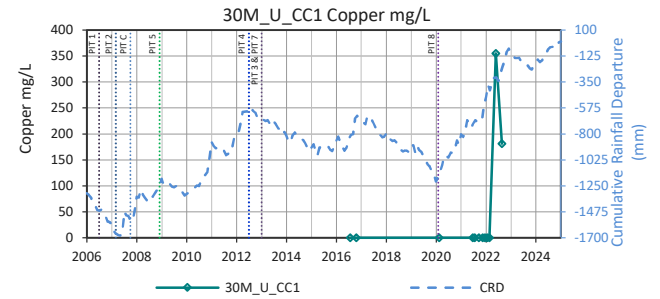
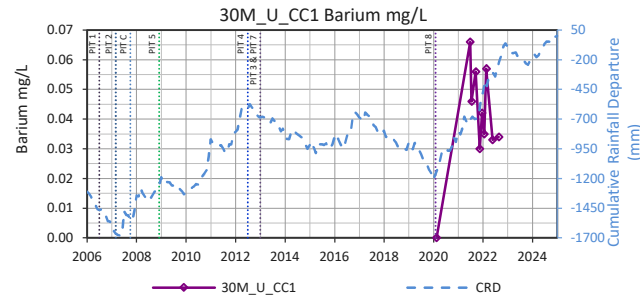
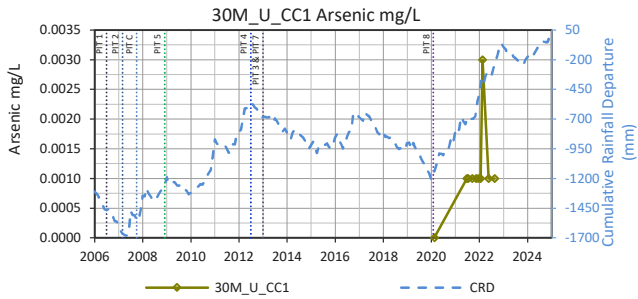
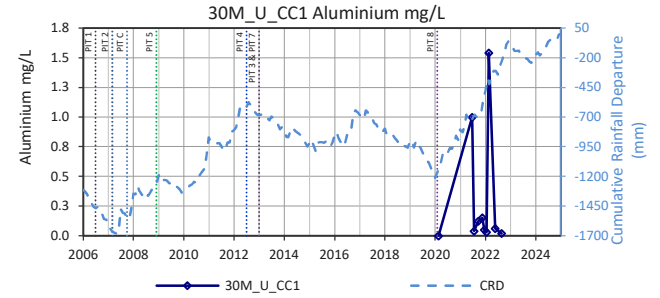
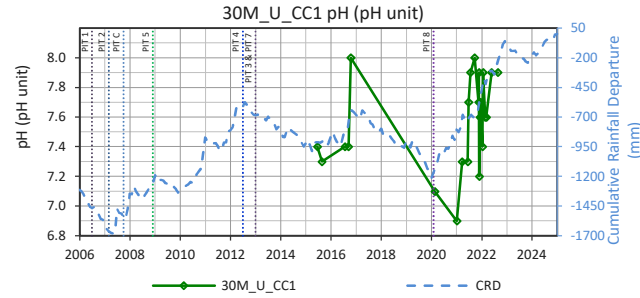
No Data Available for Strontium mg/L

No Data Available for Molybdenum mg/L



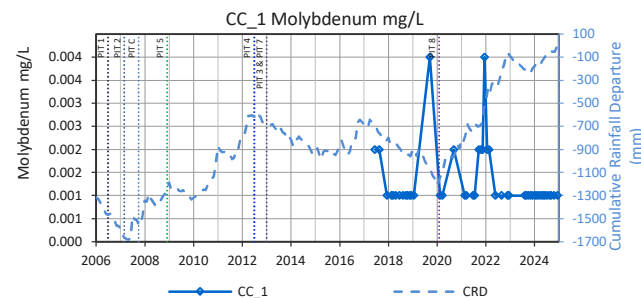
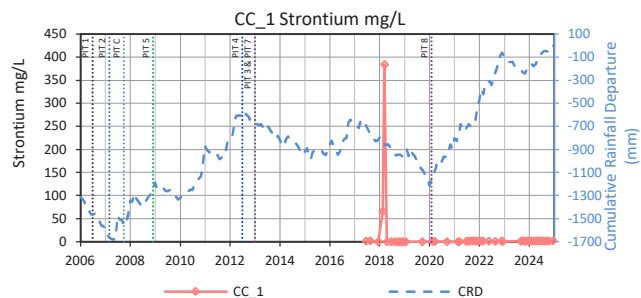
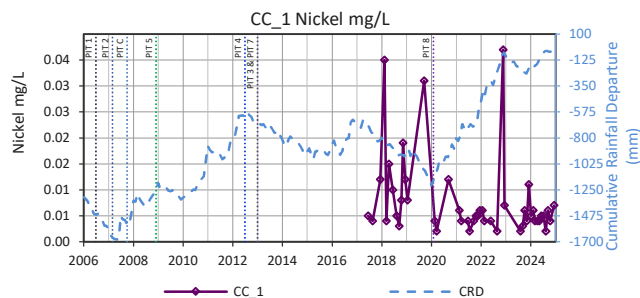
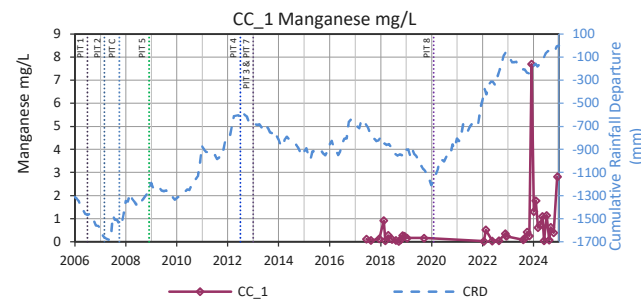
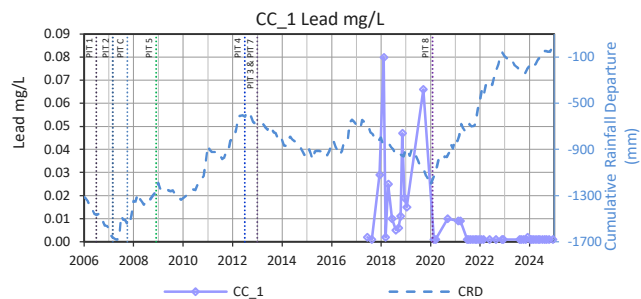
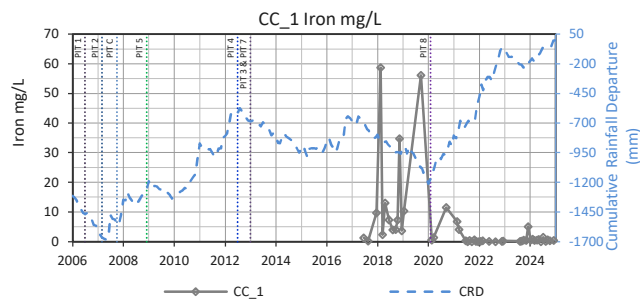
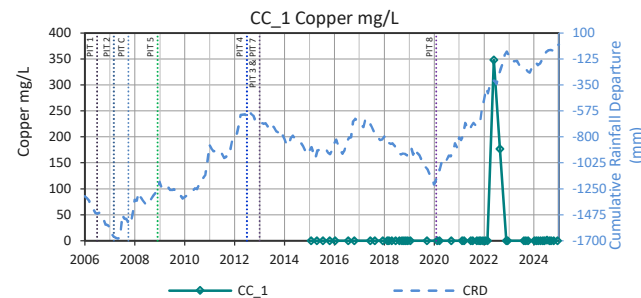
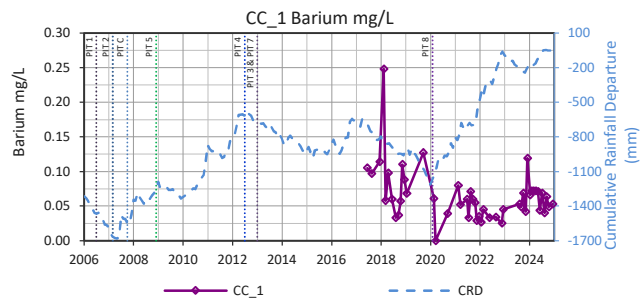
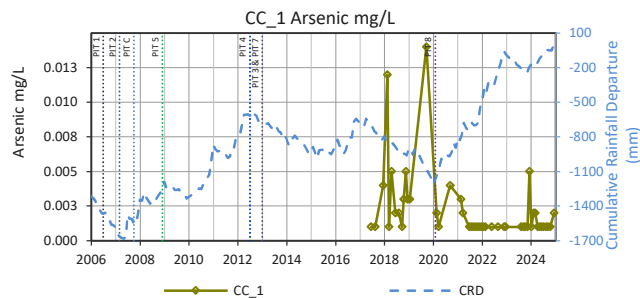
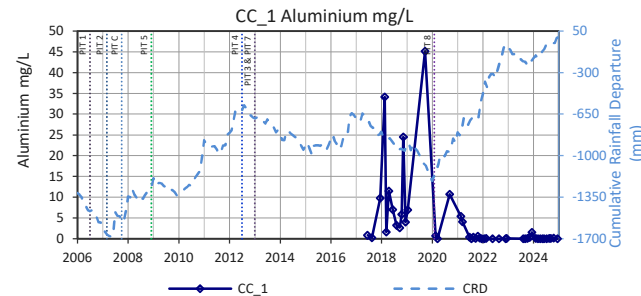
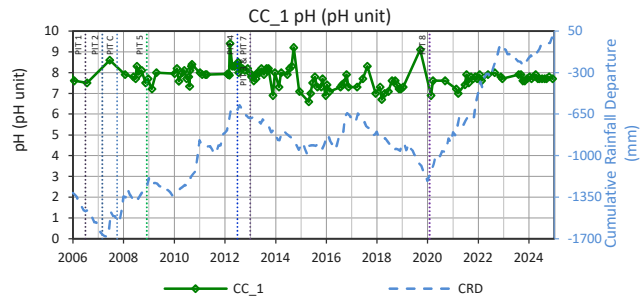
30M\_U\_CC1

No Data Available for Elevation (mAHD)



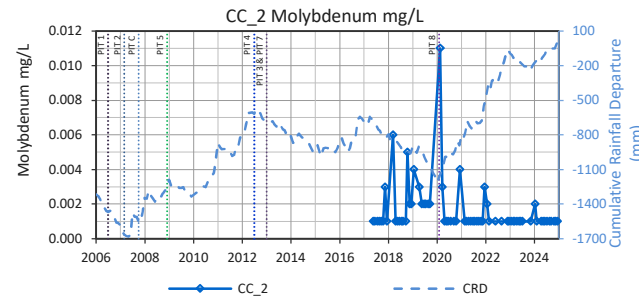
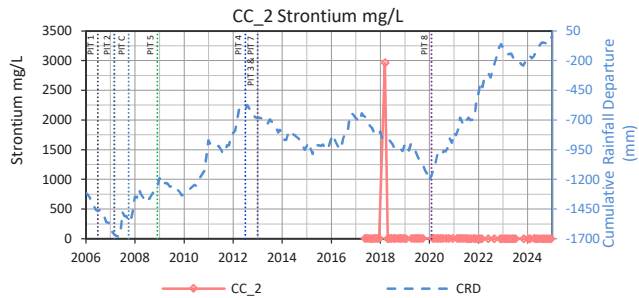
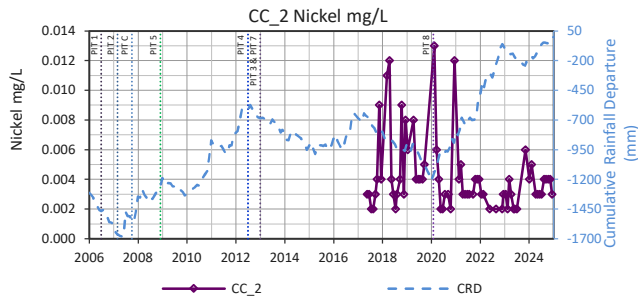
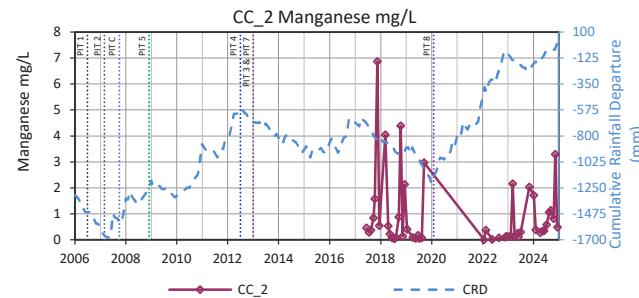
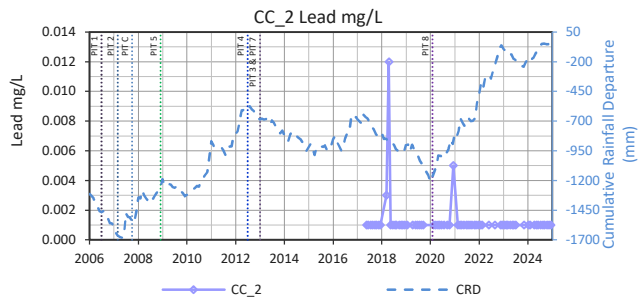
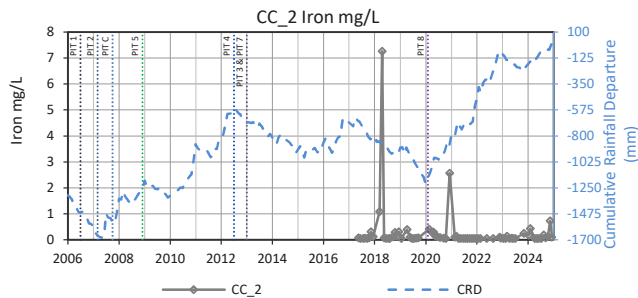
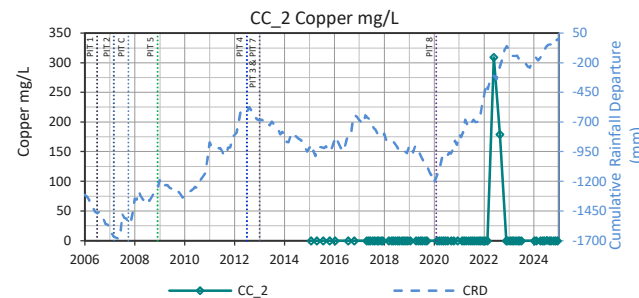
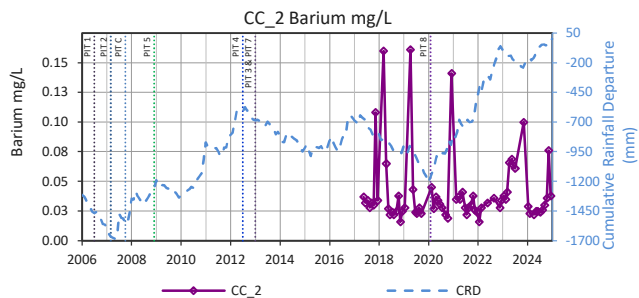
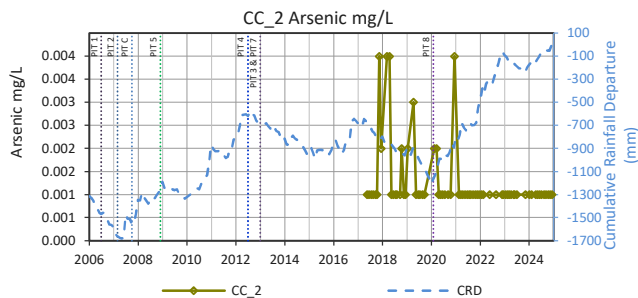
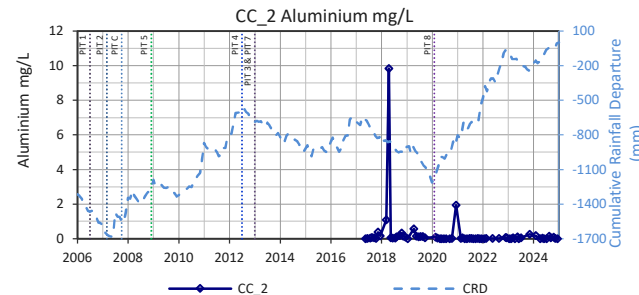
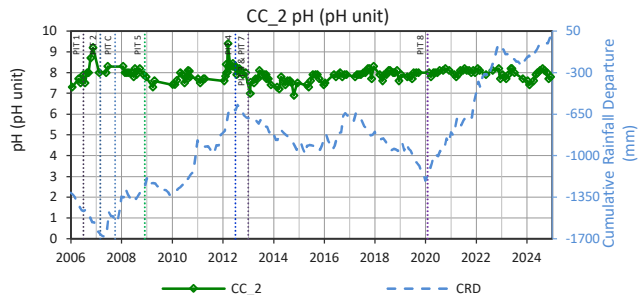
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No Data Available for Elevation (mAHD)



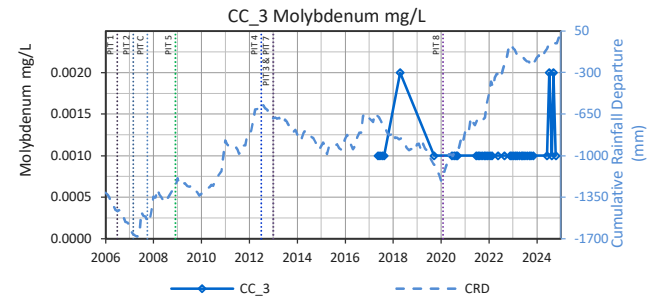
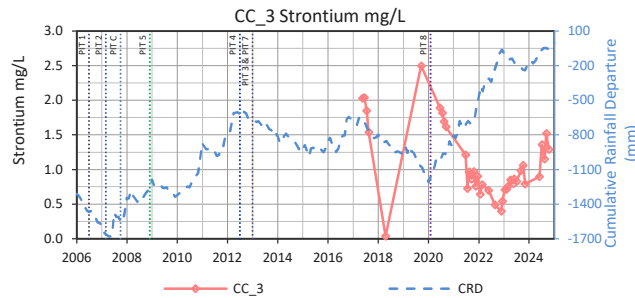
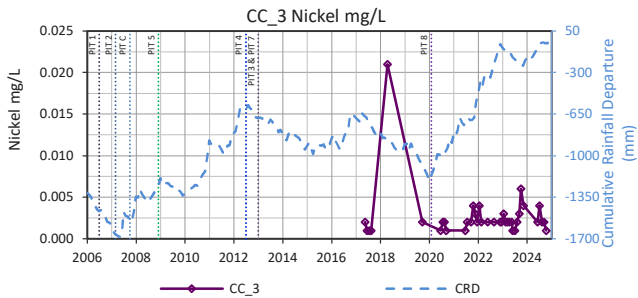
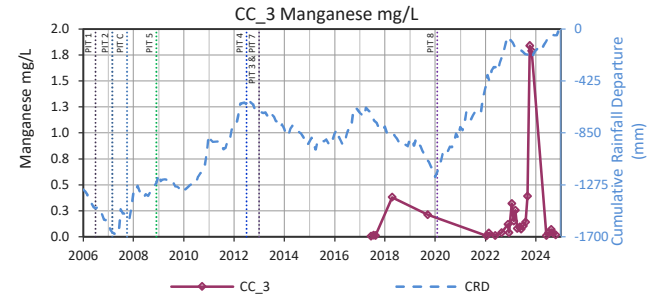
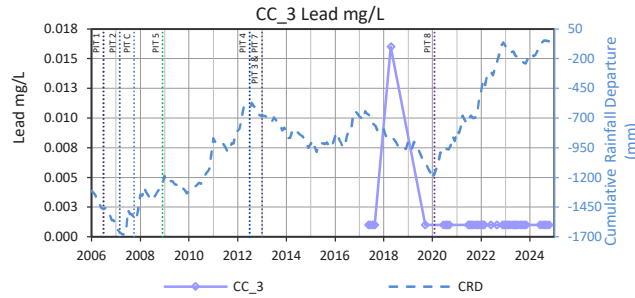
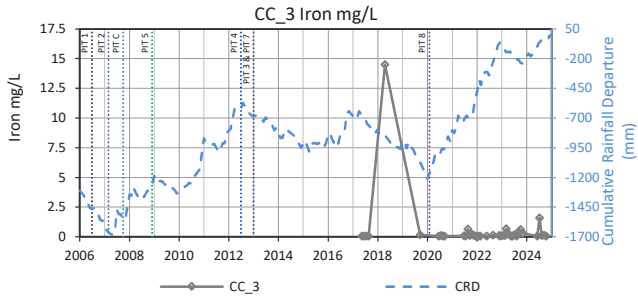
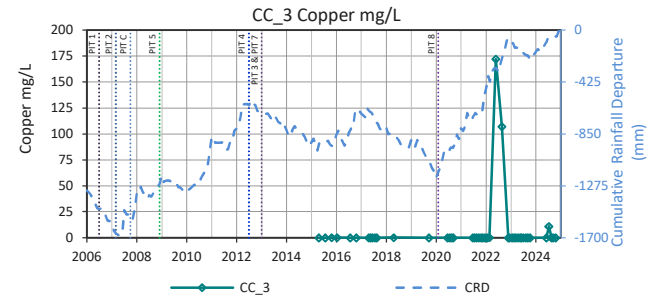
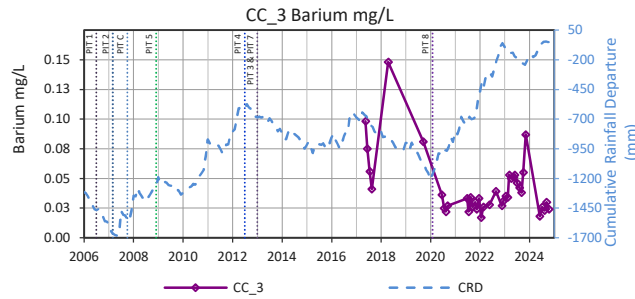
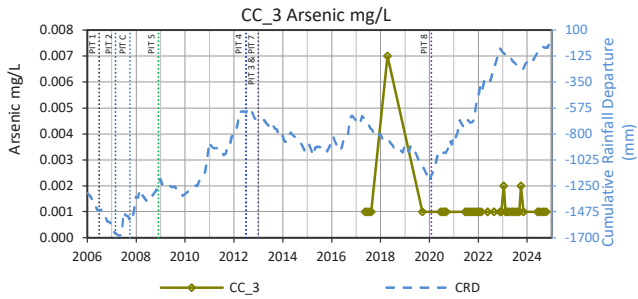
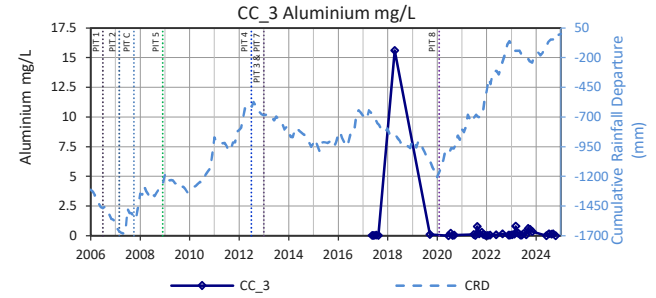
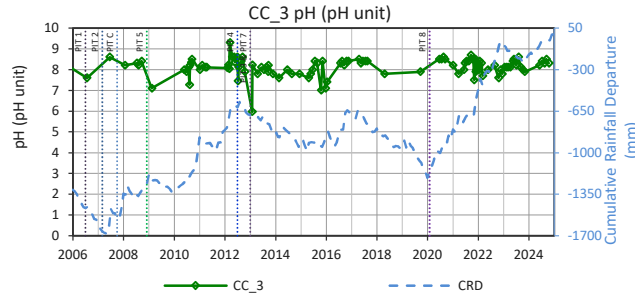
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No Data Available for Elevation (mAHD)



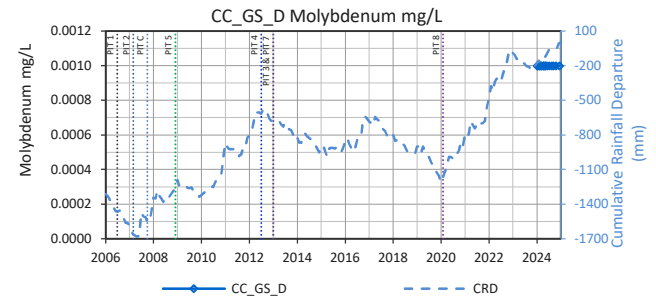
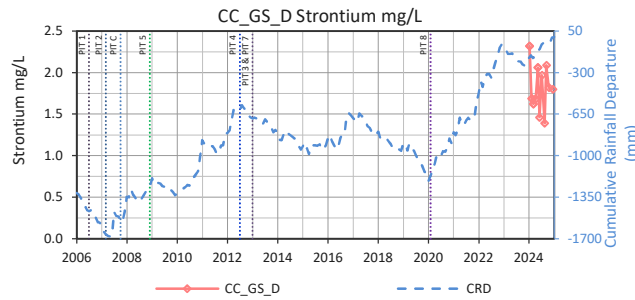
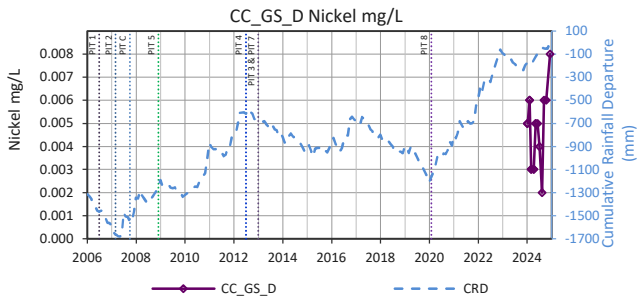
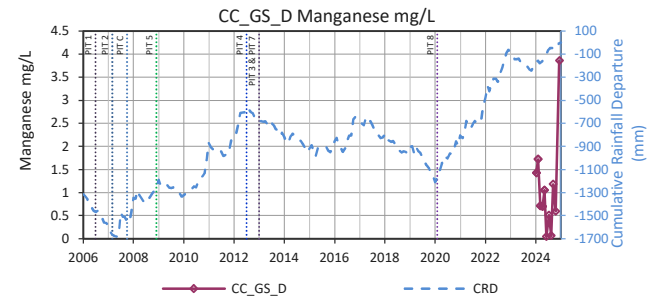
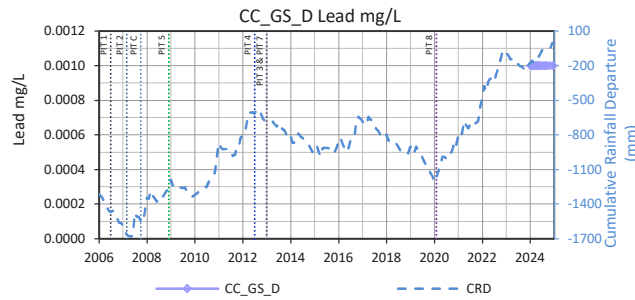
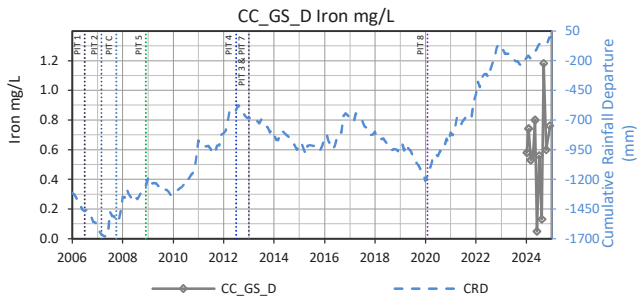
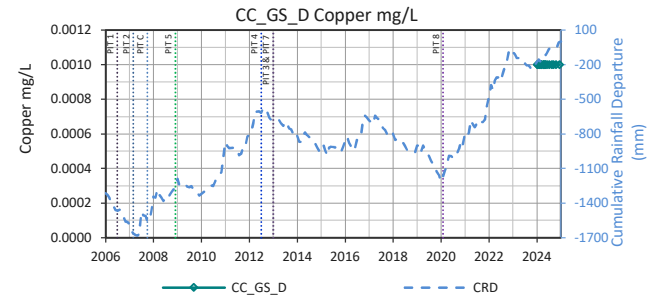
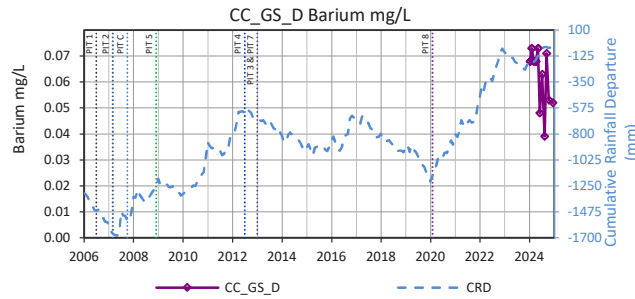
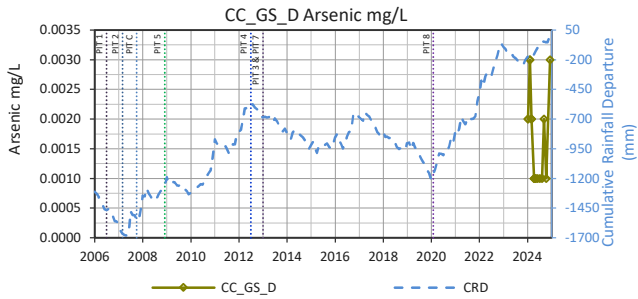
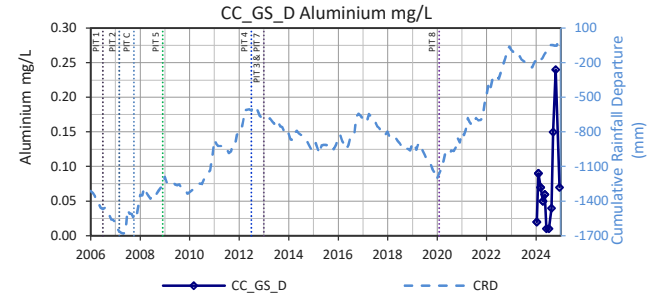
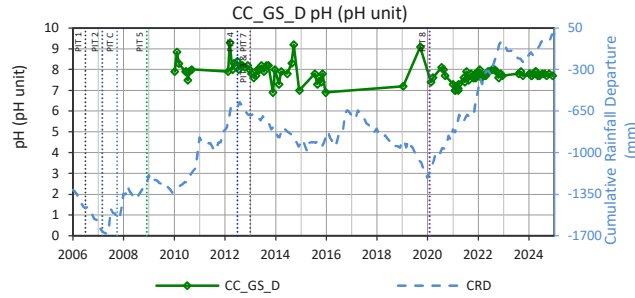
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No Data Available for Elevation (mAHD)



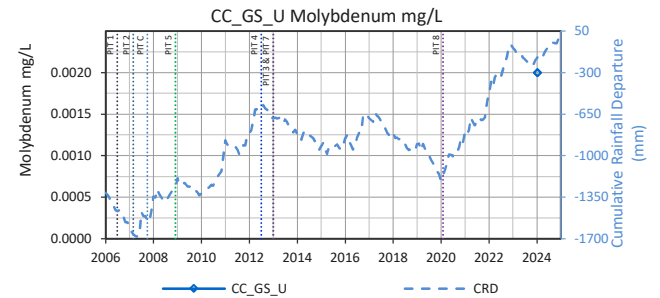
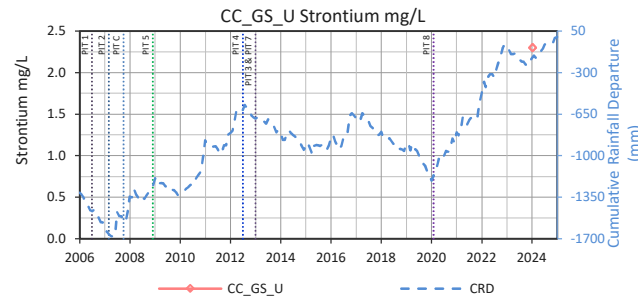
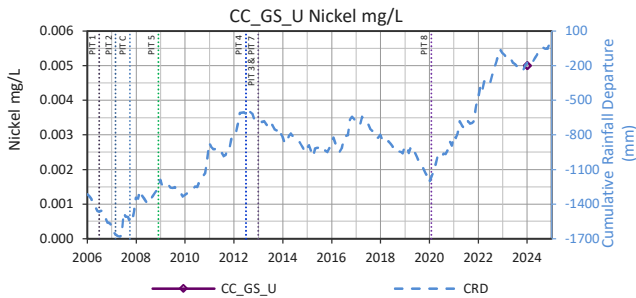
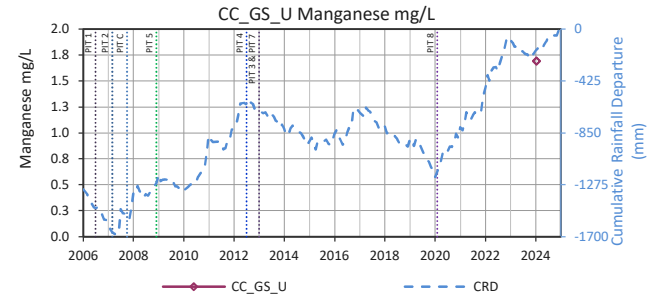
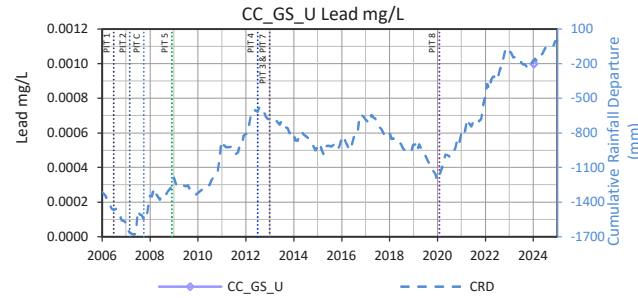
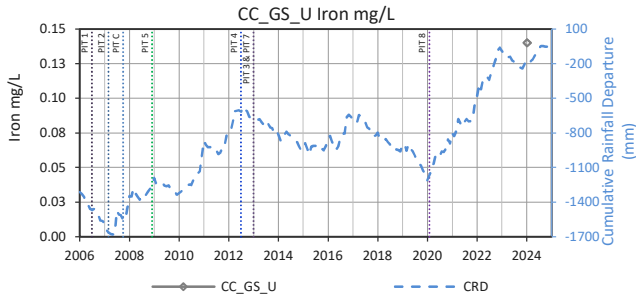
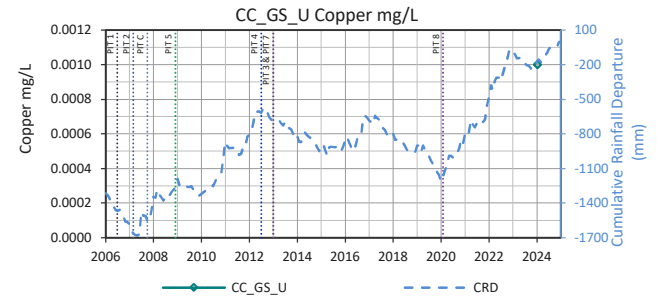
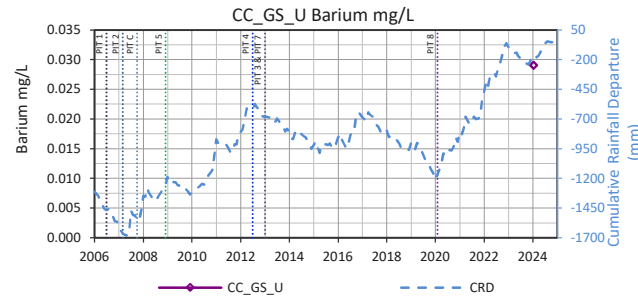
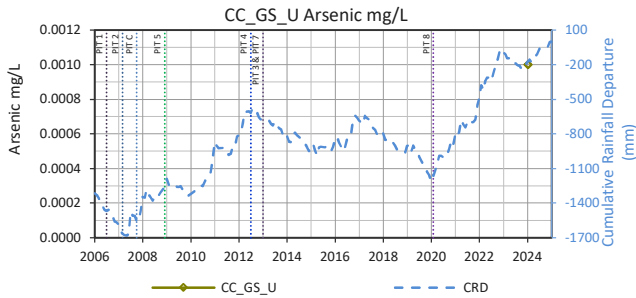
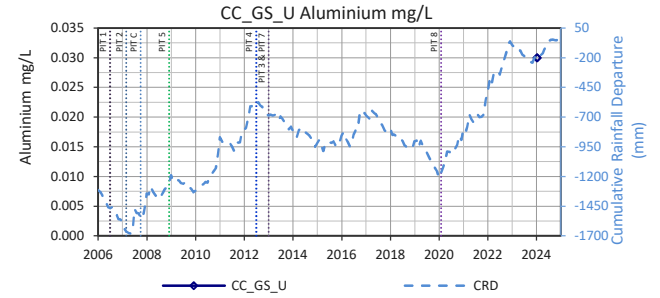
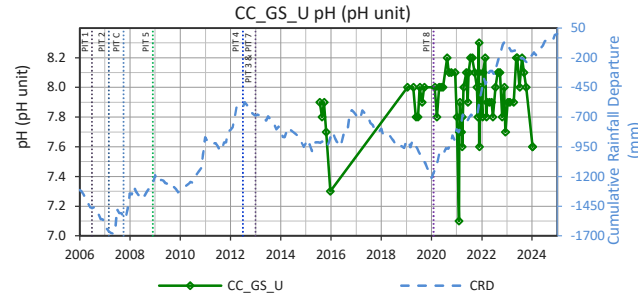
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No Data Available for Elevation (mAHD)



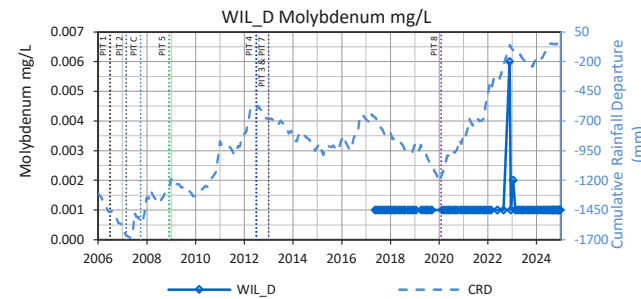
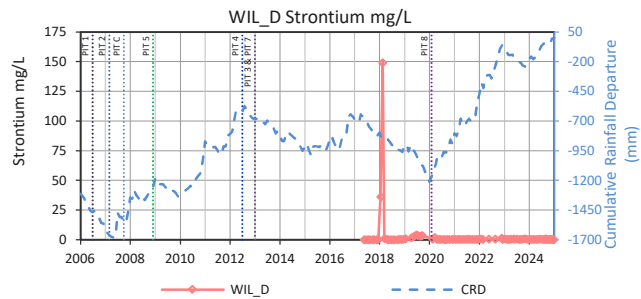
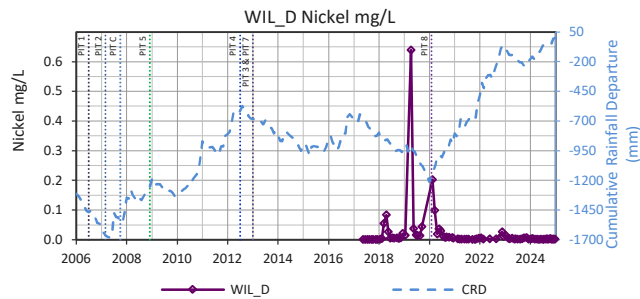
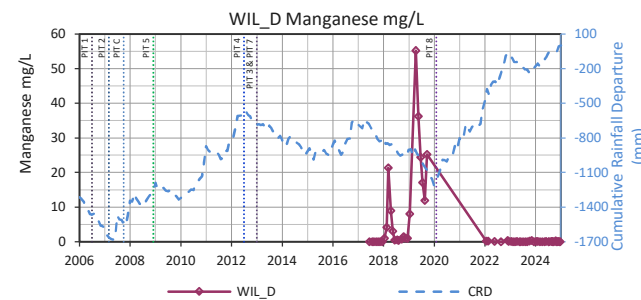
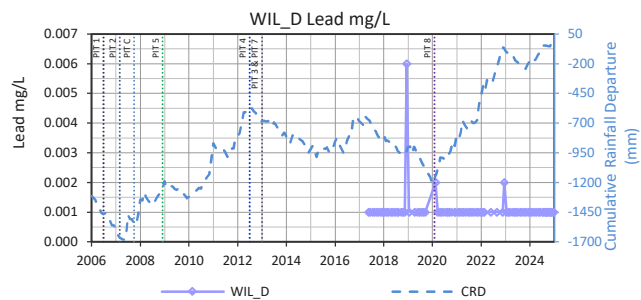
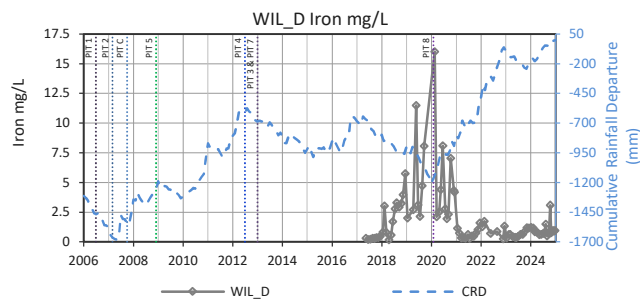
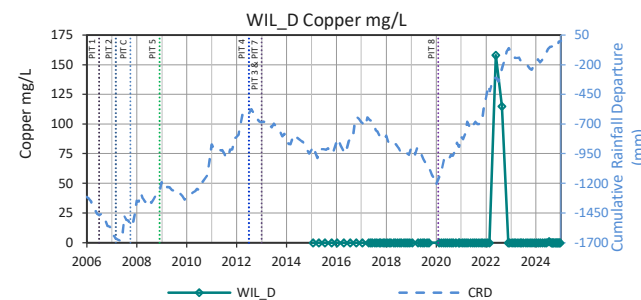
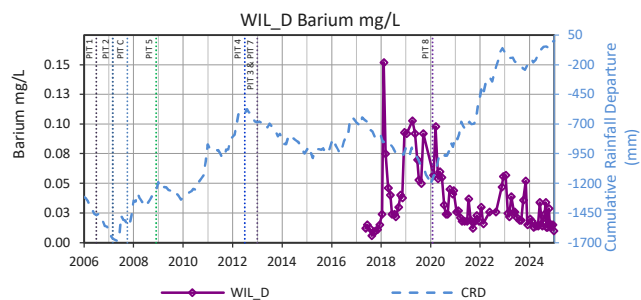
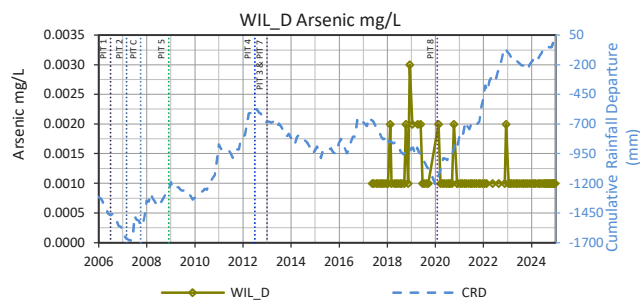
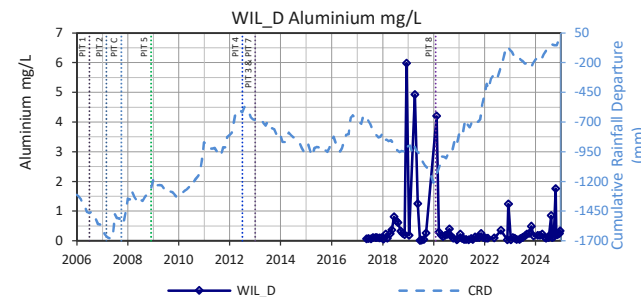
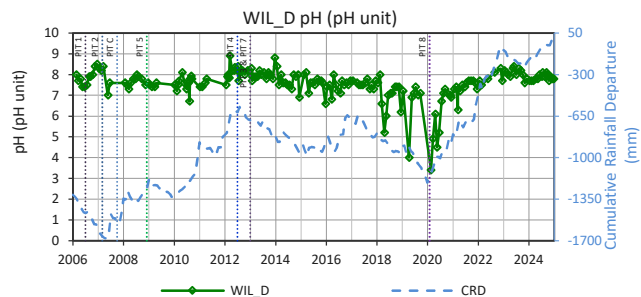
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No Data Available for Elevation (mAHD)



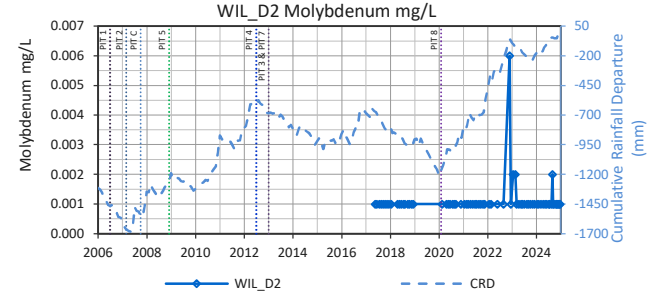
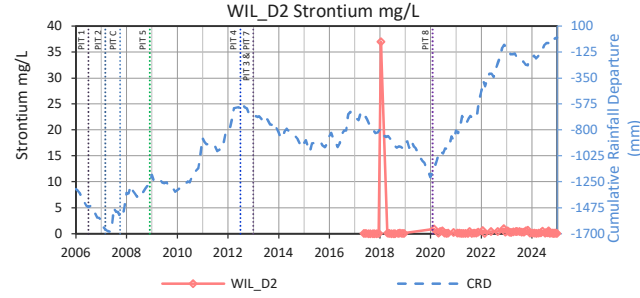
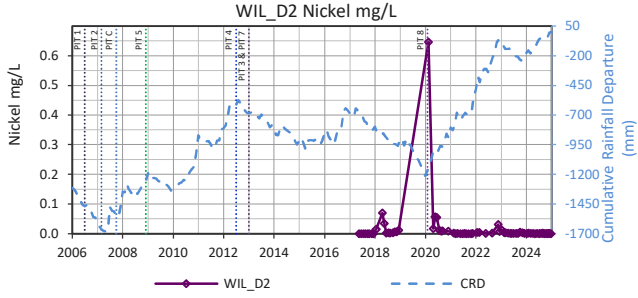
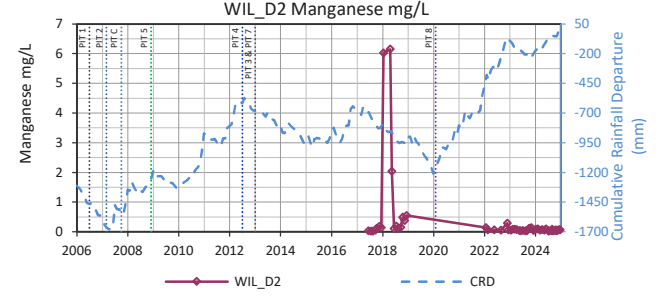
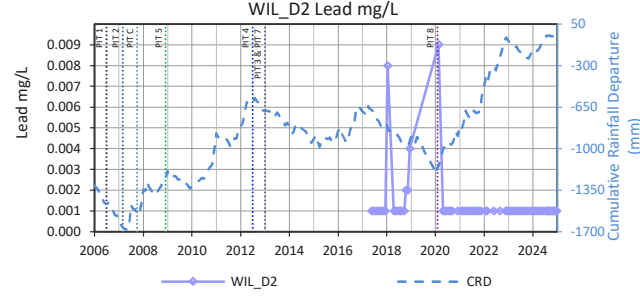
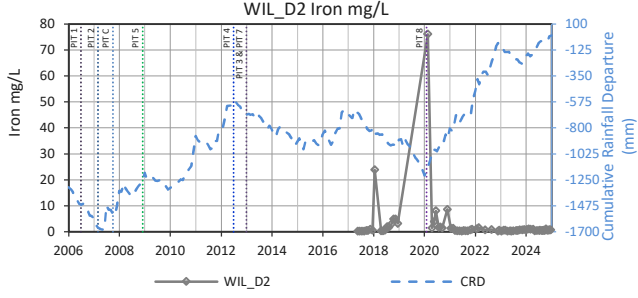
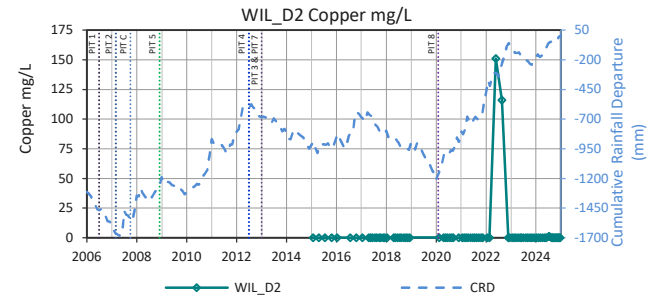
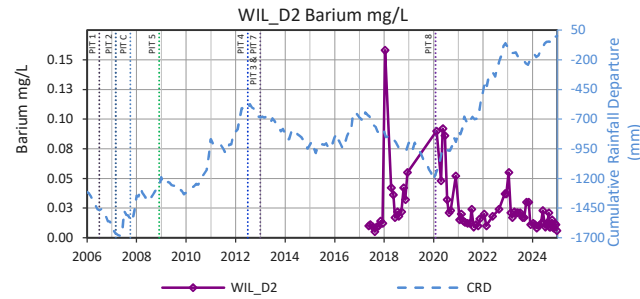
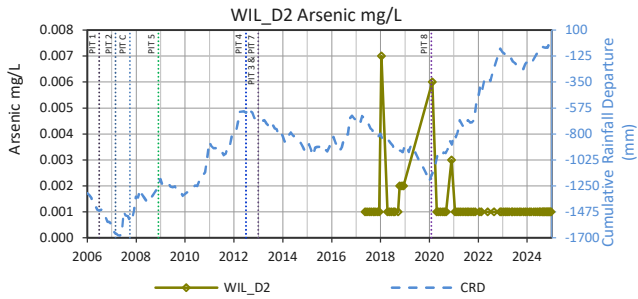
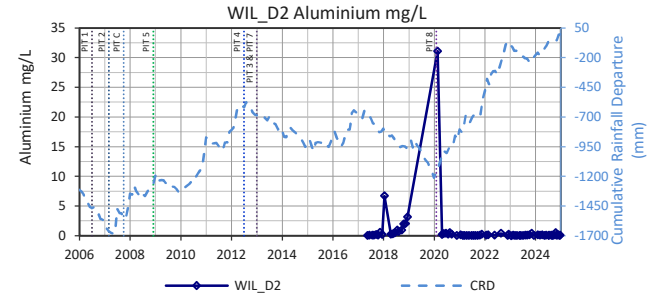
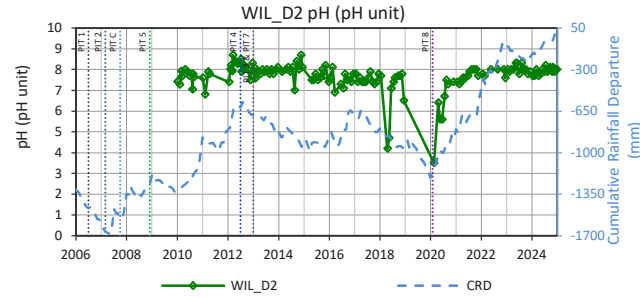
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No Data Available for Elevation (mAHD)



WIL\_D2

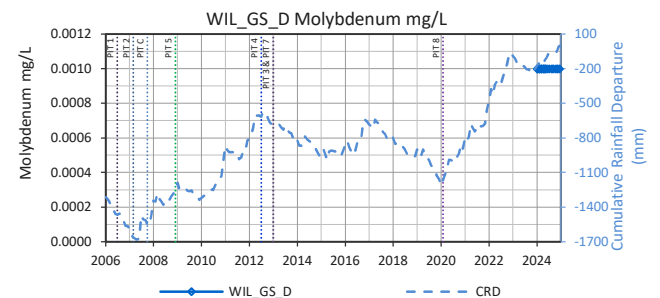
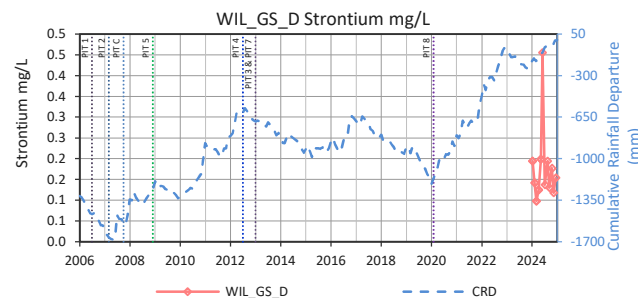
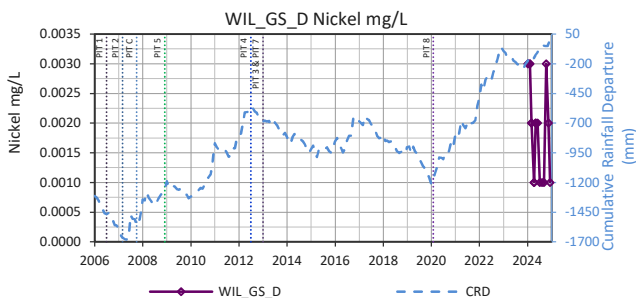
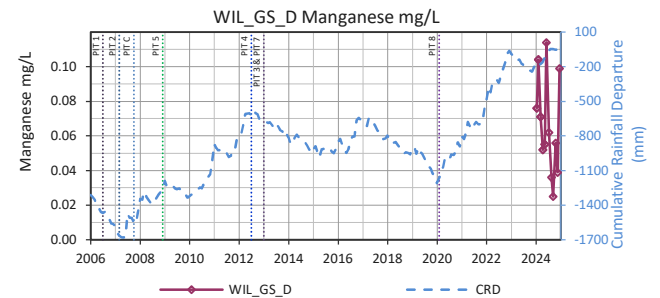
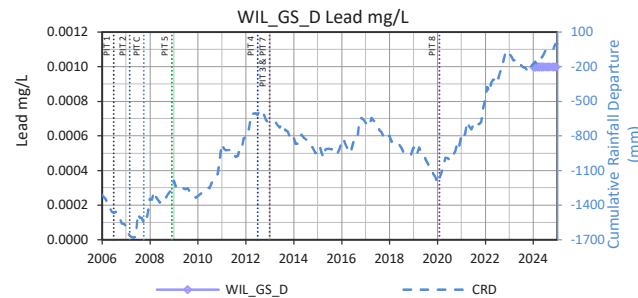
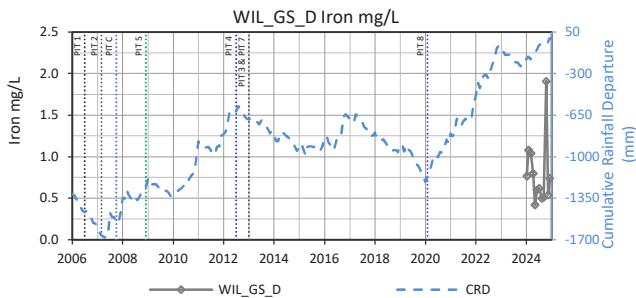
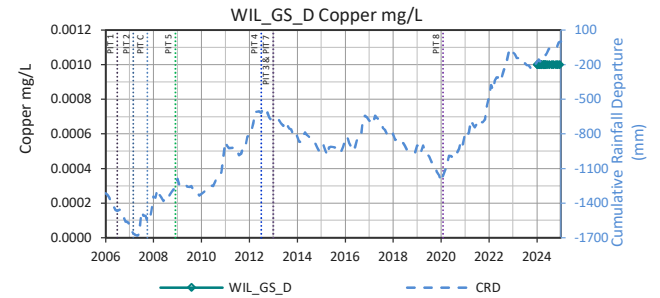
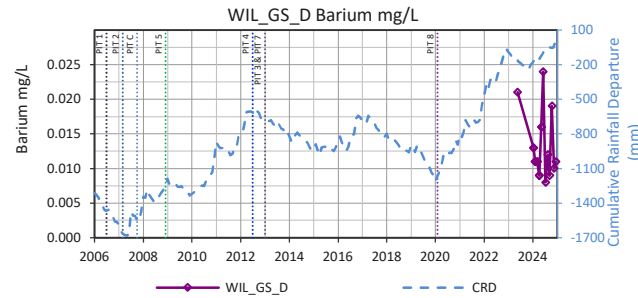
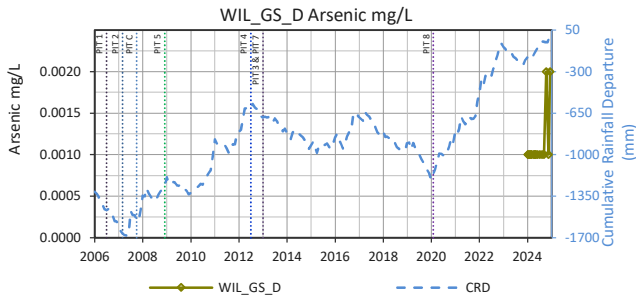
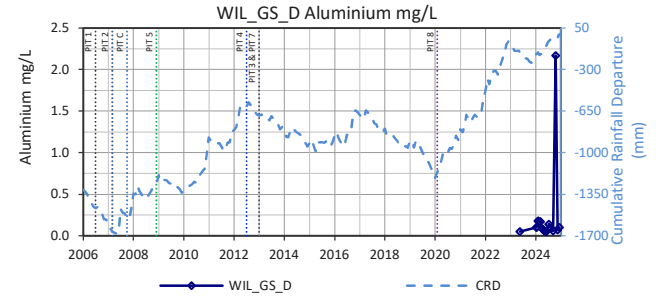
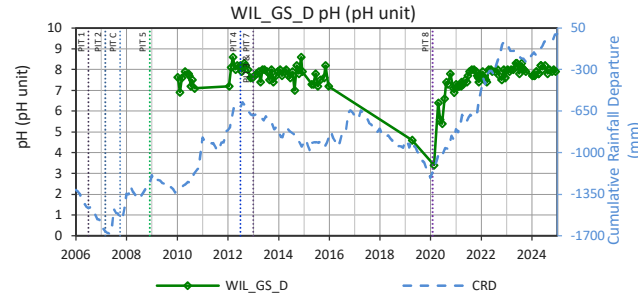
No Data Available for Elevation (mAHD)





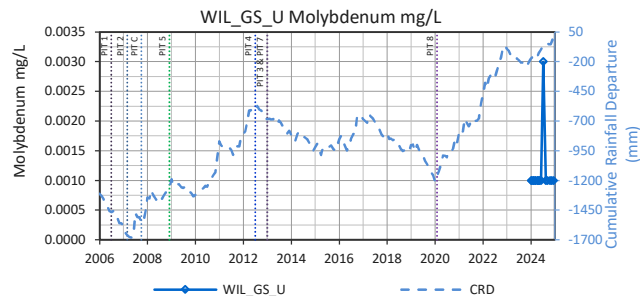
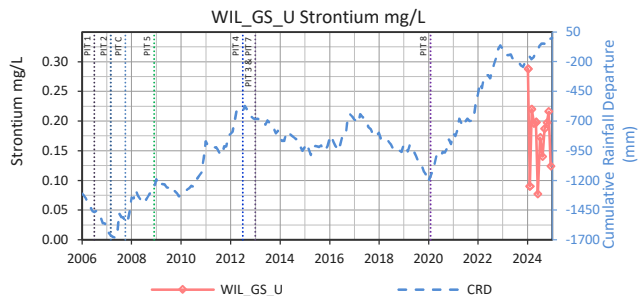
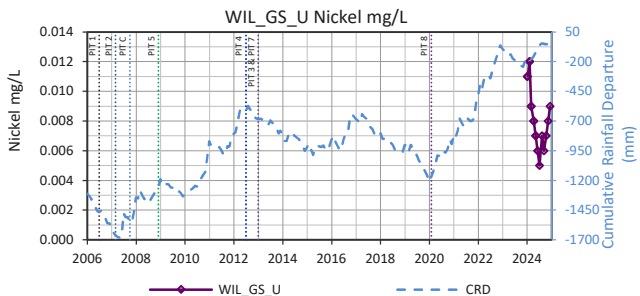
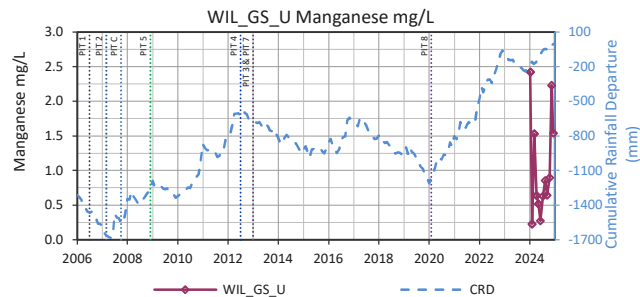
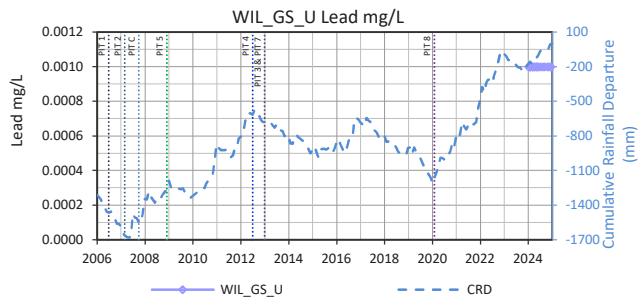
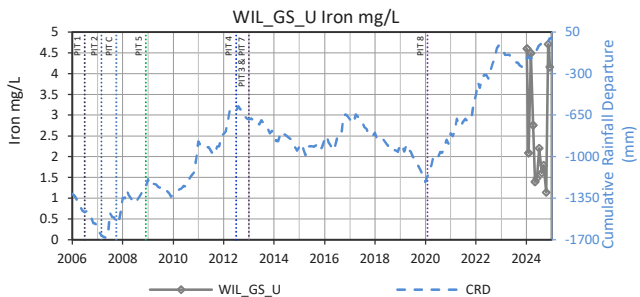
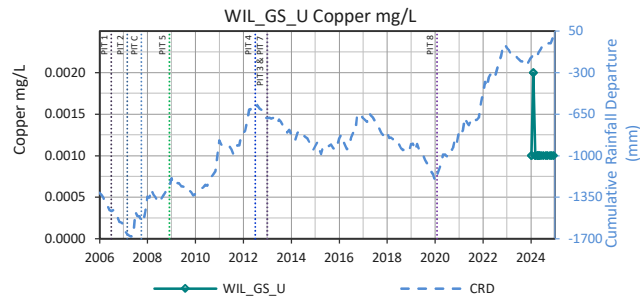
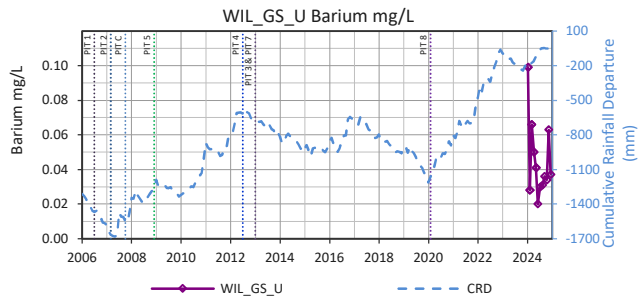
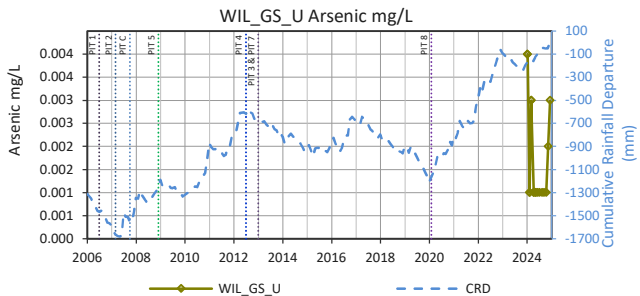
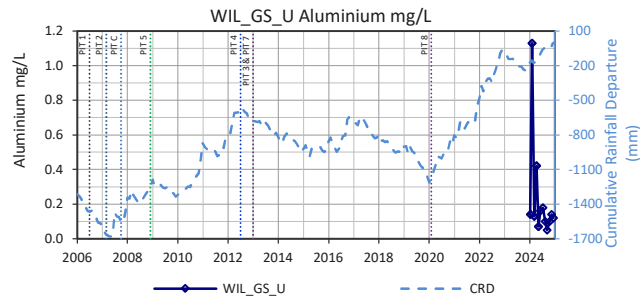
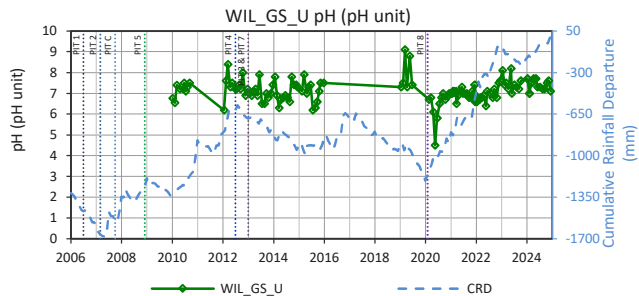
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No Data Available for Elevation (mAHD)



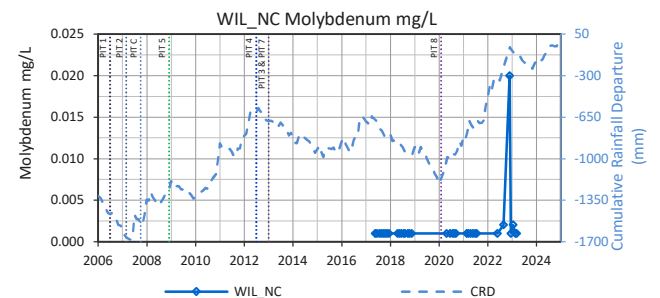
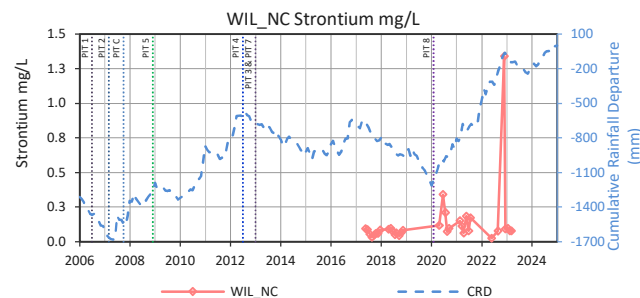
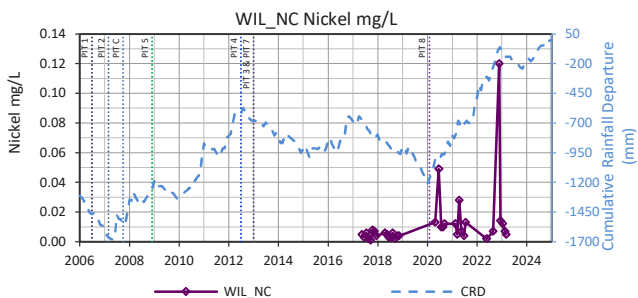
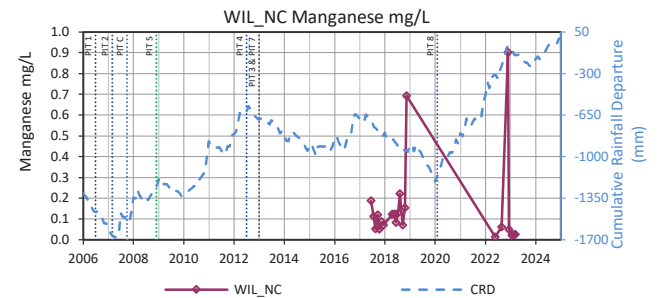
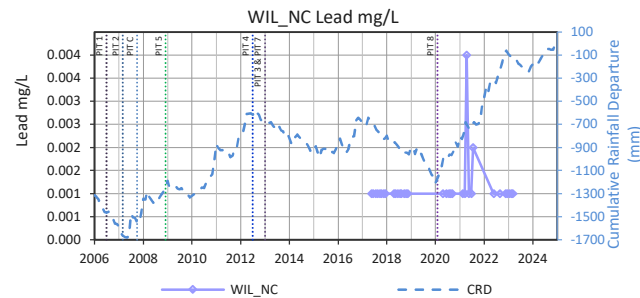
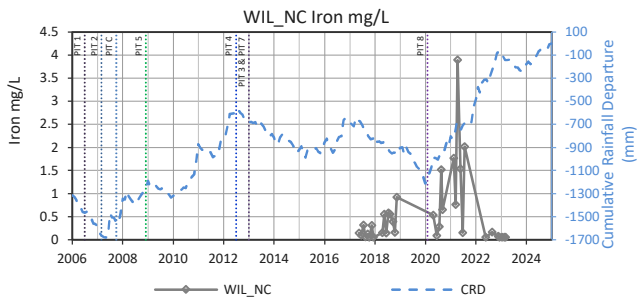
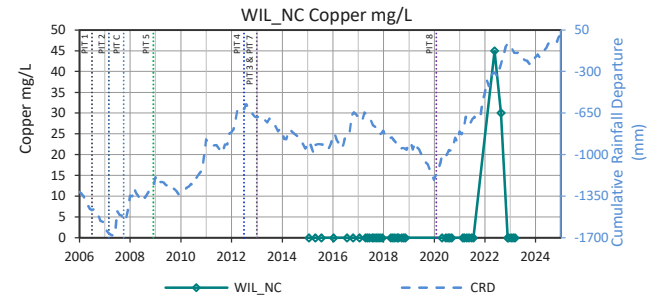
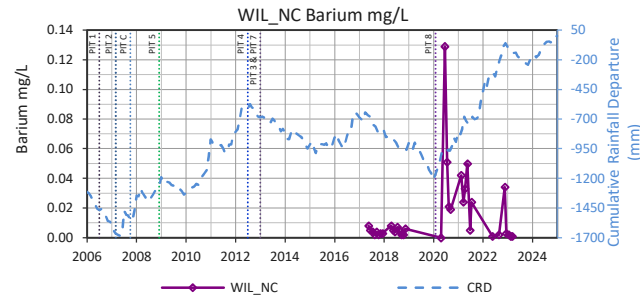
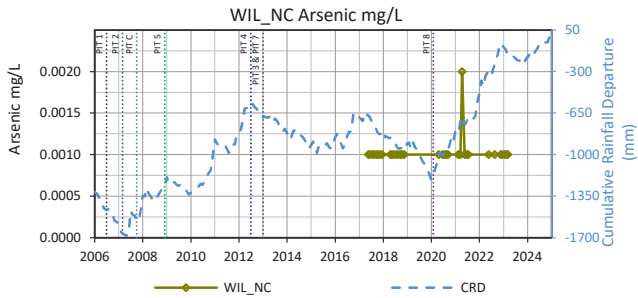
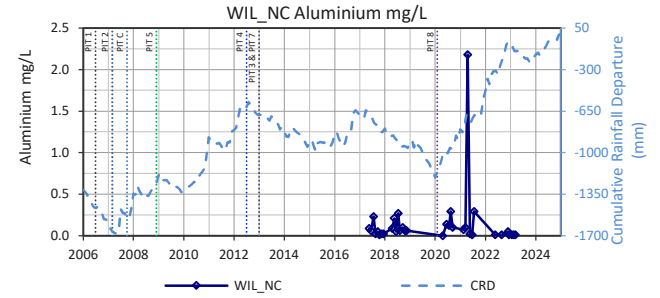
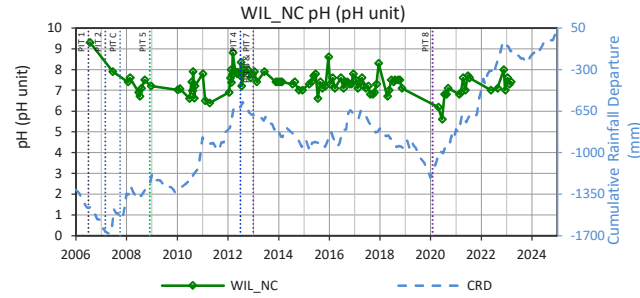
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No Data Available for Elevation (mAHD)



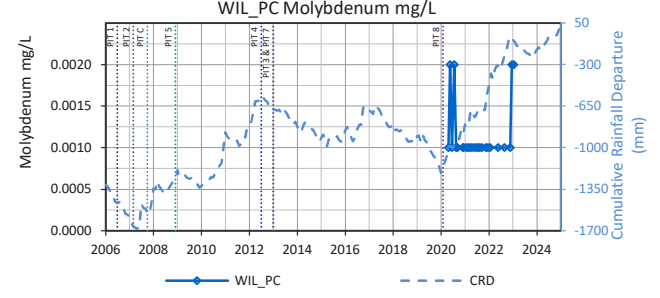
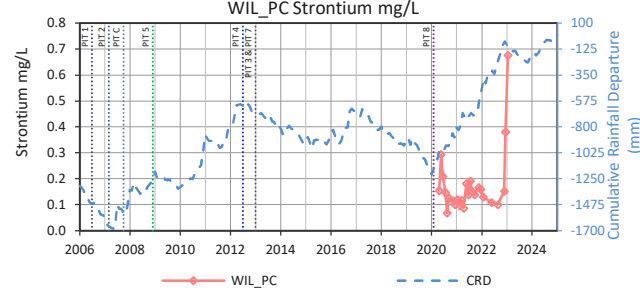
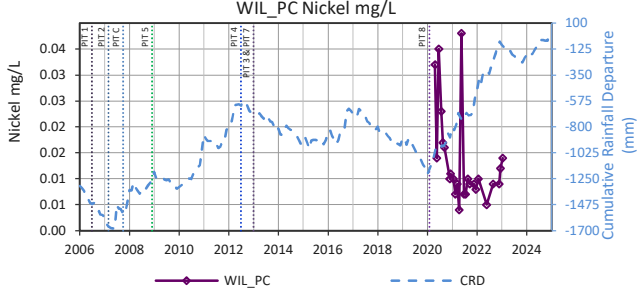
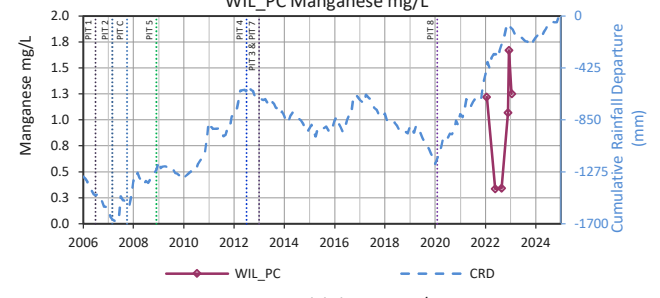
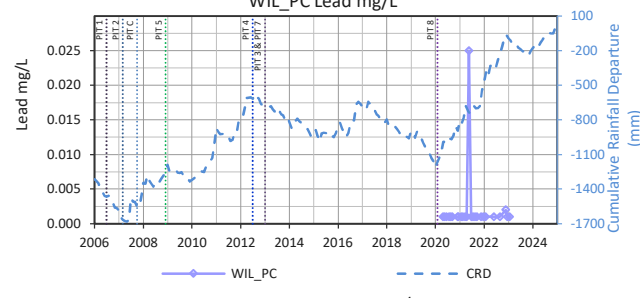
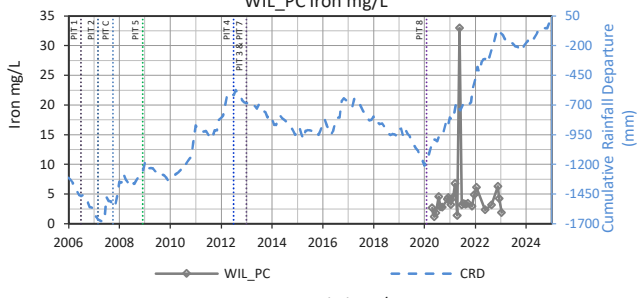
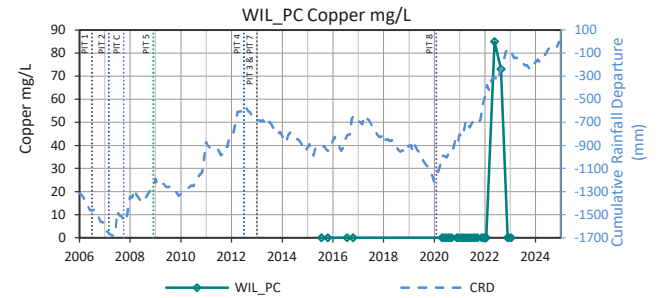
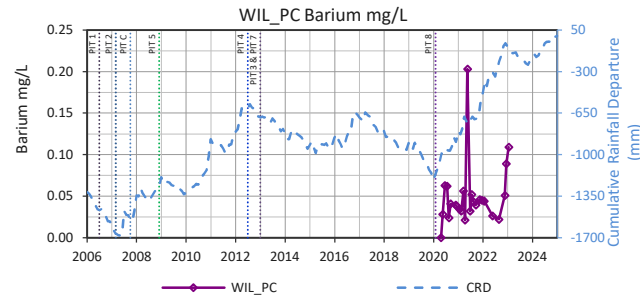
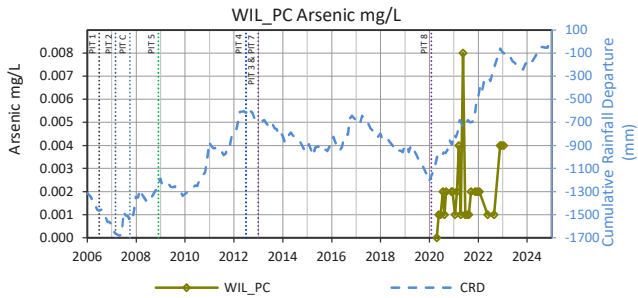
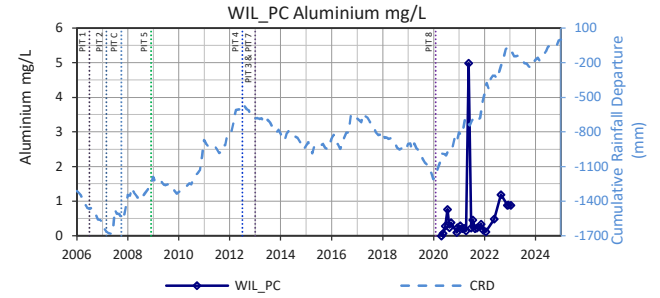
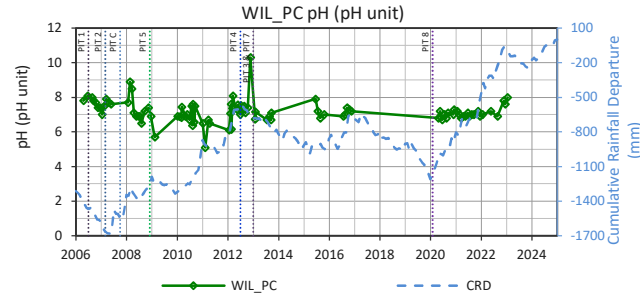
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No Data Available for Elevation (mAHD)



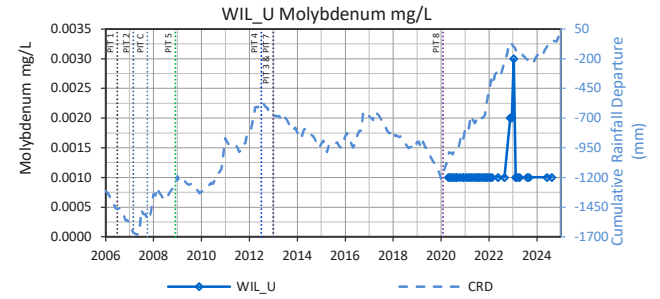
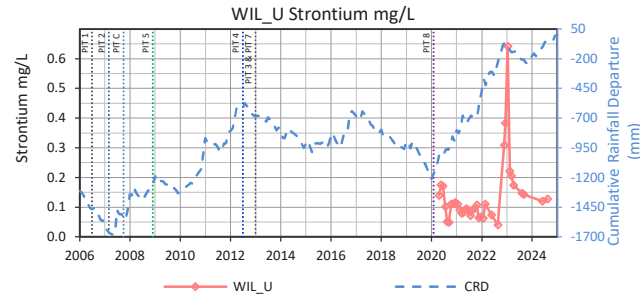
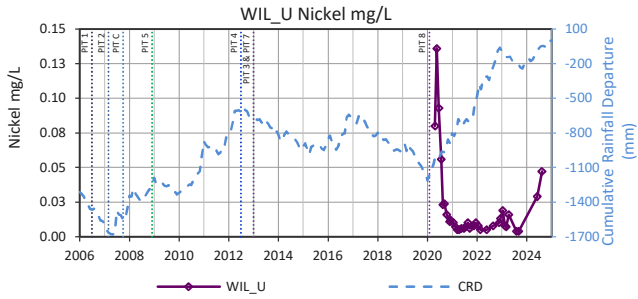
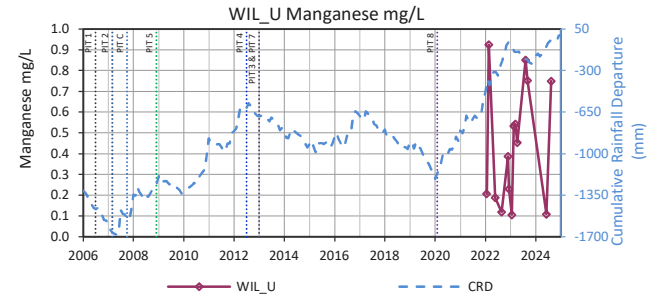
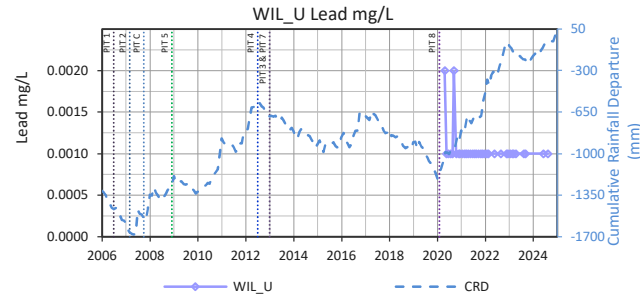
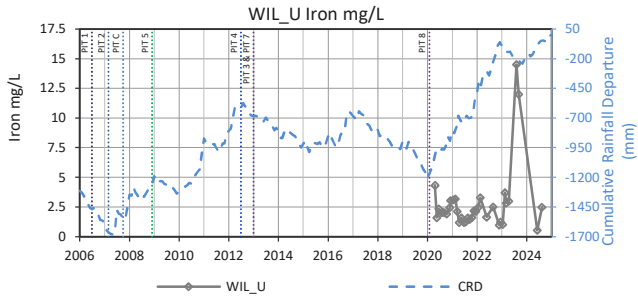
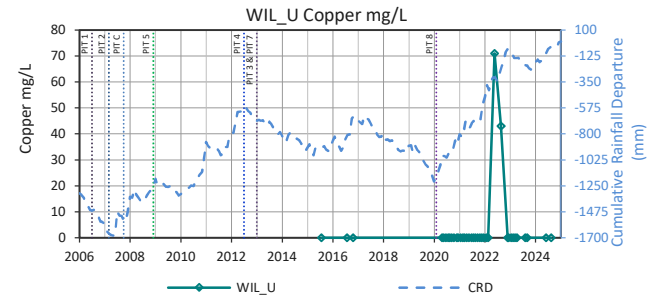
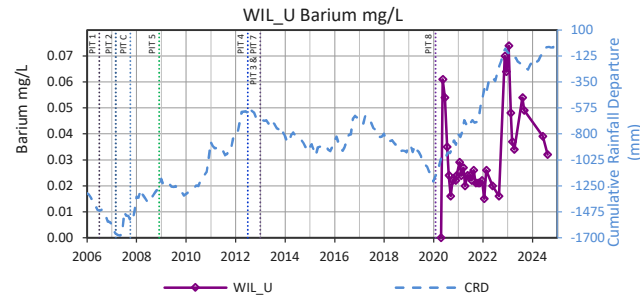
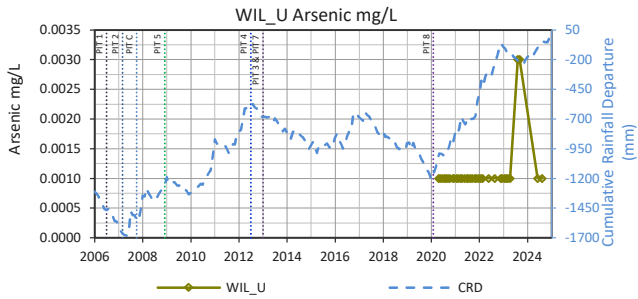
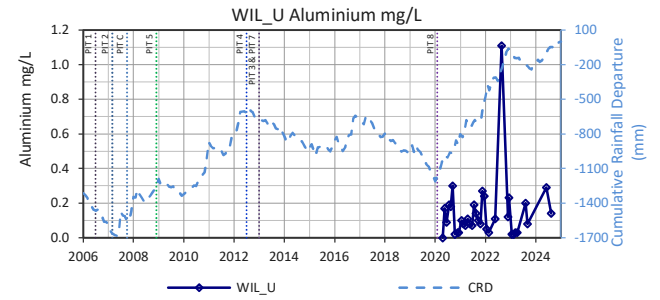
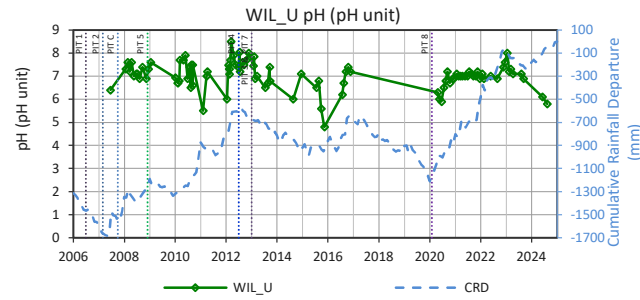
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No Data Available for Elevation (mAHD)



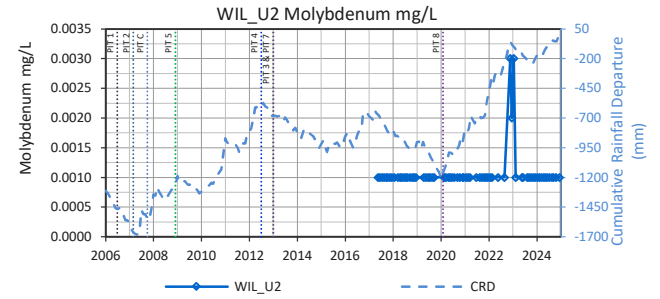
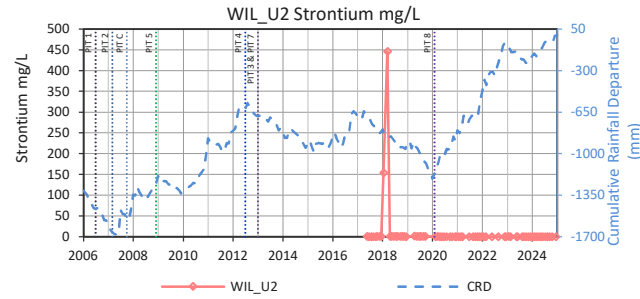
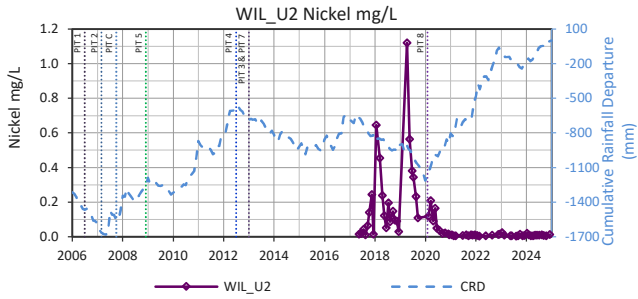
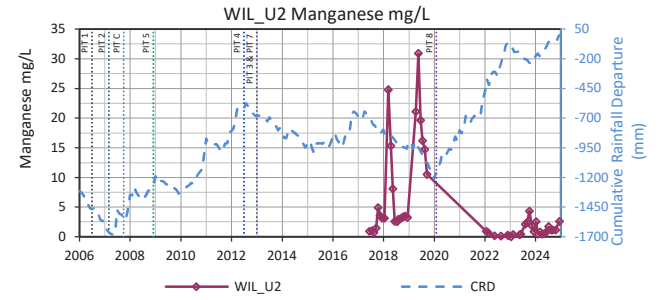
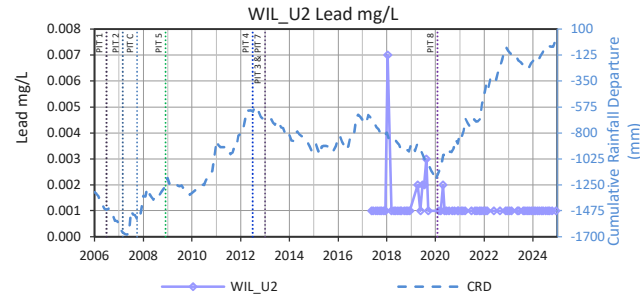
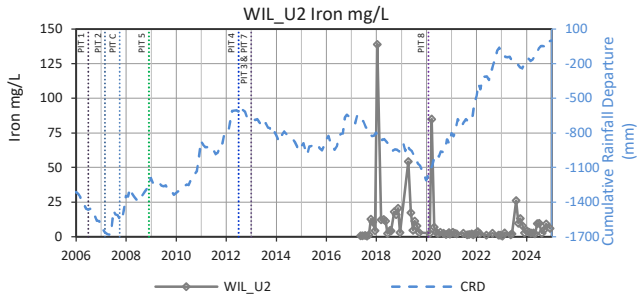
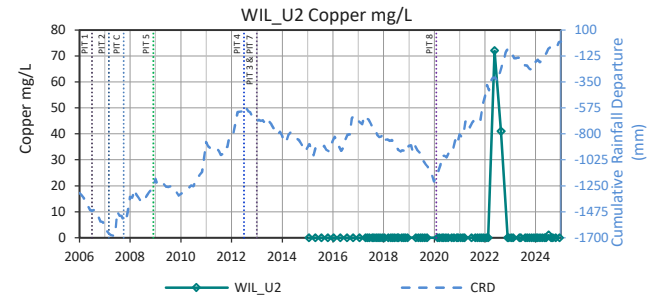
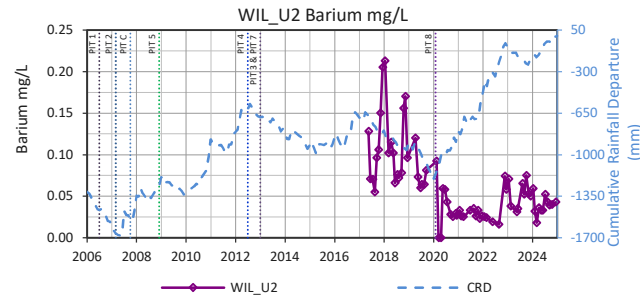
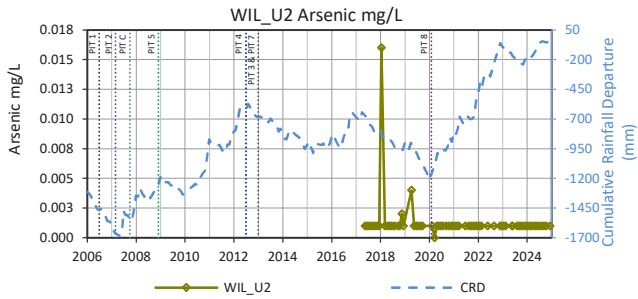
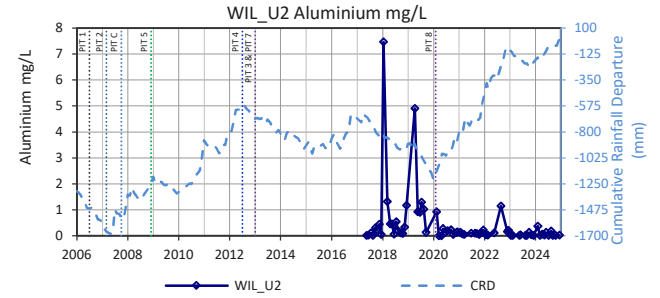
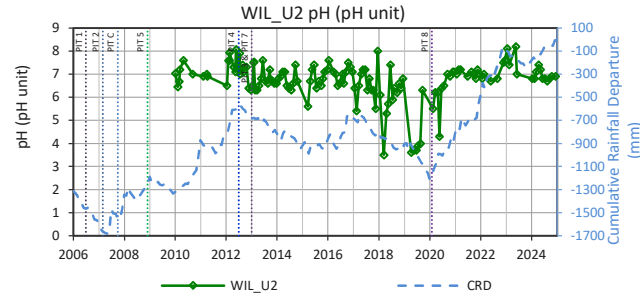
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No Data Available for Elevation (mAHD)



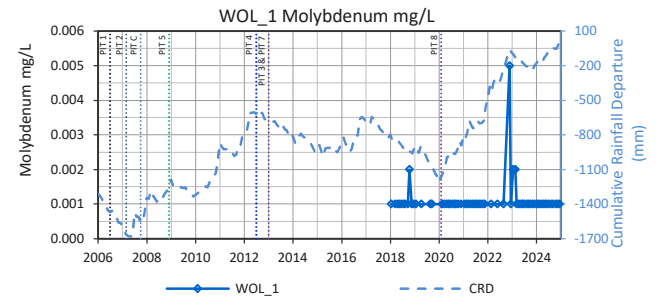
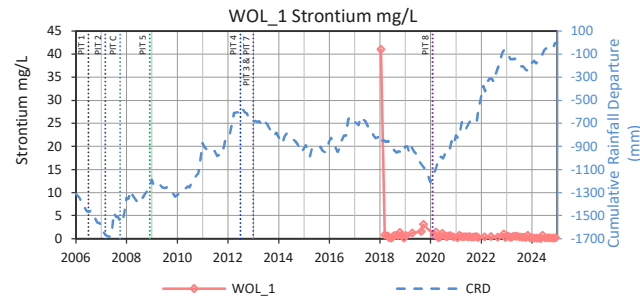
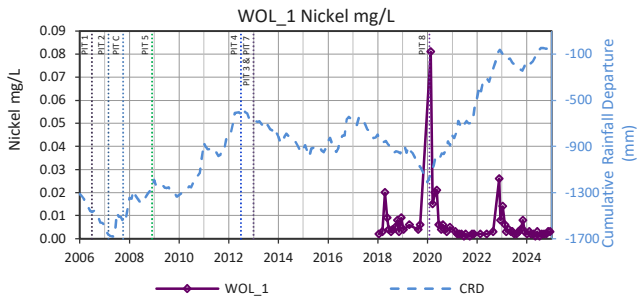
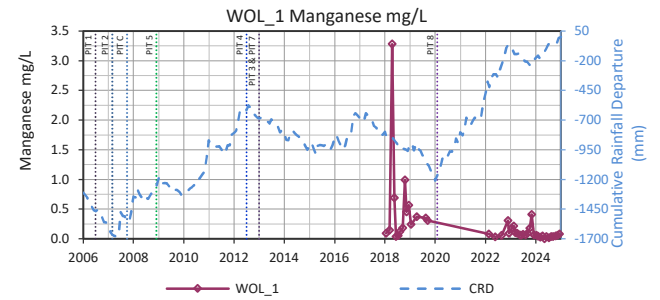
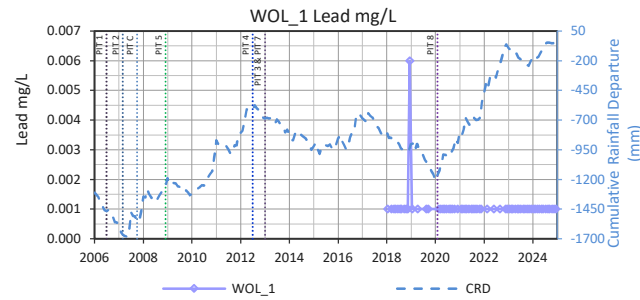
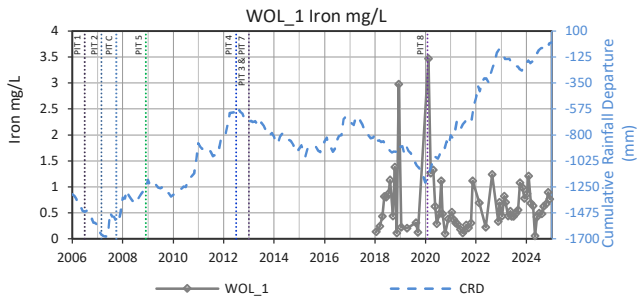
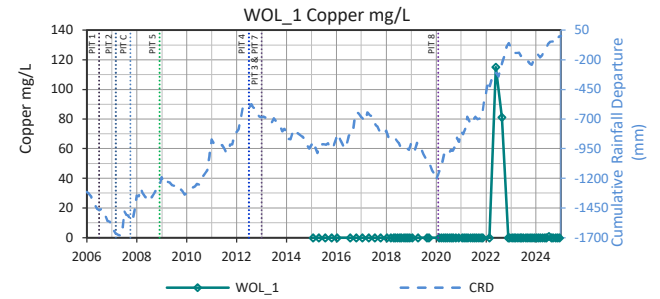
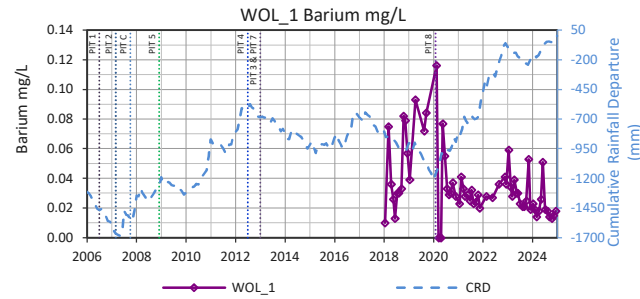
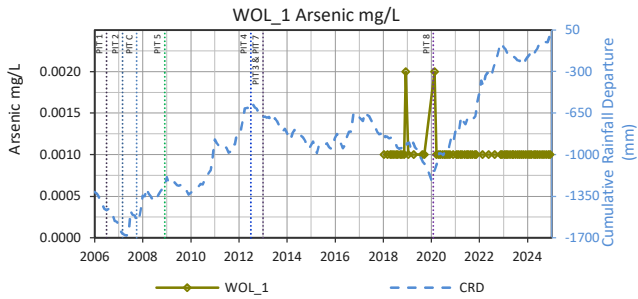
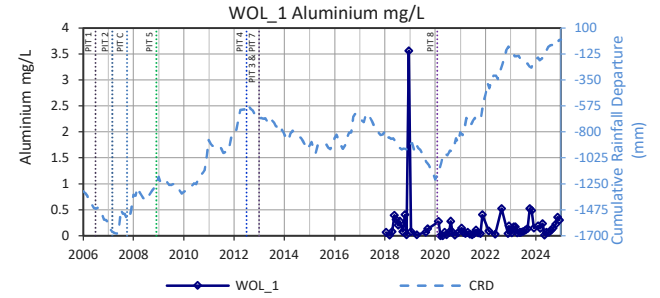
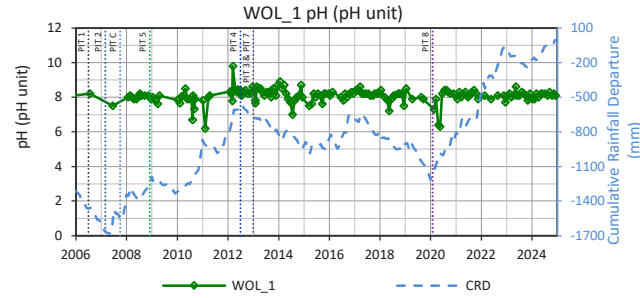
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No Data Available for Elevation (mAHD)



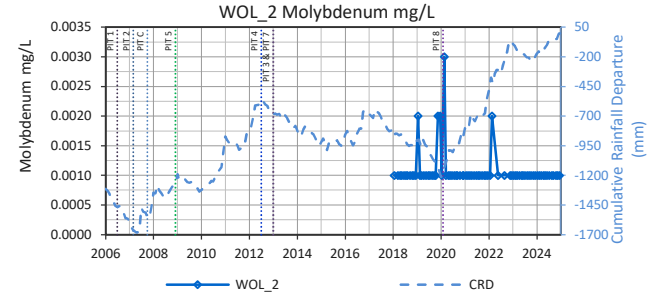
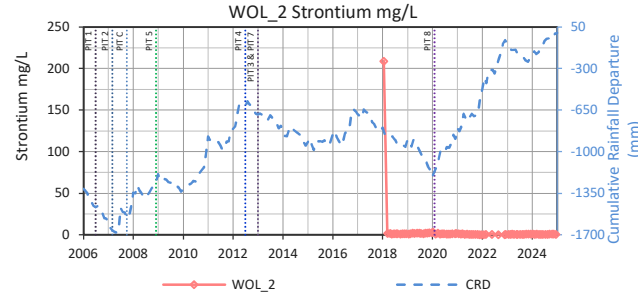
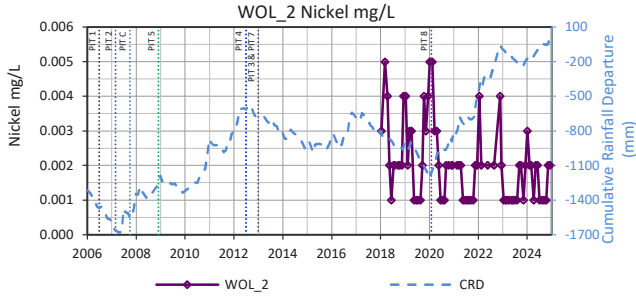
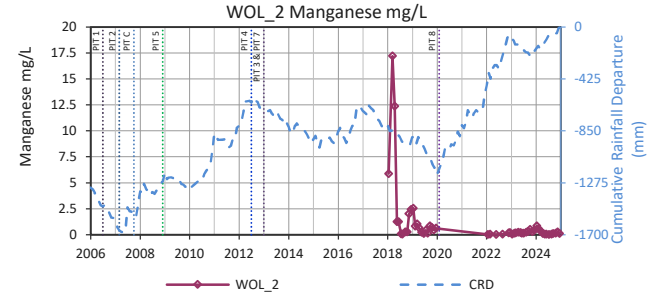
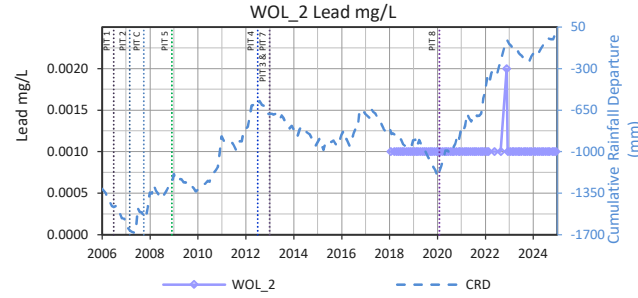
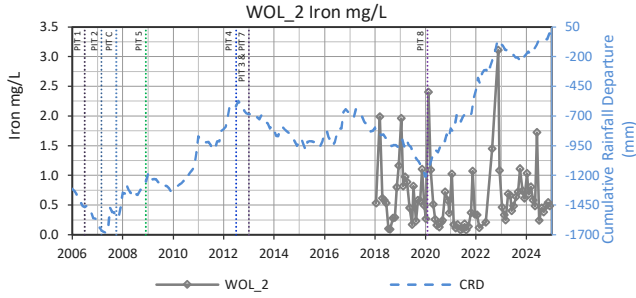
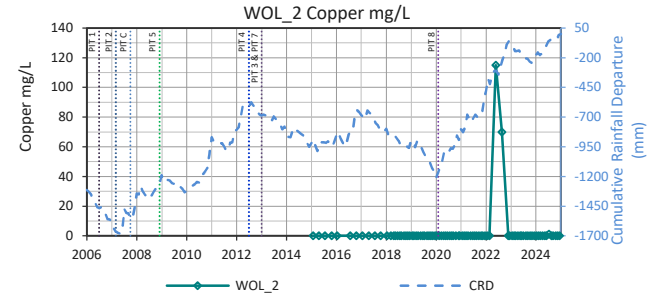
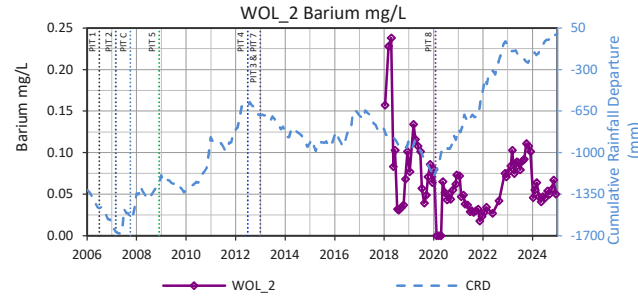
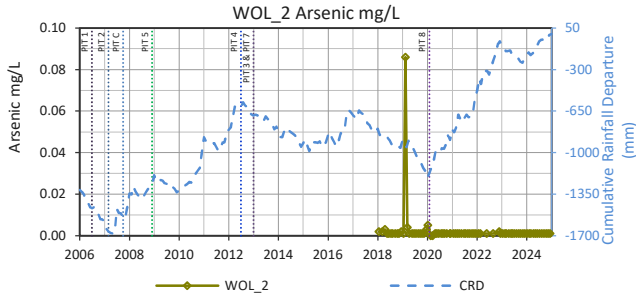
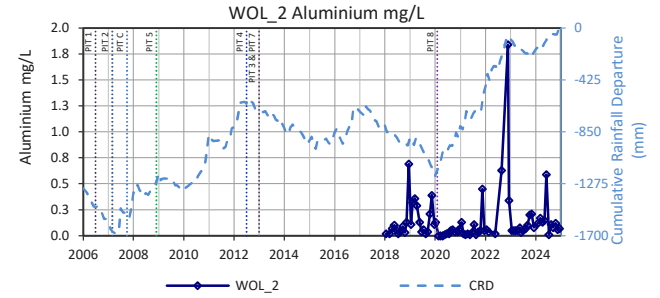
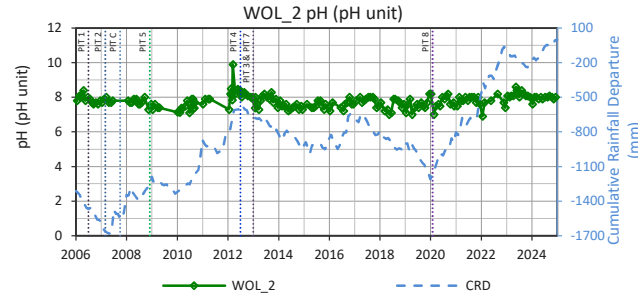
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No Data Available for Elevation (mAHD)



WOL\_2

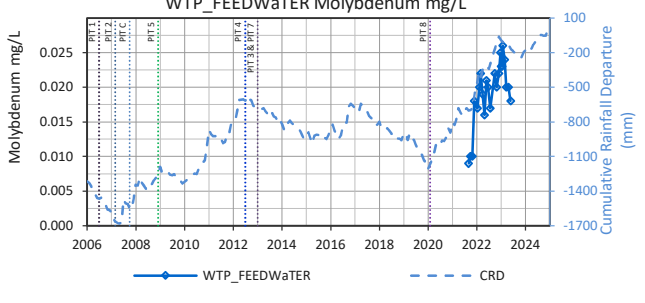
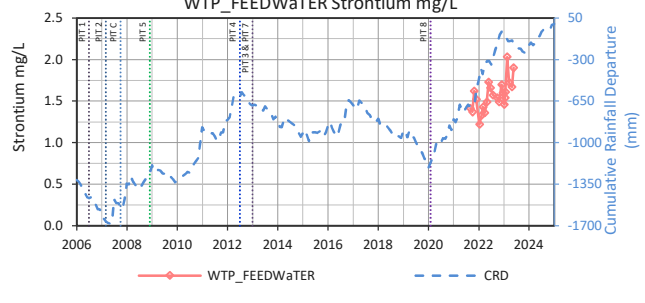
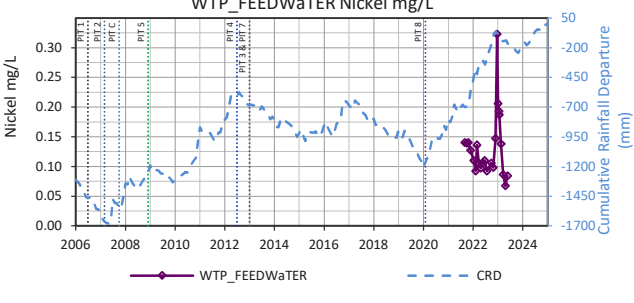
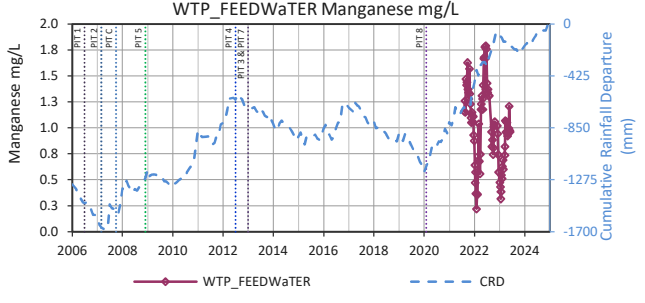
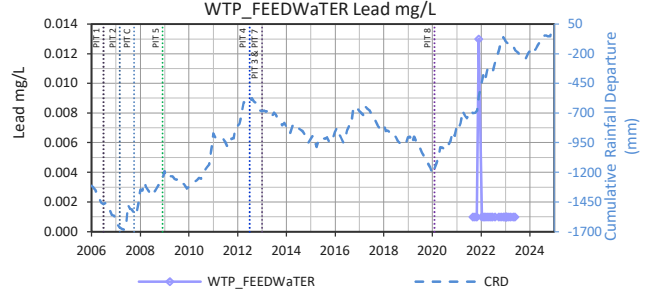
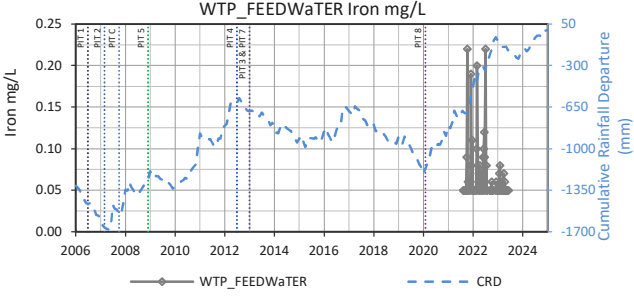
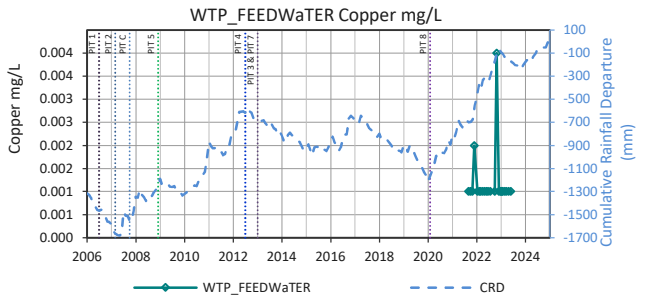
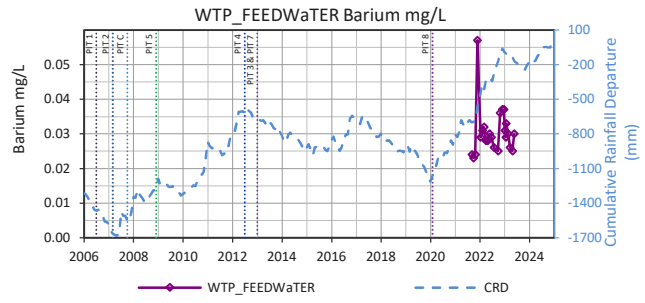
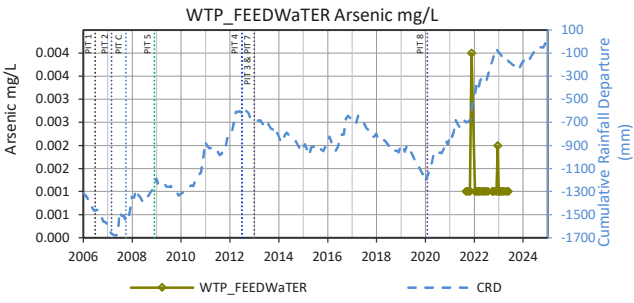
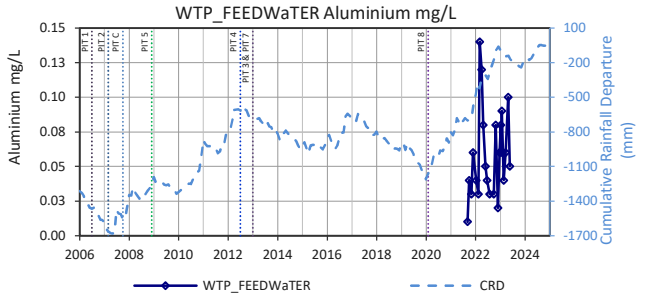
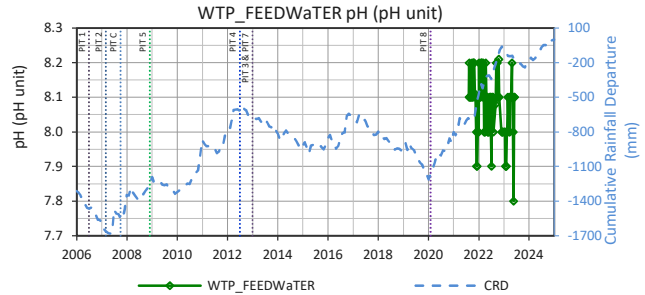
No Data Available for Elevation (mAHD)

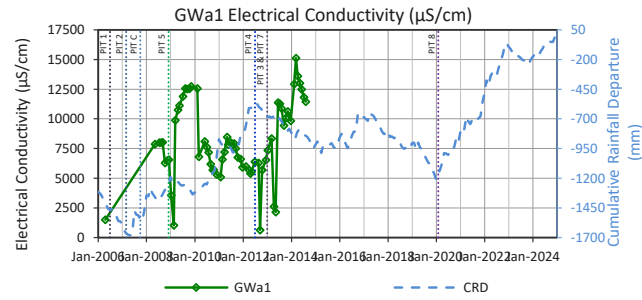
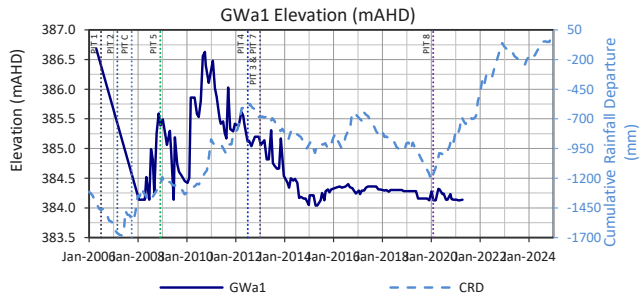




WTP\_FEEDWaTER

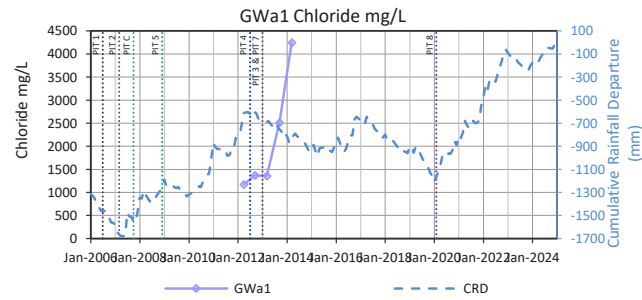
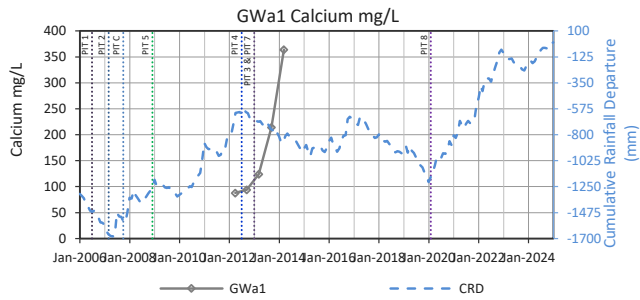
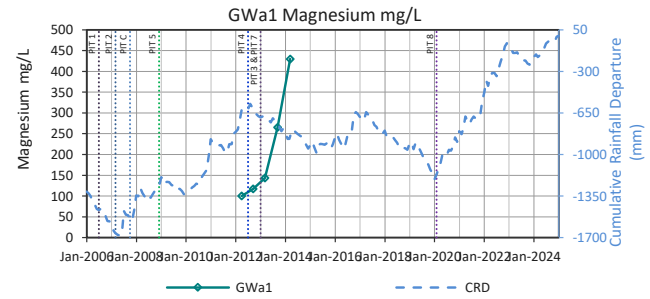
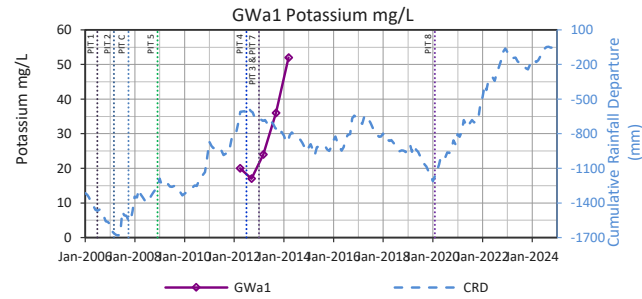
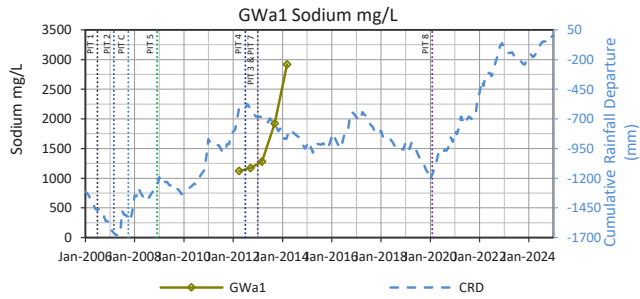
No Data Available for Elevation (mAHD)





Gwa1

No Data Available for Total Dissolved Solids mg/L

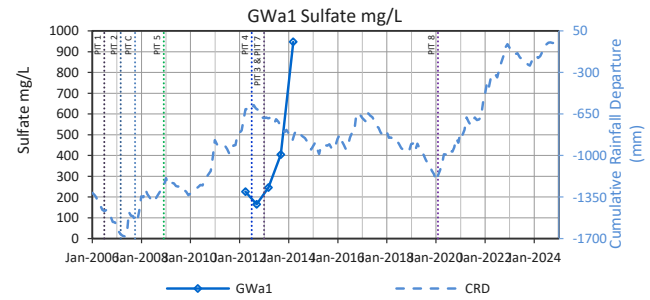


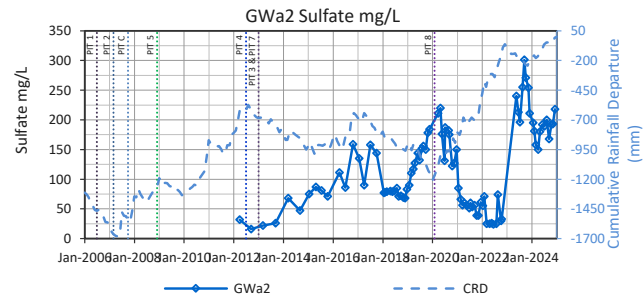
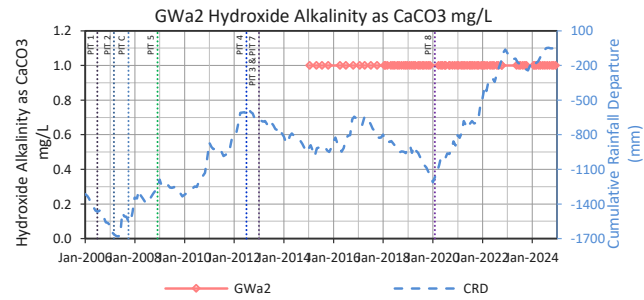
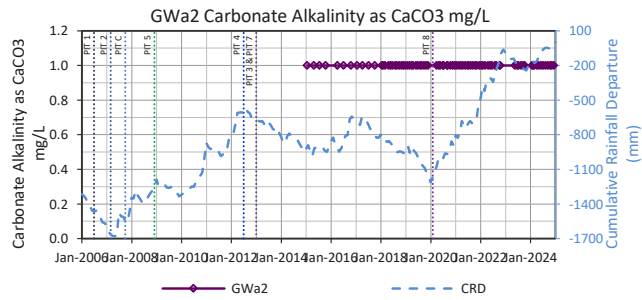
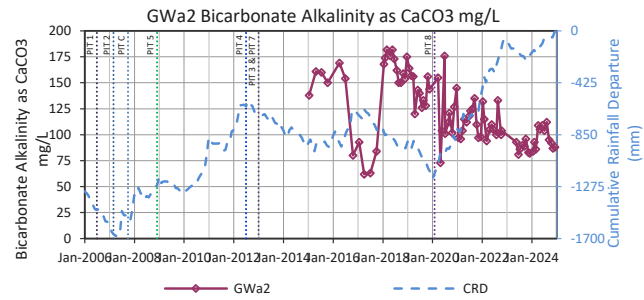
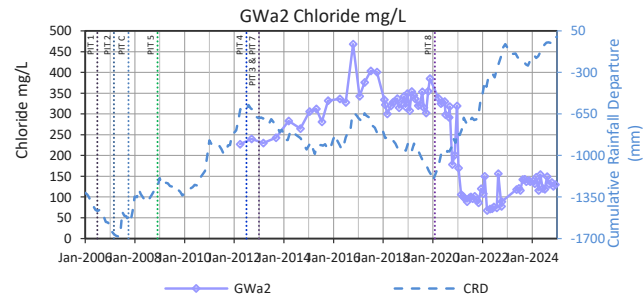
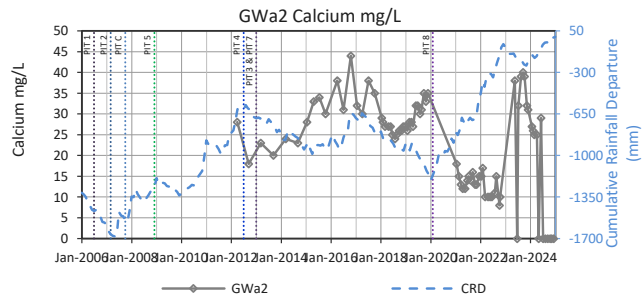
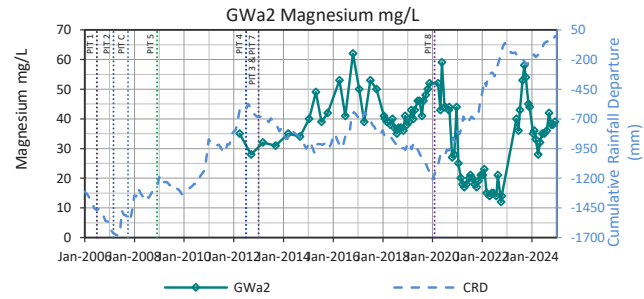
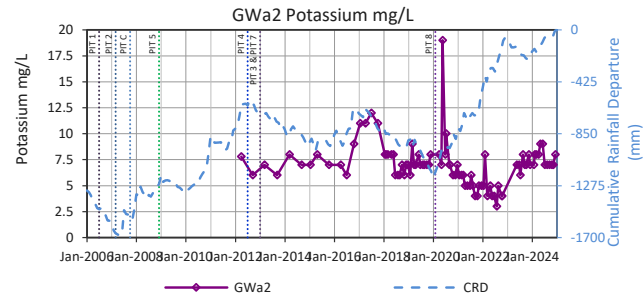
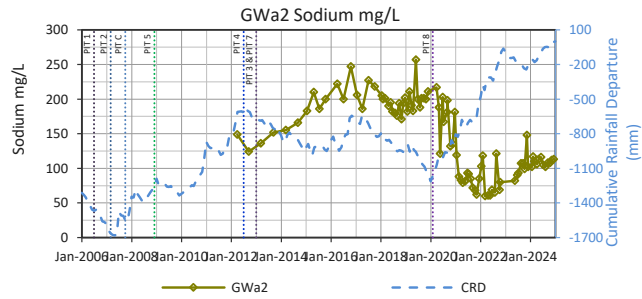
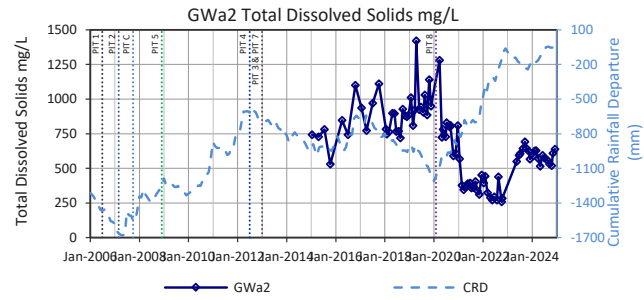
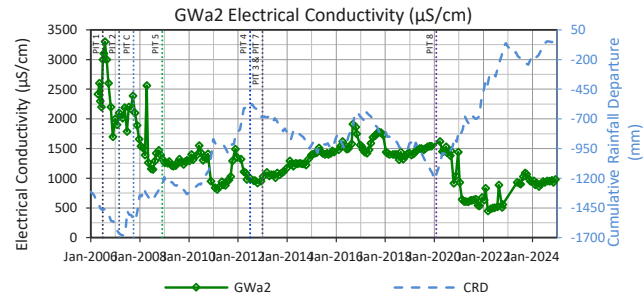
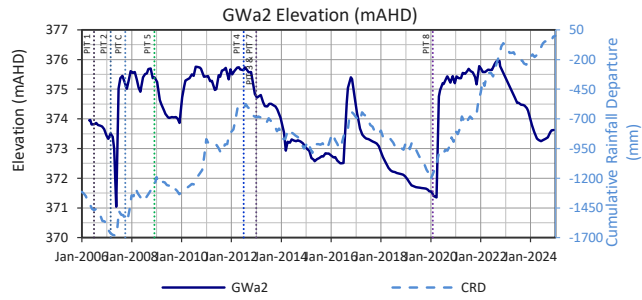
Gwa1

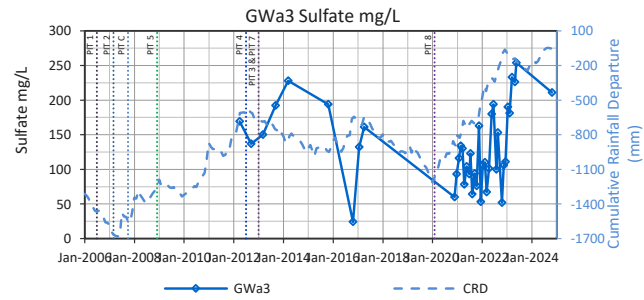
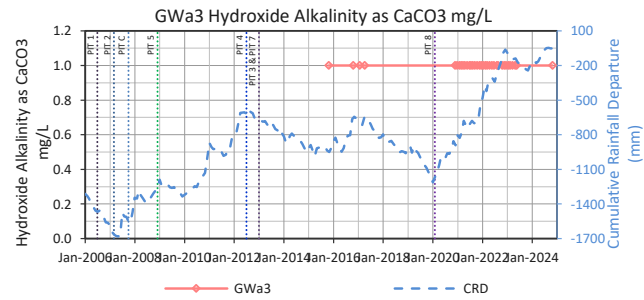
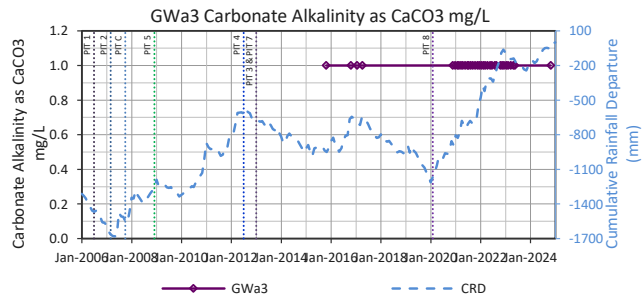
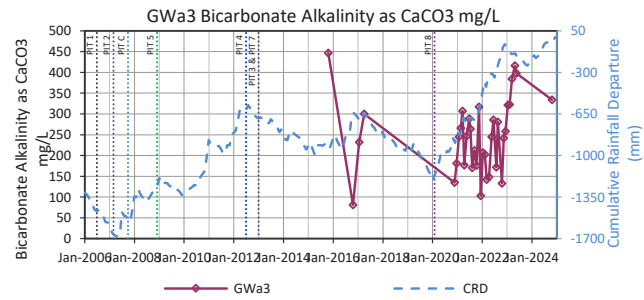
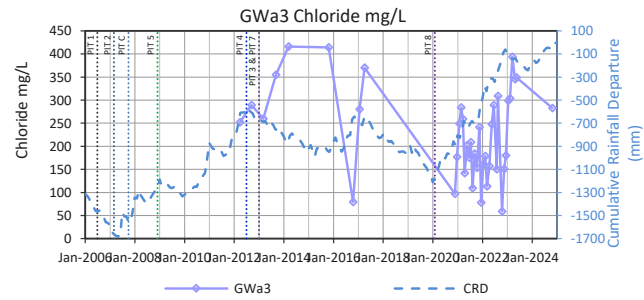
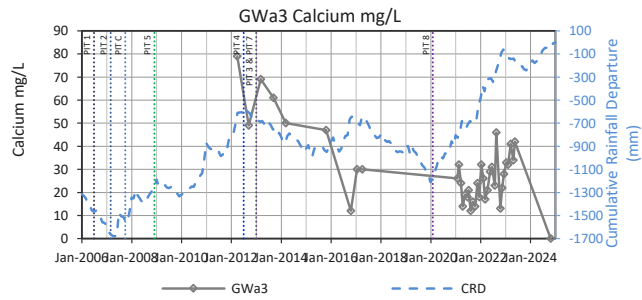
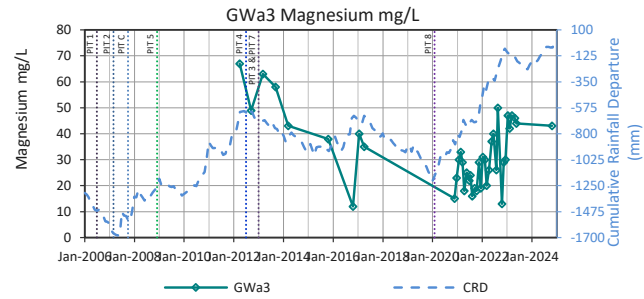
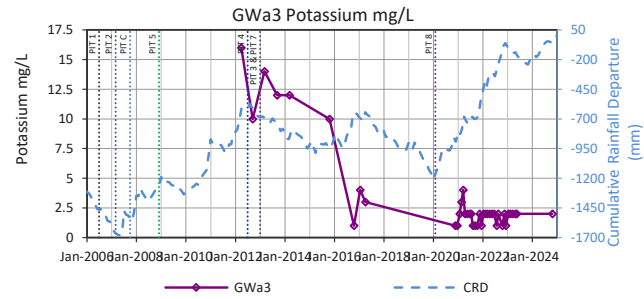
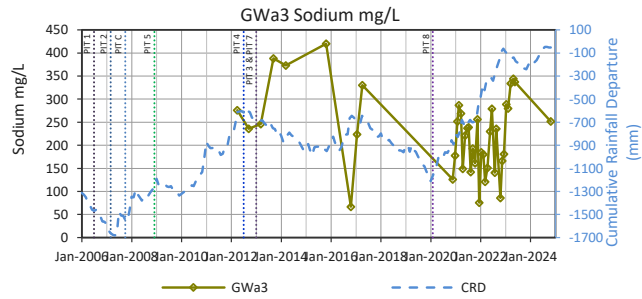
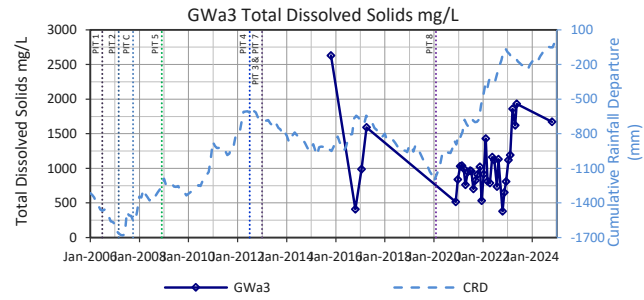
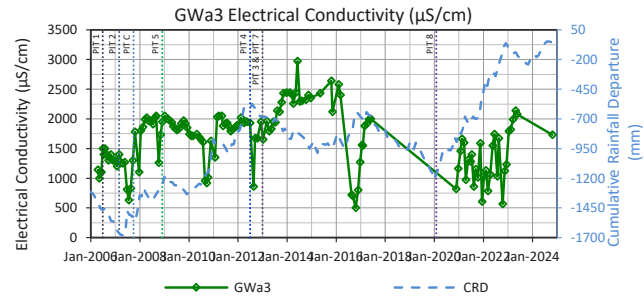
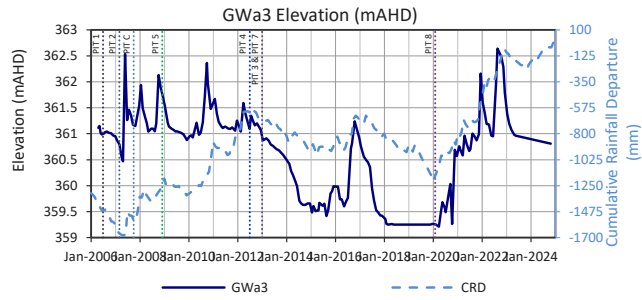
No Data Available for Bicarbonate Alkalinity as CaCO3 mg/L

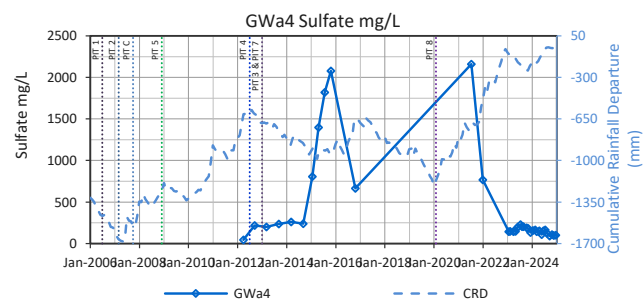
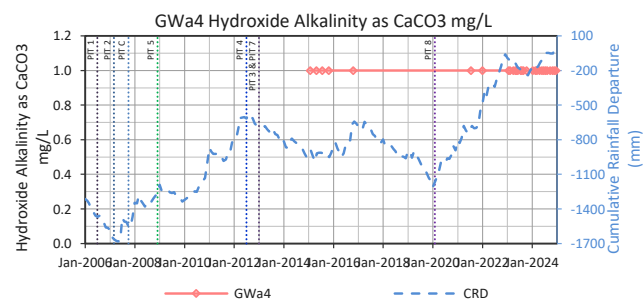
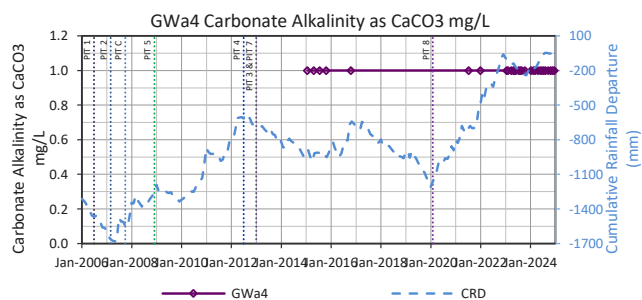
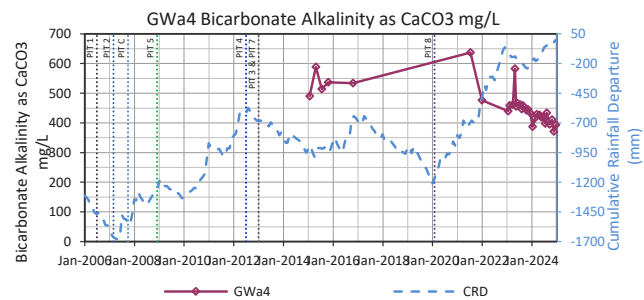
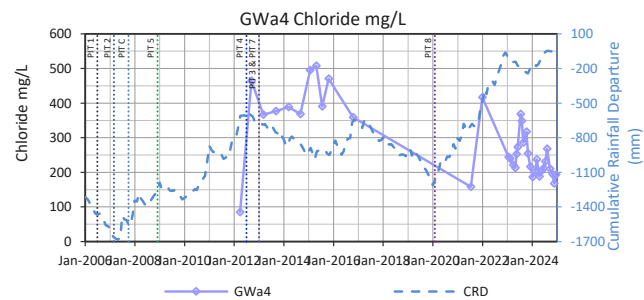
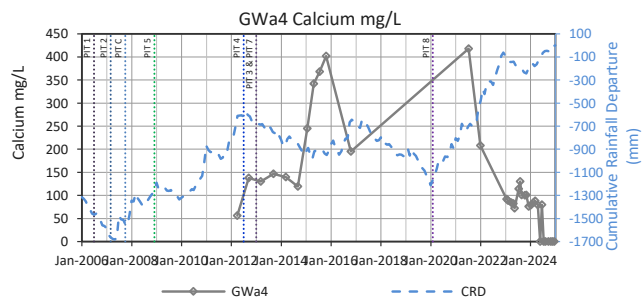
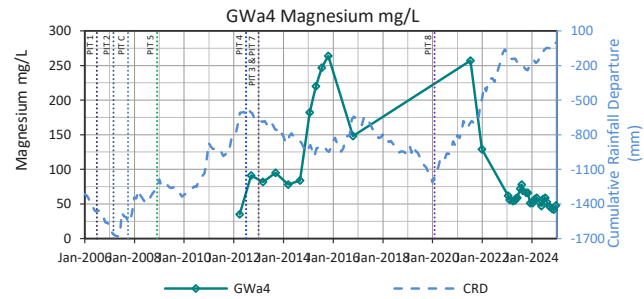
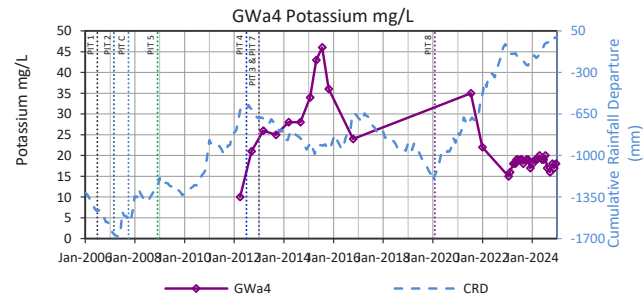
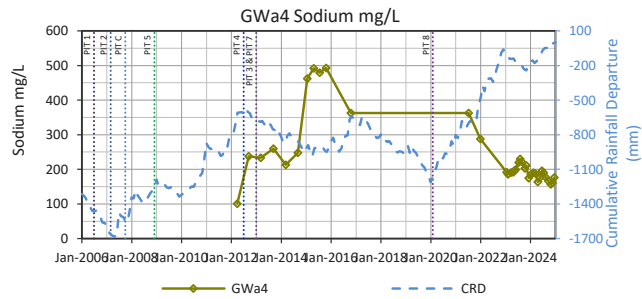
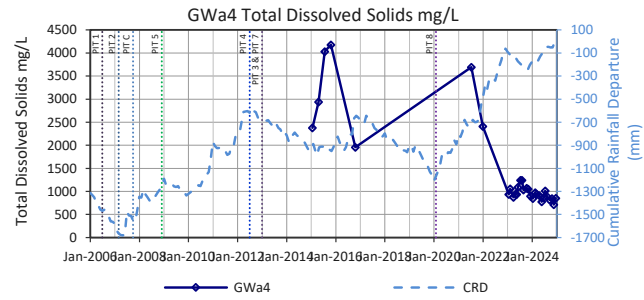
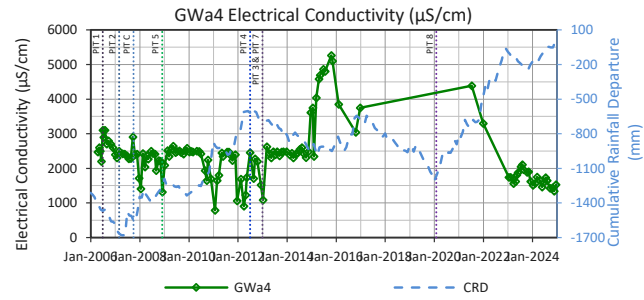
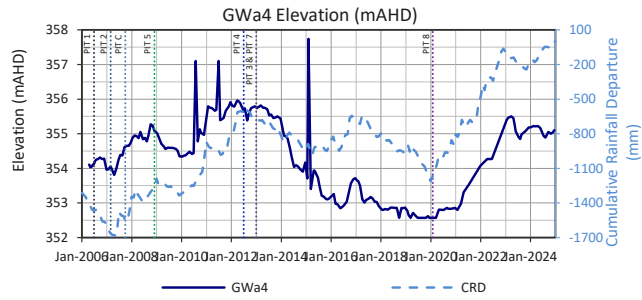
No Data Available for Carbonate Alkalinity as CaCO3 mg/L

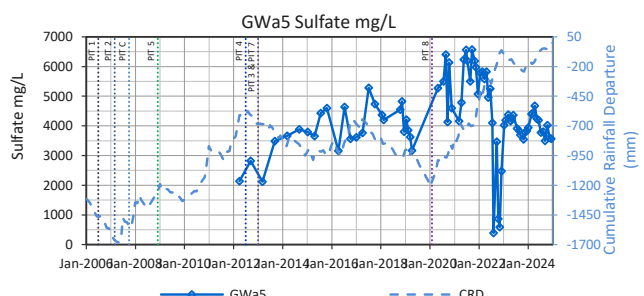
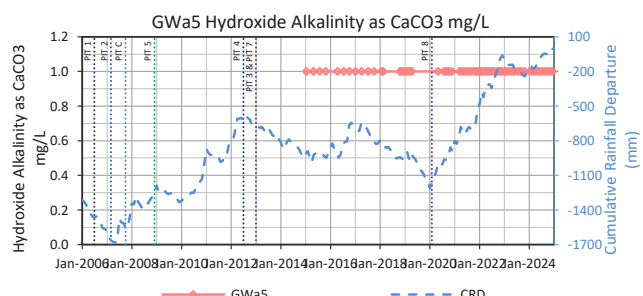
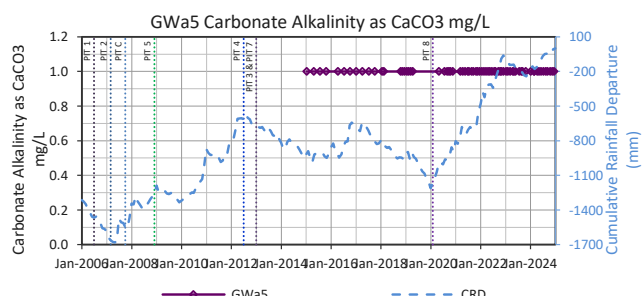
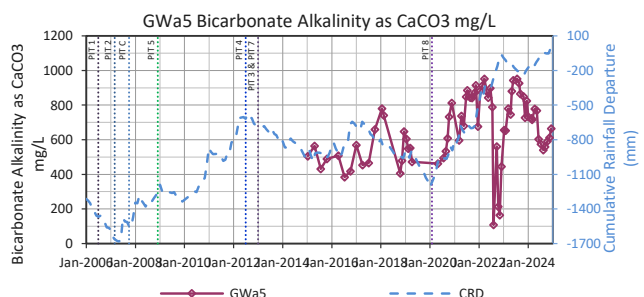
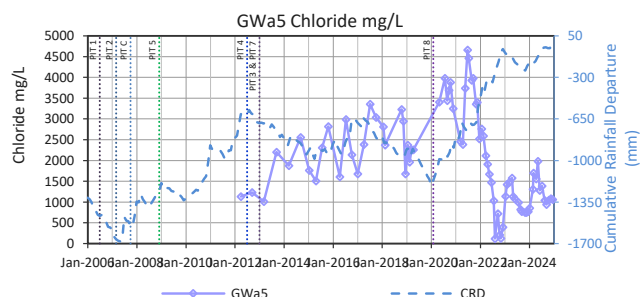
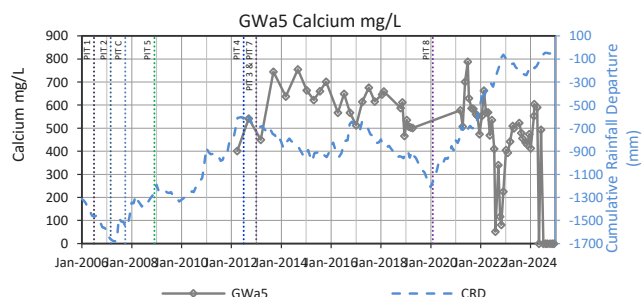
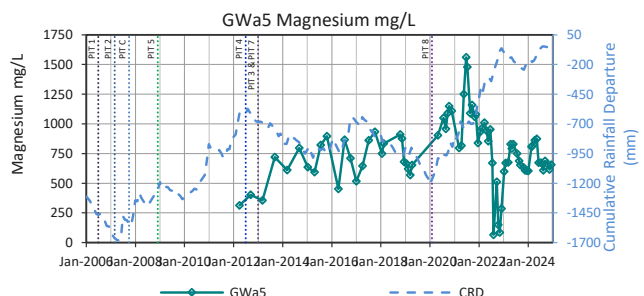
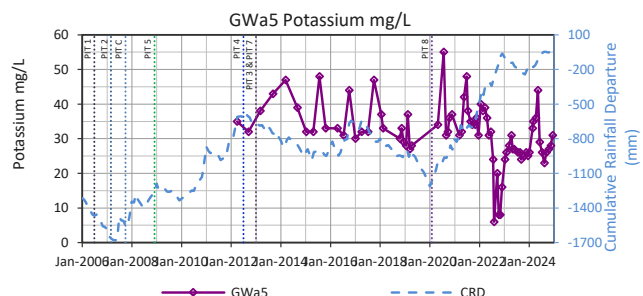
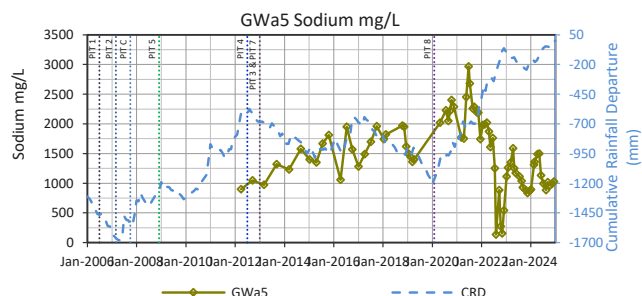
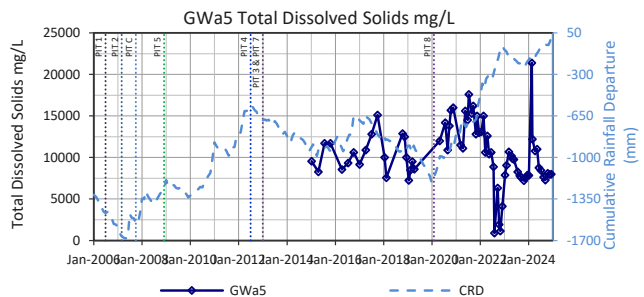
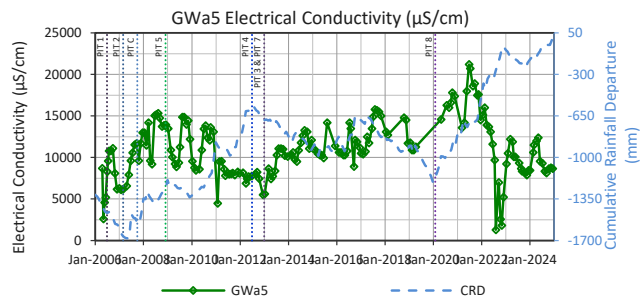
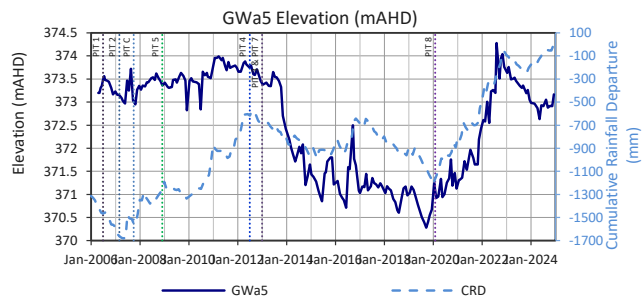
No Data Available for Hydroxide Alkalinity as CaCO3 mg/L

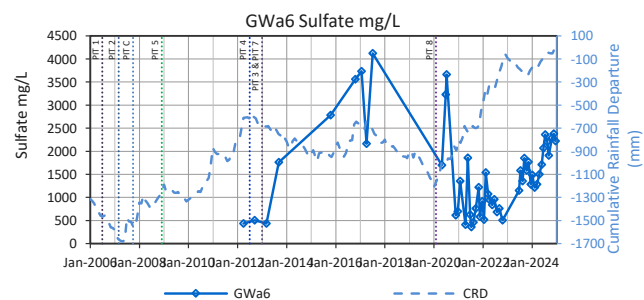
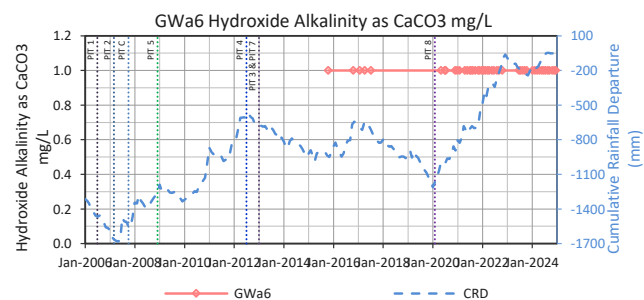
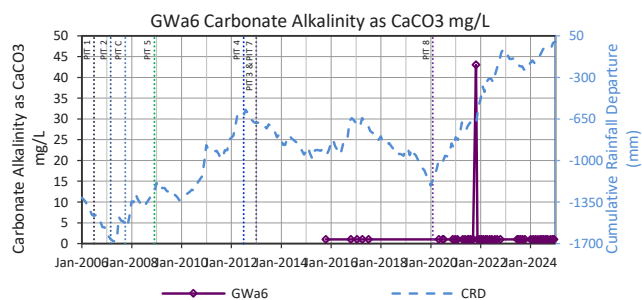
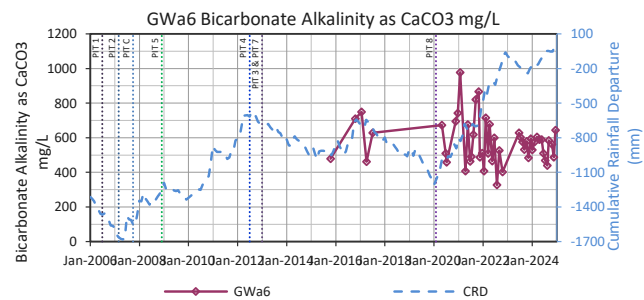
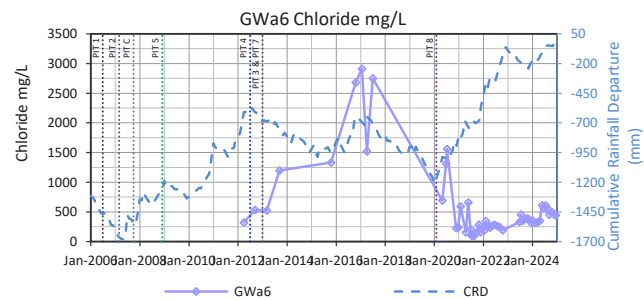
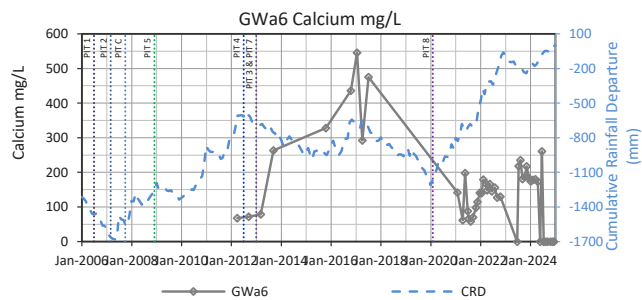
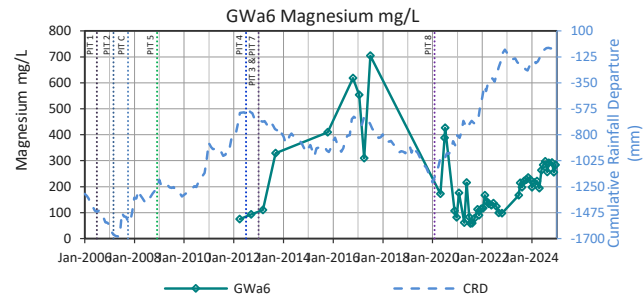
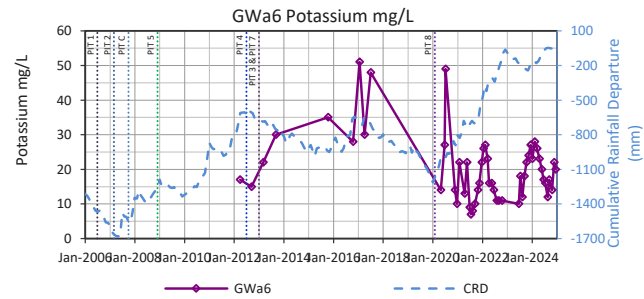
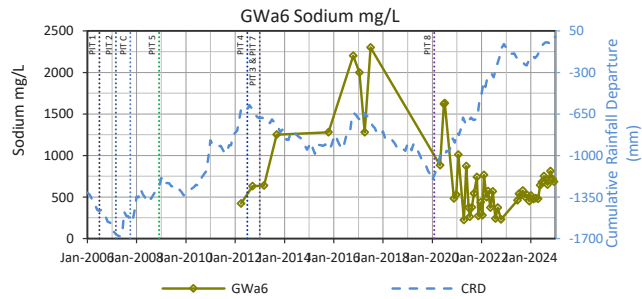
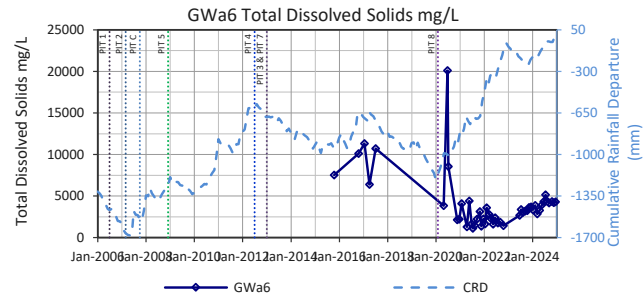
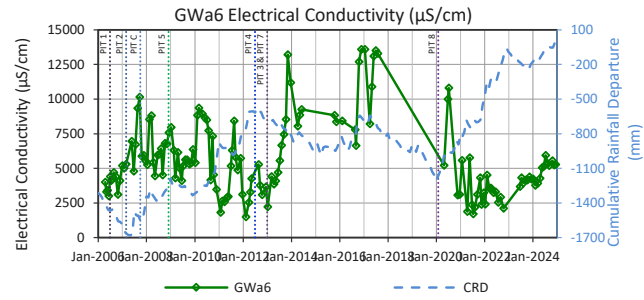
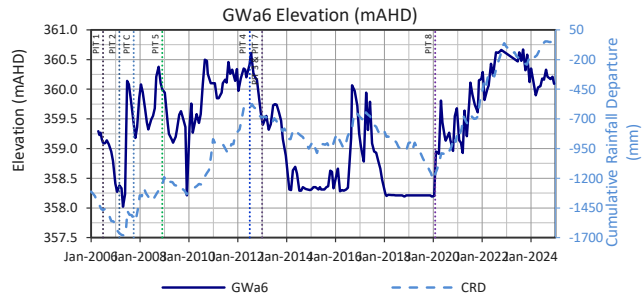


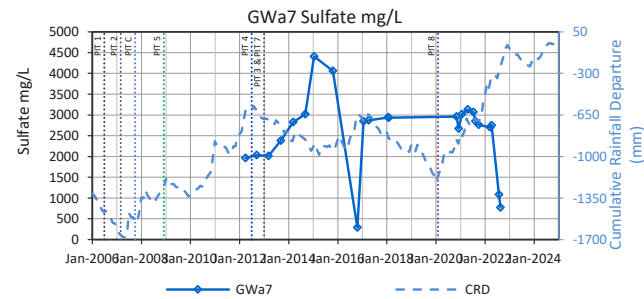
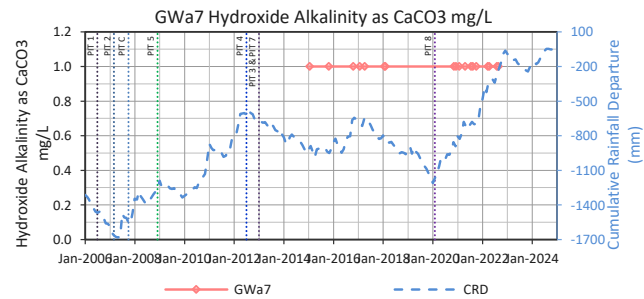
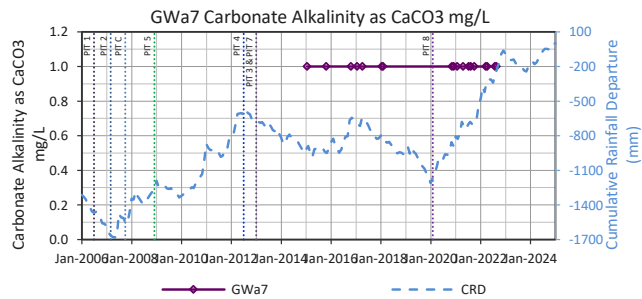
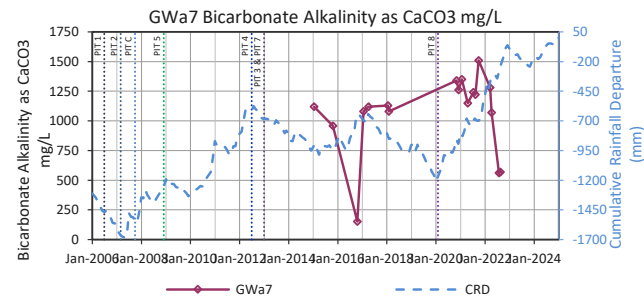
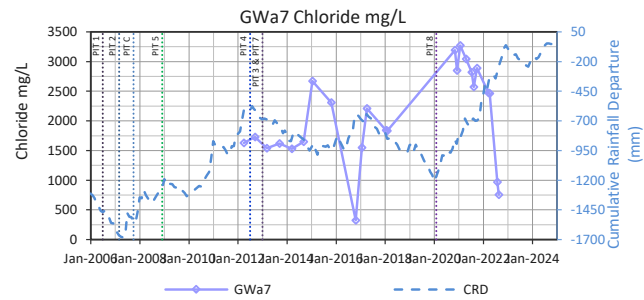
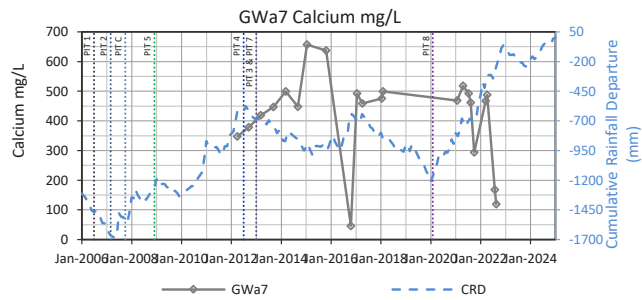
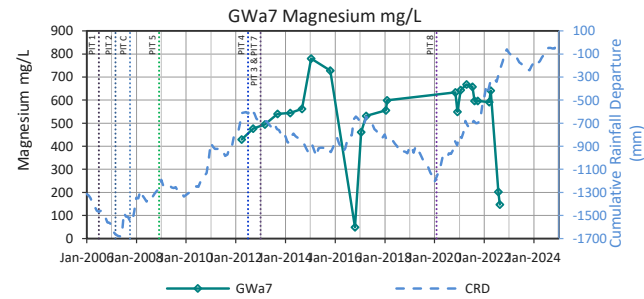
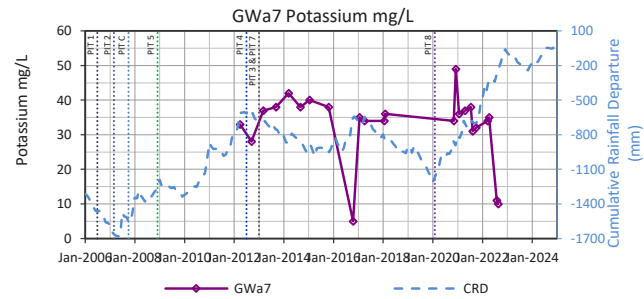
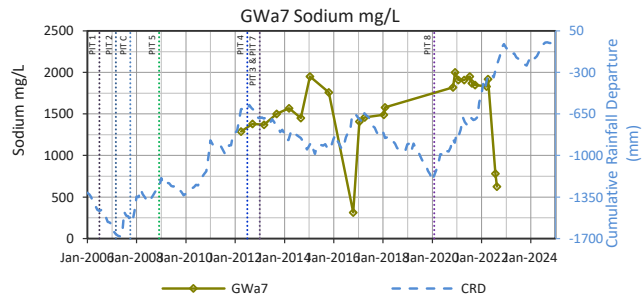
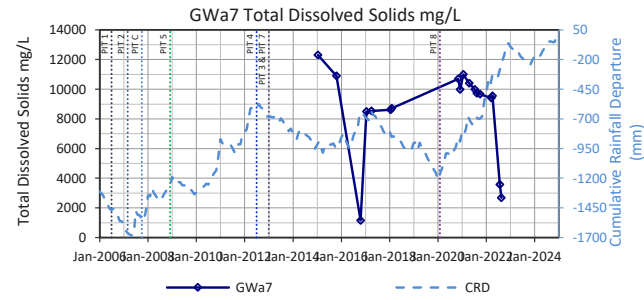
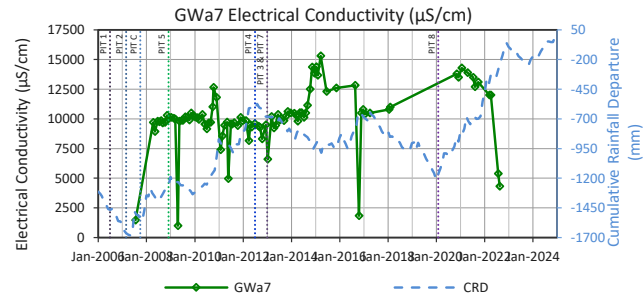
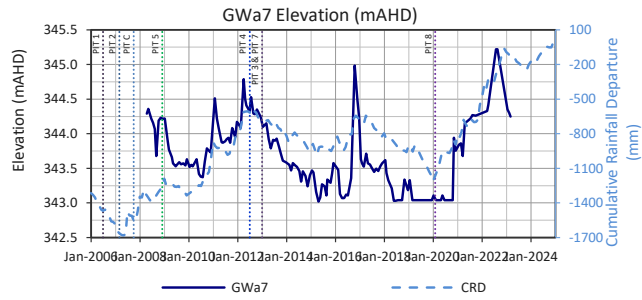




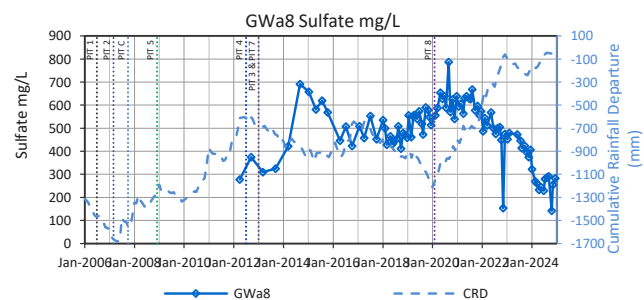
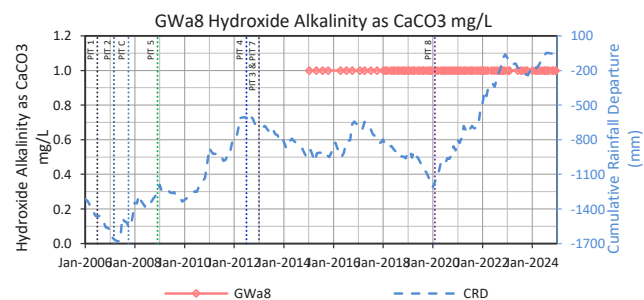
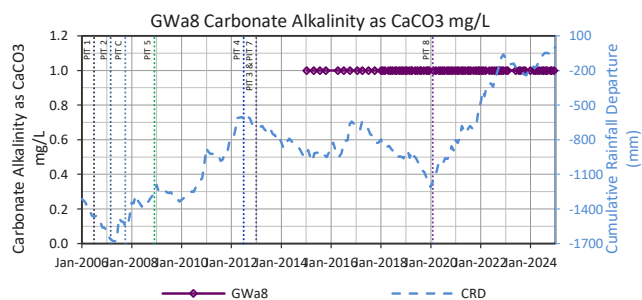
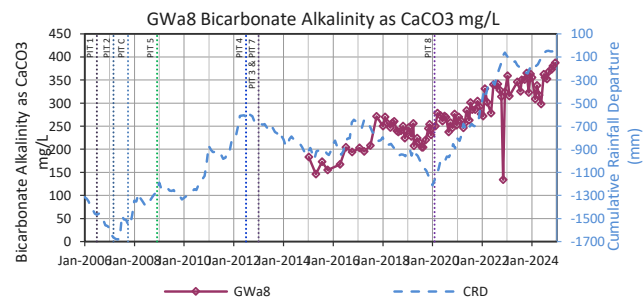
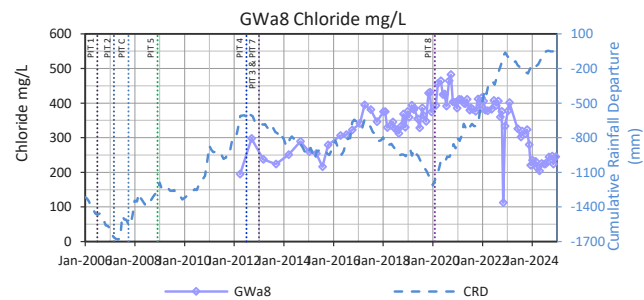
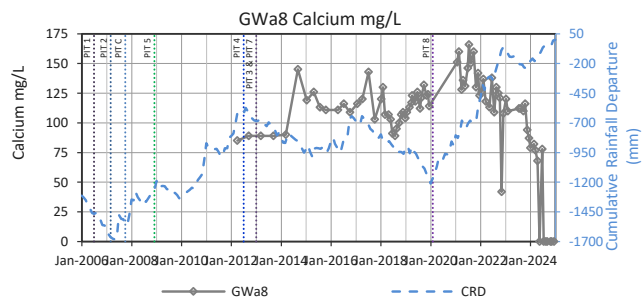
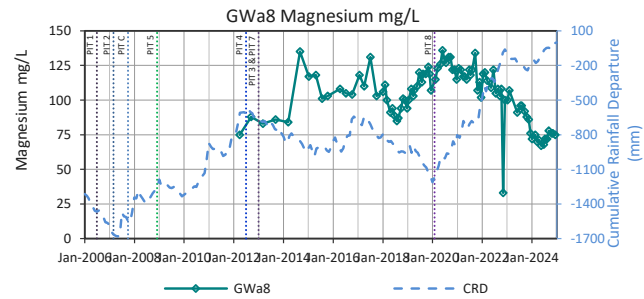
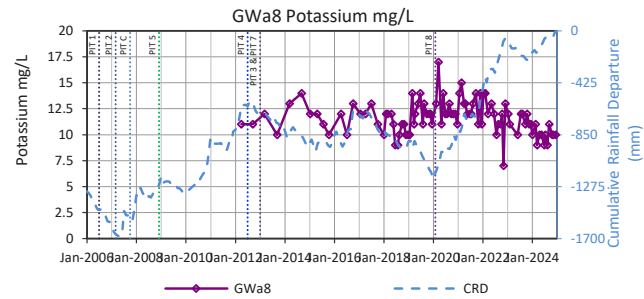
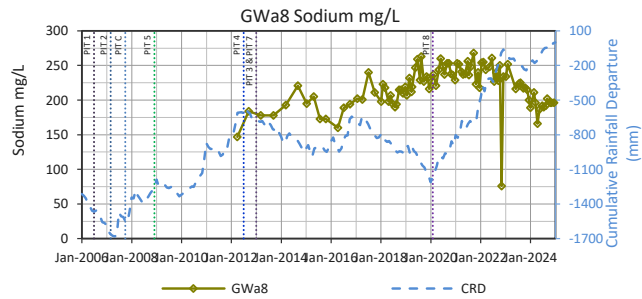
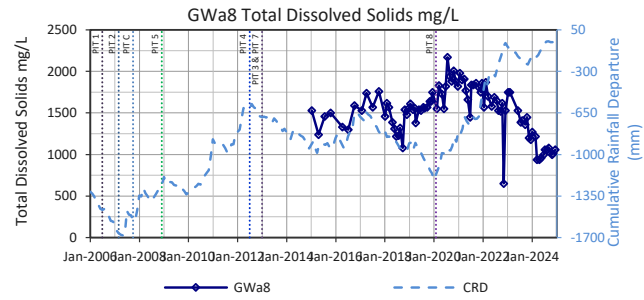
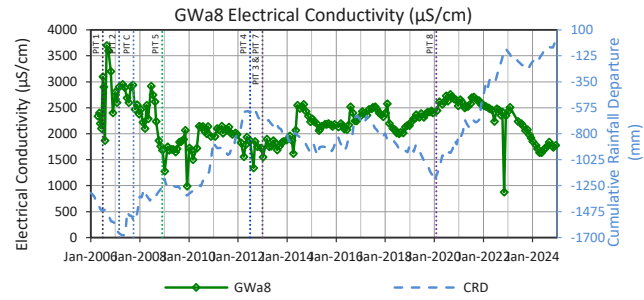
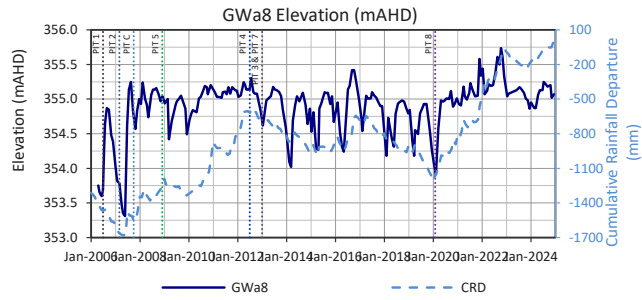


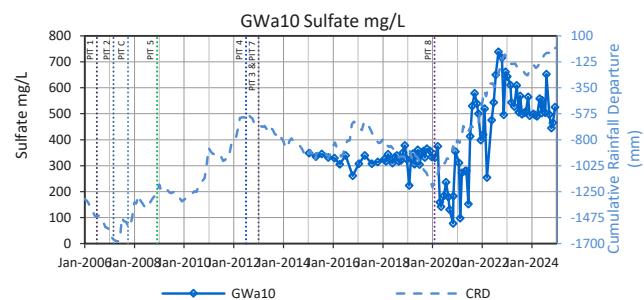
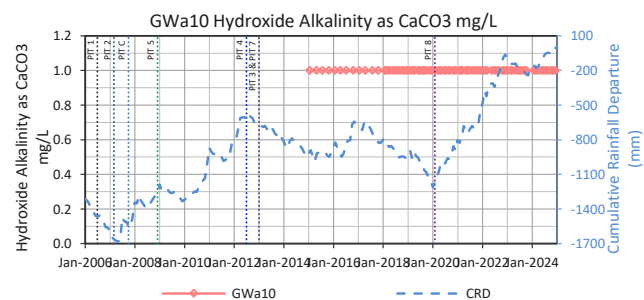
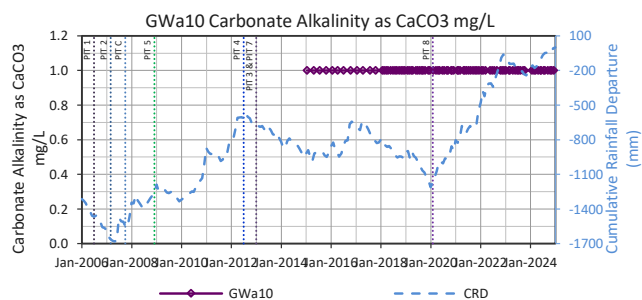
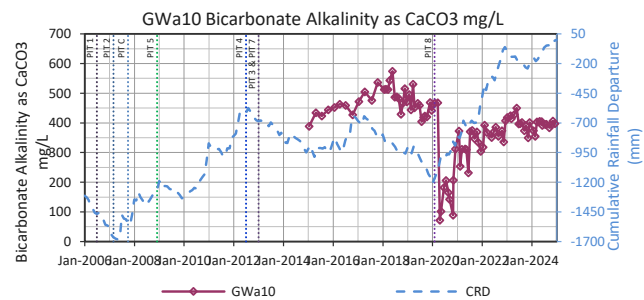
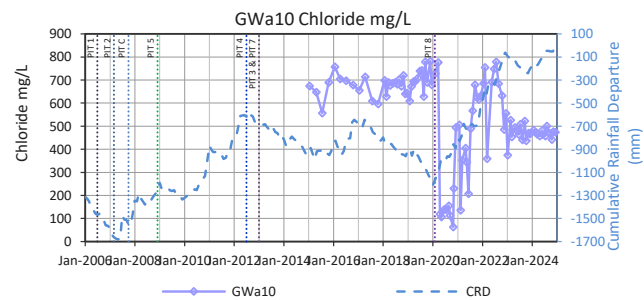
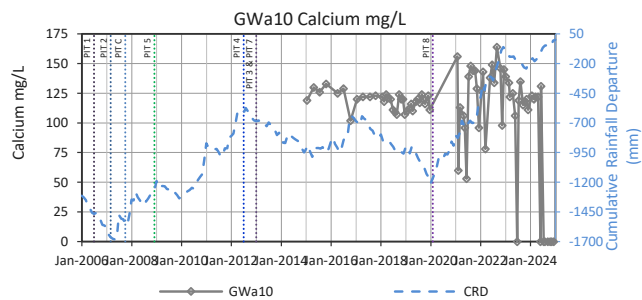
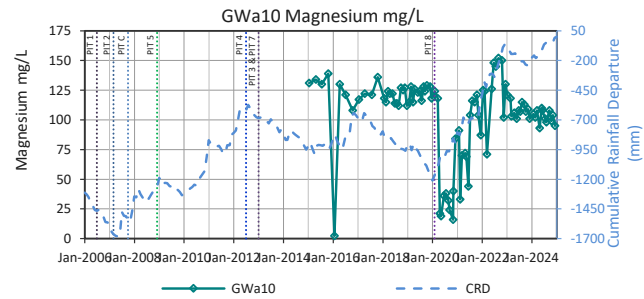
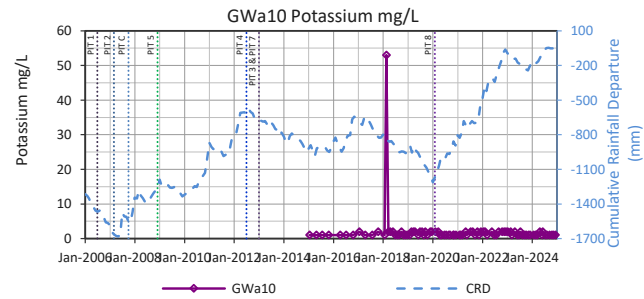
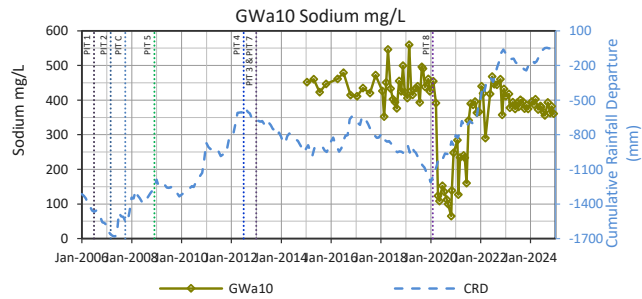
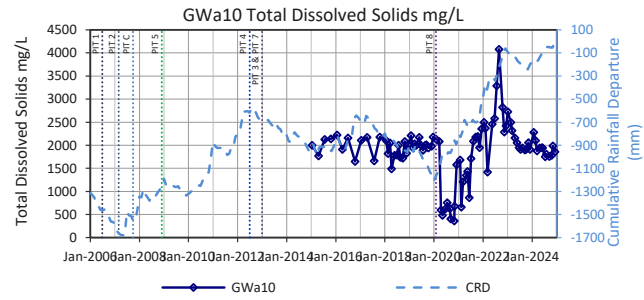
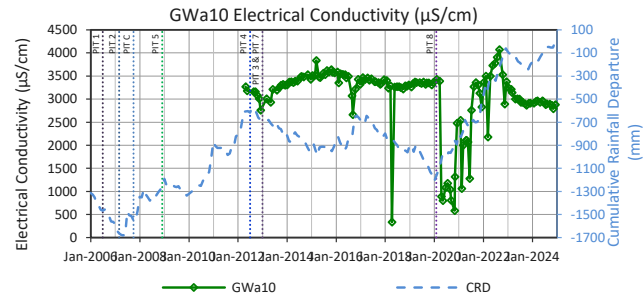
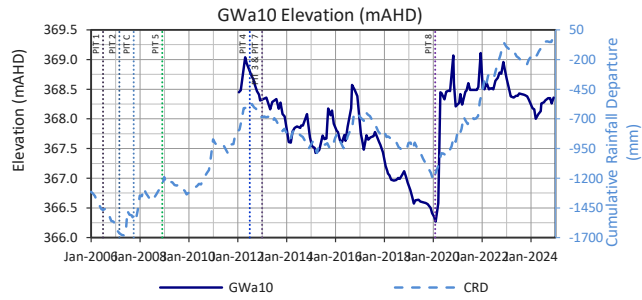


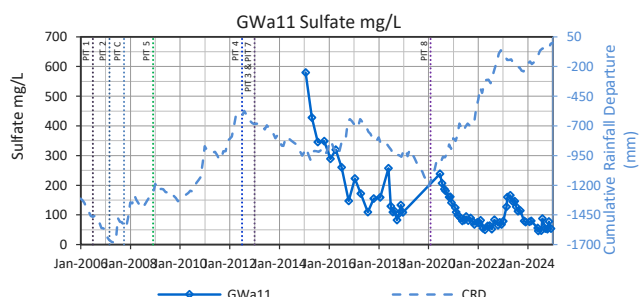
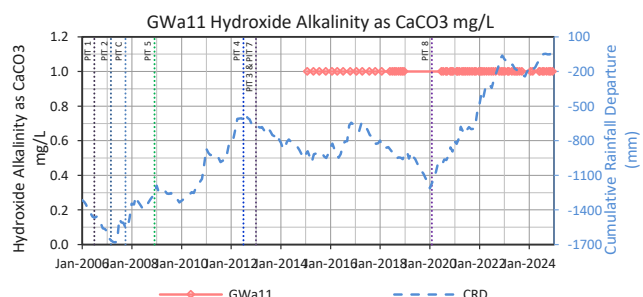
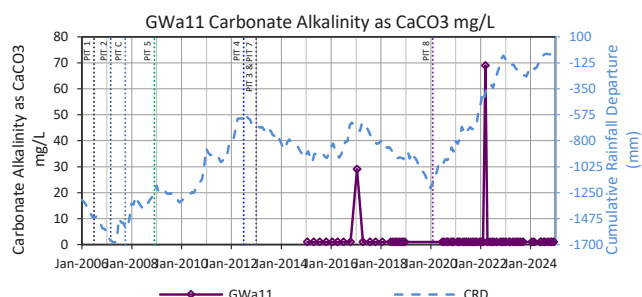
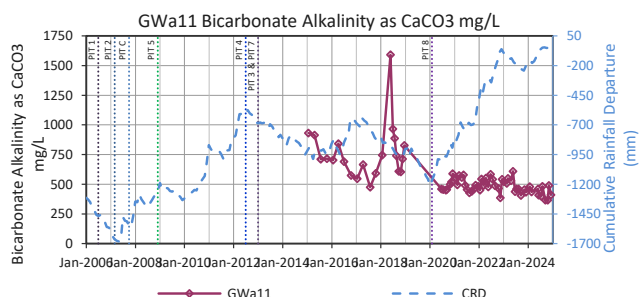
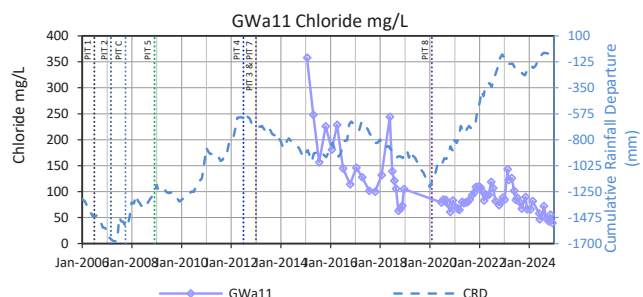
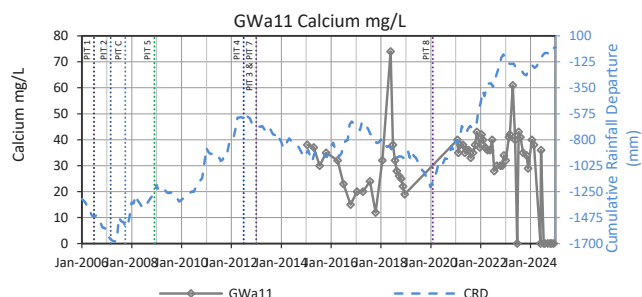
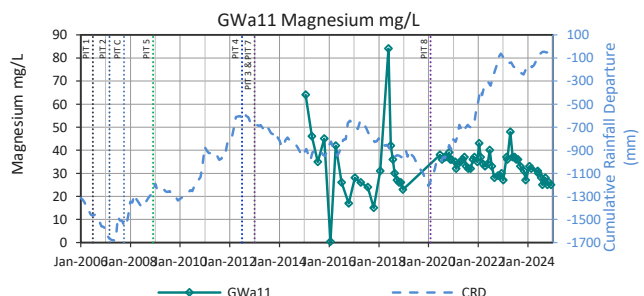
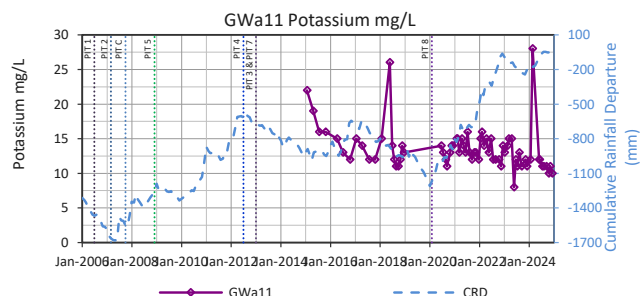
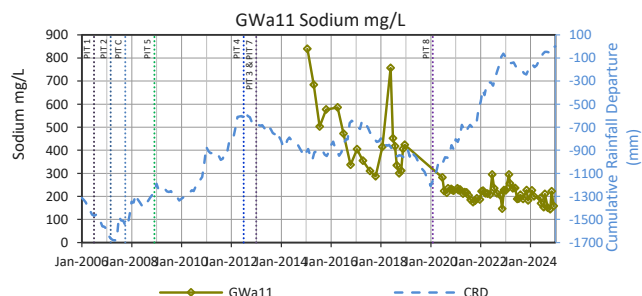
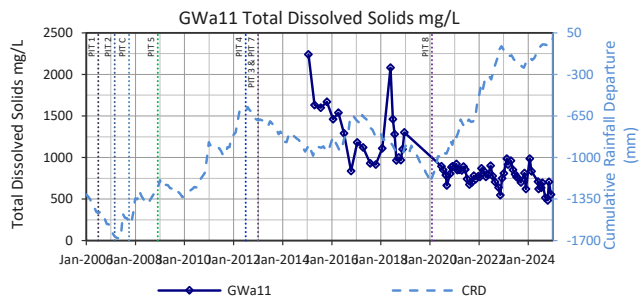
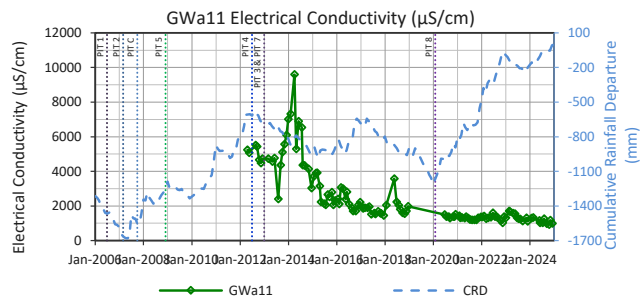
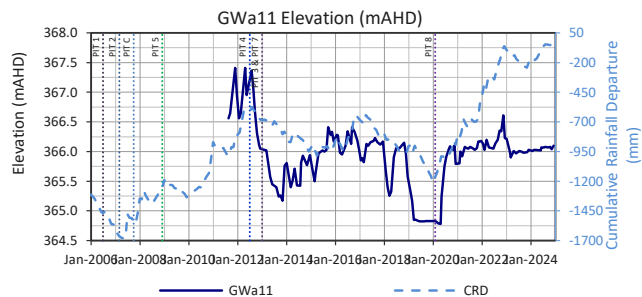


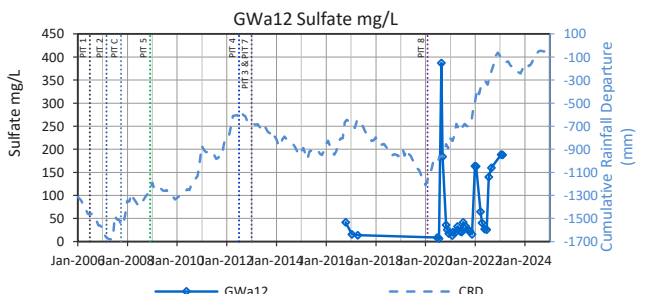
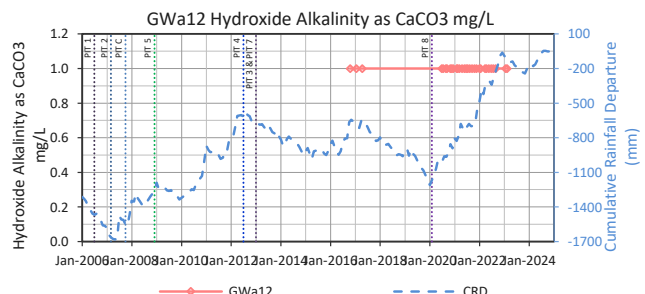
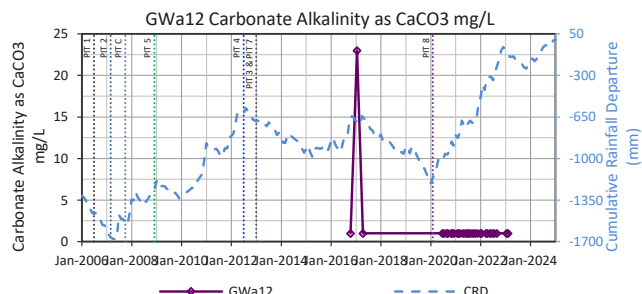
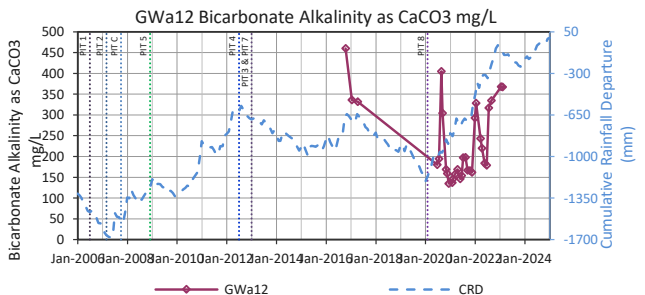
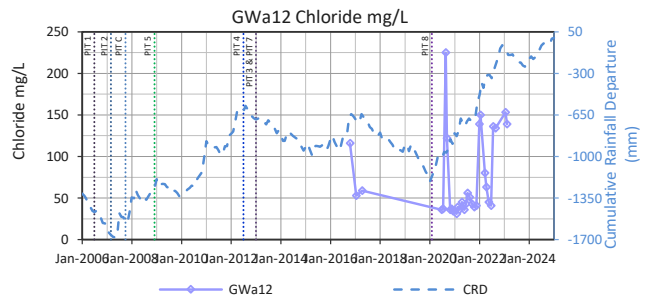
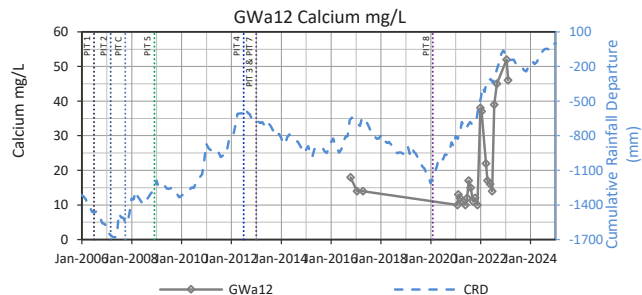
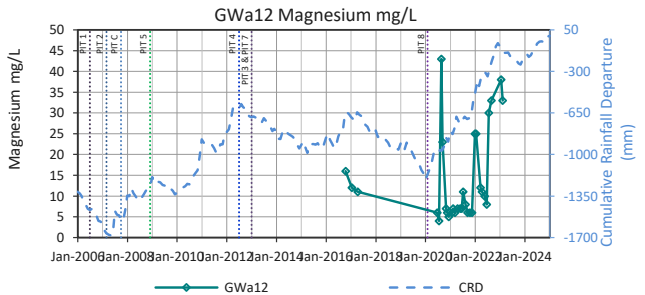
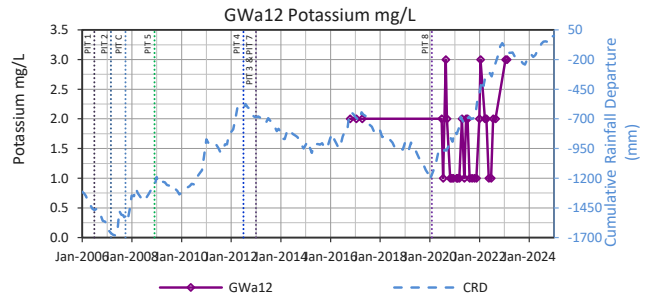
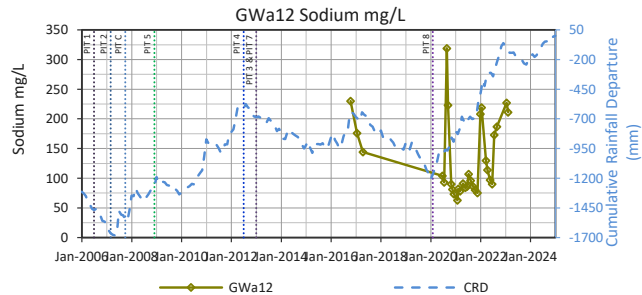
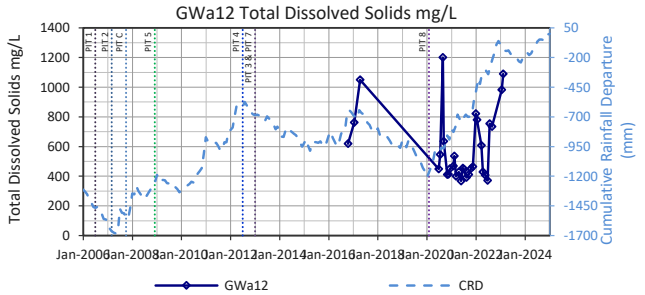
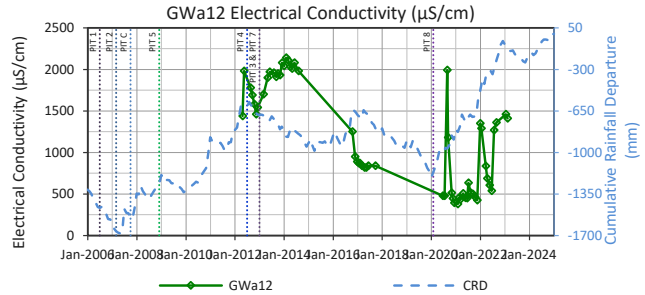
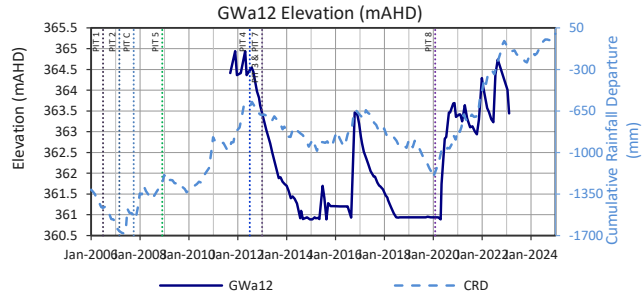


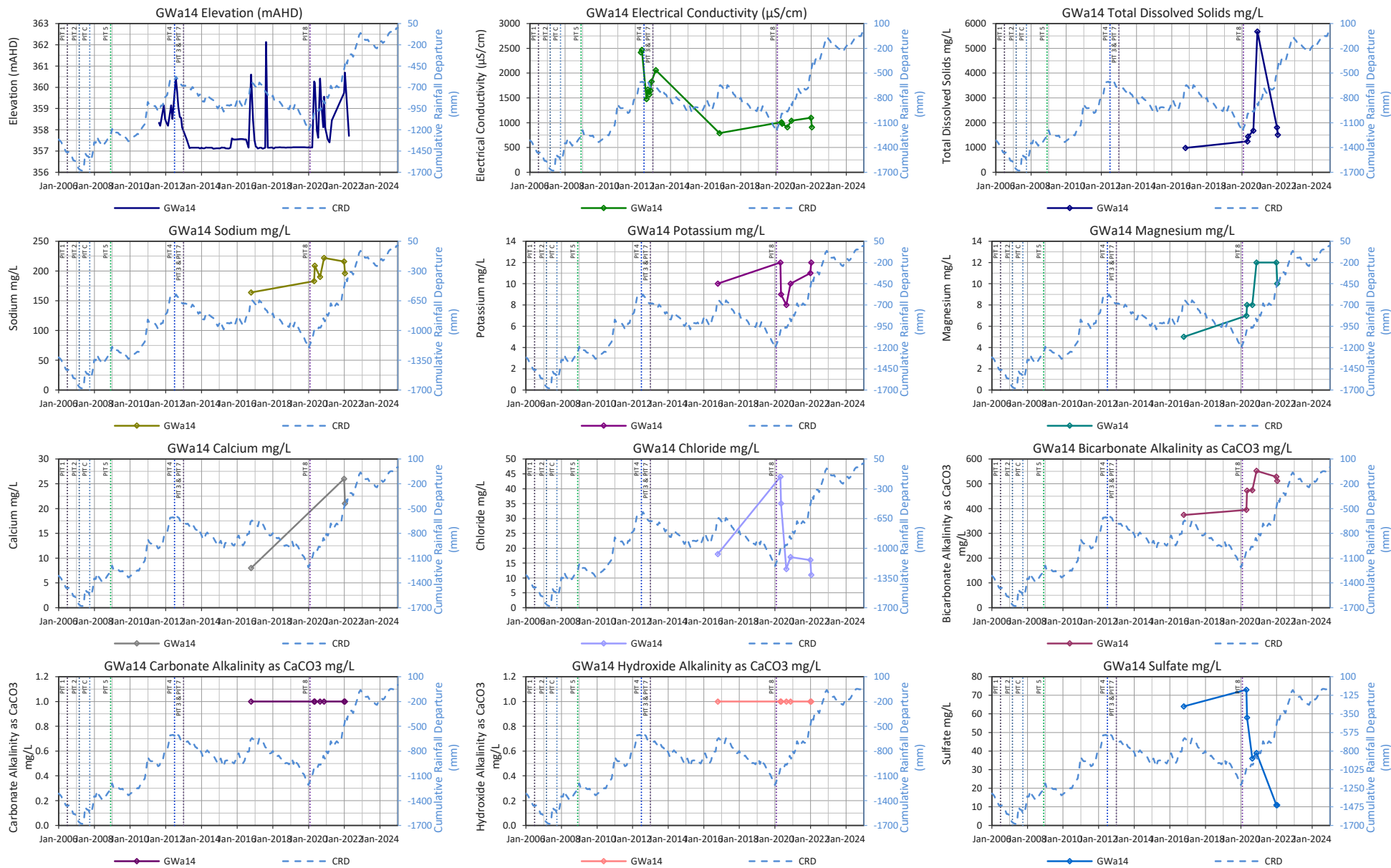


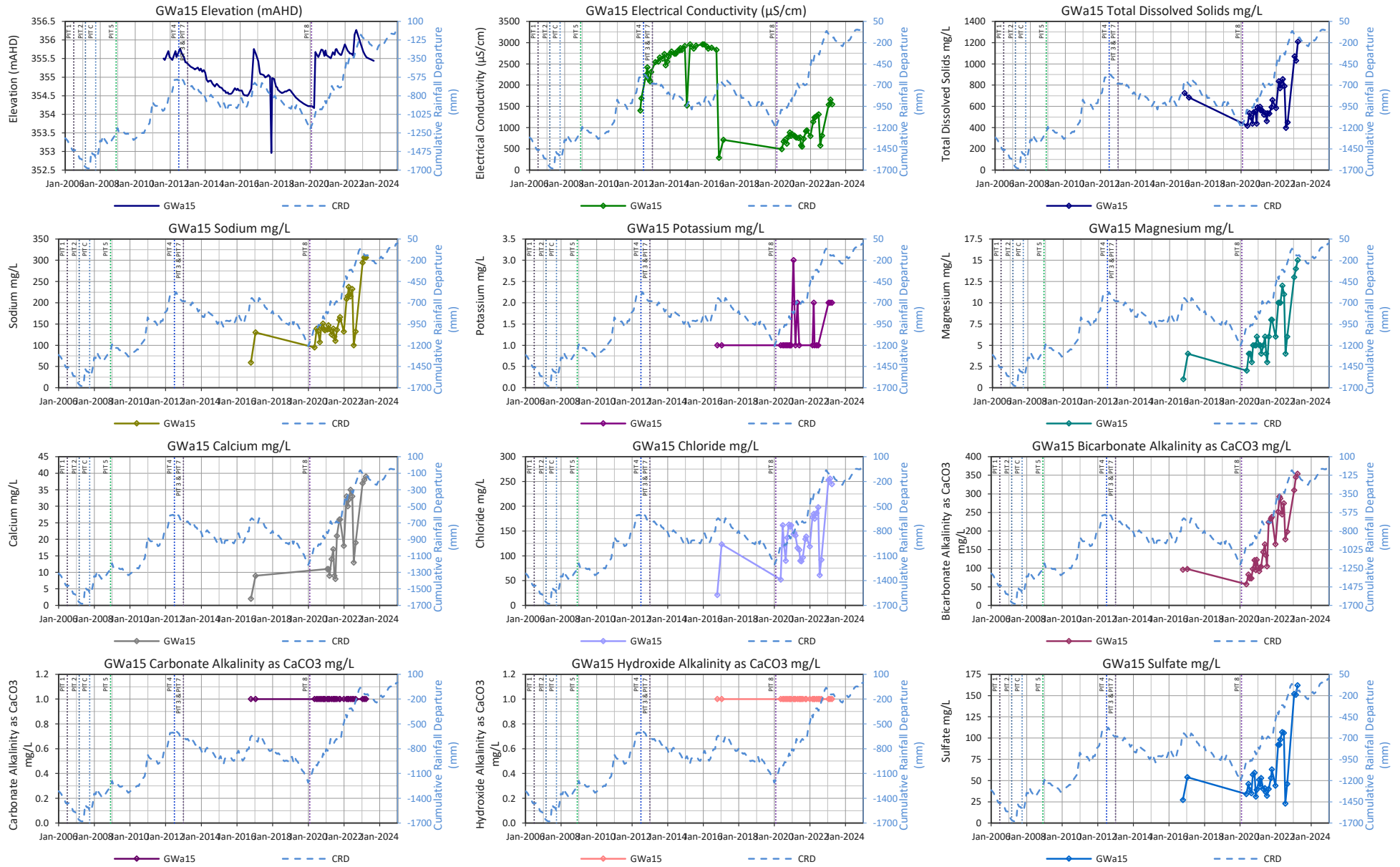


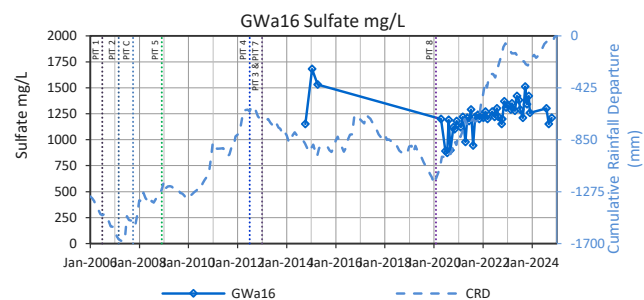
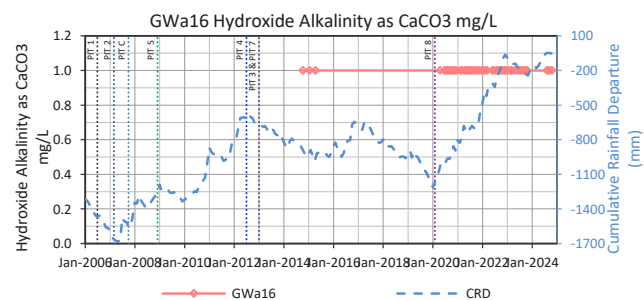
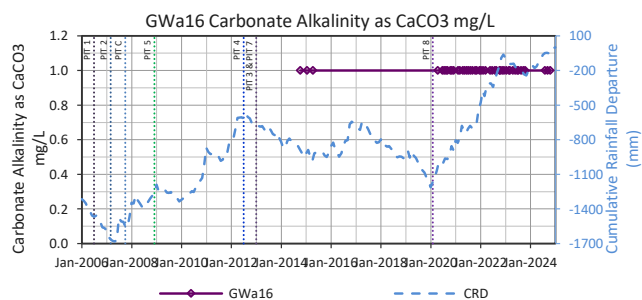
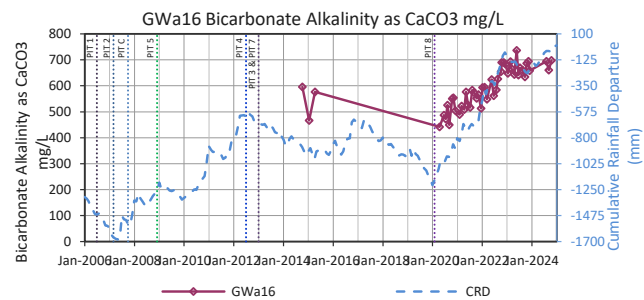
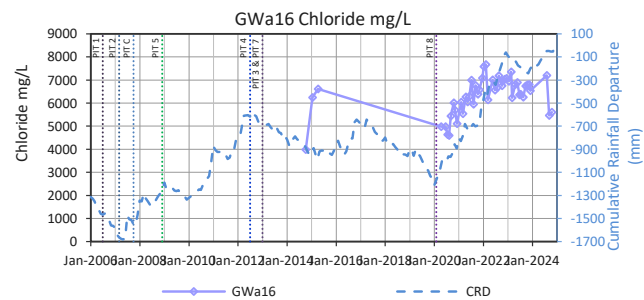
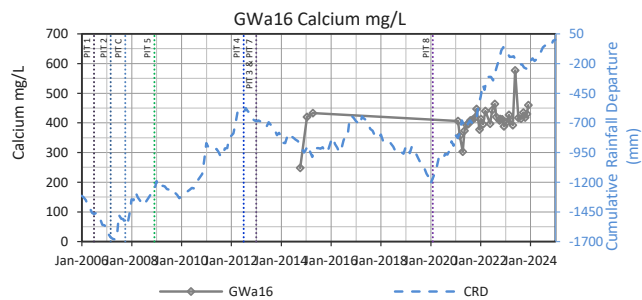
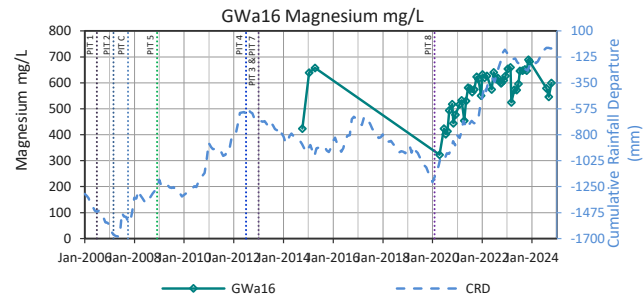
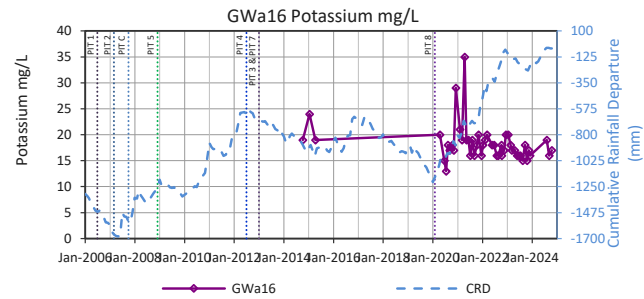
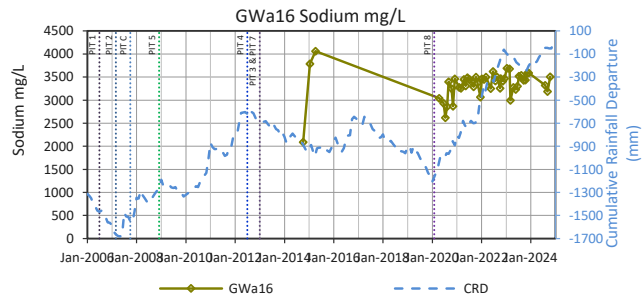
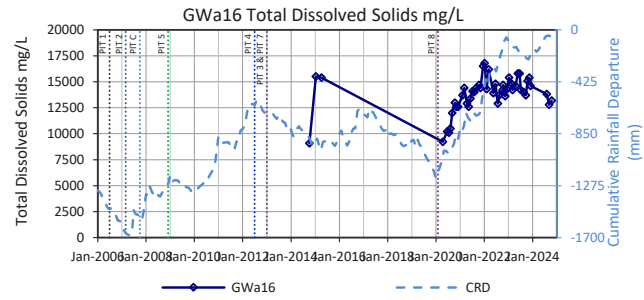
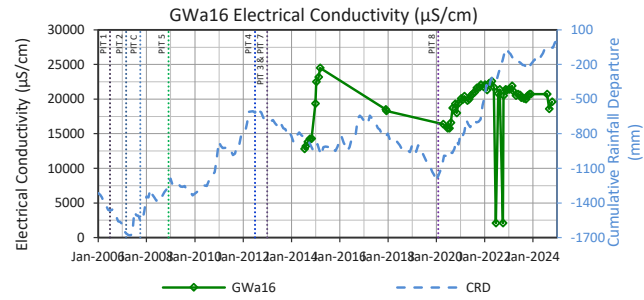
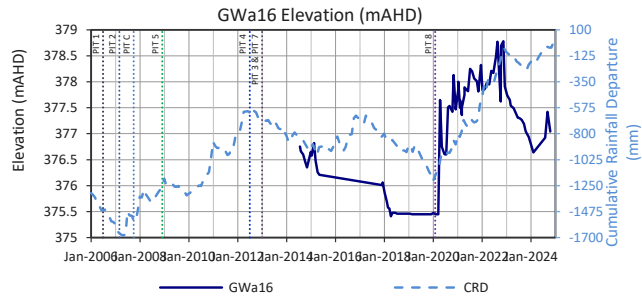


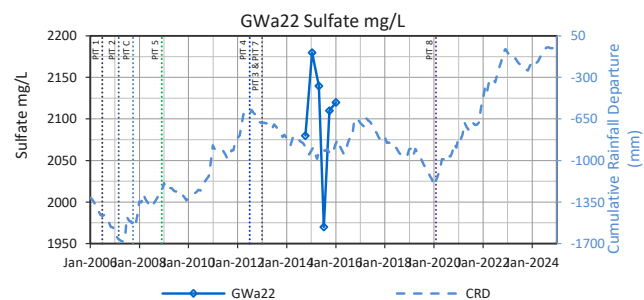
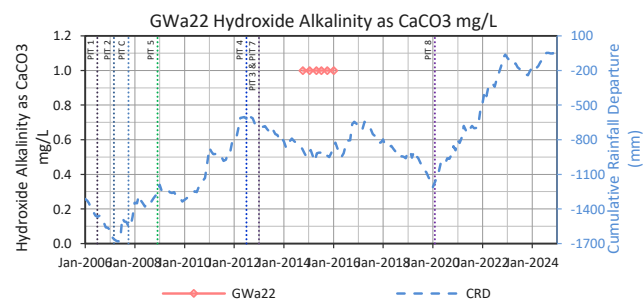
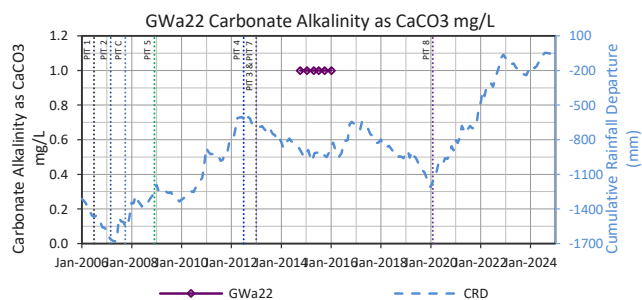
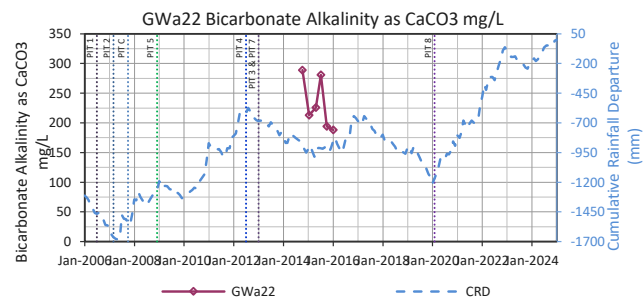
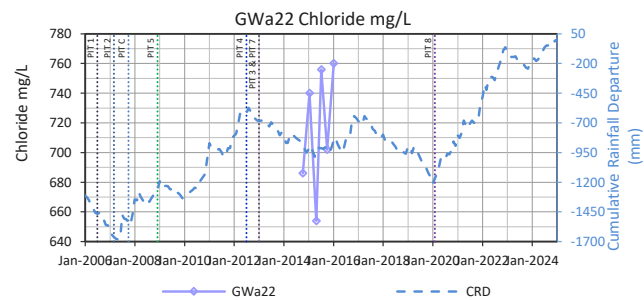
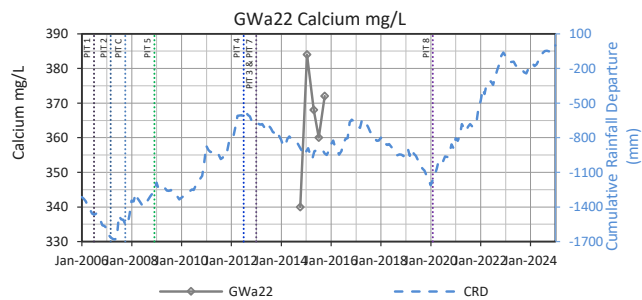
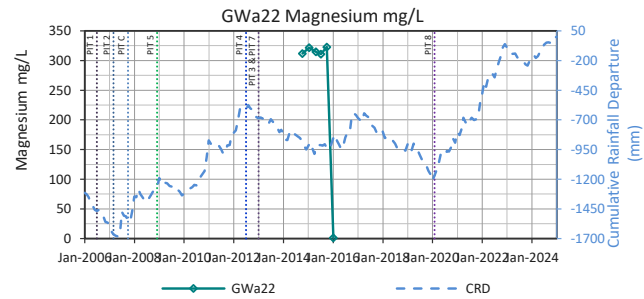
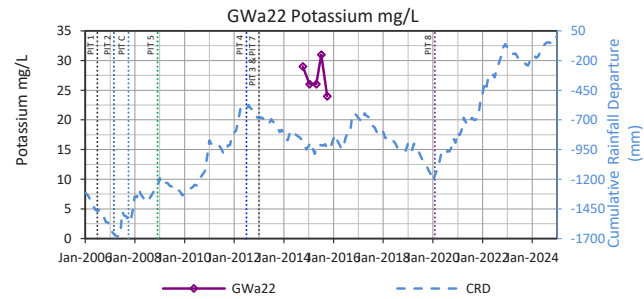
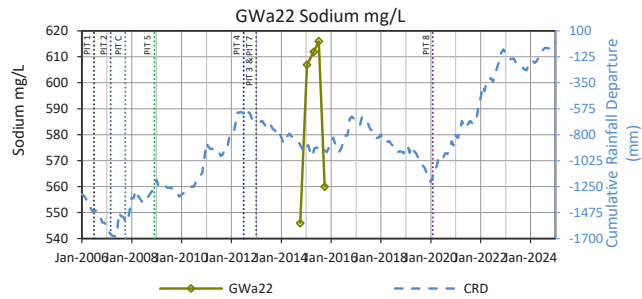
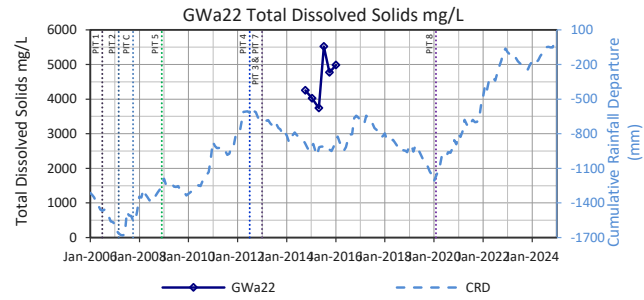
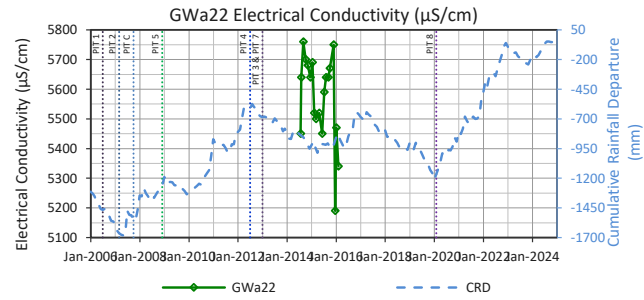
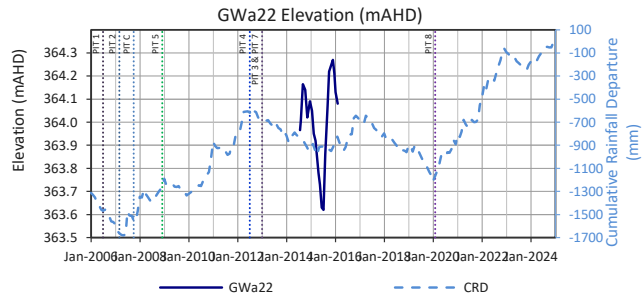




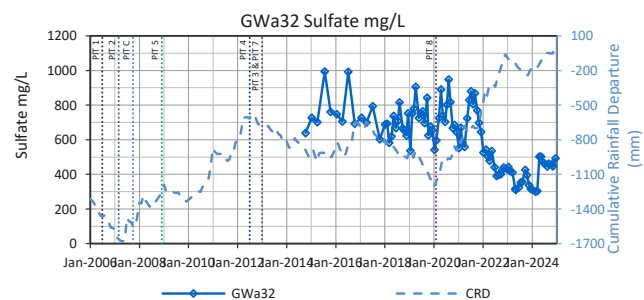
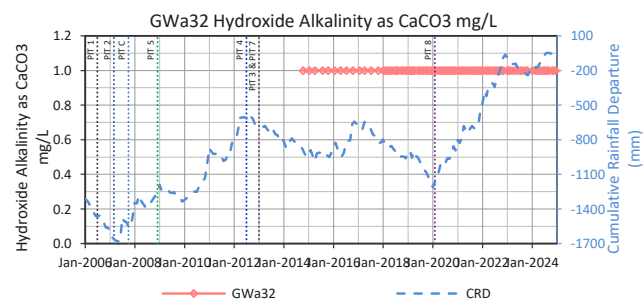
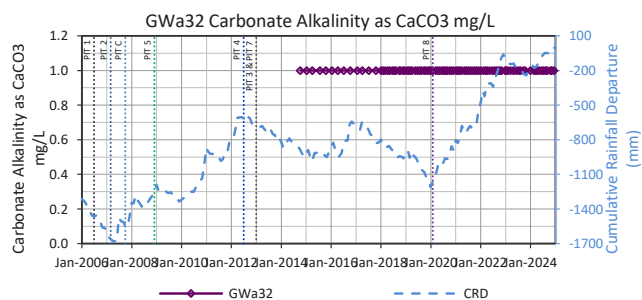
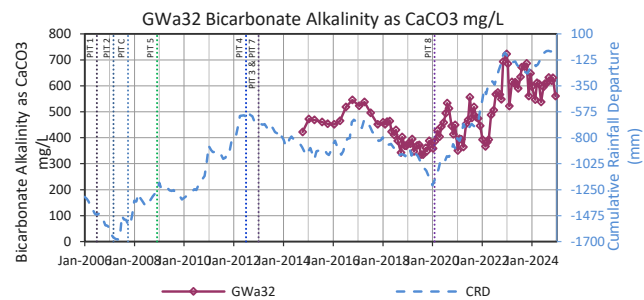
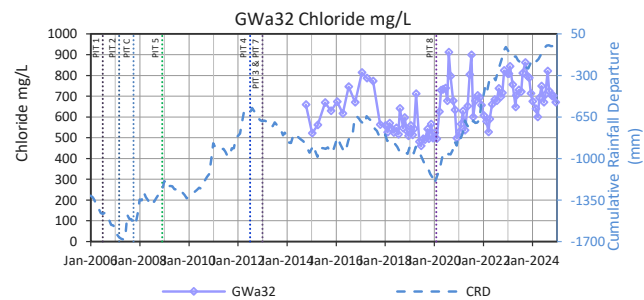
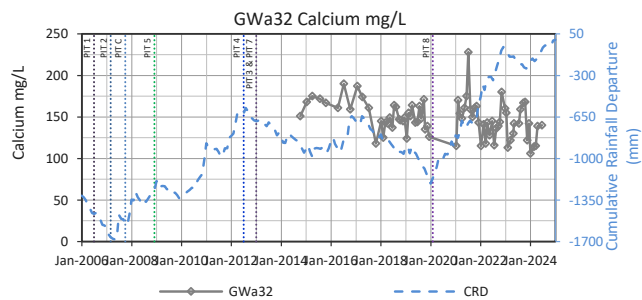
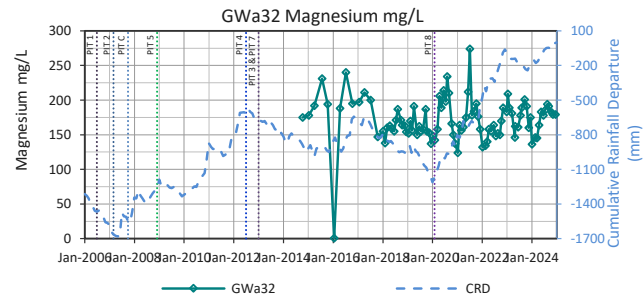
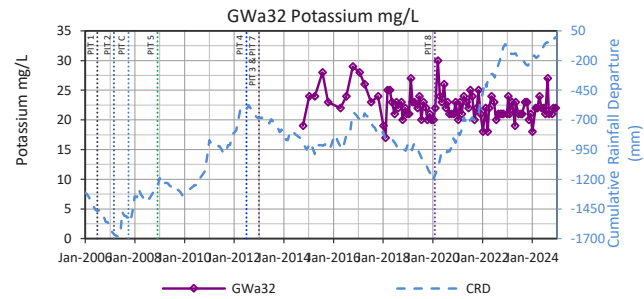
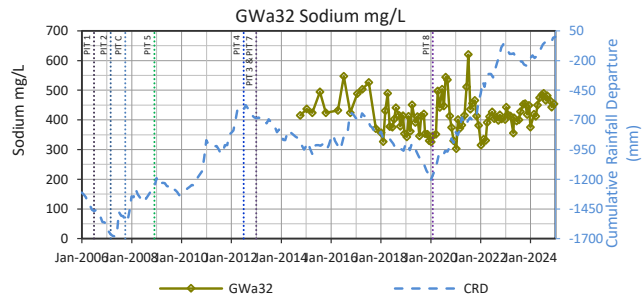
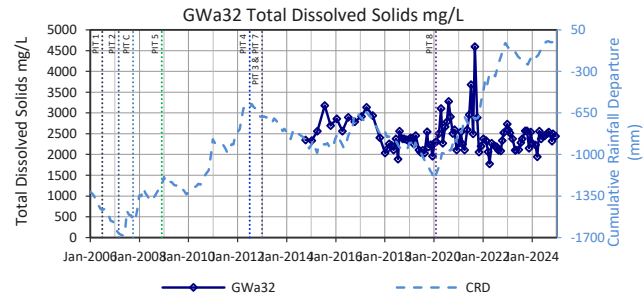
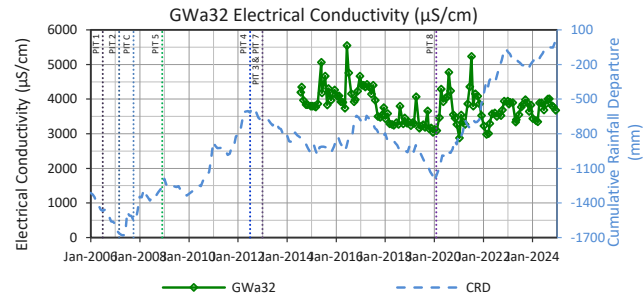
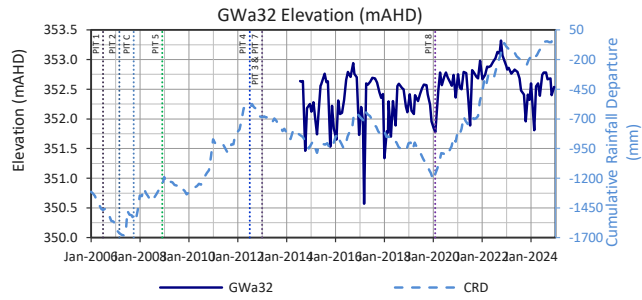


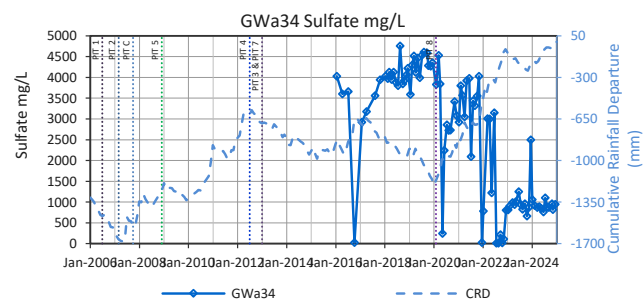
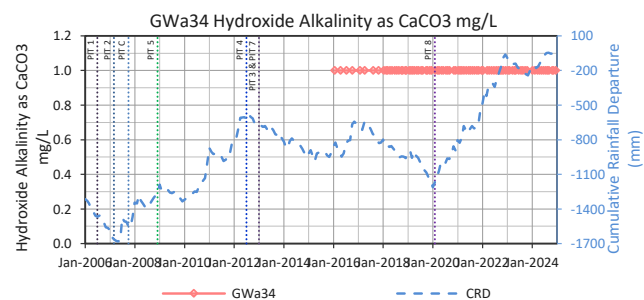
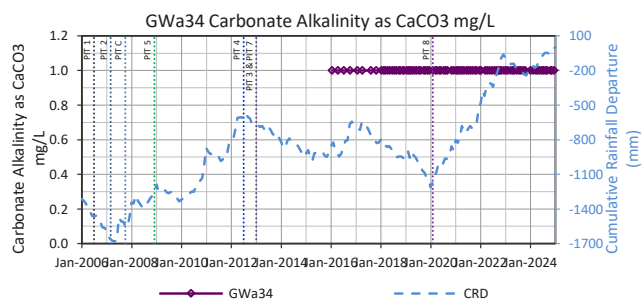
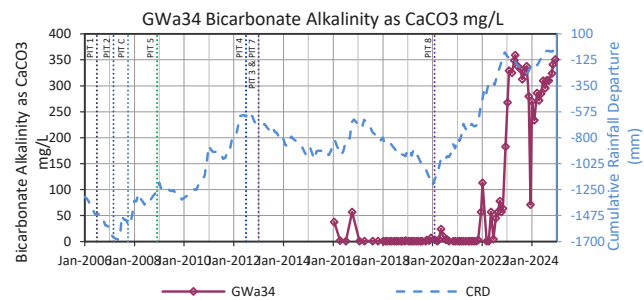
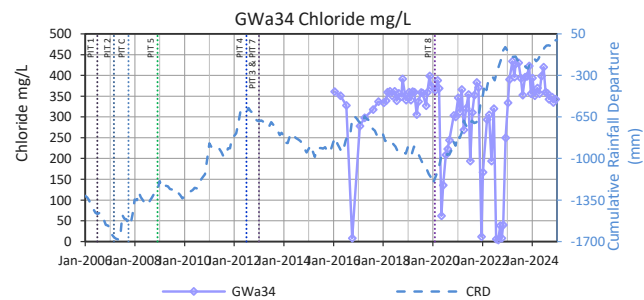
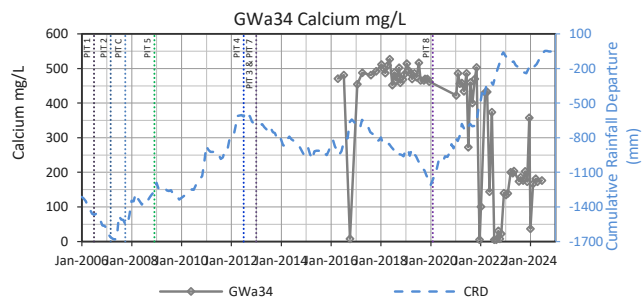
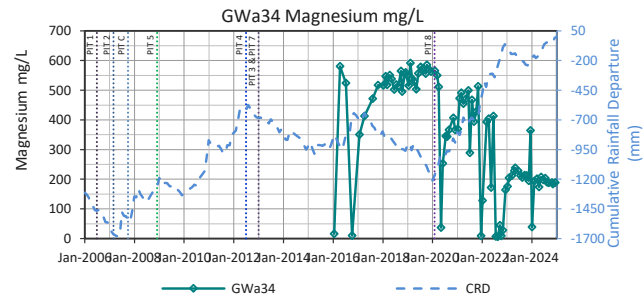
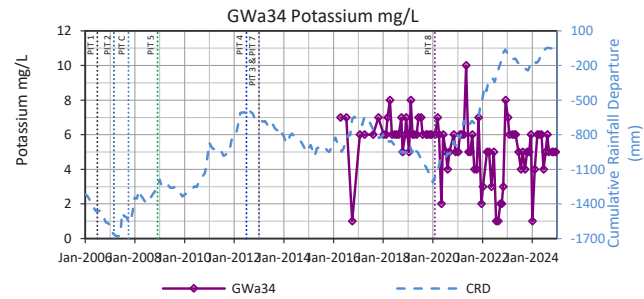
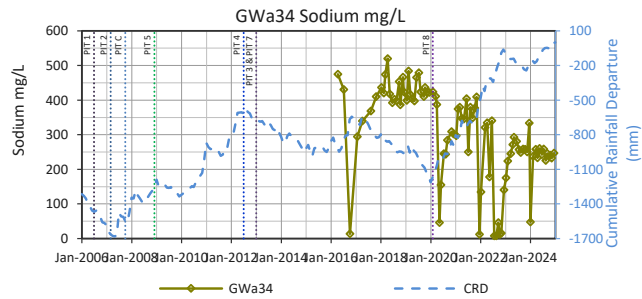
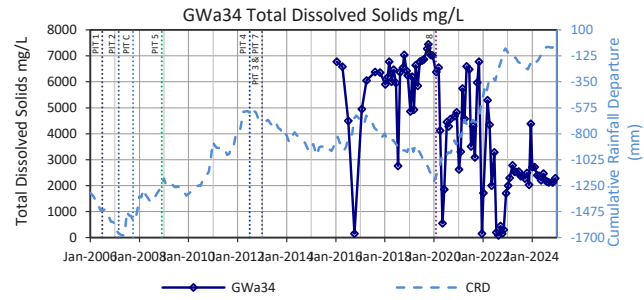
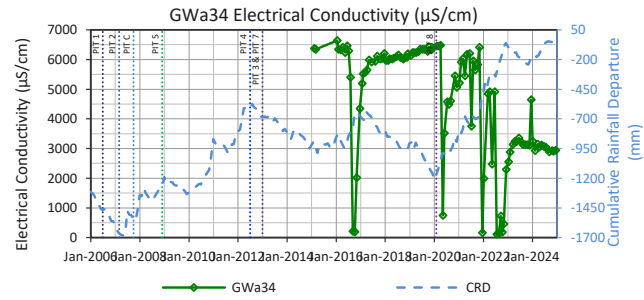
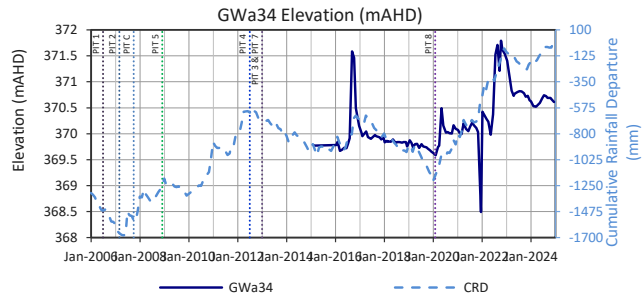


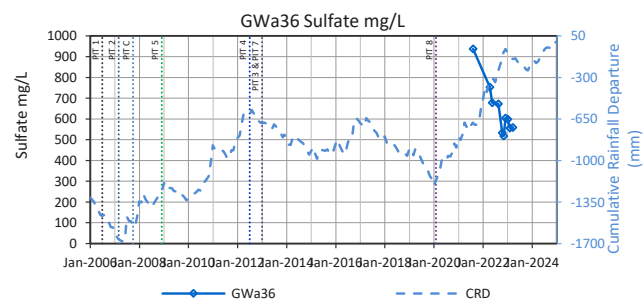
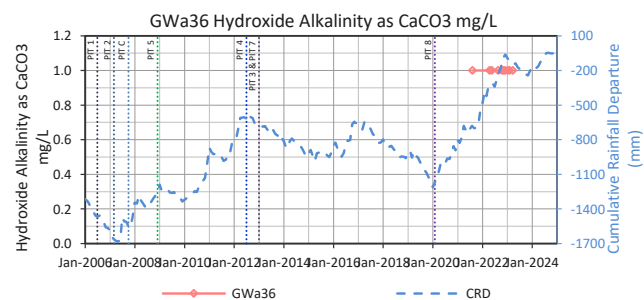
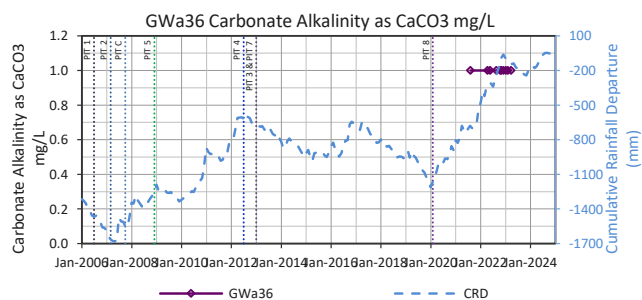
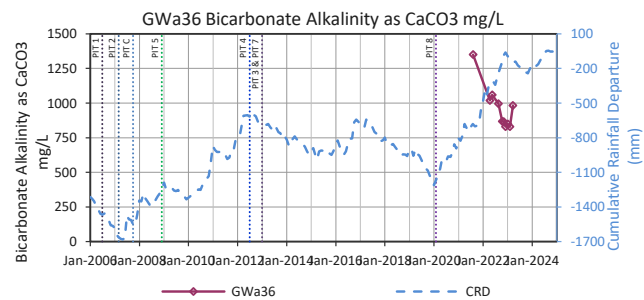
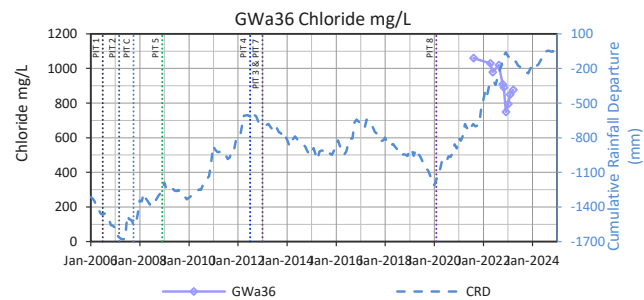
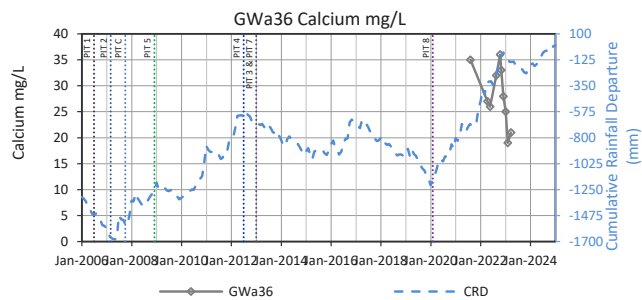
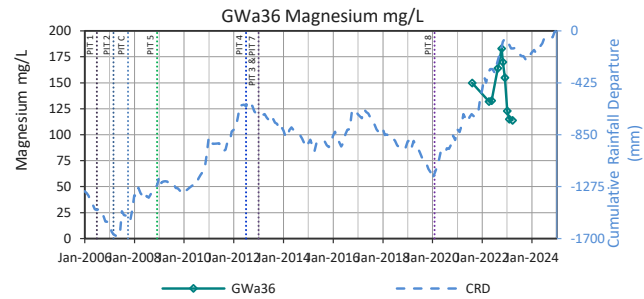
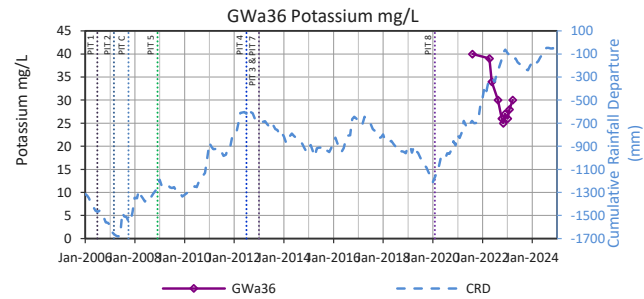
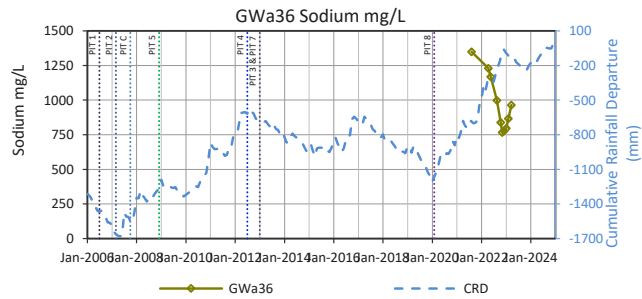
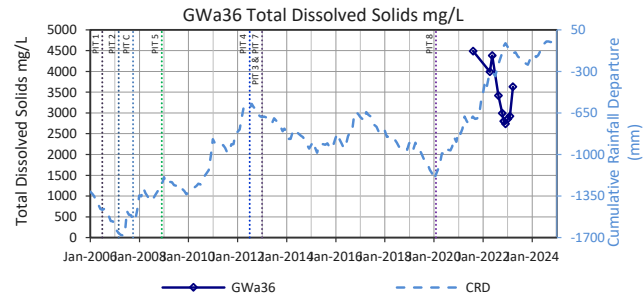
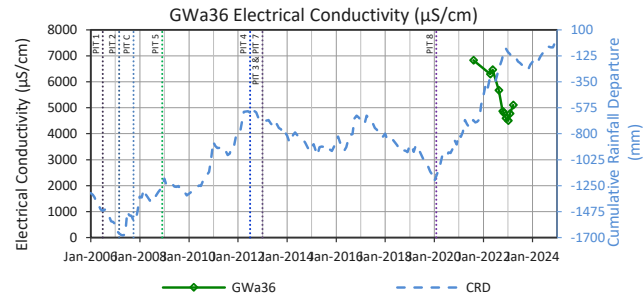
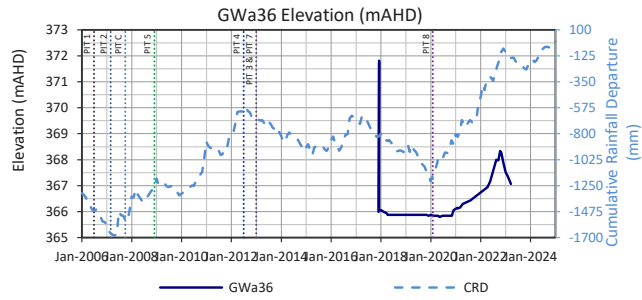




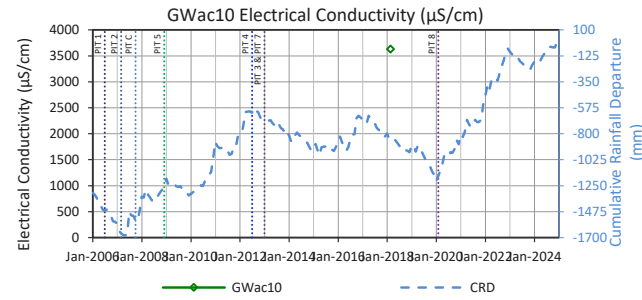








No Data Available for Elevation (mAHD)



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

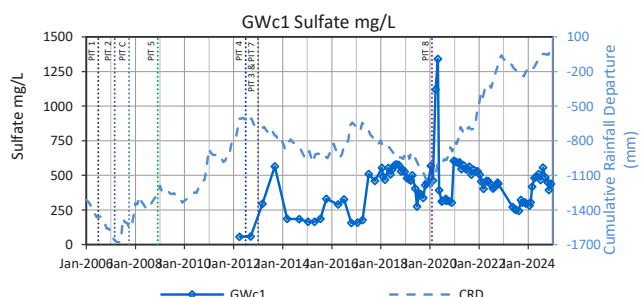
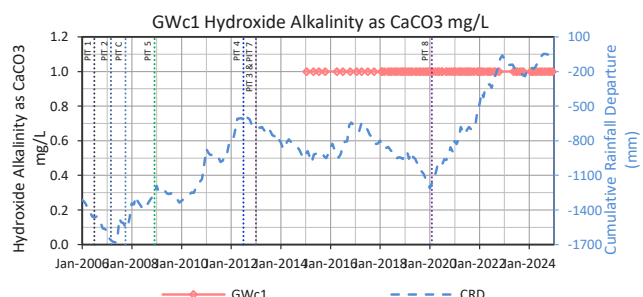
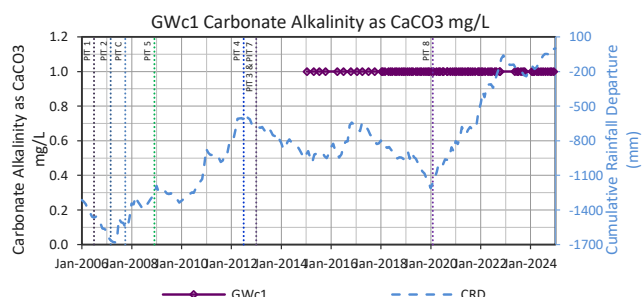
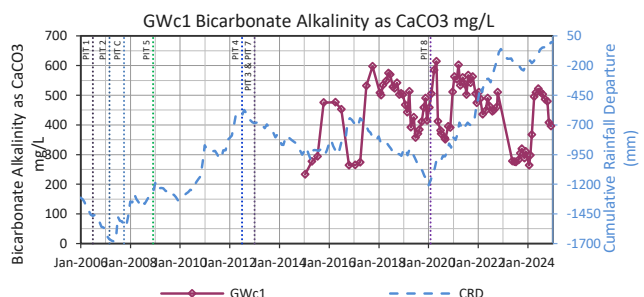
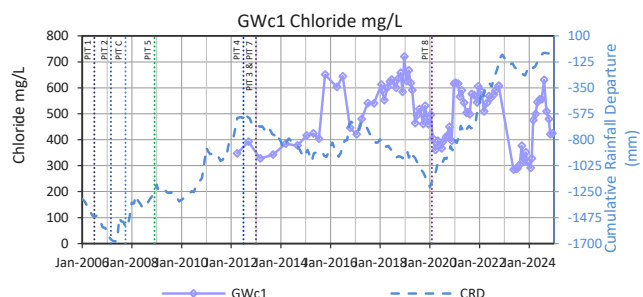
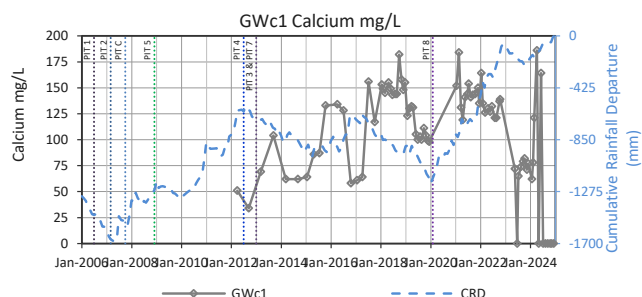
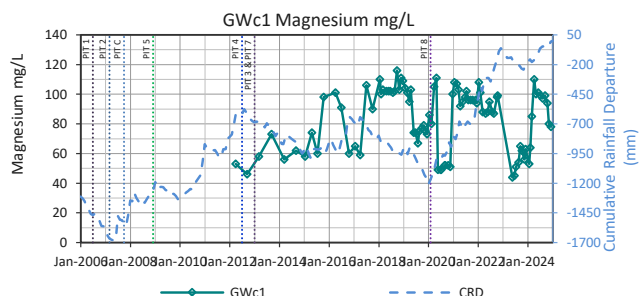
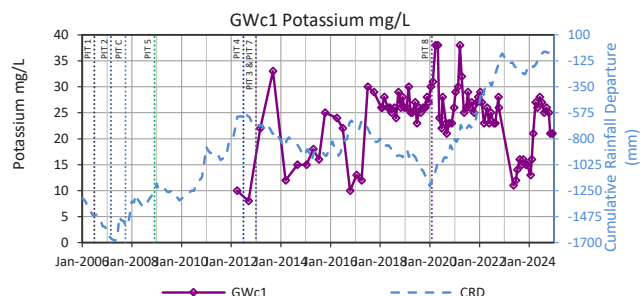
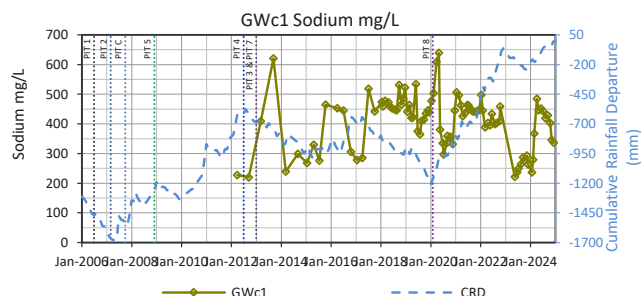
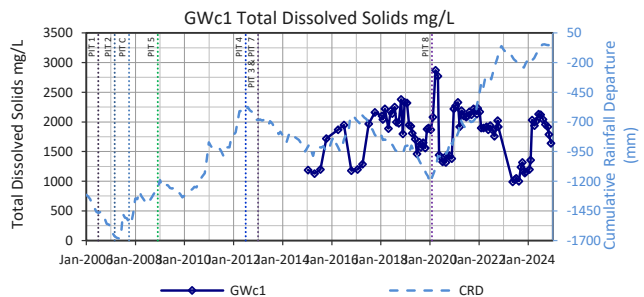
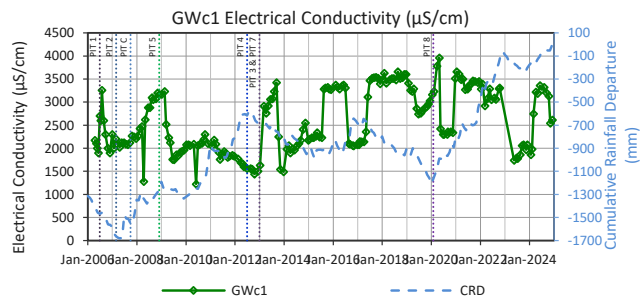
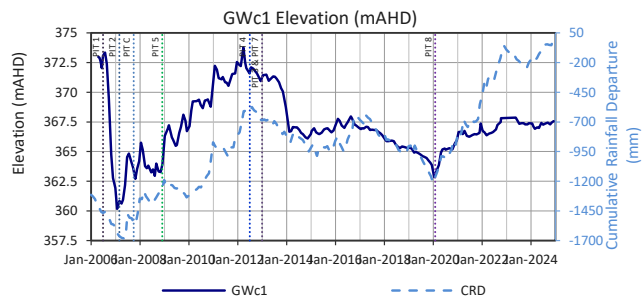
No Data Available for Chloride mg/L

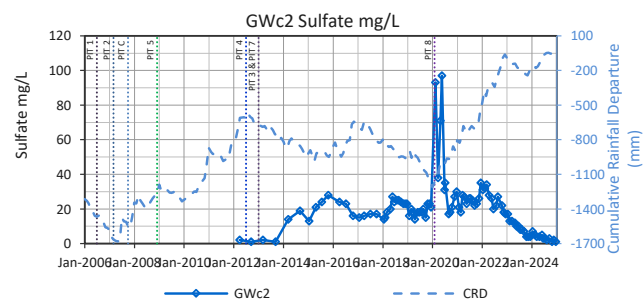
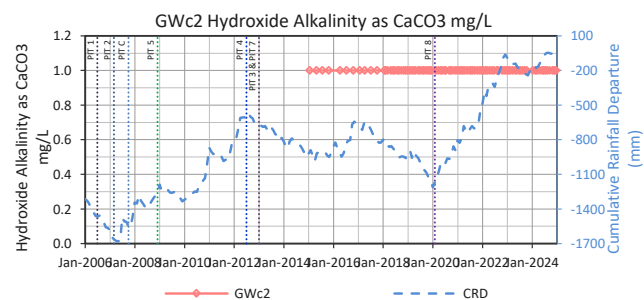
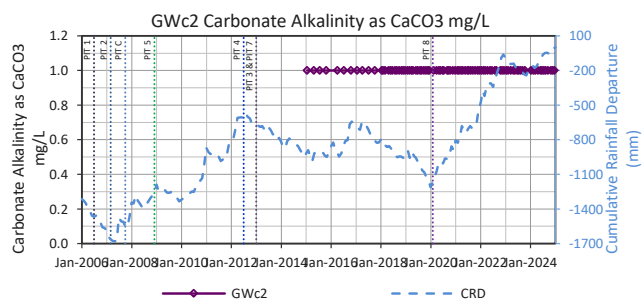
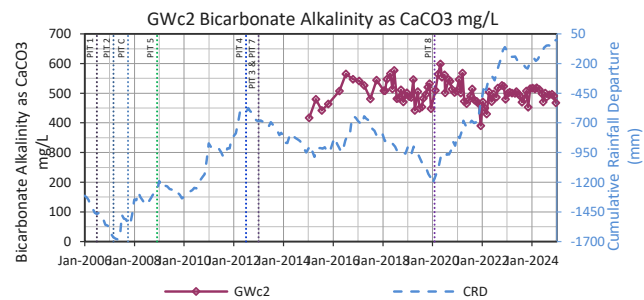
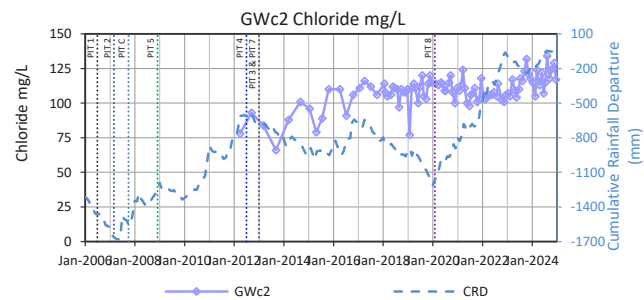
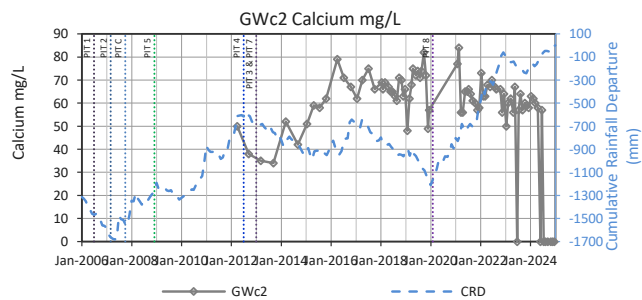
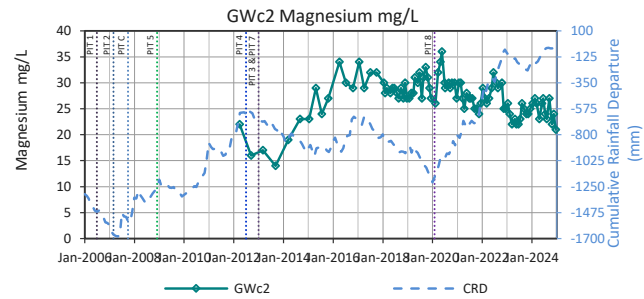
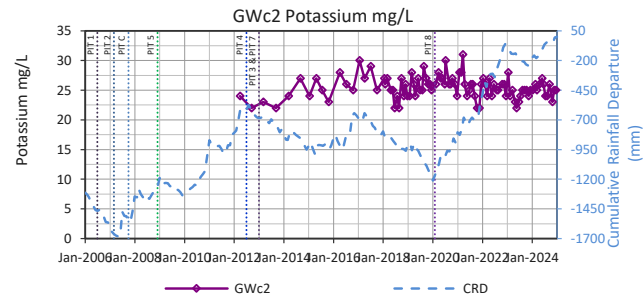
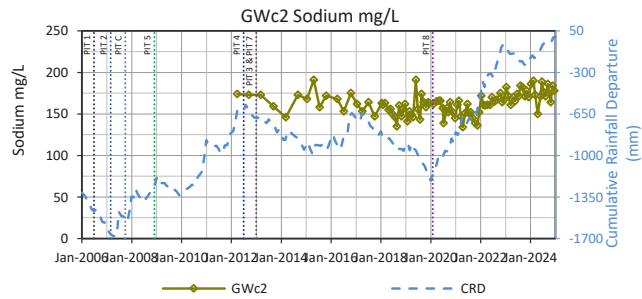
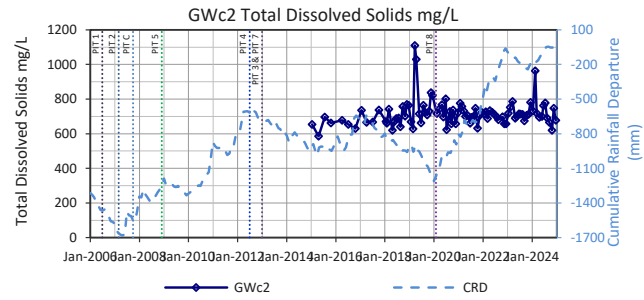
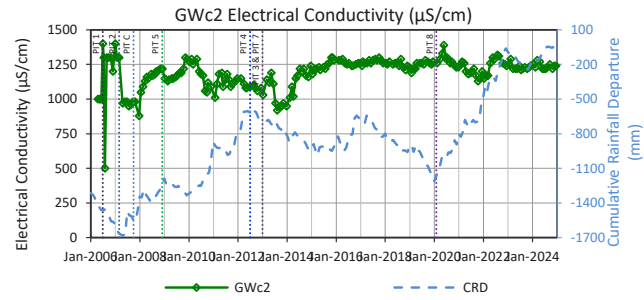
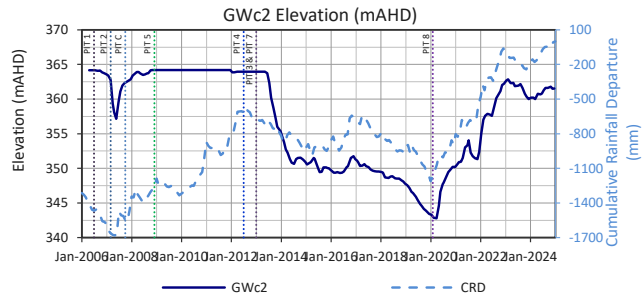
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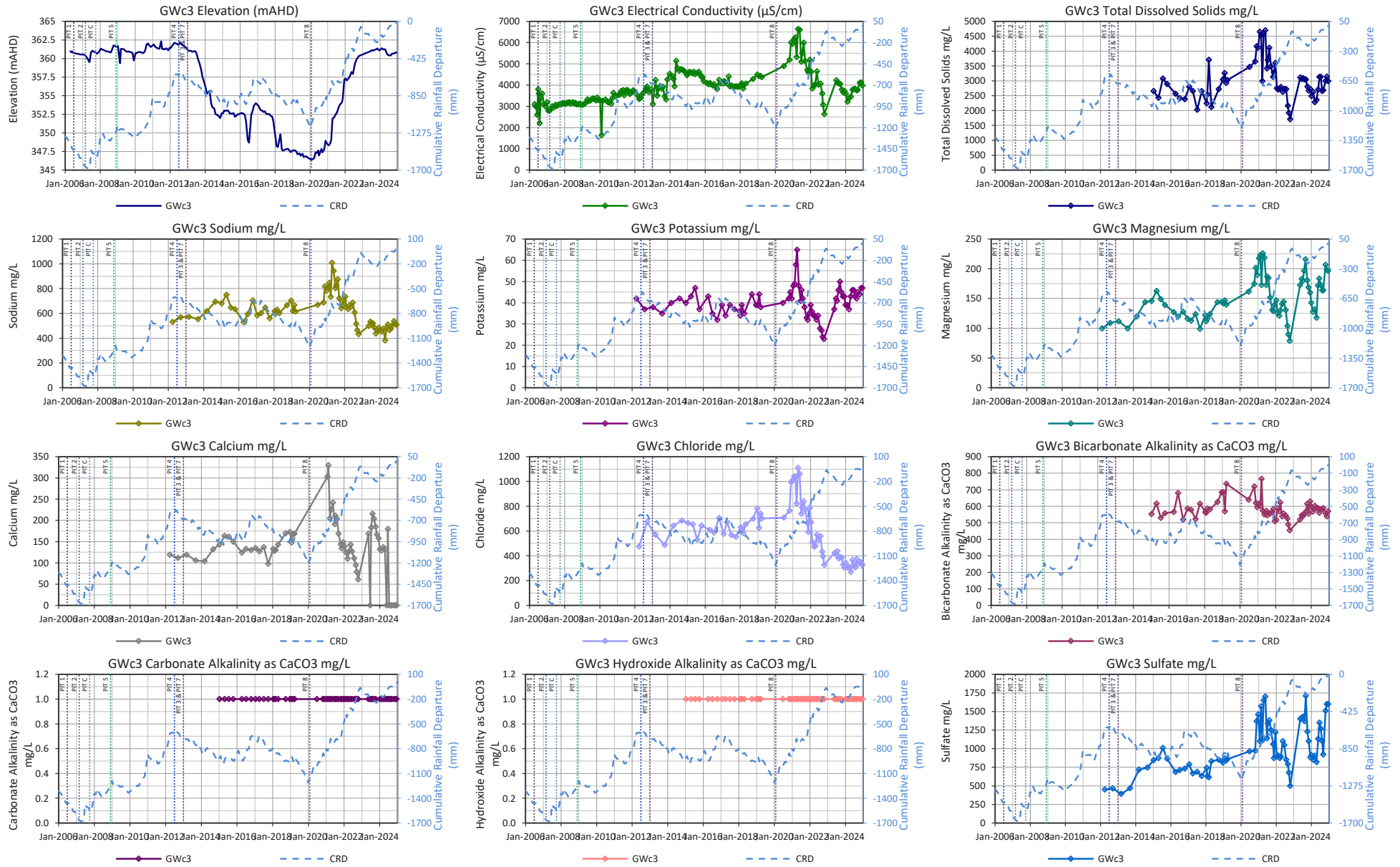
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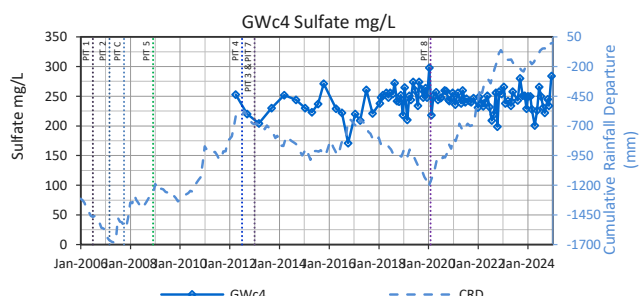
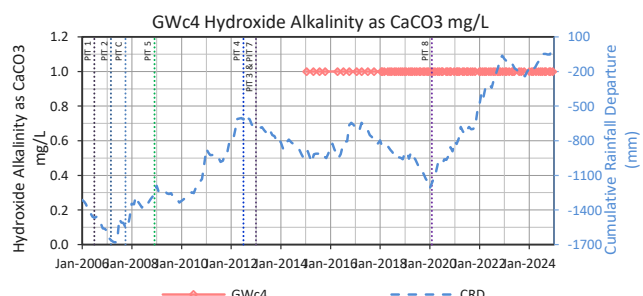
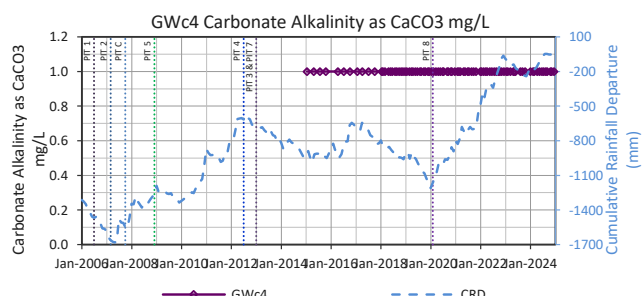
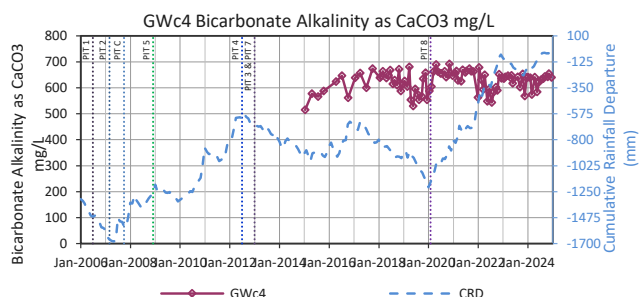
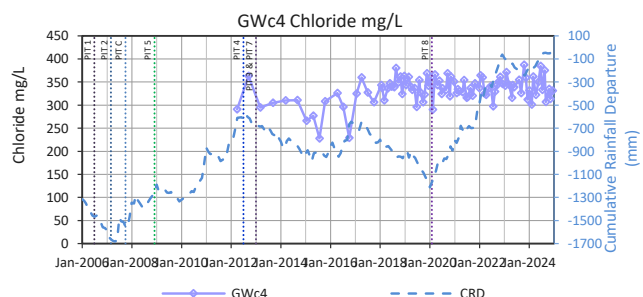
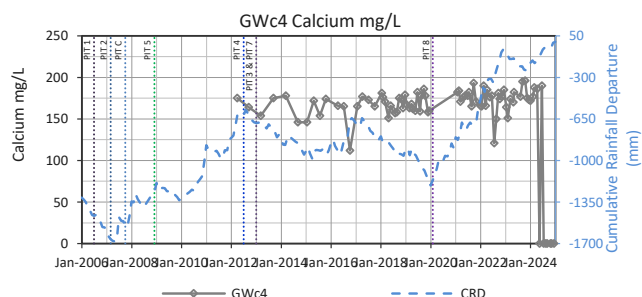
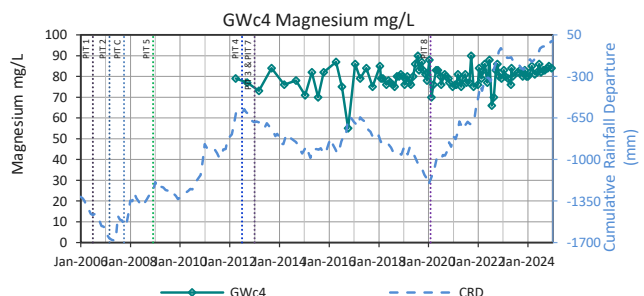
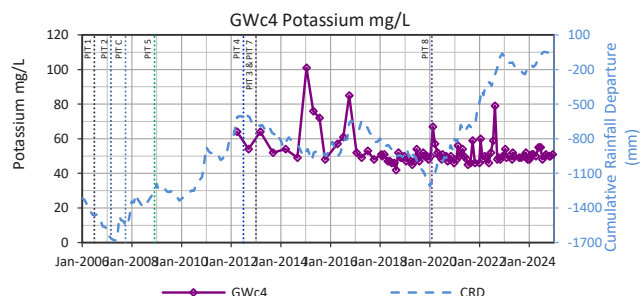
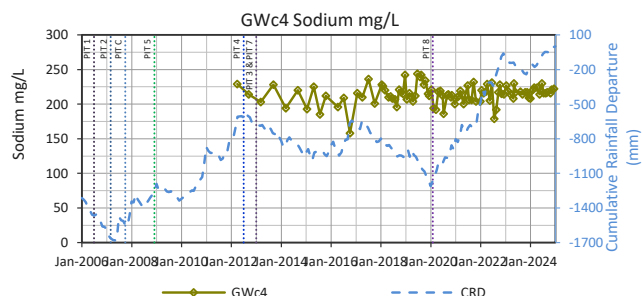
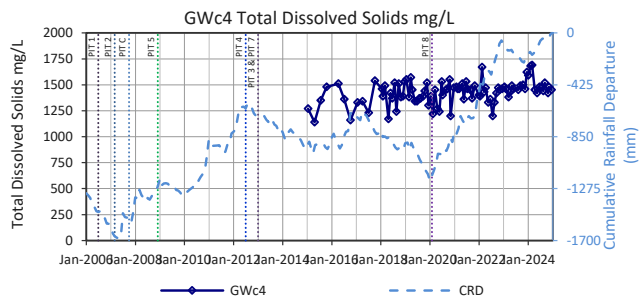
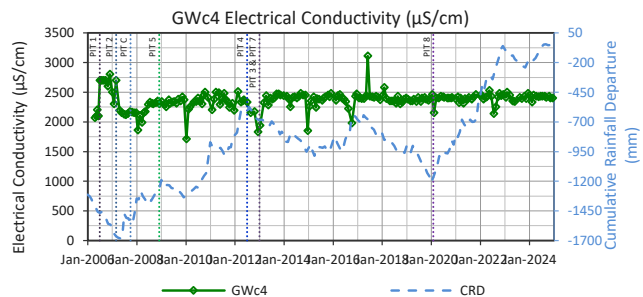
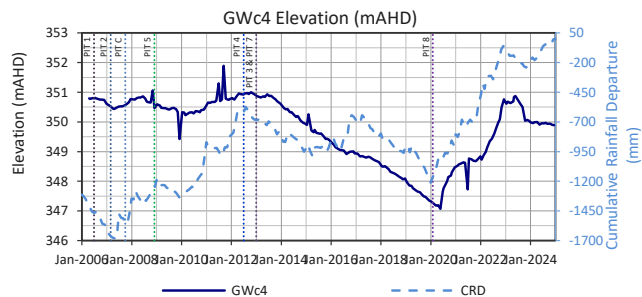
No Data Available for Hydroxide Alkalinity as CaCO3 mg/L

No Data Available for Sulfate mg/L

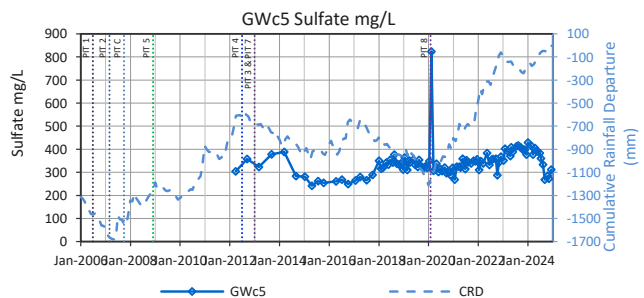
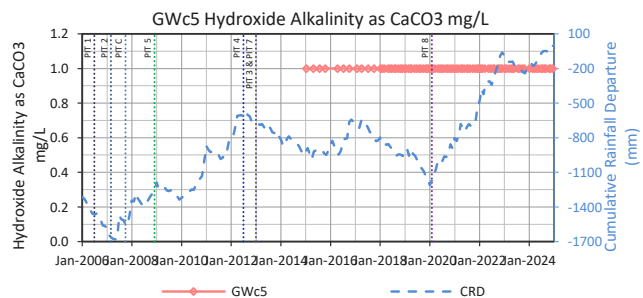
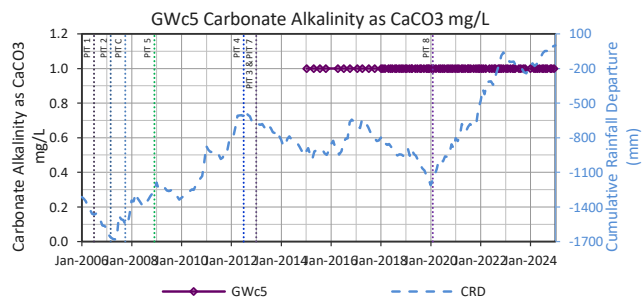
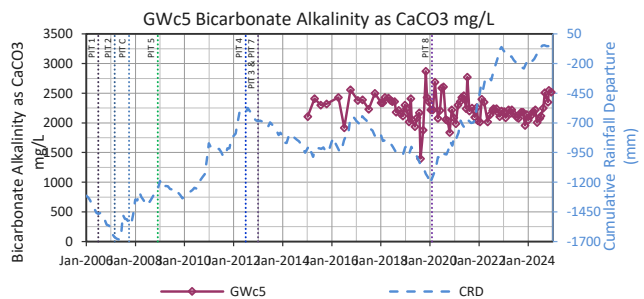
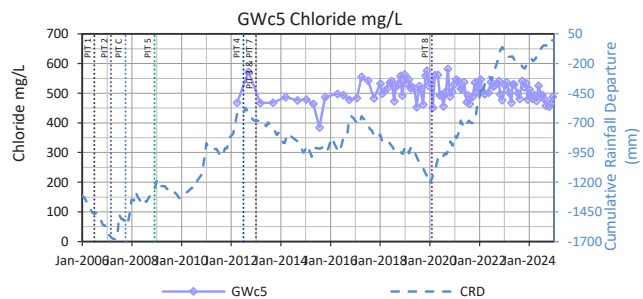
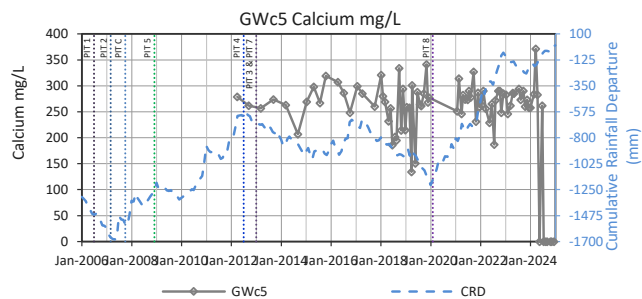
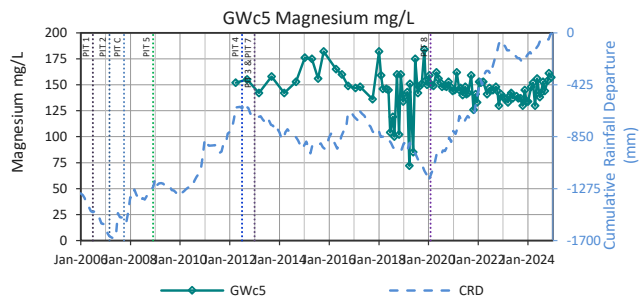
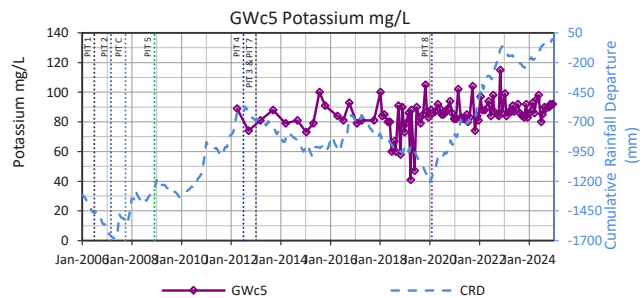
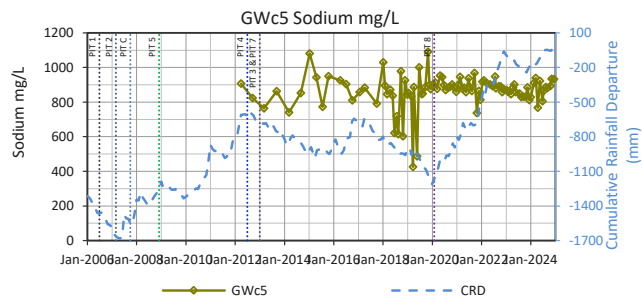
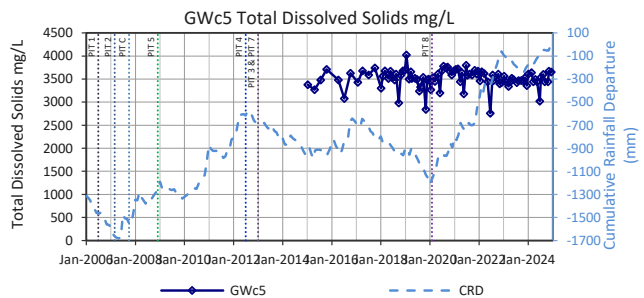
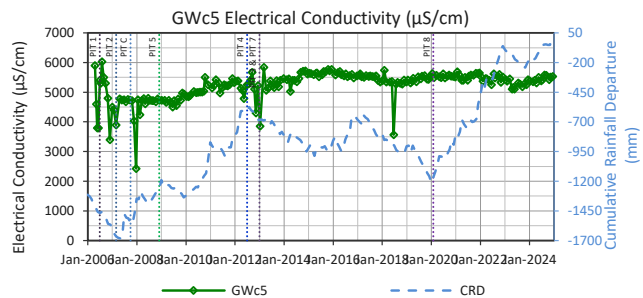
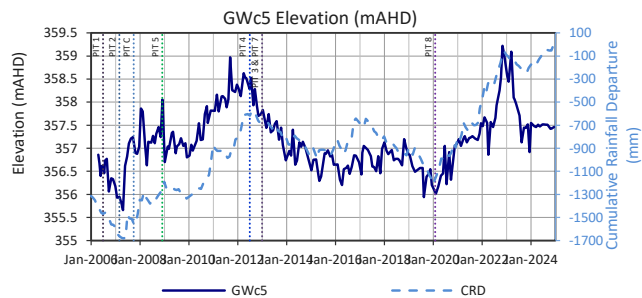


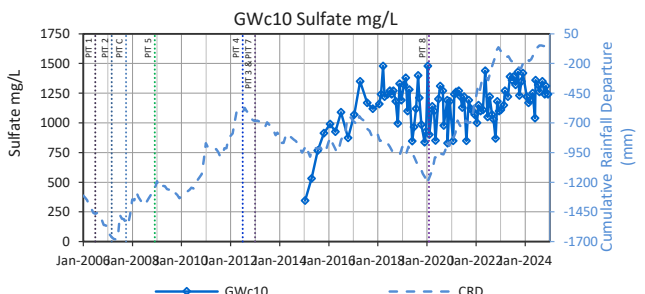
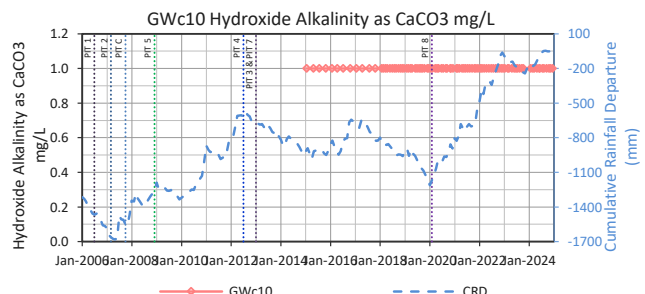
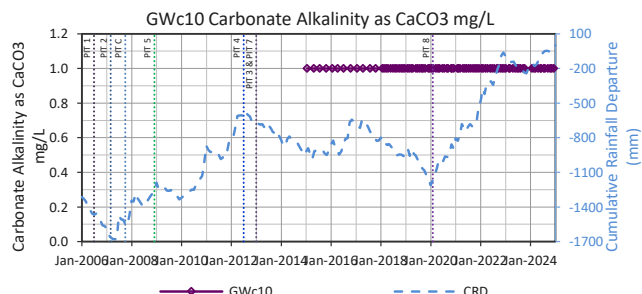
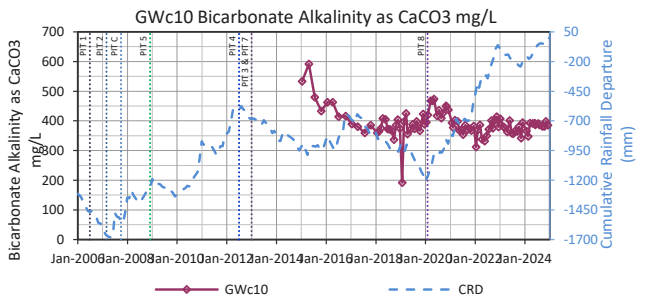
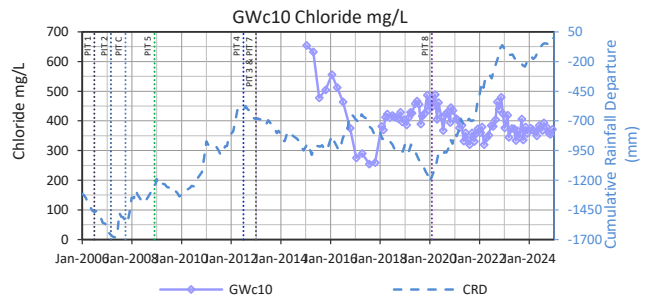
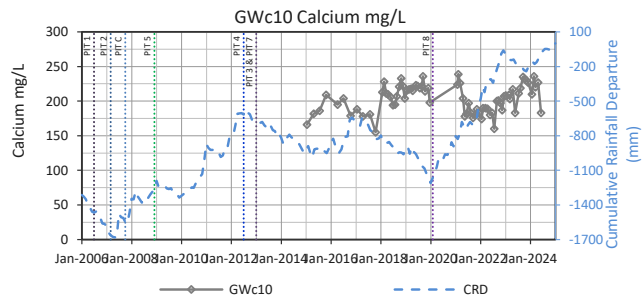
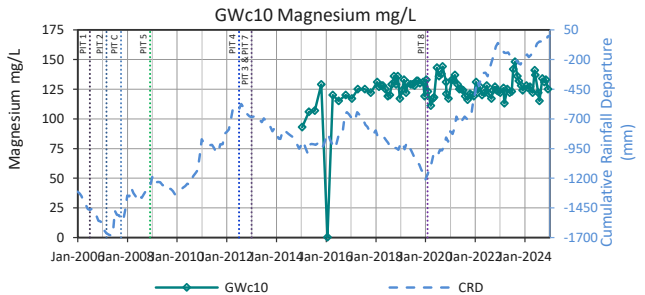
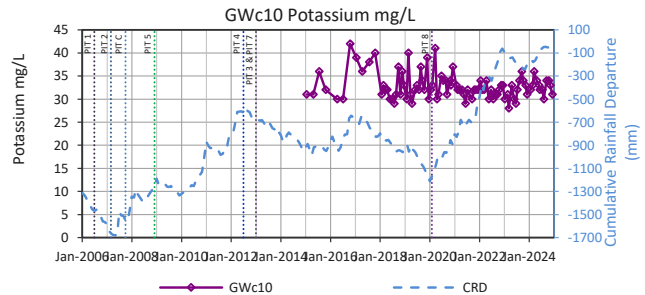
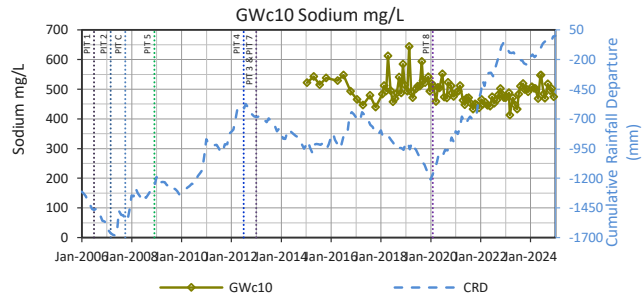
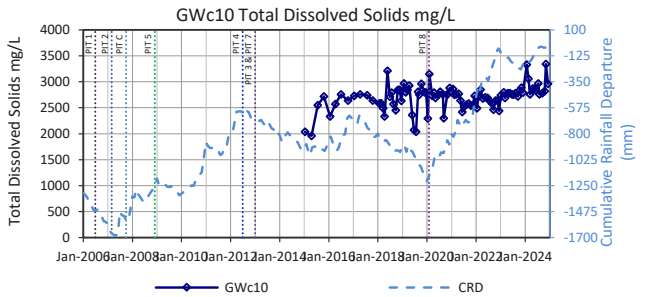
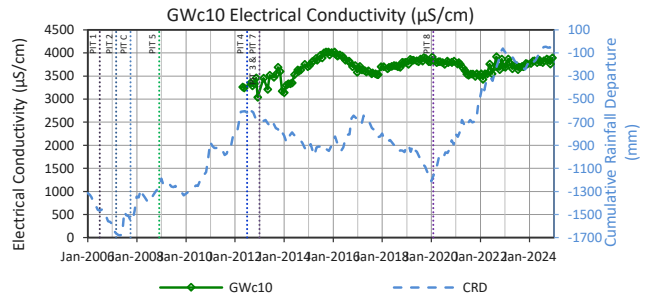
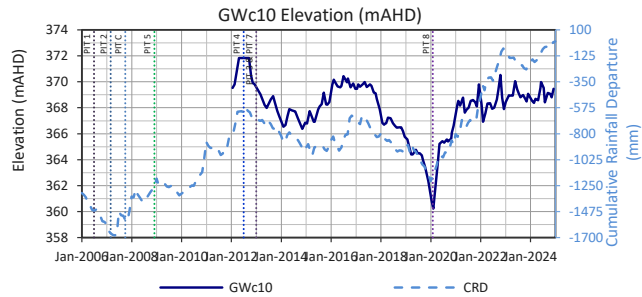


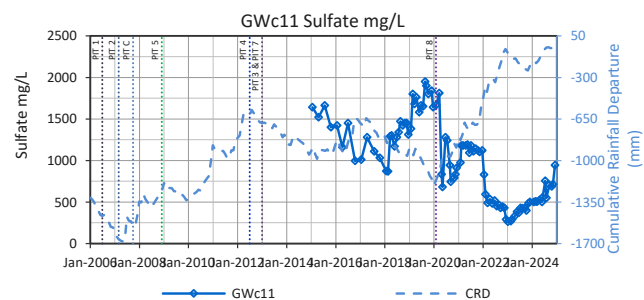
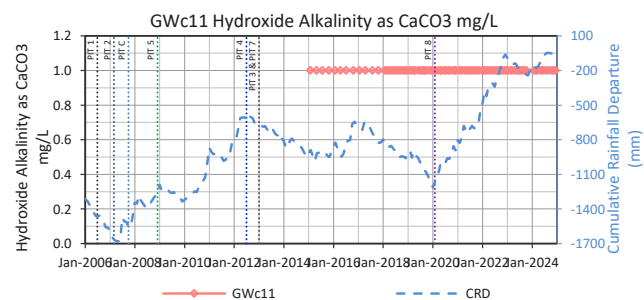
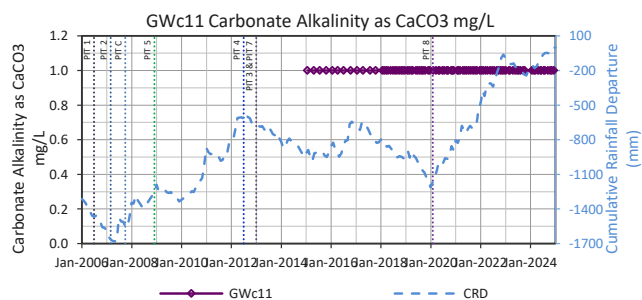
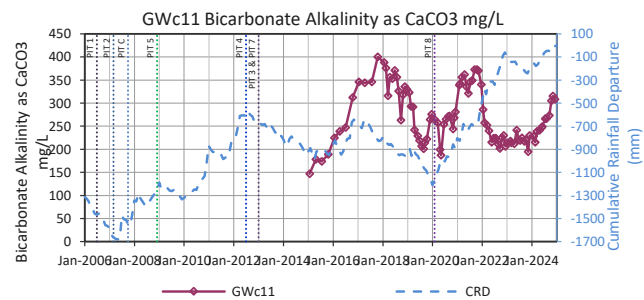
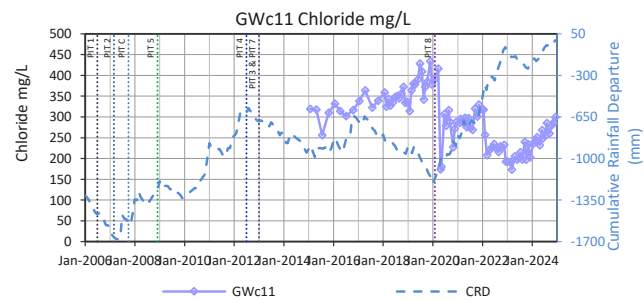
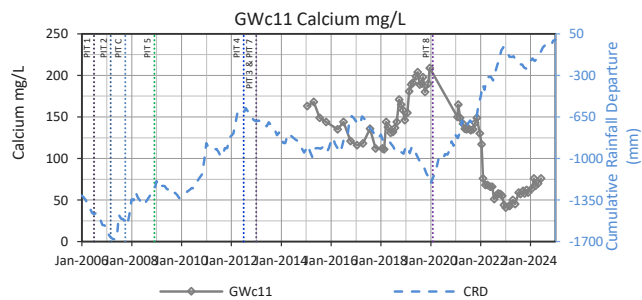
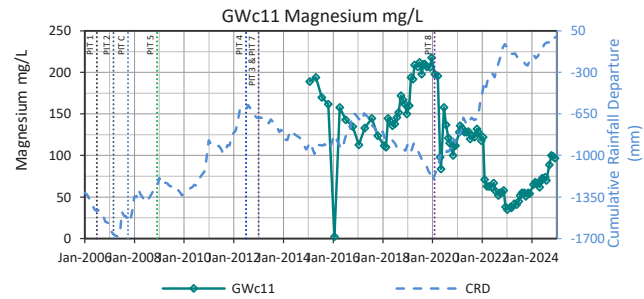
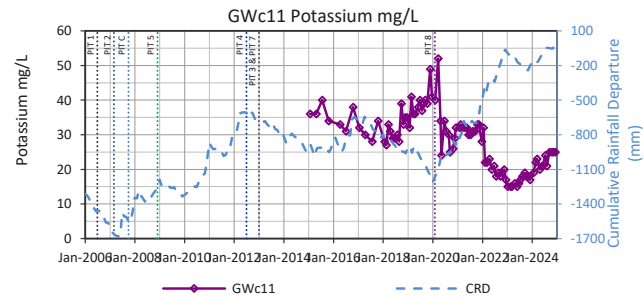
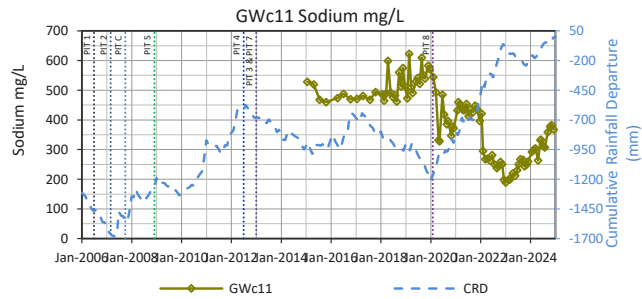
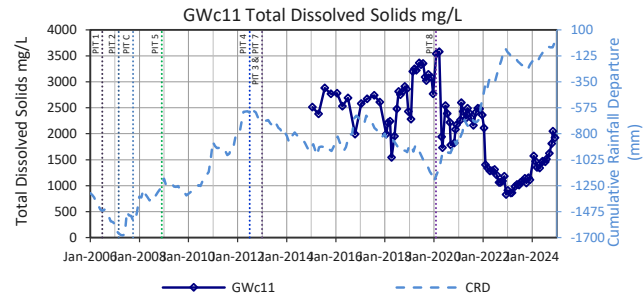
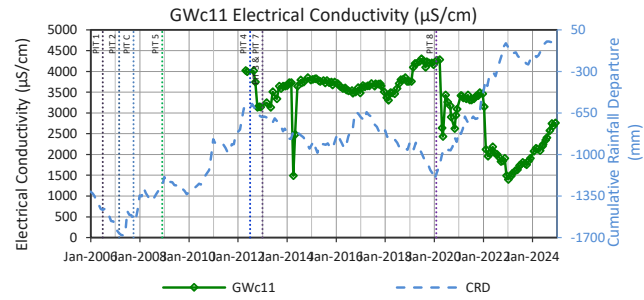
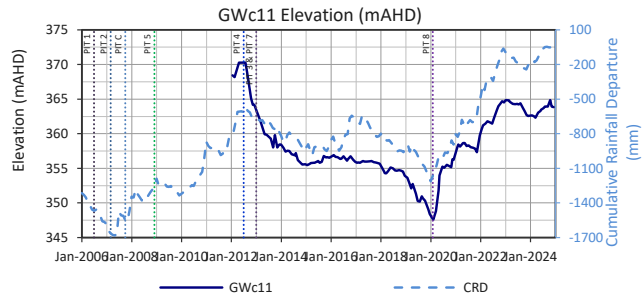


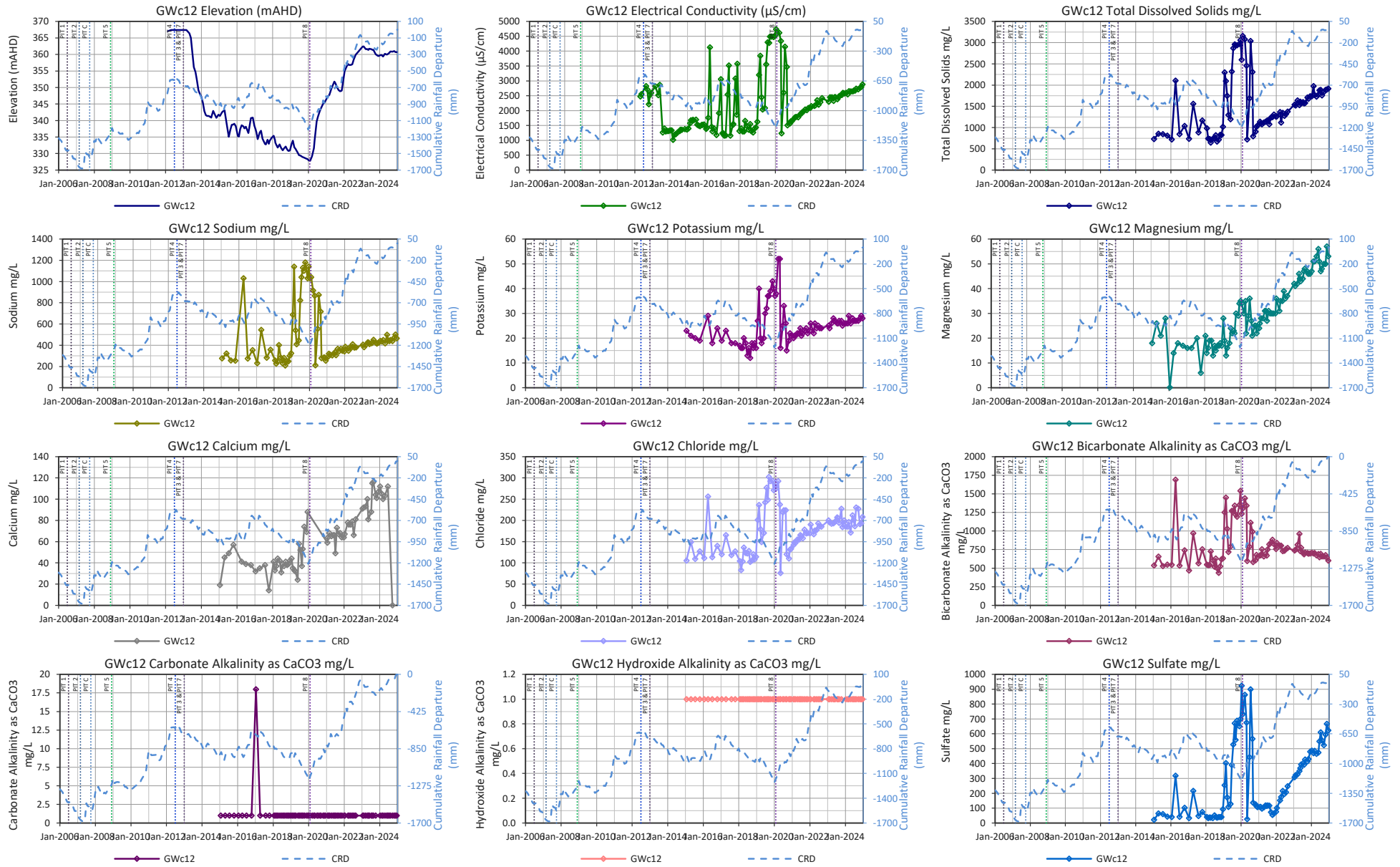


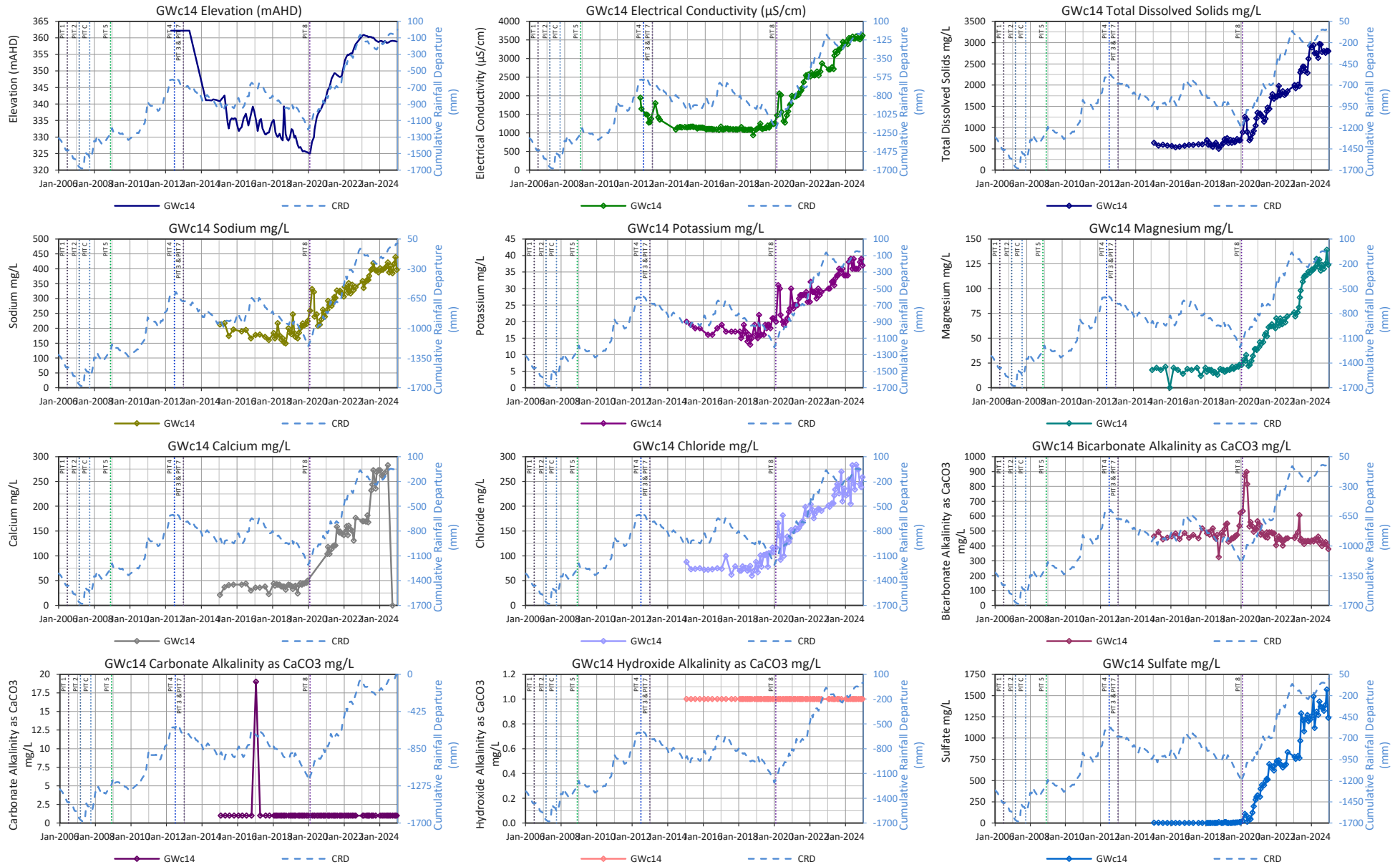


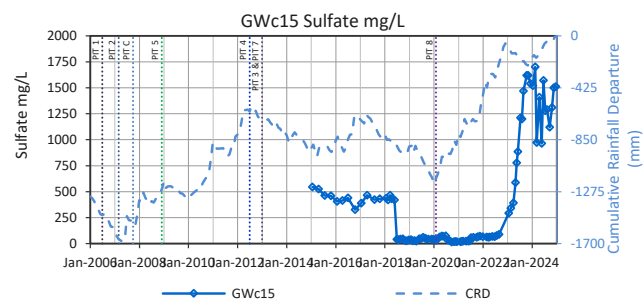
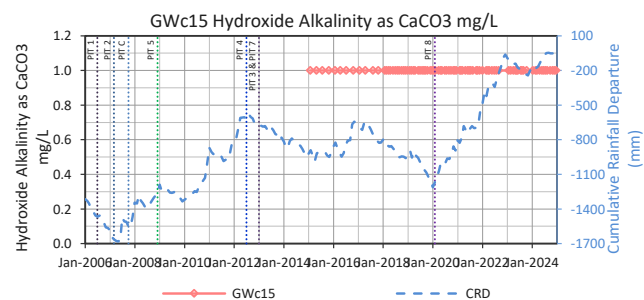
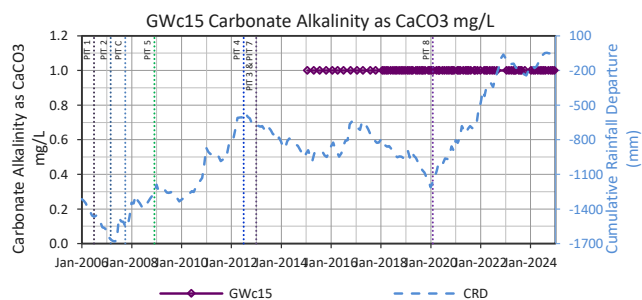
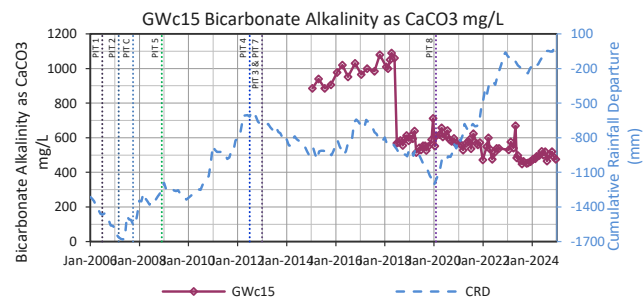
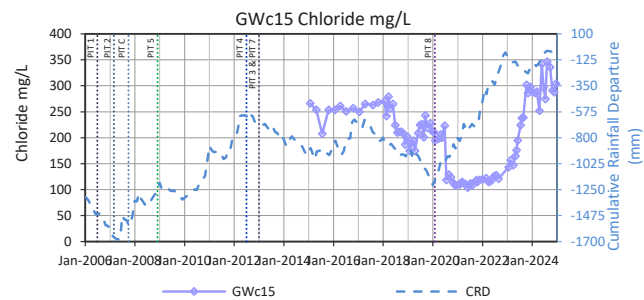
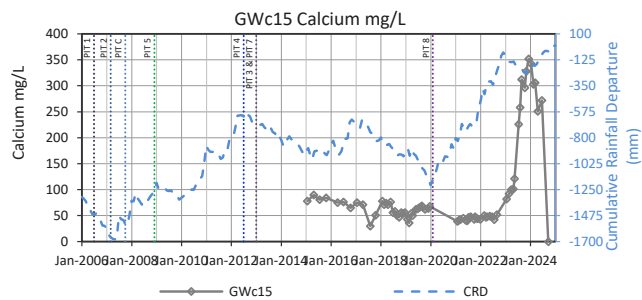
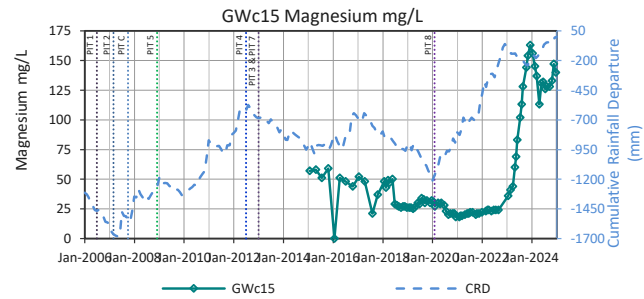
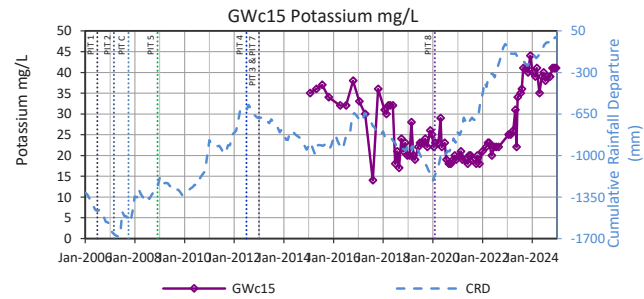
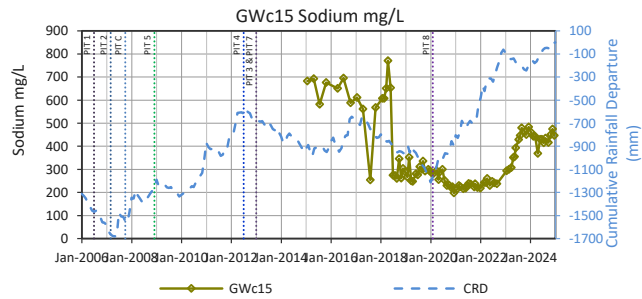
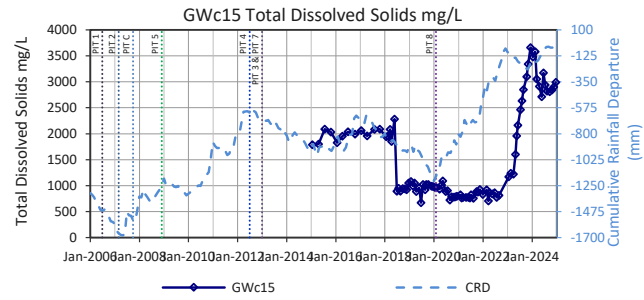
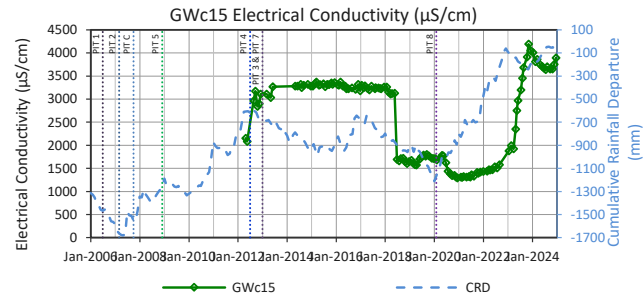
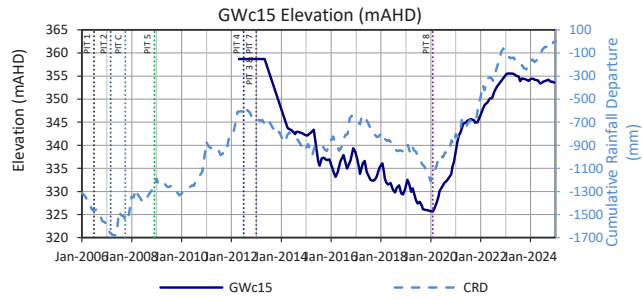


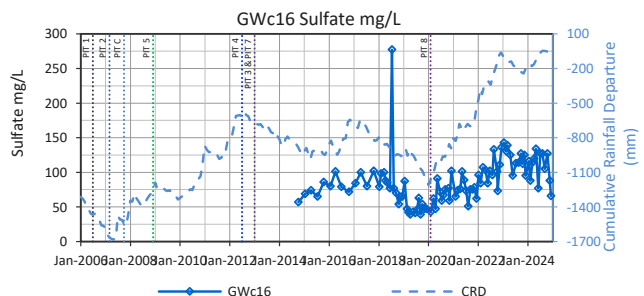
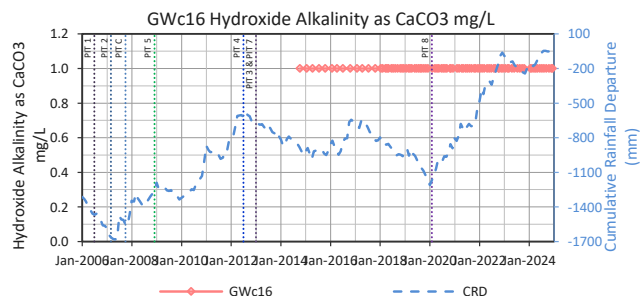
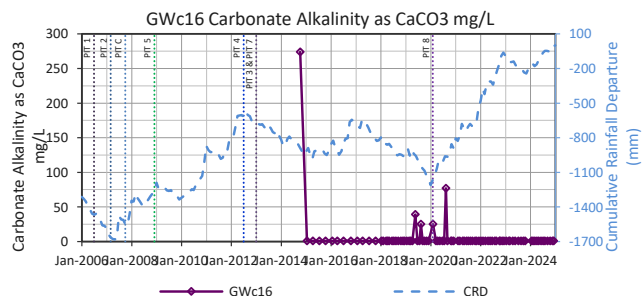
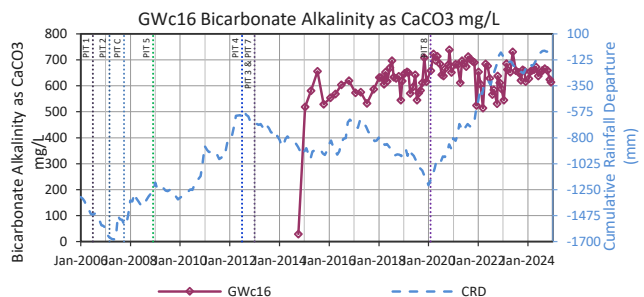
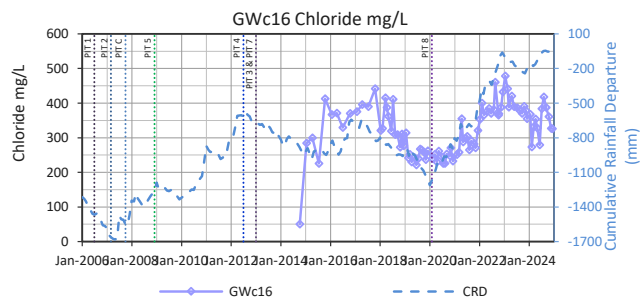
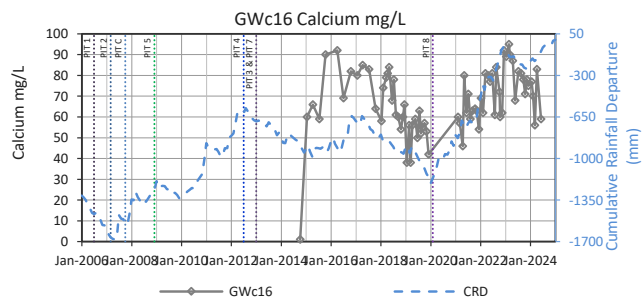
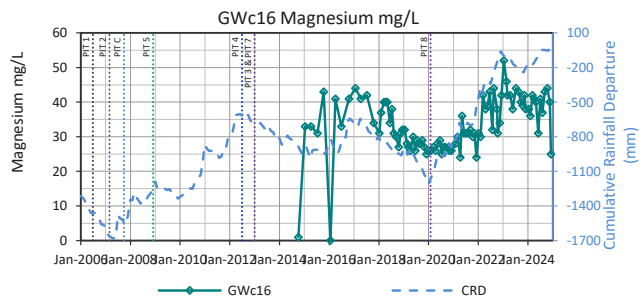
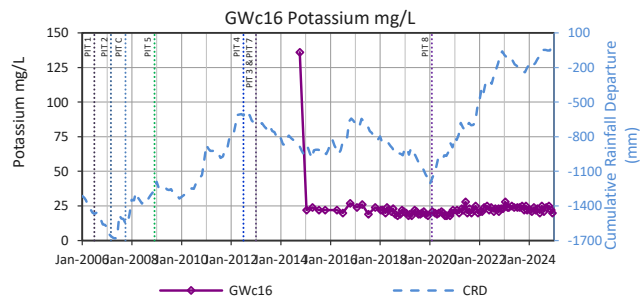
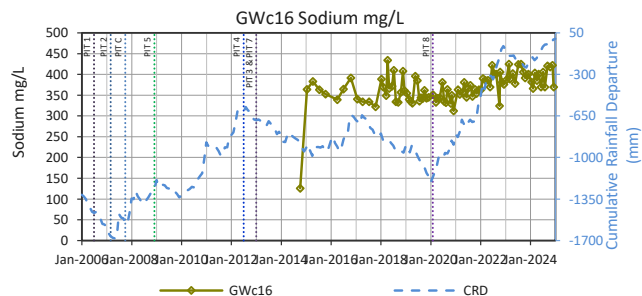
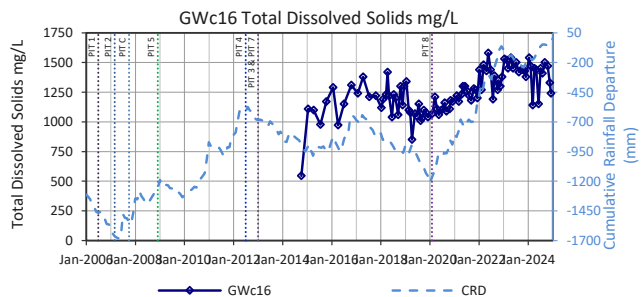
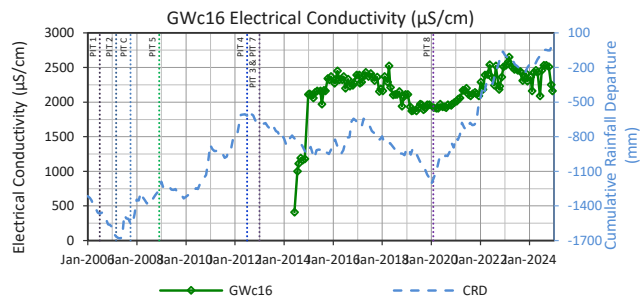
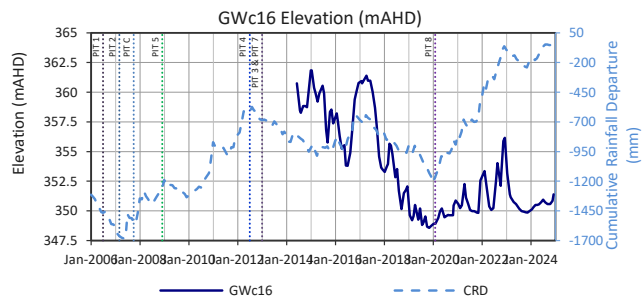


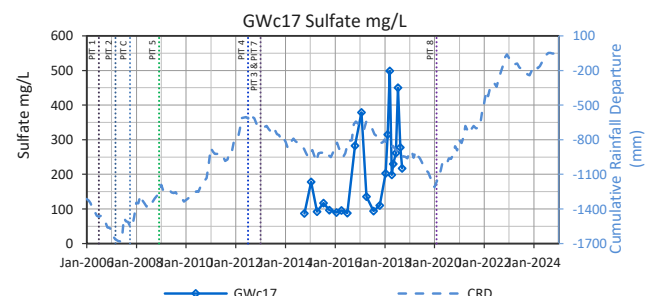
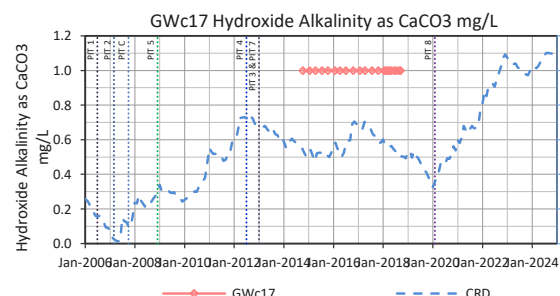
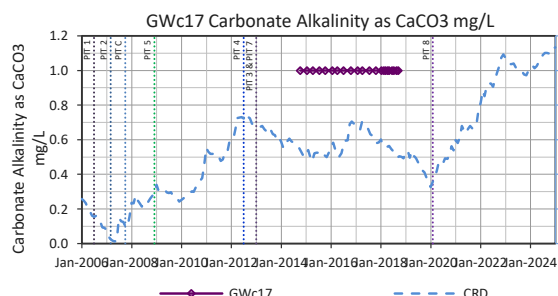
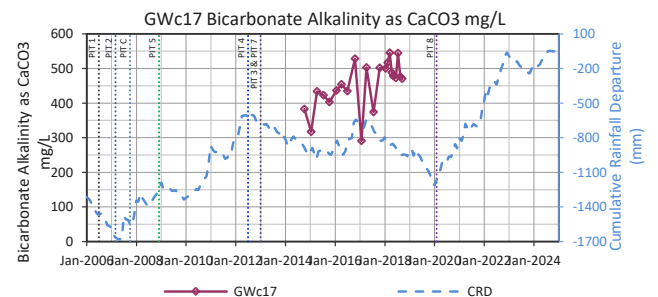
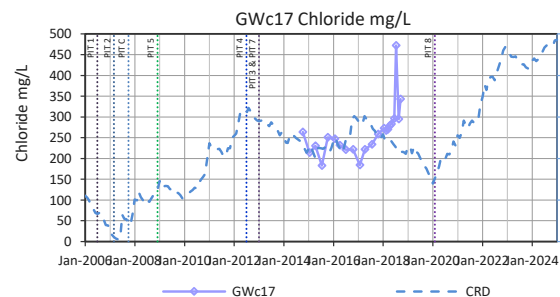
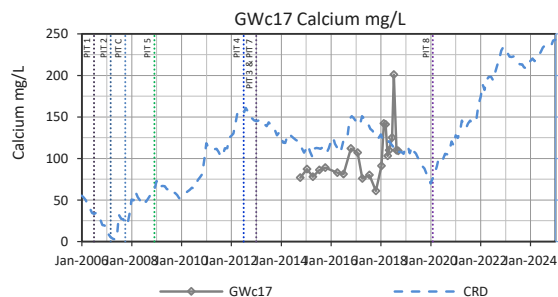
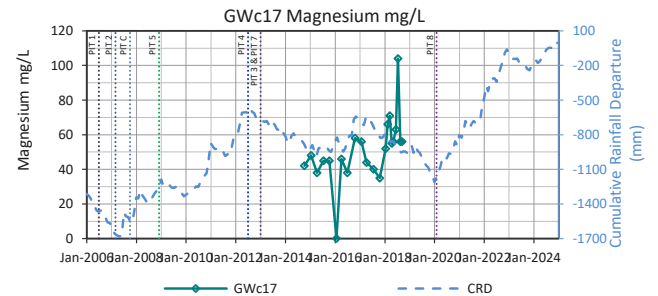
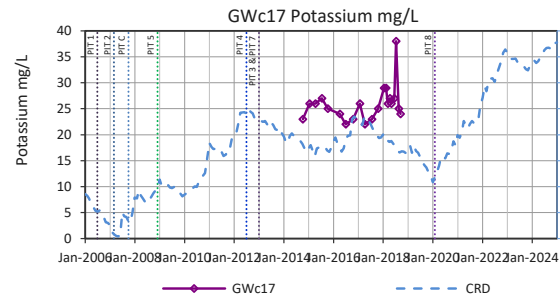
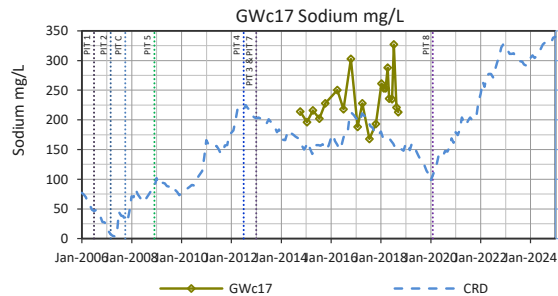
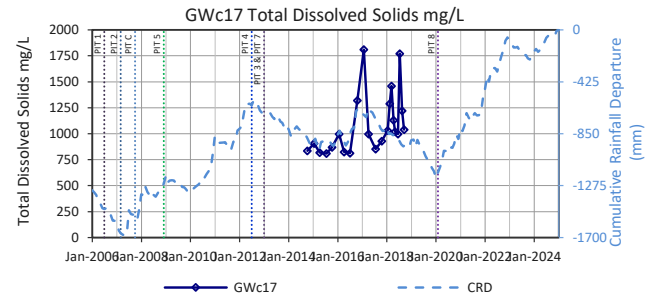
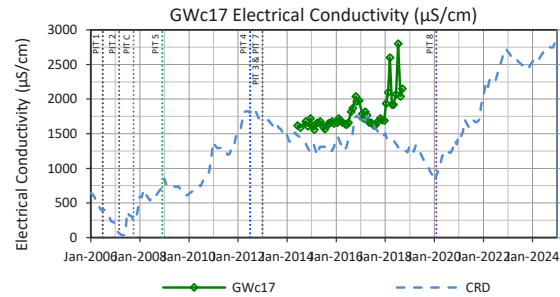
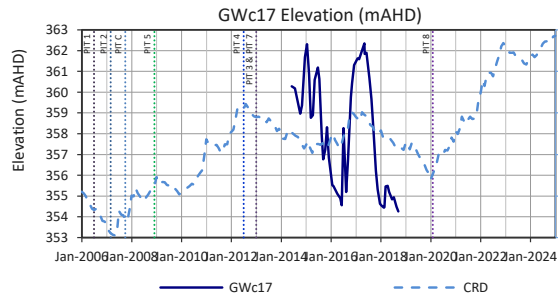




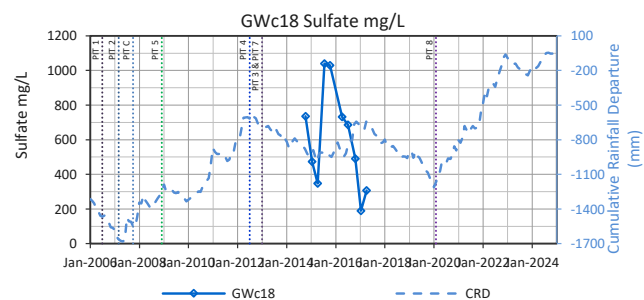
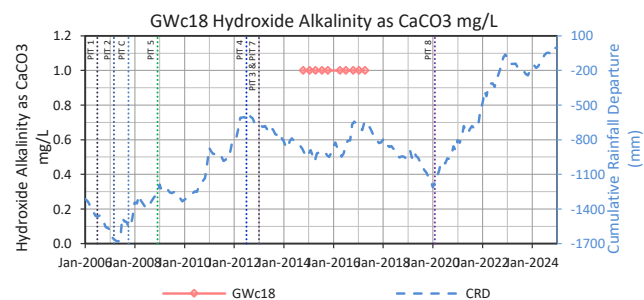
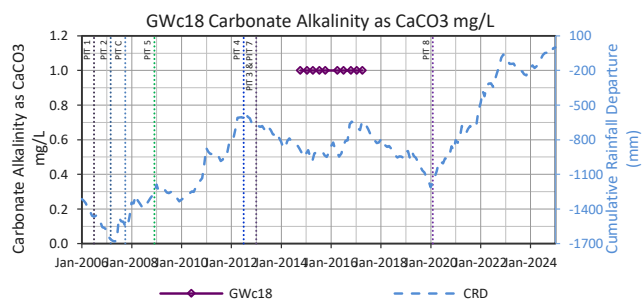
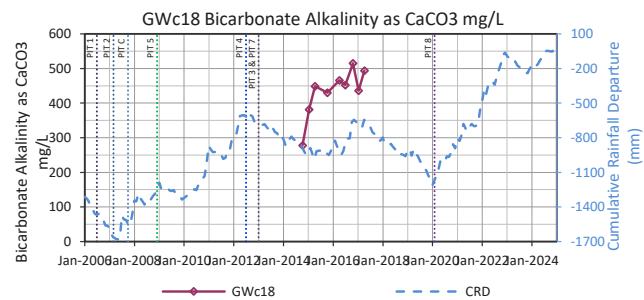
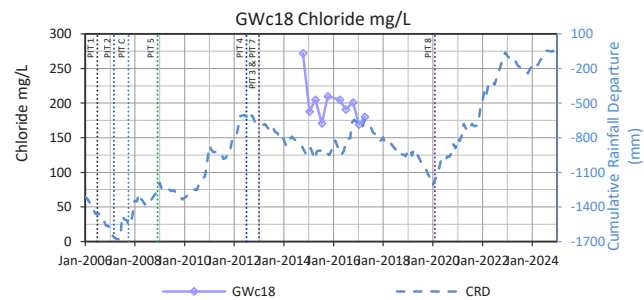
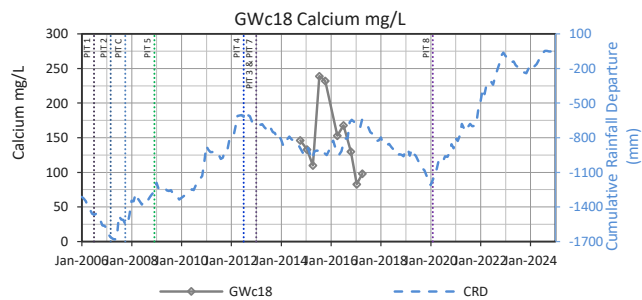
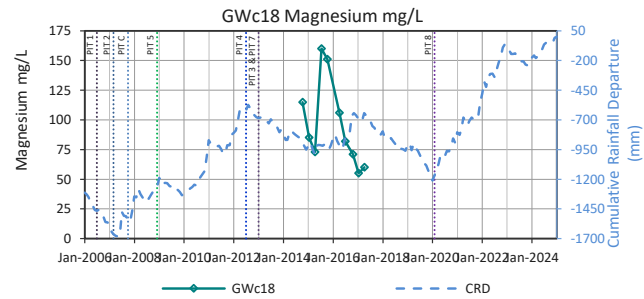
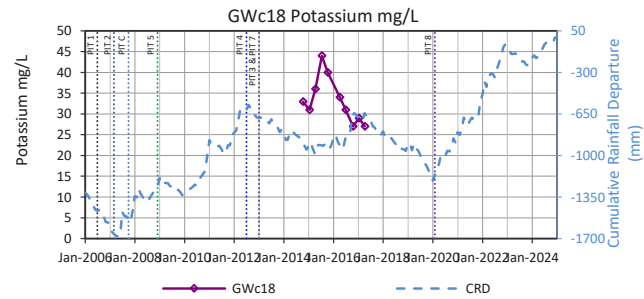
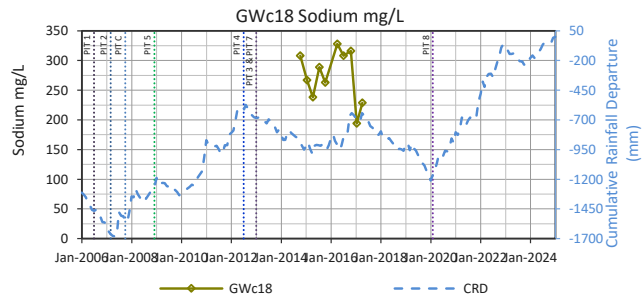
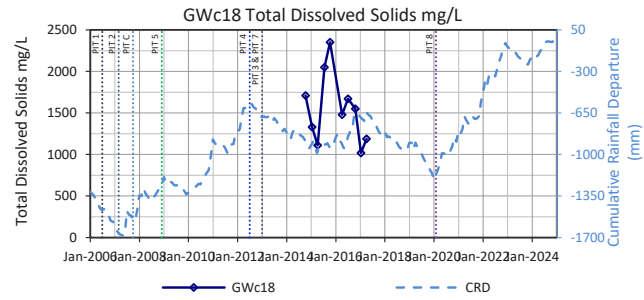
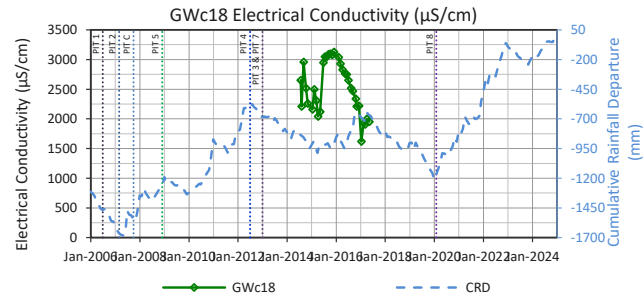
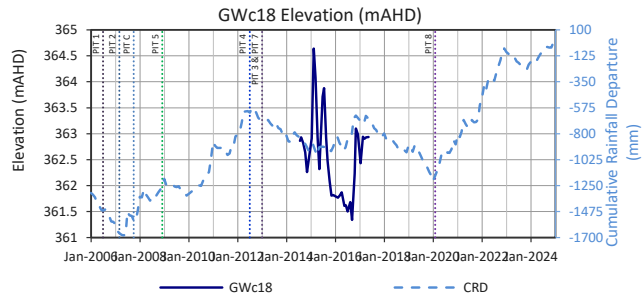


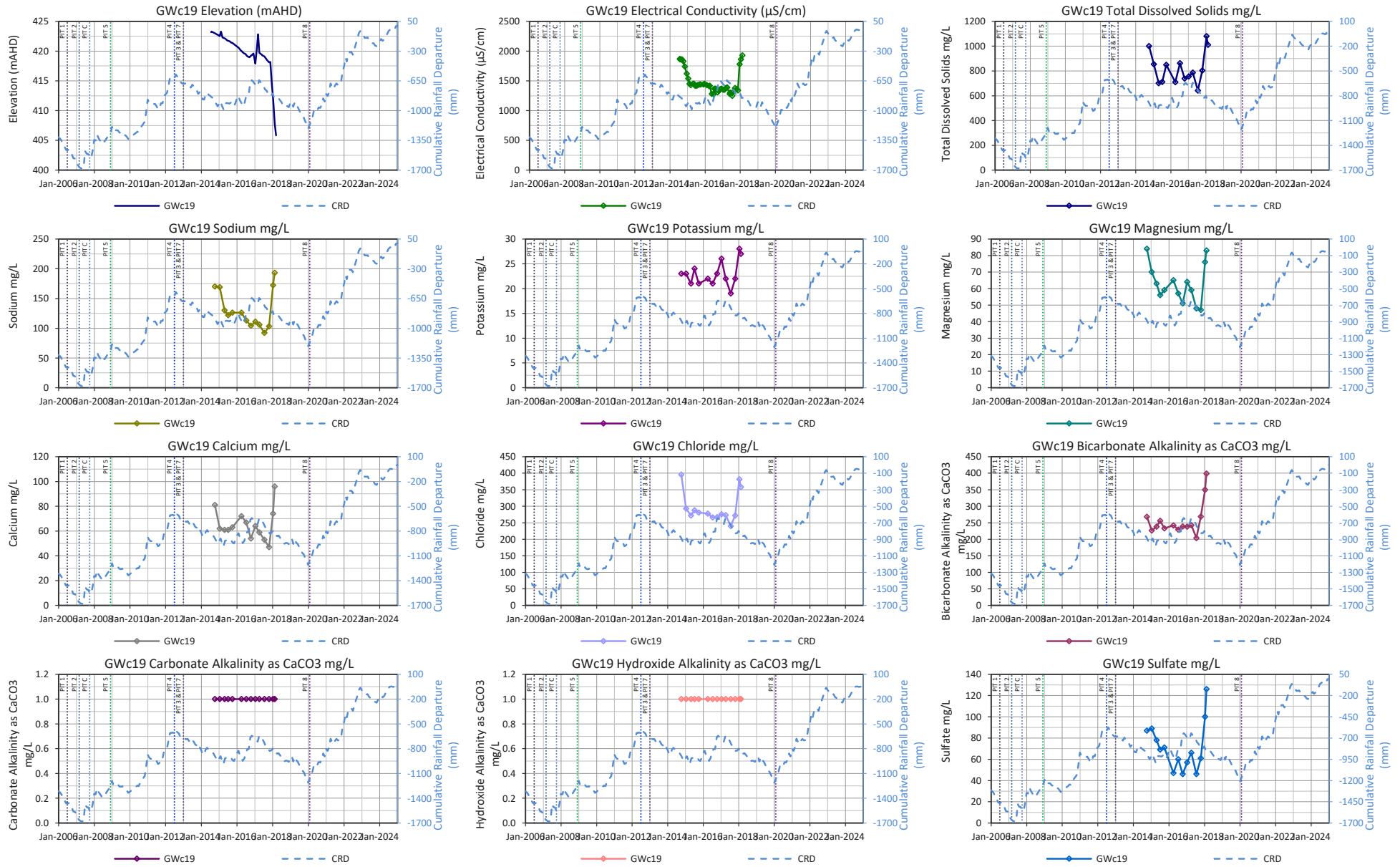


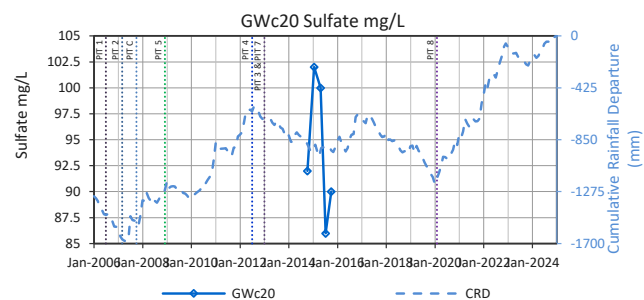
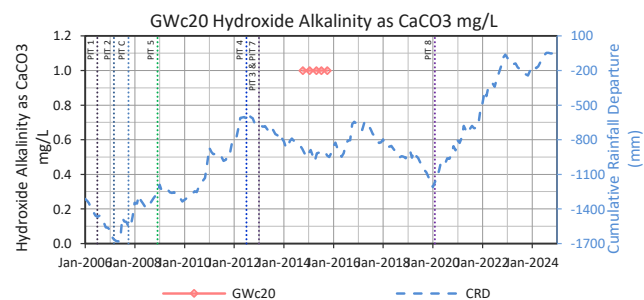
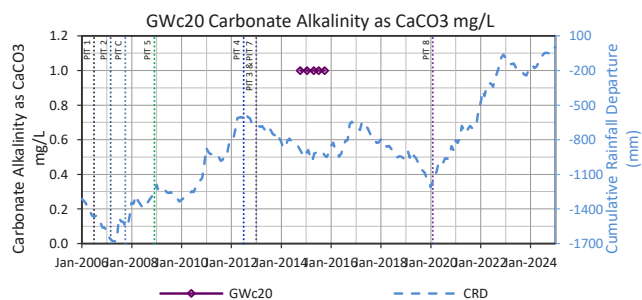
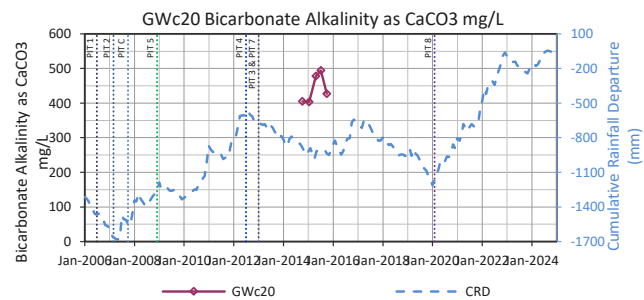
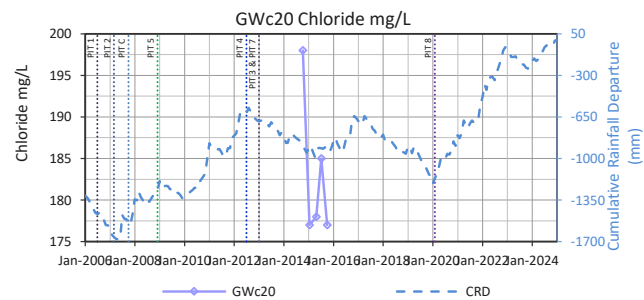
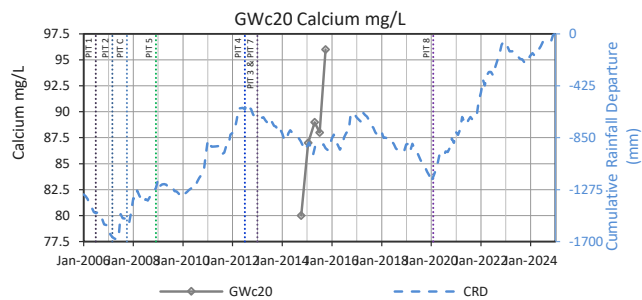
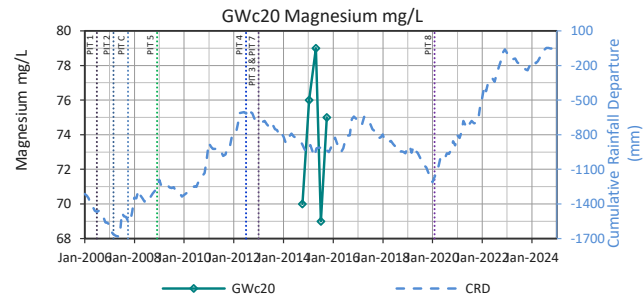
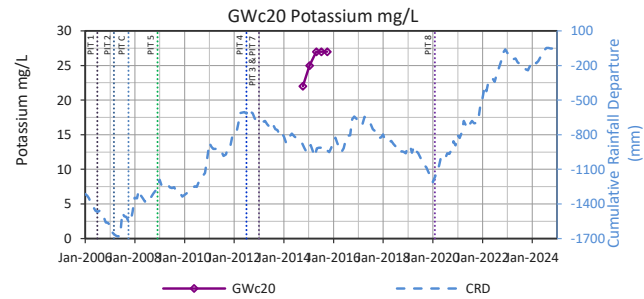
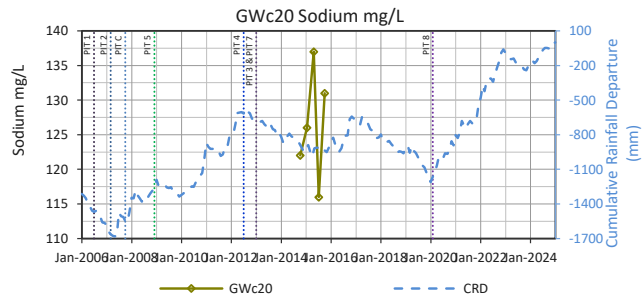
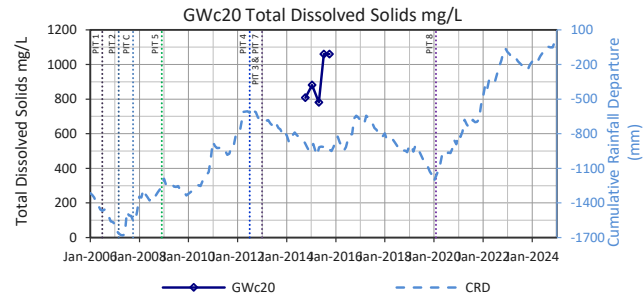
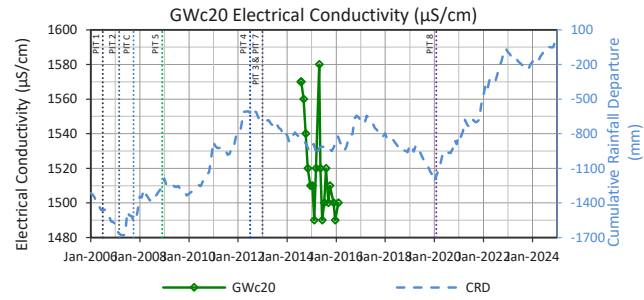
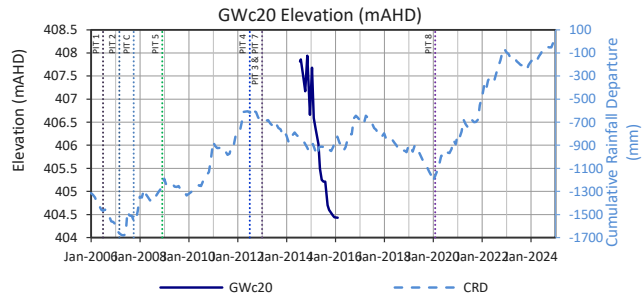


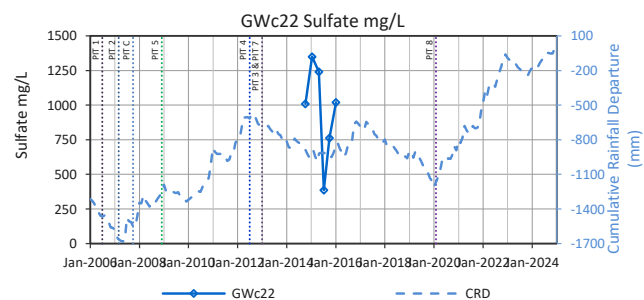
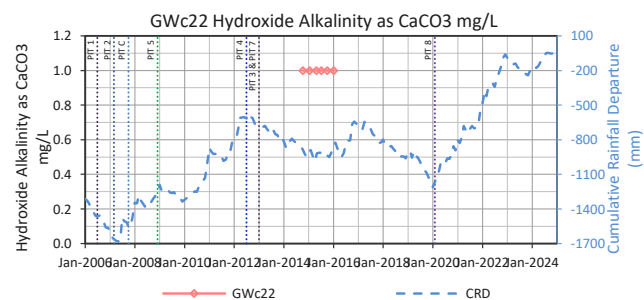
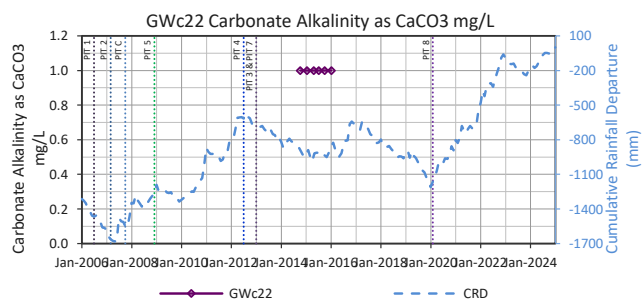
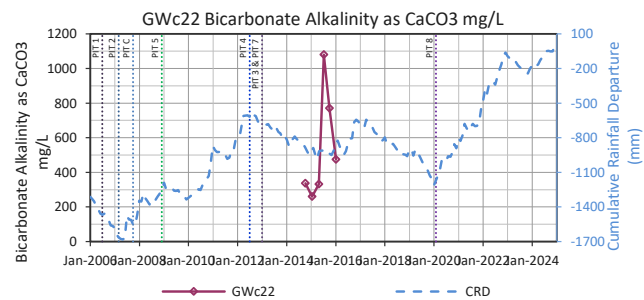
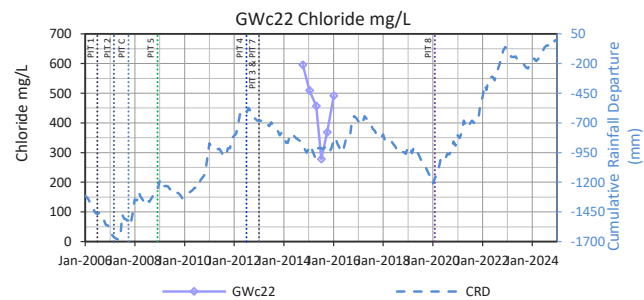
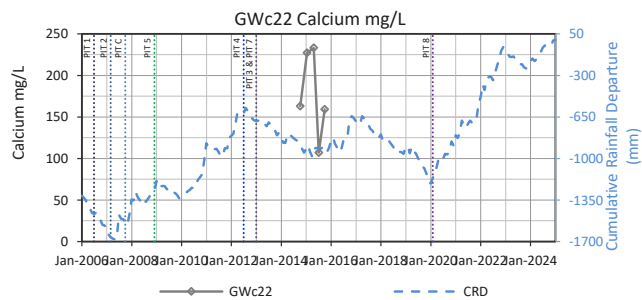
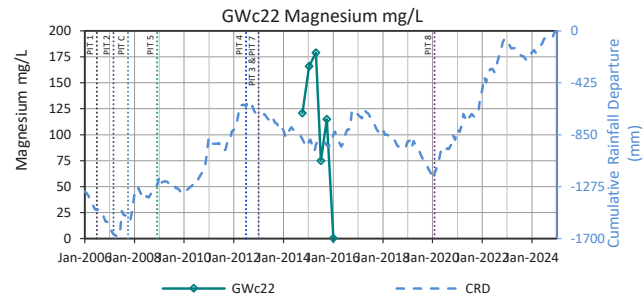
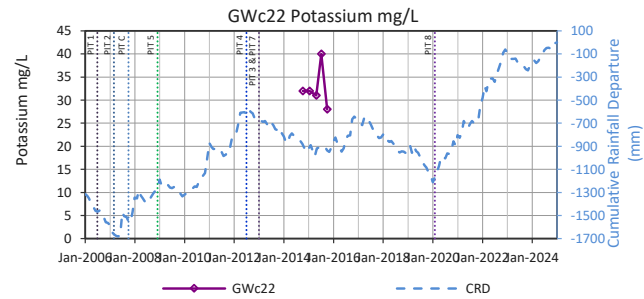
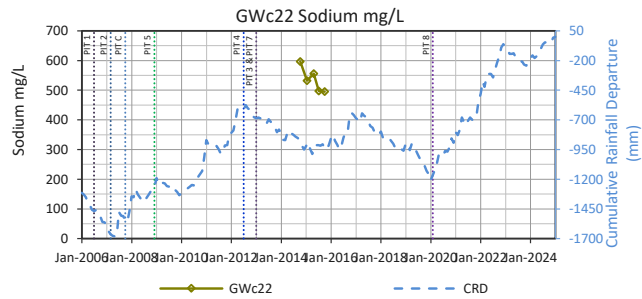
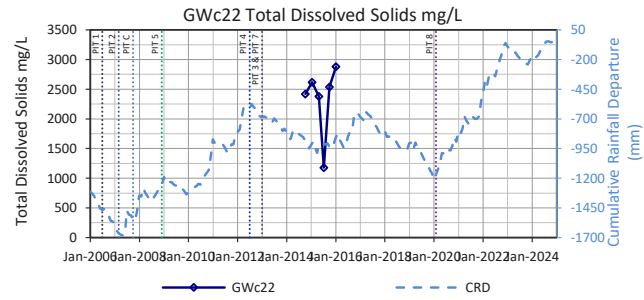
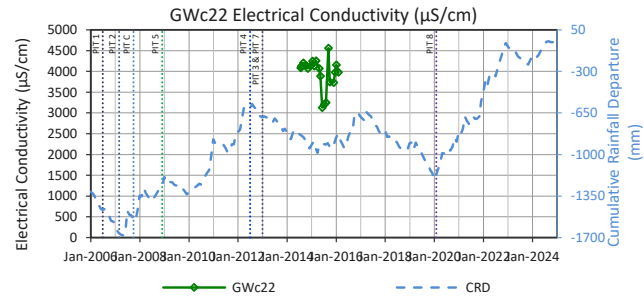
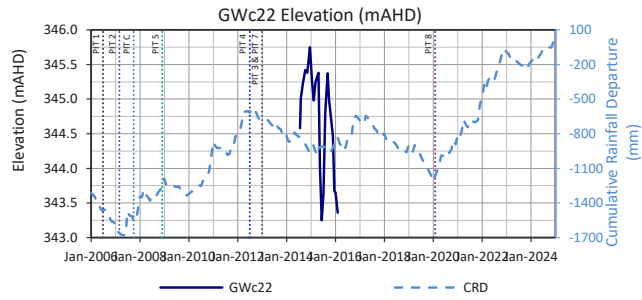


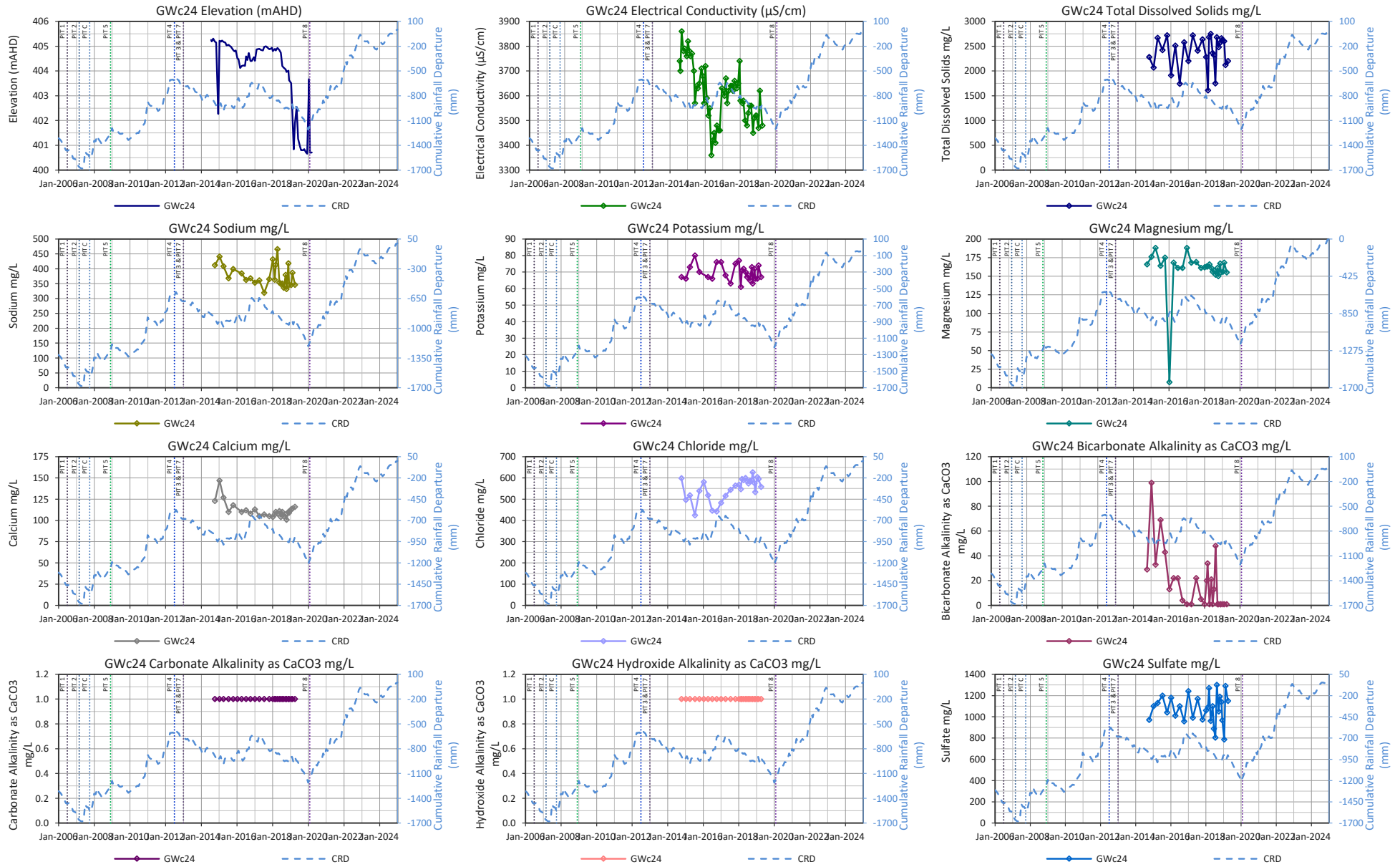


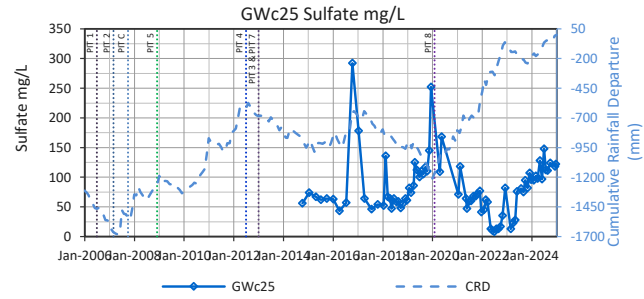
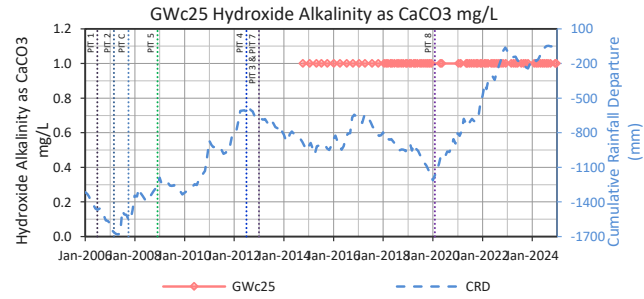
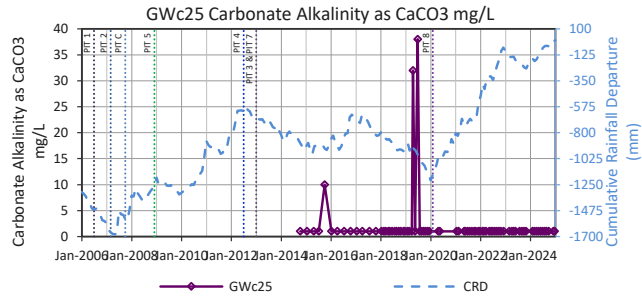
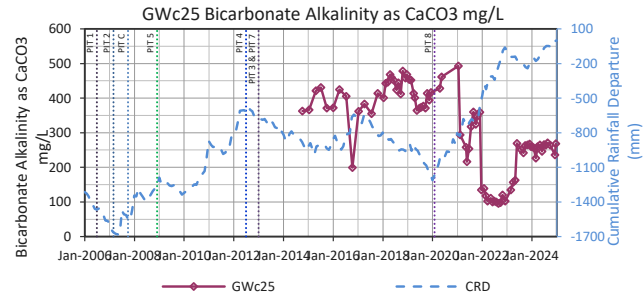
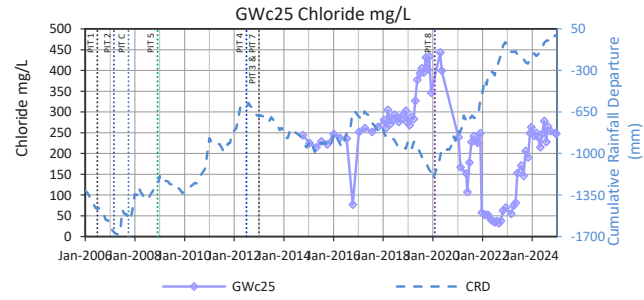
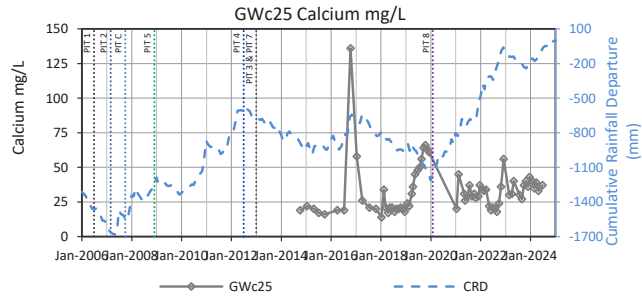
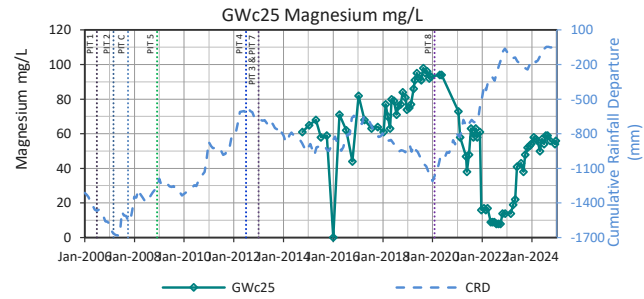
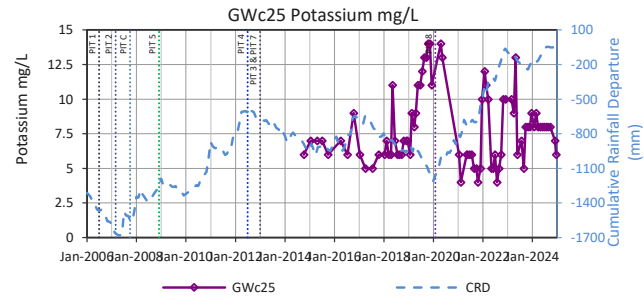
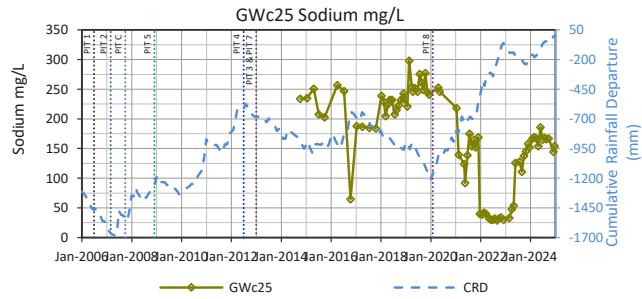
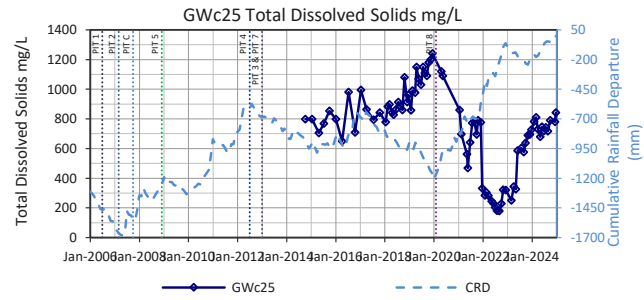
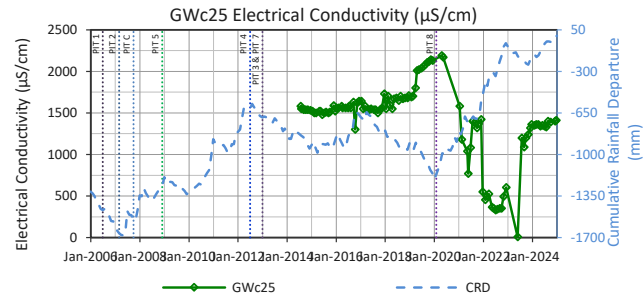
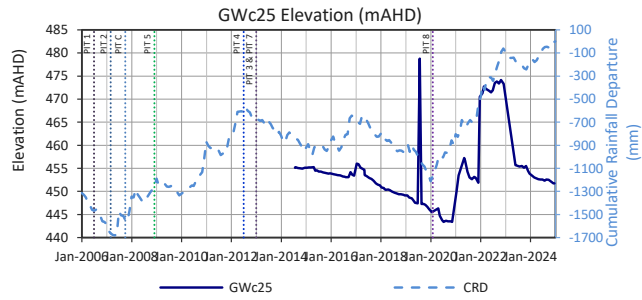


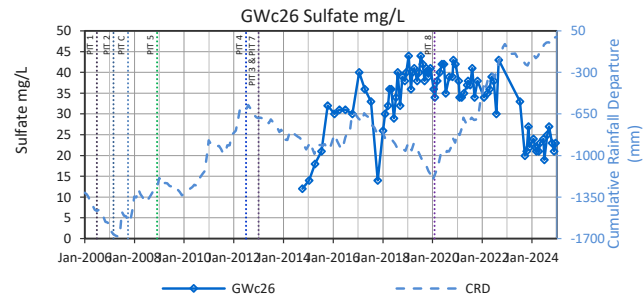
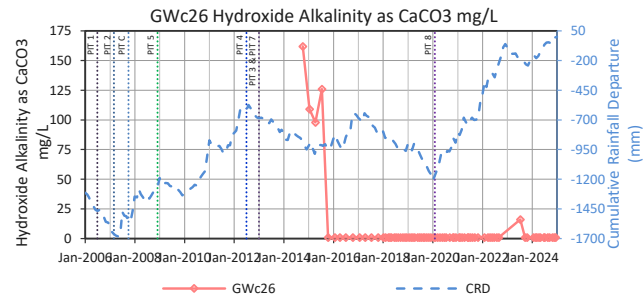
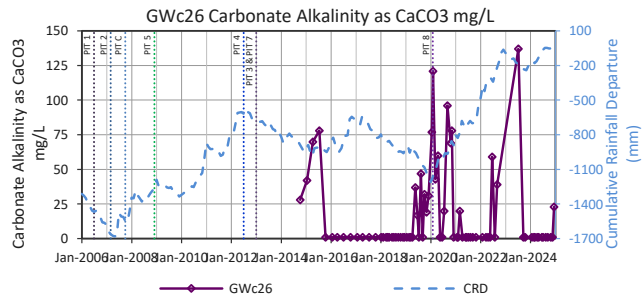
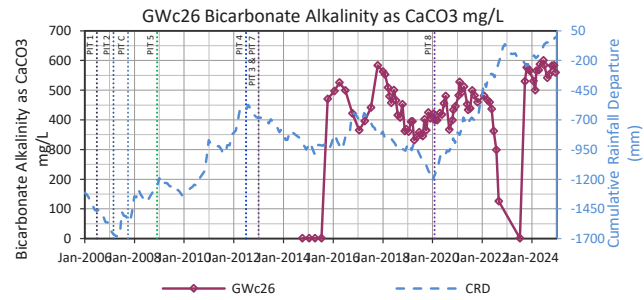
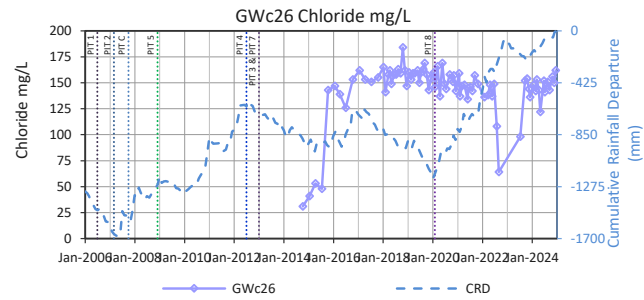
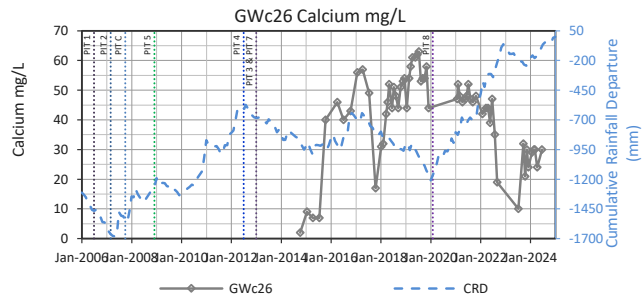
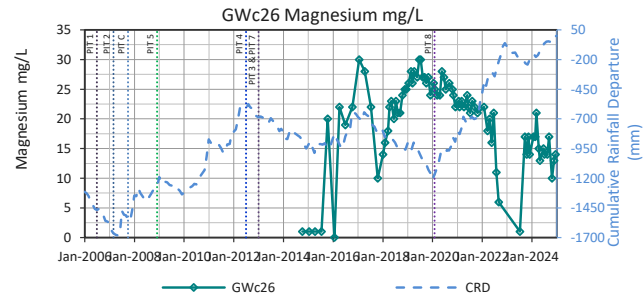
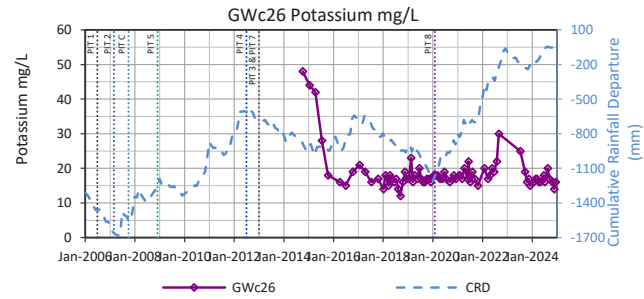
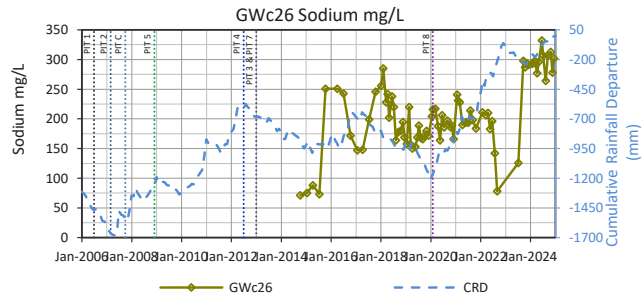
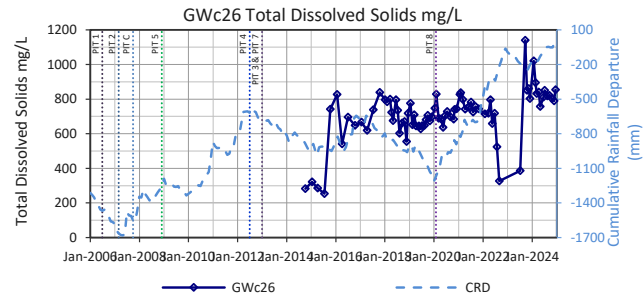
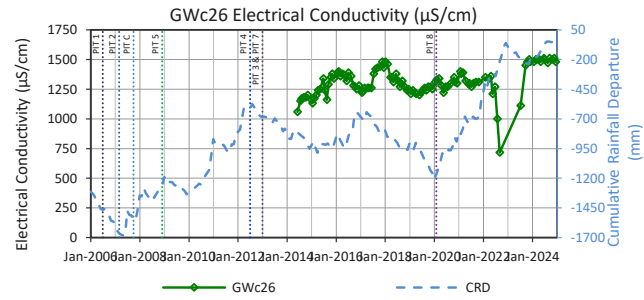
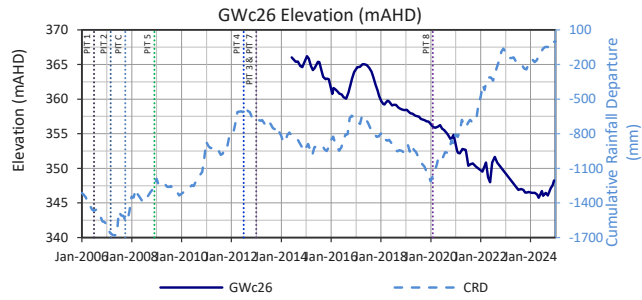


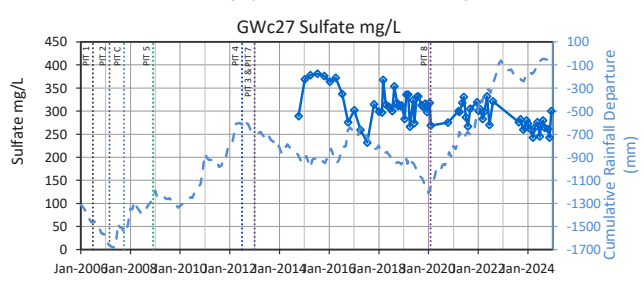
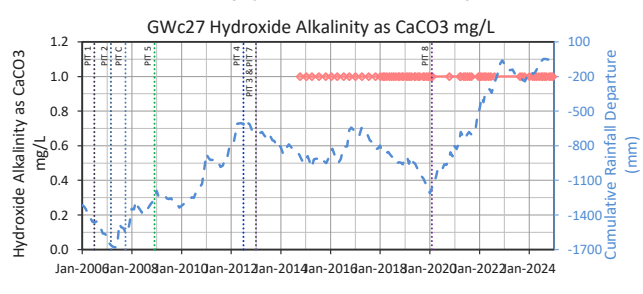
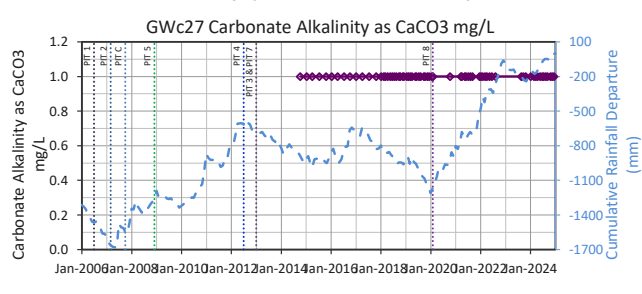
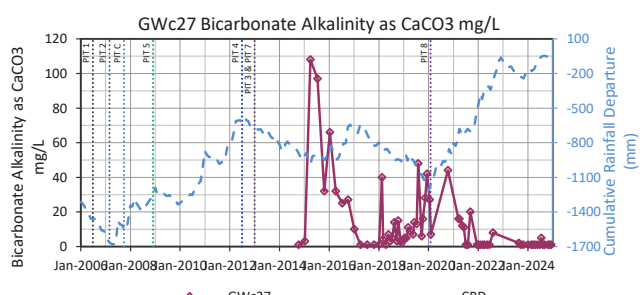
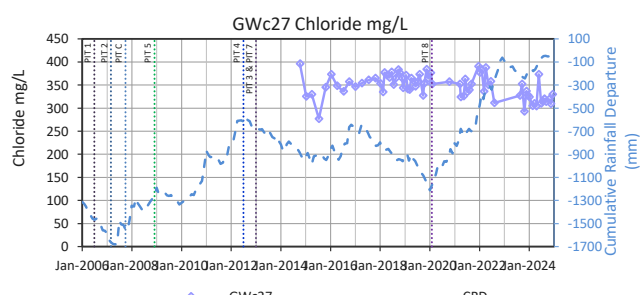
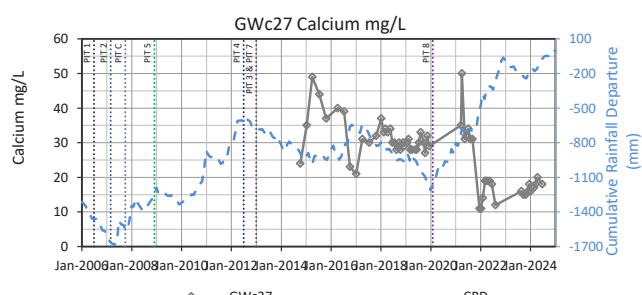
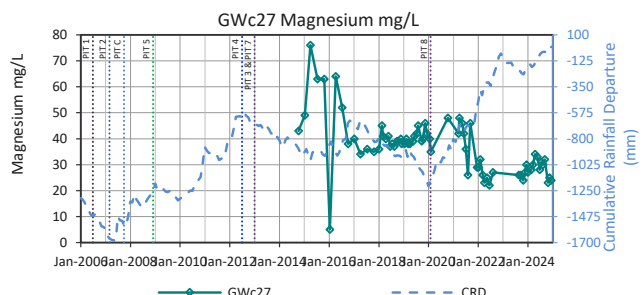
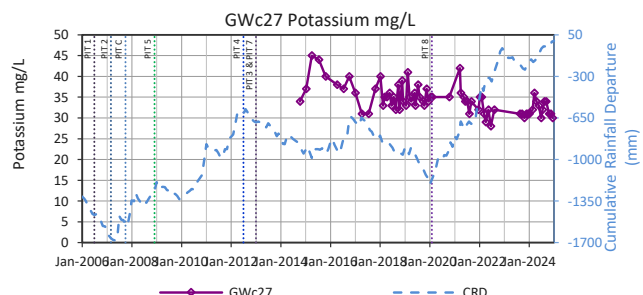
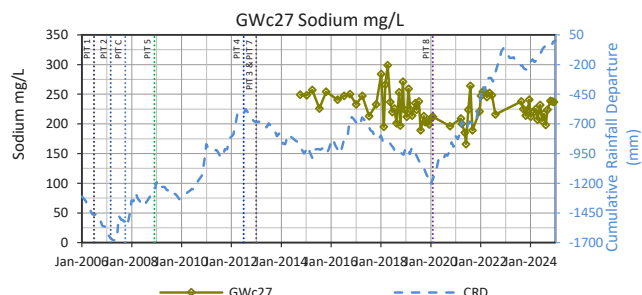
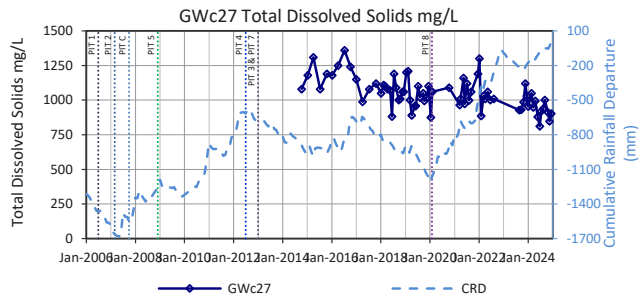
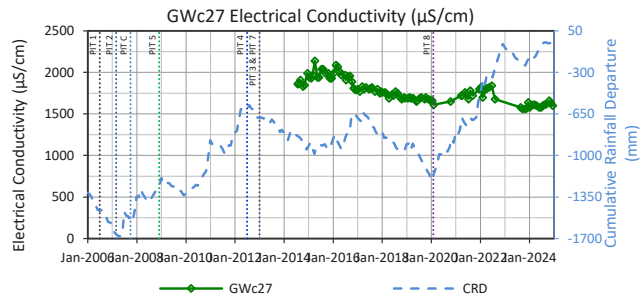
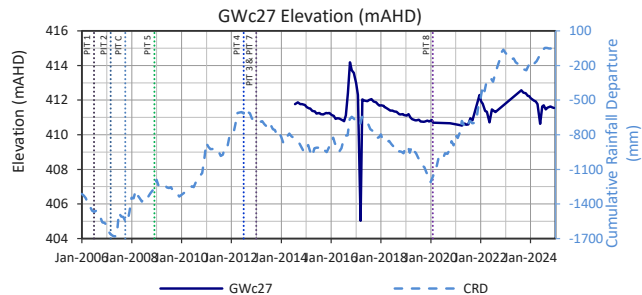




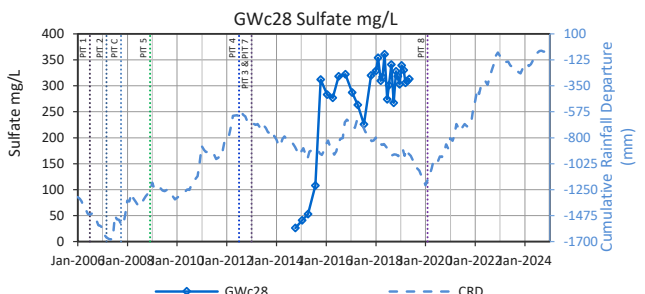
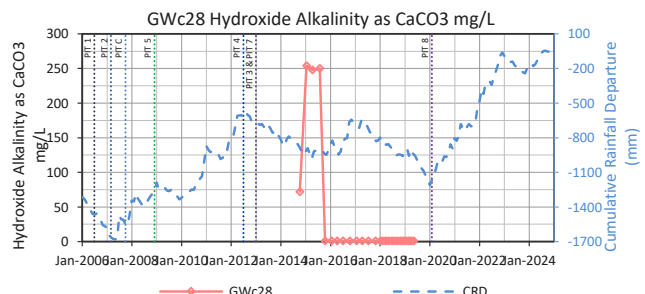
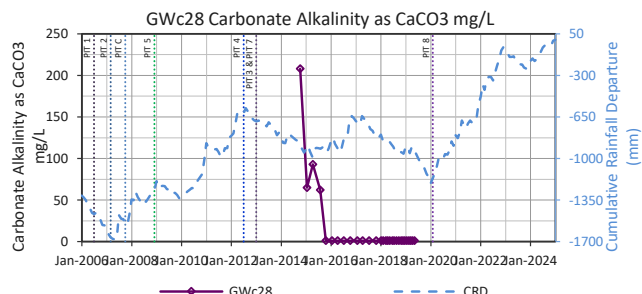
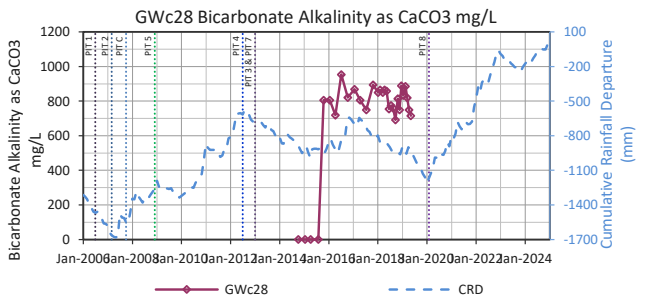
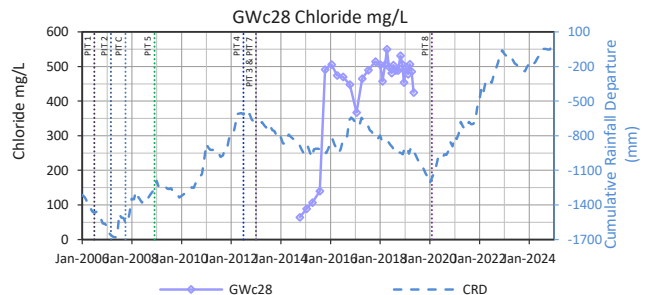
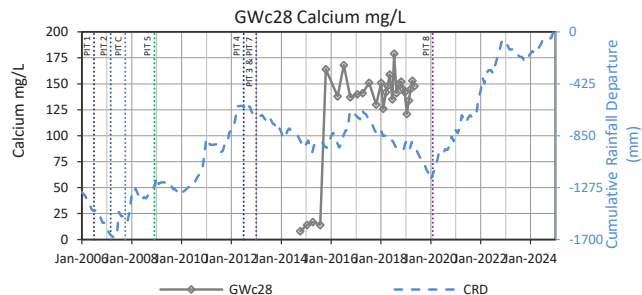
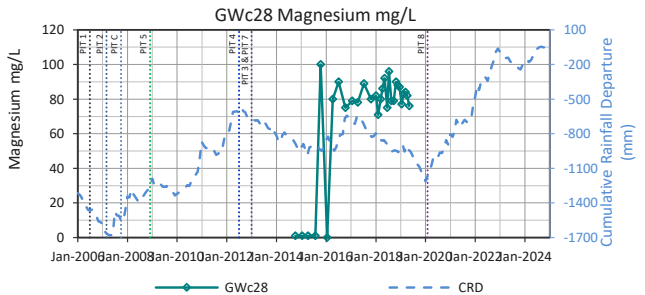
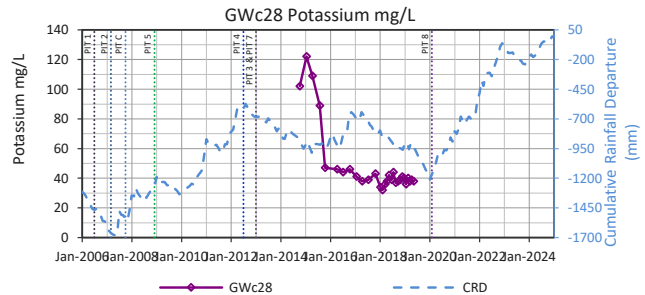
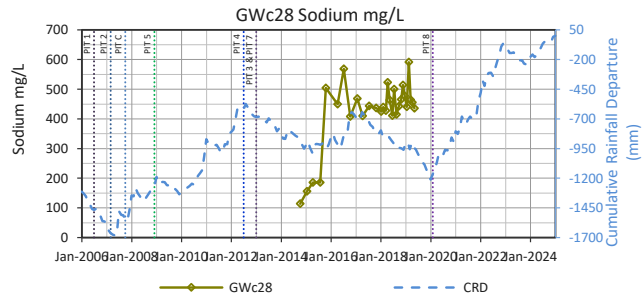
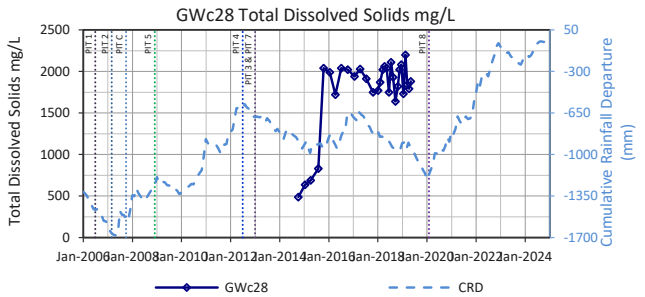
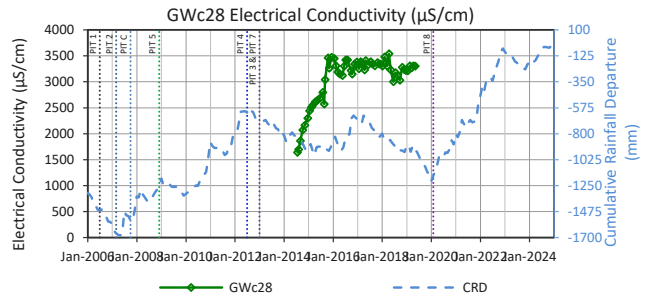
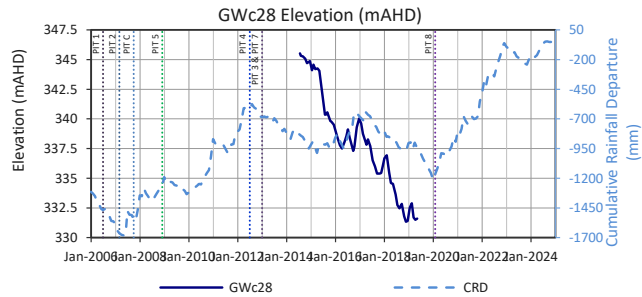


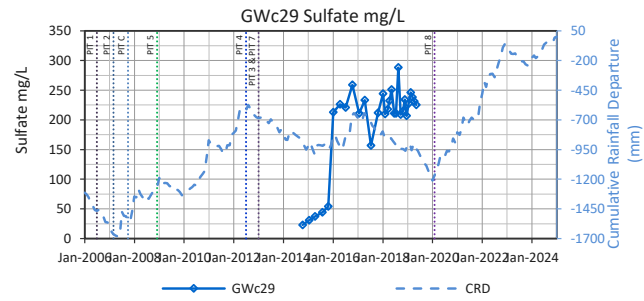
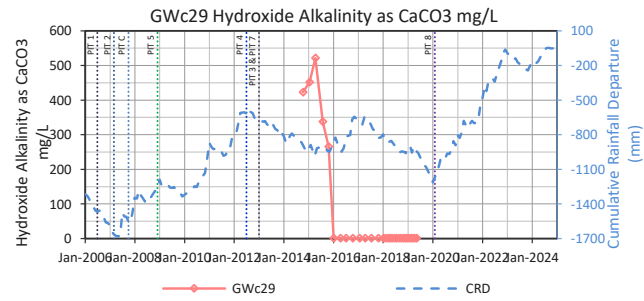
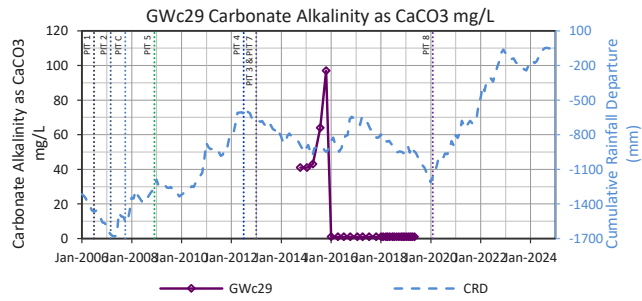
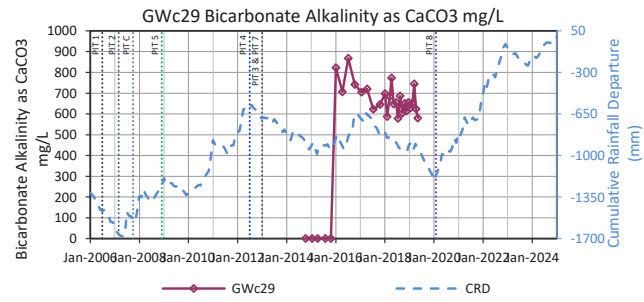
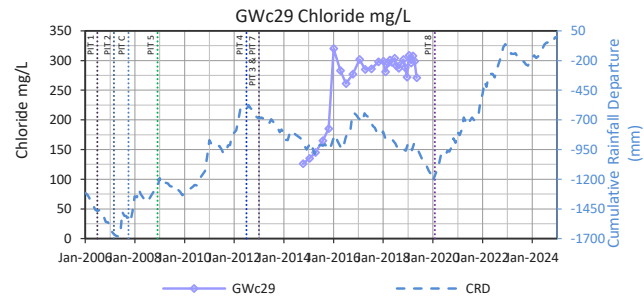
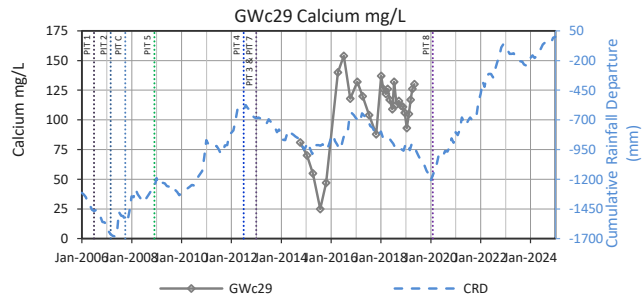
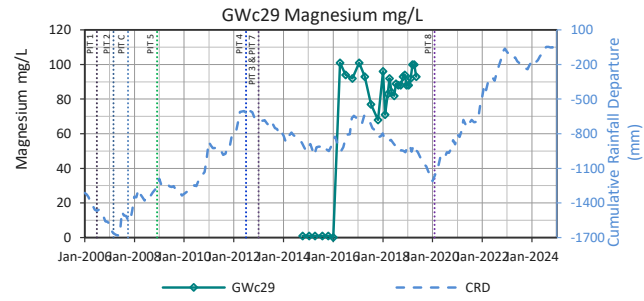
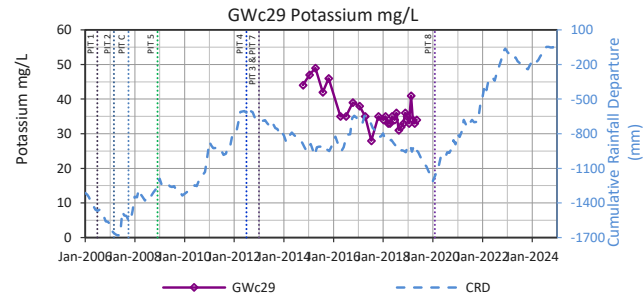
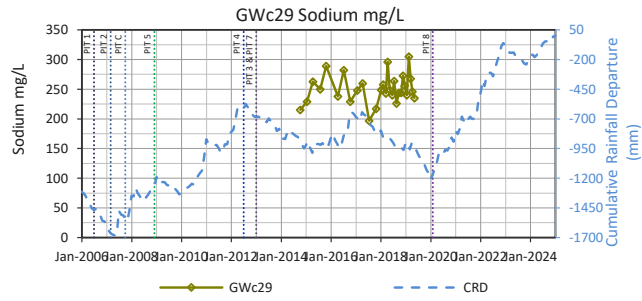
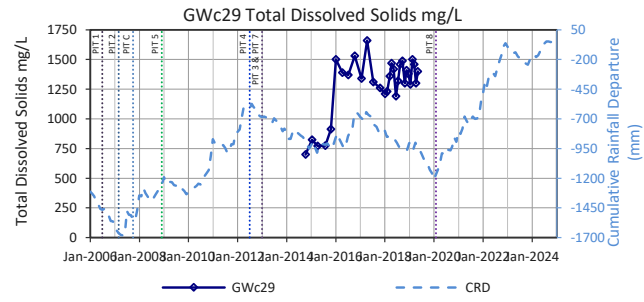
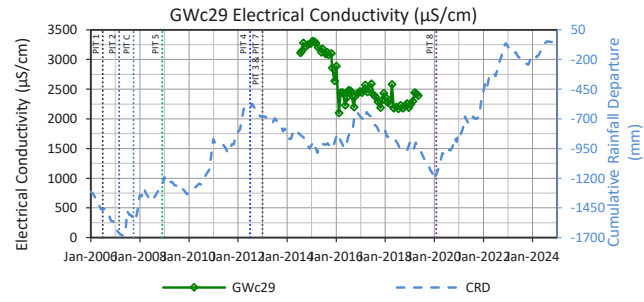
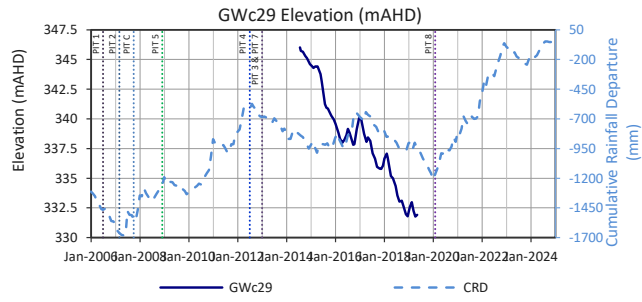


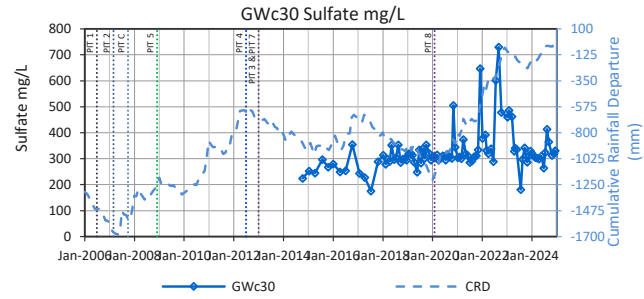
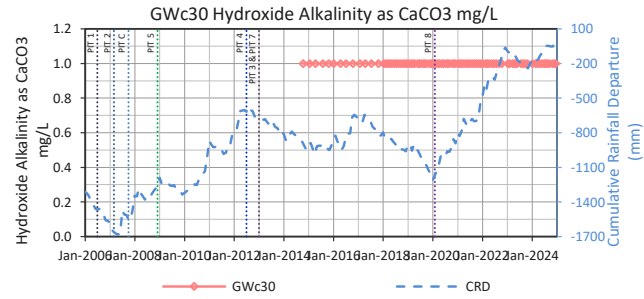
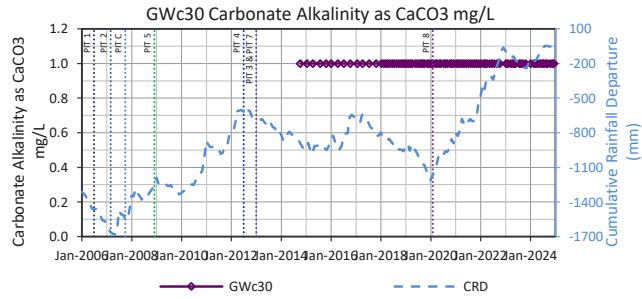
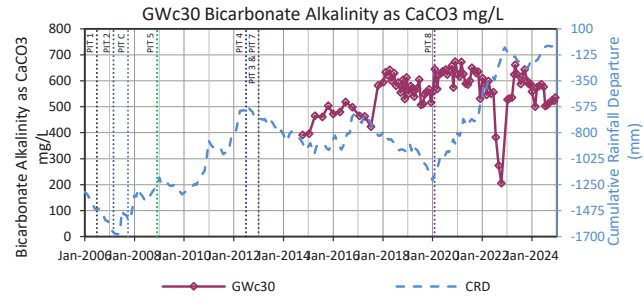
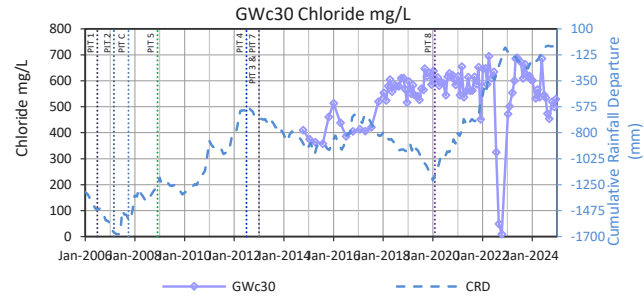
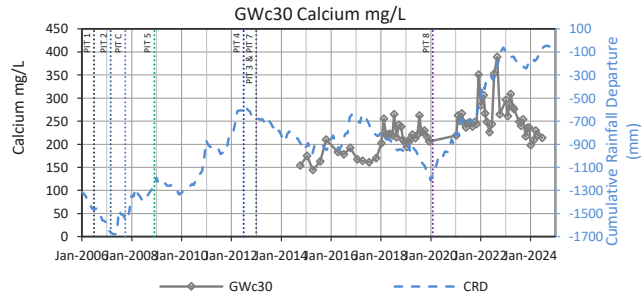
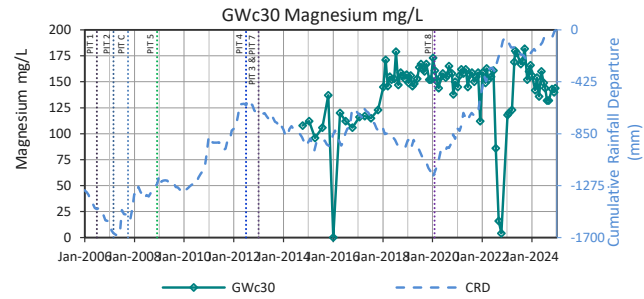
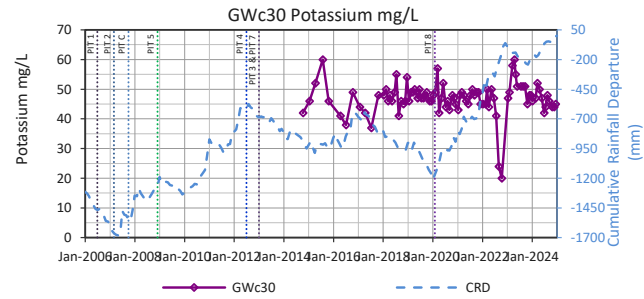
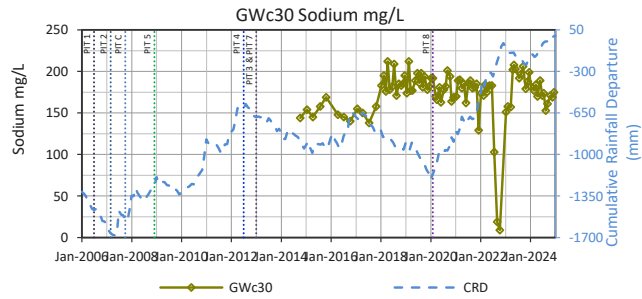
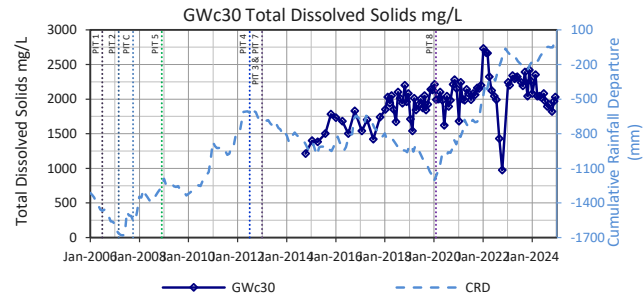
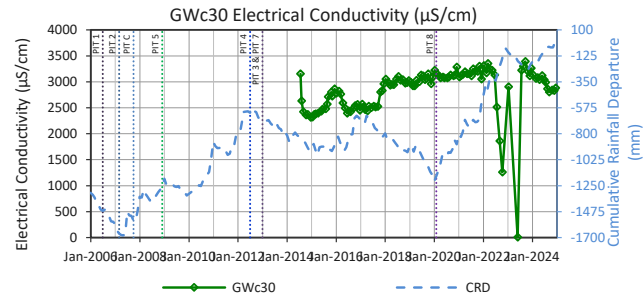
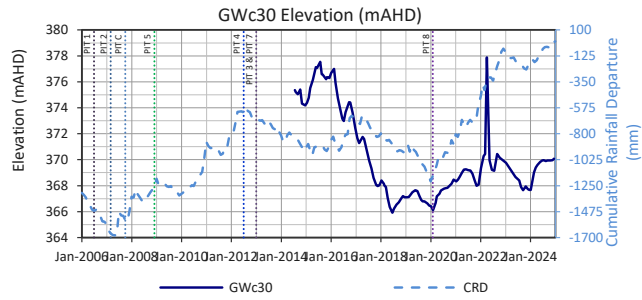


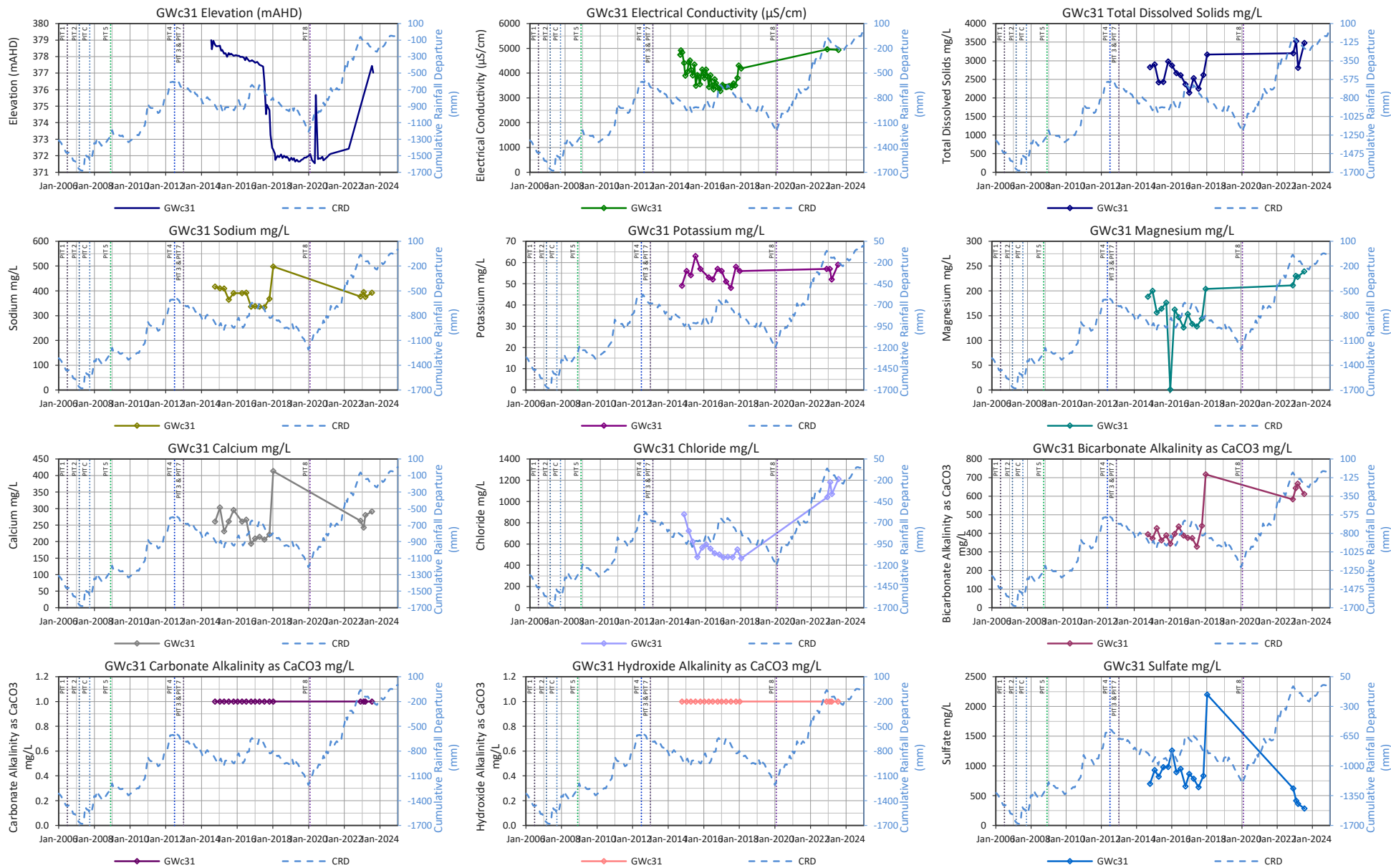


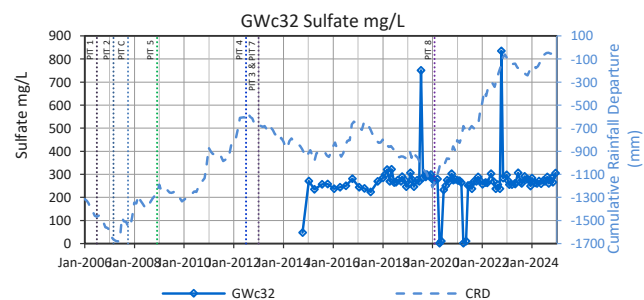
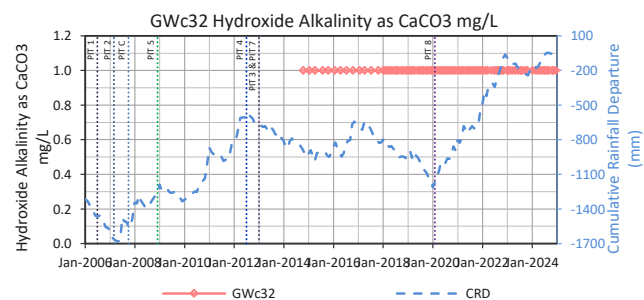
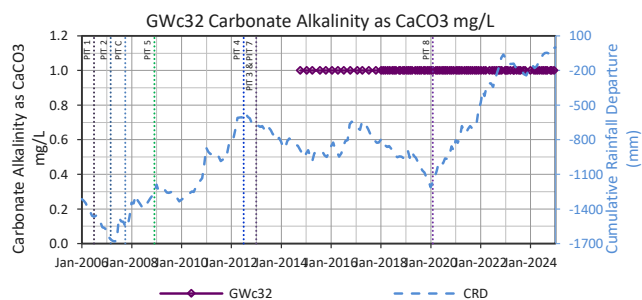
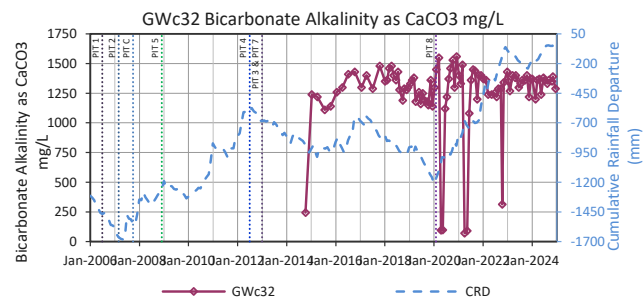
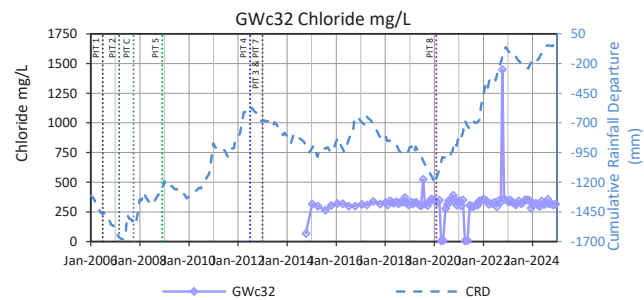
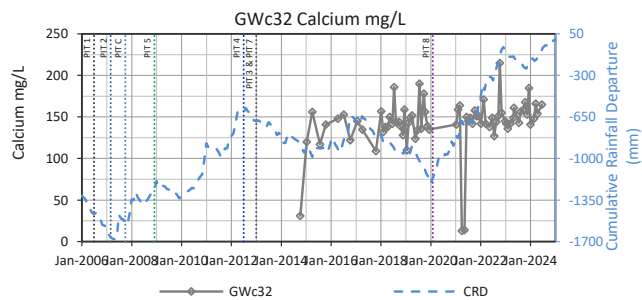
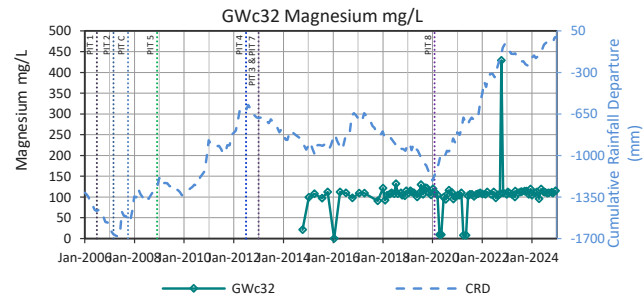
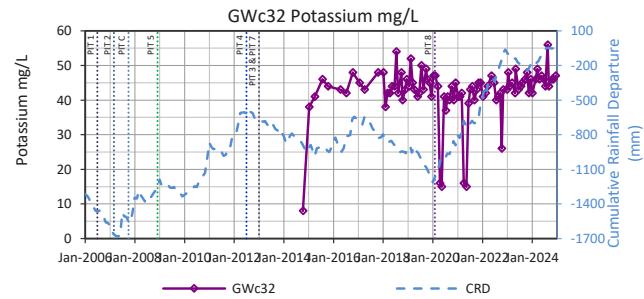
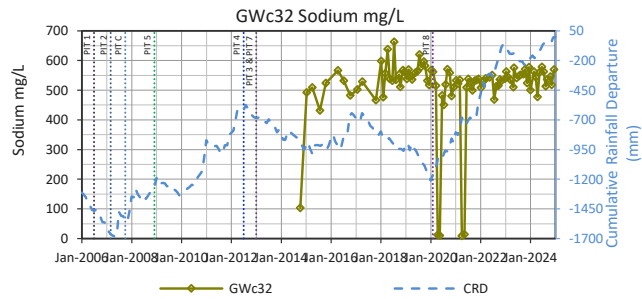
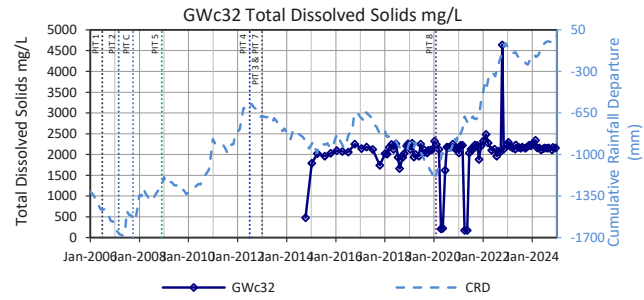
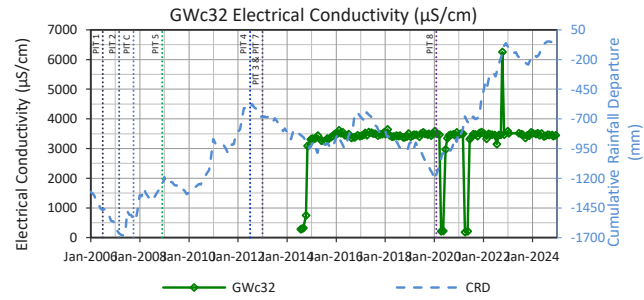
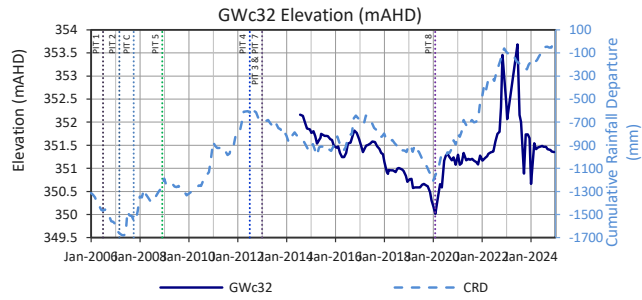


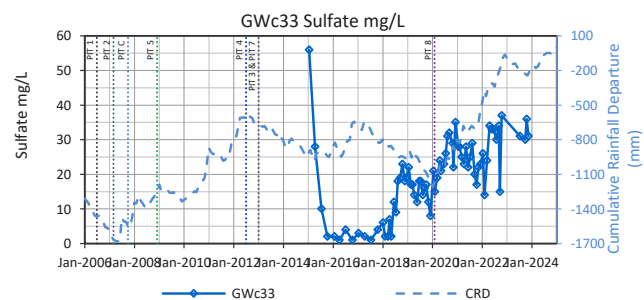
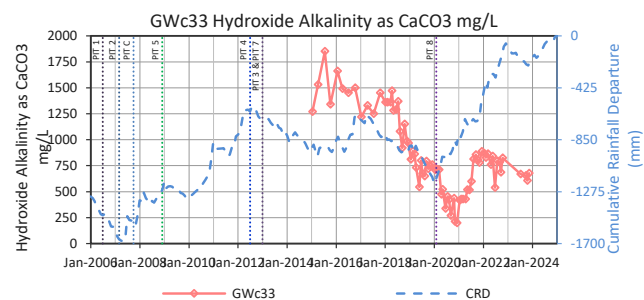
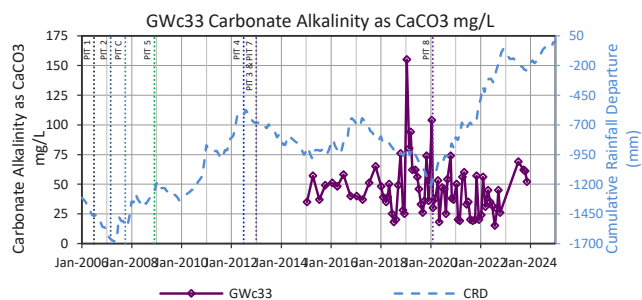
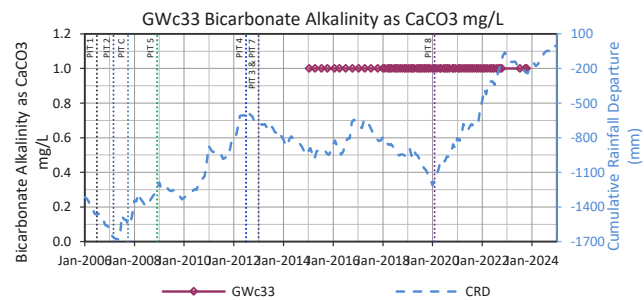
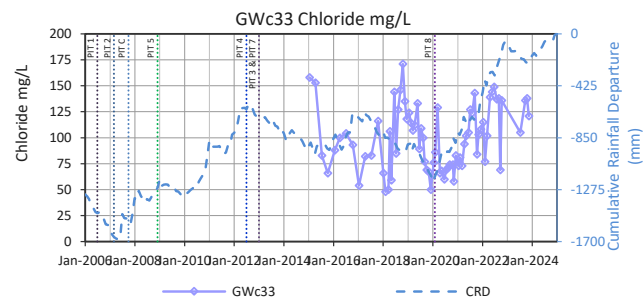
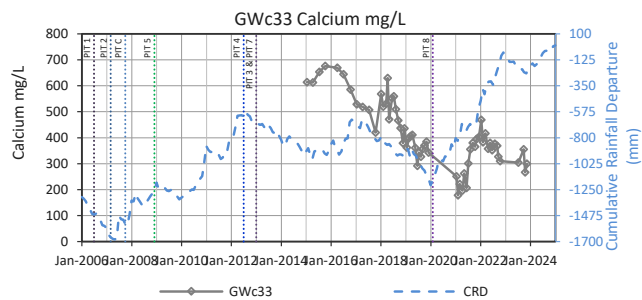
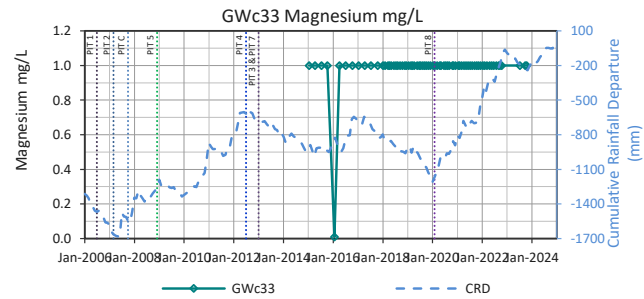
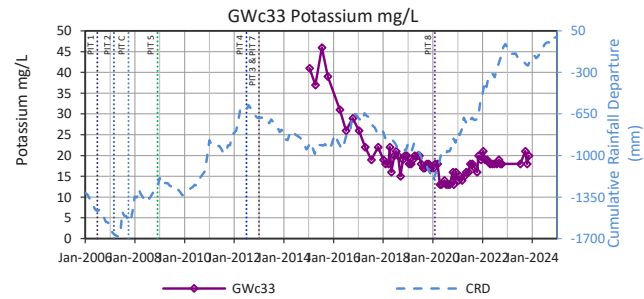
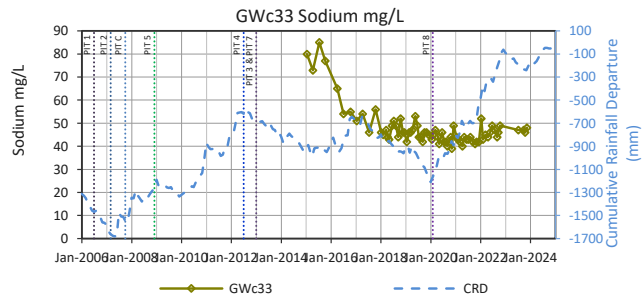
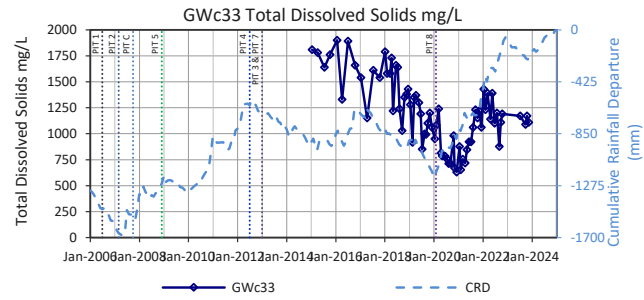
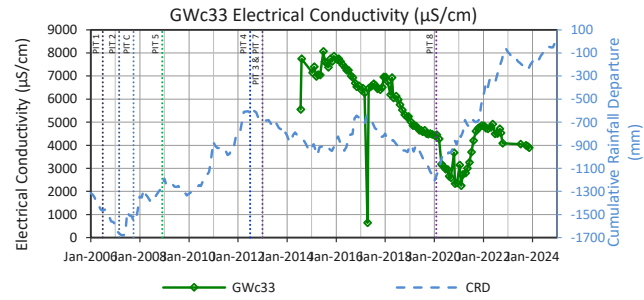
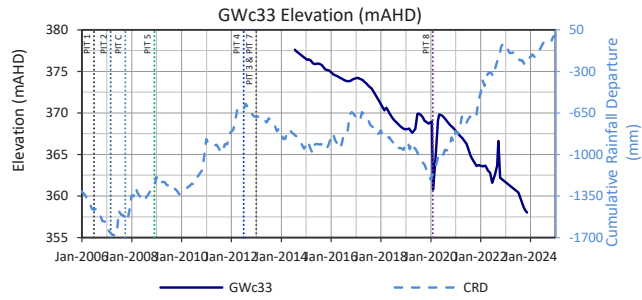


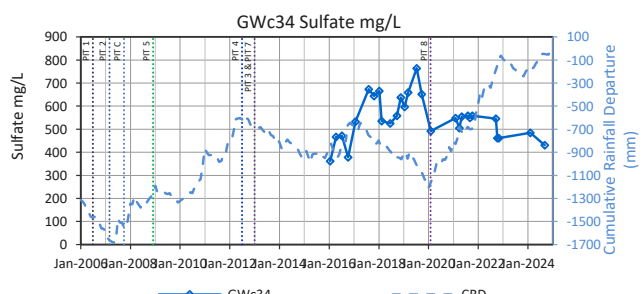
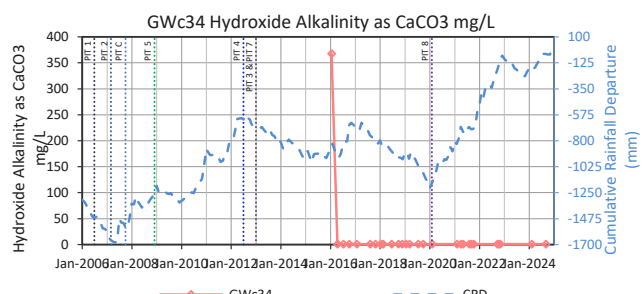
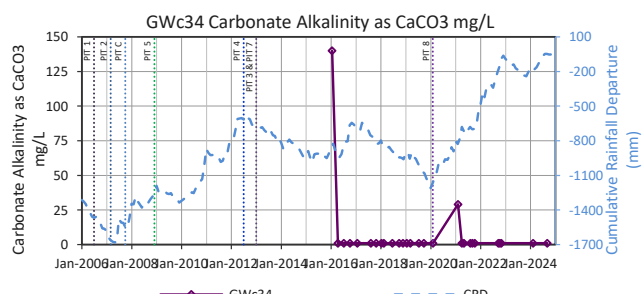
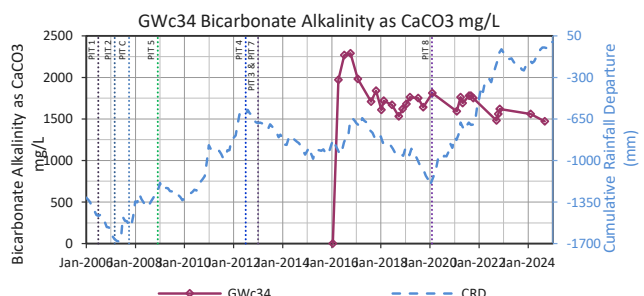
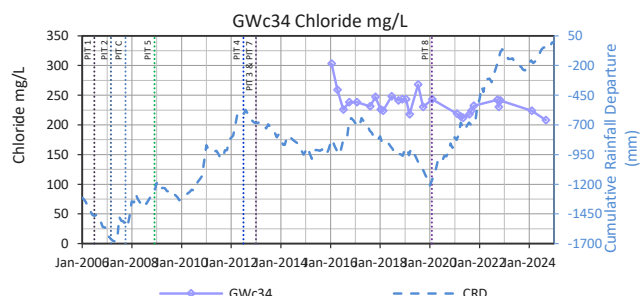
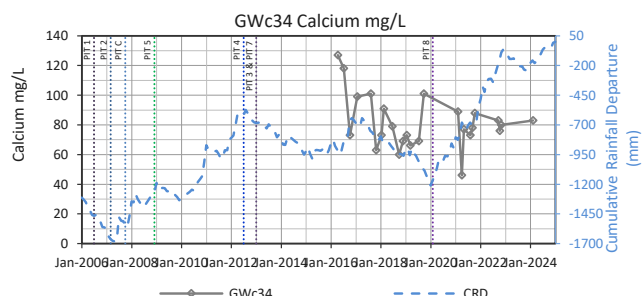
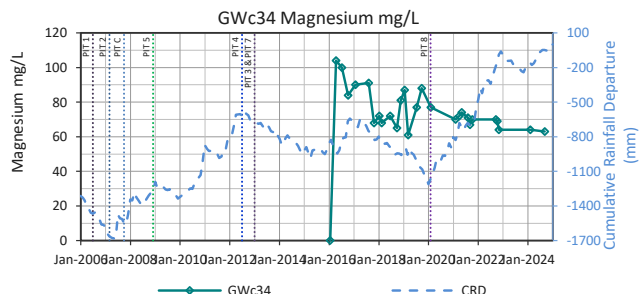
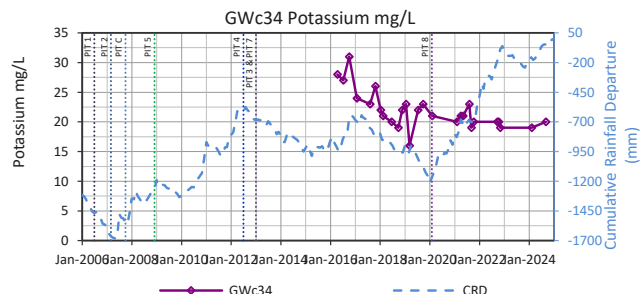
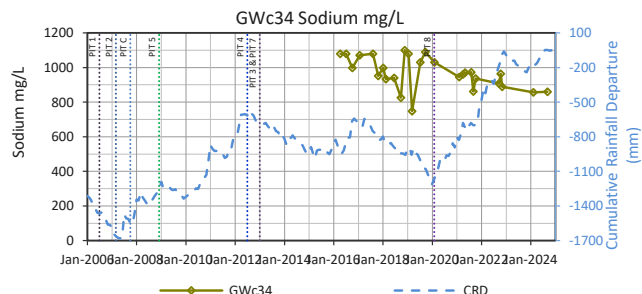
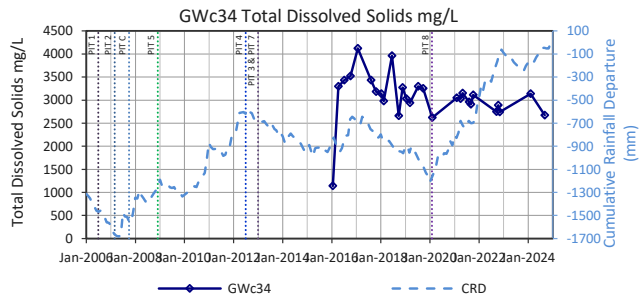
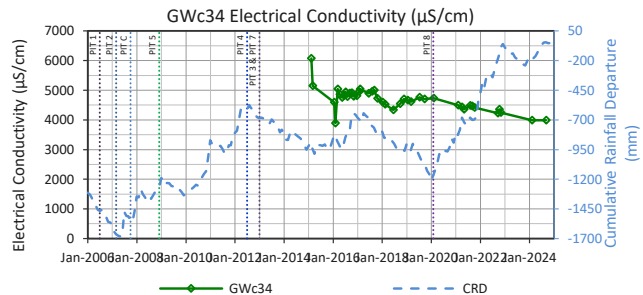
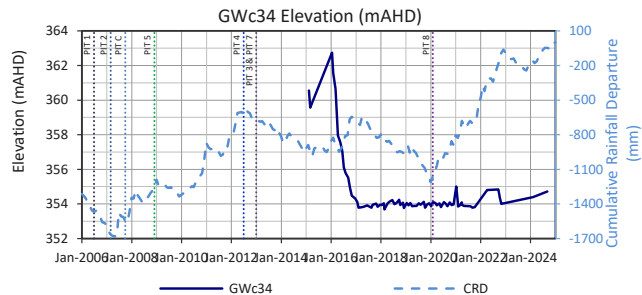


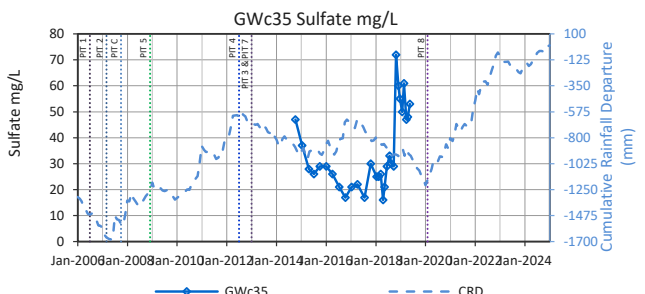
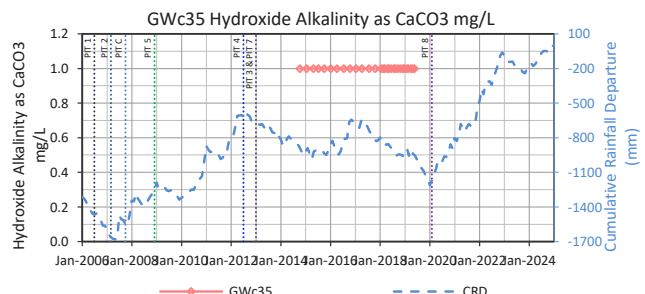
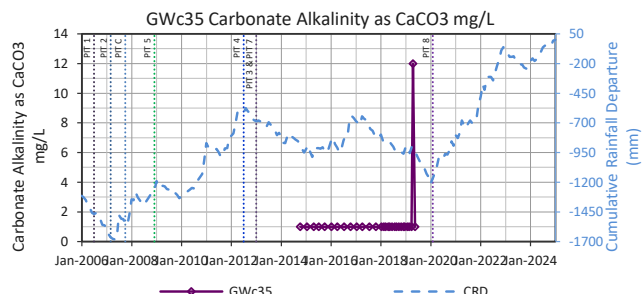
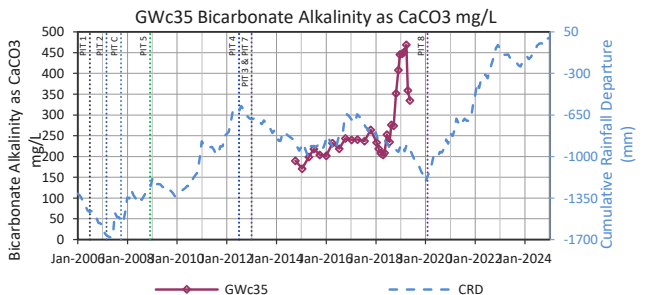
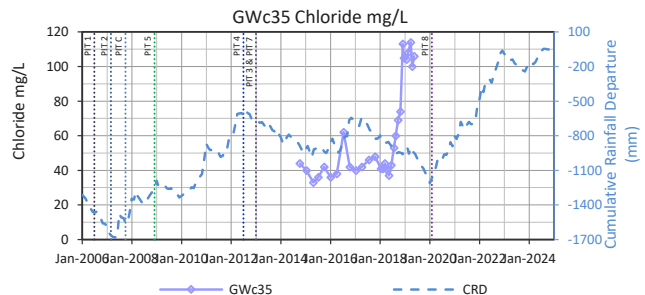
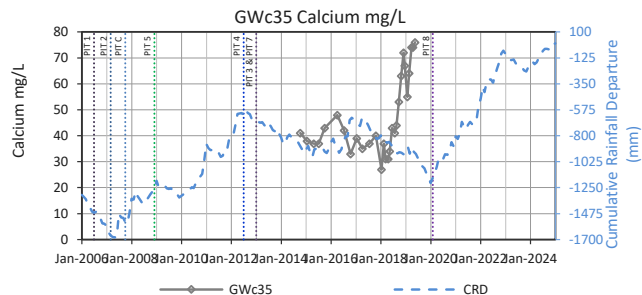
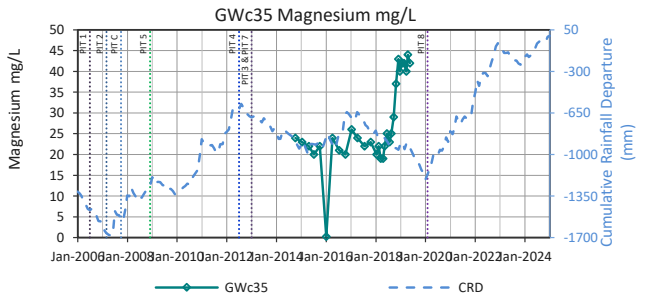
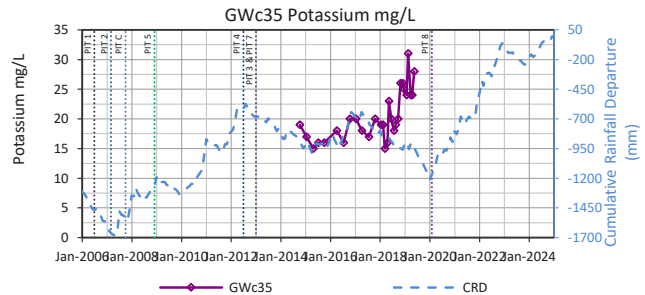
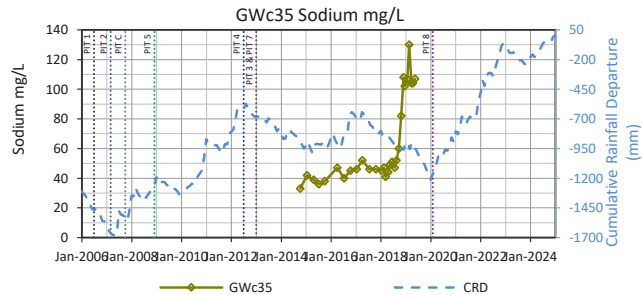
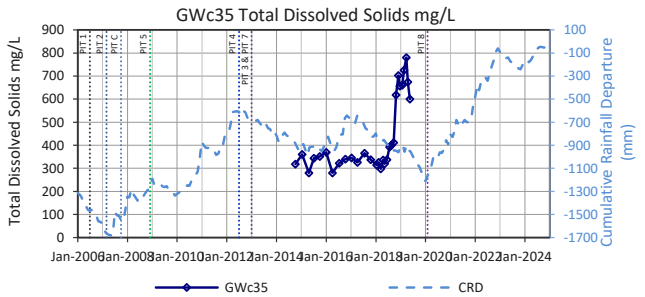
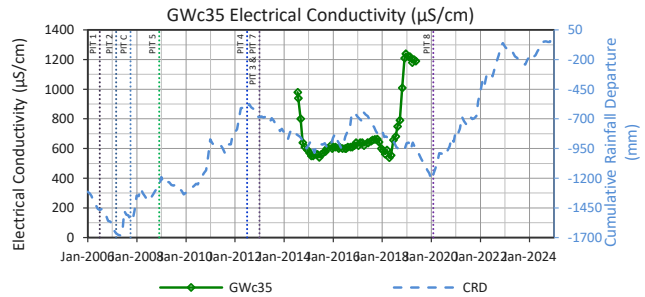
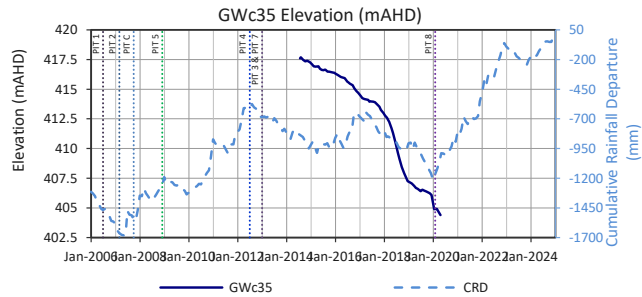




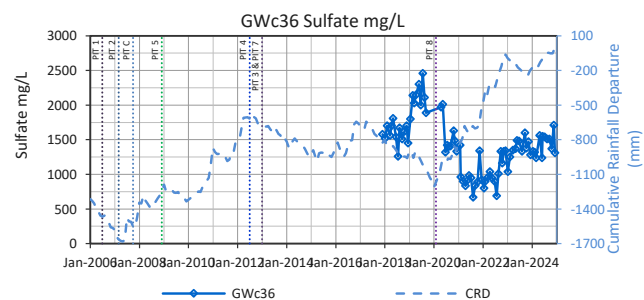
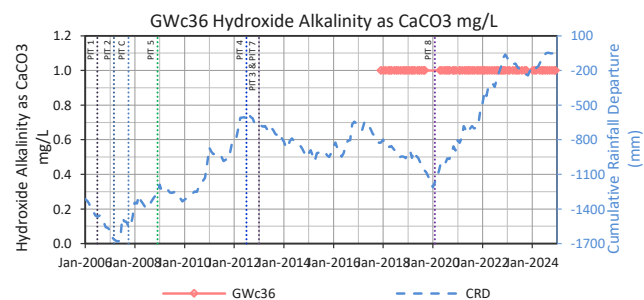
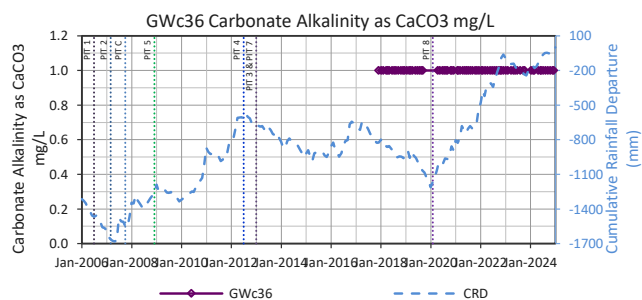
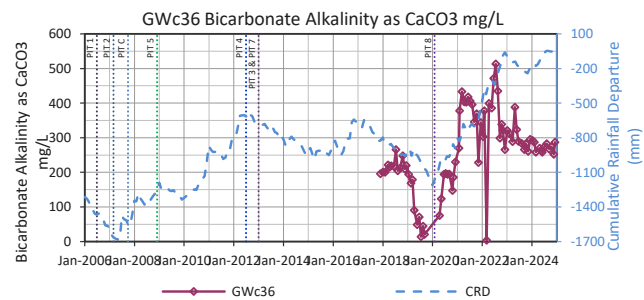
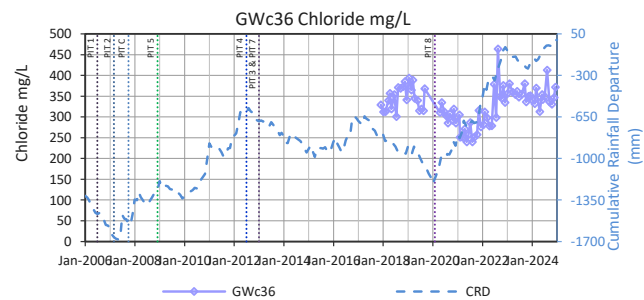
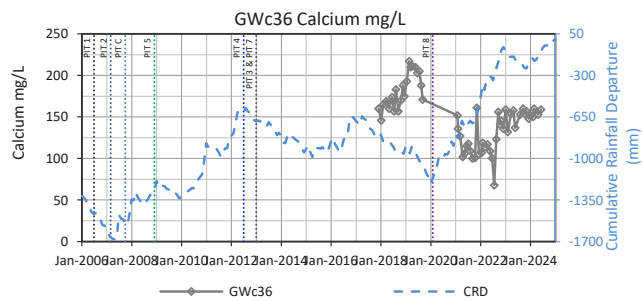
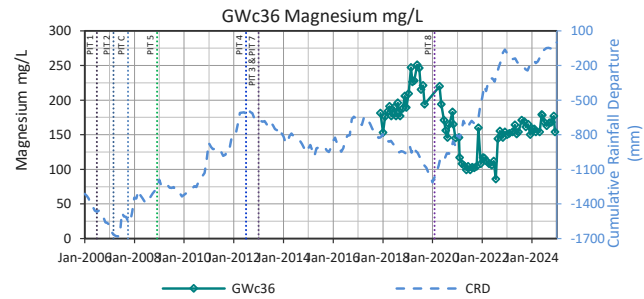
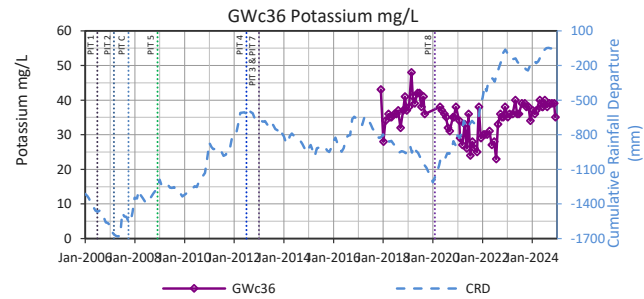
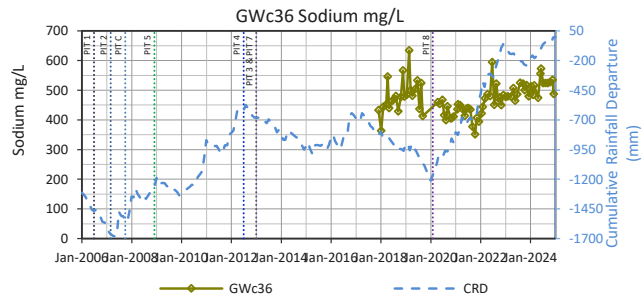
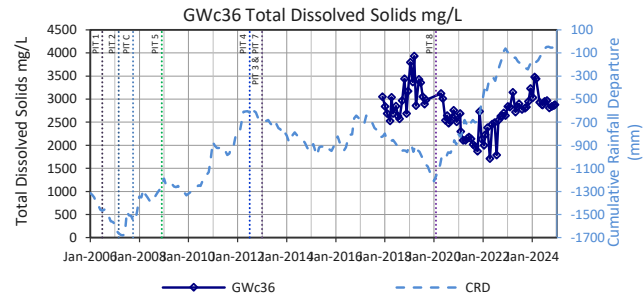
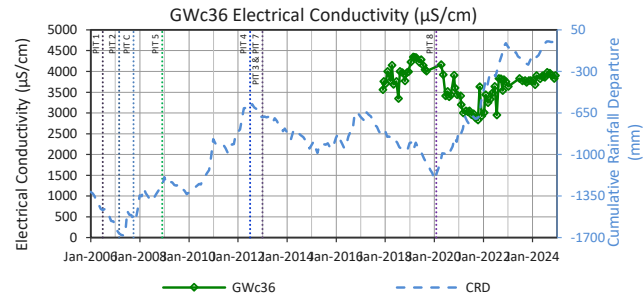
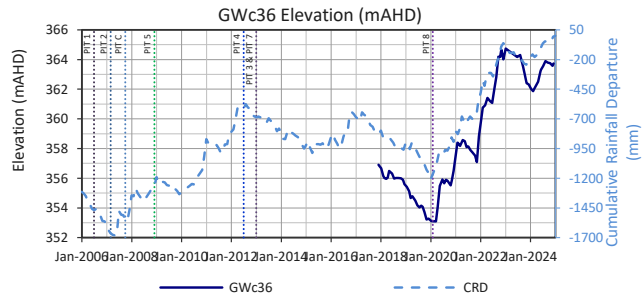


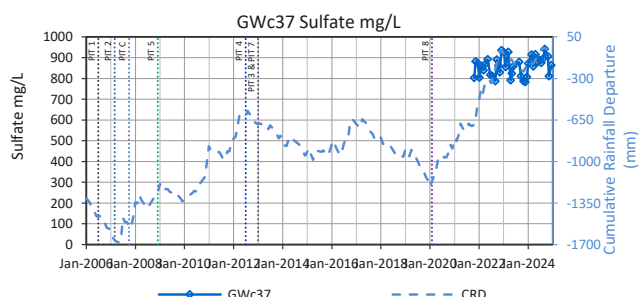
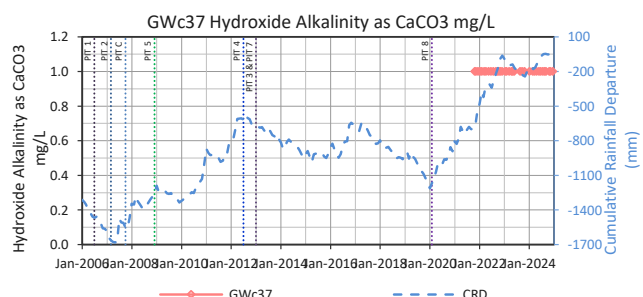
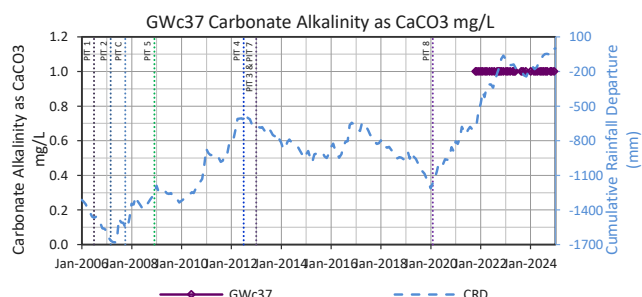
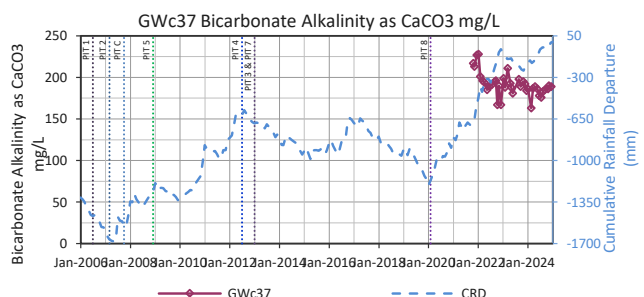
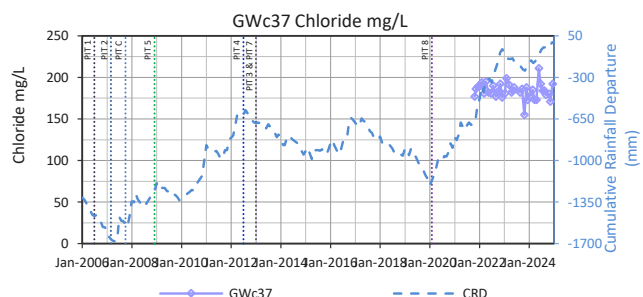
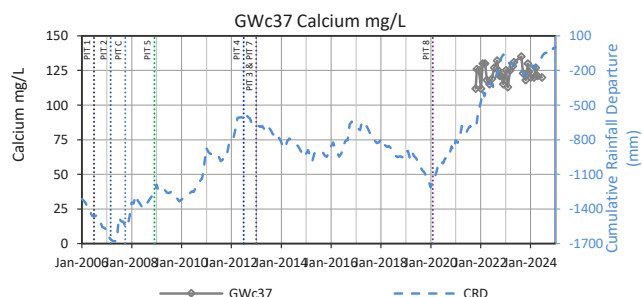
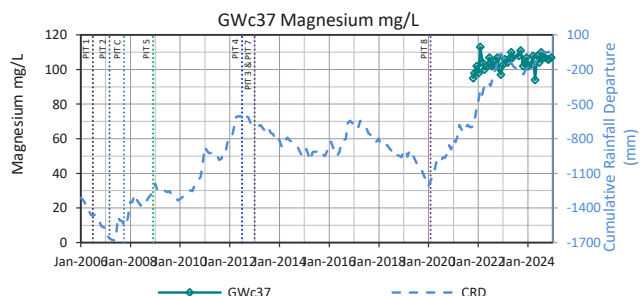
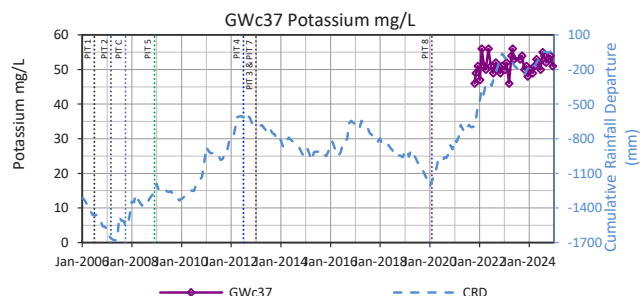
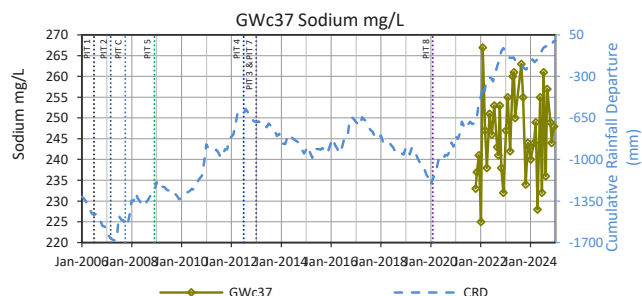
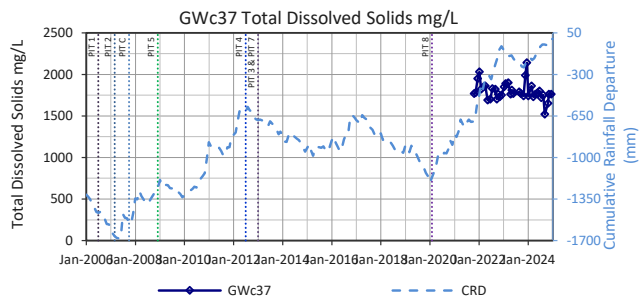
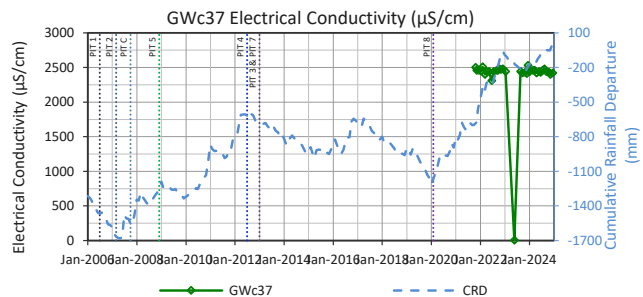
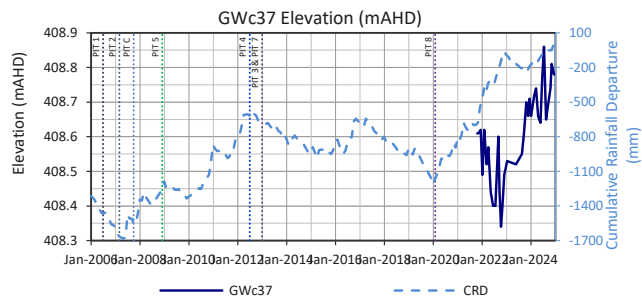


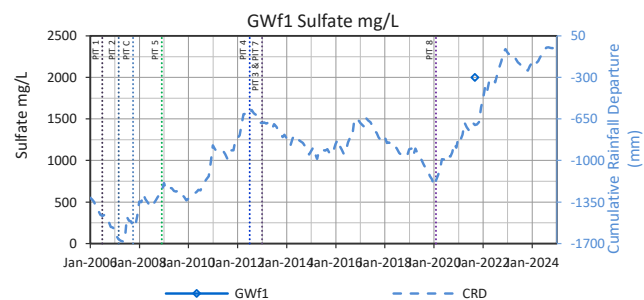
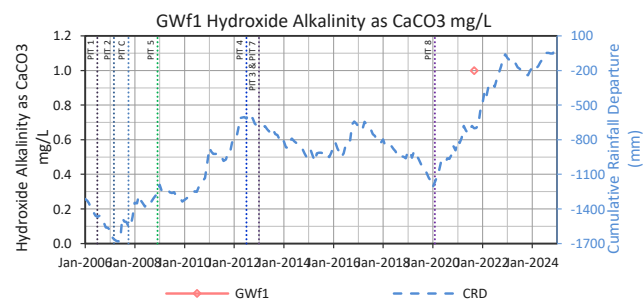
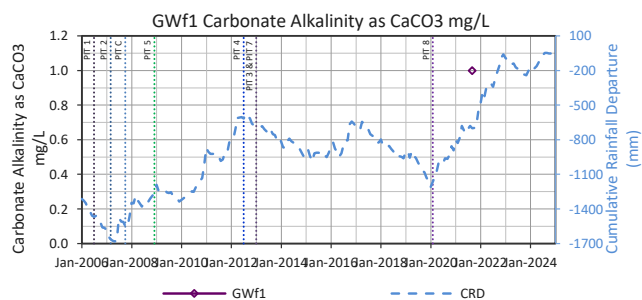
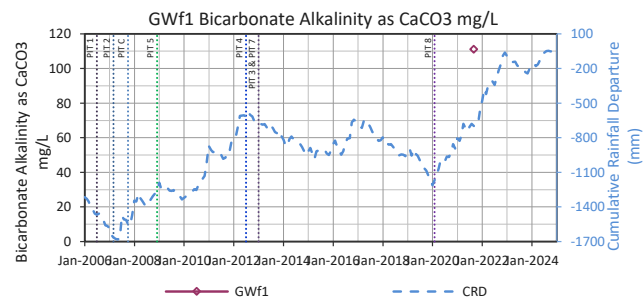
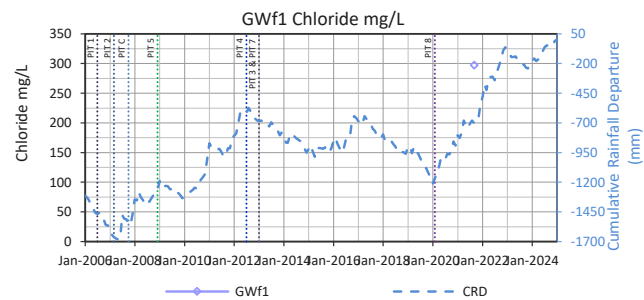
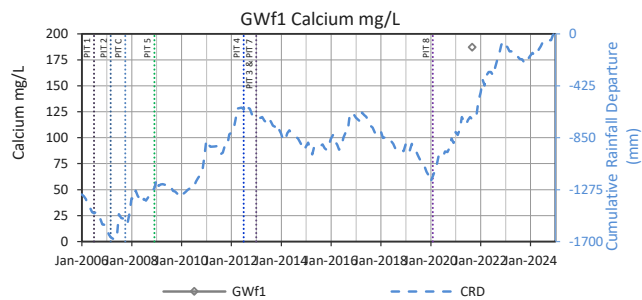
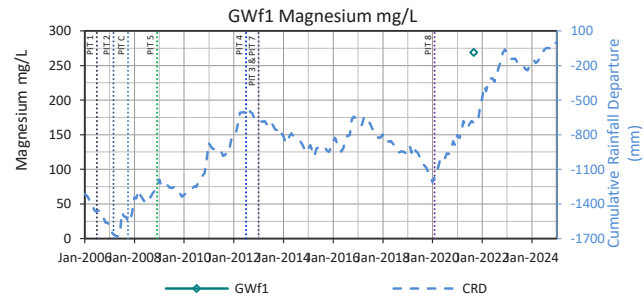
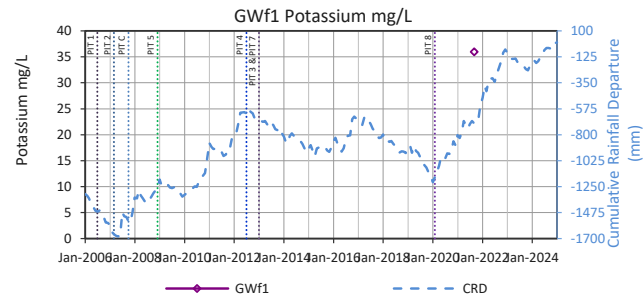
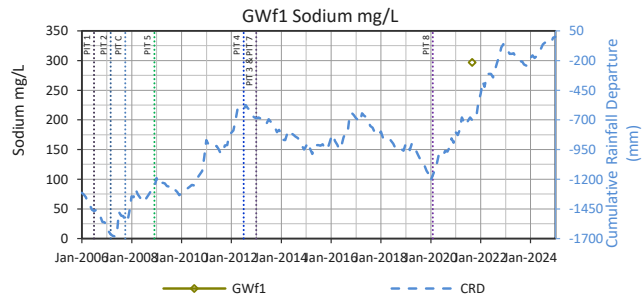
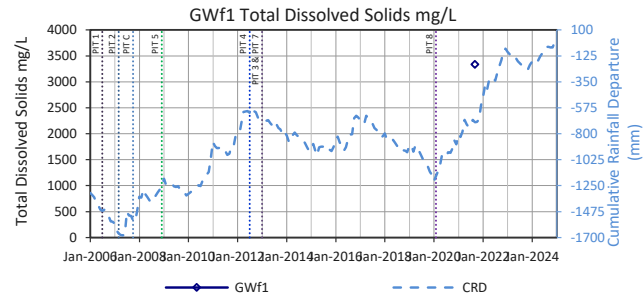
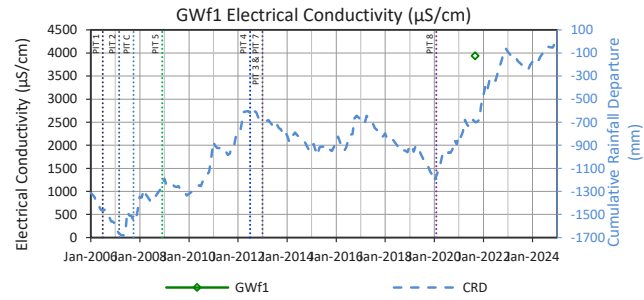
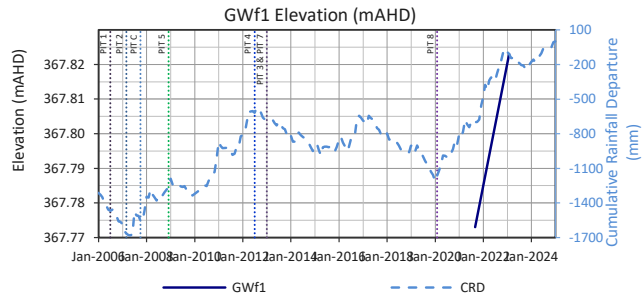


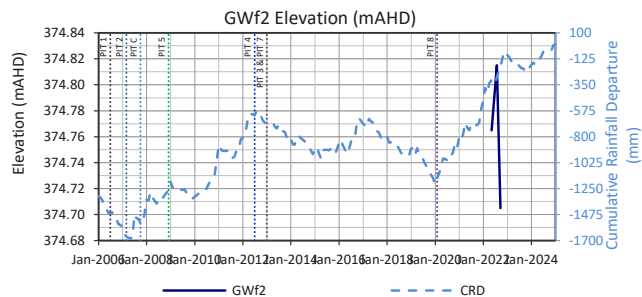






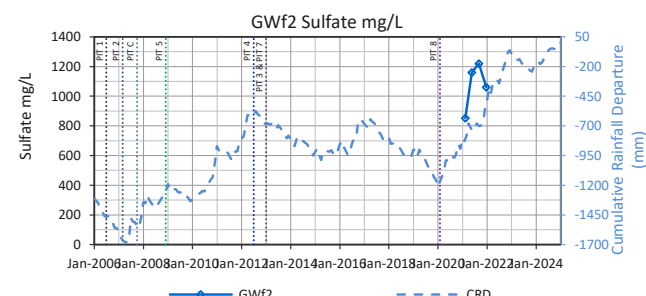
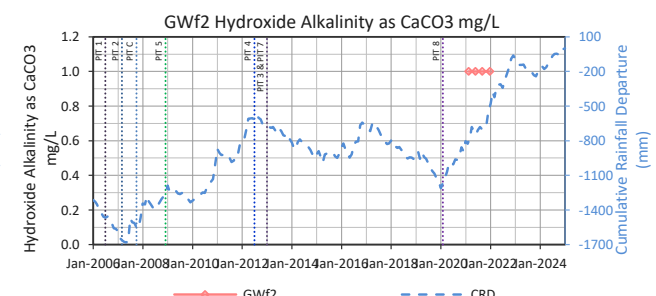
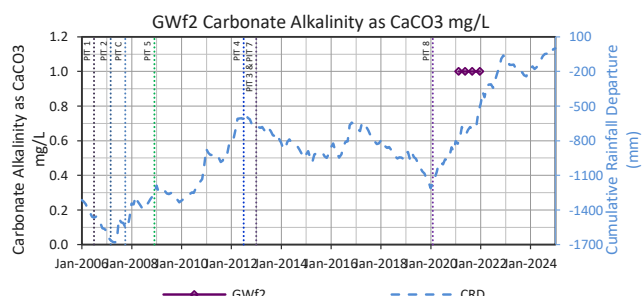
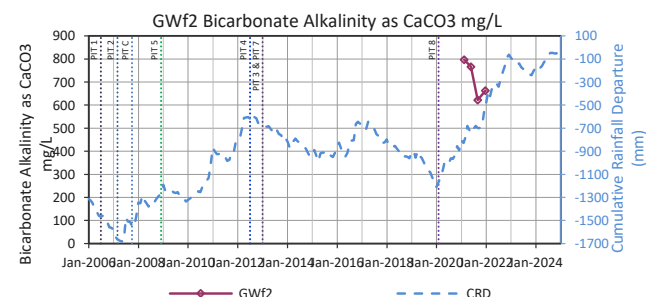
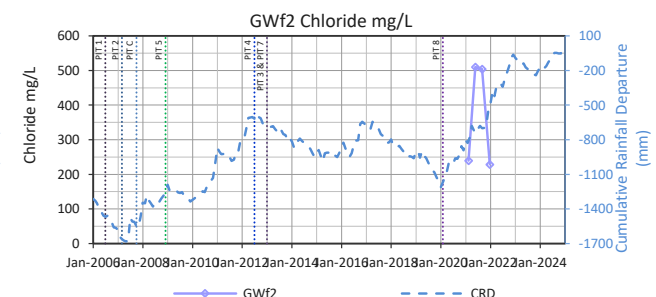
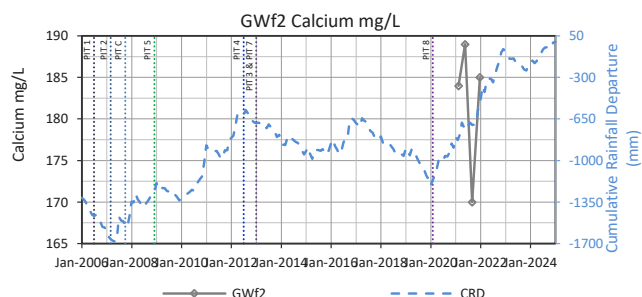
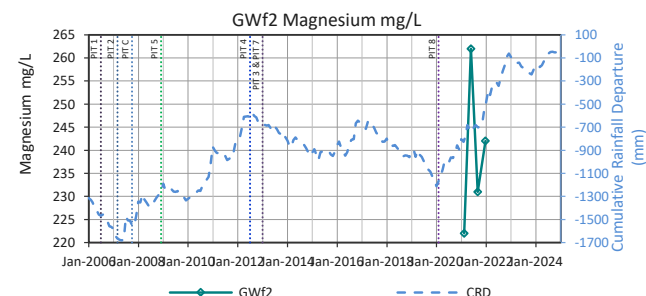
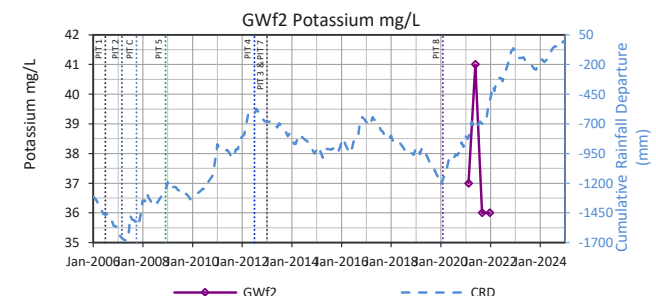
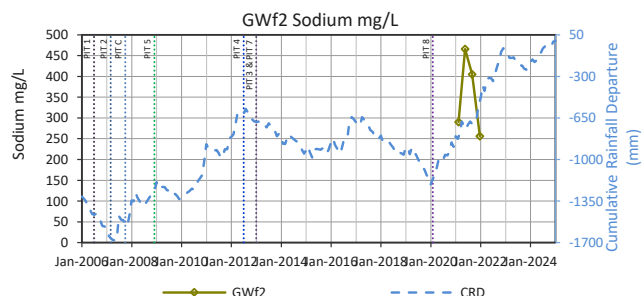
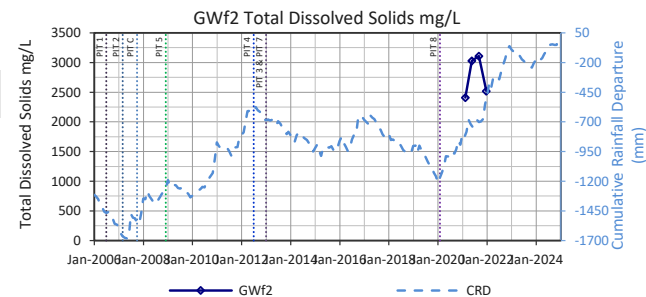


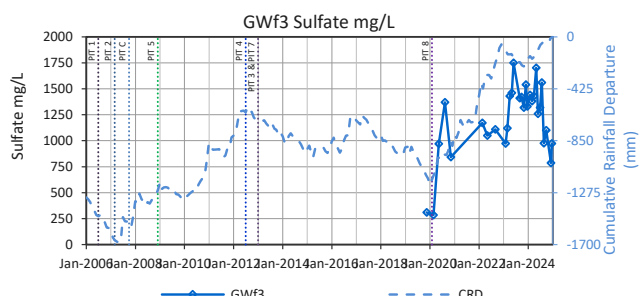
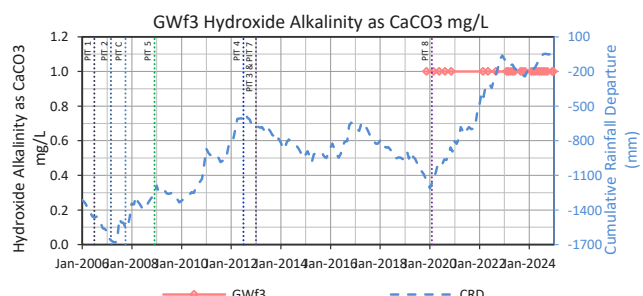
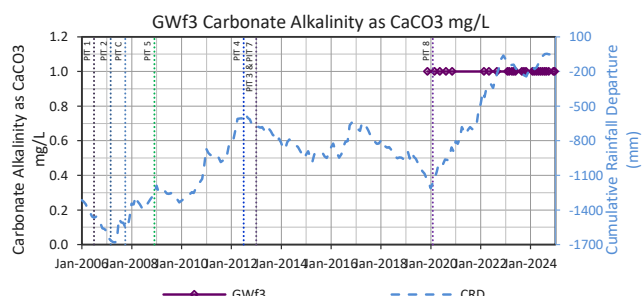
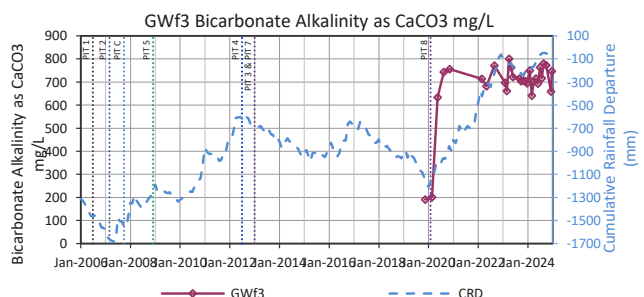
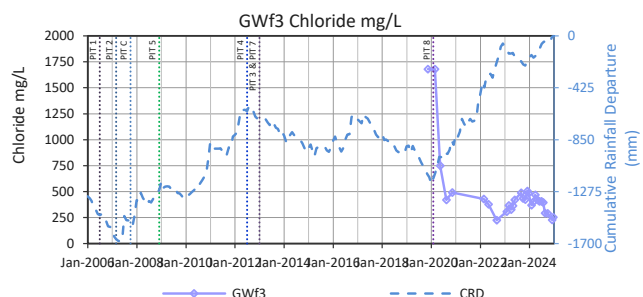
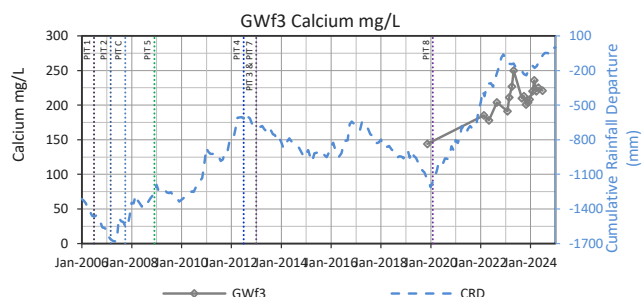
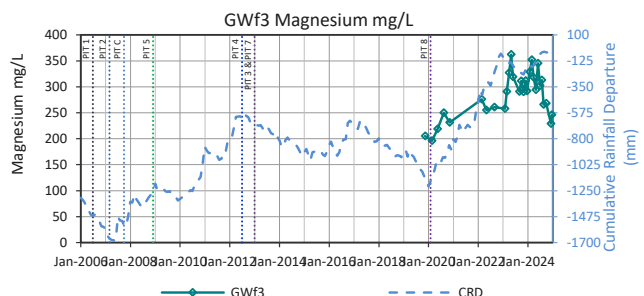
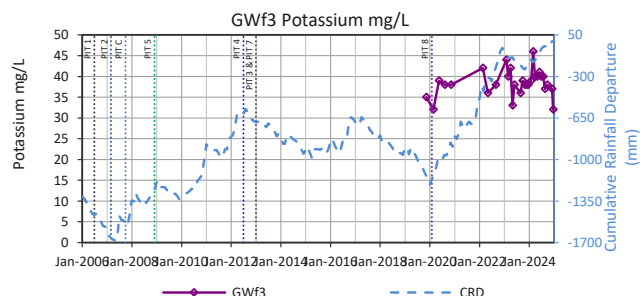
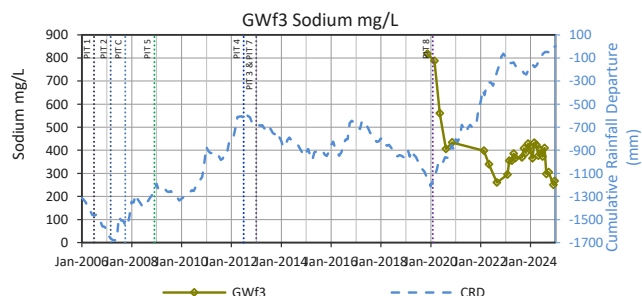
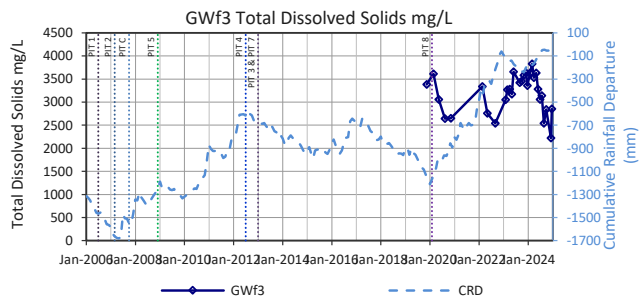
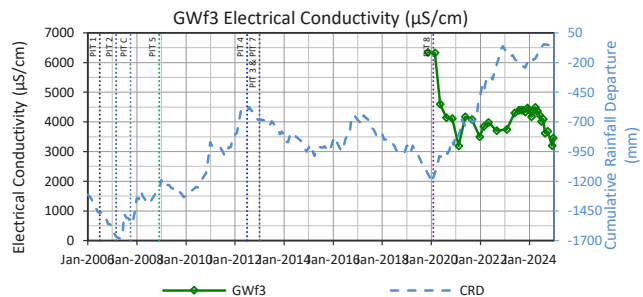
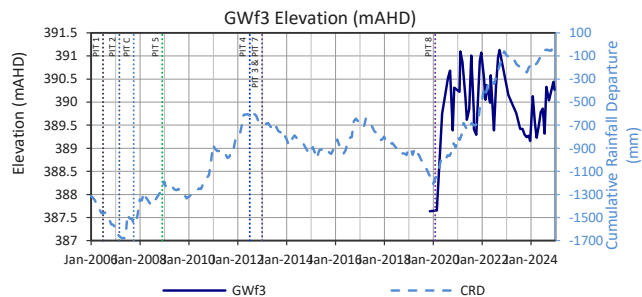


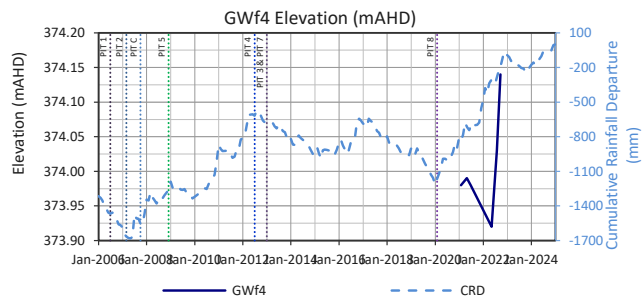


GWf2

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

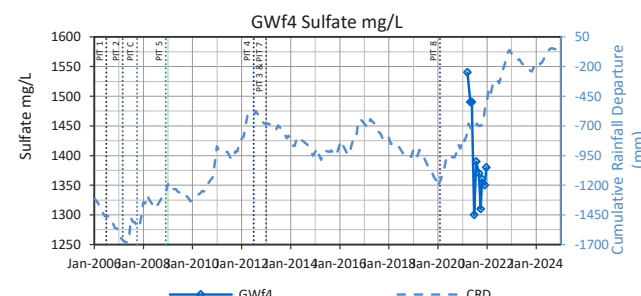
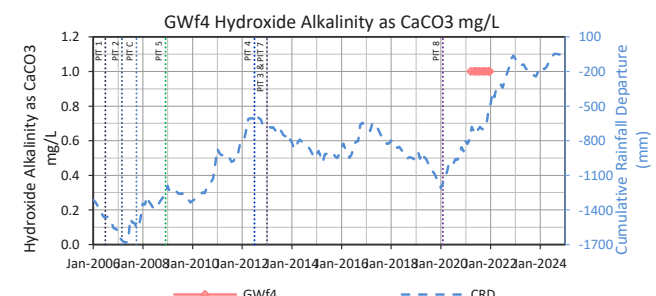
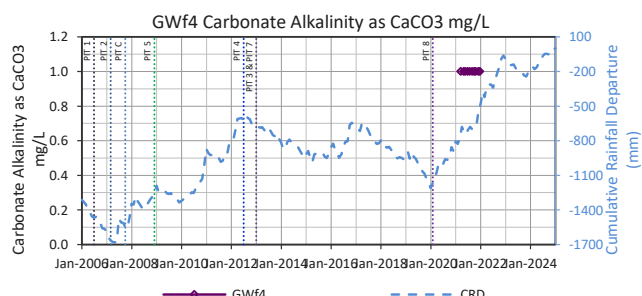
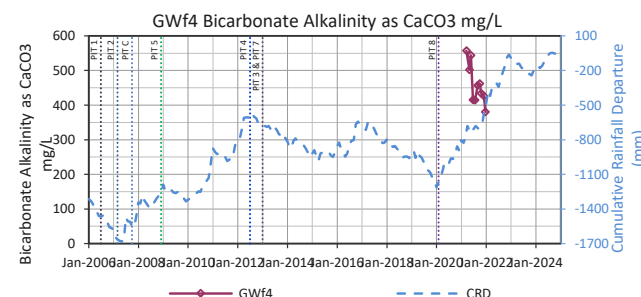
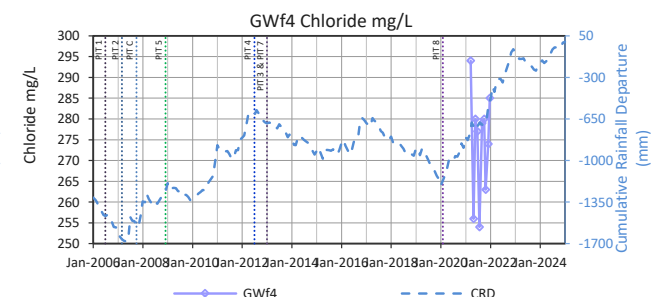
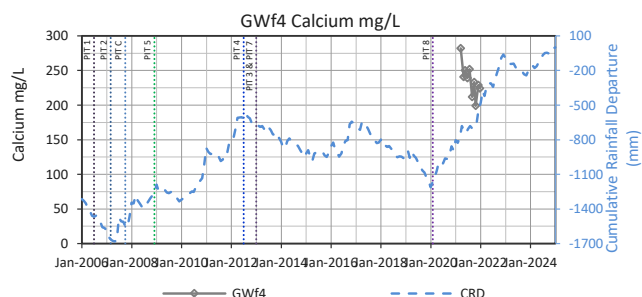
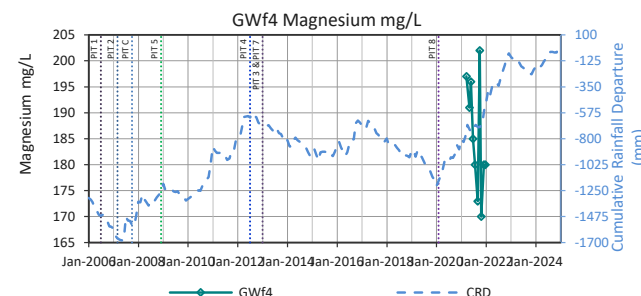
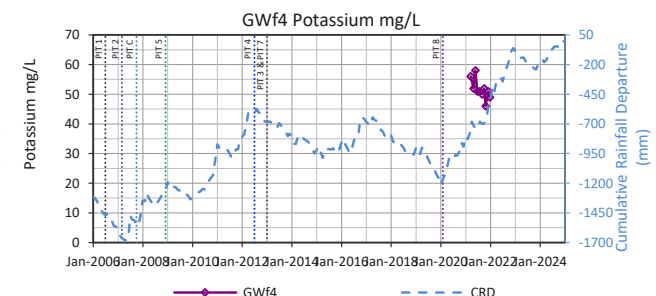
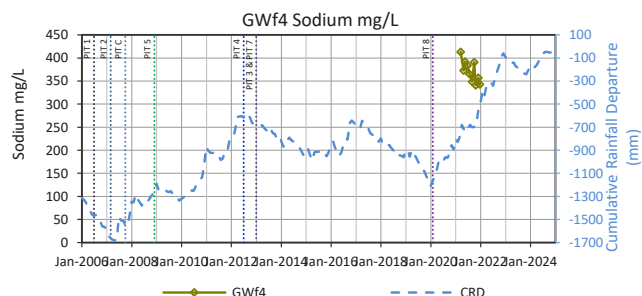
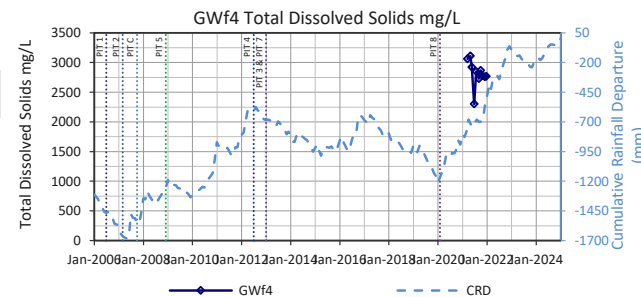


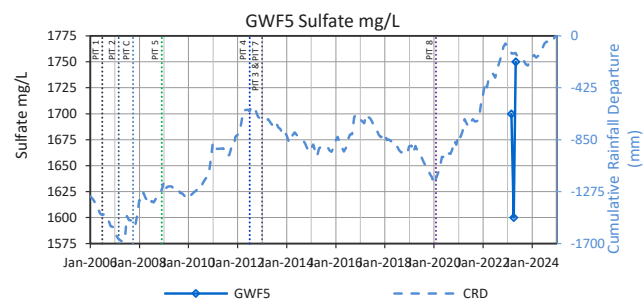
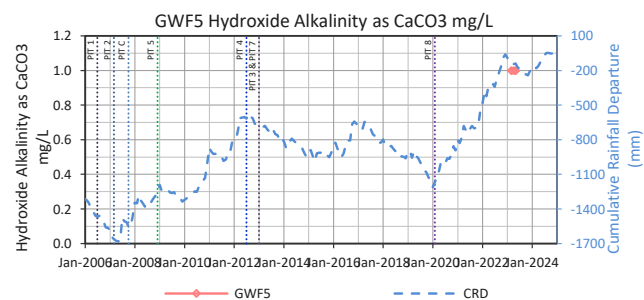
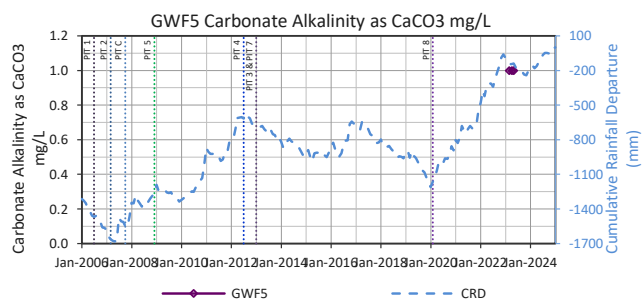
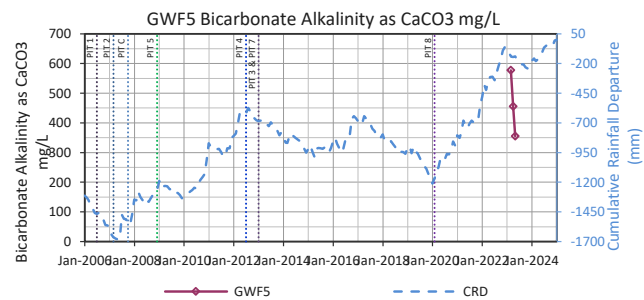
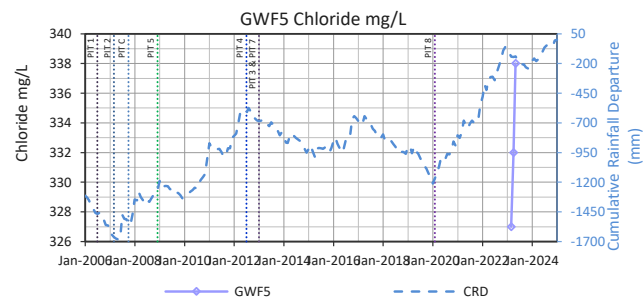
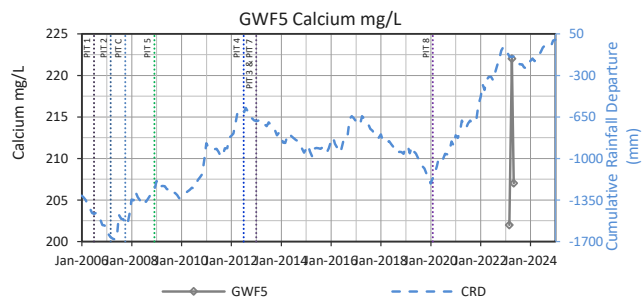
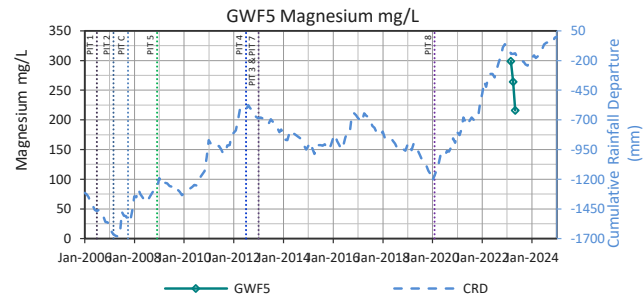
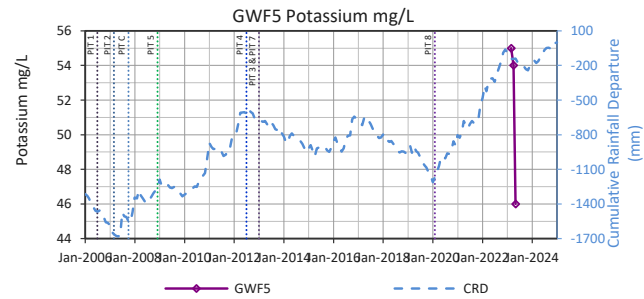
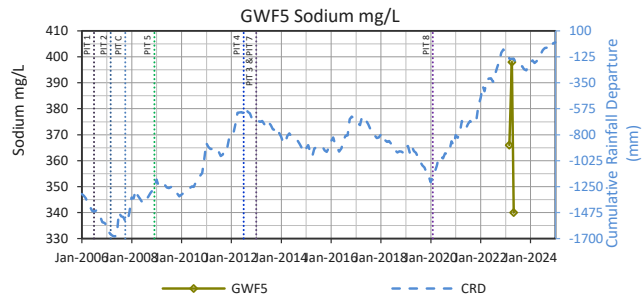
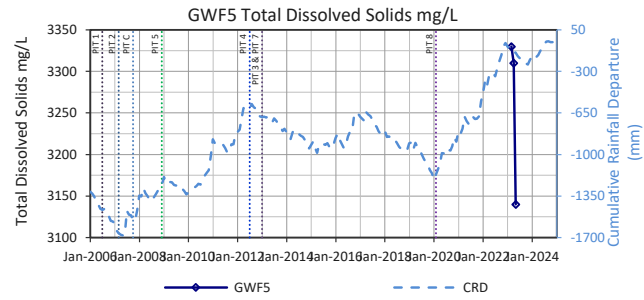
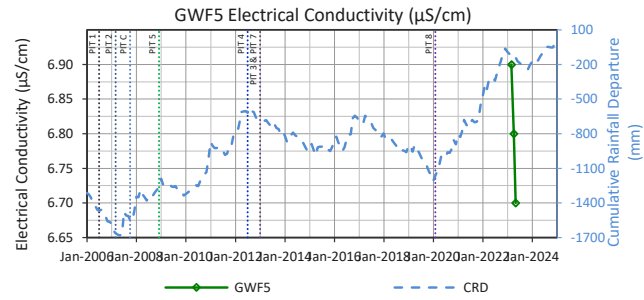
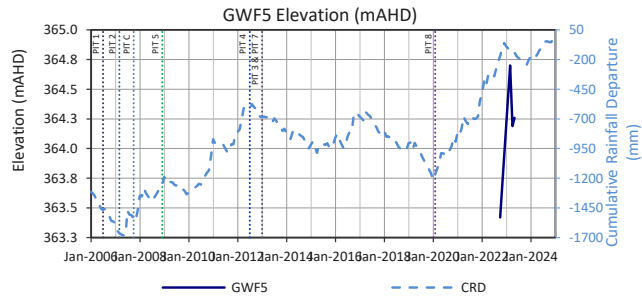


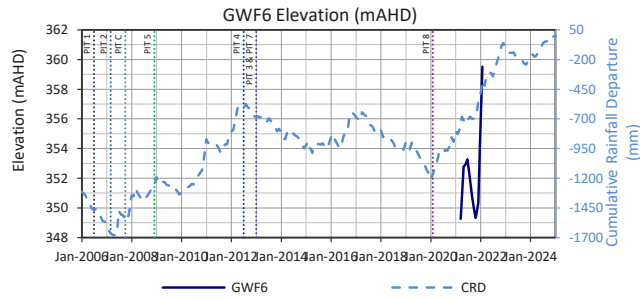


No Data Available for Electrical Conductivity ( $\mu\text{S}/\text{cm}$ )

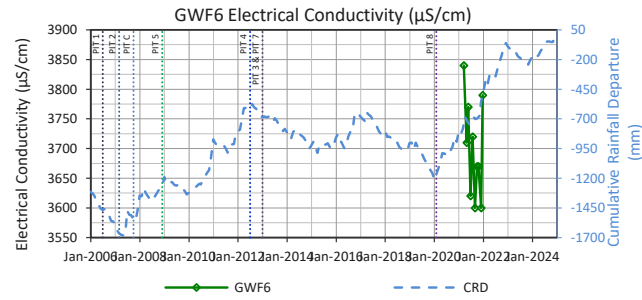
GWf4







GW6



GW6

GW6  
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

GW6

No Data Available for Calcium mg/L

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

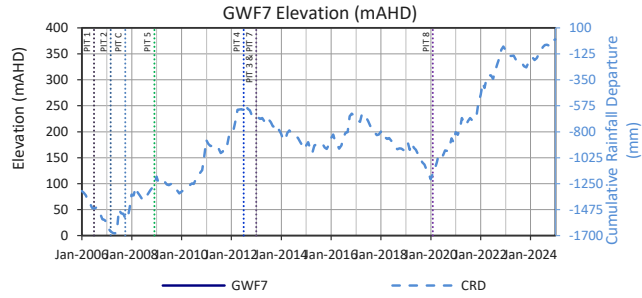
No Data Available for Hydroxide Alkalinity as CaCO3 mg/L

No Data Available for Sulfate mg/L

GW6

GW6





GWF7

GWF7

GWF7

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

No Data Available for Total Dissolved Solids mg/L

GWF7

GWF7

No Data Available for Sodium mg/L

No Data Available for Potassium mg/L

No Data Available for Magnesium mg/L

GWF7

GWF7

GWF7

No Data Available for Calcium mg/L

No Data Available for Chloride mg/L

No Data Available for Bicarbonate Alkalinity as  $\text{CaCO}_3$  mg/L

GWF7

GWF7

GWF7

No Data Available for Carbonate Alkalinity as  $\text{CaCO}_3$  mg/L

No Data Available for Hydroxide Alkalinity as  $\text{CaCO}_3$  mg/L

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  $\text{CaCO}_3$  mg/L

PZ13

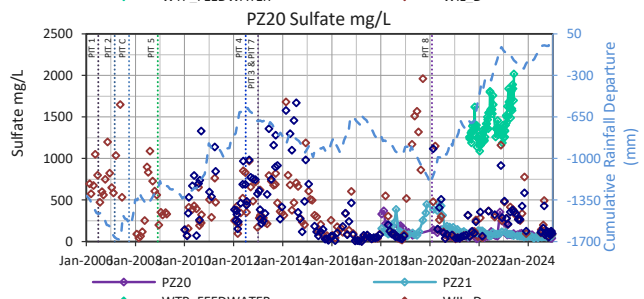
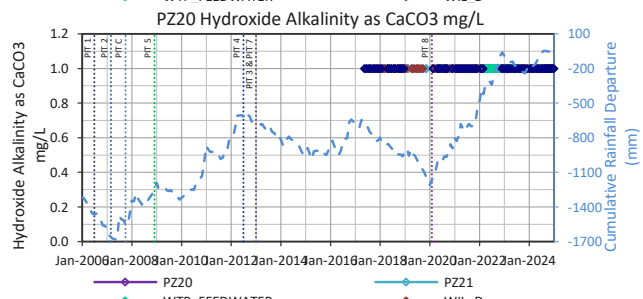
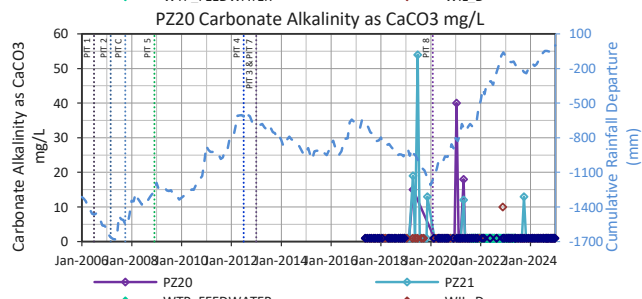
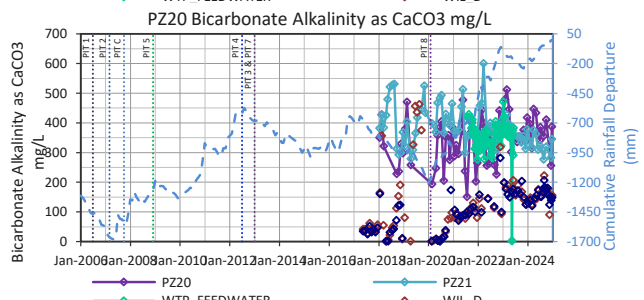
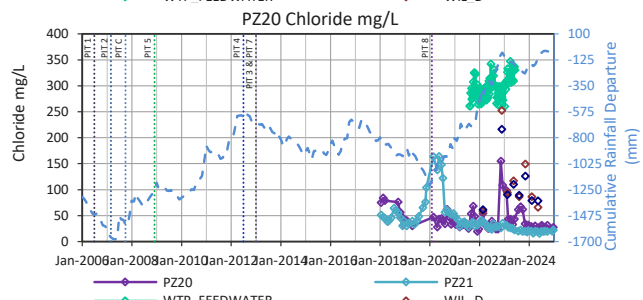
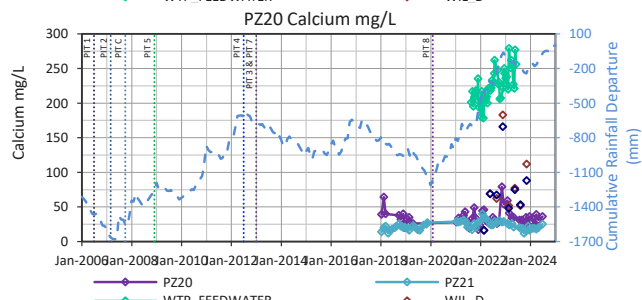
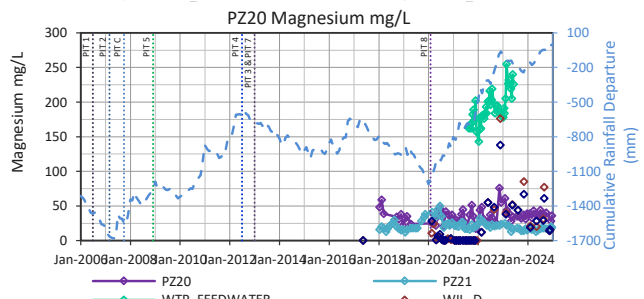
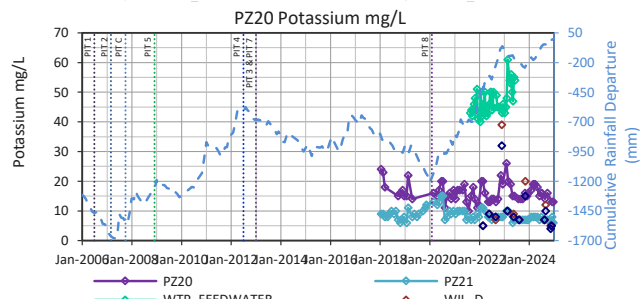
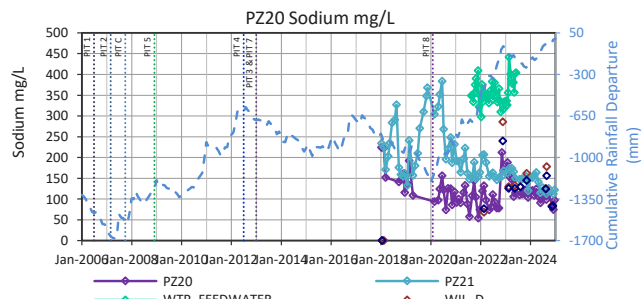
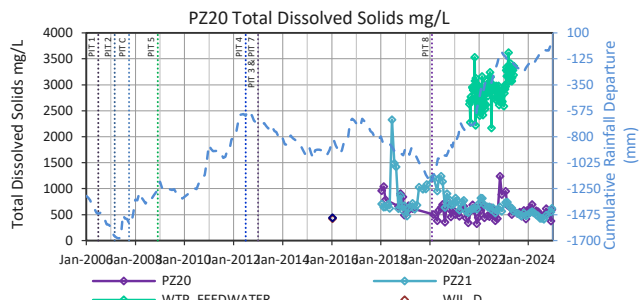
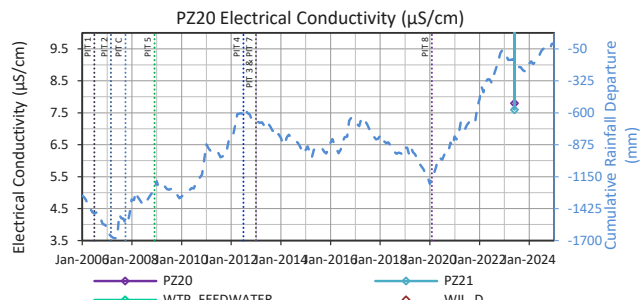
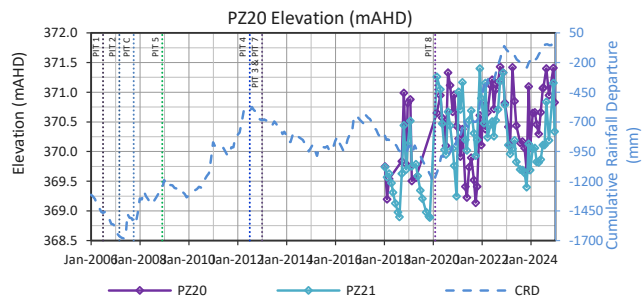
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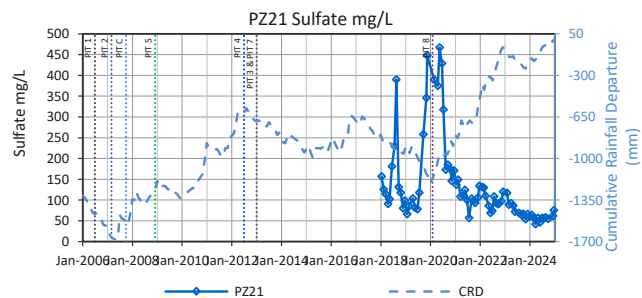
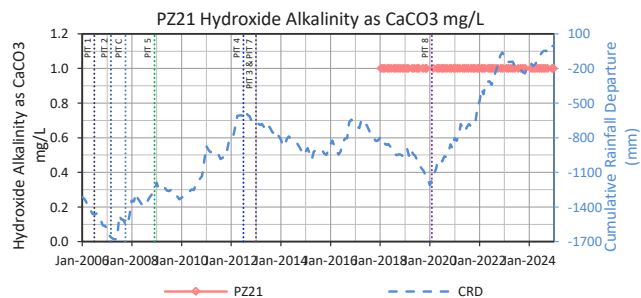
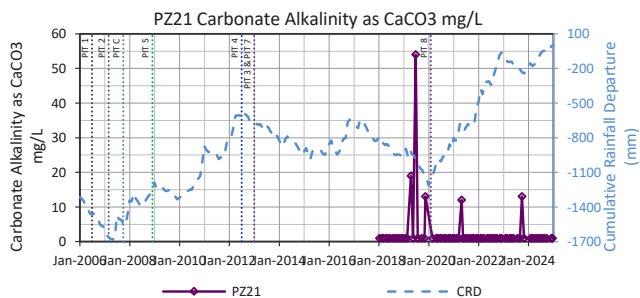
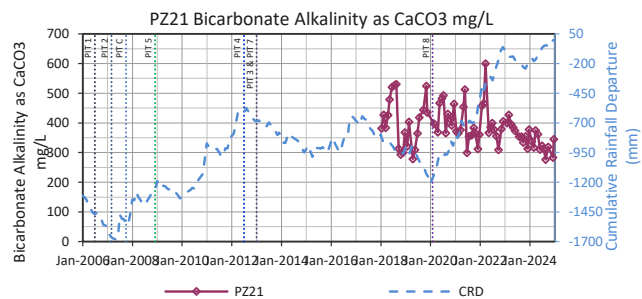
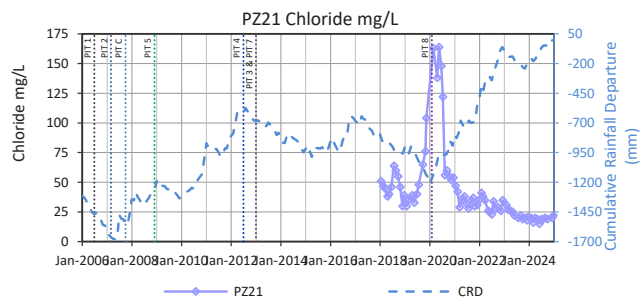
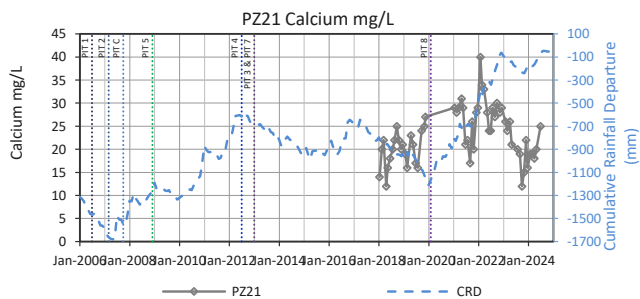
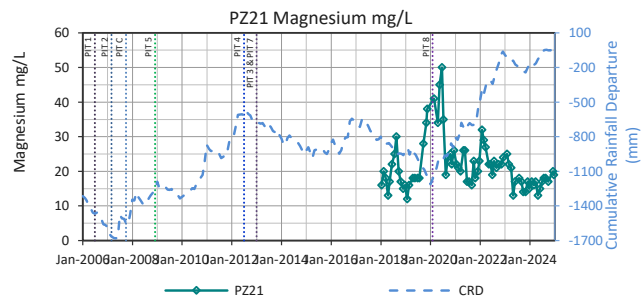
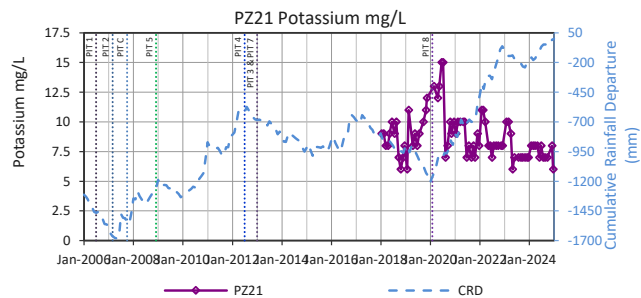
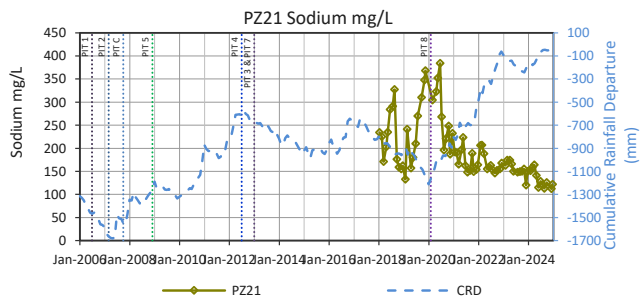
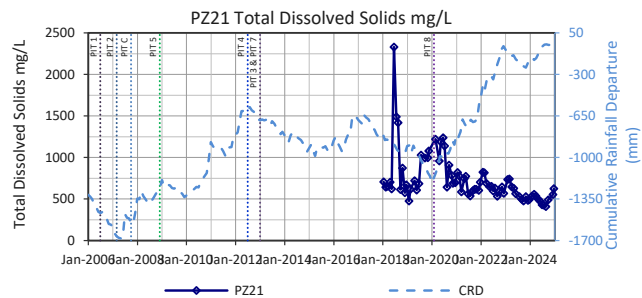
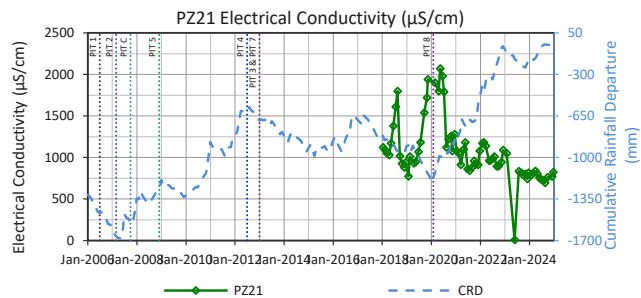
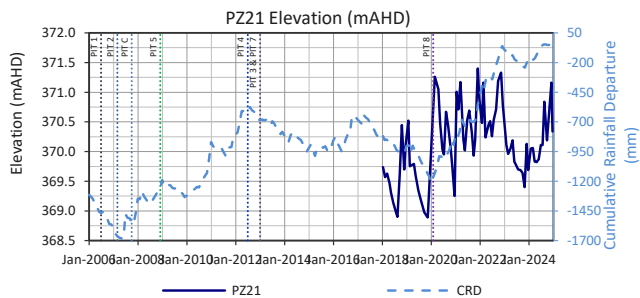
PZ13

No Data Available for Carbonate Alkalinity as  $\text{CaCO}_3$  mg/L

No Data Available for Hydroxide Alkalinity as  $\text{CaCO}_3$  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  $\text{CaCO}_3$  mg/L

PZ26

PZ26

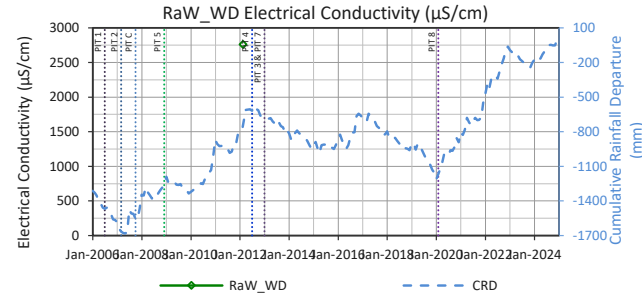
PZ26

No Data Available for Carbonate Alkalinity as  $\text{CaCO}_3$  mg/L

No Data Available for Hydroxide Alkalinity as  $\text{CaCO}_3$  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

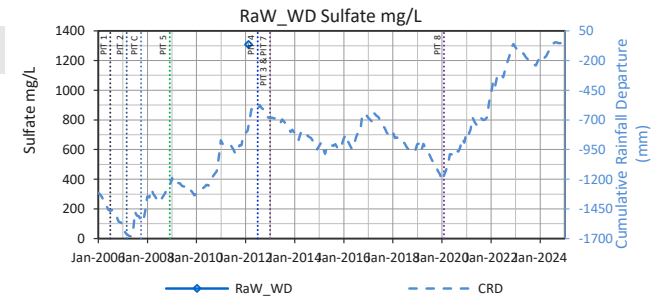
No Data Available for Calcium mg/L

No Data Available for Chloride mg/L

No Data Available for Bicarbonate Alkalinity as CaCO3 mg/L

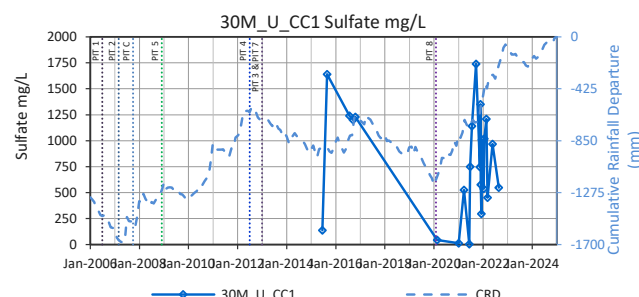
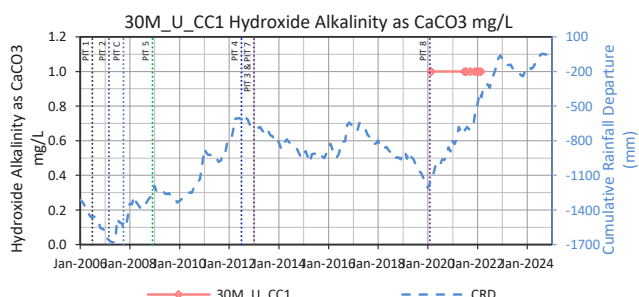
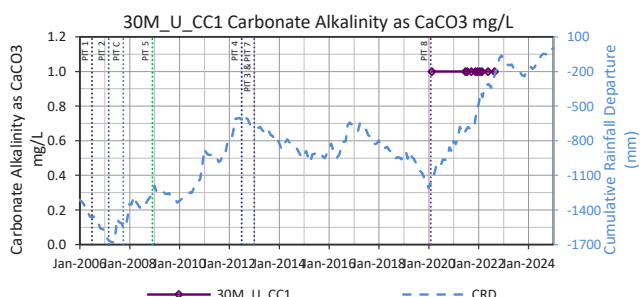
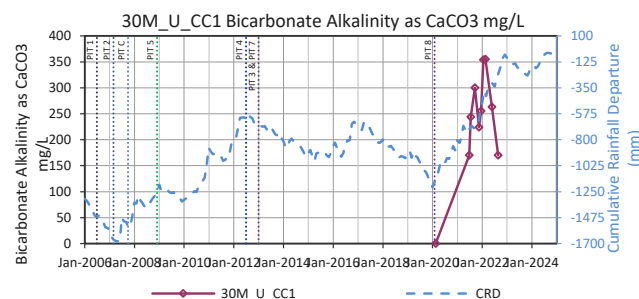
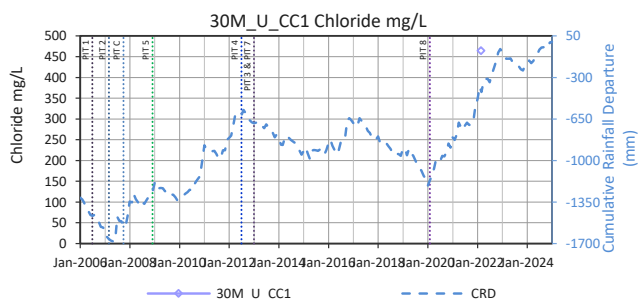
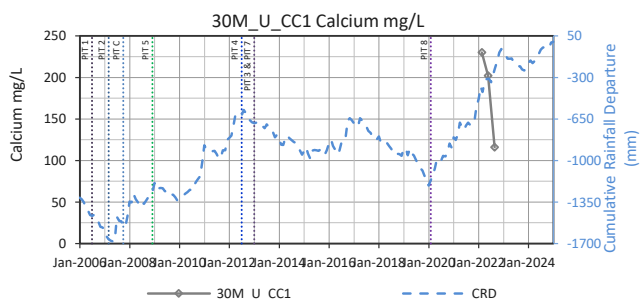
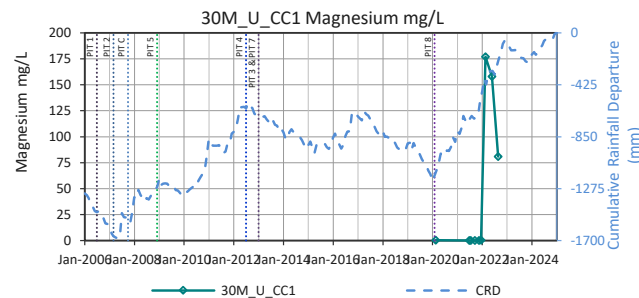
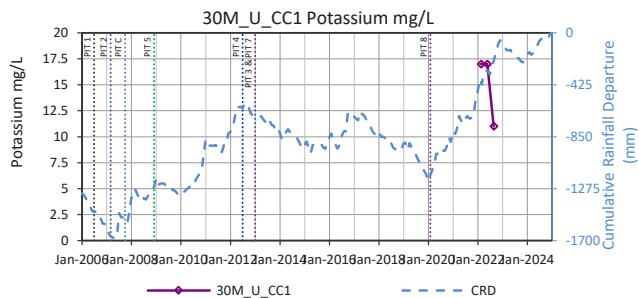
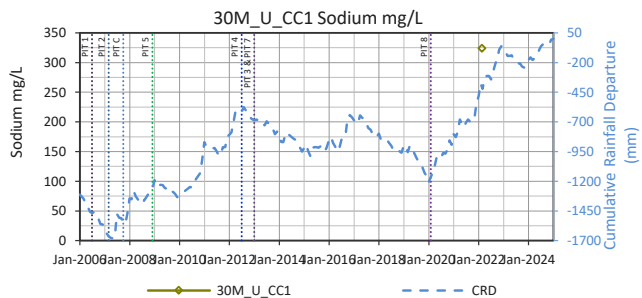
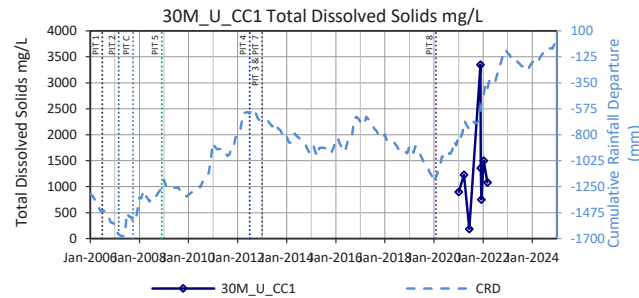
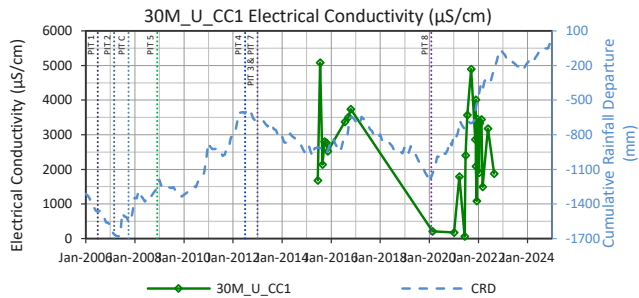
No Data Available for Carbonate Alkalinity as CaCO3 mg/L

No Data Available for Hydroxide Alkalinity as CaCO3 mg/L



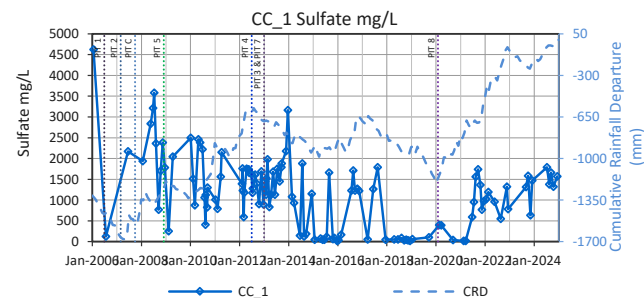
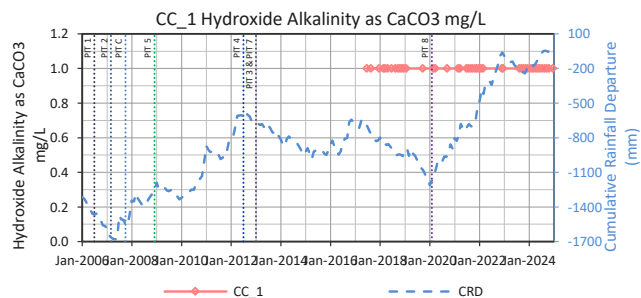
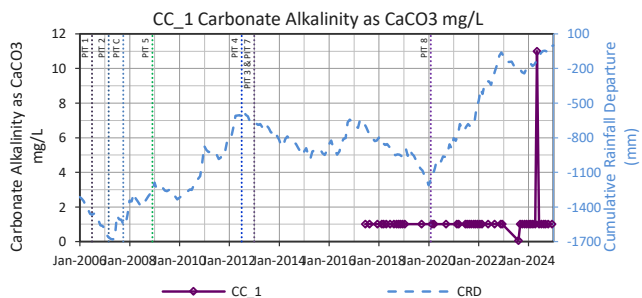
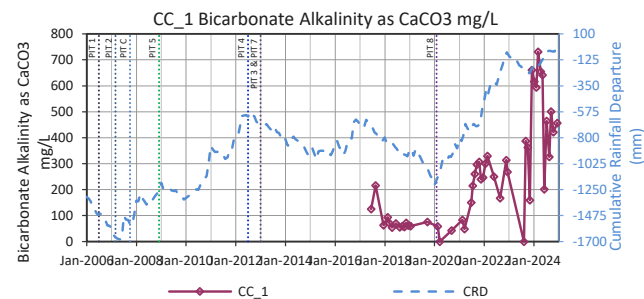
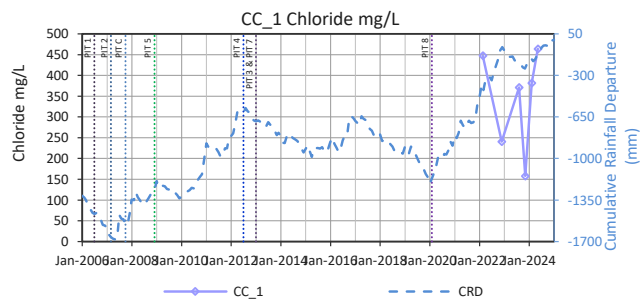
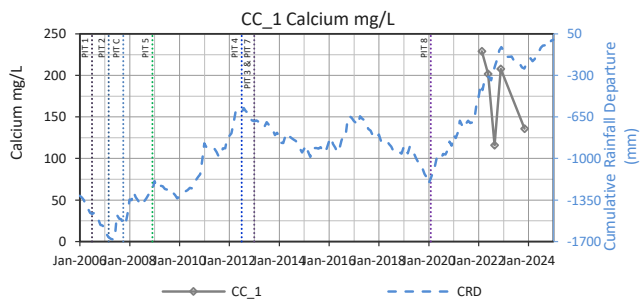
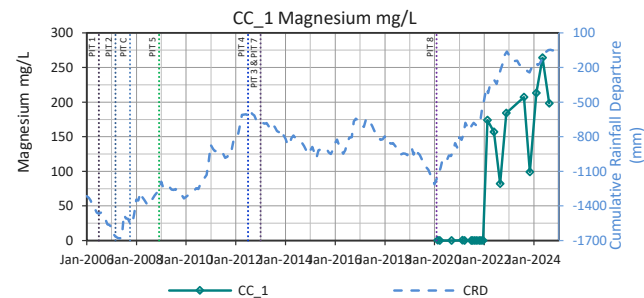
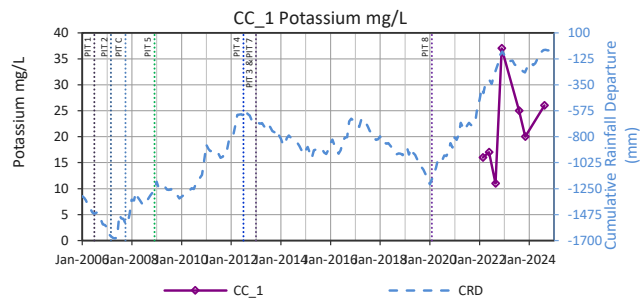
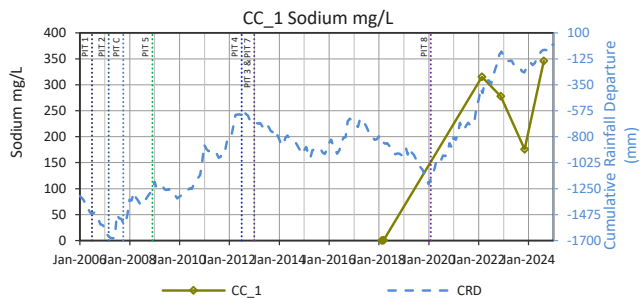
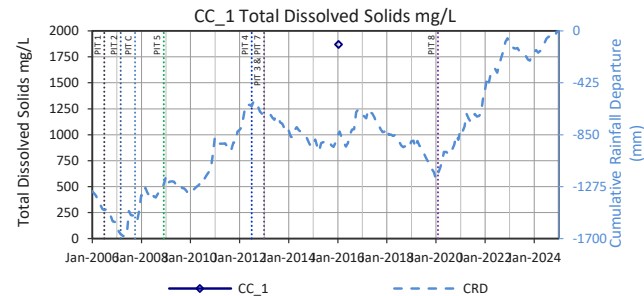
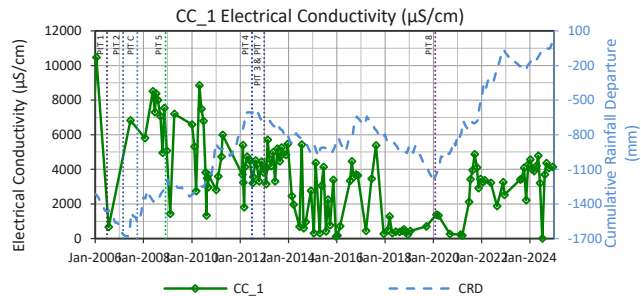
30M\_U\_CC1

No Data Available for Elevation (mAHD)



CC\_1

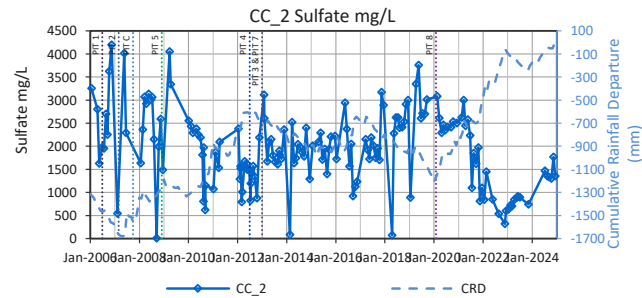
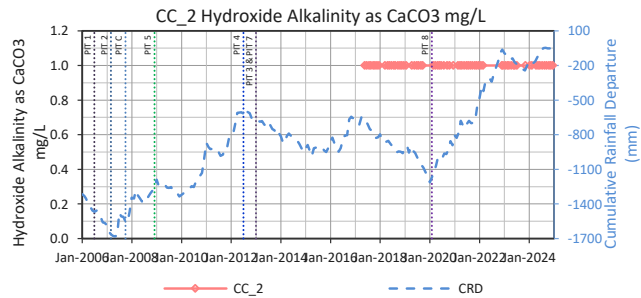
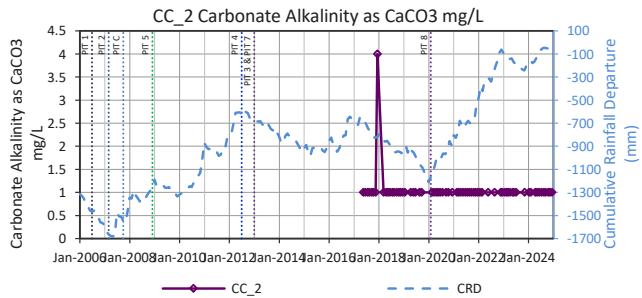
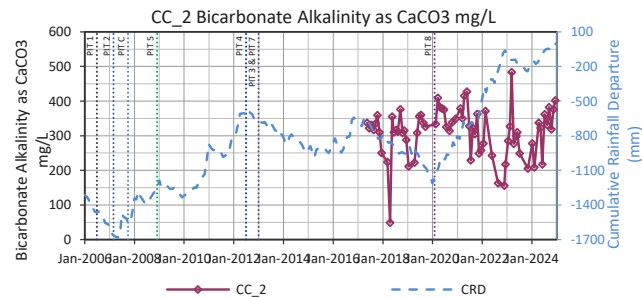
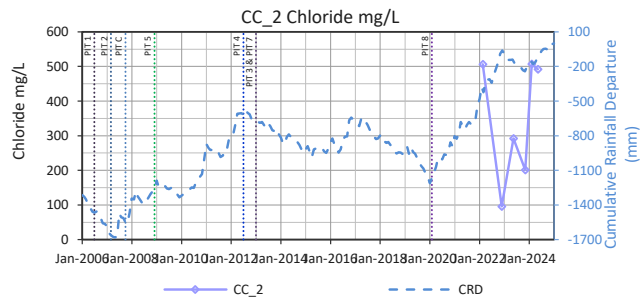
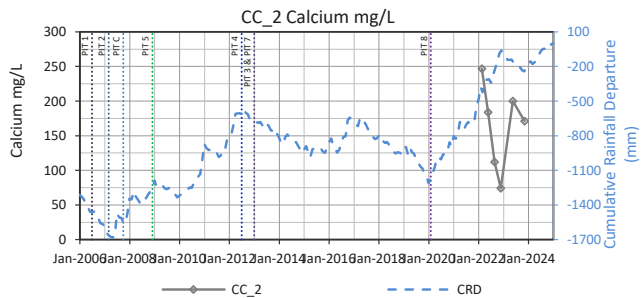
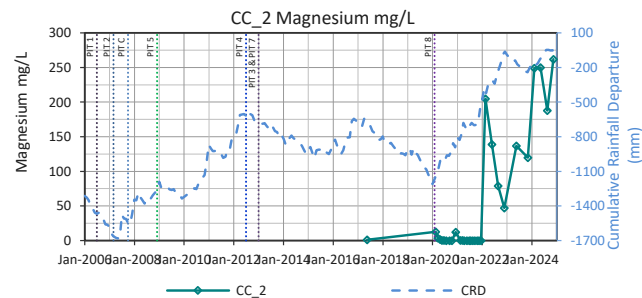
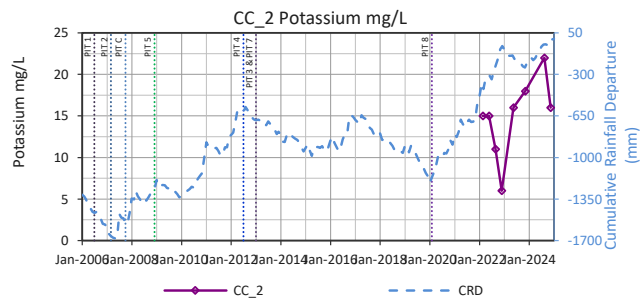
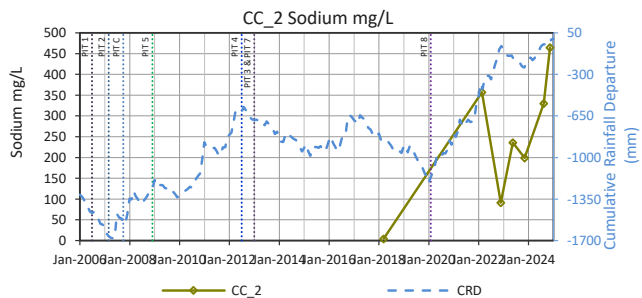
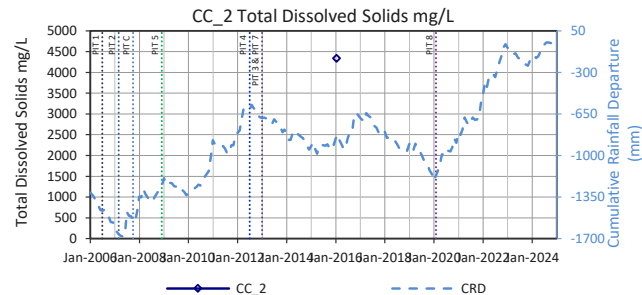
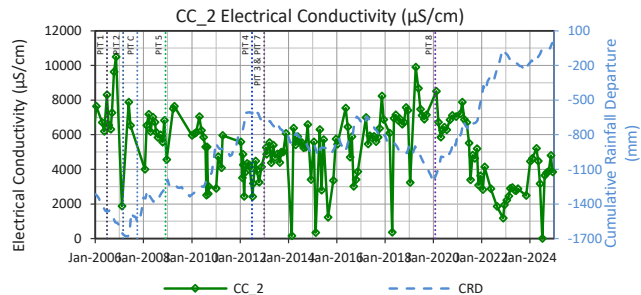
No Data Available for Elevation (mAHD)





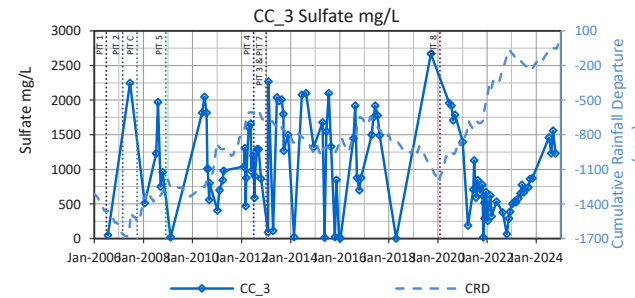
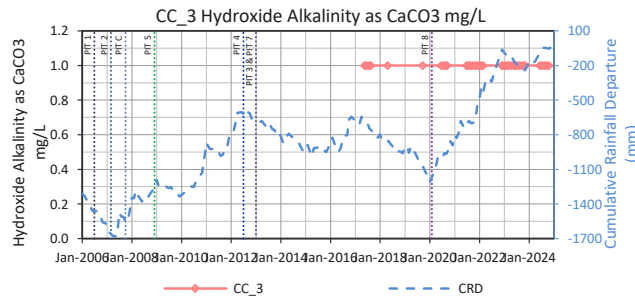
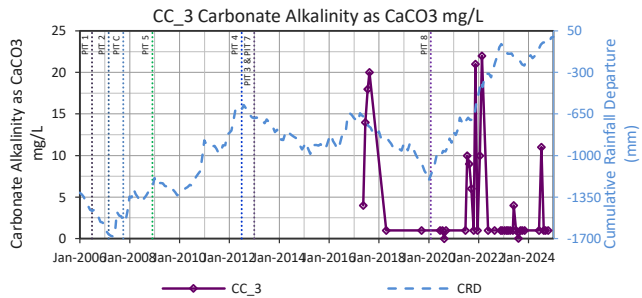
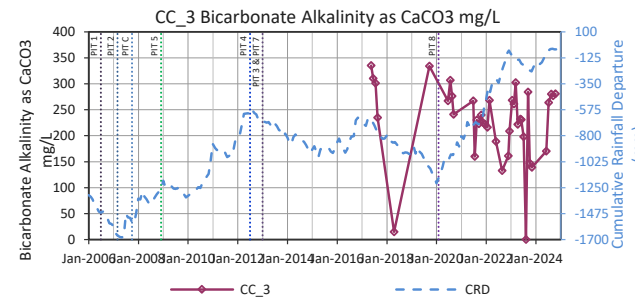
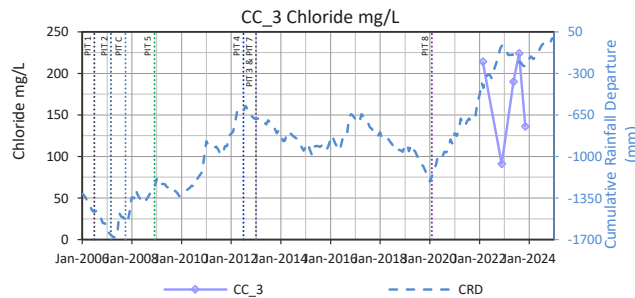
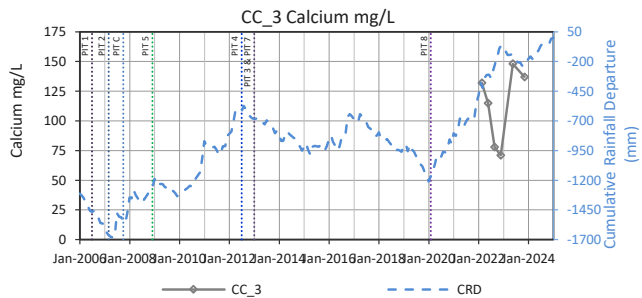
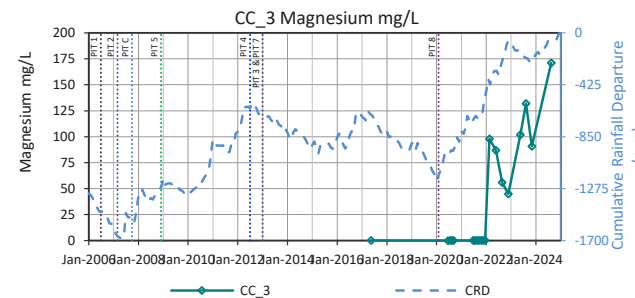
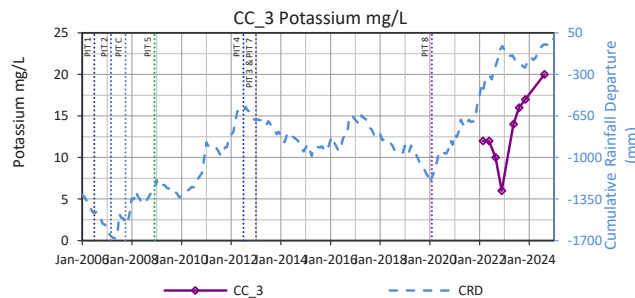
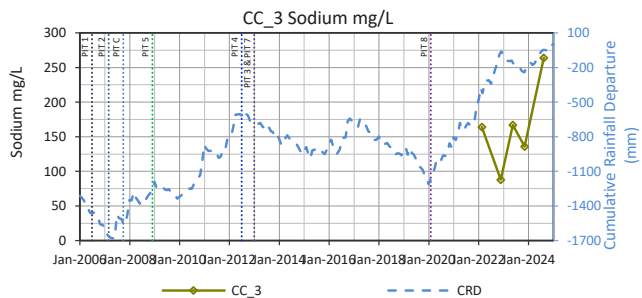
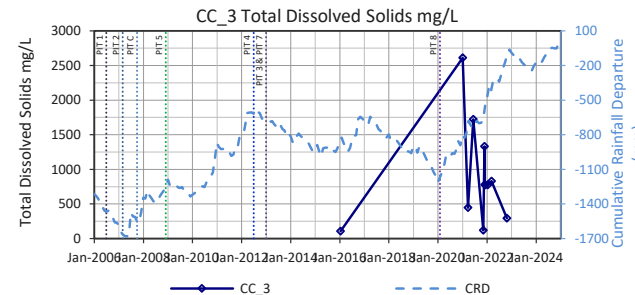
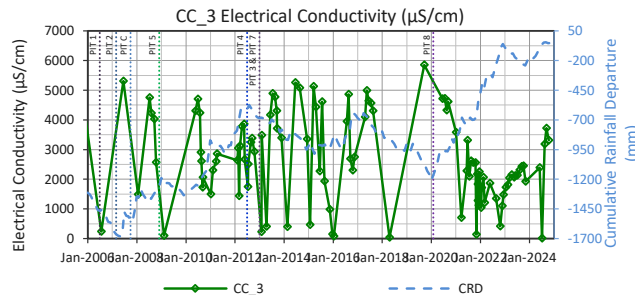
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No Data Available for Elevation (mAHD)



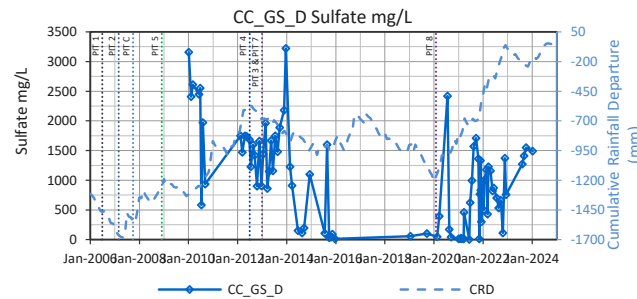
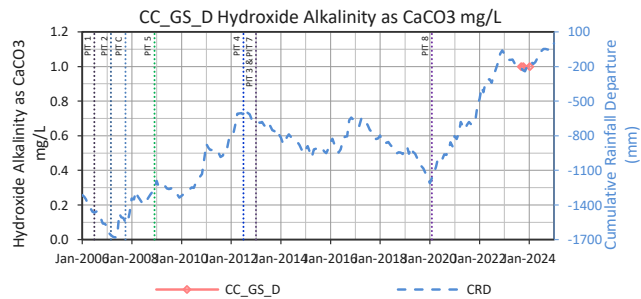
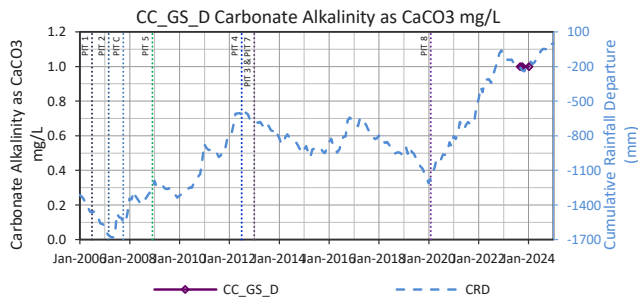
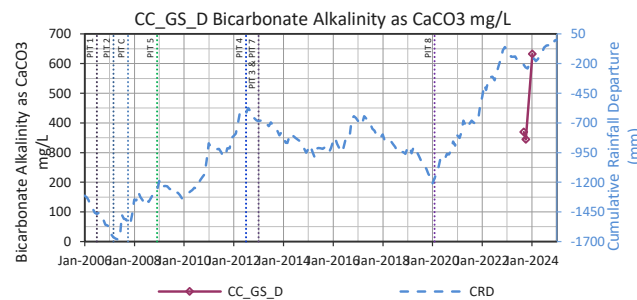
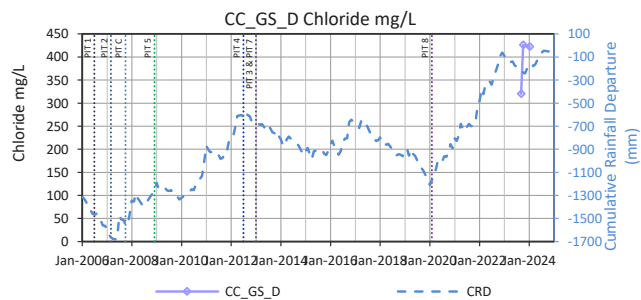
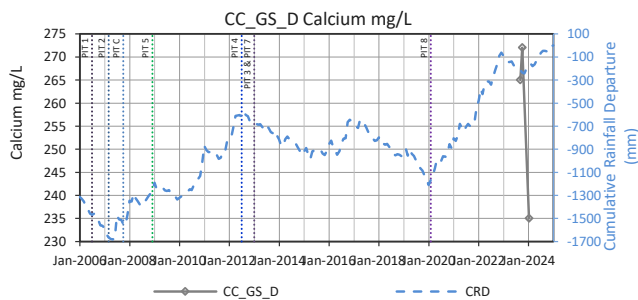
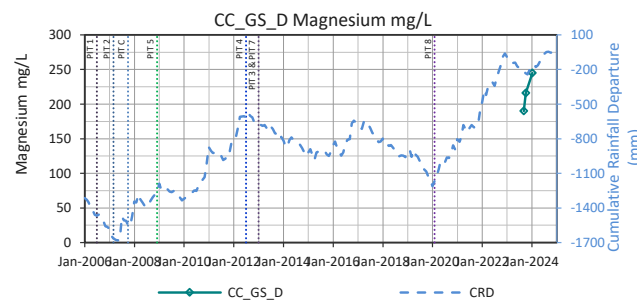
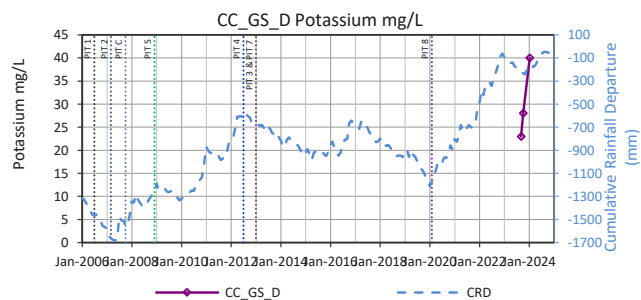
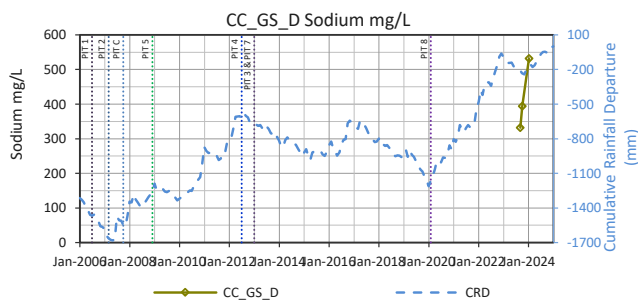
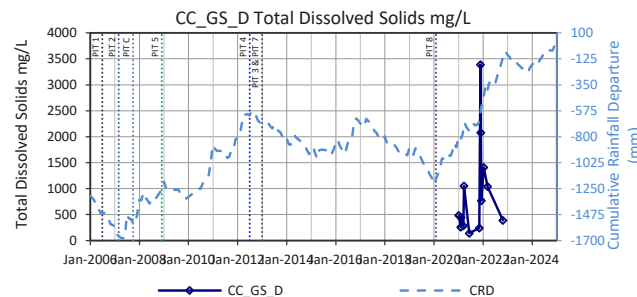
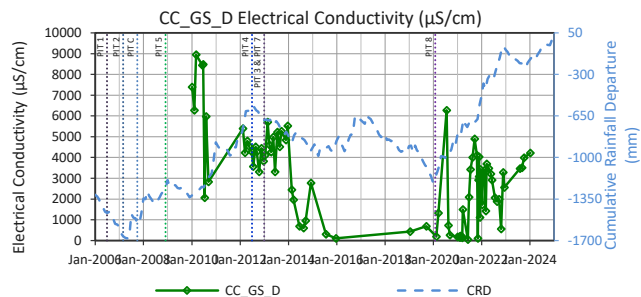
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No Data Available for Elevation (mAHD)



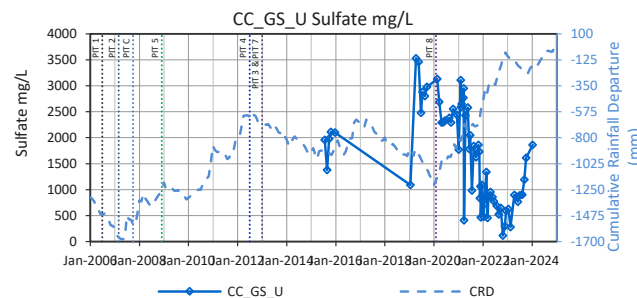
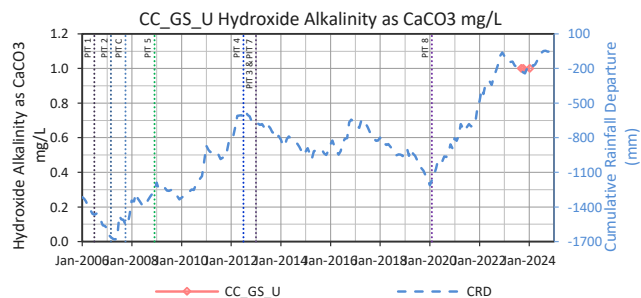
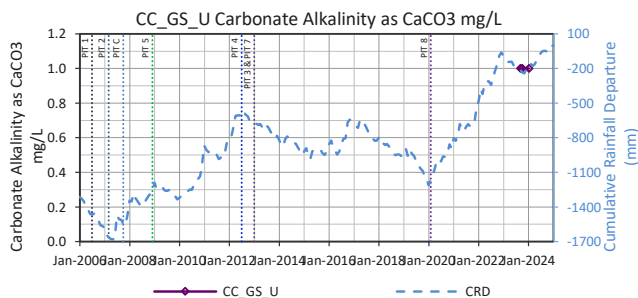
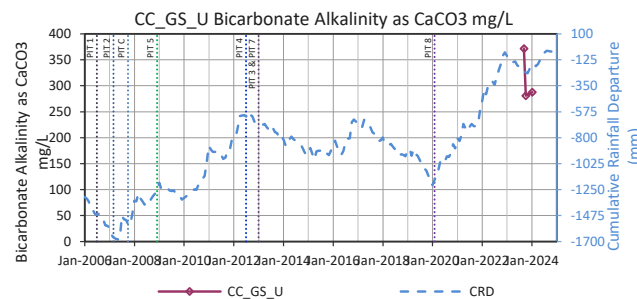
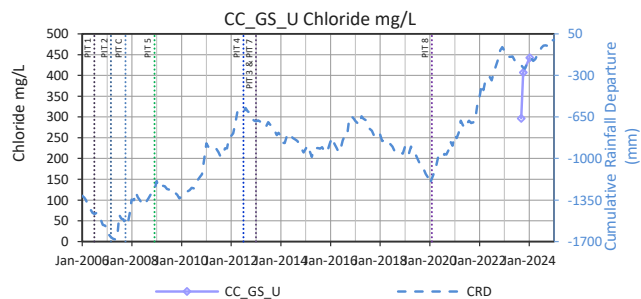
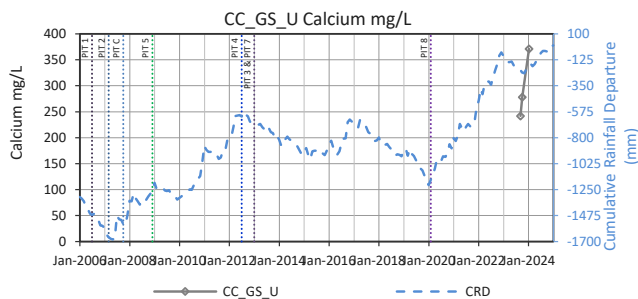
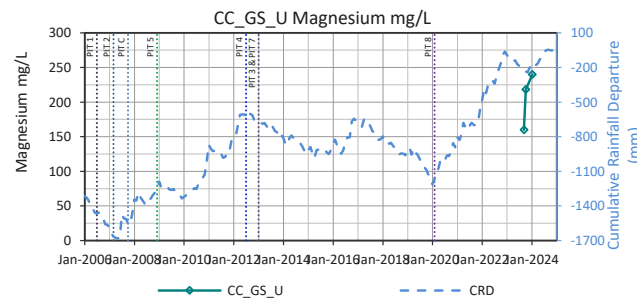
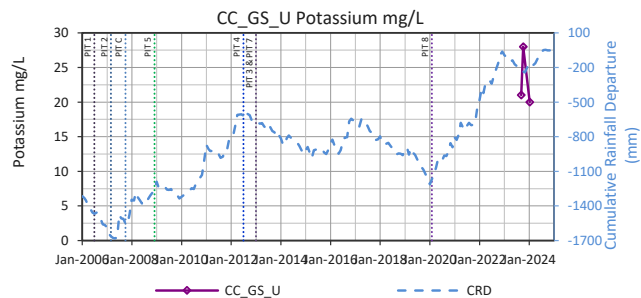
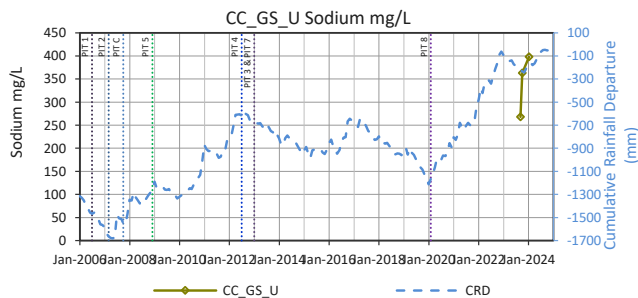
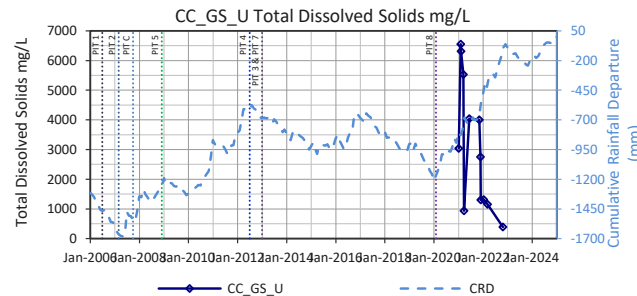
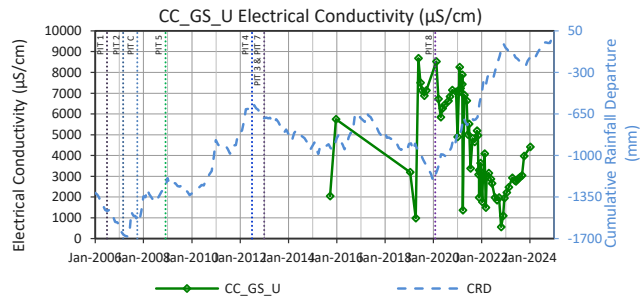
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No Data Available for Elevation (mAHD)



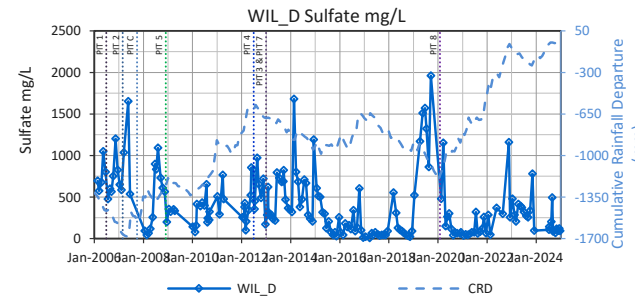
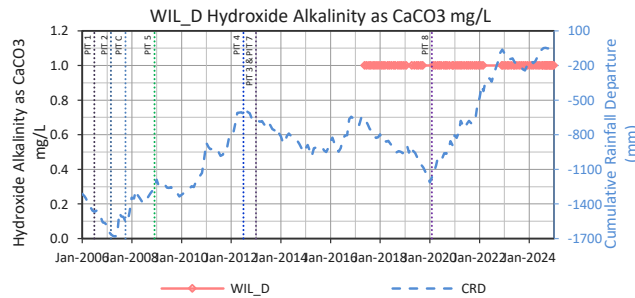
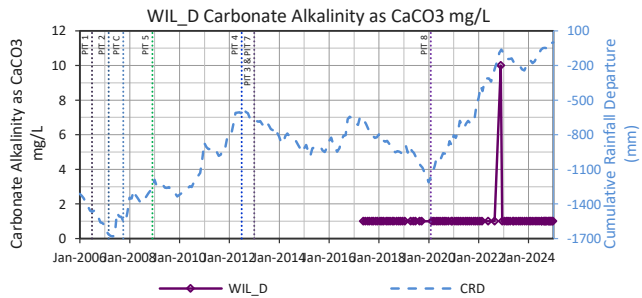
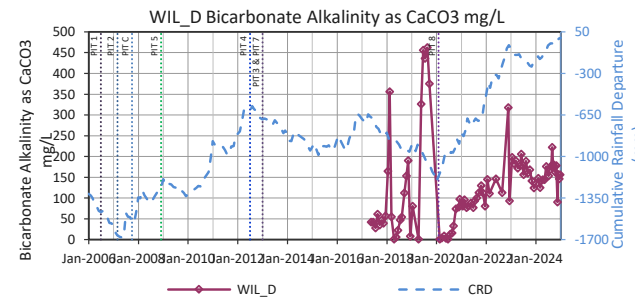
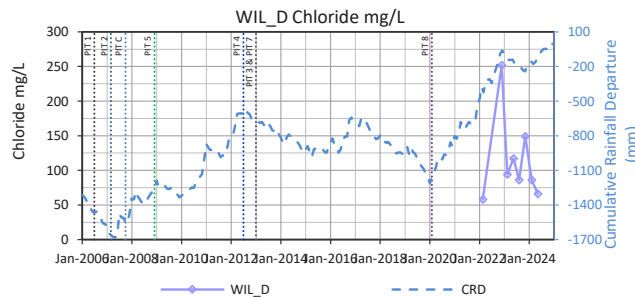
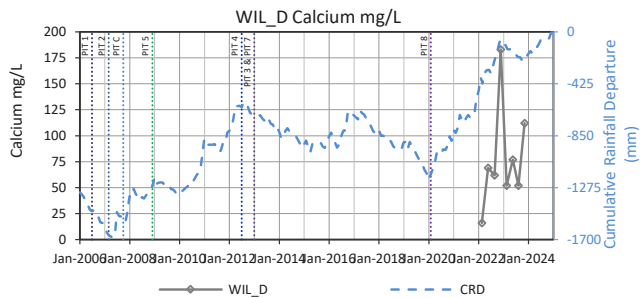
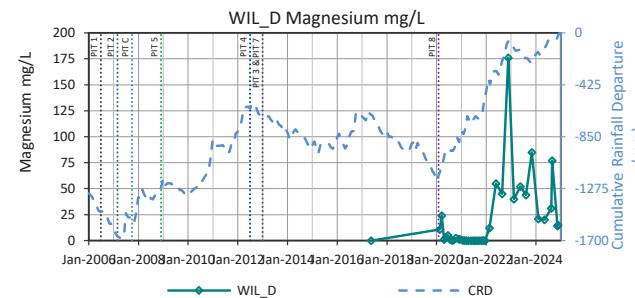
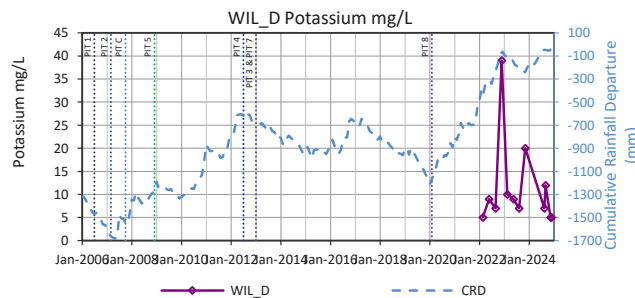
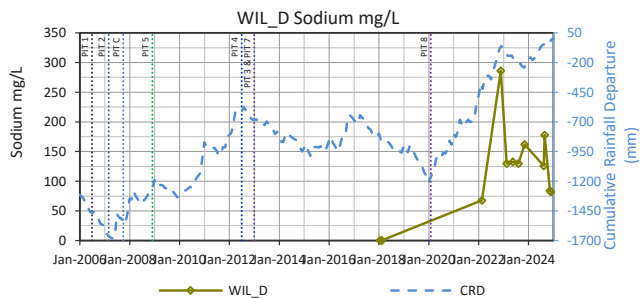
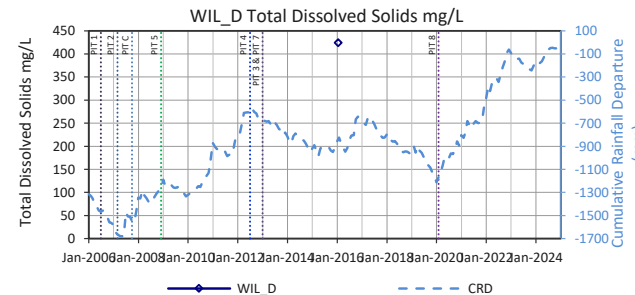
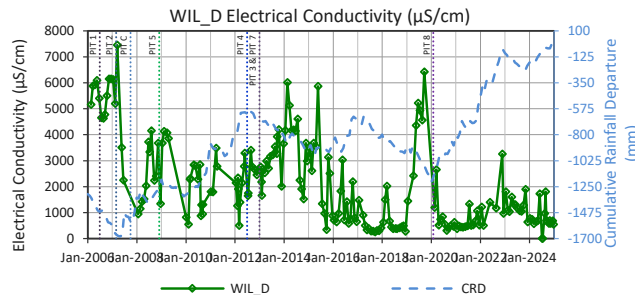
CC\_GS\_U

No Data Available for Elevation (mAHD)



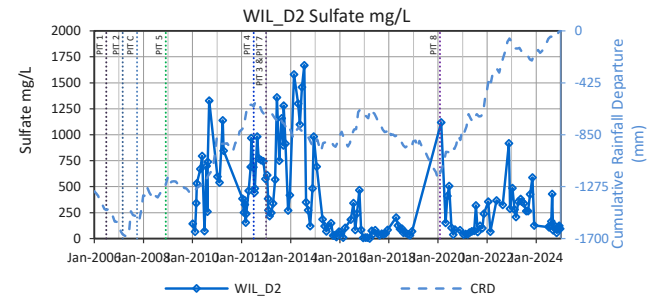
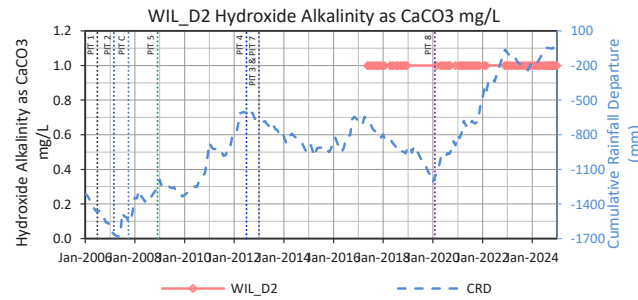
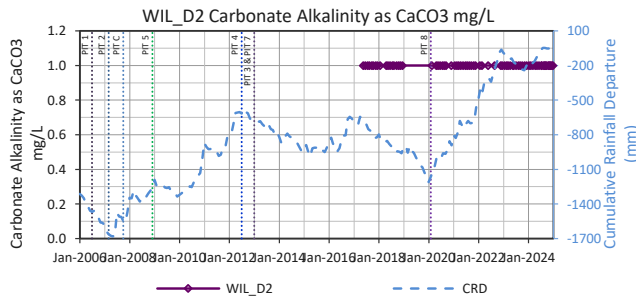
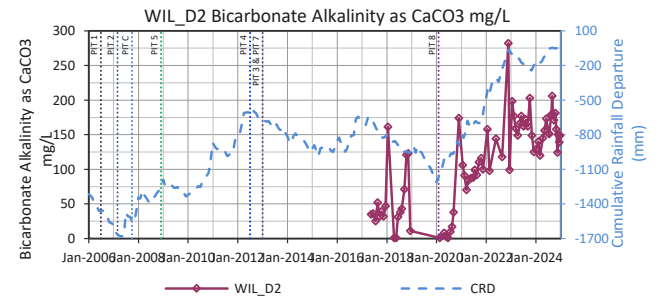
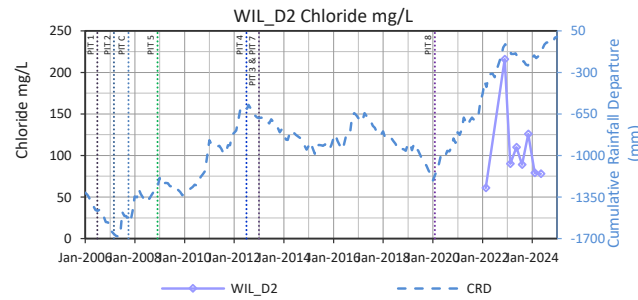
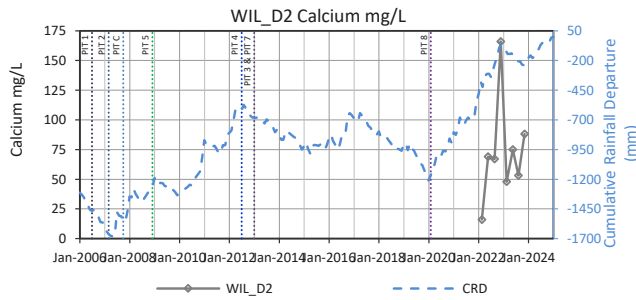
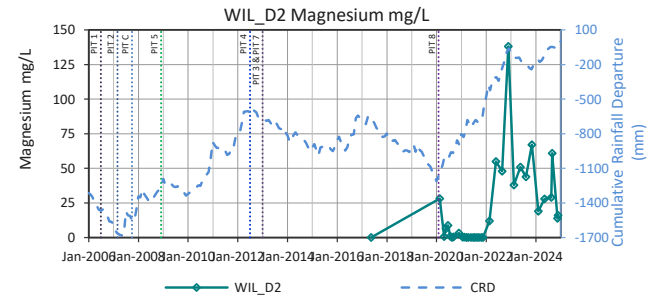
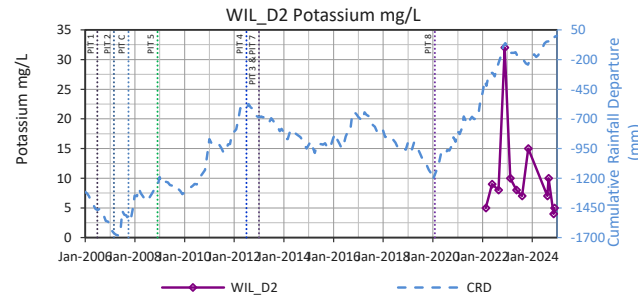
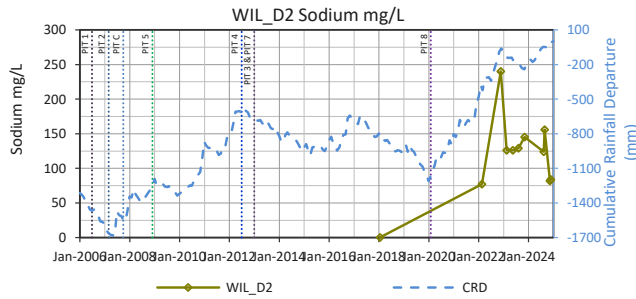
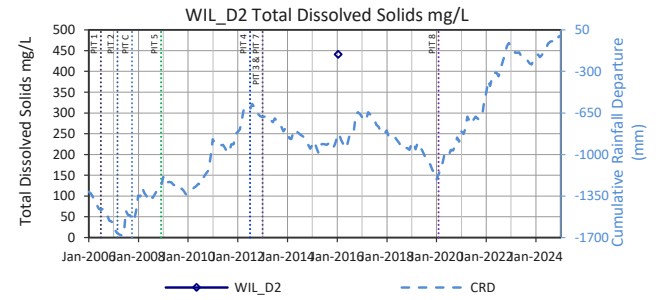
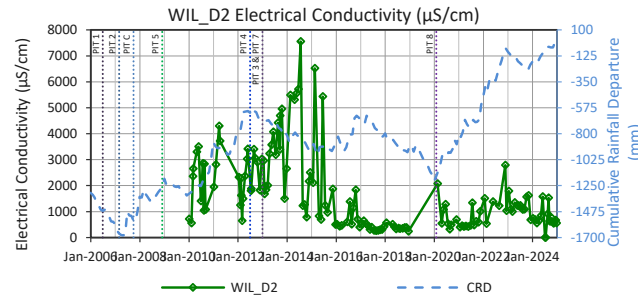
WIL\_D

No Data Available for Elevation (mAHD)



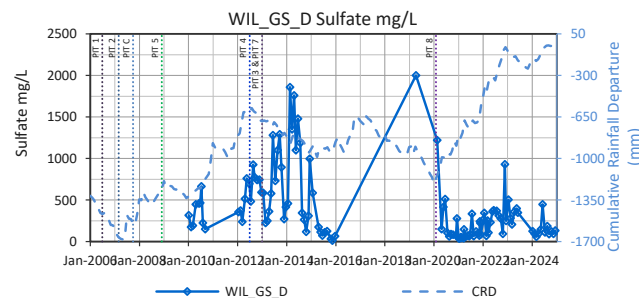
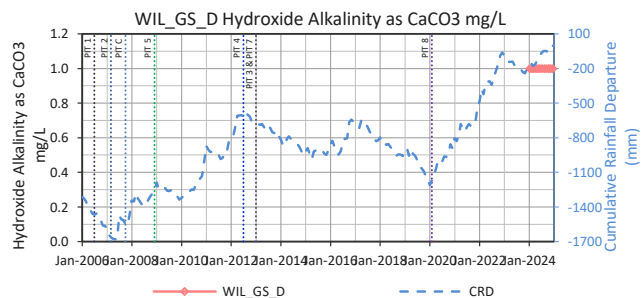
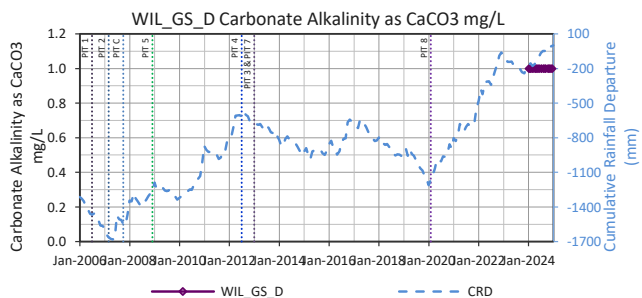
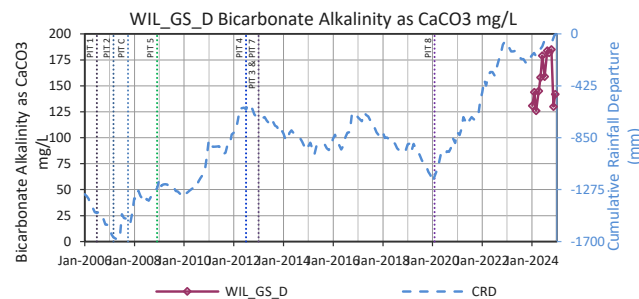
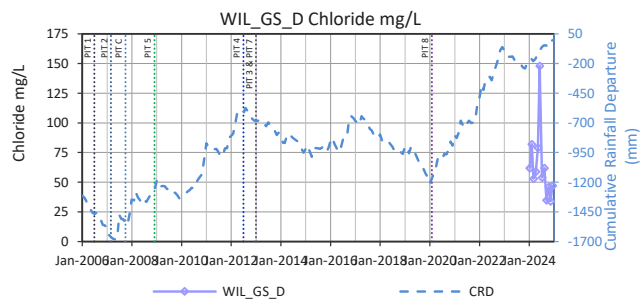
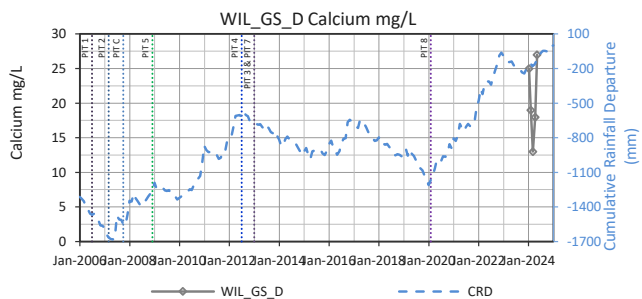
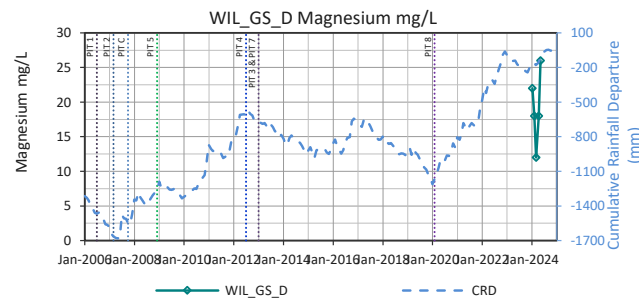
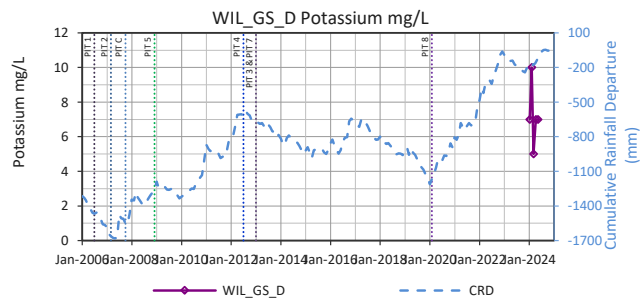
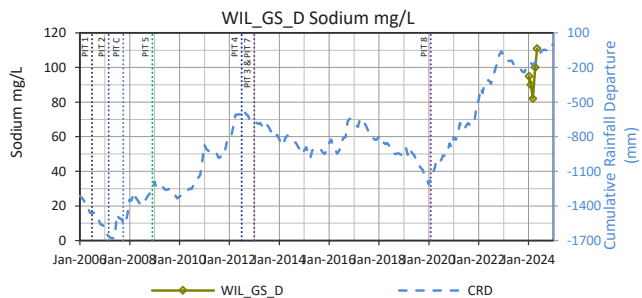
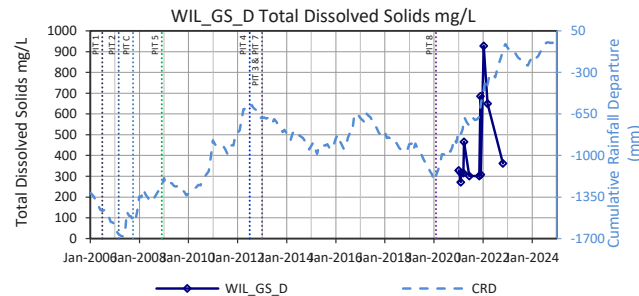
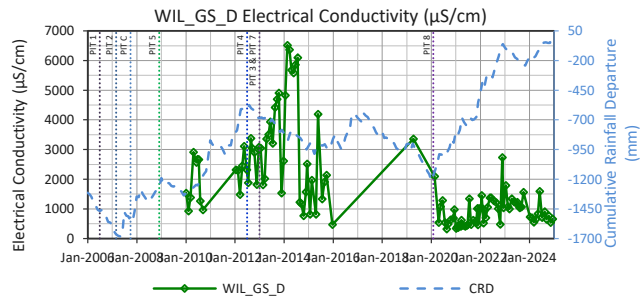
WIL\_D2

No Data Available for Elevation (mAHD)



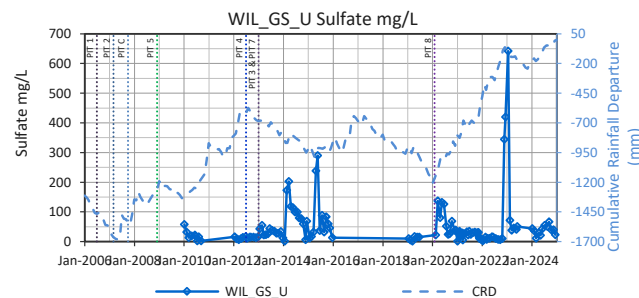
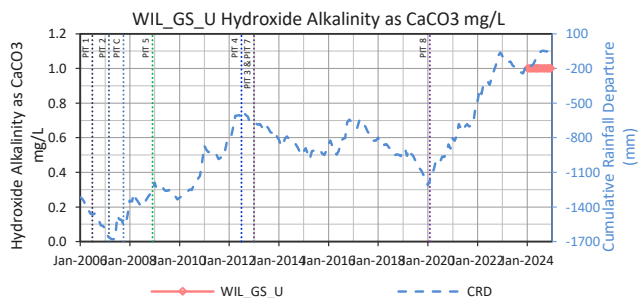
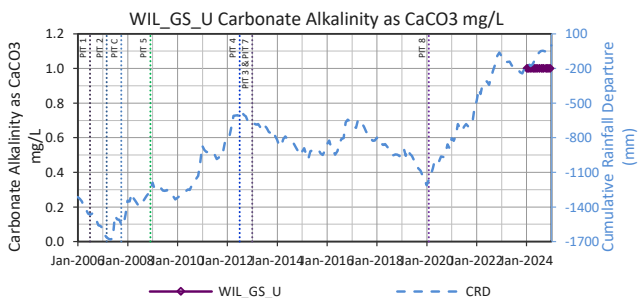
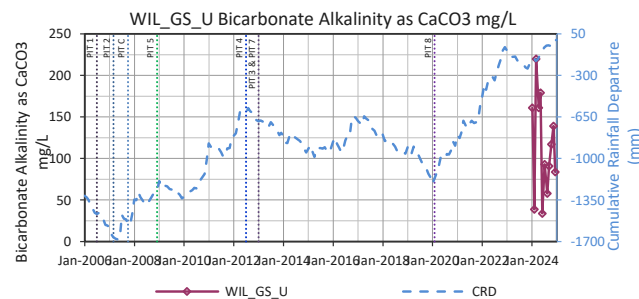
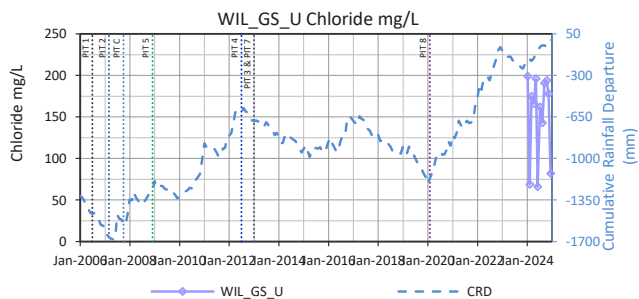
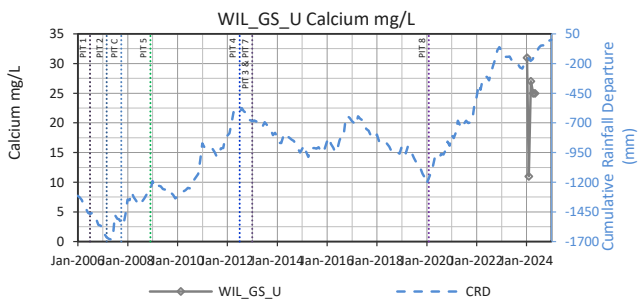
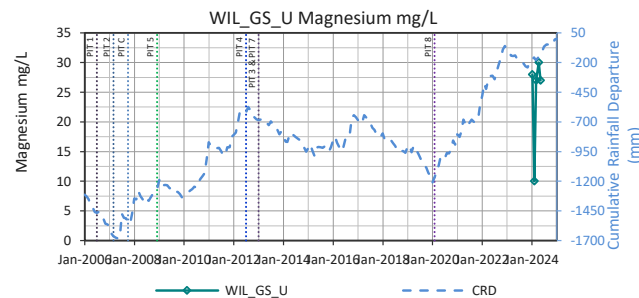
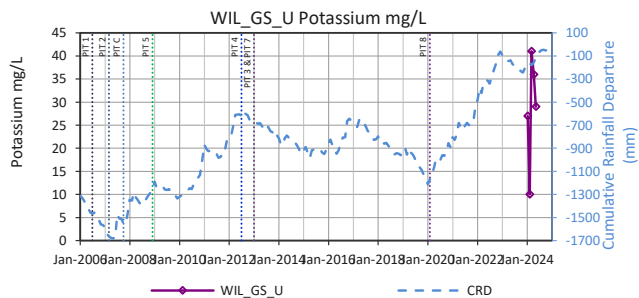
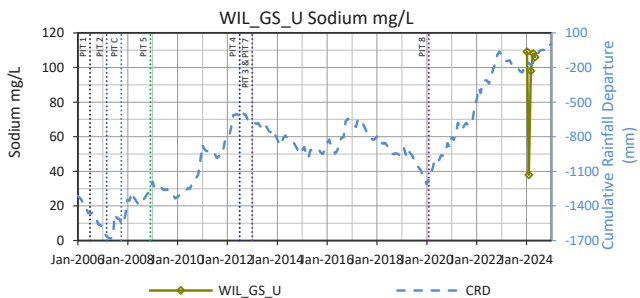
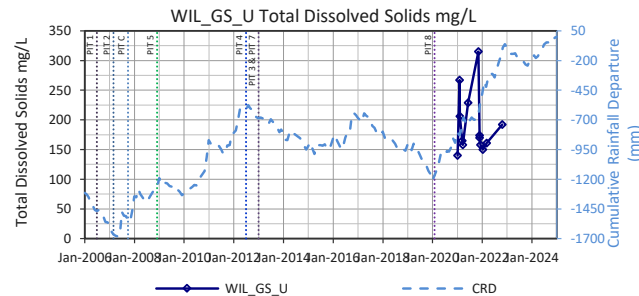
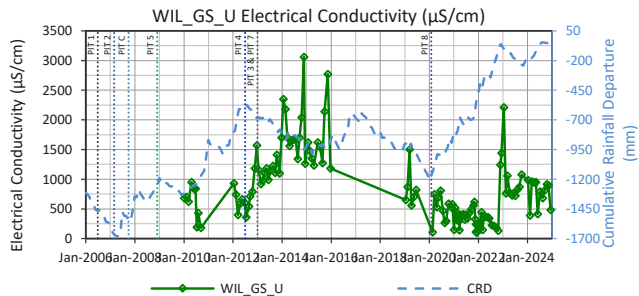
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No Data Available for Elevation (mAHD)



WIL\_GS\_U

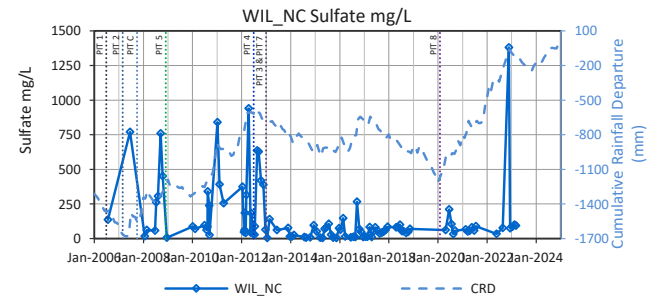
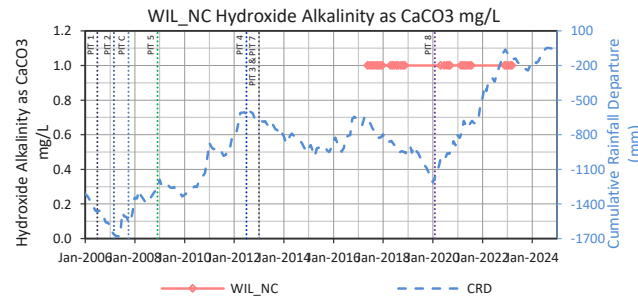
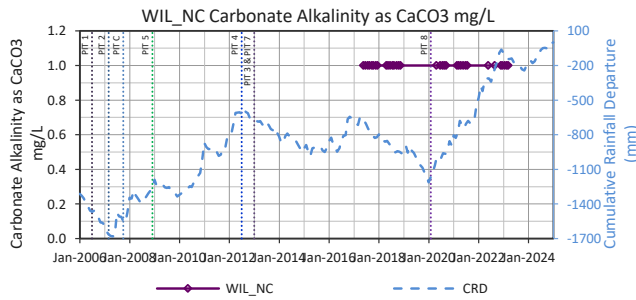
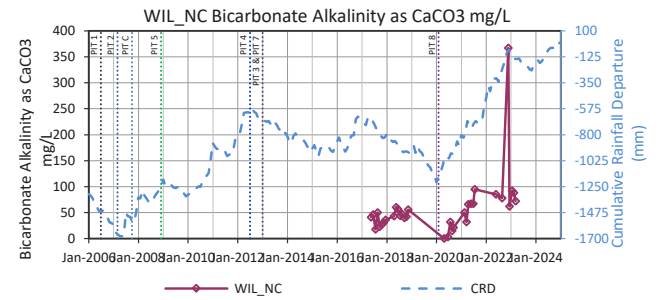
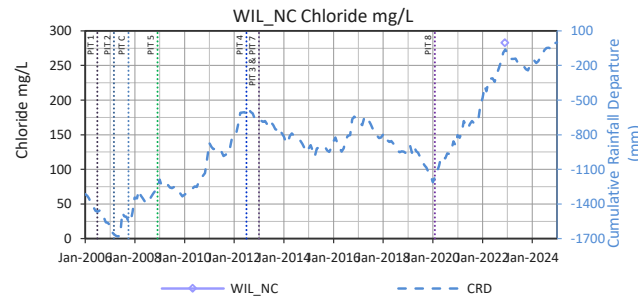
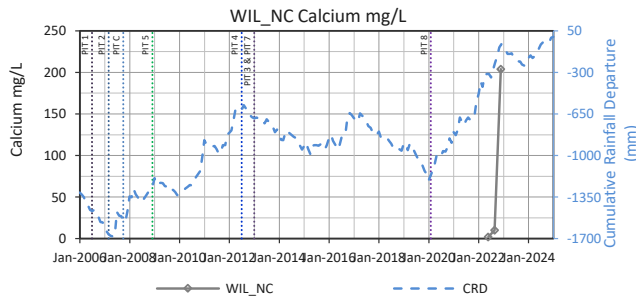
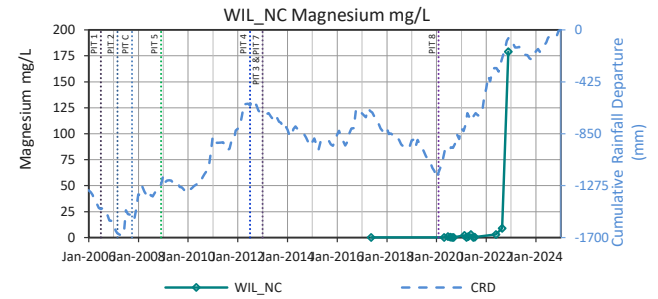
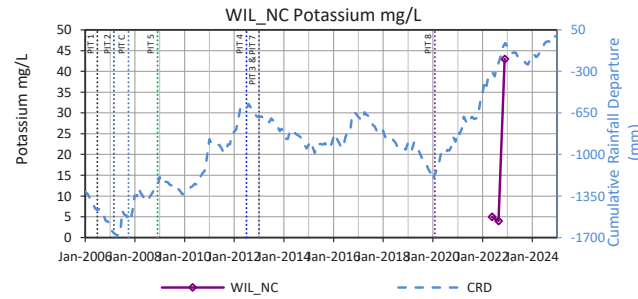
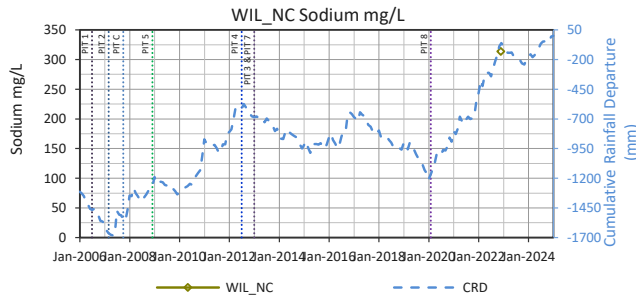
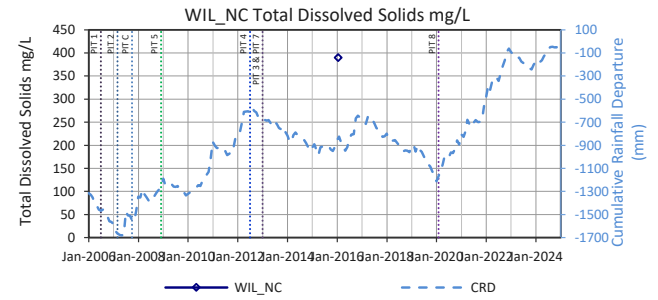
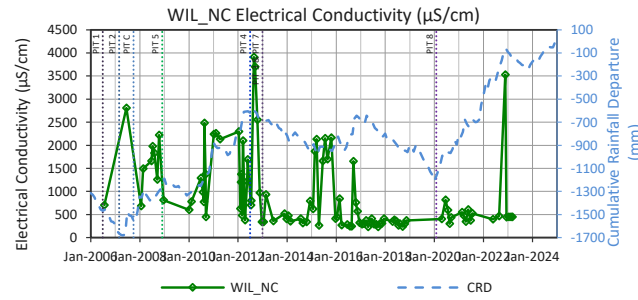
No Data Available for Elevation (mAHD)





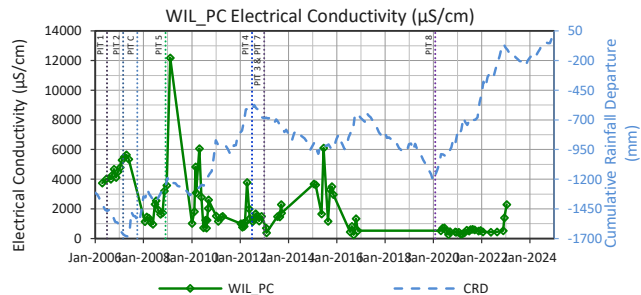
WIL\_NC

No Data Available for Elevation (mAHD)



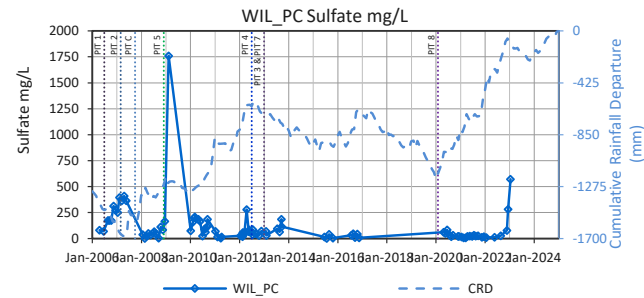
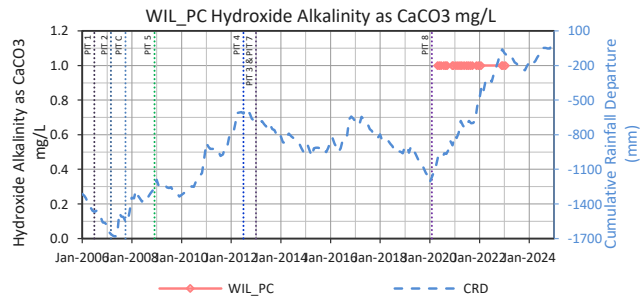
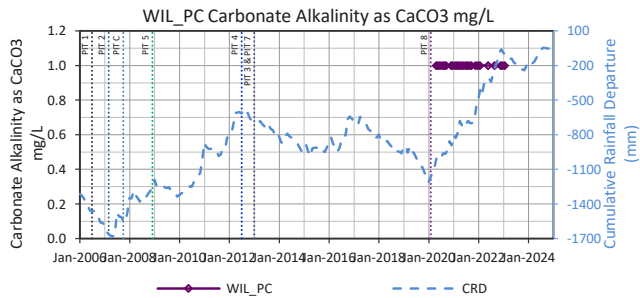
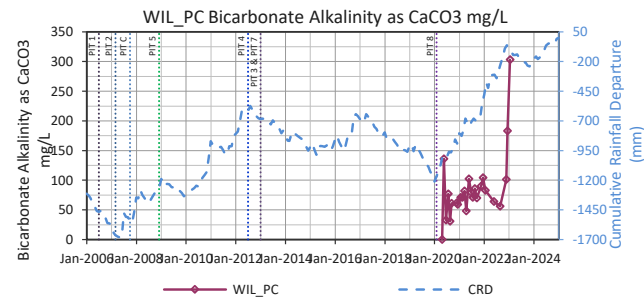
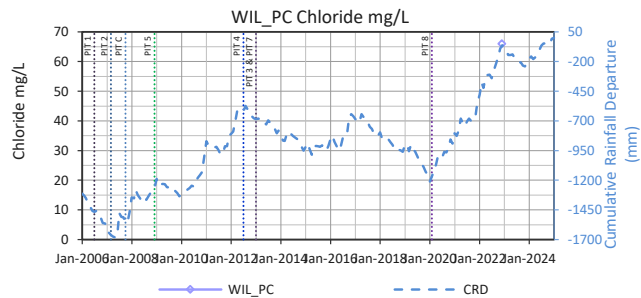
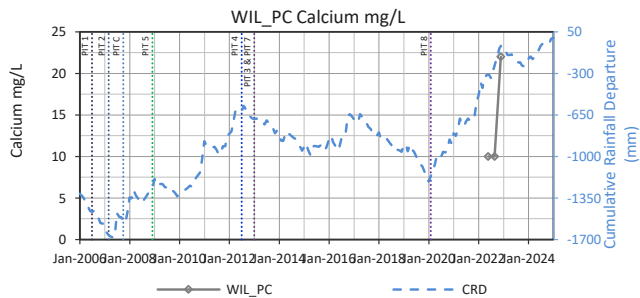
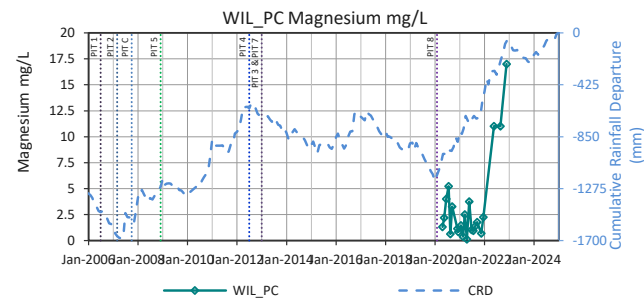
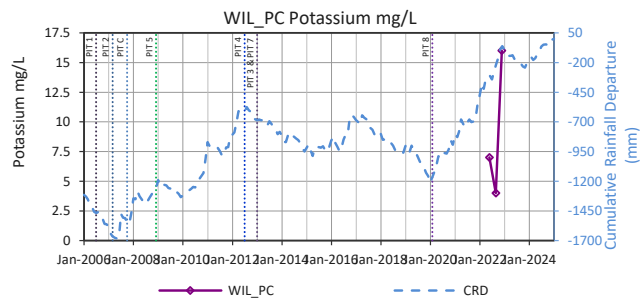
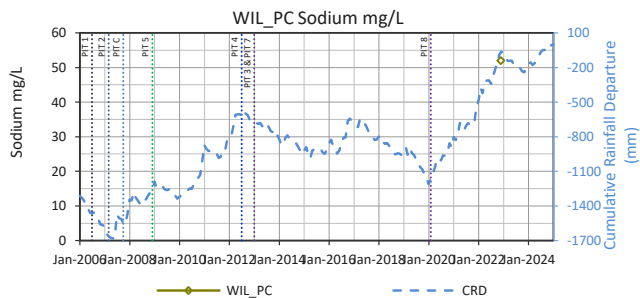
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No Data Available for Elevation (mAHD)



WIL\_PC

No Data Available for Total Dissolved Solids mg/L

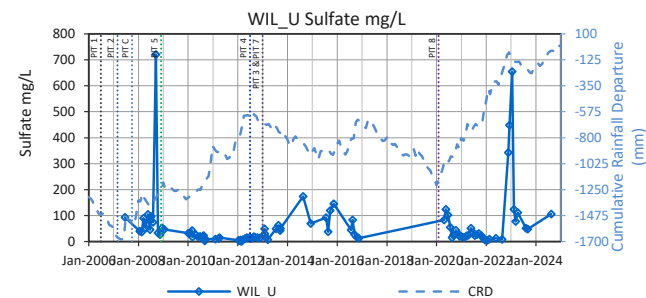
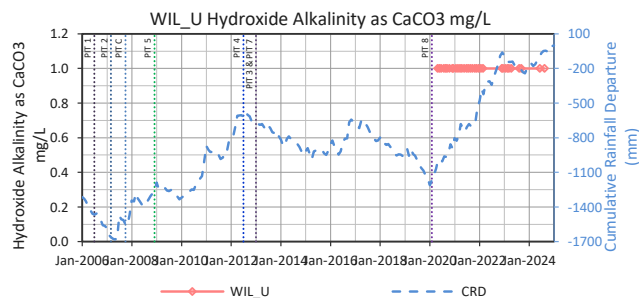
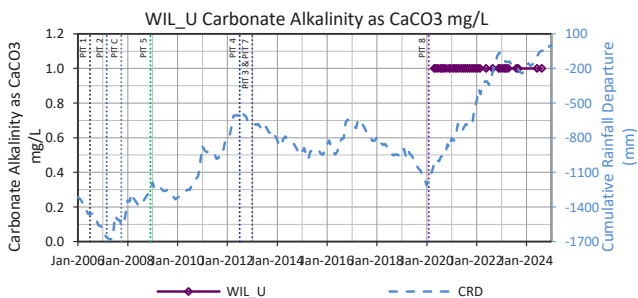
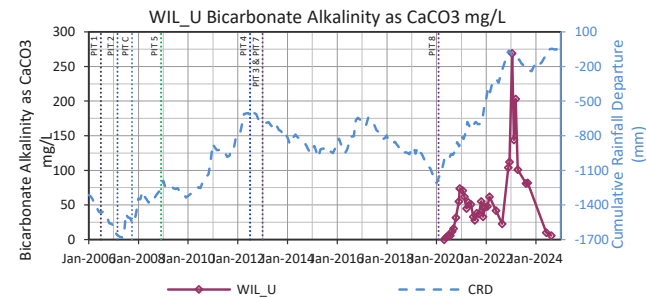
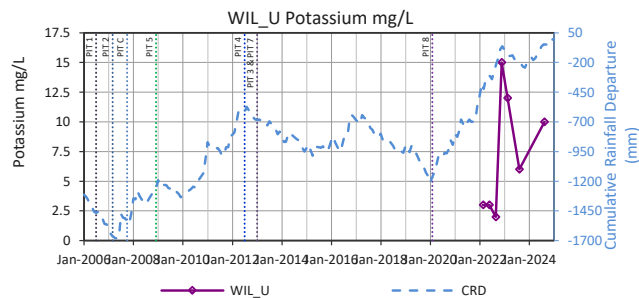
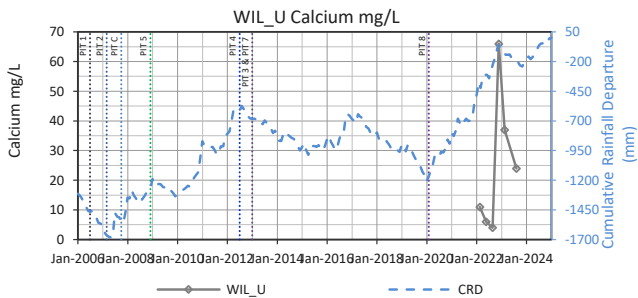
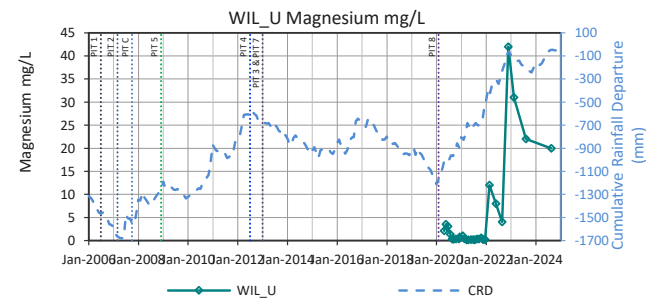
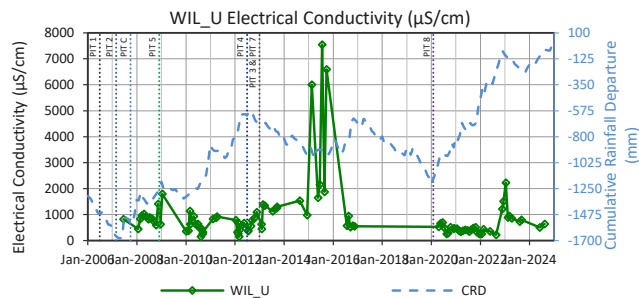
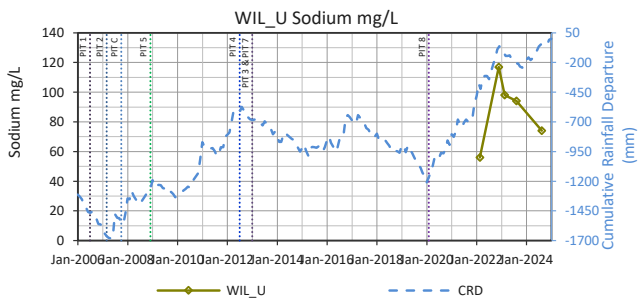


WIL\_U

No Data Available for Elevation (mAHD)

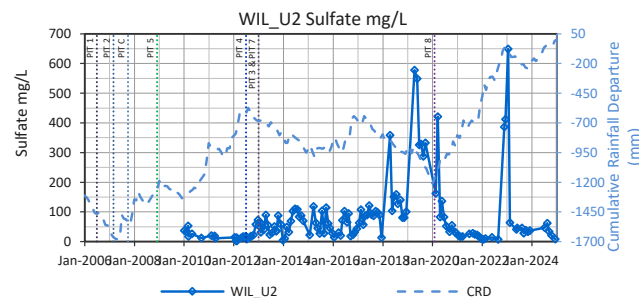
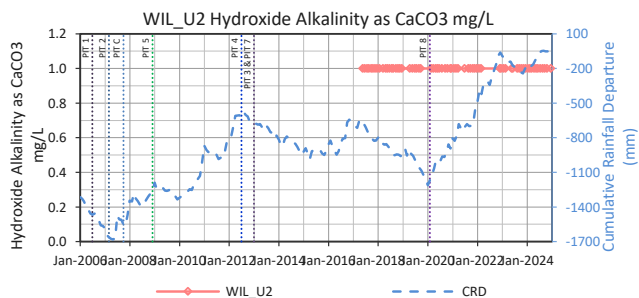
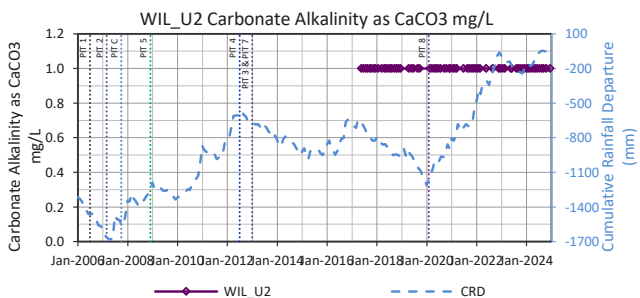
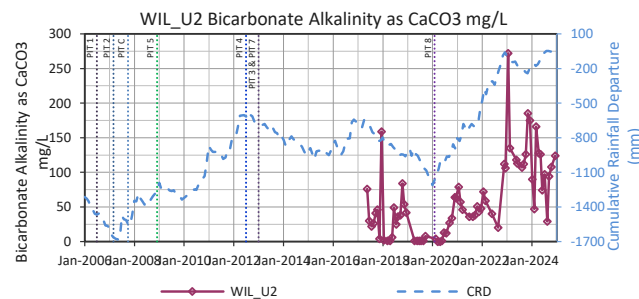
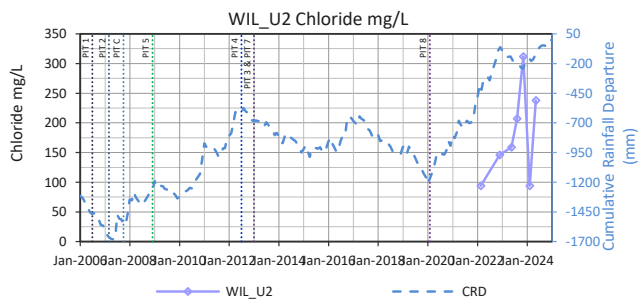
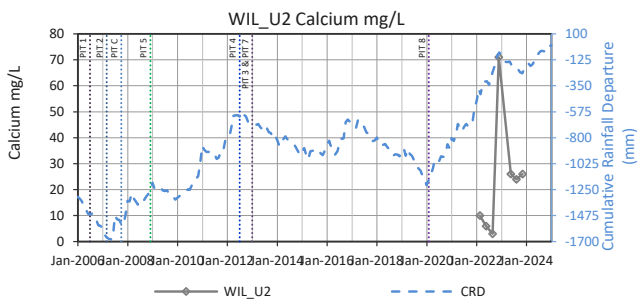
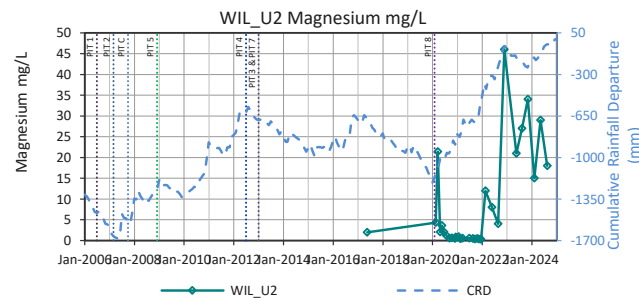
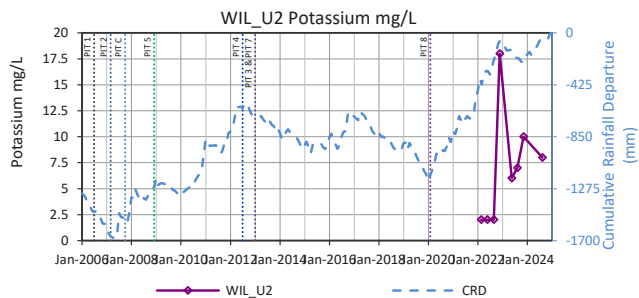
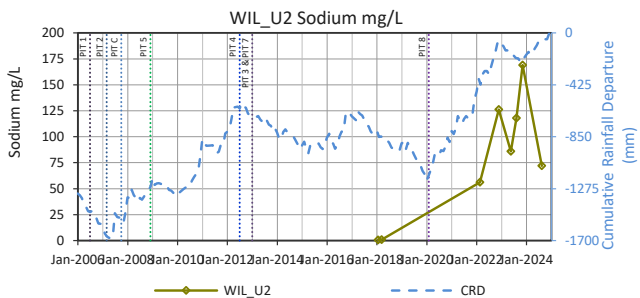
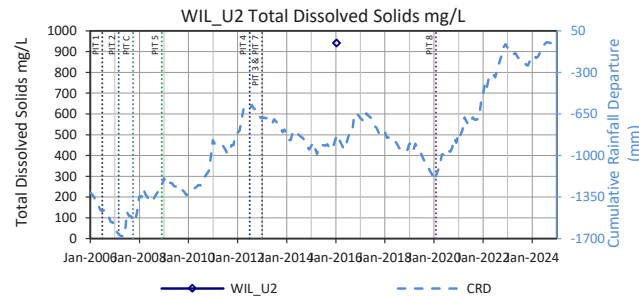
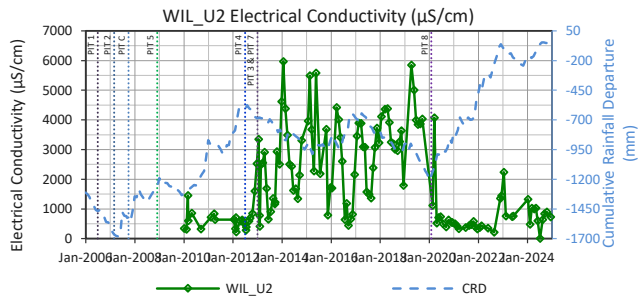
WIL\_U

No Data Available for Total Dissolved Solids mg/L



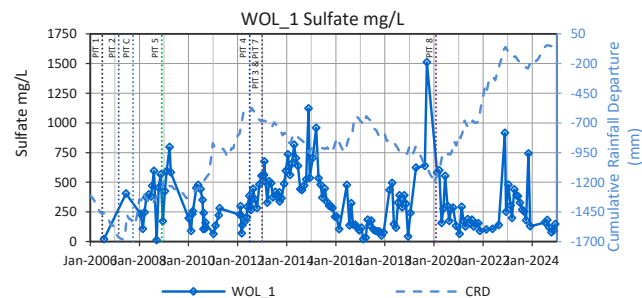
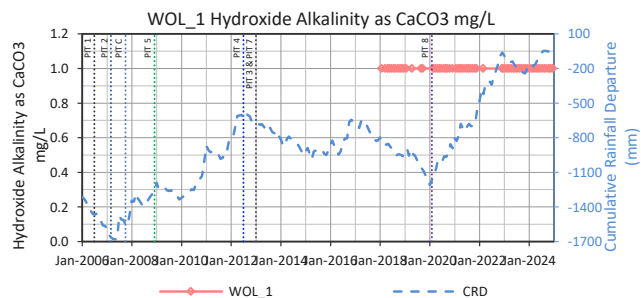
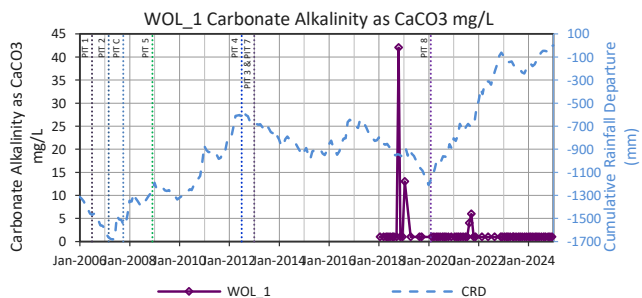
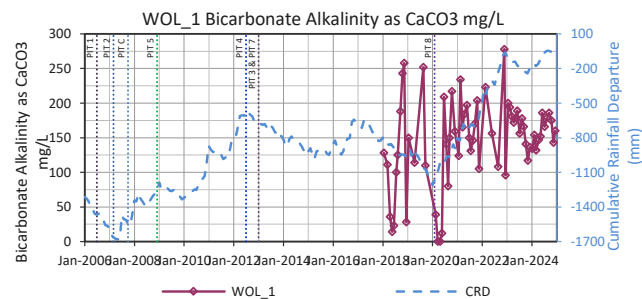
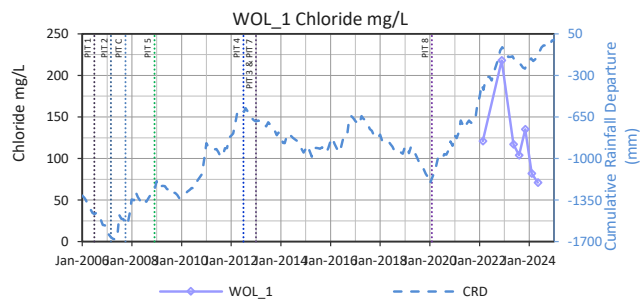
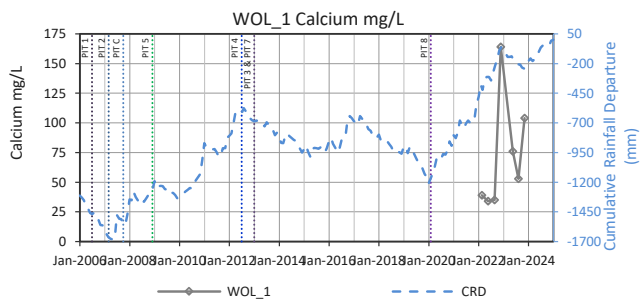
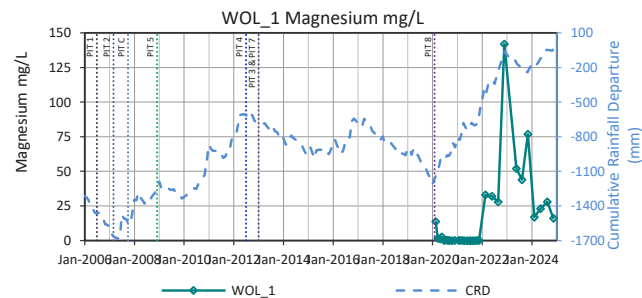
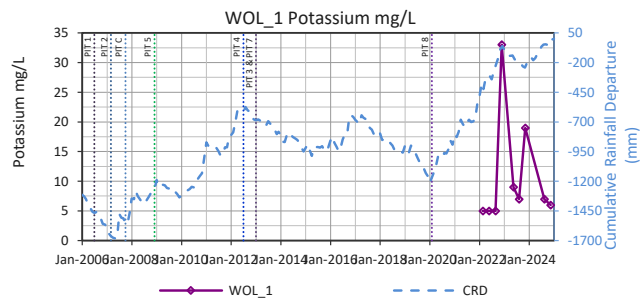
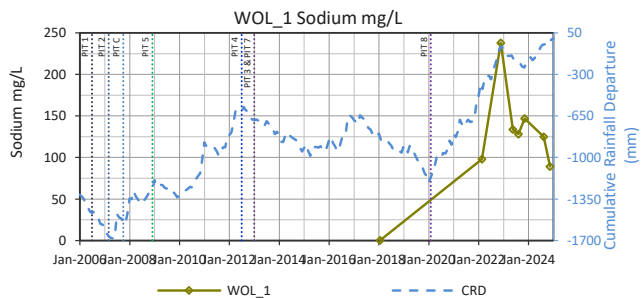
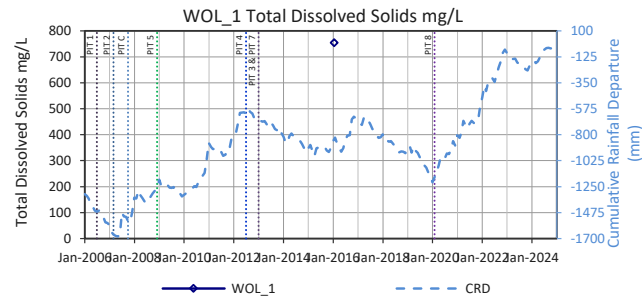
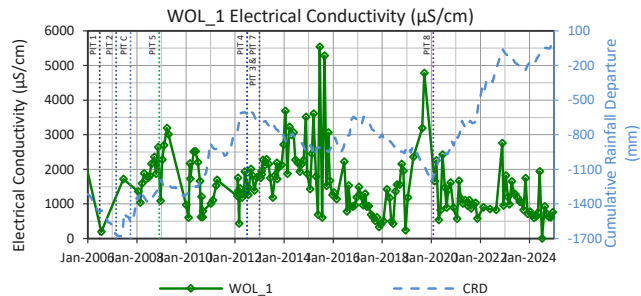
WIL\_U2

No Data Available for Elevation (mAHD)



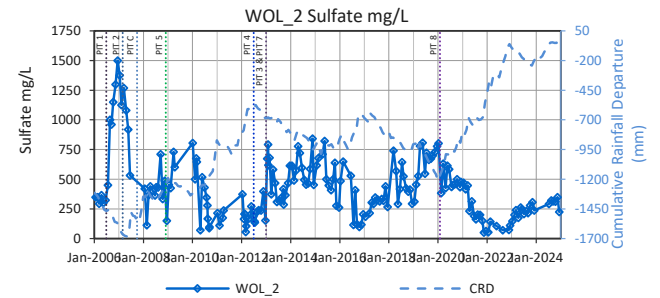
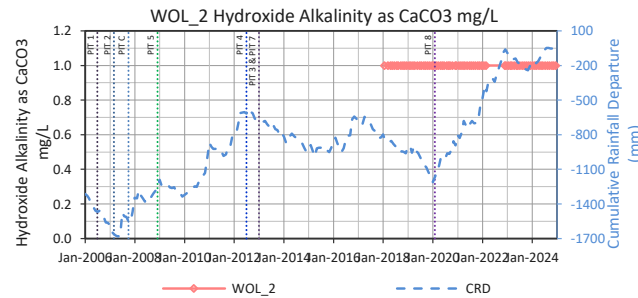
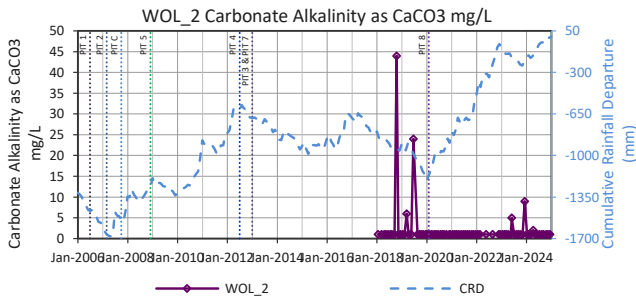
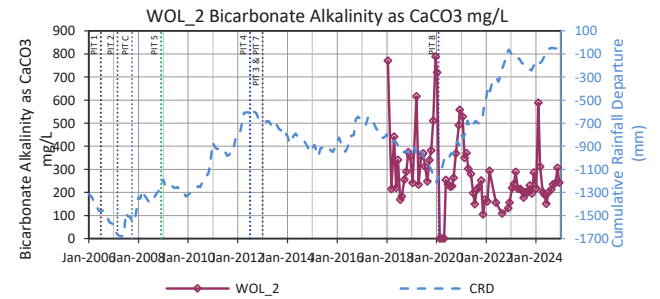
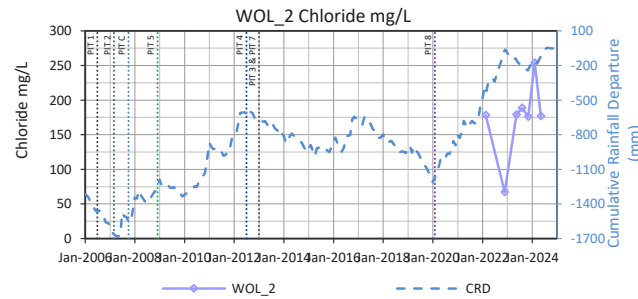
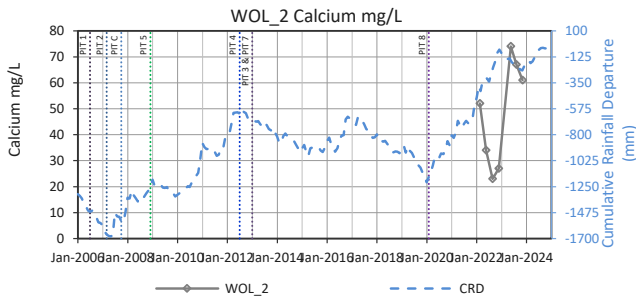
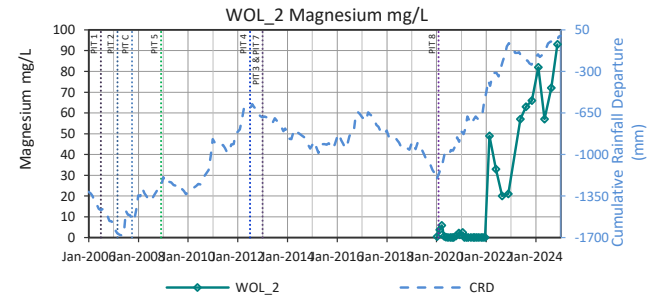
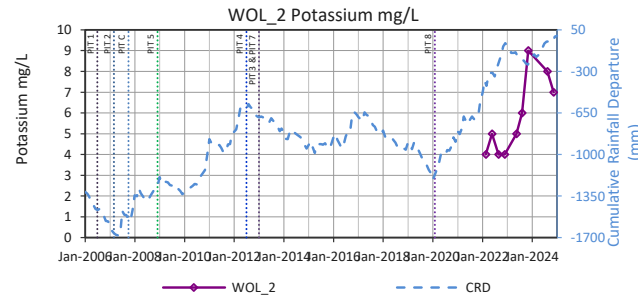
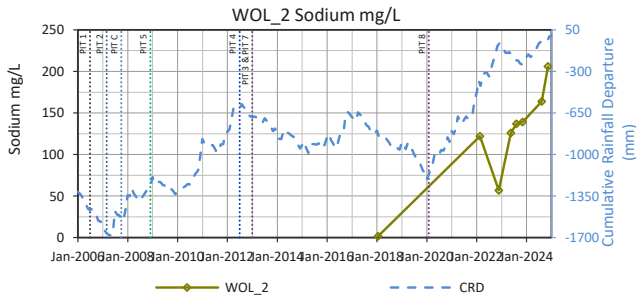
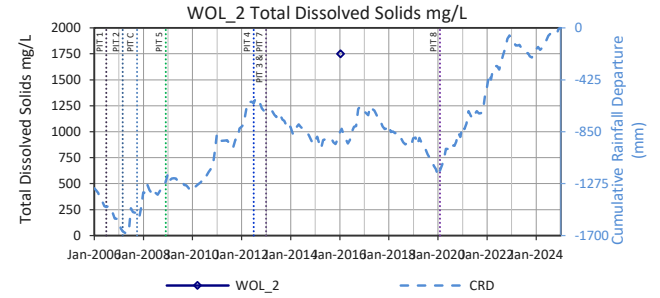
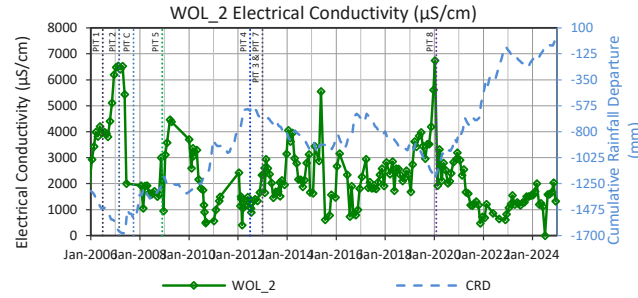
WOL\_1

No Data Available for Elevation (mAHD)



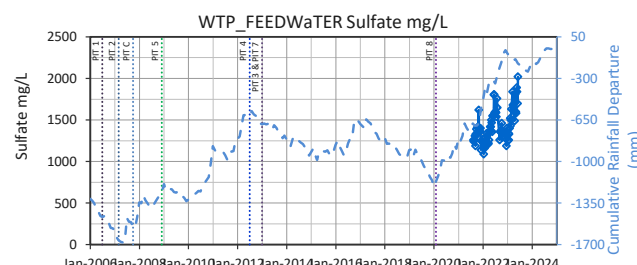
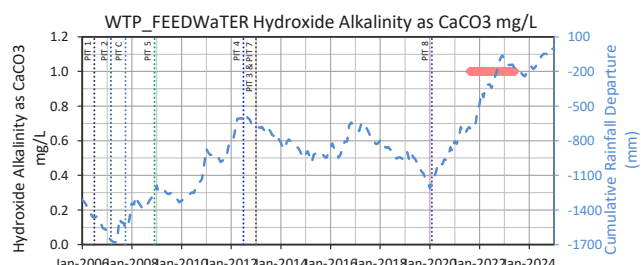
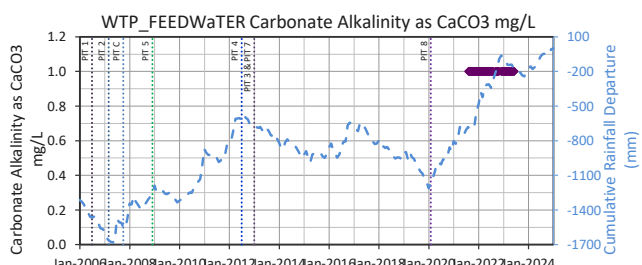
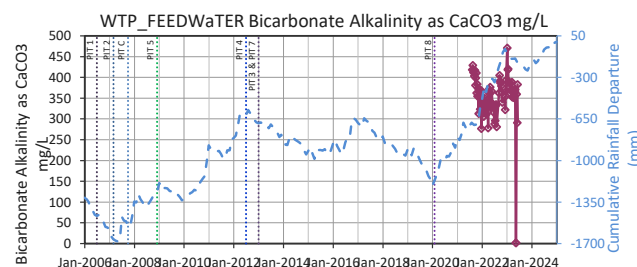
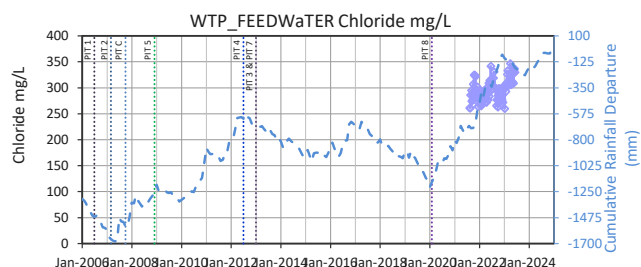
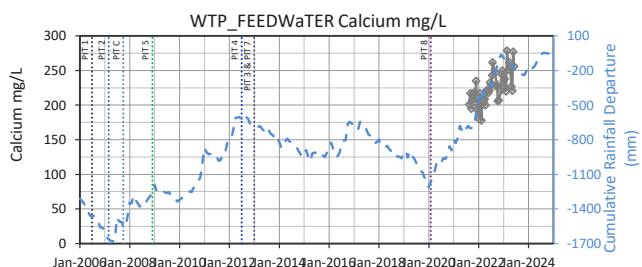
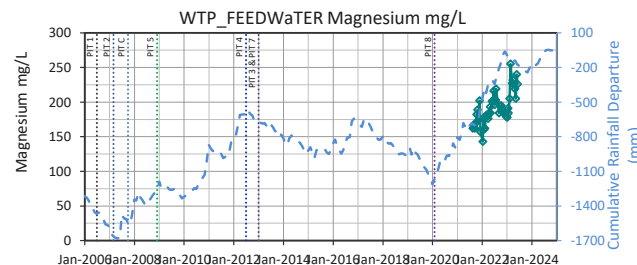
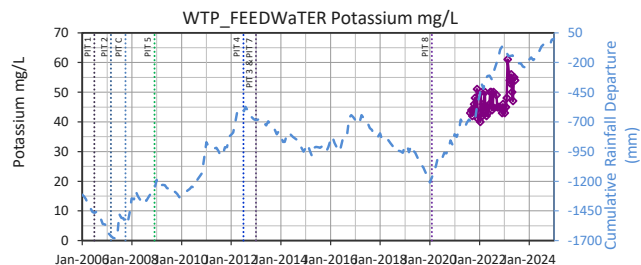
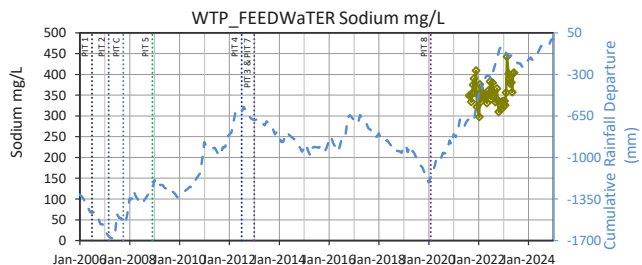
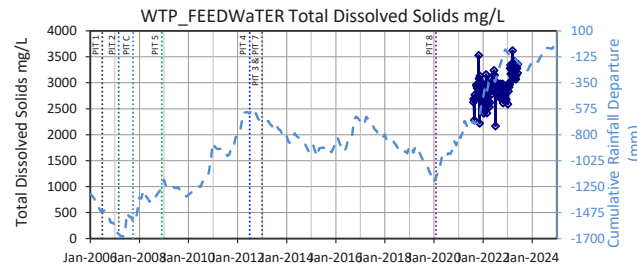
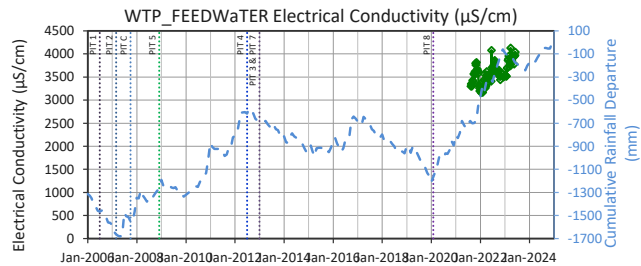
WOL\_2

No Data Available for Elevation (mAHD)



WTP\_FEEDWaTER

No Data Available for Elevation (mAHD)





# Appendix D Model Performance

## Annual Review – Wilpinjong Coal MineWilpinjong Coal Mine

**2024 Groundwater Compliance**

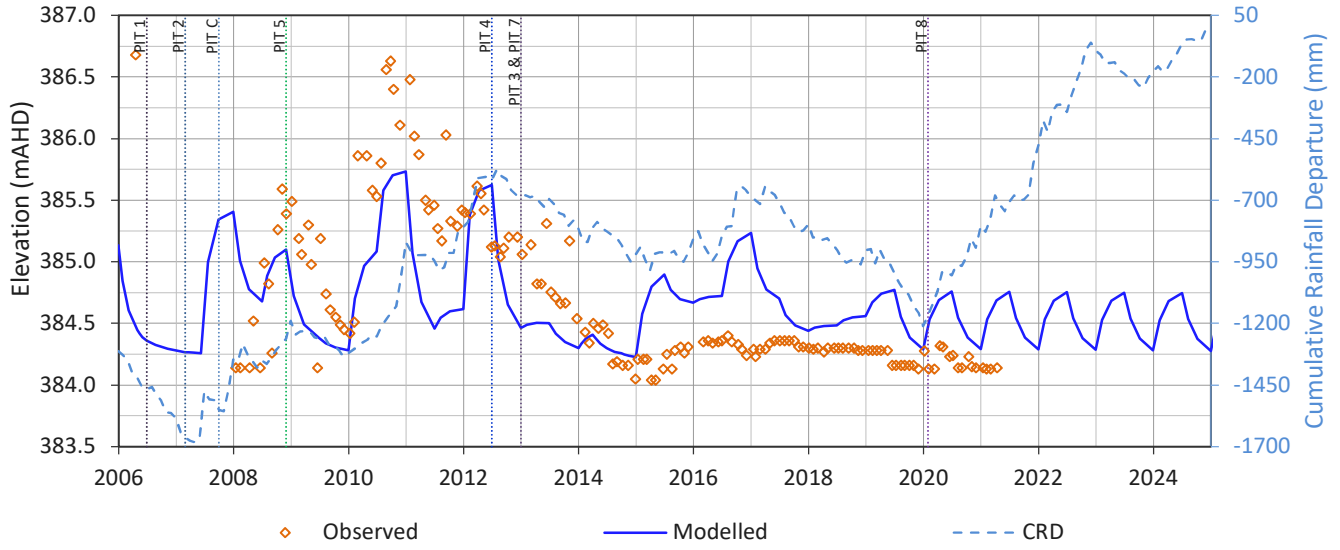
**Wilpinjong Coal Mine**

SLR Project No.: 665.v10014.02417

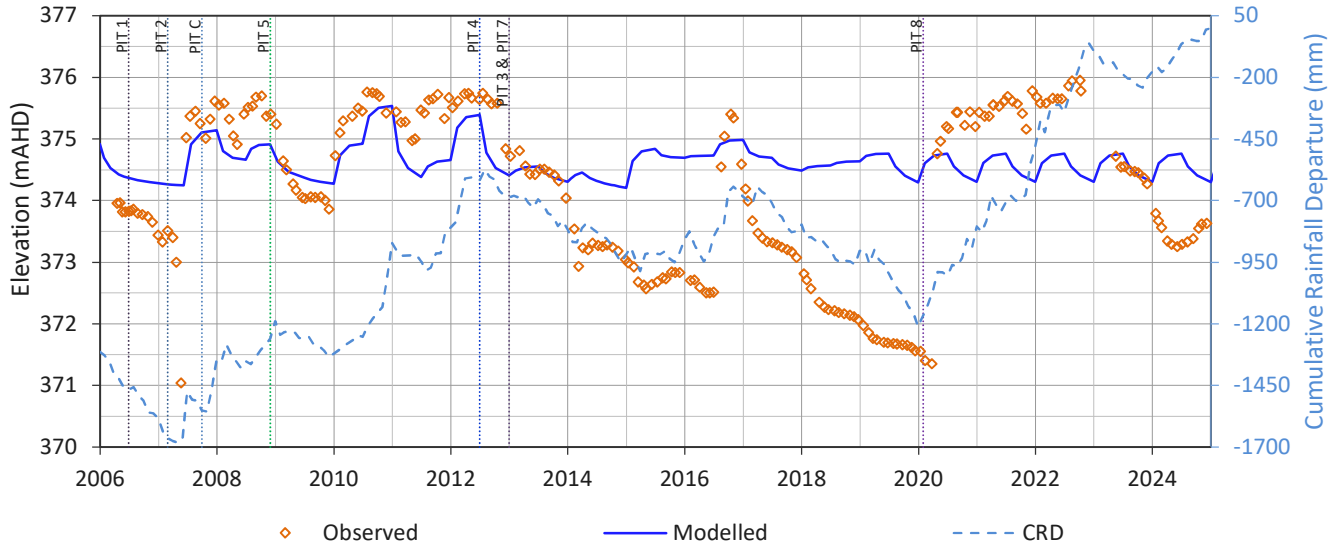
28 March 2025



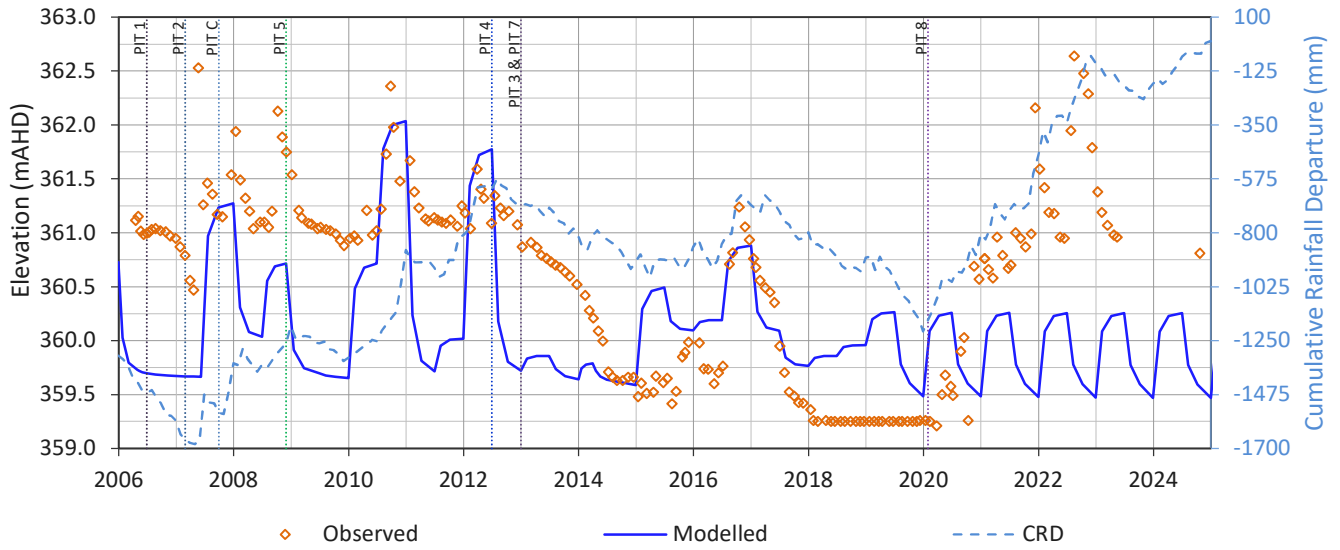
GWa1 Model Performance



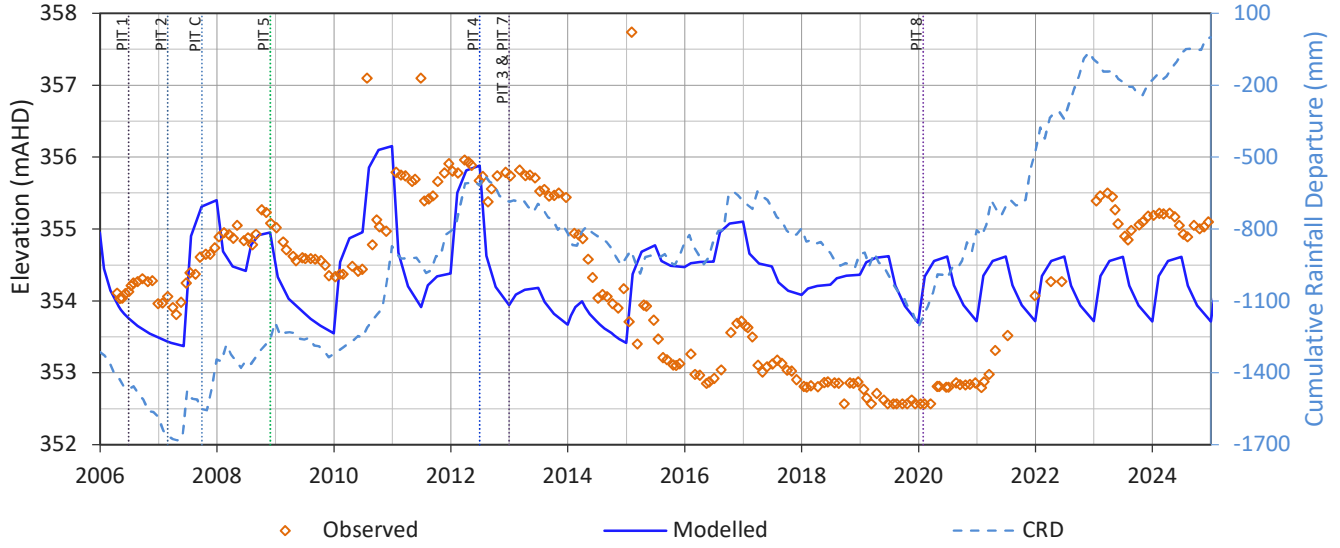
GWa2 Model Performance



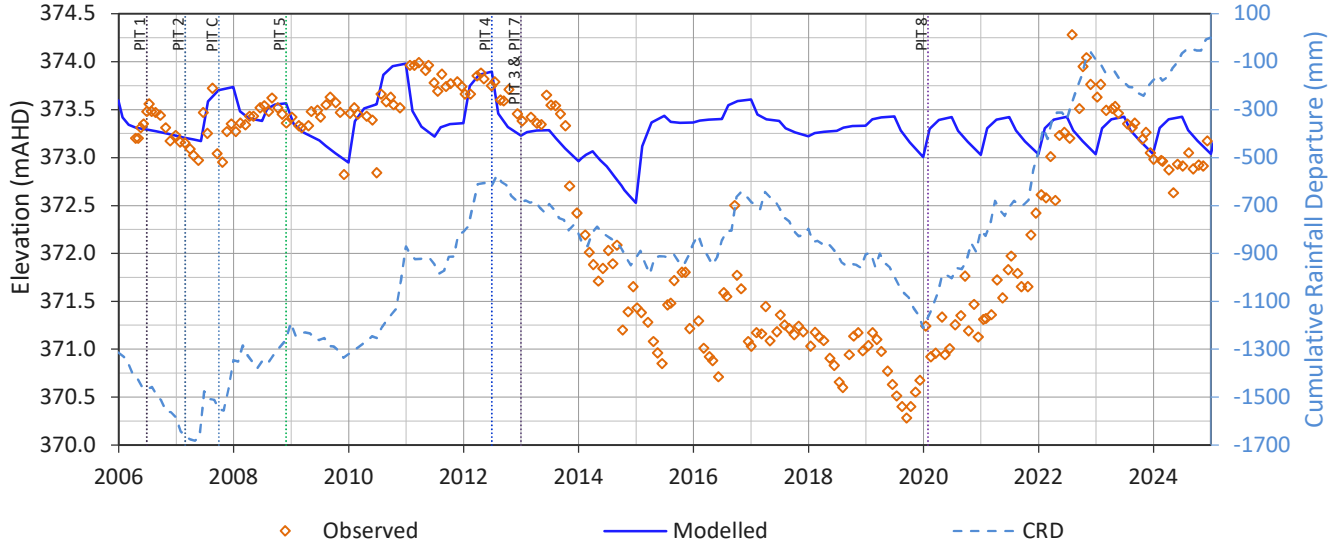
GWa3 Model Performance



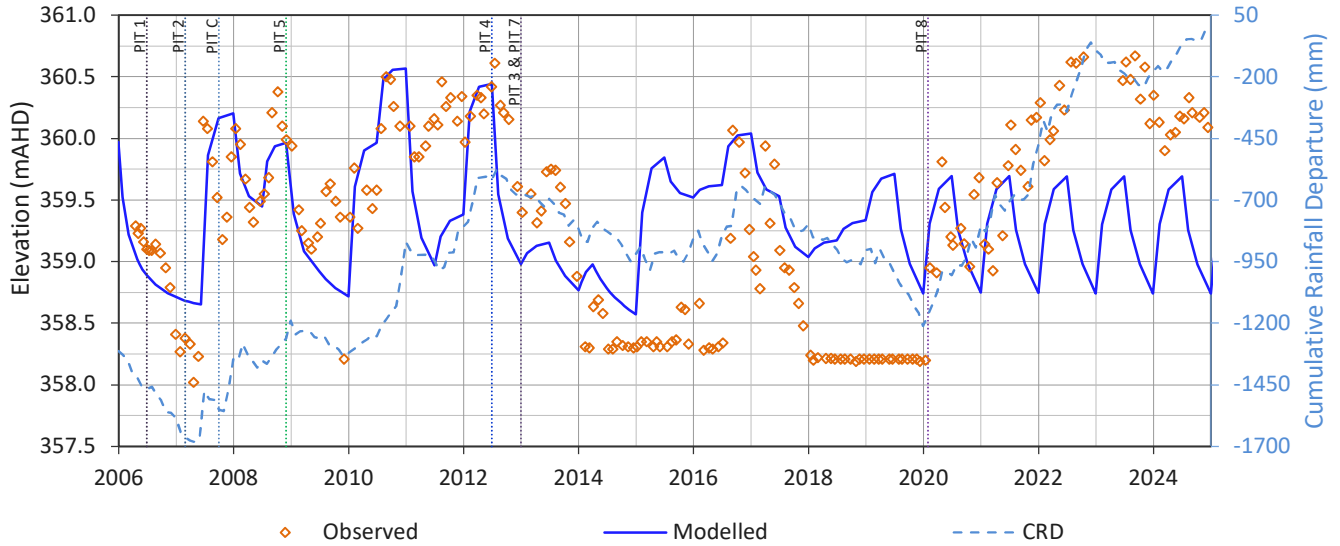
GWa4 Model Performance



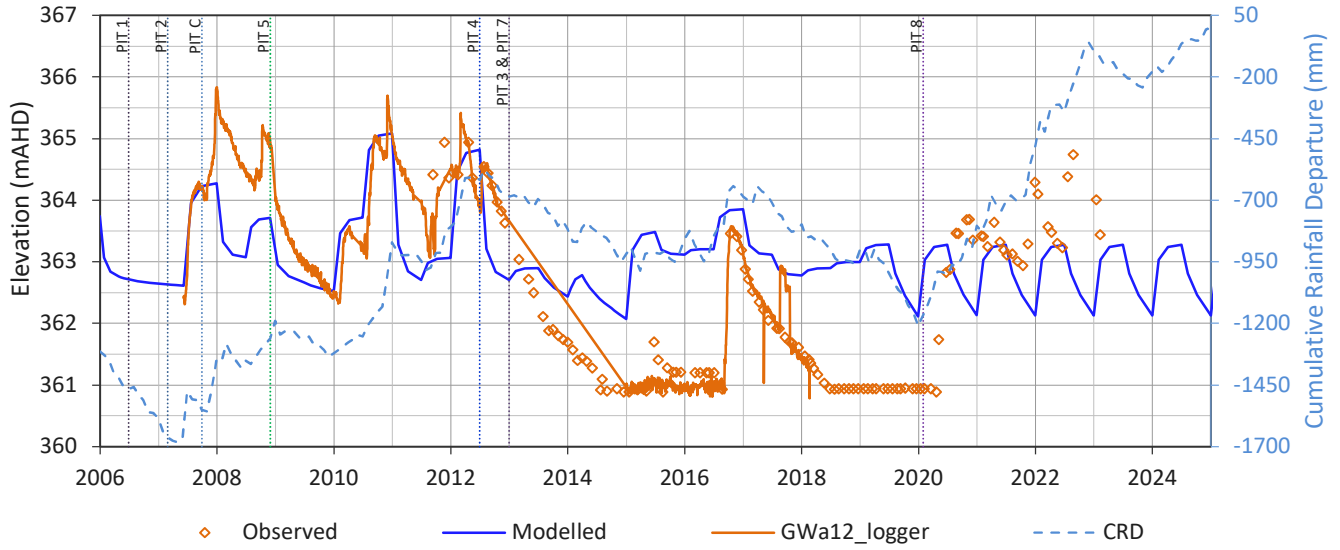
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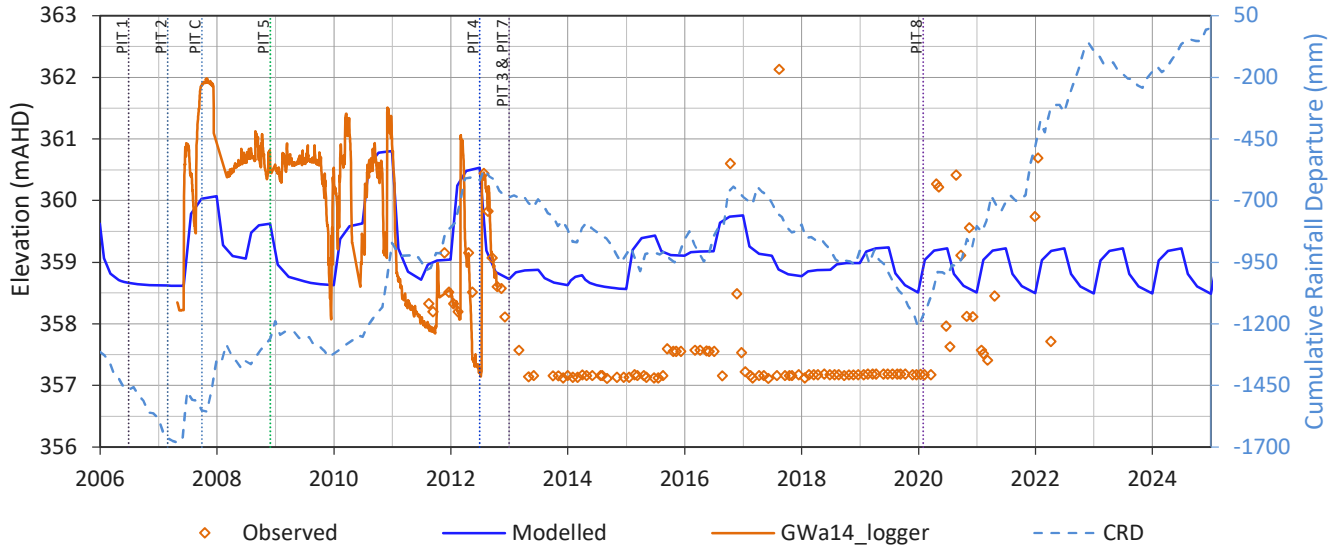
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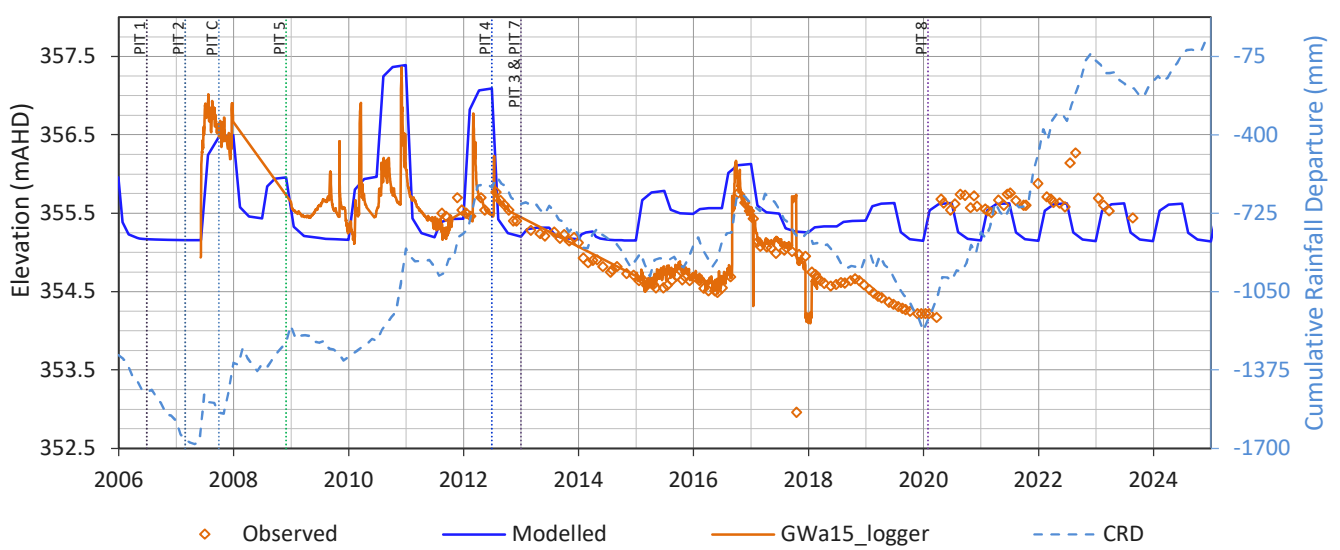
GWa12 Model Performance



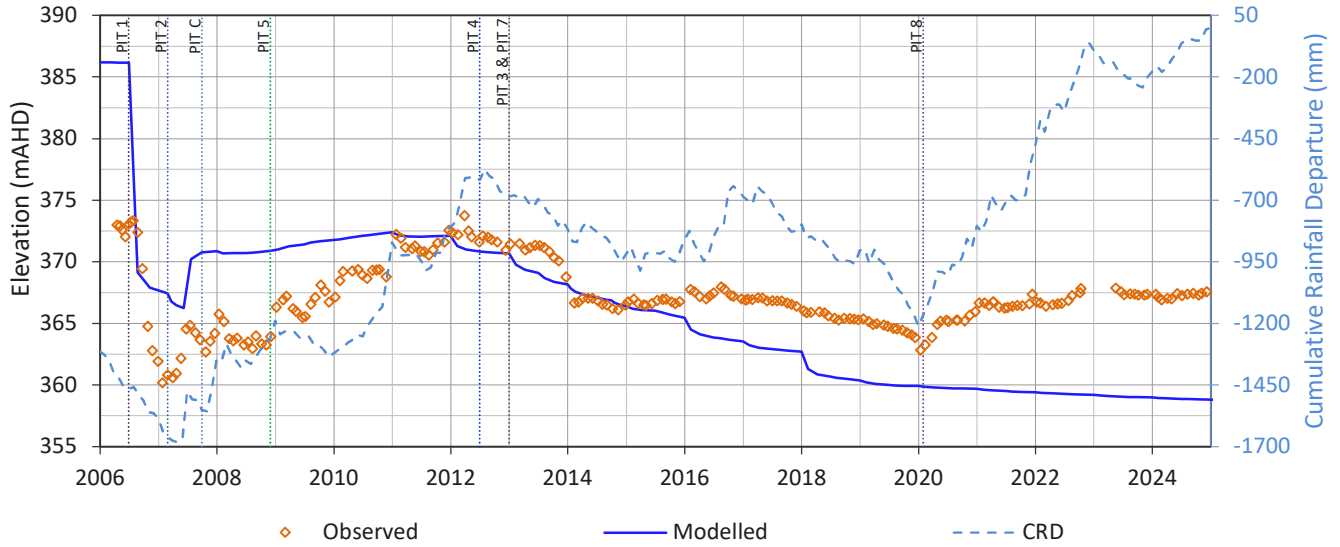
GWA14 Model Performance



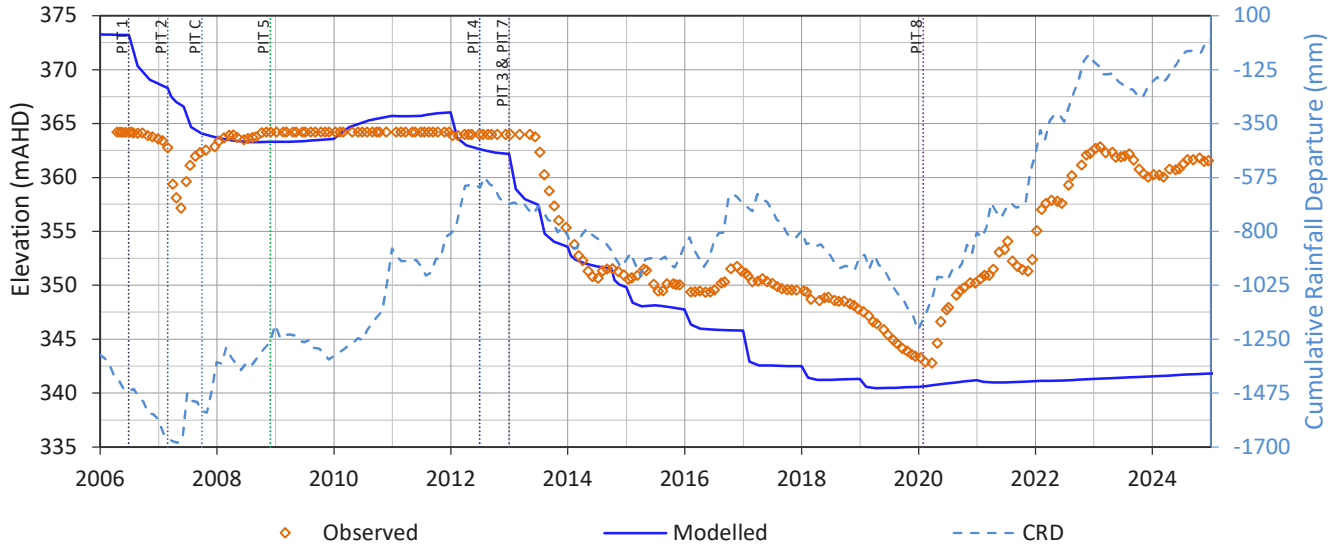
GWA15 Model Performance



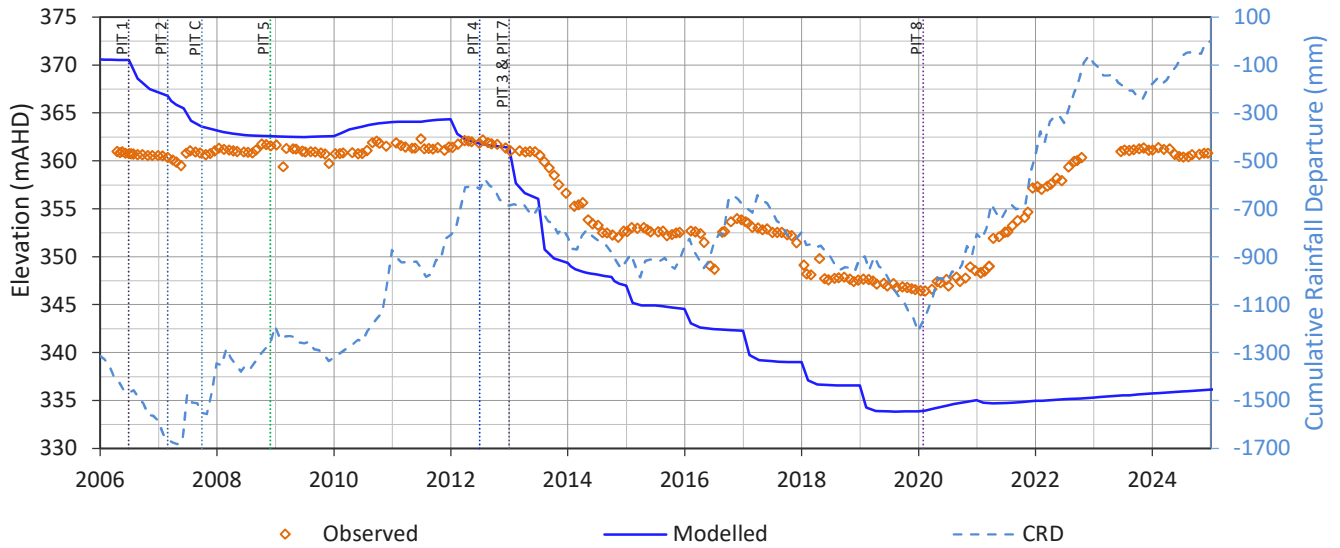
GWc1 Model Performance



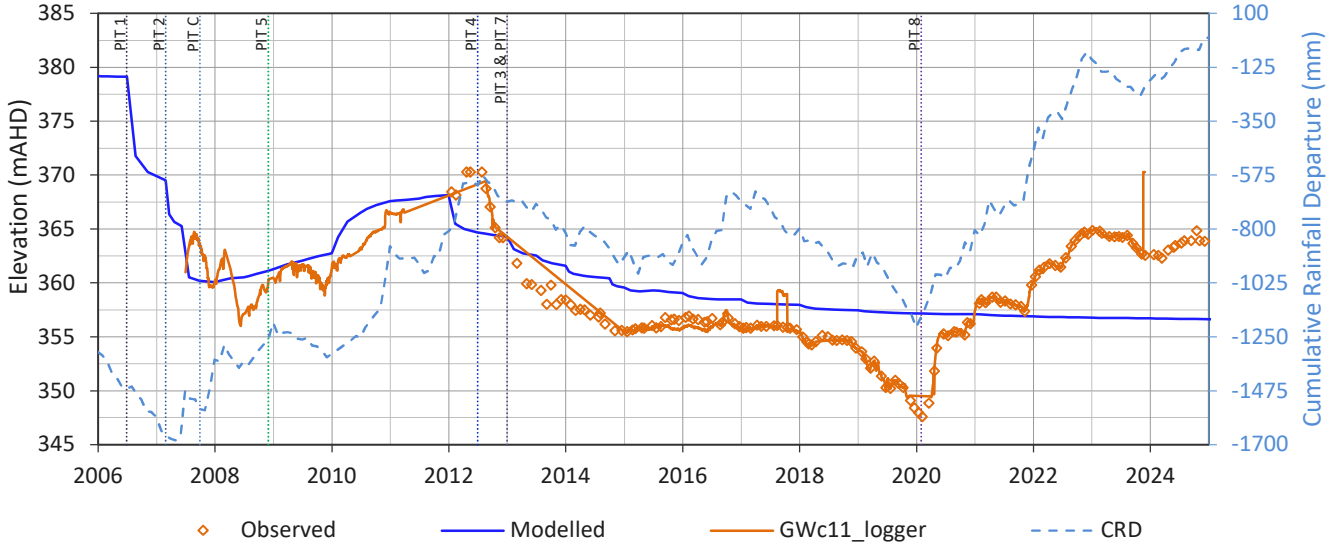
GWc2 Model Performance



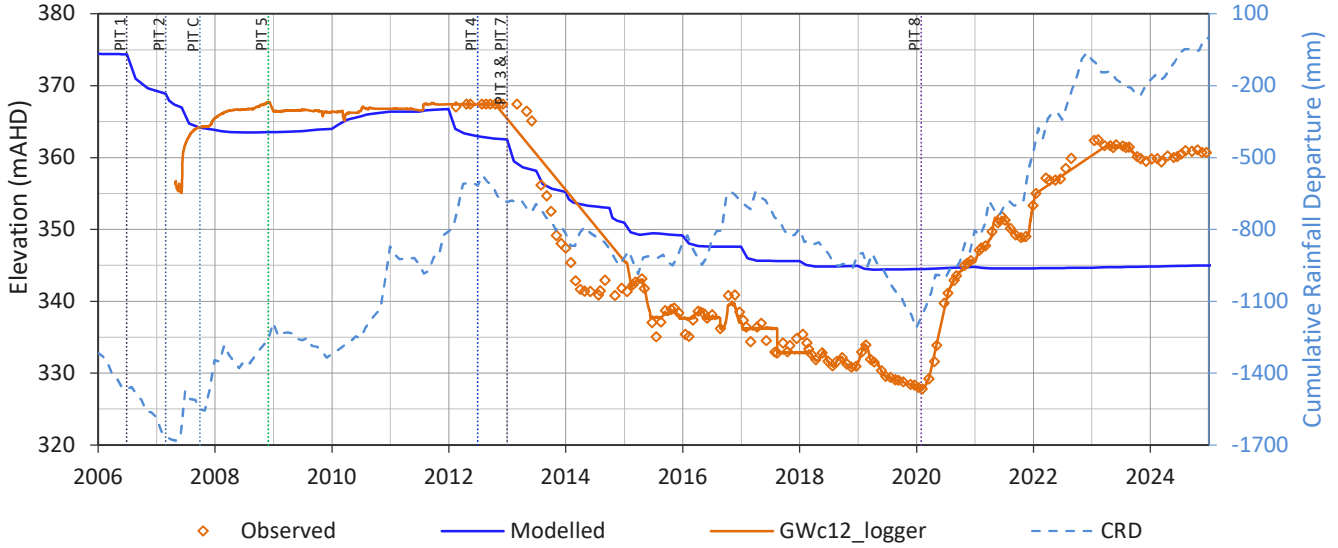
GWc3 Model Performance



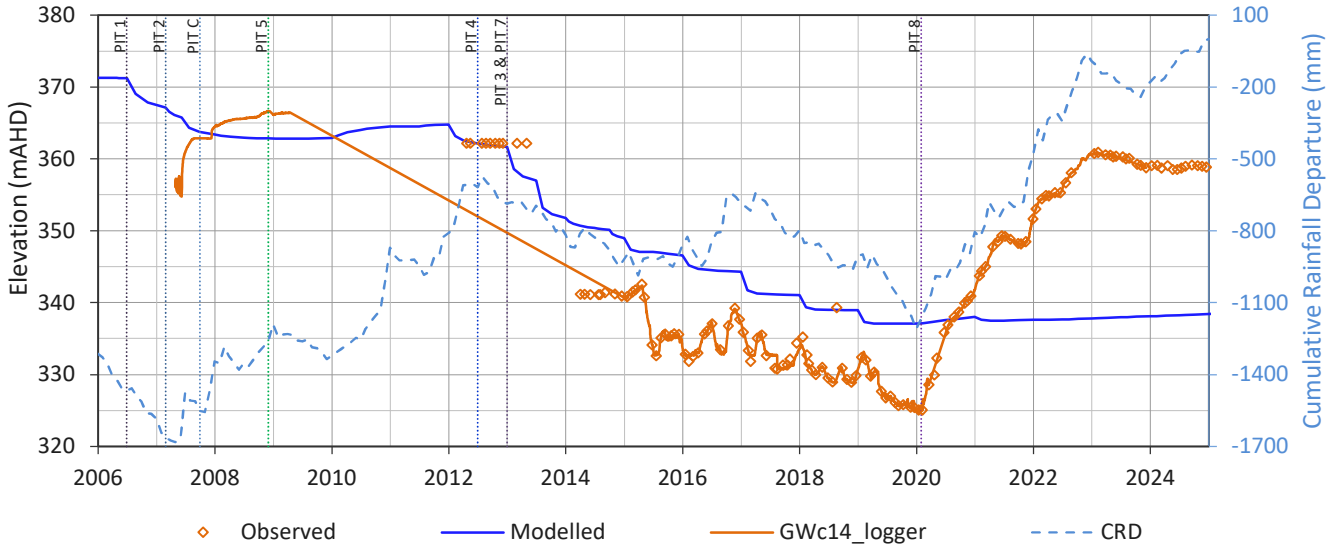
GWc11 Model Performance



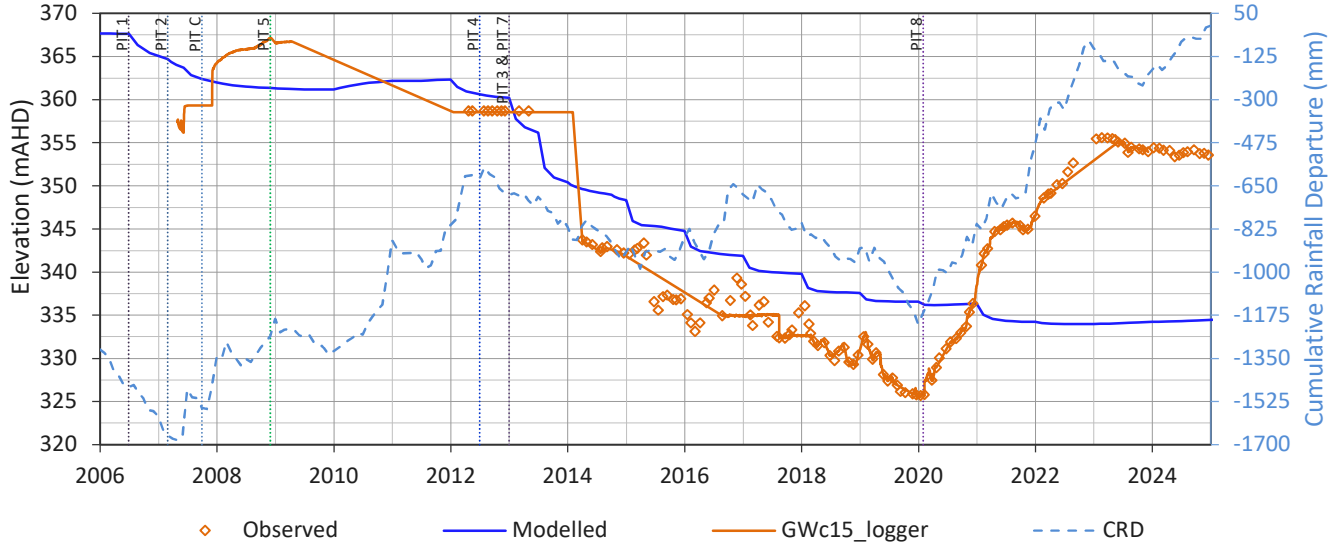
GWc12 Model Performance



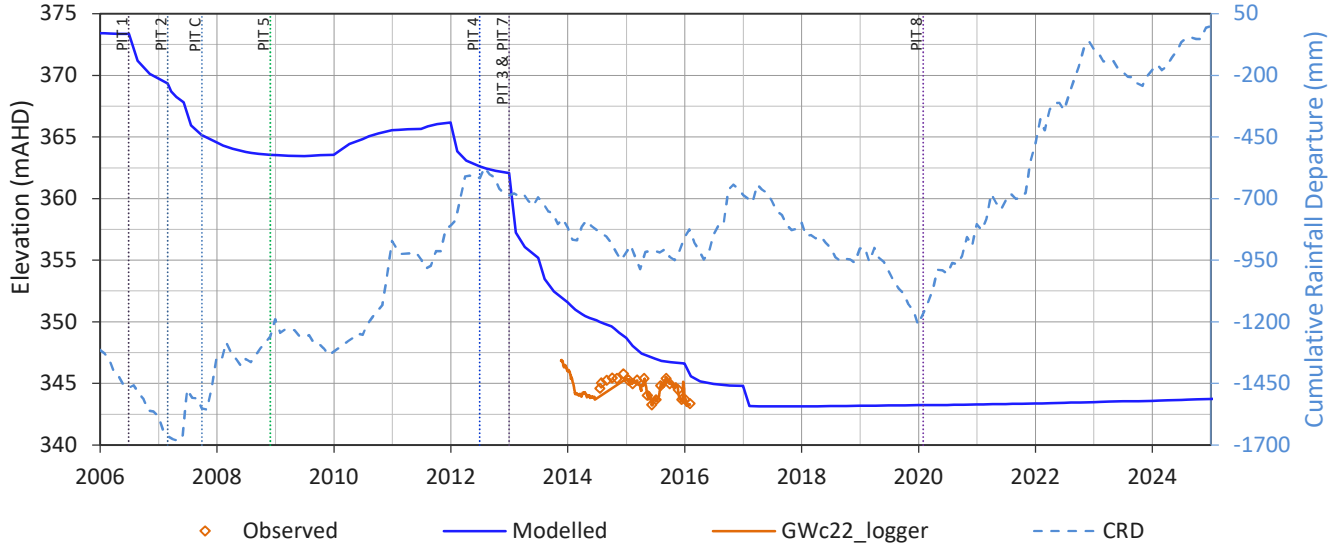
GWc14 Model Performance



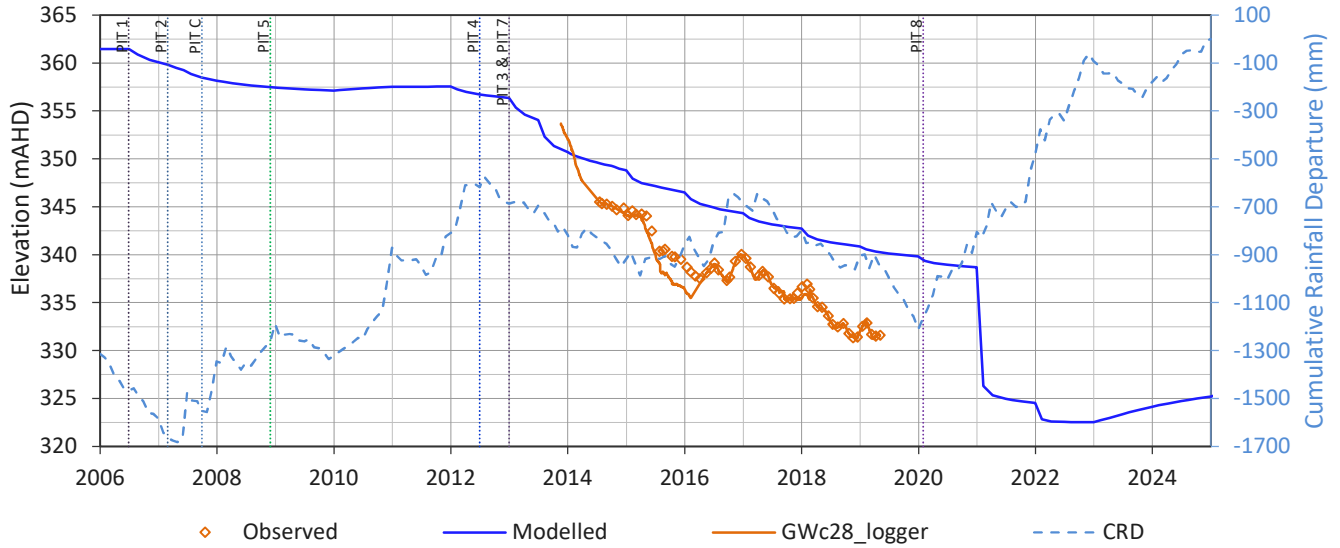
GWc15 Model Performance



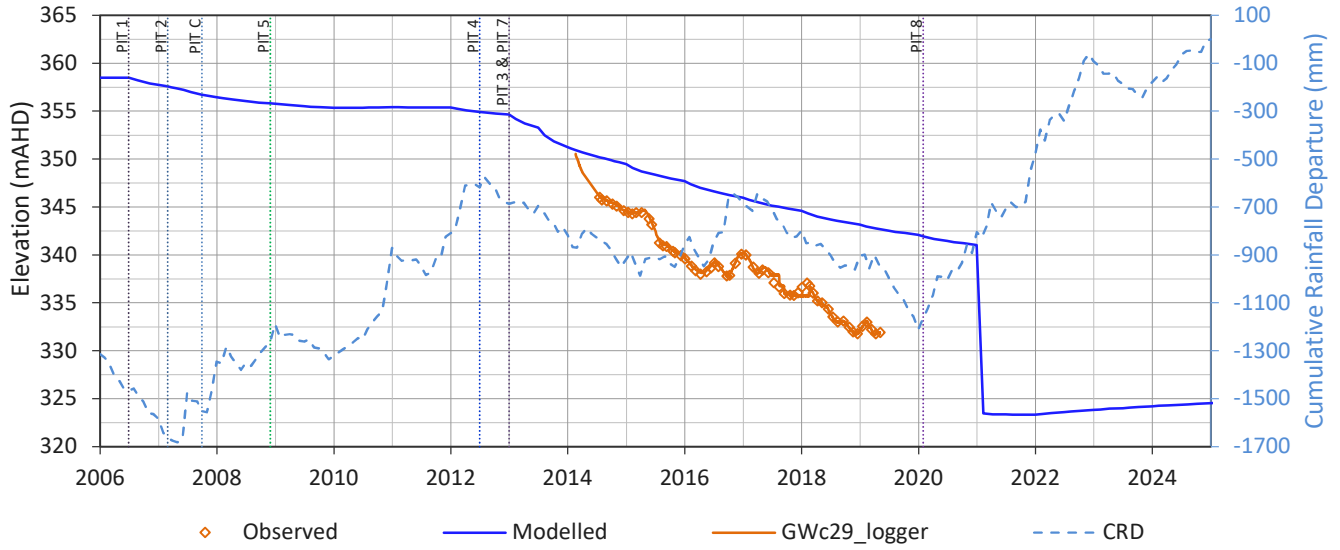
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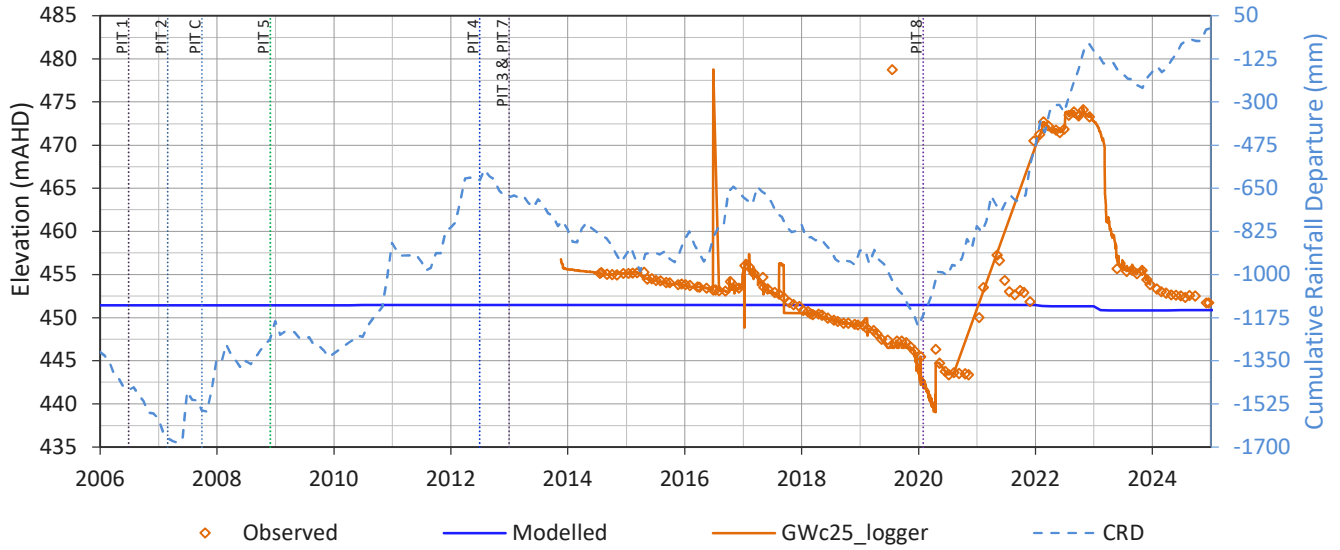
GWc28 Model Performance

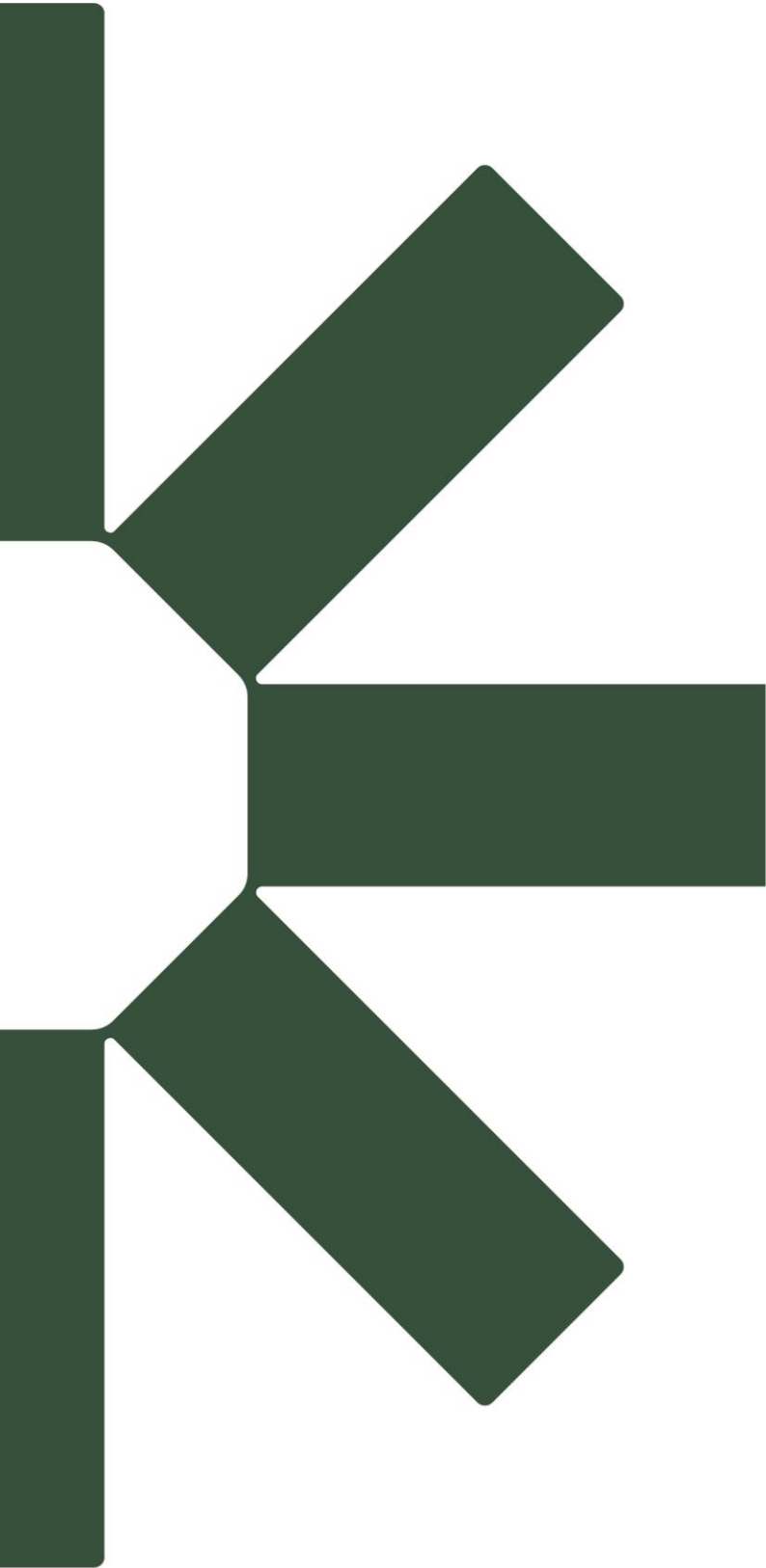


GWc29 Model Performance



GWc25 Model Performance





Making Sustainability Happen